

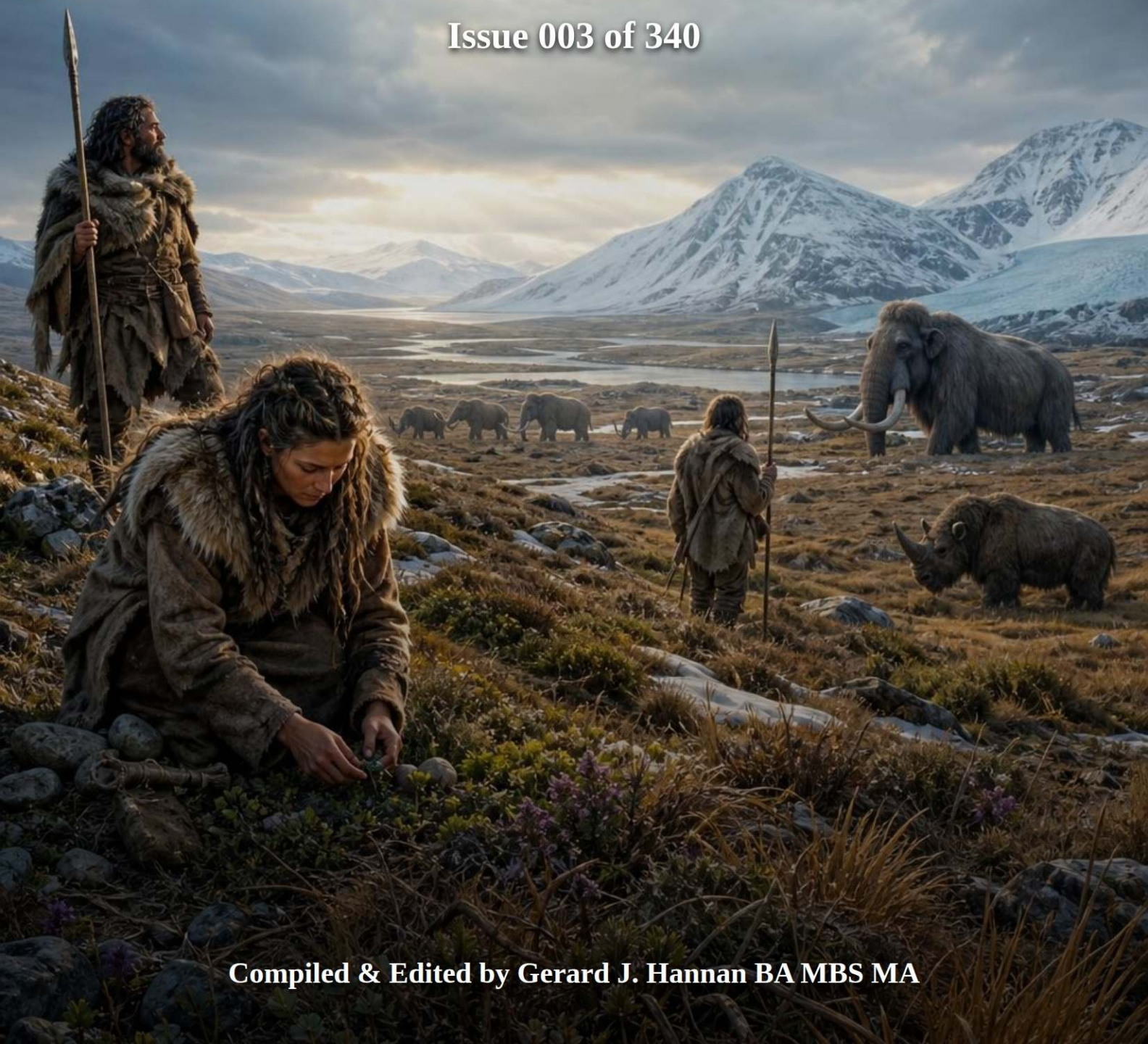


Emerald Gazette

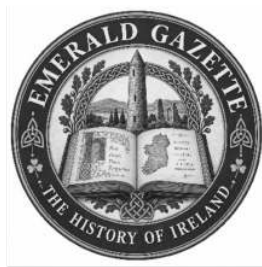
Glacial Silence

31800–31701 BCE

Issue 003 of 340



Compiled & Edited by Gerard J. Hannan BA MBS MA



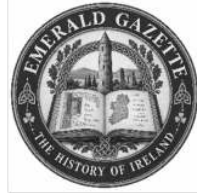
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Introduction

Ireland's history is a long and layered story shaped by people, place, belief, conflict, migration, creativity and change. Across thousands of years, successive generations have left their mark upon the island, creating a historical landscape in which ancient traditions coexist with moments of dramatic transformation. Emerald Gazette was created to explore that story in an accessible, engaging and carefully structured form, allowing readers to move through Ireland's past one period at a time while retaining a sense of the much larger historical journey.

Each issue forms part of a continuing chronological series designed to bring together significant events, personalities, communities and developments from across Irish history. Political change and military conflict are important parts of that story, but they are only part of it. Ireland's history can also be discovered through the lives of ordinary people, the growth of towns and settlements, religious belief, agriculture, trade, education, language, literature, music, folklore, industry, migration and the countless social changes that shaped everyday experience.

The purpose of Emerald Gazette is therefore not simply to present a sequence of dates or isolated historical events. It is to provide context. Events rarely occur independently of what came before them, and their consequences frequently continue long after the people directly involved have disappeared from the historical record. By following the series chronologically, readers can observe how circumstances developed over time, how ideas and institutions evolved, and how decisions made during one generation influenced those that followed.

The material presented throughout the series draws upon the wider research and historical collections of Emerald Archives. Wherever possible, individual articles place events within their broader Irish and international setting while remaining readable for both the general reader and those already familiar with Irish history. References and source information associated with the articles are available through the Emerald Archives website, enabling readers who wish to investigate particular subjects in greater depth to continue their research beyond the pages of each issue.

History is rarely a simple account of agreement and certainty. Surviving evidence may be incomplete, interpretations may change, and different historians may place differing emphasis upon the same events. Emerald Gazette recognises this complexity while seeking to present the available historical record clearly and responsibly. The objective is not to reduce Ireland's past to a single narrative, but to provide readers with a gateway into the people, events and experiences that contributed to its development.

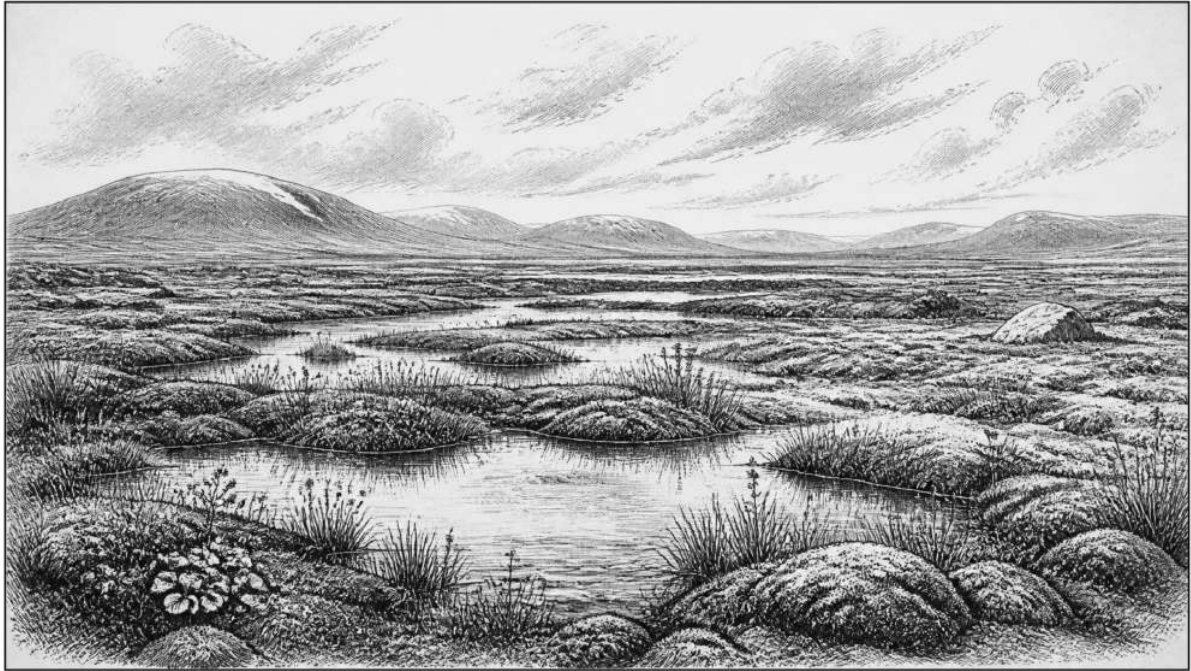
Every issue should therefore be understood both as an individual publication and as another chapter in a much larger project. Read separately, each volume offers a portrait of a particular historical period. Read together, the complete collection becomes an extended chronological journey through the story of Ireland.

We invite you to explore that journey, discover unfamiliar stories, revisit familiar events from new perspectives, and continue through the pages of Emerald Gazette as the remarkable history of Ireland unfolds.

Chapter 001 of 100

31800 BCE

Trifoliate Seed Beneath a Drumlin^[1]



31,800 BCE cannot be treated as a year in the modern historical sense. No Irish record can identify an event, a ruler, a journey or even a single season at this precise point. The date is best understood as an approximate place within the later Pleistocene: roughly 33,750 calendar years before AD 1950, within Marine Isotope Stage 3 (MIS 3), a highly unstable interval of the last Ice Age. Radiocarbon measurements from this depth of time must be calibrated, and their probability ranges commonly span centuries or millennia. What can responsibly be said is therefore regional and environmental: around this notional date, parts of Ireland appear to have been ice-free, cold and treeless, while the island's evidence for human presence remains tantalising but unproven.

A Date Within Ranges

The distinction between radiocarbon years and calendar years matters especially here. A determination of 30,500 radiocarbon years before present from organic deposits at Derryvree, near Maguiresbridge in County Fermanagh, has been calibrated in later work to a broad range of about 36,900–31,700 cal BP. “Before present” conventionally means before AD 1950. Thus 31,800 BCE falls near the younger end of the wider calibrated interval, rather than marking a separate archaeological horizon. The Derryvree material is not a diary of 31,800 BCE; it is a deposit accumulated in a cold-stage environment and dated with an uncertainty that must remain visible in any account of the period.

This was MIS 3, an Ice Age phase between approximately 57,000 and 29,000 years ago. It was not a single uniform freeze. Greenland ice-core sequences show repeated, rapid shifts between relatively milder interstadials and colder stadials across the North Atlantic region. Irish cave deposits and buried wetlands indicate that Ireland responded to these swings, though local evidence is far less finely dated than the Greenland record. The future Last Glacial Maximum, when the British-Irish Ice Sheet reached much

greater extent, still lay ahead. The timing and pattern of that expansion remain subjects of active research, but the strongest synthesis places the main build-up after about 34,000 years ago and the crossing of Ireland's south coast by inland ice after about 24,000 years ago.

Derryvree's Buried Wetland

The most revealing Irish evidence relevant to this moment came to light in road cuttings through a drumlin at Derryvree. Investigators found freshwater silts and fine sands sealed between two thick sheets of glacial till. That position is crucial. The lower till records an earlier advance of ice; the organic-rich sediments preserve an interval in which ice had withdrawn or was absent locally; the upper till shows that ice returned. Later glacial action did not wholly erase the evidence, but it buried it deeply enough for a rare fragment of an older Irish landscape to survive.

Plant and animal remains in the Derryvree sediments indicate an open tundra and a periglacial regime. "Periglacial" does not mean that a glacier stood in the exact spot. It describes a landscape strongly shaped by severe cold, frost, seasonal thaw and ground instability near or beyond ice margins. The vegetation was not woodland. It included hardy wetland and tundra plants, among them bogbean, *Menyanthes trifoliata*, whose three-part leaves are familiar around later Irish lakes and bogs. At Derryvree, however, the fossil is evidence for freshwater margins in a sparse, cold environment rather than for the lush, wooded Ireland of later millennia.

Such deposits also correct an easy but misleading image of an entirely ice-buried island. At some points in MIS 3, north-central Ireland contained freshwater hollows, sedge-rich or mossy ground and exposed terrain capable of supporting cold-adapted life. That does not establish a mild climate, a stable ecosystem or continuous habitable land across the island. It demonstrates only that the region represented by Derryvree was not permanently entombed beneath ice during the dated interval.

Cold Ground, Changing Ice

Around the notional date of 31,800 BCE, Ireland was approaching a major transformation. Ice-sheet growth was uneven: uplands, coastal sectors and the Irish Sea basin did not necessarily respond at the same pace. In the Fermanagh record, organic sediments below later till provide strong local evidence for ice-free conditions before the final major expansion. In south-west Ireland, uranium-series dates from speleothems in Crag Cave, County Kerry, show that cave drip water periodically formed calcite during relatively improved climatic episodes of the last glacial cycle. Speleothem growth is not a thermometer and cannot reconstruct an Irish weather forecast for a single year, but it indicates that groundwater circulation and surface conditions sometimes permitted deposition.

The wider landscape would have been exposed to powerful freeze-thaw processes. Seasonal meltwater could pool in shallow basins, while cold winds crossed largely unwooded ground. Soil development was limited, and vegetation cover was thin by later standards. Rivers and streams carried sediment; caves, fissures and hollows trapped bones and organic matter. These were the archives from which the period is now reconstructed. They are partial archives: erosion, ice advance, water movement and nineteenth- and early twentieth-century excavation all mixed or removed much of the original evidence.

The Animal Country

Faunal remains, particularly from Castlepook Cave near Doneraile in north County Cork, show that Ireland supported a more varied large-mammal community during parts of MIS 3 than the bare tundra label alone suggests. The cave's long and disturbed assemblage includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena; later deposits include lemmings, Arctic fox and wolf. Individual bones have dates ranging broadly from about 45,700 to 19,950 years before present. They do not all belong to one moment, and no honest reconstruction should place every species together in a single scene at 31,800 BCE.

Nevertheless, the dated assemblage establishes that cold-stage Ireland could be occupied intermittently by large herbivores and their predators. Reindeer were suited to open, low-vegetation environments. Mammoth and giant deer attest to a landscape with sufficient forage at particular times, while spotted hyaena is an important warning against assuming caves were human shelters. Carnivores can drag prey or scavenged carcass parts into caves; water can subsequently shift bones again. Castlepook was a repository over a very long period, not a neatly sealed hunting camp.

There is no basis for imagining domestic livestock, cultivation, fields or managed herds. The animal economy visible in the fossils was ecological, not agricultural. Nor can seasonal migration routes be mapped confidently from the Irish bones alone. The lowered seas of the Ice Age exposed more of the continental shelf and altered the distances between Ireland, Britain and Europe, but shifting shorelines, channels, glaciers and ice conditions make any particular crossing route uncertain.

The Castlepook Question

The most provocative evidence is a reindeer femur from Castlepook bearing a deep incision identified by zooarchaeologist Ruth Carden as consistent with a sharp stone tool used during carcass processing. A date publicised for the bone places it at about 33,000 years ago, broadly close to the chronological neighbourhood of 31,800 BCE. If the mark is demonstrably anthropogenic and contemporary with the fresh bone, it could indicate a brief Upper Palaeolithic human visit to Ireland far earlier than the island's securely evidenced post-glacial settlement.

That conditional wording is essential. The femur came from an old cave collection, not from a recently excavated, intact occupation floor. No associated hearth, stone-tool assemblage, dwelling surface, human burial or repeated sequence of butchered remains has yet established a settled community of this age. Cave deposits have complicated formation histories, including carnivore activity, water disturbance and early excavation methods that did not meet modern standards. The marked bone is therefore significant evidence requiring further testing, not a licence to populate Ireland with named hunter bands, permanent camps or a known culture.

The cautious institutional position remains that there is no clear, secure demonstration of Palaeolithic humankind in Ireland. This does not make the Castlepook find unimportant. Rather, it defines the research frontier. Modern fieldwork at the cave seeks undisturbed deposits that might connect animal remains, lithics, charcoal, sediment micromorphology and reliable dates. Until that context is found, a fleeting human incursion is possible; continuous occupation is not established.

No Polity, No Recorded Culture

For this period there is no evidence from which to infer political affairs, diplomacy, collective conflict, kinship systems, religion, language, art, formal learning or social hierarchy in Ireland. There are no houses, graves, monuments, pottery, textiles or securely dated tools that permit such claims. If people did reach the island, they would have belonged to wider Upper Palaeolithic worlds known elsewhere in Europe, but importing their practices wholesale into Ireland would be interpretation rather than evidence.

The same restraint applies to everyday life. A reindeer carcass, if processed by people, could have supplied meat, hide, sinew, marrow and bone; it cannot tell us how many people were present, whether they lived nearby, or why they came. The strongest history of society at this date is consequently a history of limits: mobile animals certainly used parts of the landscape; ice margins and climate changed repeatedly; humans may have appeared briefly; and nothing yet supports a durable Irish population.

A Landscape Before Settlement

The significance of 31,800 BCE lies in that combination of possibility and absence. Ireland was not yet the wooded, settled island of the Mesolithic, still less the farming landscape of the Neolithic or the politically divided island of recorded history. It was a changing north-western fringe of Ice Age Europe, where a freshwater tundra basin could be sealed beneath a drumlin, cave chambers could preserve the traces of mammoth-age fauna, and a single cut-marked bone could reopen a fundamental question about human arrival.

The archaeological lesson is methodological as much as historical. Ireland's Pleistocene past survives in sediments, fossils, cave calcite and calibrated probability ranges, not in calendar-annal precision. Derryvree's trifoliate seed and Castlepook's reindeer bone illuminate real environments and real research problems. They do not, by themselves, yield an event for 31,800 BCE. Their value is that they show an Ireland in motion: intermittently ice-free, ecologically demanding and on the threshold of the more extensive glaciation that would again remodel much of the island.

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31799 BCE

Maguirebridge's Buried Wetland ^[2]



31,799 BCE is a modern chronological label, not a year that anybody in prehistoric Ireland could have named, recorded or commemorated. It falls roughly 33,750 calendar years before AD 1950, the conventional reference point for “before present” dating. No Irish archaeological layer can be assigned securely to that single year. Radiocarbon determinations measure residual carbon rather than a calendar date, and calibration at this depth of time produces ranges that may extend across centuries or millennia. The responsible subject, therefore, is Ireland during the broad interval around this nominal date: later Marine Isotope Stage 3, within the last Ice Age.

This was not yet the Last Glacial Maximum, when the British–Irish Ice Sheet would expand dramatically across Ireland and its surrounding shelf. Nor was it a familiar island of green fields, forests and settled communities. The evidence instead reveals a shifting, cold landscape in which areas of open ground, wetlands and perhaps local ice existed within a climate capable of changing sharply over long human lifetimes. Much has been erased or disturbed by later ice, rising seas and millennia of erosion. What survives is fragmentary: buried silts, pollen, plant remains, cave bones, landforms and laboratory dates.

Dating an Ice-Age Landscape

The date convention itself needs care. “31,799 BCE” is calculated backwards from the modern calendar and gives an appearance of precision that the evidence cannot match. Archaeologists and Quaternary scientists normally use radiocarbon years BP and calibrated calendar years BP. The internationally used IntCal20 calibration curve reaches back to 55,000 calendar years BP, but it does not turn a sample into a record of a particular season or year. A radiocarbon measurement dates the death of an organism, while the deposition, disturbance and excavation of its remains may all be later.

For this horizon, the most useful Irish chronological evidence comes from sequences that bracket environmental intervals rather than from a dated settlement. The key conclusion is secure in broad outline: parts of Ireland were ice-free during later MIS 3, before the main advance of the last ice sheet. The exact limits of ice, water and habitable ground changed over time and varied from region to region. It would be misleading to picture all Ireland as either an unbroken glacier or a wholly open plain.

Silts Beneath the Drumlin

The clearest local window lies at Derryvree, near Maguiresbridge in County Fermanagh. Roadworks in 1969 cut through a drumlin and exposed freshwater silts and fine sands sealed between two layers of glacial till. The sequence matters greatly. An earlier ice advance had deposited the lower till; a non-glacial freshwater environment then developed; later ice overrode and buried that archive beneath fresh till. The deposits are evidence for a major environmental reversal, not a chronicle of continuous annual accumulation.

Organic material from the Derryvree sediments produced a radiocarbon determination of 30,500 years BP, with a substantial uncertainty. Later calibration places the relevant range broadly at c. 36,900–31,700 calibrated years BP. The nominal date of 31,799 BCE falls within that range, but cannot be located at a precise point in it. Derryvree nevertheless demonstrates that north-central Ireland could support freshwater conditions during this part of the Late Pleistocene, before a later glacial expansion remodelled the ground.

The plant and animal traces from the buried sediments indicate open tundra and periglacial conditions. Grasses, sedges, herbs, mosses and low shrubs were better suited to the landscape than dense woodland. Wet ground lay beside shallow freshwater, while seasonally frozen soil and severe winters shaped drainage and vegetation. Occasional tree pollen should not automatically be read as evidence of local forest: pollen can travel far, and sparse woodland was not the defining character of this environment. This was a biologically active but exposed country, not an empty white wilderness.

Animals in Open Country

Cave assemblages from southern Ireland complement the Fermanagh environmental record. Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork, has yielded remains attributed to woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. Shandon Cave near Dungarvan in County Waterford has also produced mammoth, reindeer, horse, bear, wolf and hare. Together, such remains show that Ireland intermittently supported a varied cold-stage fauna between at least about 45,000 and 20,000 years ago.

These lists must not be treated as a census of animals alive together in 31,799 BCE. Cave deposits can form over very long periods. Carnivores may carry bones into dens; animals can die in crevices; roof falls, water, sediment movement and early excavations can mix material from different episodes. Some of Castlepook's oldest collections were recovered in the early twentieth century, before modern methods of fine-grained stratigraphic recording. Recent redating has shown that several earlier radiocarbon results underestimated the antiquity of southern Irish cave fauna, but it has also reinforced the need for caution when reconstructing individual events.

Even so, the fauna gives a credible impression of the food webs available in an open, cold landscape. Reindeer and giant deer browsed or grazed; mammoths required extensive forage; hares and lemmings occupied smaller ecological niches; wolves and hyaenas were predators and scavengers. Their presence

suggests seasonal productivity in grassland, herb-rich tundra and wetland margins. It does not establish that every species shared one place at one time, nor that animal abundance made the country easy or safe for people.

The Castlepook Question

A reindeer femur from Castlepook has made this period especially important in Irish archaeology. Re-examination identified a deep linear mark interpreted as consistent with cutting or chopping by a sharp stone tool, perhaps during carcass processing. The bone has been reported as dating to about 33,000 years ago. If the modification was indeed made by people close to the animal's death, it would indicate a human visit to Ireland far earlier than the long-recognised terminal-Pleistocene evidence from County Clare.

That is an important possibility, not a licence to invent an established Ice-Age population. The specimen came from an old cave collection rather than a modern excavation of an intact camp surface. No securely associated hearth, stone-tool assemblage, shelter floor, burial or repeated occupation horizon of comparable age has yet been recovered at Castlepook. The radiocarbon date dates the animal, not necessarily the making of the mark, its place of killing or the length of any human presence. Ongoing investigation at the cave has located undisturbed fossil-bearing deposits, which may eventually clarify the wider context.

The most defensible interpretation around this date is therefore modest. Small Upper Palaeolithic hunting parties may have reached parts of Ireland during a favourable interval of MIS 3 and may have exploited animal carcasses. They might have arrived across a changing north-west European landscape in which lower sea levels altered coastlines and routes. But there is no direct evidence for a permanent Irish population, a village, a named group or continuous occupation. Whether access was by exposed land, ice, short sea crossings or a combination of routes remains unresolved for this specific phase.

No Kingdoms, No Recorded Wars

Political affairs, diplomacy and formal institutions cannot responsibly be reconstructed for Ireland at this time. There were no written records, no known monuments, no proven settlements and no evidence for territorial states. Nor can conflict be inferred from the mere presence of predators or from damaged bone: gnawing, breakage and carcass scavenging belong first to natural and animal processes. If people were present, their social organisation would have been on the scale of highly mobile hunter-gatherer groups, but that is an inference drawn from wider Upper Palaeolithic contexts, not something demonstrated by an Irish camp.

The same restraint applies to religion, culture, learning, trade and everyday life. There is no Irish evidence from this horizon for ritual structures, art, burial practice, exchange networks, farming, pottery, metalworking or long-term houses. A possible butchered reindeer bone speaks most directly to practical knowledge: the use of a sharp implement on animal tissue and bone. It does not reveal a language, belief system or political identity. The absence of such evidence is not proof that people had no culture; it is a limit on what the Irish record can presently show.

Before the Major Advance

The greatest development relevant to this nominal year was environmental rather than political. Ireland stood within an unstable prelude to the most extensive phase of the last glaciation. During the following millennia, the British–Irish Ice Sheet grew and eventually covered Ireland and much of the continental shelf, reaching maximum extent broadly around 27,000–23,000 calibrated years BP. That later expansion would scour, bury and transform many older landscapes, leaving rare protected pockets such as Derryvree and cave deposits as vital witnesses.

Thus Ireland around 31,799 BCE is best understood through its buried wetland and cave-bone archives: a cold, open, changing land with freshwater refuges and substantial mammals, before the full glacial maximum. The possible Castlepook human trace makes the period unusually significant, but its ambiguity is part of the history. It reminds us that the earliest Irish past is not a sequence of confidently dated events, but a careful reconstruction from evidence that is precious precisely because so little of it survives.

Chapter 003 of 100

31798 BCE

Castlepook's Reindeer Trail^[3]



A Date Beyond the Calendar

31,798 BCE is a modern way of placing a point far back in the Late Pleistocene. It was not a year that anybody in Ireland could have named, recorded or experienced within a calendar. Archaeology cannot identify an event on this particular year, nor can it supply rulers, battles or settlements for it. The responsible approach is to consider the much broader period around it: roughly 33,700 calibrated years before 1950, within Marine Isotope Stage 3, an unstable interval of the last Ice Age.

Even that conversion needs care. Radiocarbon dates are measurements with margins of uncertainty, and calibration against changing atmospheric carbon levels produces ranges rather than an exact historical timestamp. A radiocarbon result dates the death of an organism whose bone or charcoal has been tested; it does not automatically date every mark on that object, the deposit in which it was later found, or an imagined human visit. At this depth of time, an apparently precise BCE label is useful for organising a chronology, but it must not be mistaken for year-by-year evidence.

Ireland around this point was not the familiar island of later history. Sea levels were lower than today, coastlines lay differently, and the British–Irish Ice Sheet was changing through episodes of growth and retreat. Yet scholars cannot reconstruct the exact limits of ice, sea and habitable ground for a single year in the early thirty-second millennium BCE. The best evidence is regional and discontinuous: cave bones, organic sediments protected beneath later glacial deposits, landforms, marine cores and the physical traces left by ice.

A Changing Ice-Age Landscape

This was a cold world, but not necessarily one in which every part of Ireland lay continuously under a uniform cover of ice. Recent work emphasises that the British–Irish Ice Sheet had a complex pre-Last Glacial Maximum history, including advances and retreats during Marine Isotope Stage 3. The great, well-dated expansion that covered much of Ireland and the surrounding shelf belongs chiefly to the later part of the last glaciation, after this broad period. Therefore neither a wholly ice-free Ireland nor a wholly ice-covered Ireland should be projected uncritically onto 31,798 BCE.

For people and animals, the important consequence was variability. Open ground could be exposed in some places and seasons while glaciers, permanent snowfields, frozen soils or cold seas limited movement elsewhere. Windswept herb-rich tundra, grasses, sedges, dwarf shrubs and scattered hardy plants are reasonable regional analogies for favourable ice-free terrain, but they are reconstructions rather than a direct botanical census of this year. Much of the older Irish environmental record has been erased, disturbed or buried by later ice advances. That loss is itself a major reason why Ireland's Palaeolithic record is so slight.

The physical landscape was also larger in some directions than the modern map suggests. Lower global sea levels exposed areas of continental shelf, although the detailed geography of channels, coastal plains and possible crossings changed through time and varied locally with ice loading and relative sea level. It is unsafe to draw a simple land bridge from Ireland to Britain or mainland Europe for this precise date. What can be said is that the geography of movement was different, and that animals reached Ireland during parts of the Late Pleistocene.

The Castlepook Evidence

The most directly relevant Irish evidence comes from Castlepook Cave, also called Mammoth Cave or Doneraile Cave, near the Awbeg Valley in north County Cork. Cave excavations there, especially those undertaken in the late nineteenth and early twentieth centuries and later investigations, produced a remarkable collection of Ice-Age animal remains. The assemblage includes species associated with cold and open environments, among them reindeer, spotted hyaena, brown bear, fox, hare and lemming; mammoth material has also given the cave its alternative name.

These finds are important, but the collection must not be treated as one contemporaneous scene. Many bones were recovered during antiquarian excavations, before modern standards of recording deposits, and cave sediments may be moved by water, scavengers, gravity, frost and later digging. Individual bones can be reliably identified and sometimes directly dated, while the original relationship between bones, layers and cave entrances may remain uncertain. Castlepook was used or entered by animals at different times; it was not necessarily a single stable habitat, a permanent den, or a place continuously occupied by any species.

A reindeer hind-leg bone from the cave has become especially significant. It has been reported as dating to approximately 33,000 years ago and carries a deep linear modification that zooarchaeologist Ruth Carden has interpreted as a cut or chopping mark made with a sharp stone implement while a fresh carcass was being processed. If this interpretation is confirmed and the broad chronology holds, it may indicate that humans reached Ireland during an earlier part of the Upper Palaeolithic than had previously been accepted.

That possibility is relevant to a date such as 31,798 BCE, but it is not evidence for a person living in Ireland in this exact year. Nor does one marked bone establish a permanent population, a named cultural group, an organised hunting territory or a continuous ancestry linking Ice-Age visitors with later inhabitants. The radiocarbon date concerns the reindeer's death; the mark must be assessed separately, and the old recovery context limits certainty. The lack of a securely associated stone-tool assemblage, hearth, dwelling floor, human burial or stratified food-processing deposit means that the claim should remain carefully framed as possible early human activity, not as a fully documented settlement.

Animals, Caves and Survival

Even without proving human presence, Castlepook and other Irish cave sites reveal a real Pleistocene fauna. Reindeer point to cold, open terrain with forage adequate for grazing herds. Arctic fox, hare and lemmings likewise fit severe northern conditions. Spotted hyaenas, however, are a useful warning against simplistic pictures of a silent frozen wasteland. They were powerful social carnivores and scavengers that could accumulate bones in caves, gnaw and break them, and alter the archaeological record. A bone-bearing cave may preserve the work of predators as readily as the work of people.

The economy of any humans who may have entered Ireland can therefore only be inferred in the most general terms. Mobile Upper Palaeolithic hunter-gatherers elsewhere in north-west Europe used stone tools and drew food, hides, sinew, bone and antler from large mammals. Reindeer would have been a valuable animal, but Castlepook does not demonstrate a planned reindeer-hunting economy on the island. It may represent a brief visit, the transport of a carcass part, opportunistic scavenging, or a much more complicated sequence of animal and natural activity. Evidence supports the presence of animal resources; it does not permit a confident account of meals, trade, seasonal camps or social organisation.

No Kingdoms, No Recorded Beliefs

There is no evidence for political affairs in Ireland at this date. No kingship, territory, alliance, diplomacy, warfare or institution can be recovered from the archaeological record. Equally, there is no Irish evidence of ritual buildings, formal graves, art, symbols, language or religious practice that can responsibly be assigned to this narrow period. Upper Palaeolithic communities elsewhere in Europe possessed rich cultural traditions, but importing their known art, clothing, beliefs or identities into Ireland would be speculation.

The absence of such evidence is not proof that people, if present, had no beliefs, kinship or culture. It reflects the scale and fragility of the surviving record. Small, short-lived groups leave few traces even in favourable circumstances; later glaciation, changing shorelines and Ireland's often acidic soils greatly reduce the chance that camps, wooden objects, hearths and human remains will survive. Caves are exceptional repositories because they can shelter bone and sediment, but their deposits are also difficult to interpret.

What This Moment Can Mean

The central historical development around 31,798 BCE is therefore not a known event but an archaeological question: whether the changing landscapes of Ice-Age Ireland were visited by people long before the securely established post-glacial colonisation of the island. Castlepook's reindeer bone makes

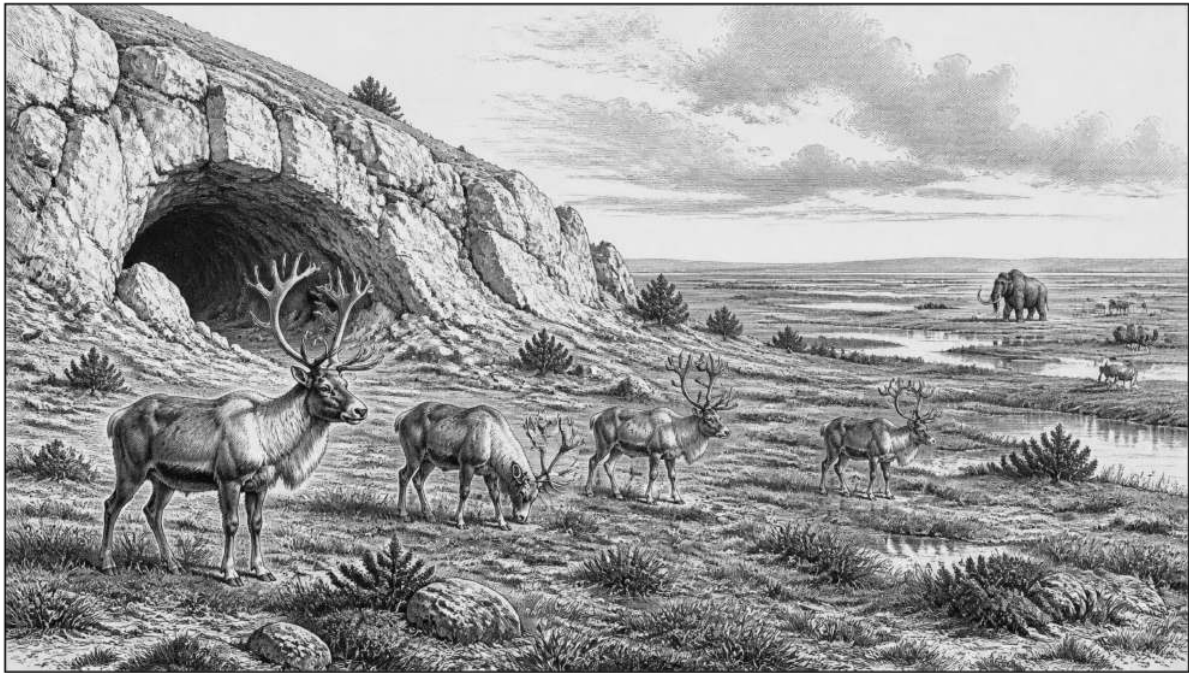
that question more urgent. It joins wider evidence that Late Pleistocene Ireland supported, at intervals, a varied cold-climate fauna and was not simply an empty blank beyond Europe's edge.

Future progress depends on work that is necessarily painstaking: locating undisturbed cave deposits, dating bone collagen with improved methods, distinguishing stone-tool damage from carnivore and geological marks, analysing ancient DNA and isotopes, and mapping former ice and coastlines. For now, the clearest picture is restrained but compelling. Around this modern calendar point, Ireland belonged to a dynamic Ice-Age world of shifting ice margins, exposed ground, mobile animals and uncertain human horizons. The reindeer trail at Castlepook is not yet a history of settlement. It is a rare clue to how much deeper Ireland's human past may eventually prove to be.

Chapter 004 of 100

31797 BCE

Castlepook's Faunal Crossroads^[4]



For a date expressed as 31,797 BCE, Ireland cannot be described year by year in the ordinary historical sense. No written record, calendar, ruler, settlement sequence or event can be fixed to this particular year. The number is a modern conversion, useful chiefly as a point of orientation. In archaeological terms it falls broadly within Marine Isotope Stage 3, a long and climatically unstable part of the Late Pleistocene, before the Last Glacial Maximum. The responsible evidence consists of caves, buried sediments, animal bones, pollen, insects, geological landforms and scientific dates with margins of uncertainty. It can illuminate environments and possibilities over centuries or millennia; it cannot supply an Irish diary for one year.

Dating a Deep Past

Radiocarbon laboratories conventionally report age in years before AD 1950, and a radiocarbon determination is not automatically a calendar age. Atmospheric carbon levels varied through time, so measurements must be calibrated against independently dated records. IntCal20, the current Northern Hemisphere calibration curve extending to 55,000 calendar years before present, has improved this process but has not made the far past precise to individual years. Thus 31,797 BCE is best treated as approximately 33,746 calendar years before AD 1950, not as a date at which a particular Irish occurrence happened. Where published scholarship provides ranges, those ranges matter more than a calculated BCE label. The Last Glacial Maximum, for example, is generally placed at about 28,200–20,400 calibrated years before present, while the date considered here belongs to the preceding interval.

This distinction is particularly important for Irish evidence. A bone date establishes when the animal died within a statistical range; it does not necessarily date a cut, a visit to a cave, a kill-site or a human presence. Sediment layers can record an episode of deposition rather than a continuously inhabited

landscape. Even a cave rich in fossils may have served, at different moments, as a carnivore den, a natural trap, a drainage channel, a shelter, or a place where bones accumulated after being washed in. At this depth of time, interpretation has to remain visibly separate from observation.

The North Cork Cave Archive

The most important Irish locality for this broad period is Castlepook Cave, also known historically as Mammoth Cave, near Doneraile in north County Cork. Excavations in the early twentieth century recovered a remarkable collection of animal remains from a complex limestone cave system above the Blackwater catchment. Later reassessment and improved radiocarbon methods demonstrated that some Castlepook fauna belongs to Marine Isotope Stage 3, substantially older than formerly recognised. The cave is among Ireland's principal pre-Last Glacial Maximum faunal archives, though its old excavations and complicated deposits make it difficult to reconstruct exact associations between individual bones.

The assemblage documents a landscape inhabited by large herbivores and formidable predators or scavengers. Recorded or reported Pleistocene taxa include woolly mammoth, reindeer, giant deer, wolf, red fox, arctic fox, brown bear, spotted hyaena and lemmings. Not every specimen need be contemporary, and the precise age of each bone must be assessed separately. Yet the combined record securely shows that Ice Age Ireland was not uniformly barren. At intervals before the most extensive late glacial ice cover, suitable habitats existed for a varied cold-climate fauna, including animals requiring substantial food resources and wide territories.

Castlepook is therefore more than a catalogue of extinct mammals. Mammoth implies extensive grazing opportunity; reindeer indicate open, seasonal country; lemmings point towards northern ecological conditions; and hyaenas, wolves and bears reveal a food web in which carcasses could be hunted, scavenged, dragged underground or reworked by later processes. The cave itself was part of that food web. Bones found within it do not prove that all the animals lived beside the entrance, nor that they died there. They do, however, preserve a rare Irish window onto an ecosystem almost wholly erased by subsequent ice advances.

Open Ground, Wet Hollows

Evidence from northern Ireland complements the Cork cave record. At Derryvree near Maguiresbridge, County Fermanagh, organic-rich freshwater silts and fine sands survived between two tills beneath a drumlin. Their pollen, plant and insect evidence indicates a cold, open and treeless wetland environment: mosses, sedges, grasses, juniper and herbs around shallow pools rich in plant matter. The deposits have traditionally been linked to a middle Midlandian cold phase and have been associated with a radiocarbon age around 30,500 BP, although their chronology is not fine enough to identify a single equivalent calendar year.

Other buried organic deposits at Hollymount and Greenagho in Fermanagh, and at Aghnadarragh in County Antrim, demonstrate that the last glaciation contained substantial environmental variation. Some records indicate cold open ground and marked seasonality; Aghnadarragh also preserves evidence of an earlier, relatively milder woodland episode with birch, pine and spruce. These sites should not be assembled into one seamless map for 31,797 BCE. They are snapshots from different phases and locations. Taken together, however, they show that Ireland experienced oscillations between ice expansion, ice-free or partly ice-free terrain, wetland formation, sparse vegetation and, at other times, more wooded conditions.

For the period around this modern date, the strongest interpretation is of a periglacial Irish landscape with exposed ground, herb-rich vegetation and wet depressions, rather than a forested island resembling later Ireland. Winters were harsh, growing seasons short and weather highly seasonal. The precise extent of ice across every region remains debated because ice sheets later scoured, buried and rearranged earlier deposits. It is safer to speak of local habitable patches and changing corridors than to claim that the whole island was either open or ice-covered at once.

Before the Ice Maximum

The date also belongs to the long build-up towards the Last Glacial Maximum. Modern reconstructions of the British–Irish Ice Sheet indicate growth from roughly 31,000 to 26,000 years ago, followed by changing and asynchronous advances across Irish, British and North Sea sectors. The maximum extent of the Irish and British sectors was reached later, broadly around 26,000 years ago, not at the point represented by 31,797 BCE. In other words, this was not yet the fullest ice-bound Ireland of popular imagination, but it was a world in which glaciation was becoming an increasingly decisive force.

Lower sea levels altered the geography beyond the modern coast. Continental shelves now submerged were dry or shallower ground in places, and animal dispersal between Ireland, Britain and continental Europe occurred under conditions very different from those of the present island. This does not justify a simple claim of a permanent land bridge, still less a claim that people necessarily walked into Ireland. It does explain why Castlepook's fauna belonged to wider north-west European populations rather than to an isolated island menagerie. Recent sedimentary ancient-DNA work from Castlepook, presently reported as a preprint, supports broad faunal connectivity but remains supplementary rather than conclusive evidence.

The Human Question

Human activity is the most arresting and most uncertain issue. A reindeer femur from the Castlepook collection has been reported as bearing a deep mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone tool during butchery. Public presentations of the specimen place the animal at about 33,000 years ago, often rendered broadly as c.31,000 BCE. If the mark is genuinely a fresh tool cut and is contemporary with the bone, it would be potentially momentous evidence that Upper Palaeolithic people reached Ireland far earlier than the island's previously accepted late-glacial record.

That possibility must not be converted into a settled story of colonisation. The femur comes from an old cave collection, not a modern excavation of an undisturbed occupation surface. There is no securely associated hearth, dwelling, lithic assemblage, human skeleton, burial, repeated food-processing floor or art of comparable antiquity in Ireland. The radiocarbon result dates the death of the reindeer, not independently the mark or the duration of any human visit. Moreover, taphonomic analysis must distinguish intentional cutting from carnivore damage, sediment abrasion, breakage, excavation disturbance and later handling. The specimen is thus a serious and provocative clue, not proof of a resident population in north Cork.

Accordingly, there can be no responsible account here of Irish political affairs, diplomacy, tribes, named leaders, warfare or religious institutions. There is no evidence for them. Nor is there evidence for farming, domesticated animals, trade systems, monuments, formal learning, pottery or permanent villages. If people did enter the Irish landscape during this broad interval, they would have been mobile Upper

Palaeolithic hunter-gatherers operating within a dangerous, seasonal world. That is an inference from contemporaneous European societies and the possible Castlepook butchery trace, not a directly demonstrated description of an Irish community.

A Landscape Before Social History

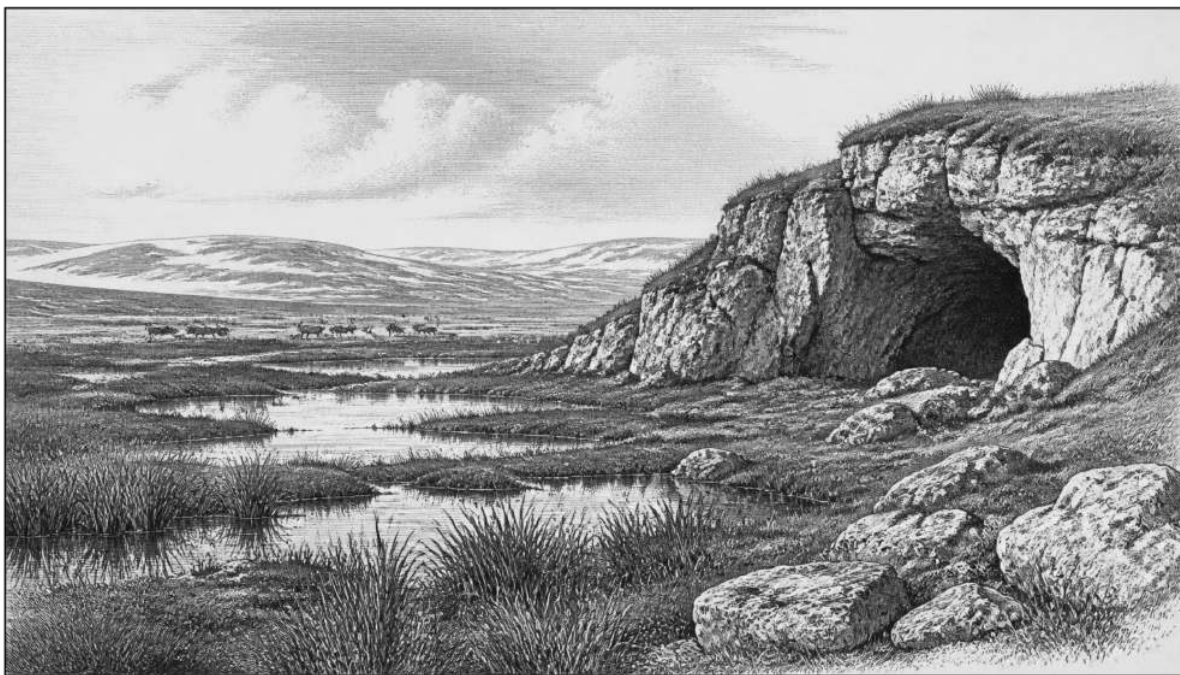
The economic reality demonstrable in Ireland was ecological rather than agricultural: grazing, browsing, predation, scavenging, seasonal movement and the accumulation of animal remains. Reindeer and mammoth formed part of a wider living landscape, while hyaenas and other carnivores competed for carcasses and shelter. For any human visitors, a reindeer carcass would have offered meat, marrow, fat, hide, sinew and bone, but the one marked femur cannot establish a routine hunting economy. Equally, there is no basis for identifying cultural identity, language, ceremony or a route of arrival.

The enduring significance of the period is therefore not an invented event but a threshold of evidence. Castlepook, Derrylvree and related deposits show that Ireland around this broad point in the Late Pleistocene was a changing northern landscape connected to wider ecological processes, inhabited by animals later eliminated locally by climate change, ice-sheet advance and geographic isolation. The question of whether people briefly shared that landscape remains open. Future work on intact cave deposits, better dating, microscopic damage analysis and sedimentary DNA may narrow the uncertainty. For now, the most compelling history of 31,797 BCE is one of animals, ice, exposed ground and a single bone that asks more than it can yet answer.

Chapter 005 of 100

31796 BCE

Awbeg Valley Faunal Archive^[5]



Modern calendar precision is not available for Ireland in 31,796 BCE. The numbered year is a useful point of orientation, not an event-date: expressed in the archaeological convention of calibrated years before present, with “present” fixed at 1950, it falls roughly 33,700–33,800 cal BP. That estimate must not be mistaken for an anniversary. At this depth in time, radiocarbon measurements have substantial ranges, calibration curves are uneven, and Irish deposits are rarely continuous. The responsible subject is therefore Ireland during the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable phase of the Late Pleistocene, rather than a recoverable year in the lives of identifiable people.

A Landscape Before the Ice Maximum

Ireland stood well before the Last Glacial Maximum, when the British–Irish Ice Sheet expanded to cover most of the island. That later maximum is generally placed around 27,000 years ago in the British–Irish record, although its timing and extent varied from one ice-sheet sector to another. Around the nominal date used here, ice, water, vegetation and animal ranges were already changing on long and sometimes abrupt timescales. It is unsafe to picture a single fixed national landscape. Some places may have supported exposed ground and freshwater habitats during milder intervals; others lay nearer active or advancing ice; still others have left no surviving environmental record at all.

The familiar Ireland of wooded hills, peatlands, enclosed fields and coasts did not exist. Sea level was much lower globally than today, and the outlines of the Irish Sea basin and Atlantic shelf were consequently very different. Yet lower seas do not automatically prove an easy land route for people or animals at every moment. Access between Ireland, Britain and continental Europe depended on changing

coastlines, marine channels, ice margins and ecological corridors. The evidence establishes that Ice Age animals reached Ireland; the exact routes, seasons and frequency of movement remain matters of reconstruction rather than direct observation.

Wetlands Beneath Fermanagh

Northern Ireland preserves some of the clearest evidence for environments broadly relevant to this date. At Derryvree, near Maguiresbridge in County Fermanagh, organic-rich freshwater sediments occur between an older and a younger layer of glacial till. Their position is crucial. Ice deposited the lower till; a non-glacial freshwater environment then existed long enough for silts, plant remains and insects to accumulate; later ice covered the sequence with upper till. The deposit is not a diary and cannot be assigned to 31,796 BCE, but it demonstrates that a cold, ice-free interval occurred between glacial advances.

Derryvree's fossils point towards an open, treeless wetland or muskeg landscape. Freshwater mosses and sedges, together with insect species of cold northern affinity, indicate shallow pools, saturated ground and low vegetation rather than closed forest. A radiocarbon determination of about 30,500 radiocarbon years BP from the organic layers has a broad calibrated significance rather than year-level precision. It overlaps a long later-MIS-3 environmental window, not a single moment. Nearby sites at Hollymount, Greenagho and Aghnadarragh add important corroboration: they preserve organic horizons between tills and show that Ireland's glacial history included episodes of cold but non-glacial terrain.

Such deposits illuminate everyday ecology rather than human society. Mosses, sedges, pollen and beetles can show the sort of habitats available to animals, the severity of winters and the presence of standing water. They cannot tell us what language anyone spoke, whether a camp stood nearby, or how long any group remained. Their value lies precisely in this restraint: they give Ireland an environmental history where conventional historical sources are impossible.

Castlepook's Mixed Cave Record

The most striking southern Irish archive is Castlepook Cave, also called Mammoth Cave or Doneraile Cave, in the Awbeg Valley of north County Cork. Its limestone passages yielded more than 2,000 animal bones during investigations undertaken principally between 1904 and 1918. The cave is exceptionally important because it contains remains spanning a long part of the Ice Age, including material from before and after the Last Glacial Maximum. It is also difficult evidence. Water movement, carnivore activity, natural deaths, sediment disturbance and early excavation all helped produce the collection. A bone from one named gallery is not necessarily contemporary with every other bone from that gallery.

Even so, the assemblage establishes an Irish fauna far removed from that of the present island. Identified remains include woolly mammoth, reindeer, giant deer, brown bear, wolf and spotted hyaena; later cold-stage material includes Arctic fox and lemmings. Not all these species need be placed in the same century, still less the same season, and revised radiocarbon work has shown that some older dates from Irish cave collections were too young because of limitations in earlier laboratory preparation. The secure conclusion is a long-lived, changing animal record. Reindeer and mammoth are consistent with extensive open grazing country, while predators and scavengers show that carcasses were contested resources in an active Ice Age food web.

Spotted hyaena is particularly informative, though it should not be romanticised. Castlepook is Ireland's only known site for the species, and the cave may have served as a carnivore repository or den during part of its history. Hyaenas, wolves, flowing water and gravity could all move bones into passages. Consequently, an animal's presence in the cave proves neither that it died there nor that people encountered it there. The Awbeg Valley archive is most useful as evidence of regional ecological possibility: large herbivores and formidable carnivores were able to occupy Ireland during portions of MIS 3.

The Reindeer Femur Question

One Castlepook object has made this period especially important for Irish prehistory: a reindeer femur reported as bearing a deep mark interpreted as having been made by a sharp stone tool during carcass processing. County Cork heritage material has associated the bone with about 31,000 BCE. If the mark is correctly identified and contemporary with the animal's fresh bone, it would be evidence for an Upper Palaeolithic person handling a reindeer in Ireland many millennia before the island's long-established post-glacial settlement record. It would be an extraordinary result, but it is not a licence to invent a settled community in 31,796 BCE.

The limits are exact and important. The specimen comes from an old cave collection rather than a modern excavation of a sealed occupation floor. Its date concerns the animal bone, not independently the making of the incision, the place where the animal was killed, or the length of any human visit. No securely associated hearth, dwelling surface, stone-tool assemblage, burial, art object or sequence of repeated camps of comparable antiquity has yet been published from Castlepook. Recent licensed work has sought surviving deposits and has underlined both the cave's potential and the disruption caused by earlier exploration.

Accordingly, the best interpretation is deliberately modest. The femur may record a brief human incursion: perhaps one or more highly mobile visitors used a lithic cutting edge to remove meat, hide, sinew or marrow from a carcass. It does not tell us whether they hunted the reindeer, scavenged it, traded for it, or found it already dead. Nor can it demonstrate permanent settlement, a named people, a population size, family life or descent from later inhabitants of Ireland. The difference between a possible act of butchery and proof of colonisation is the central historical distinction for this date.

What Cannot Yet Be Written

There is no responsible political history for Ireland in this year. No kings, chiefs, territories, laws, alliances, battles, diplomatic exchanges or institutions can be identified. There is equally no direct evidence for religion, ritual, art, learning, language, trade networks, domestic architecture or social rank. Continental Europe certainly contained Upper Palaeolithic communities with varied stone technologies and cultural practices, but those broader realities cannot simply be transferred across the sea to Ireland. Irish evidence must lead the account, and at present it does not support a detailed human narrative.

If people did reach Ireland during this broad interval, survival would have depended upon mobility, careful knowledge of animals and terrain, and the practical use of perishable materials as well as stone. That is an inference from the conditions and from the possible modified femur, not a demonstrated reconstruction of an Irish economy. Reindeer, other large mammals, hides, bone, antler, plant foods and

perhaps driftwood or local scrub might have offered resources, but no excavated campsite allows their collection, processing or sharing to be described. “Trade” and “diplomacy” are not merely undocumented here; they are concepts for which the evidence provides no foothold.

An Archive of Possibility

Ireland around the nominal year 31,796 BCE was not empty of history, but it is known through deep environmental and faunal archives rather than chronicles. Fermanagh’s sub-till wetlands show that cold, open freshwater landscapes existed between ice advances. Castlepook shows that a diverse Ice Age fauna ranged through southern Ireland across a long span before the glacial maximum. The marked reindeer femur raises the possibility that people were present too, perhaps briefly. Future excavation, refined dating and microscopic study of bone surfaces may test that possibility. For now, the honest history is one of tundra wetlands, cave-borne bones, shifting ice and a single contested trace of human action.

Chapter 006 of 100

31795 BCE

Mosses Between the Tills^[6]



Modern calendar-year precision is not available for Ireland in 31,795 BCE. The number is a convenient point on a modern chronological scale, not a date recorded by people living then. Archaeologists instead work with radiocarbon ages, calibrated ranges and long environmental sequences. Expressed in the conventional archaeological measure of years before AD 1950, 31,795 BCE lies approximately 33,745 calendar years before present (cal BP). It falls within the Late Pleistocene, in Marine Isotope Stage 3, during the long, unstable cold period before the Last Glacial Maximum.

For Ireland, the responsible history of this moment is therefore not a story of named communities, rulers or events. It is a reconstruction from sediment beneath later glacial deposits, bones preserved in limestone caves, pollen, mosses, insects, landforms and the changing relationship between ice, sea and land. Those records can illuminate conditions across broad intervals. They cannot tell us what happened in one particular year, nor can they justify assigning a precise season, settlement or migration to 31,795 BCE.

A Cold-Phase Landscape

The closest Irish environmental evidence comes from Derryvree near Maguiresbridge in County Fermanagh. Roadworks there in 1969 exposed organic silts and fine sands enclosed between two layers of glacial till. The deposit yielded a radiocarbon result of $30,500 \pm c.1,100$ radiocarbon years BP; later calibration places it broadly between about 36,900 and 31,700 cal BP. That range overlaps the chronological point represented by 31,795 BCE, but it is much too wide to make Derryvree a snapshot of that year.

Its evidence is nonetheless unusually vivid. Pollen, plant macrofossils and beetle remains indicate open, treeless tundra or muskeg: wet ground with pools, mosses, sedges and herb-rich vegetation, rather than the familiar wooded Irish landscape of later millennia. Bogbean, dwarf birch, willows, grasses, sedges and other cold-adapted plants point to a raw, seasonal environment. Insects support the picture of exposed ground and shallow freshwater habitats. Winters were severe; summers may still have allowed a short but productive growing season in sheltered wet places.

Derryvree was not all Ireland. It is one local sequence in Fermanagh, and its organic sediments were deposited in a particular basin between glacial episodes. Yet it demonstrates an essential fact about Ireland around this broad period: parts of the island could sustain tundra vegetation and freshwater ecosystems even as the climate moved towards the more extensive glaciation of the Last Glacial Maximum. The land was neither a timeless white wilderness nor a landscape comparable with modern Ireland.

Ice, Water and Uneven Ground

The eventual Last Glacial Maximum, conventionally placed around 27,000–23,000 cal BP for maximum British-Irish Ice Sheet extent, lay in the future. Evidence from landforms, offshore sediments and exposure dating shows that the growth, flow and retreat of ice varied considerably by region. At the point represented here, Ireland was in an earlier cold phase rather than securely within the later maximum. It would be misleading to claim that the whole island was either ice-free or uniformly ice-covered on this particular date.

Glaciers and ice sheets had already shaped the terrain profoundly. Their advances eroded older deposits, redistributed stone and sediment, and repeatedly destroyed or buried traces that people or animals might have left. This is one reason why the Irish Palaeolithic record is so sparse. The absence of a camp site may reflect genuine absence, but it can also reflect erosion, later ice movement, rising seas and the limited survival of suitable deposits.

Sea level was substantially lower than today during glacial conditions, exposing areas now beneath the Irish and Celtic Seas. Ireland's coastlines and distances from neighbouring lands were therefore different. But lowered sea level should not be simplified into an assured, open land bridge to Britain or continental Europe. Ice margins, rivers, estuaries, relief and changing relative sea levels mattered, while the timing of any usable terrestrial connection remains complex. Movement by animals or people may have been easier at some times than today, but the exact routes available around 33,745 cal BP cannot be reconstructed with confidence.

Cave Bones and Mobile Animals

Irish caves supply another important, though complicated, archive. Castlepook Cave near Doneraile in north Cork has produced remains of mammals associated with Late Pleistocene cold environments. Earlier work identified such animals as reindeer, woolly mammoth and spotted hyaena, alongside smaller mammals and carnivores. Published radiocarbon determinations on a mammoth bone and a hyaena bone have been reported at roughly $33,500 \pm 1,200$ and $34,300 \pm 1,800$ radiocarbon years BP respectively. These are broad dates, not dates for a single shared occupation of the cave, but they show that cold-stage fauna reached southern Ireland during the wider period.

The animals should not be imagined as a single harmonious herd. Reindeer were highly mobile grazers and browsers adapted to open country. Mammoths required large ranges and substantial forage. Spotted hyaenas were powerful carnivores and scavengers, capable of accumulating bones in den sites.

Caves were not necessarily domestic shelters; they could be predator lairs, natural traps, places where carcasses were dragged, or locations where bones were later disturbed by water, sediment and excavation. Each specimen must therefore be assessed taphonomically: by considering how it entered the deposit and what altered it afterwards.

For human history, Castlepook matters because a reindeer femur from the old cave collection has been interpreted by zooarchaeologist Ruth Carden as carrying a deep modification made by a sharp stone tool during fresh-bone processing. The bone has been publicised as approximately 33,000 years old, and, if both the age and human origin of the mark are confirmed, it may represent evidence for a remarkably early human visit to Ireland. That possibility is important, but it remains more limited than popular retellings suggest.

The Human Question

There is no securely excavated settlement floor, hearth, stone-tool assemblage, human burial or stratified sequence of repeated occupation in Ireland dated to around 31,795 BCE. The Castlepook bone derives from an antiquarian collection, not from a modern excavation with full three-dimensional context and associated deposits. A mark consistent with butchery is not the same as proof of permanent residence. It could indicate a brief encounter: perhaps one or a few people processing an animal, if the interpretation survives further testing.

The distinction matters because the next securely dated Palaeolithic evidence currently published for Ireland is much later. A cut-marked brown-bear patella from Alice and Gwendoline Cave in County Clare has been independently dated to about 12,810–12,590 cal BP. It demonstrates human presence after the worst of the last glaciation, but does not establish continuity with any much earlier Castlepook episode. The substantial and recurrent archaeological record begins later again, with Mesolithic hunter-gatherer settlement after the Pleistocene had ended.

Thus there is no evidential basis for describing an Irish people, tribe, language or enduring settlement at this date. If humans entered the island during this cold phase, the most cautious inference is that they were members of small, highly mobile Upper Palaeolithic hunting groups moving through north-west Europe. Such groups elsewhere used sophisticated stone tools, clothing, fire and detailed knowledge of animal behaviour. But those are comparisons from better-documented regions, not discoveries from a 31,795 BCE Irish camp.

Society Without States

Political affairs, diplomacy and organised warfare are invisible here. No monuments, boundaries, settlements, weapons assemblages or burials from this Irish horizon permit discussion of leaders, alliances or conflict. Nor is there evidence for a local religious institution, formal learning, craft tradition or trade network. The proper conclusion is not that people lacked social lives, but that the surviving Irish evidence cannot identify them.

Should the Castlepook modification prove anthropogenic, it would speak most directly to economy: the use of a large animal for meat, marrow, hide, sinew or bone. It might also imply technological knowledge embodied in a sharp stone edge and social knowledge involved in hunting or scavenging. Even this interpretation must stay conditional. A single altered bone cannot reveal whether an animal was hunted, found dead, shared among a group, or processed during a one-off stop.

Environmental evidence offers firmer ground. In Fermanagh, freshwater pools and wet mossy ground supported specialised plants and insects. Across more open terrain, animal movements would have followed food, shelter and snow conditions. Caves in limestone country preserved a fragmentary record of those movements. The pattern is one of ecological opportunity constrained by cold, seasonality and advancing ice—not of a settled island society.

What This Date Can Mean

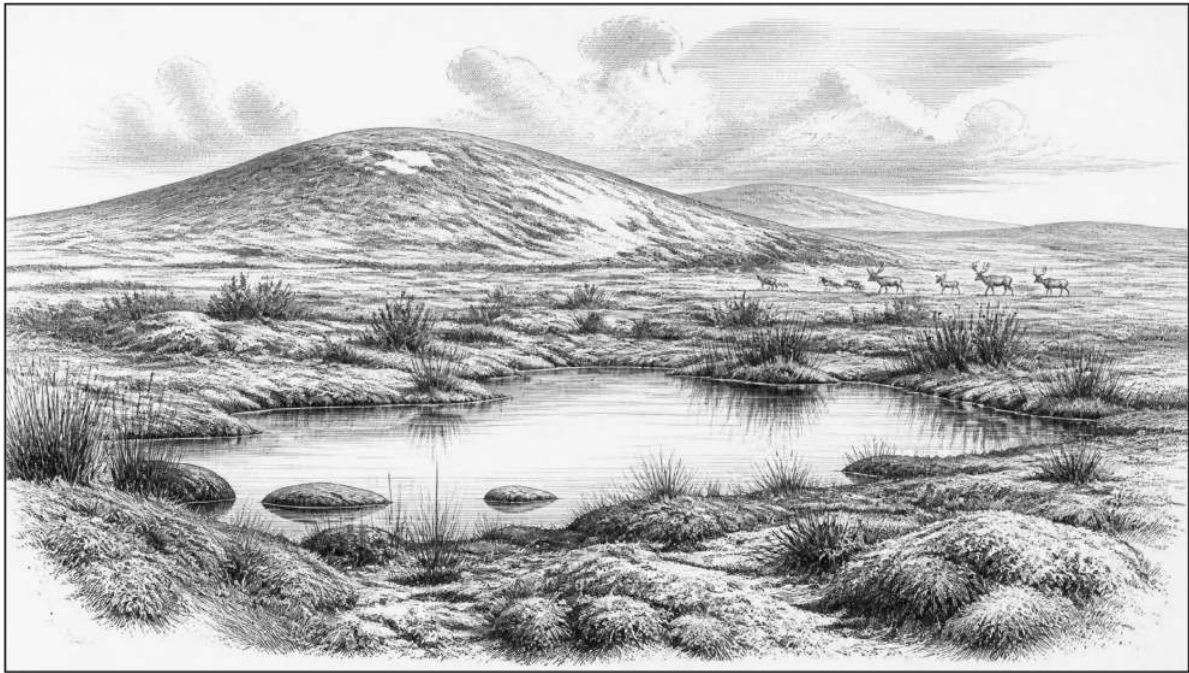
31,795 BCE is best treated as a point within a wide archaeological horizon. Ireland then belonged to a changing north-west European world of tundra wetlands, exposed ground, large herbivores, predators and shifting ice margins. Derryvree provides direct evidence for a periglacial freshwater landscape within a calibrated range that reaches this time. Castlepook preserves evidence that cold-adapted mammals occupied southern Ireland during the broader interval, while one marked reindeer bone raises the unresolved prospect of a human visit.

The most important development was not a political event but environmental instability. Ireland had not yet reached the fullest extent of the last ice sheet, yet the conditions that would make long-term occupation extraordinarily difficult were intensifying. Any human presence was, at most, fragile and episodic. The island's deep past at this point is accordingly written not in chronicles but in silts between tills, fossil mosses, beetles and cave bones—rare survivals from a landscape repeatedly remade by ice.

Chapter 007 of 100

31794 BCE

Maguirebridge's Freshwater Interval ^[7]



An Archaeological Time-Window

31,794 BCE is a modern chronological label, not a year that can be recovered from Ireland's prehistoric evidence. No written record, annually layered archive, settlement sequence or securely dated event allows Irish history to be narrated at calendar-year precision this far back. In archaeological terms the date falls roughly 33,700 years ago, within the later part of the Last Glacial period and Marine Isotope Stage 3. Radiocarbon results of this age must be calibrated, and their ranges commonly span many centuries or millennia. The responsible task is therefore not to invent an episode for one numbered year, but to examine the dated environmental and faunal evidence that illuminates Ireland around this broad horizon.

The point in time lies near the beginning of Greenland Interstadial 6 in the Greenland ice-core chronology: a comparatively milder interval within an Ice Age marked by abrupt climatic swings. That does not mean that Ireland experienced a neat, instant warming in the year named here. Greenland ice cores provide a North Atlantic climatic framework, while Irish deposits preserve local conditions only intermittently. The available evidence suggests a cold, exposed and strongly seasonal island-region whose landscapes, ice margins, watercourses and animal populations changed repeatedly over long periods.

There was no Ireland in the political sense of a kingdom, people or nation. There are no rulers, alliances, wars, diplomatic exchanges, laws or institutions to identify. Nor is there evidence for permanent communities, cultivated fields, villages, monuments, burials, metalworking, writing or religious practice. These absences are historically important. They mark the limits of what can be known, and prevent later Irish identities from being projected back into a world tens of thousands of years before the first secure long-term settlement of the island.

Freshwater Beneath a Drumlin

The most informative Irish evidence close to this horizon comes from Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 cut through a drumlin, exposing organic-rich freshwater silts and fine sands sealed between two distinct layers of till, the unsorted debris deposited by glaciers. The sequence records a simple but powerful relative history: an earlier ice advance laid down the lower till; an ice-free interval permitted a freshwater environment to form; and a later glacier covered the deposit with a new till sheet. Much of the Irish Pleistocene record was eroded or disturbed by later glaciation, making this survival exceptionally valuable.

The organic layers at Derryvree produced a conventional radiocarbon age of 30,500 years BP, with a substantial uncertainty of +1,170 and -1,030 years. Later calibration places the result broadly around 36,900–31,700 calibrated years BP. The nominal year 31,794 BCE lies within that wide interval, but this overlap must not be overstated. The deposit does not preserve a scene from that year, nor does it establish that every part of Ireland shared the same conditions at the same moment. It provides a long environmental window on north-central Ireland before the later, major expansion of the Irish sector of the British–Irish Ice Sheet.

Its pollen, plant macrofossils and insect remains indicate open tundra vegetation and a periglacial regime. Freshwater mosses and sedges grew around pools or slow water; cold-adapted insects add detail to a picture of wet ground amid an otherwise sparse landscape. Grasses, herbs and low shrubs were better suited to these conditions than dense woodland. Frost action, seasonal snow, short growing seasons and exposure would have shaped soils and vegetation. This was not a featureless white desert, however. Shallow basins, stream margins, sheltered hollows and patches of better-drained ground created a mosaic of habitats, each important to plants, invertebrates and grazing mammals.

A Land Between Ice Advances

Derryvree demonstrates that at least parts of Ireland were not continuously buried beneath ice during this phase. Other Fermanagh deposits, including evidence from Hollymount near Maguiresbridge and Greenagho near Belcoo, also point to cold non-glacial intervals, though their dating and correlation have limitations. The correct picture is regional and changing rather than a single nationwide map. Ice could persist in one district, advance from uplands or marine basins in another, and leave ice-free ground, lakes, river corridors or periglacial terrain elsewhere.

By comparison with the later Last Glacial Maximum, the Ireland of this period retained more environmental possibility. Large-scale reconstructions show that the British–Irish Ice Sheet expanded substantially after this broad interval, with different sectors reaching maximum positions at different times. Evidence from Derryvree and elsewhere is consistent with largely ice-free conditions in north-central Ireland until about 34,000 years ago, before the main build-up. Subsequent growth was neither instantaneous nor uniform. In the west and south, ice later reached the continental shelf and crossed the southern coast only after about 24,000 years ago; ice-sheet-wide maximum volume is modelled around 23,000 years ago. These later developments would erase, bury and transform many earlier landscapes.

Sea level was lower than today because vast quantities of water were locked in global ice sheets, and the surrounding shelf seas had a different shape. Yet neither the exact coastline nor the availability of crossings can be reconstructed securely for one particular year in this period. The presence of land

animals in Ireland shows ecological connection with Britain and north-west Europe at intervals, but it does not by itself prove a specific land bridge, route or season of arrival. Any claim about a particular crossing would go beyond the evidence.

Castlepook's Animal Evidence

In County Cork, Castlepook Cave near Doneraile—also called Mammoth Cave—offers the most striking faunal archive from the Irish Late Pleistocene. Excavations between 1904 and 1908 recovered a large collection of bones. Reassessment and radiocarbon dating of the cave material have shown that mammals including reindeer, spotted hyena and woolly mammoth belonged to the broad cold-stage world of roughly 45,000 to 30,000 years ago. The National Museum of Ireland regards Castlepook as Ireland's most important cave site for mammal remains of the last cold stage.

These animals convey both opportunity and danger. Reindeer could have used open ground and seasonal forage, while mammoths attest to extensive herbivore habitat somewhere within the wider region. Spotted hyenas were major scavengers and predators. A cave containing their bones and those of prey cannot automatically be treated as a human camp: carnivores, water movement, excavation methods and later disturbance all affect what survives and where it is found. Cave deposits are not straightforward inventories of a living community. They require taphonomic study—analysis of how remains accumulated, were modified and were buried—before conclusions about the landscape can be drawn.

A reindeer femur from Castlepook has made this caution especially necessary. It has been reported as carrying a mark made while the bone was fresh and interpreted as possible evidence of cutting with a stone tool. Modern radiocarbon dating has placed the bone at approximately 33,000 years ago. If the modification is confirmed as anthropogenic, it may record a brief visit by Upper Palaeolithic people and the processing of a reindeer carcass, far earlier than Ireland's formerly accepted evidence for human activity. It would not demonstrate a resident population, a settlement, a named culture or continuous occupation. No associated hearth, stone-tool assemblage, dwelling floor or securely excavated occupation layer has yet been identified at Castlepook.

People: Possibility, Not a Population

For that reason, human history at this date must be stated negatively and carefully. Ireland may have been visited episodically by highly mobile hunter-gatherers during favourable intervals, perhaps from populations already present in Britain or continental north-west Europe. Such people elsewhere used sophisticated stone technologies, hunted and scavenged animals, made clothing and shelters, maintained social networks and sometimes produced art. None of those continental facts can be assumed for Ireland without Irish evidence. The Castlepook bone is a significant clue, not a licence to supply an Irish campfire, trading system, ritual life or political world from imagination.

The absence of identifiable human communities also means that economy and exchange cannot be described in normal historical terms. There is no evidence here for farming, livestock management, domestic food production, markets or trade. The only securely visible economy is ecological: plants converted a brief growing season into forage; herbivores moved through available habitat; carnivores and scavengers followed them; freshwater margins supported their own small but vital communities. If people were present, animal fat, meat, hide, sinew, bone and antler would have been valuable resources, but this remains an inference from wider Upper Palaeolithic practice rather than a demonstrated Irish activity.

What This Date Can Mean

31,794 BCE is therefore best understood as a point within a dynamic interval, not as a conventional historical year. Derrynree preserves direct evidence for cold, open, freshwater-edged tundra in Fermanagh during a pre-maximum ice-free phase. Castlepook preserves evidence that large mammals occupied parts of Ireland's wider Late Pleistocene landscape, and a debated indication that people may have briefly done so as well. Together, these records replace any simple tale of an eternally frozen, empty island. They do not establish an inhabited country in the later sense.

The great development was environmental instability. Local wetlands and tundra communities existed between advances of ice; animal populations reached Ireland at intervals; and changing climate was gradually preparing the conditions for the much more extensive glaciation that followed. The record is sparse because later ice was an active geological force, not because nothing happened. What survives beneath a drumlin in Fermanagh and within a Cork cave is enough to show a living but precarious landscape—and enough to remind us that deep prehistory is reconstructed from ranges, deposits and probabilities, rather than exact dates and invented events.

Chapter 008 of 100

31793 BCE

Doneraile's Contested Reindeer Femur^[8]



“31,793 BCE” is a useful filing point, not a date at which an Irish event can be placed. No written record, calendar or securely annual archaeological sequence exists for Ireland at this depth of time. In modern chronological terms it falls roughly 33,700 years before present (where “present” conventionally means 1950), within Marine Isotope Stage 3, a long and climatically unstable part of the Late Pleistocene. Radiocarbon determinations from this era must be calibrated and normally yield ranges rather than a single historical year. The responsible history of Ireland at this point is therefore a history of sediments, animal bones, caves and changing ice—not of named peoples, rulers or battles.

A Cold Country Before the Ice Peak

Ireland was approaching, but had not yet reached, the most extensive phase of the last glaciation. The Last Glacial Maximum in the Irish sector came later, broadly after c. 27,000–25,000 calibrated years ago, and major ice-sheet growth and retreat were uneven in both place and time. Reconstructions of the British–Irish Ice Sheet therefore caution against imagining the whole island as a single, permanently ice-covered block in 31,793 BCE. Conditions, ice margins and habitable ground could differ sharply between regions and over periods far shorter than the archaeological resolution available to us.

The wider climate was cold, dry and highly seasonal by modern Irish standards. Woodland was absent or extremely restricted. Evidence from Irish deposits attributed to the Middle Midlandian cold phase, especially organic silts beneath drumlins at Derryvree in County Fermanagh, indicates a treeless landscape of grasses, sedges, herbs, juniper and mosses. Archaeologists and palaeoecologists describe it

as open tundra or muskeg: wet, low-lying ground with pools and marshy vegetation, rather than a smooth blanket of snow. Such evidence belongs to broad intervals, not to the numbered year itself, but it offers the best available guide to the environments of Ireland around the later part of MIS 3.

Wind, frost, seasonal thaw and flowing water shaped the ground. Bare mineral surfaces, shallow soils and sedge-rich hollows would have alternated with more sheltered patches of vegetation. In the uplands, periglacial processes—repeated freezing and thawing of soil and rock—were important. River valleys and limestone country could provide local shelter and routes for animals. The familiar green, wooded and densely settled Ireland of later millennia did not exist. Nor can the evidence support a uniform reconstruction of every coast, valley or mountain: what survives is fragmentary and has often been disturbed by later ice, water and excavation.

Castlepook's Animal Archive

The central Irish site for this period is Castlepook Cave, also called Mammoth Cave or Doneraile Cave, in the Awbeg Valley of north County Cork. Its chambers and passages produced a remarkable collection of Late Pleistocene bones during excavations in the early twentieth century, while further work has continued intermittently since. Geological Survey Ireland describes Castlepook as the country's richest known archive for vertebrate fauna from the period leading up to the Last Glacial Maximum. The assemblage includes woolly mammoth, giant deer, reindeer, brown bear, spotted hyaena, wolf, Arctic fox and lemmings.

This is strong evidence that, during suitable phases of the Ice Age, Ireland supported a varied large-mammal community. Reindeer and lemmings point to cold open habitats; mammoth and giant deer suggest substantial grazing landscapes; predators such as wolf and spotted hyaena show that carcasses and herbivore herds formed part of a functioning food web. But the bones do not amount to a census of animals living together on one day, season or even century. Castlepook was a cave repository accumulated over a very long interval. Carnivores, natural deaths, water movement, collapse and human excavation all affected what entered, remained or was recovered from its deposits.

That qualification matters especially because the cave's early excavation history was not conducted to modern stratigraphic standards. Many finds came from disturbed deposits, and later work has shown that older radiocarbon measurements on Irish cave bones can be unreliable when compared with results obtained using improved collagen purification and accelerator methods. Re-dating at Castlepook, Shandon and Foley caves produced substantially older results in several instances. Consequently, individual bones need direct dating and their physical context must be assessed before they are used to build a precise chronological story.

The Femur and Its Limits

A reindeer femur fragment from Castlepook has made the period around this nominal year unusually important. The bone bears a linear modification interpreted by zooarchaeologist Ruth Carden as a cut or chopping mark made on fresh bone with a sharp stone tool. Its reported age, about 33,000 years ago, lies broadly close to the chronological horizon represented by 31,793 BCE. If that interpretation is sustained, it would indicate that people reached Ireland during the earlier Upper Palaeolithic, far earlier than the previously secure evidence for human presence.

It must not, however, be turned into a story of a settled Ice-Age community. One modified bone is not a house, hearth, tool kit, burial ground or repeatedly occupied camp. No stone artefact or bone tool from Castlepook has yet been demonstrated beyond doubt to belong to a human occupation of this age. The 2022 Castlepook Caves Project explicitly noted that no such certain tool had been identified, while renewed excavation, sediment study, dating and ancient-DNA work were intended to test what undisturbed evidence survives. The femur is best understood as significant and suggestive, rather than final proof of a known population, culture or route into Ireland.

There is a useful contrast with later evidence from Alice and Gwendoline Cave in County Clare. There, a brown-bear kneecap bearing butchery marks was independently dated to calibrated ranges of 12,810–12,590 and 12,810–12,685 years before present. That find provides accepted evidence of a Late Upper Palaeolithic human presence in Ireland, but it is around twenty millennia younger than the Castlepook question. It cannot demonstrate that people lived in Ireland in 31,793 BCE; rather, it shows why careful dating and direct physical traces are essential.

People, Society and Belief

There is no responsible basis for describing political affairs, diplomacy, territorial rule, warfare, religion, language or learning in Ireland at this time. No Irish human burial, settlement plan, artwork, ceremonial structure or securely associated artefact assemblage is known from this horizon. It is equally unsafe to assign the Castlepook femur to a named archaeological culture merely because Upper Palaeolithic communities elsewhere in Europe made sophisticated tools, art and ornaments. Ireland's evidence must speak for Ireland.

If people did visit, the most defensible interpretation is of small, mobile parties operating in a difficult northern landscape, perhaps following animal movements or exploiting a carcass. That is an inference from the bone and from the ecology, not a fact established by an excavated camp. Their numbers, sex and age, language, beliefs, social organisation, means of travel and length of stay are unknown. They may have made only a brief incursion; alternatively, the trace may yet prove non-human or undatable in the archaeological sense. The distinction between evidence and possibility is the central historical fact here.

Movement Without Proven Trade

The animal record nevertheless establishes regional connectivity. Mammals capable of ranging across open cold landscapes reached Ireland during MIS 3, implying access through changing northern and western European environments. Lower global sea levels altered coastlines and continental shelves, but the precise routes available at any particular point depended on local sea level, ice, rivers and terrain. It is not justified to call this “trade”, or to infer regular human traffic between Ireland and Britain or the continent. There is no Irish evidence for exchanged goods, established ports, boats or diplomatic contact in this period.

What can be said is that Ireland was not ecologically isolated. Its large mammals belonged to wider Pleistocene populations, while cave deposits preserve evidence of movements into and through the island before later ice expansion transformed the landscape. The apparent disappearance of some species before the glacial maximum may reflect local extinction, retreat from deteriorating habitats, or gaps in survival and sampling. In particular, re-dating research has proposed that giant deer and spotted hyaena were locally lost before the Last Glacial Maximum, though the timing remains subject to refinement.

How This Date Is Known

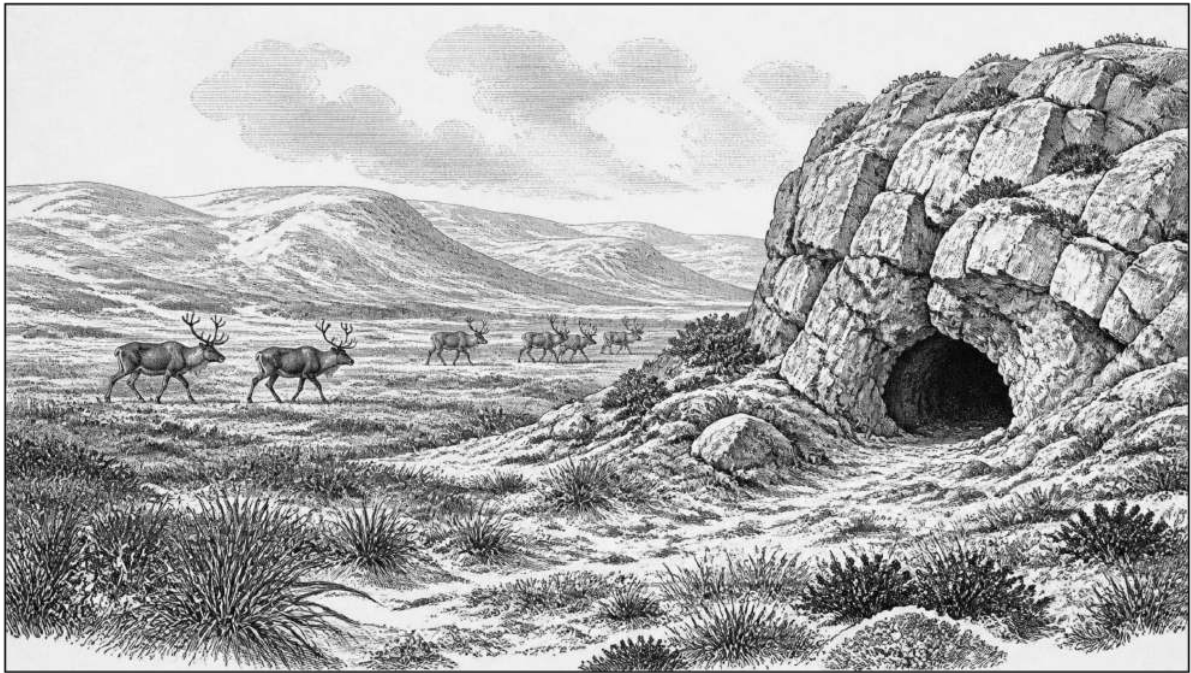
The precision of “31,793 BCE” should therefore not mislead. At roughly 33,743 years before 1950, it falls within the range where radiocarbon calibration is indispensable and where single determinations can have wide probability distributions. IntCal20, the Northern Hemisphere calibration curve, extends to 55,000 calibrated years before present and incorporates evidence from tree rings and independently dated cave formations; it enables better conversion of radiocarbon ages, but does not turn cave deposits into annual chronicles.

For Ireland, the most important development around this notional year was not a recorded human deed but the existence of a cold, open and ecologically connected Ice-Age landscape, increasingly vulnerable to the advance of the British–Irish Ice Sheet. Castlepook’s bones, Derryvree’s buried wetland sediments and continuing fieldwork offer glimpses of that world. They also impose a discipline: at 31,793 BCE, Irish history is not silent, but its surviving voice is geological and faunal, and it must not be made to say more than the evidence permits.

Chapter 009 of 100

31792 BCE

Elephant Hall's Reindeer Horizon^[9]



The numbered year 31,792 BCE cannot be treated as an anniversary in Irish history. No settlement, ruler, battle, ritual or journey can be placed in that single modern calendar year. At this depth in time, the useful scale is a broad calibrated horizon: roughly 33.7 thousand calendar years before present, within Marine Isotope Stage 3 of the Late Pleistocene. Radiocarbon ages are measured against AD 1950 and converted through calibration curves; at such antiquity, their ranges and uncertainties matter far more than a nominal BCE year. What can responsibly be said is that Ireland was entering a profoundly cold and unstable phase before the Last Glacial Maximum, and that a handful of caves, animal bones and buried sediments preserve glimpses of the land.

A Landscape Before the Ice Peak

In the wider north-west European sequence, this was not yet the climatic peak of the last glaciation. Reconstructions of the British–Irish Ice Sheet place its major expansion after about 35–32 thousand years ago, with maximum extent much later, broadly between 27 and 21 thousand years ago. That does not mean a uniform, ice-free Ireland in the earlier period. Ice masses grew and shifted in response to changing climate, while exposed ground, valley glaciers, ice margins and cold periglacial landscapes could occur in different regions at different times. The exact extent of ice around 33.7 thousand calibrated years ago remains a matter of reconstruction rather than something directly mapped from a single Irish deposit.

For people accustomed to the later green, wooded island, the most important correction is environmental. Ireland's vegetation did not resemble the modern patchwork of pasture, hedgerow and Atlantic woodland. The evidence available for Late Pleistocene Ireland points instead towards open, cold-country habitats: grassland, herbs, low shrubs, bare mineral ground, wet hollows and seasonally severe conditions. Plant remains, pollen, insects and animal bones from different Irish localities document

changing episodes rather than one continuous national landscape. They nevertheless establish that the island, or its then differently shaped landmass and coasts, could support large grazing mammals during favourable intervals.

Sea level was markedly lower than it is today, so the outlines of coasts, estuaries and shelves were very different. But lower sea level should not automatically be turned into a simple land bridge or an assured migration route. The changing Irish Sea basin, the position of glaciers and the nature of any crossing are questions requiring local evidence. No excavated camp of this age tells us whether a human visitor, if one came, travelled over exposed ground, crossed narrow water, used watercraft, or approached at another time when geography differed.

The Cave Record at Castlepook

The most illuminating Irish archive for this broad period lies at Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Its limestone passages include Elephant Hall, Hyaena Hall and other galleries named by early investigators. Excavations in the early twentieth century recovered a remarkable quantity of animal bone, while later re-examination and radiocarbon dating showed that the collection represents a long and complicated history rather than a single moment. Geological Survey Ireland describes Castlepook as Ireland's richest vertebrate-fauna site for the period leading towards the Last Glacial Maximum.

That distinction is essential. Castlepook is a repository, not a frozen snapshot of one community. Bones reached caves through more than one process: carnivores could drag in prey; animals might die in or near entrances; water could move material; later collapse, excavation and collecting could disturb layers. The old excavations also predated modern recording standards. A mammoth rib, a reindeer bone and a hyaena skull from the same named cave do not necessarily demonstrate that those animals met there in the same season, or even the same millennium.

Even with those cautions, the fauna is striking. Castlepook has yielded woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena, with wolf, Arctic fox, mountain hare and both Norwegian and collared lemmings represented in the wider Ice Age record. Shandon Cave in County Waterford supplies an important comparison, having produced mammoth, reindeer, horse, bear and wolf. Radiocarbon reassessment has made some southern Irish cave-animal dates significantly older than earlier results suggested. It has also supported the conclusion that some species, especially giant deer and spotted hyaena, may have disappeared locally before the Last Glacial Maximum. The lesson is not that every species listed lived beside Doneraile in 31,792 BCE, but that Ireland was repeatedly part of a wider Late Pleistocene faunal world.

Reindeer and the Human Question

A reindeer femur from the Castlepook collection gives this period unusual historical importance. It has been reported as roughly 33,000 years old and bears a deep incision which zooarchaeologist Ruth Carden has interpreted as a cut made by a sharp stone tool during carcass processing. If both the age and the anthropogenic interpretation are sustained, the specimen may indicate that one or more Upper Palaeolithic people handled a reindeer in Ireland tens of millennia before the long-recognised terminal Pleistocene evidence from County Clare.

The appropriate language is deliberately conditional. The femur itself is physical evidence; its date concerns the animal's death within a range. Whether the mark was made by a human tool is a separate microscopic and taphonomic judgement. The bone derives from an old cave collection rather than a modernly excavated occupation surface with associated hearths, stone tools, food waste, shelters or burials. A single possible cut mark cannot identify the number of people involved, where the animal was killed, whether it was hunted or scavenged, how long anyone remained, or whether visitors returned. It does not establish a settled population or a line of descent to later inhabitants of Ireland.

Comparison shows why this caution matters. At Alice and Gwendoline Cave in County Clare, a brown-bear kneecap with fresh-bone cut marks was independently dated to calibrated ranges of about 12,810–12,590 and 12,810–12,685 years before present. That is secure evidence of human processing far later than the Castlepook claim, after the glacial maximum. By contrast, the Castlepook reindeer offers an earlier possibility requiring continuing expert scrutiny. Renewed fieldwork has sought surviving undisturbed Pleistocene sediments in portions of the cave missed or disturbed by earlier exploration. Such work may eventually provide the contextual evidence that an isolated museum specimen cannot.

Life, If Visitors Reached Ireland

There is no defensible basis for describing political affairs, diplomacy, named groups, territories, warfare, leaders or institutions in Ireland at this time. There is equally no Irish evidence for buildings, graves, formal religion, art, writing or teaching. The absence of such evidence is not proof that visitors had no beliefs, stories, kin networks or practical knowledge; Upper Palaeolithic people elsewhere in Europe certainly possessed elaborate social and cultural lives. It does mean that these cannot be transferred wholesale to Ireland.

If the reindeer mark records human action, the smallest responsible interpretation is economic and practical: a mobile party gained access to a carcass and used a sharp edge to cut it. Reindeer could provide meat, fat, hide, sinew, antler and bone, resources of great value in a cold environment. Yet the bone does not show whether the animal was deliberately hunted, found dead, or taken after another predator had killed it. Nor can it demonstrate regular seasonal hunting, exchange networks, a camp economy or a permanent settlement. "Trade" and "diplomacy" are therefore not hidden chapters awaiting imaginative reconstruction; for Ireland around this horizon, they are simply undocumented.

The cave fauna does, however, show an ecological setting in which predators and people, if present, would have negotiated risk as well as opportunity. Spotted hyaenas used Castlepook as a den or bone-accumulating place during parts of its history. Wolves and bears were also among the large animals of the Ice Age landscape. A cave might offer brief shelter, but it could also be dangerous, occupied, flooded or inaccessible. The evidence does not permit a picturesque scene of families living permanently underground. It points instead to a harsh and fluctuating country in which caves were natural archives precisely because animals, water and sediment repeatedly used them.

What This Date Can Mean

The principal development around 31,792 BCE was environmental, not political: the approach towards the glacial maximum was reshaping habitats, coastlines and the possibilities for animal and human movement. Ireland's surviving record is exceptionally fragmentary because subsequent ice

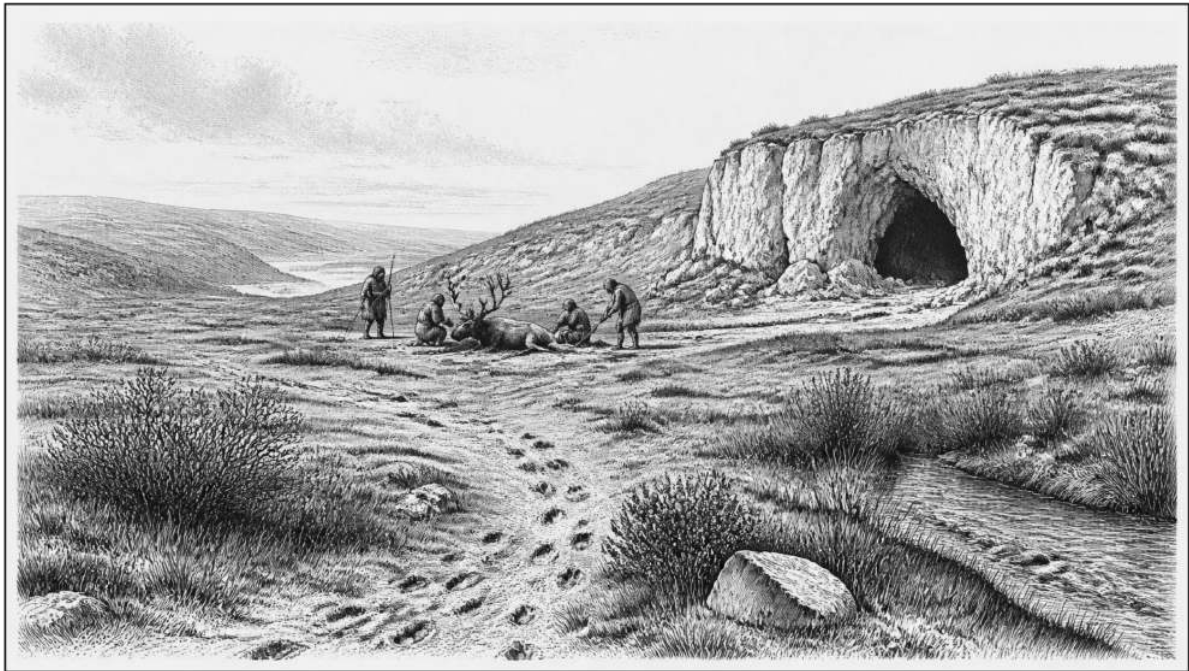
advance, erosion, rising seas and the limited survival of datable deposits have removed or concealed much evidence. That makes every securely dated bone, preserved sediment and carefully recorded cave layer valuable, while making overconfident stories especially hazardous.

Thus this year belongs to an archaeological horizon, not a conventional chronicle. Around 33.7 thousand calibrated years before present, Ireland was part of the cold Late Pleistocene north-west European world. Reindeer and other large mammals reached its landscapes at intervals; ice was growing towards its later maximum; and a marked Castlepook femur raises the serious but still unconfirmed possibility of a very early human visit. The enduring historical fact is not a dateable event but the evidence itself: a cave archive in north Cork, a changing glacial landscape, and a question about the first human footsteps that remains open.

Chapter 010 of 100

31791 BCE

Mammoth Cave's Reindeer Femur^[10]



“31,791 BCE” is a modern filing label, not a year that can be recovered from Ireland’s prehistoric record. It corresponds arithmetically to roughly 33,740 years before AD 1950, the conventional reference point for “before present”, but neither people nor events on the island can be dated to that single calendar year. At this depth of time, radiocarbon measurements require calibration, their ranges can be wide, and cave finds may have been moved long after an animal died. The responsible historical frame is therefore later Marine Isotope Stage 3 (MIS 3), a fluctuating part of the last Ice Age before the Last Glacial Maximum.

An Island Before the Ice Peak

Ireland was not yet necessarily the fully ice-covered land it became during the Last Glacial Maximum, conventionally placed later, broadly between about 26,500 and 19,000 years ago. The British–Irish Ice Sheet was growing and changing, however, while climate shifted abruptly between relatively milder interstadials and severe cold phases. It is misleading to picture a stable “Ice Age Ireland”. Conditions could differ greatly over centuries or millennia, and between exposed Atlantic coasts, uplands, river valleys and limestone lowlands.

The island was also physically unlike modern Ireland. Lower global sea level exposed large areas of the continental shelf. Ireland was not automatically joined to Britain or continental Europe by a simple dry land bridge, but crossings between landmasses and across narrowed seaways would have been different from those faced today. The submerged shelf formed part of the wider north-west European landscape through which animals, and perhaps small groups of people, could move. Yet it is essential not to turn this geographical possibility into proof of regular travel, organised migration, or a settled Irish population.

The North Cork Clue

The most important Irish object relevant to this broad period is a reindeer femur from Castlepook Cave, near Doneraile in north County Cork. Also known as Mammoth Cave, Castlepook produced a large collection of Pleistocene animal bones during antiquarian excavations from the early twentieth century. A re-examination of the collection identified a deep linear mark on the reindeer bone. Zooarchaeologist Ruth Carden has interpreted it as damage made by a sharp stone implement during the butchery of a fresh carcass. County Cork heritage material places the object broadly around 31,000 BC; public reports describe its radiocarbon age as about 33,000 years.

If the mark is indeed a human cut mark, the implication is momentous: people reached Ireland, at least briefly, far earlier than the formerly accepted terminal-Pleistocene evidence. The action inferred is modest but significant. Someone may have cut meat, detached tissue or processed a reindeer limb. It does not establish a named people, a camp beside the cave, a hunting party of known size, or an unbroken occupation of the island. The bone dates the animal's death, not necessarily the precise instant of cutting; and its recovery from an old, disturbed cave collection limits what can be reconstructed about where the animal was killed or processed.

There are further reasons for caution. Castlepook's caves were used by natural agents as well as any humans: carnivores could drag bones underground, water and sediment could redeposit them, and early excavators did not record deposits to modern standards. No securely associated hearth, stone-tool assemblage, dwelling floor, human remains or contemporary artwork has yet been recovered from the site. Recent archaeological work has been directed towards locating intact deposits and testing the promise of the old collection. For 31,791 BCE, then, the femur is best understood as possible evidence of a fleeting human encounter with an animal, not evidence for a village or a permanent frontier settlement.

Reindeer, Carnivores and Open Ground

Even without accepting every implication of the marked femur, Castlepook demonstrates that Ice Age mammals occupied at least parts of Ireland in this wider interval. Its cave fauna has included reindeer, woolly mammoth, giant deer, brown bear, wolf and spotted hyaena. These species do not all need have lived there at precisely the same time, and the cave assemblage cannot be read as one single ecological photograph. Nonetheless, it evokes a landscape capable of supporting large herbivores and their predators during windows before the ice sheet's maximum advance.

Reindeer are especially informative. They are animals of open, cold environments and, in much of Upper Palaeolithic Europe, were an important source of meat, hides, sinew, antler and bone. That wider European context makes the interpretation of a butchered reindeer plausible, but it cannot supply facts missing in Ireland. No Irish stone points, blades, hide-working tools, shelters or hearths of this date are known. It is reasonable to say that a visitor who butchered a reindeer would have obtained valuable food and materials. It is not responsible to specify the group's language, kinship system, season of travel, clothing, hunting tactics or cultural affiliation.

Carnivores complicate the story as well as enriching it. Spotted hyaenas and wolves may have accumulated some of the cave bones; bears may have used caves as dens. Their presence means that Castlepook was part of an animal landscape in which caves were repeatedly entered, occupied and altered. A cave is not automatically a human home. In this period it may have been a carnivore refuge, a trap, a place reached by scavenged bone, or only an occasional human shelter. Archaeology has to distinguish those possibilities specimen by specimen.

Wetlands Beneath the Drumlins

Fermanagh supplies a different kind of evidence. At Derryvree, near Maguiresbridge, roadworks exposed freshwater silts and fine sands sealed between two thick layers of glacial till within a drumlin. The organic deposits yielded mosses, sedges and cold-adapted insect remains. Their original radiocarbon determination was 30,500 years BP, with an uncertainty of +1,170 and –1,030 radiocarbon years. This is not a direct date for 31,791 BCE, and modern calibration means it should not be converted casually into one calendar year. Its importance is environmental: before a later ice advance buried the deposits, Fermanagh had supported a treeless, periglacial wetland or muskeg.

Related deposits at Hollymount and Greenagho, also in Fermanagh, reinforce the picture of cold, open country during parts of the Midlandian glacial stage. Pollen and insect evidence point towards grasses, sedges, dwarf birch, willow, heaths and other northern or arctic-alpine plants, rather than woodland. Such proxies are local records, not a detailed map of every Irish valley. Still, they provide firmer evidence for the character of the landscape than any imagined scene of human society can do. Low vegetation, marshy ground, frost action and strong seasonal contrasts formed the ecological setting in which herbivores moved.

Water, Stone and Climate Change

Crag Cave in County Kerry gives an independent indication that conditions in south-west Ireland were not uniformly frozen throughout MIS 3. Uranium-thorium dates show episodes of stalagmite growth during interstadials. In a shallow cave system, calcite formation requires liquid water moving through the rock and generally cave temperatures above freezing. This does not mean that the surface was warm by modern standards, nor does it date human activity. It does show that the climate could ameliorate enough, at intervals, for groundwater circulation and cave growth, before colder episodes interrupted them.

Taken together, the cave bones, buried freshwater deposits and speleothems reveal a dynamic rather than static Ireland: an exposed, largely treeless territory in which cold wetlands, grass-and-sedge communities, limestone caves and roaming mammals persisted during climatic oscillations. The later advance of ice would erode, bury and rearrange much of that earlier terrain. This destructive history helps explain why evidence is so sparse. Absence of excavated camps is not proof that no person ever arrived, but neither does it justify filling the gaps with an elaborate lost society.

No Politics, No Recorded Faith

There is no evidence from Ireland around this point for political institutions, rulers, diplomacy, territorial states, warfare, formal religion, writing, schooling, farming, markets or long-distance trade networks. Those categories belong to much later parts of Irish history. The smallest defensible social interpretation is one of possible highly mobile hunter-gatherers making short visits within a north-west European Ice Age world. If people were present, their economy would have rested on direct access to wild resources, above all animals and perhaps seasonally available plant materials. Whether any group stayed overnight, returned repeatedly, or crossed to Ireland in more than one climatic phase remains unknown.

The year therefore belongs not to an event narrative but to a threshold in knowledge. Around the modern label 31,791 BCE, Ireland was approaching a harsher glacial future while still preserving habitats used by Ice Age fauna. Castlepook's reindeer femur offers a provocative, potentially transformative trace

of human activity. Its value lies precisely in its limits: one altered bone can open a new question about the earliest people in Ireland, but it cannot yet answer it on its own.

Chapter 011 of 100

31790 BCE

Sedges Under Maguiresbridge^[11]



The label 31,790 BCE offers a useful point of orientation, but it cannot identify an Irish event in a particular twelve-month period. No written record, annual chronology or excavated occupation layer has that resolution. In calendar terms it lies roughly 33,700 years before AD 1950, within the later part of the Late Pleistocene and broadly within Marine Isotope Stage 3 (MIS 3), a volatile phase of the last Ice Age. The responsible evidence comes instead from radiocarbon ranges, cave fauna, pollen and plant remains, insects, sediments, landforms and the cautious interpretation of marks on animal bone. These sources illuminate an environmental horizon, not an anniversary.

A Cold Phase Between Ice Advances

Ireland was not yet simply the ice-covered land of the Last Glacial Maximum. The great maximum expansion of the British–Irish Ice Sheet came later, with different sectors advancing and retreating at different times. Yet this was already a cold world of recurring climatic shifts, local glaciation and expanding ice masses. Recent syntheses emphasise that the ice sheet’s history before its maximum remains less securely dated than its later retreat. There are indications of substantial ice in Ireland and western Britain before 30,000 years ago, but the precise extent, thickness and timing of individual advances are still matters for research rather than settled fact.

This uncertainty matters. It is tempting to draw a single coast-to-coast line across a map and call the island either habitable or frozen. The actual landscape was more changeable. Ice, permafrost, snow cover, exposed ground, freshwater basins and coastal margins could coexist over relatively short distances and change through time. In some areas later glaciers eroded or buried the evidence of earlier conditions. Thus the survival of organic deposits beneath till is exceptional. They are small windows through which archaeologists and Quaternary scientists can see landscapes otherwise removed by ice.

Derryvree's Freshwater Record

The most evocative Irish window near this broad horizon lies at Derryvree near Maguiresbridge, County Fermanagh. Road works in 1969 exposed organic-rich freshwater silts and fine sands between two layers of glacial till. The deposit produced a radiocarbon determination of 30,500 $\pm$ 1,170/–1,030 radiocarbon years BP. That result must not be converted mechanically into one calendar year: radiocarbon ages require calibration and carry statistical uncertainty. Nevertheless, the Derryvree sequence belongs broadly to the cold middle part of MIS 3 and is directly relevant to understanding Ireland around the early 30,000s BCE.

Its contents make the deposit important. Mosses, sedges and other plant remains, together with poorly preserved herb pollen and an insect fauna of northern aspect, indicate open ground around freshwater channels or pools. This was not a wooded Irish landscape. The evidence supports tundra-like or muskeg conditions: wet, mossy, often waterlogged terrain, with sedge-rich vegetation, sparse dry-ground cover and short productive summers. A few grains of tree pollen cannot responsibly be treated as proof of local forest, since pollen may travel long distances or be redeposited from older sediments. What is secure is the contrast with later post-glacial woodland.

Derryvree also corrects an image of the Ice Age as an unchanging white desert. Fresh water was present; plants grew; insects lived in and around the wetland; sediment accumulated in quiet water. Winter conditions may have been severe and the growing season brief, but the ecology was active. Comparable inter-till deposits at Hollymount near Maguiresbridge and Greenagho near Belcoo show that parts of Fermanagh preserve a wider, if discontinuous, record of cold open environments between phases of ice action. Their dates and correlations are imperfect, so they should not be forced into a single neat sequence. Together, however, they establish that northern Ireland experienced habitable, though harsh, ice-age intervals.

Cork Caves and Wandering Animals

In the south, limestone caves near Doneraile in County Cork preserve another kind of archive. Castlepook Cave, also known as Mammoth Cave or Doneraile Cave, yielded a rich assemblage of Late Pleistocene animal remains from historic excavations. The fauna includes reindeer, wolf, Arctic fox and other animals associated with cold, open country; earlier reports from the cave complex also point to a wider large-mammal community including hyaena and mammoth. Such species do not demonstrate that every animal lived together in one season, nor that the cave was a peaceful shelter. Cave assemblages may be accumulated by carnivores, water, scavengers or people over long spans of time.

Even so, the fauna establishes a major regional change. Ireland was not biologically isolated in the way familiar from the modern sea map. Lower global sea levels enlarged the continental shelves and altered coastlines, while animals could move through changing land and maritime corridors in north-west Europe. Reindeer are especially informative because they suggest open vegetation capable of supporting grazing herds. Their movements would have shaped the opportunities of predators and any human visitors. Hyaena and wolf, if present in a cave deposit, also warn against casually calling it a human home: predators often carried carcass parts into dens, leaving teeth marks, broken bone and mixed assemblages.

The cave evidence therefore speaks most confidently about animal geography and environment. It suggests a cold, treeless or lightly vegetated Ireland with sufficient seasonal productivity for large herbivores and their predators. It does not provide a map of territories, a count of animals, or proof that

conditions were identical in Fermanagh and Cork. The island's relief, exposure to Atlantic weather, proximity to ice and local water supply would all have produced regional variation. Indeed, the contrast between wet Fermanagh sediments and Cork's cave deposits is precisely why both archives are needed.

The Reindeer Femur Question

Castlepook has acquired special historical importance because a reindeer femur from its old collection has been reported as dating to about 33,000 years ago and as bearing an incision interpreted as a cut made by a sharp stone edge during carcass processing. County Cork's archaeological heritage publication presents the find as evidence for Palaeolithic people butchering reindeer. If the identification of the mark as anthropogenic is confirmed, and if it is securely related to the bone's age, it would push evidence for human activity in Ireland far earlier than the better-established terminal-Pleistocene evidence.

That conditional language is essential. The bone comes from historic cave work rather than a modern excavation of an intact occupation surface. A date on bone dates the animal's death within a calibrated range; it does not itself date the moment of cutting, identify the cutter, show where the animal was killed, or prove that the bone entered the cave through human action. Single grooves must be assessed against damage caused by carnivore teeth, trampling, sediment movement, excavation tools, handling and weathering. Current investigation at Castlepook is valuable precisely because it seeks undisturbed deposits, further fauna, lithics and contextual evidence capable of testing this striking claim.

The modest interpretation, if the mark is human-made, is that one or more Upper Palaeolithic people handled a reindeer carcass in Ireland during the broader pre-maximum Ice Age. It could represent a brief visit by highly mobile foragers, perhaps following seasonal animal movements, rather than a permanent settlement. No securely stratified Irish hearth, dwelling, burial, substantial stone-tool assemblage or repeated campsite has yet been demonstrated for this date. There is no basis for naming a people, assigning a language, tracing descent to later populations, or describing an Irish 'tribe' at 31,790 BCE.

Society Beyond the Evidence

For that reason, conventional headings such as political affairs, diplomacy and warfare have almost no direct content here. There were no states, kingdoms, borders, rulers, treaties or institutions known in Ireland at this time. Nor is there evidence for organised conflict. A damaged animal bone cannot distinguish hunting, scavenging, exchange, ritual action or violence between people. The absence of evidence should not become a claim that people elsewhere in north-west Europe had no social worlds; Upper Palaeolithic hunter-gatherers certainly depended on co-operation, practical knowledge and relationships. It means only that Ireland's evidence cannot reconstruct such arrangements for this date.

The same restraint applies to religion, culture and learning. No Irish cave art, carved object, musical instrument, grave or ceremonial site can securely be assigned to this horizon. If people visited, their knowledge of animal behaviour, weather, fuel, stone and safe routes would have been sophisticated, but that is an inference from the demands of survival and from comparative European archaeology, not an observed Irish curriculum or belief system. Reindeer could have supplied meat, hide, sinew, bone and antler; wetlands could have offered water and plant materials. Yet no excavated Irish assemblage of this age permits a detailed reconstruction of diet, clothing or exchange.

Trade is similarly unproven. The wider European Upper Palaeolithic contains long-distance movement of stone, shell and social connections, but no contemporary Irish material establishes an exchange network. Geography does make mobility a reasonable question. Sea level was lower than today,

coastlines differed, and Ireland's position within the north-western European land-and-sea mosaic was not fixed in modern terms. But routes across water or exposed shelf cannot be assumed without direct evidence. The decisive fact is that people, if present, encountered a difficult and changing landscape rather than an empty stage awaiting permanent settlement.

An Environmental History, Not an Annal

The largest development appropriate to 31,790 BCE is therefore environmental. Ireland was moving through a cold, unstable portion of the last glacial cycle. At Derryvree, freshwater silts preserve mosses, sedges and insects from an open northern landscape between ice advances. At Castlepook, animal remains reveal the passage of cold-adapted fauna through southern Ireland. Across the island, later ice expansion would reshape surfaces and destroy much of the older record, making every surviving deposit disproportionately important.

This is also why the possible Castlepook cut mark deserves attention without exaggeration. It opens a serious question about an unexpectedly early human presence, but it is not a foundation for a settled Palaeolithic Ireland. The clearest published direct evidence of human processing in Ireland remains much later: cut-marked brown-bear bone from Alice and Gwendoline Cave in County Clare, dated to about 12,810–12,590 calibrated years BP. The gulf between that late-glacial evidence and the Castlepook possibility cannot be filled with invented generations of inhabitants.

Around this notional year, then, Ireland's history is written in sediment, bone and ice. The evidence securely identifies a severe but living landscape of waterlogged tundra, roaming animals and climatic change. It may preserve a fleeting human trace. It cannot tell us who those people were, whether they returned, or what happened in this precise year. That limitation is not a failure of history. It is the central historical fact of Ireland at the deep edge of the human past.

Chapter 012 of 100

31789 BCE

Greenagho's Buried Fen^[12]



Modern calendar-year precision is not available for Ireland in 31,789 BCE. The number is a convenient point on a modern retrospective scale, not a date at which an Irish chronicle, settlement layer or identifiable event can be placed. In radiocarbon terms it falls at roughly 33,700 years before AD 1950, within the later Pleistocene, broadly Marine Isotope Stage 3. At this depth in time, dates must be calibrated and expressed as ranges; moreover, a bed of peat, silt or cave bone may represent an accumulation or episode spanning far more than one year. The responsible history of Ireland at this point is therefore a history of changing environments, preserved animal remains and a very small, much-debated body of possible evidence for people.

A Landscape Between Ice Advances

Ireland was in the last Ice Age, but that does not mean that the whole island was necessarily sealed beneath one unbroken sheet of ice at this precise moment. Ice extent changed markedly through the glacial cycle and did not advance or retreat everywhere at once. Recent reconstructions of the British-Irish Ice Sheet suggest that much of the last Irish ice sheet expanded from relatively ice-free conditions from about 34,000 years ago, with ice reaching the south coast only substantially later, after about 24,000 years ago. That broad reconstruction is more secure than any claim about a single winter or summer in 31,789 BCE.

The period belongs to a volatile climatic world rather than a stable “Ice Age climate”. Greenland ice-core records and north-west European deposits show repeated abrupt shifts between colder stadials and comparatively milder interstadials across Marine Isotope Stage 3. In Ireland, the sparse terrestrial record has been repeatedly disturbed, covered or removed by later glacier activity. What survives is therefore

unusually valuable but discontinuous: sediment trapped beneath later tills, cave deposits protected in limestone, and marine material preserved offshore. These traces show that parts of the country could sustain freshwater habitats and open vegetation before later ice remade the surface.

At Derryvree in County Fermanagh, organic silts lay between two deposits interpreted as tills. The material produced a conventional radiocarbon determination of $30,500 \pm 1,200$ radiocarbon years before present, calibrated in one published synthesis to approximately 36,900–31,700 calendar years before present. That long calibrated interval encompasses the approximate time represented by 31,789 BCE, but it does not identify a particular calendar year. Its importance is environmental: the deposits accumulated when this part of north-central Ireland was ice-free, before a subsequent glacier overrode and preserved them beneath its debris.

Sedges, Mosses and Open Water

The Derryvree sediments preserve a treeless, cold-country assemblage rather than a woodland. Pollen and plant remains include grasses, sedges, juniper and herbs; mosses and beetles point to wet ground with pools, abundant plant matter and marshy margins. This was not an empty white wilderness. It was a tundra or tundra-steppe-like mosaic in which shallow water, saturated ground and more open, drier patches offered different resources to plants and animals. Winters were severe, while the growing season was short and conditions could change rapidly.

Greenagho, near Belcoo in Fermanagh, supplies a related though earlier benchmark. Organic detritus from lacustrine deposits beneath till has been calibrated to about 37,200–35,700 years before present. It does not date precisely to the notional year considered here, and should not be treated as doing so. Yet, taken with Derryvree, it demonstrates that freshwater basins and cold open habitats existed in the region during phases before the major later expansion of ice. The deposits also demonstrate the fragility of the evidence: without burial beneath later glacial sediments, much of this ecological record might have vanished.

The physical map was unlike that of modern Ireland. Sea level was lower than today, shorelines lay farther out on the continental shelf in some areas, and ice, exposed ground and water barriers altered potential routes between Ireland, Britain and continental Europe. It is unsafe, however, to turn this into a simple story of a permanent land bridge or an easy migration corridor. Routes varied with sea level and ice margins, while cold seas, glaciers and open terrain could all hinder movement. The evidence establishes a changing north-west European landscape, not a mapped road into Ireland.

Castlepook's Animal World

For the animal life of this broad phase, Castlepook Cave near Doneraile in north Cork is indispensable. Its old cave collections contain one of Ireland's richest pre-Last Glacial Maximum faunal assemblages. Among the animals identified from the cave are woolly mammoth, reindeer, giant deer, brown bear, wolf, foxes, hares, lemmings and spotted hyaena. Such a list should not be read as a photograph of one day's landscape. Cave deposits can combine material carried in over long periods by carnivores, water, gravity and excavators. Nevertheless, the assemblage establishes that Ireland, or at least accessible parts of it, supported a striking mixture of cold-adapted and large grazing animals during the later Pleistocene.

Spotted hyaena is especially revealing. Now associated in popular imagination with African grasslands, Ice Age spotted hyaenas ranged across parts of Europe and could occupy caves as dens. Castlepook is Ireland's principal hyaena site. Their presence helps explain why bones accumulated in caves and why a cave need not have been a human camp. Carnivores could drag prey or scavenged carcass parts underground, gnaw and scatter bones, and leave deposits subsequently mixed by natural processes. Mammoths, reindeer and giant deer indicate productive open country somewhere within their ranges; they do not prove that every species stood together around Castlepook at 31,789 BCE.

For people, the most consequential object is a reindeer femur from Castlepook. It has been dated to around 33,000 years ago and bears a deep mark interpreted by zooarchaeologist Ruth Carden as damage made to fresh bone by a sharp stone tool during carcass processing. If that interpretation and its association with the animal's death are sustained, it would be evidence that one or more Upper Palaeolithic people handled a reindeer in Ireland during this broad period. It would push the known human story of the island far back beyond the better-established post-glacial record.

What One Mark Can—and Cannot—Say

The reindeer bone is important precisely because it is so exceptional. No securely associated stone-tool assemblage, hearth, dwelling floor, burial, artwork or stratified campsite of comparable age has yet been recovered in Ireland. The bone was part of an old cave collection shaped by early twentieth-century excavation, while the cave itself was a place of natural disturbance and carnivore activity. Dating an animal bone also dates the animal's life, not automatically the precise instant at which a mark was made. A cut-mark interpretation can be plausible and still require continuing testing against carnivore damage, breakage and the complicated history of the deposit.

Accordingly, the evidence does not justify a settled Palaeolithic population, an Irish tribe, or a named migration. It cannot tell us what language any visitors spoke, how many there were, whether they returned seasonally, or whether they left descendants. The strongest cautious inference is narrower: if the mark is anthropogenic, a small mobile party possessed a sharp stone edge and processed at least part of a reindeer carcass. Such people would have been participants in the wider Upper Palaeolithic worlds of western Europe, where hunting, scavenging, animal butchery and movement through large territories were established practices. That wider comparison provides context, not proof of a particular Irish society.

No Politics, No Proven Diplomacy

There is no evidence for political institutions, rulers, territories, warfare, diplomacy or formal trade in Ireland at this time. Nor can archaeology identify religion, stories, music, kinship rules or systems of learning from the available Irish material. It would be misleading to fill these silences with later Gaelic traditions, Celtic imagery or generic Stone Age scenes. All of those belong to much later historical and prehistoric contexts. Even the term "Ireland" is geographical shorthand here, not the name of a recognised community or state.

Likewise, there was no agriculture demonstrated for this period: no fields, crops, livestock management or farming settlement. If people were present, their economy would have depended on mobility and on immediate access to animal and plant resources, rather than production on permanent farms. Reindeer are often associated with seasonal movement, but the Castlepook evidence cannot establish a local migration calendar. The caves and wetlands instead show the ecological setting within which animals, carnivores and possibly human hunters moved.

A Record Preserved by Destruction

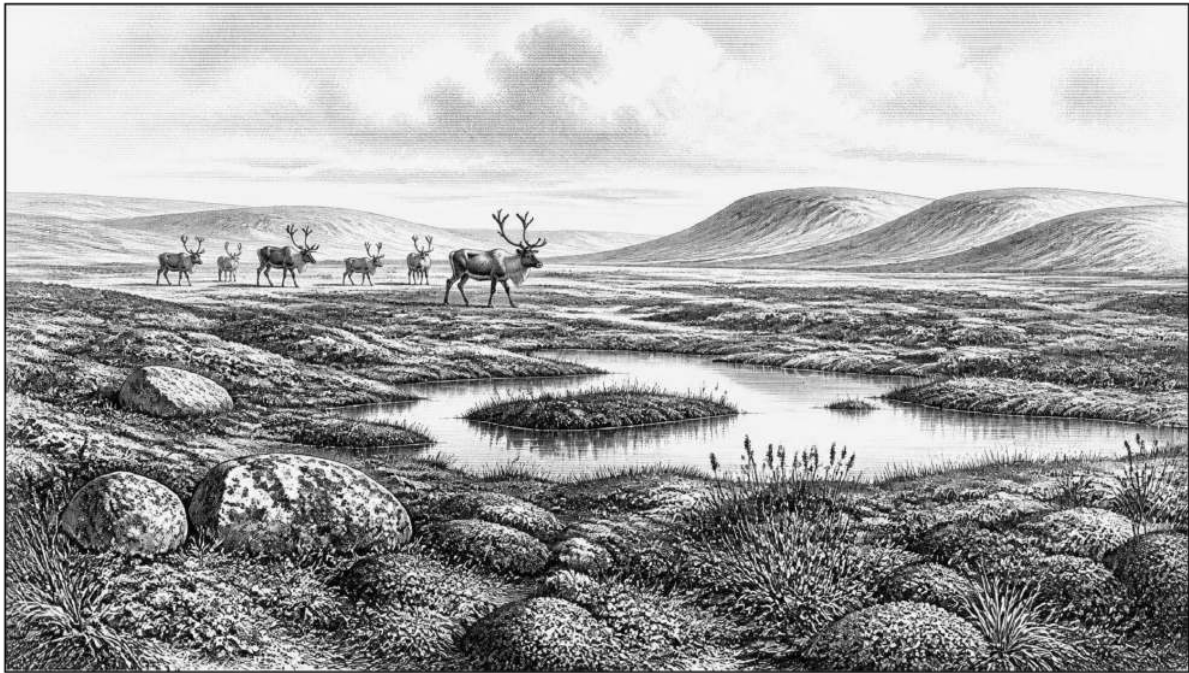
The later advance of the Irish ice sheet gives this distant period much of its historical meaning. Glaciers stripped and rearranged soils, altered valleys, deposited till and obscured former land surfaces. They destroyed countless traces while sealing a few organic deposits below later sediments. Ireland's evidence for the time around 31,789 BCE is therefore sparse not because nothing occurred, but because preservation is heavily biased. Caves such as Castlepook and sub-till basins such as Derryvree and Greenagho are rare survival zones within a landscape subsequently transformed by ice.

What can responsibly be said is both modest and remarkable. Around the notional date of 31,789 BCE, Ireland was part of a cold, shifting north-west European environment, with ice-free ground in at least some phases and regions, open wetland vegetation, freshwater pools, and large mammals adapted to Pleistocene conditions. Cave deposits attest to a formidable animal world; one modified reindeer bone raises the serious possibility of human activity. Beyond that lies uncertainty. This is not yet a year of kings, conflicts or monuments, but a deep environmental threshold whose scattered deposits continue to redefine the earliest possible human chapter of Ireland.

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31788 BCE

Derryvree Under Drumlin Ice^[13]



The label 31,788 BCE creates an unavoidable illusion of precision. No written record, settlement sequence or archaeological layer allows Ireland to be described one modern calendar year at a time at this depth in the past. The date is best treated as a point of orientation within the Late Pleistocene, specifically Marine Isotope Stage 3 (MIS 3), not as the date of a recorded event. In the conventional archaeological system of calibrated years before present, where “present” is AD 1950, it corresponds mechanically to about 33,737 years ago. That conversion is not a direct measurement. The evidence available consists instead of broad radiocarbon ranges, layers of sediment, pollen, plant remains, insects, animal bones and the traces left by glaciers.

For Ireland around this broad horizon, the most responsible picture is not of a named people or an ancient polity, but of a changing cold-stage landscape. It was a world before the Last Glacial Maximum, when the British-Irish Ice Sheet later expanded to cover most of the island. Ireland was neither a timeless white wilderness nor securely ice-free everywhere. Conditions and ice margins changed repeatedly. Local deposits show that some ground supported freshwater, plants and animals during intervals that were subsequently buried beneath glacial sediment. The exceptional challenge is to separate what individual sites demonstrate from wider reconstructions drawn from them.

A Date Range, Not a Dated Year

The closest Irish environmental archive to this notional year lies at Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 cut through a drumlin and exposed freshwater silts and fine sands, including an organic, moss-rich deposit, lying between two bodies of glacial till. This stratigraphy is crucial. Till below the organic beds records an earlier glacial episode; the silts and biological remains

show that freshwater and vegetation later occupied the locality; deposits above them indicate renewed glacial conditions. Derryvree therefore preserves a sequence of environmental change rather than an unbroken annual diary.

An early radiocarbon measurement on the organic material gave 30,500 radiocarbon years BP, with a large uncertainty of +1,170/-1,030 years. Radiocarbon years are not equivalent to calendar years, because atmospheric carbon-14 levels have varied greatly. Using modern calibration, discussion of the Derryvree result places it broadly in the region of 36,900–31,700 calibrated years BP. The nominal date of 31,788 BCE falls near the younger end of that broad interval. It cannot identify the exact year in which a particular moss grew, an insect flew or a pool formed. Nor should a date derived from one Fermanagh deposit be made to stand for every valley, upland and coast in Ireland.

A Wet, Open Fermanagh Landscape

What Derryvree does illuminate is a cold, open local environment. Pollen was poorly preserved but was dominated by herbaceous types rather than woodland trees. Plant macrofossils included a notably rich collection of mosses, while insects added evidence about the character of the ground. Taken together, these remains support an interpretation of tundra or muskeg-like country: wet patches, shallow water, sedges and mosses, herbs and low vegetation, with frost shaping soils and drainage. *Dryas octopetala*, the mountain avens, is among the plants recorded from the deposit and remains a familiar emblem of cold, lime-rich ground.

“Tundra” should not conjure a featureless plain. The Derryvree evidence suggests varied microhabitats: waterlogged hollows, pool margins, exposed mineral surfaces and drier, sparsely vegetated ground. In a severe, strongly seasonal climate, the growing season would have been short, while frozen ground and thawing water could alter channels and slopes. There is no evidence here for the dense oak, elm and hazel forests of much later Holocene Ireland. Equally, there is no basis for saying that every part of the island looked precisely like Derryvree. Altitude, geology, drainage, distance from ice and Atlantic exposure would all have mattered.

Animals at the Edge of the Record

Southern cave deposits show that Ireland’s cold-stage fauna was more varied than the Fermanagh wetland alone can reveal. Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork is the outstanding Irish site for mammal remains from this part of the Pleistocene. Its collections include woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, lemmings and spotted hyena. The National Museum of Ireland’s collections preserve, among other material, an incomplete spotted-hyena skull from the cave. These bones make a powerful case that large herbivores and predators reached Ireland during broad pre-Last Glacial Maximum intervals.

They do not, however, supply a census for 31,788 BCE. Many of the cave bones were recovered in early excavations, before modern standards of recording sediment, position and association. Subsequent radiocarbon work has shown that some older measurements require reassessment as methods of extracting and purifying bone collagen improve. Castlepook is consequently best used as evidence for a long and episodic faunal history, roughly within the wider 45,000–30,000-years-ago span proposed for several species, not as proof that every listed animal shared the same Cork hillside on one day.

The presence of predators is nevertheless historically meaningful in the broadest sense. Hyenas, wolves and bears, together with mammoth, reindeer and deer, point to food webs unlike any in modern Ireland. Caves may have served as dens, traps for washed-in material, or places where bones accumulated through scavenging and other natural processes. Tooth marks, breakage and the choice of bones can help specialists reconstruct such processes, but do not automatically indicate hunting, human butchery or a human campsite. The animals were part of a mobile northern European fauna whose movements depended on changing climates, available vegetation and the changing geography of the Irish Sea basin.

No Demonstrable Community

There is no reliable evidence for a human community in Ireland around 31,788 BCE. Accordingly, no political affairs, leaders, alliances, warfare, diplomacy, religion, language, economy, trade network or system of learning can responsibly be assigned to this year. There are no houses, hearths, burials, tools securely dated to this horizon, or food-processing areas that would establish a human settlement. A flint flake from Mell, County Louth, is sometimes presented as Ireland's earliest artefact, but the National Museum explains that it was made elsewhere in a far earlier period and was later transported by ice. It is not evidence for people living in Ireland at this time.

This caution also matters because claims for a very early human presence can be compellingly dramatic. Recent research at Alice and Gwendoline Cave, County Clare, has strengthened evidence for human activity in the terminal Pleistocene, around 12,700 calibrated years BP, from a butchered brown-bear patella. That is a major discovery for Irish prehistory, but it is more than twenty millennia later than the date considered here. It cannot be projected backwards to make an Upper Palaeolithic population at Derryvree or Castlepook. For 31,788 BCE, the archaeological evidence supports fauna and environment, not society.

Movement Without Trade

There was movement in this landscape, but it was animal movement rather than documented human travel or exchange. Lower sea levels and different ice conditions meant that the geography around Ireland was unlike that of today. The exposed shelf and periodically altered routes through the Irish Sea region could facilitate, obstruct or redirect dispersal. Yet the exact configuration of coasts, sea ice, land connections and ice margins changed through time and remains actively researched. The prudent conclusion is simply that Ireland was not ecologically isolated in the way it later became, as shown by the arrival of continental mammal species.

The terms "economy" and "settlement" therefore have to be used carefully. Mammoths and reindeer grazed; predators and scavengers obtained food; plants colonised wet and dry ground. These were ecological relationships, not evidence of an Irish human subsistence economy. Likewise, a cave full of bones is not a village. The nearest thing to regional change visible in the record is environmental: ice advanced and retreated, lakes and wetlands formed, vegetation shifted, and animal habitats expanded or contracted. In time, renewed glaciation would erase, bury or rework much of the evidence, helping to explain why the surviving archive is so fragmentary.

What Can Be Said Responsibly

Ireland around the broad period represented by 31,788 BCE was a place of profound climatic instability. Derryvree offers unusually direct evidence for an ice-free freshwater setting in south Fermanagh within a cold, treeless and heterogeneous landscape. Castlepook demonstrates that, over comparably ancient pre-Last Glacial Maximum phases, Ireland supported an imposing range of cold-adapted and large mammals. These sites do not prove that all regions were ice-free, that all species were contemporaries, or that people were present. Their real importance is that they replace a simple image of “Ice Age Ireland” with a more exact one: a landscape repeatedly transformed by ice, water, frost, vegetation and animal migration, long before the island’s securely documented human history began.

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31787 BCE

Cork Femur Debate^[14]



31,787 BCE is not a year that can be recovered from Ireland’s archaeological record in the way a medieval annalistic year can. It is a modern, proleptic calendar label, approximately 33,736 years before the AD 1950 reference point used for “before present” dating. No excavated Irish layer, bone or artefact can presently be assigned responsibly to that single calendar year. The appropriate setting is instead late Marine Isotope Stage 3 (MIS 3), a fluctuating part of the last Ice Age, broadly before the Last Glacial Maximum. Evidence comes in ranges measured in thousands of years, not in annual instalments; its meaning is necessarily provisional.

A Date Without an Annal

For Ireland around this point, there are no names, communities, settlements, graves, tools in secure context, hearths or written traditions. There can therefore be no responsible account of rulers, diplomacy, warfare, law or political boundaries. Nor is there evidence for a permanent population. This is not a failure to look hard enough for a lost Irish kingdom: it reflects the immense antiquity of the period, subsequent glacial erosion, changing sea levels and the very small amount of surviving Palaeolithic evidence on the island.

The most useful distinction is between *evidence* and *interpretation*. Evidence includes cave bones, their radiocarbon measurements, sediments beneath glacial deposits, pollen and insect remains, and the landforms left by ice. Interpretation connects these traces into a changing landscape of animals, vegetation and possible human movement. That connection is valuable, but it cannot produce a diary entry for 31,787 BCE. Radiocarbon results also require calibration against changing atmospheric carbon, and calibrated ranges, rather than a single unqualified age, are the responsible way to express deep time.

Before the Maximum Ice

At roughly 33.7 thousand calendar years before present, Ireland lay in the later part of MIS 3, before the coldest and most extensive phase of the last glaciation. The Last Glacial Maximum is generally placed much later, around 26,000–19,000 calendar years ago. Ireland was not yet simply the wholly ice-covered island familiar from popular images of the Ice Age. Research on the British–Irish Ice Sheet instead shows a complex, rapidly changing system: major growth was under way in the wider archipelago from about 32,000–31,000 years ago, while its timing, limits and thickness differed between regions.

That regional complexity matters. Southern Irish cave faunas demonstrate that mammals had occupied parts of the island during MIS 3, while modern reassessment of old radiocarbon samples has made some of those animals considerably older than earlier chronologies suggested. At Castlepook Cave near Doneraile in north County Cork, and at Foley and Shandon caves in the south, re-dating has altered the chronology of several faunal remains. The published conclusion is not that all Ireland was hospitable at all times, but that particular mammals were present during earlier, variable phases of the glacial cycle.

The shoreline was also profoundly unlike that of modern Ireland. Lower global sea level exposed broad shelves around north-west Europe, while glaciers, rivers and ice-dammed waters repeatedly altered routes and barriers. It would be rash to imagine today's Irish Sea as a fixed obstacle, or alternatively to assume a simple, continuous dry land bridge to Britain and continental Europe. The exact geography available to animals or people depended on the relationship between sea level, local crustal movement and the advancing ice. What can safely be said is that Ireland's position on Europe's Atlantic margin was different, more connected in some respects and more ice-affected in others, than it is today.

Open Country and Cave Fauna

The evidence points to a cold, largely open and environmentally diverse Ireland rather than a modern green, wooded island. Plant-bearing deposits preserved beneath later glacial sediments in Fermanagh are particularly important, though their exact correlation with individual climate oscillations remains difficult. Organic silts at Derryvree have been interpreted as a treeless muskeg environment, while other Irish interstadial deposits preserve evidence for wet ground, sedges, mosses and sparse vegetation. These records show that even within a generally cold age, habitats could vary sharply with local drainage and climate.

For the wider MIS 3 interval, cave assemblages give the clearest picture of animal life. The Irish Quaternary Fauna Project identified a substantial Pleistocene mammal record, and subsequent work at southern caves has emphasised reindeer, red deer, giant deer, brown bear and spotted hyaena among the fauna represented. Such lists must not be read as a single herd grazing together on one day. Cave collections often combine remains accumulated over long periods, and carnivores can carry bones into caves. Nonetheless, they establish that parts of Ireland supported substantial animal communities before maximum glaciation.

Predators are especially revealing. A spotted-hyaena skull from Mammoth Cave, Castlepook, is held by the National Museum of Ireland. Hyaenas could use caves as dens and bone-accumulating places, complicating every claim that a bone was carried there by people. Brown-bear genetic and fossil research likewise demonstrates how Irish cave material can illuminate broader questions of animal survival, dispersal and extinction, even where it cannot yield a straightforward human story. Caves are archives, but they are not automatically campsites.

The North Cork Femur

The object most closely associated with this broad era is a reindeer femur from Castlepook Cave. The County Cork heritage catalogue assigns it to about 31,000 BCE and records a deep linear mark interpreted by zooarchaeologist Ruth Carden as having been made with a sharp stone tool while fresh bone was being processed. If that interpretation is sustained, it is potentially the earliest known indication of human activity in Ireland, far earlier than the securely dated Late Upper Palaeolithic evidence from Alice and Gwendoline Cave in County Clare, where a butchered brown-bear patella dates to about 12,810–12,590 calibrated years BP.

But the Castlepook femur is a reason for careful investigation, not a licence for certainty. The bone derives from older cave excavations rather than a newly excavated, sealed occupation surface. No associated lithic tool, hearth, dwelling floor or human bone has yet been published from the same securely dated context. A cut-like mark may be highly suggestive, but its identification, the relation of the mark to the bone's age and the route by which the bone reached the cave all require scrutiny. The current Castlepook research programme has explicitly sought surviving deposits, fresh environmental samples, charcoal, lithics and further modified bones precisely because those finds would test the hypothesis properly.

The cautious conclusion for 31,787 BCE is therefore deliberately limited. A reindeer bone from north Cork, broadly near this period, makes a short-lived human visit or episode of carcass processing possible. It does not demonstrate that people lived continuously in Ireland, that they hunted the animal where it died, or that the cave was their home. It cannot tell us whether one person or a group was involved, what language they spoke, or whether they belonged to any archaeological culture recognised elsewhere in Upper Palaeolithic Europe.

Lives We Cannot Yet Describe

If people did reach Ireland during a favourable interval of MIS 3, they would have depended on mobile knowledge of terrain, weather, animals and routes. That is an inference from the demands of northern European hunter-gatherer life, not a directly observed Irish social system. The reindeer femur could be consistent with obtaining meat, marrow, sinew, hide or other useful material, but none of these products is preserved as proof. A cave bone does not disclose family structure, seasonal round, clothing, shelters, ritual or learning.

Accordingly, “economy” at this date can only mean the possible use of wild resources, not farming, herding, markets or trade. There is no evidence for crops, domestic animals, pottery, metalworking, monuments, boats or exchange networks in Ireland around 31,787 BCE. There is equally no direct evidence for religion or art. Later prehistoric Ireland is rich in monumental, funerary and artistic evidence, but projecting those worlds backwards by more than thirty millennia would erase the real scale of change.

Conflict and diplomacy are beyond recovery as well. Large carnivores, harsh weather and shifting ice made survival difficult, but natural danger is not evidence of warfare. Nor should the absence of evidence be turned into a romantic picture of isolated “first Irish” people. The island's earliest well-substantiated human traces remain much later than this date, and the Mesolithic provides the first substantial archaeological record of sustained lifeways in Ireland. The possible MIS 3 signal is important precisely because it is so slight and because later ice may have removed much of what once existed.

An Island of Evidence Fragments

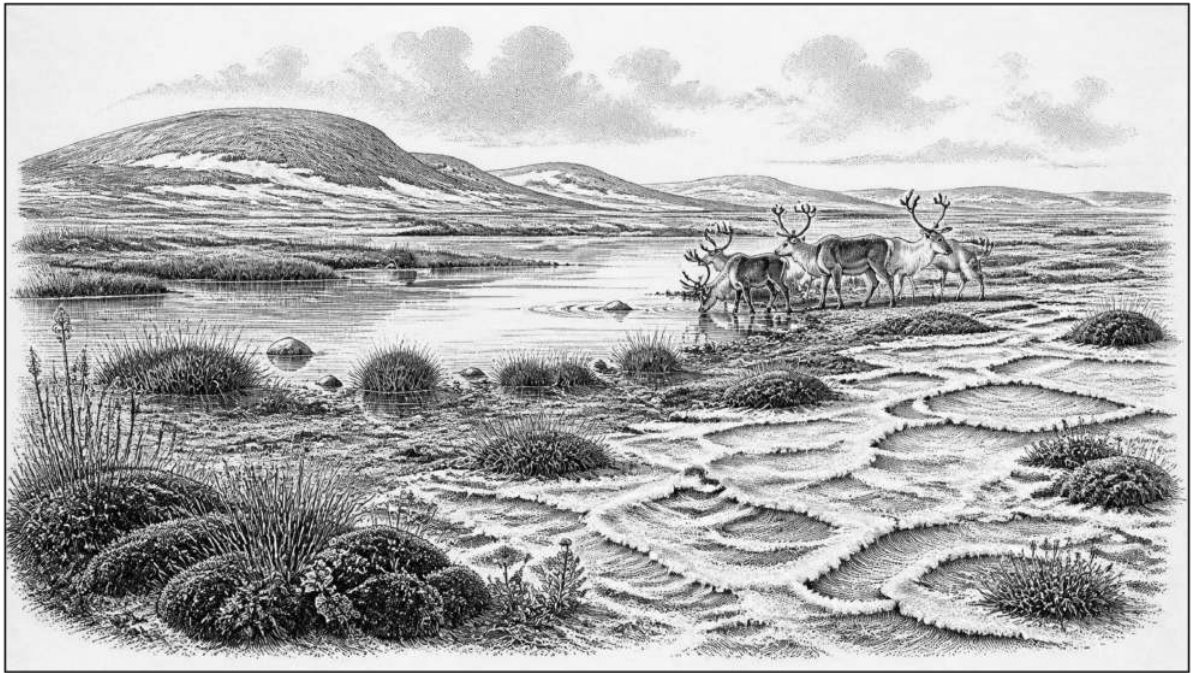
The lasting importance of this period lies in method as much as discovery. Museum collections, originally excavated cave sediments, improved bone pretreatment, accelerator radiocarbon dating, ancient DNA, pollen analysis and new fieldwork have together changed the questions historians can ask. Re-dating has shown why old numerical ages cannot simply be repeated; better methods can revise the timing of animals and, potentially, people.

Around 31,787 BCE, then, Ireland was not a nation, polity or settled society waiting to enter written history. It was a changing Ice-Age landscape, occupied at least intermittently by cold-adapted mammals and subject to the growing power of the British–Irish Ice Sheet. The North Cork reindeer femur offers a tantalising possibility that humans briefly touched that landscape. Until securely stratified tools, hearths or further unequivocal modified bones are found, the honest history of this date remains one of tundra, caves, animal remains and a question still open.

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31786 BCE

Derryvree's Roadcut Tundra^[15]



31,786 BCE is a modern calendar label, not a date that can be matched to an event recorded in Ireland. No written records, named communities, monuments or securely dated settlements allow historians to describe a single Irish year so far back. In calendar terms the label falls about 33,735 years before AD 1950, the conventional ‘present’ used in radiocarbon dating. It belongs to the later part of the Late Pleistocene, broadly within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable stretch of the last Ice Age. The responsible history of Ireland at this point is therefore a history of dated ranges, cave bones, buried sediments and changing ice margins rather than one of annual chronology.

The closest evidence does not establish what happened in 31,786 BCE itself. Instead, it places parts of the island within wider calibrated intervals. Organic sediments at Derryvree, near Maguiresbridge in County Fermanagh, have been placed broadly between about 36,900 and 31,700 calibrated years before present. That range overlaps the modern numerical point represented by 31,786 BCE. The overlap is important, but its meaning must not be exaggerated: it indicates that the Derryvree deposit can illuminate the environmental world of this broad period, not that it provides a diary of that particular year.

A Date Without an Annal

Even the conversion from an ancient radiocarbon measurement to a calendar range requires care. Radiocarbon years are not identical to calendar years because atmospheric carbon-14 has varied over time. The Derryvree organic bed produced a conventional age of 30,500 radiocarbon years before present, with a substantial uncertainty. Modern calibration curves translate such results into probability ranges

rather than exact points. The farther back in time, the more essential that distinction becomes. A numbered BCE year can be useful for arranging a long historical sequence, but it must not suggest a degree of precision that the evidence cannot sustain.

Nor was Ireland a fixed, familiar island landscape. Lower global sea levels altered the extent of surrounding shelves and shorelines, while ice, meltwater and changing relative sea level continually reshaped coasts. The precise arrangement of dry ground, marine water, seasonal ice and glacier fronts at any particular moment remains uncertain. 'Ireland' in this article means the landmass that would become the modern island, together with its immediately relevant shelves and connections to the wider north-west European world.

Freshwater Beneath a Drumlin

Derryvree is valuable because road works in 1969 cut through a drumlin and revealed a rare sequence: organic freshwater silts and fine sands enclosed between two thick, distinct beds of till. Till is debris deposited directly by glacier ice. The lower till shows that ice had occupied the locality before the freshwater deposit accumulated; the upper till shows that ice later returned and buried it. Between those episodes, water, sediment, plants and small animals occupied an ice-free landscape.

The biological remains in the Derryvree beds point to a cold, open, periglacial environment. They include plant and insect evidence associated with tundra conditions, while the overall picture is of treeless or almost treeless ground rather than forest. Mosses, sedges, grasses and low herbaceous vegetation could exploit wet soils around pools, streams and shallow basins. In summer, such places would have offered concentrated food and water; in winter, frost action, frozen ground and snow cover would have governed movement and survival. This was not an empty white wilderness, but neither was it a wooded countryside or a productive agricultural plain.

The deposit is local evidence. It cannot tell us the precise temperature in every Irish valley or prove that the whole island was simultaneously ice-free. Yet it decisively complicates the older, simpler image of Ireland as continuously buried beneath ice throughout the later Ice Age. At least in north-central Ireland, there was an interval in which freshwater habitats developed between glacial advances. Nearby organic deposits at Greenagho in Fermanagh reinforce the broader conclusion that cold, open environments survived in parts of the region before renewed ice expansion.

An Animal Landscape

Caves and fissures in southern Ireland preserve a complementary, though more difficult, record. Castlepook Cave near Doneraile in north Cork yielded an exceptionally important assemblage of Pleistocene animal bones. Dating programmes have identified remains from a succession of periods, including reindeer, giant deer, brown bear, wolf, Arctic fox, lemmings, spotted hyaena and woolly mammoth. Not all these animals need have lived together, and not every specimen belongs exactly to the Derryvree interval. The cave accumulated bones over many thousands of years, and water movement, animal activity and early excavation disturbed and mixed some deposits.

Nevertheless, the assemblage gives a persuasive impression of the kinds of faunal communities that repeatedly reached Ireland during MIS 3. Reindeer and lemmings speak to cold, open habitats; Arctic fox likewise belongs to a severe northern ecological setting. Mammoth and giant deer indicate that the available country could, in favourable phases, support very large grazing or browsing mammals. Wolves

and spotted hyaenas were predators and scavengers within that food web. Brown bears could use caves as shelters or dens. Their presence should not be converted into a neat, simultaneous ‘menagerie’: the evidence establishes a long-lived and changing regional fauna, not a single perfectly dated scene.

These animals also reveal that Ireland was connected to broader ecological routes. Mammals could not have reached the landmass by magic, and their arrival depended on changing geography, sea level and climatic conditions across the Irish Sea region and the continental shelf. The evidence supports intermittent colonisation and movement, not a permanent biological isolation. Yet routes available to animals were not necessarily easy or continuous routes for people, especially as ice and water barriers shifted.

The Castlepook Question

Castlepook has particular historical importance because a reindeer femur from the old collection has been reported as bearing an incision interpreted as a cut made by a sharp stone tool during carcass processing. The bone has been presented as approximately 33,000 years old and thus as possible evidence of human activity in Ireland far earlier than the well-established post-glacial settlement record. If the interpretation is correct, it shows that at least one person or small group had access to a fresh reindeer carcass in Ireland during the Late Pleistocene.

But the claim must remain carefully framed. A cut-marked animal bone is not a house floor, hearth, stone-tool assemblage, grave or settlement. It does not identify the people involved, their language, origin, numbers, sex, season of arrival or length of stay. It does not prove a resident population, still less a continuous Irish occupation. The historic excavation of Castlepook occurred before modern stratigraphic methods, and the cave deposits were subject to reworking. The date tells us about the death of the animal represented by the bone, not automatically the exact moment, place or circumstances in which a mark was made.

The most cautious conclusion is also the most significant: the Castlepook specimen makes a Late Pleistocene human visit or episode of carcass processing plausible, perhaps even likely, but it cannot bear the weight of a detailed social history. No named hunter, clan or culture can responsibly be placed in Ireland in 31,786 BCE. There is no evidence for a political order, territorial chiefdom, diplomacy, warfare, formal religion, art tradition or system of learning on the island at this date.

Livelihood Without Settlement

If people did enter Ireland during this broad span, their economy would have depended on mobile foraging rather than farming. Reindeer were potentially valuable for meat, marrow, hide, sinew and bone, while other game could have supplied food and raw materials. Such statements are informed inferences from the animal record and from Upper Palaeolithic lifeways elsewhere in Europe, not direct proof of a particular Irish camp. No securely excavated dwelling, hearth or toolkit of this age has yet been recovered in Ireland.

That absence is meaningful but not final. Small, short-lived camps leave slight traces even in favourable conditions. In Ireland, later glacial advances eroded landscapes, buried surfaces beneath till, rearranged sediments and destroyed much evidence that might once have survived. Caves are selective archives rather than ordinary living spaces: they may preserve the remains of animals that fell in, were

dragged in by predators, died while sheltering, or were washed in by water. A lack of identified settlements therefore does not prove that no person ever entered the landmass; it does mean that durable occupation remains unproven.

There can be no responsible account of trade in the usual sense. The evidence does not show exchange networks, imported objects or regular sea crossings to Ireland at this date. Nor does it support claims about kinship customs, rituals or spoken languages. The most that can be said is that any human presence would have operated within wider north-west European landscapes in which groups moved, hunted and exchanged knowledge over distances. Whether those wider connections extended to a brief Irish visit remains an archaeological question, not an established narrative.

Ice on the Horizon

The Derryvree world was also a world under pressure from climatic change. MIS 3 was marked by abrupt millennial-scale swings between colder stadials and relatively milder interstadials, strongly expressed in Greenland ice cores and North Atlantic records. Ireland stood exposed to those Atlantic shifts. A cold but habitable tundra basin could, over centuries and millennia, give way to worsening conditions, snow accumulation and glacier growth.

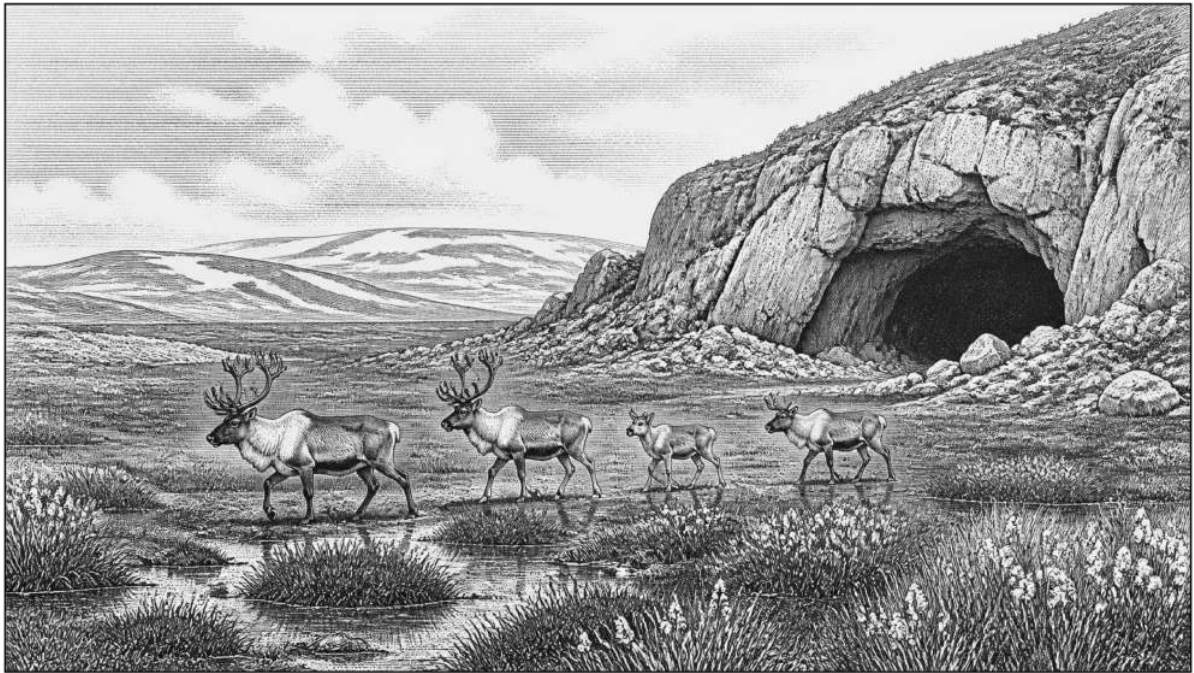
Recent reconstructions of the British–Irish Ice Sheet show that major ice expansion was already under way in the wider region around 32,000–31,000 years ago. By about 30,000 years ago, ice had expanded rapidly across parts of the continental shelf, although growth and maximum extent varied greatly by region. Ireland’s full last-glacial ice cover belongs chiefly to later phases, with maximum coverage broadly dated to about 27,000–23,000 calibrated years before present. The future of the Derryvree landscape was therefore burial beneath renewed ice, not gradual development into later prehistoric Ireland.

That later ice is one reason this remote episode is so difficult to recover. It sculpted drumlins, excavated basins and dispersed earlier deposits, while also sealing a few precious environmental archives. Derryvree’s roadcut and Castlepook’s cave bones are not fragments of a lost Irish kingdom. They are more fundamental: traces of a changing Ice-Age land where tundra wetlands, large mammals, predators and perhaps fleeting human visitors existed before the expanding ice sheet transformed the country again.

Chapter 016 of 100

31785 BCE

Mammoth Cave's Uncertain Butchery^[16]



Modern calendar precision cannot responsibly be applied to Ireland in 31,785 BCE. The label is a convenient point on a much larger prehistoric timescale, roughly 33,700 calendar years before AD 1950, but neither human activity nor environmental change can be fixed to that individual year. The most useful framework is the later part of the Late Pleistocene, within Marine Isotope Stage 3 (MIS 3), an unstable interval of the last Ice Age. For Ireland, evidence is sparse, unevenly dated and often recovered by antiquarian excavators long before modern recording standards. It can illuminate a broad world of cold landscapes, caves and large animals; it cannot furnish an annual chronicle.

Dating an Ice-Age Moment

The distinction between radiocarbon years and calibrated calendar years matters especially at this depth of time. A radiocarbon result measures the remaining carbon-14 in organic material, but atmospheric carbon-14 levels have varied greatly. Researchers therefore calibrate results against internationally maintained curves such as IntCal20. At around 34,000 calendar years ago, calibration intervals can be broad, and revised laboratory pretreatment can substantially alter older results. A date written as 31,785 BCE should consequently be read as an approximate modern conversion, not as a date known to contemporaries or an exact timestamp for an archaeological layer.

In Irish terminology, this was during the Midlandian glaciation, though not at the Last Glacial Maximum. The latter, broadly between about 27,000 and 23,000 calibrated years before present, eventually covered Ireland and much of its surrounding shelf with the British–Irish Ice Sheet. Around the notional year considered here, conditions were colder than today but were not simply uniform, permanent

ice. MIS 3 contained abrupt shifts between relatively milder interstadials and severe cold phases. The question is therefore not whether Ireland was ‘in the Ice Age’—it plainly was—but which districts retained exposed, ecologically active ground at particular times.

Water, Tundra and Ice-Free Ground

The clearest Irish evidence for such variation comes from buried deposits rather than settlements. At Derryvree near Maguiresbridge, County Fermanagh, roadworks exposed organic-rich silts and sands trapped between glacial tills inside a drumlin. Pollen, plant remains and beetles indicated freshwater and wet-ground environments during an interval later sealed beneath renewed ice. Calibrated ages reported for the deposit span roughly 36,900 to 31,700 years before present. That range includes the broad chronological neighbourhood of 31,785 BCE, but it does not prove that the same wetland survived unchanged throughout it.

Derryvree’s vegetation was not a lost Irish forest. The plant evidence points instead to open, treeless, cold-climate ground, with sedges, mosses, herbaceous plants and shrubs such as juniper in suitable places. Such habitats could include shallow pools, wet hollows and patches of richer grazing amid exposed mineral ground. Another buried organic deposit at Greenagho, also in Fermanagh, indicates a freshwater setting during an earlier MIS 3 amelioration. Together these sites demonstrate that parts of Ireland could support plants and animals between episodes of glaciation. They do not provide a national map of vegetation, temperature or ice margins for a single year.

Crag Cave in County Kerry supplies a different kind of climate evidence. Stalagmites grow only when water can percolate through soil and limestone and deposit calcite in a cave. Uranium-thorium dating of broken and reworked calcite shows episodic speleothem growth during MIS 3, corresponding broadly with warmer and wetter North Atlantic interstadials. This is powerful evidence for climatic fluctuation, but it must not be exaggerated: a growth phase in a Kerry cave is a local response to hydrology and climate, not proof that every Irish region was hospitable at the same moment.

Castlepook and the Human Question

The most consequential evidence directly relevant to people is a fragment of reindeer femur from Castlepook Cave, near Doneraile in north Cork. Castlepook, long also called Mammoth Cave, was excavated between 1904 and 1913. Its old collections contain remains of an impressive Ice-Age fauna. Recent reassessment and improved radiocarbon methods have shown that some bones from the cave are substantially older than earlier dates suggested. A reindeer bone has been reported as dating to about 33,000 years ago and bears a deep linear mark interpreted by zooarchaeologist Ruth Carden as a cut or chopping mark made on fresh bone with a stone tool.

If that interpretation is sustained, it is potentially Ireland’s earliest evidence of human action: not a town, tribe or permanent population, but the processing of a reindeer carcass during MIS 3. It would place a human visit far earlier than the better-known terminal Pleistocene evidence from Alice and Gwendoline Cave in County Clare, where a butchered brown-bear kneecap dates to roughly 10,800–10,500 BCE. The Castlepook reindeer find is therefore important precisely because its implications are large.

Yet the responsible conclusion remains cautious. A marked bone is not automatically a campsite. Cave assemblages may be accumulated, moved and damaged by carnivores, water, collapse, excavation and later handling. Castlepook was worked extensively before modern stratigraphic methods, reducing confidence about the bone’s original context. Nor has a securely associated stone-tool assemblage, hearth,

shelter floor, human burial or repeated occupation surface been identified for this early phase. The incision is evidence under specialist assessment; the proposition that people butchered the animal is an interpretation of that evidence. Ongoing investigation at Castlepook has sought intact deposits in parts of the cave not emptied by earlier excavators.

An Animal Landscape

Whatever the outcome of the human debate, Castlepook and other southern Irish caves establish that Ireland supported a varied mammal community during MIS 3. Re-dated faunal material indicates the presence, at different points in this broad interval, of reindeer, woolly mammoth, giant deer, brown bear, horse, wolf, mountain hare, Arctic fox, lemmings and spotted hyaena. The fauna should not be treated as a single herd encountered on one day. Cave deposits commonly combine remains accumulated over long periods, and direct dates show that species arrived, disappeared and returned on different schedules.

Spotted hyaena are particularly significant at Castlepook. Their bones, teeth and evidence of feeding help explain why caves can be bone-rich without being human homes. Hyaenas could drag carcass parts underground, chew and break bone, and leave dens that later researchers must distinguish from human activity. Mammoth and giant deer make the landscape sound spectacular, but their presence is best understood as palaeontological evidence for available habitats and routes, not as proof of large resident animal populations across every part of the island.

The likely setting was an open mosaic of herb-rich tundra, wet ground and exposed limestone rather than the familiar green, wooded Ireland of later millennia. Reindeer were suited to cold, seasonal environments and could have moved across broad ranges. Mammoths, horses and giant deer likewise required accessible forage, while predators followed prey. Their remains indicate that Ireland was not biologically empty before the maximum glaciation. They also suggest why a brief human incursion, if the Castlepook mark is anthropogenic, is plausible: mobile hunter-gatherers elsewhere in north-west Europe understood such animal landscapes and possessed stone technologies capable of carcass processing.

Mobility Without a Proven Community

That plausibility is not evidence for an Irish society in the later historical sense. There are no names, languages, territories, leaders, laws or political institutions. There is no basis for describing wars, alliances, diplomacy or an island-wide population. Nor is there direct Irish evidence from this time for ritual sites, graves, cave art, ornaments, teaching traditions or symbolic objects. Absence of evidence is partly a consequence of later glacial erosion, rising seas and the limited survival of excavated cave deposits; it is not proof that visiting people lacked culture. But historical writing must distinguish that reasonable possibility from what Irish finds actually demonstrate.

Similarly, economy and trade cannot be reconstructed as facts. Should the Castlepook mark prove human-made, it would demonstrate the use of animal resources—perhaps meat, hide, sinew or marrow—from at least one reindeer. It would not demonstrate regular hunting camps, exchange networks or a sustained seasonal round in Ireland. Any people reaching the island would probably have belonged to small, mobile hunter-gatherer groups, an inference based on contemporaneous European Upper Palaeolithic lifeways rather than a recovered Irish household. Nor can their route be confidently specified. Lower sea levels exposed extensive shelf landscapes, but the changing Irish Sea, ice limits and possible crossings require reconstruction, not assumption of a simple land bridge.

What This Date Can Mean

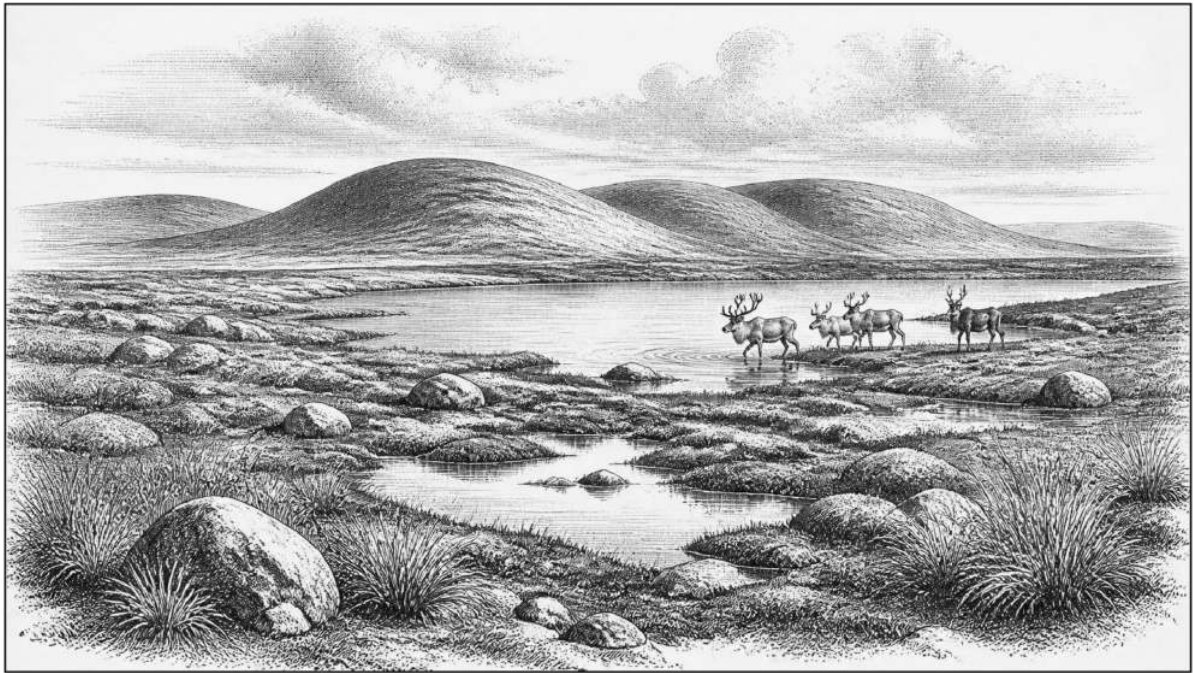
For 31,785 BCE, the most defensible picture is thus one of possibility bounded by evidence. Parts of Ireland had experienced ice-free interstadial landscapes within the wider MIS 3 climate cycle. Freshwater basins in Fermanagh preserved traces of tundra vegetation; caves in Cork and Waterford retained bones of animals adapted to an open, cold and changing world. At Castlepook, a dated reindeer femur may preserve the earliest sign that people briefly entered that world and processed an animal there.

It would be wrong to turn this into the first year of continuous Irish settlement. Within several millennia, advancing ice would radically transform and in many areas scour the landscape, leaving a discontinuous archaeological record. The importance of Castlepook is not that it supplies an invented origin story, but that it opens a carefully testable question: humans may have reached Ireland far earlier than once believed. At this point in prehistory, the cave, the marked bone and the sediments deserve more confidence than any tale built beyond them.

Chapter 017 of 100

31784 BCE

Derryvree's Mossy Waters^[17]



“31,784 BCE” is a modern chronological label, not a year that anyone in Ireland could have named, counted or recorded. It corresponds approximately to 33,700 calendar years before AD 1950, the conventional “present” used in radiocarbon science. At that depth of time, however, modern calendar-year precision is not available. A radiocarbon determination dates organic material within a statistical range, and must be calibrated because atmospheric carbon-14 has varied through time. Nor does a date from a bone or sediment establish what occurred everywhere in Ireland at once. The responsible frame is therefore a broad one: the later part of Marine Isotope Stage 3, a fluctuating cold phase of the Late Pleistocene, before the maximum expansion of the last British–Irish Ice Sheet.

Ireland has no securely established year-by-year human history at this point. There are no written records, named rulers, settlements, graves, monuments or artefact assemblages that can be tied to this nominal year. What can illuminate the island is more indirect but still remarkably vivid: freshwater deposits buried beneath later glacial sediment in County Fermanagh; cave accumulations and animal bones in north County Cork; improved radiocarbon measurements; and reconstructions of changing ice, sea and land. These archives describe episodes and environments over centuries or millennia. They do not provide a single frozen scene for 31,784 BCE.

A Landscape Between Ice Advances

The key northern archive lies at Derryvree, near Maguiresbridge in County Fermanagh. Roadworks there exposed a remarkable sequence within a drumlin: one thick glacial till below, organic silts and fine sands in the middle, and another till above. The middle deposits were laid down beside freshwater during an ice-free interval between episodes of glaciation, then buried and protected when ice later returned.

Their radiocarbon result of 30,500 radiocarbon years before present, with a substantial error range, is not identical to the modern label 31,784 BCE. Once calibrated, it nevertheless places the deposit within the cold Late Pleistocene world relevant to this article.

The Derryvree silts contain pollen, plant remains, mosses and insect evidence. Together they indicate open tundra-like ground, periglacial conditions and freshwater habitats rather than woodland or a settled agricultural landscape. Sedges and aquatic or wet-ground plants grew around pools and marshy margins. The insect fauna included species with northern or Arctic affinities. This was not an empty wasteland: even severe climates sustain intricate food webs. But it was a landscape shaped by short growing seasons, frost action, exposed soils, standing water and powerful seasonal contrasts. Trees, if present anywhere locally, were not the defining feature of the Derryvree environment.

Derryvree also demonstrates why simple maps of an “ice-covered Ireland” can mislead. Ice-sheet margins were not permanently fixed. The lower till proves an earlier advance; the organic interval proves that non-glacial freshwater conditions subsequently existed at that site; the upper till records later renewed ice occupation or expansion. Whether other districts were ice-free, thinly glaciated, glacier-front terrain or beyond the reach of ice at precisely the same moment depended on local topography and shifting climate. The later Last Glacial Maximum would transform much of Ireland far more comprehensively, eroding or burying older surfaces and helping to explain the extraordinary scarcity of surviving early archaeological evidence.

Caves and Cold-Stage Animals

In southern Ireland, Castlepook Cave near Doneraile, County Cork, supplies a different kind of record. Excavated principally in the early twentieth century, its chambers yielded a notable collection of Pleistocene animal remains. Reindeer are particularly important, but the wider collection has also included red deer, giant deer, brown bear, wolf, fox, hare, lemmings, woolly mammoth and spotted hyaena. The cave shows that Ireland participated in a wider north-west European cold-stage animal world. Herbivores, carnivores and scavengers did not belong to a mythical isolated fauna: their presence depended on ecological corridors and changing geography beyond the modern shoreline.

Yet Castlepook must not be treated as a census taken in one season. Cave deposits can combine material accumulated at different times through animal deaths, carnivore denning, scavenging, water movement, sediment disturbance and antiquarian excavation. Recent redating of southern Irish cave fauna has shown that several older determinations were too young because methods for extracting and cleaning bone collagen have improved. The revised results indicate that parts of the Castlepook fauna are considerably older than once supposed, and suggest that giant deer and spotted hyaena may have disappeared locally before about 40,000 calibrated years ago. Thus, their bones illuminate the broader Marine Isotope Stage 3 setting, but should not be placed automatically beside a reindeer at Derryvree in 31,784 BCE.

The animal evidence nevertheless permits careful interpretation. Reindeer are well suited to cold, open country and could have grazed grasses, sedges, herbs and dwarf shrubs across tundra and steppe-tundra mosaics. Hares, foxes and lemmings evoke smaller-scale habitats among wet ground, vegetation cover and stony soils. Wolves and hyaenas, when present in Ireland, indicate that large prey animals could support predators and scavengers. Mammoth remains point to connections with a continental Pleistocene fauna, though a find in a cave does not reveal the precise route, season or ecological circumstances by which an animal reached the island. Fossils establish former presence; they do not by themselves recreate behaviour.

The Unsettled Question of People

The possibility of people in Ireland during this broad interval rests largely on a reindeer femur from Castlepook. A mark on the bone has been interpreted as an incision or chop made with a sharp stone implement, and the specimen has been associated with an age of roughly 33,000 years. If that interpretation and dating remain sound, it would be potentially transformative: it would indicate that people processed animal tissue in Ireland many millennia before the island's formerly accepted post-glacial human record.

But the conclusion must remain deliberately narrow. The bone came from an old cave collection, not from a newly excavated, sealed occupation floor with a hearth, stone-tool scatter, dwelling, repeated butchered assemblage or human burial. One modified bone could record a brief visit or hunting episode; it cannot demonstrate a permanent population, continuous occupation, a village or a distinct cultural tradition. Neither can a cut mark reveal language, kinship, political authority or belief. The claim is important precisely because it is so rare, and rarity makes context and independent confirmation essential. Continued work in undisturbed cave sediment is more likely to clarify the question than confident storytelling around a single object.

Elsewhere in north-west Europe, *Homo sapiens* groups of this era made sophisticated stone and organic tools, used fire, maintained far-reaching social contacts and, in some regions, created personal ornaments and cave art. That wider evidence makes a human visit to Ireland conceivable. It does not prove that every such practice occurred here. There is presently no securely identified Irish artwork, hearth, camp structure, tool assemblage or burial that can responsibly be assigned to around 31,784 BCE. The appropriate distinction is between European context and Irish evidence.

No Kingdoms, No Trade Network

Political affairs, diplomacy and organised warfare cannot be reconstructed for Ireland at this date. There is no evidence for polities, chiefs, territorial boundaries, alliances or conflict between human communities. Nor can religion, learning or formal cultural institutions be described from Irish material. If people visited, their everyday life may have involved mobile foraging, hunting and the management of fire, clothing and food in a cold climate, but that is an inference from better-documented contemporary societies elsewhere, not a demonstrated Irish household.

For the same reason, there is no evidence for an Irish economy or trade system. The meaningful economic history is ecological: plants converting a brief growing season into forage; herbivores moving through open ground; predators and scavengers exploiting animal populations; freshwater pools sustaining insects and wetland vegetation. Any people present would have depended upon this living landscape rather than farms, livestock, fields, metal or markets. Sea level was lower than today, but the precise existence, timing and usability of land connections between Ireland and Britain remain complex questions shaped by sea level, crustal movement, coastal topography and ice margins. A simple permanent land bridge should not be assumed.

An Evidence-Led Ireland

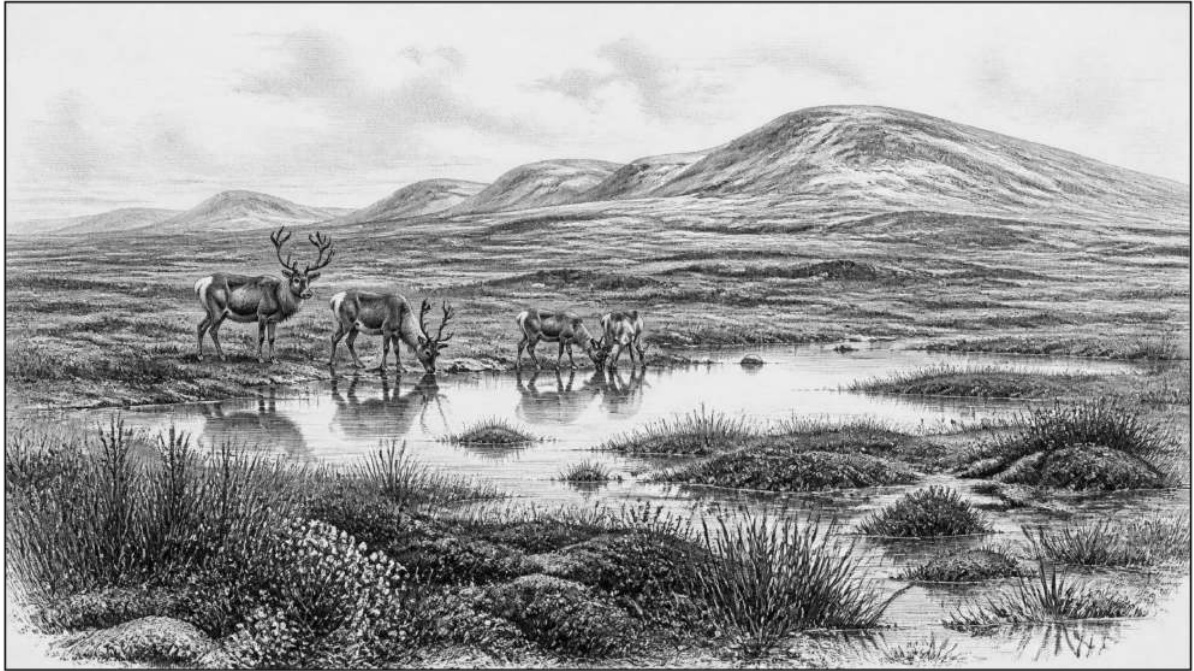
The most important history around this notional year is therefore the history of environments in motion. Derrynvree preserves cold freshwater life between glacial advances. Castlepook preserves fragments of a changing mammal world and a possible, still limited, human trace. Together they show that

Late Pleistocene Ireland was neither timeless nor uniformly buried beneath ice. It was a changing edge-land, sometimes capable of supporting tundra wetlands and large animals, then altered again by the advancing British–Irish Ice Sheet. That is not a lesser history because it lacks kings and battles. It is the deep environmental precondition for every later human history of Ireland.

Chapter 018 of 100

31783 BCE

Derryvree's Bogbean Horizon^[18]



The label 31,783 BCE gives a useful point of orientation, but it must not be mistaken for a year that can be recovered from Ireland's archaeological record. No written calendar existed, no named community is known, and no Irish deposit can be assigned responsibly to that single year. In modern chronological terms it falls roughly 33,700 years before AD 1950, during the Late Pleistocene and Marine Isotope Stage 3 (MIS 3). The evidence instead consists of calibrated ranges, fossil assemblages, sediments and reconstructions of changing ice. Together they illuminate an Ice Age Ireland that was cold, open and environmentally unstable, but not a land with identifiable rulers, settlements or historical events.

A Date Within Ranges

Radiocarbon dating does not yield a simple modern calendar date. It measures the remaining radioactive carbon in organic material, and its results must be calibrated against independently dated records. The calibration curve becomes less precise farther back in time, so a single measurement commonly corresponds to a range of possible calendar ages. This matters especially here. The strongest environmental record relevant to this notional year comes from Derryvree, near Maguiresbridge in County Fermanagh, where organic silts between two tills produced a conventional radiocarbon age of 30,500 years BP, with a substantial uncertainty. Calibration places that material broadly around 36,900–31,700 calendar years BP. Thus 31,783 BCE lies within the range, but cannot be claimed as the precise moment when the Derryvree plants grew or its animals lived.

The period is often described in Irish stratigraphy as part of the Midlandian glacial stage. Older local terminology gives the Derryvree deposits a place in a Middle Midlandian cold phase; international scholarship more usually locates them within MIS 3. These labels are frameworks for comparing records,

not proof that conditions were identical across the island. Ireland's climate and ice cover altered repeatedly on millennial and shorter scales. The responsible question is therefore not "what happened in 31,783 BCE?", but what the surviving evidence permits us to say about Ireland around the middle of the fourth millennium before the Last Glacial Maximum.

A Wetland Beneath Ice Debris

Derryvree is exceptional because road works in 1969 cut through a drumlin and exposed freshwater silts and fine sands sealed between two thick sheets of glacial till. The lower till records an earlier incursion of ice; the upper one shows that ice later returned and buried the wetland archive. Between them lay evidence of a landscape that was not under permanent glacier ice when the sediments accumulated. Plant remains, pollen and insects pointed to a treeless, periglacial setting: a cold terrain affected by frost, with pools and saturated ground rather than woodland or farmed fields.

The deposit contained mosses, sedges and other herbs, alongside a fossil seed of bogbean (*Menyanthes trifoliata*), a plant associated with shallow freshwater margins. Finds of mountain avens (*Dryas octopetala*) and juniper pollen reinforce the image of open ground. Insect evidence suggested a muskeg-like wetland with plant-rich pools, mossy margins and little shelter from wind. This was not a uniform white desert. Even in a rigorous climate, freshwater hollows could sustain aquatic and marsh vegetation during the short growing season. Yet neither should it be imagined as a benign modern bog. Frozen ground, seasonal snow, severe winters and sparse tree cover shaped a landscape in which living things occupied protected patches rather than a densely vegetated countryside.

Before the Greatest Ice Advance

At about 33,700 calendar years BP, Ireland had not yet reached the fullest extent of the last British–Irish Ice Sheet. Evidence synthesised from landforms, marine cores and numerical reconstruction indicates that important parts of north-central Ireland remained ice-free until at least about 34,000 years ago. The Derryvree and nearby Greenagho records are central to that conclusion. They demonstrate that deposits containing organic matter could accumulate before later ice overrode them. This does not establish that all of Ireland was free of ice, nor that the island's shoreline resembled the present one; it establishes regional complexity.

Subsequent expansion was profound. Large-scale reconstructions chart sustained growth of the British–Irish Ice Sheet from roughly 31,000 to 26,000 years BP, with different sectors reaching their maxima at different times. Its overall maximum volume came later, around 23,000 years BP. For the world of 31,783 BCE, the chief historical development was therefore approaching glaciation rather than its climax: highlands could already support glaciers or ice caps, while lower ice-free ground persisted elsewhere. In the centuries and millennia ahead, advancing ice would scour, deform and conceal much of the earlier landscape, helping explain why the archaeological record is so fragmentary.

Animals of Open Country

Cave deposits, particularly in southern Ireland, show that a surprisingly varied large-mammal fauna entered the island during MIS 3. Castlepook Cave near Doneraile, County Cork, has produced remains attributed to reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, hare and spotted hyaena. Shandon Cave in County Waterford has also yielded mammoth, reindeer, horse, red deer, bear and wolf.

The dates of individual bones and the integrity of old collections require caution: many were excavated long before modern stratigraphic practice, and improved pretreatment has shown that some early radiocarbon determinations were too young. Nevertheless, redating confirms that important elements of the southern Irish fauna belong to MIS 3.

These animals should not be turned into a single simultaneous tableau. A bone proves that its species was present at some point within a dated interval, not that every listed animal grazed beside every pool in the year 31,783 BCE. The defensible interpretation is that parts of Ireland could support cold-adapted and open-country mammals over the wider period. Reindeer are particularly relevant to a tundra and grass-herb mosaic; mammoth and horse indicate broader continental connections in the faunal record; predators such as wolf and spotted hyaena point to food webs with substantial prey. Giant deer, often called the “Irish elk”, was neither uniquely Irish nor an elk, but a widespread extinct Eurasian deer whose fossils became especially famous in Ireland.

The Castlepook Question

Human history at this date rests on one intriguing but unresolved object: a reindeer femur from Castlepook Cave. Zooarchaeologist Ruth Carden identified a deep incision interpreted as a mark made by a sharp stone tool while a fresh carcass was being processed. Public heritage material has associated the bone with an age of about 33,000 years ago, broadly close to this article’s horizon. If that interpretation is confirmed, it would be remarkable evidence that an Upper Palaeolithic person handled a reindeer in Ireland many millennia before the best-established late-glacial traces of people on the island.

Its implications must remain limited. The bone derives from a historic cave collection, not from a modern excavation of an intact hearth or living floor. The date relates to the death of the animal, not independently to the creation of the mark, the location of its killing, or the length of a human visit. Carnivore activity, sediment movement, old excavation practices and later handling can complicate cave assemblages. Renewed work at Castlepook in 2022 located surviving sediments, but did not reveal a published Palaeolithic occupation surface: sampled charcoal and hazelnut shell in one area proved modern. There are no securely associated stone tools, built shelters, burials, human remains, ornaments or art from Ireland around 31,783 BCE.

No Polity, No Proven Settlement

Accordingly, political affairs, diplomacy and organised conflict cannot be narrated for Ireland at this point. There is no evidence for chiefs, tribes, territories, treaties or warfare. Nor is there evidence for permanent settlement, farming, herding, pottery, metalworking, monuments, long-distance exchange systems or formal religious institutions. To invent them would replace archaeology with fiction. The appropriate description of economy is ecological rather than commercial: animals moved through a severe landscape; plants exploited wet ground during the growing season; predators, scavengers and herbivores formed interconnected food webs.

If the Castlepook incision is anthropogenic, it permits one modest social inference only. Small, mobile hunter-gatherer parties may have entered parts of the Irish landmass during a favourable MIS 3 interval and processed animal carcasses. Such people would have depended upon portable equipment, knowledge of seasonal terrain and close attention to game, weather and shelter. But their number, language, origins, travel route, kinship and duration of stay are unknown. A brief incursion is not the same thing as a resident population, and it provides no basis for claiming continuity with Ireland’s later Mesolithic inhabitants.

An Archive of Loss and Survival

The deepest significance of this period lies in how it frames the archaeological survival of Ireland. Later ice expansion destroyed or redistributed much evidence that open-air activity might once have left behind. Caves and buried wetland sediments are therefore disproportionately important: they are rare places where bones, pollen, insects and organic layers escaped total erasure. Derryvree's bogbean seed and Castlepook's reindeer bone are small survivals from a vast vanished world.

For Ireland around 31,783 BCE, the evidence supports an open, cold, periglacial environment in at least some regions; ice-free ground in north-central Ireland during the broader dated interval; and a MIS 3 fauna capable of including reindeer and other large mammals in the south. It supports a possible, not yet definitive, episode of human carcass processing at Castlepook. It does not support an annual event, a settled society or a conventional political history. That restraint is not a deficiency. It is the real historical lesson of this remote Irish horizon: landscapes, animals and deposits speak clearly enough to show a country on the threshold of major glaciation, while preserving only the faintest suggestion of human footsteps.

Chapter 019 of 100

31782 BCE

Derryvree's Reedbed Interval^[19]



The number 31,782 BCE cannot responsibly be treated as a date on which a recorded Irish event occurred. There were no written calendars, named rulers, settlements or political institutions in Ireland from which a year-by-year history could be made. In archaeological terms, it is a modern conversion that falls roughly around 33,700 calibrated years before present (where “present” is conventionally AD 1950), within the Late Pleistocene and broadly Marine Isotope Stage 3. At this depth of time, even good radiocarbon dates produce ranges rather than a single calendar year. The proper subject is therefore not an invented episode in 31,782 BCE, but the changing landscape, animals and uncertain human possibilities represented by evidence from Ireland close to this horizon.

A Date Range, Not a Diary

The strongest caution concerns chronology. A radiocarbon measurement records the decay of carbon-14, not a directly observed calendar date. It must be calibrated against an internationally maintained curve, and the farther back one goes, the wider the resulting range may be. The most relevant northern Irish deposit, at Derryvree near Maguiresbridge in County Fermanagh, produced organic silts dated to 30,500 radiocarbon years BP, with a substantial published uncertainty of +1,170 and –1,030 years. Calibration places the deposit broadly within the later part of MIS 3, approximately c. 37,000–31,700 calibrated years BP. The nominal modern year 31,782 BCE lies within that broad window; it cannot identify one season, generation or event within it.

This distinction matters because Ireland’s evidence is thin, fragmentary and often difficult to date. Ice, frost, flowing water and later human activity have disturbed or erased many deposits. Some cave finds were excavated in the nineteenth or early twentieth century, before modern recording standards, and their

bones may derive from more than one episode. Recent re-dating has shown that some older Irish radiocarbon determinations were seriously too young because contamination had not been adequately removed from bone collagen. Rather than weakening the story, that revision makes its central lesson clearer: the island's deep past must be read from carefully tested physical traces, not from confident narratives.

Freshwater Beneath the Drumlin

Derryvree is especially valuable because its stratigraphy preserves a sequence rather than an isolated object. Roadworks exposed fine sands and organic silts between two bodies of glacial till. Till is sediment deposited directly by ice. The lower till represents an earlier glacial phase; above it, freshwater sediments accumulated in an ice-free or locally ice-free interval; a later advance then sealed the organic layer beneath upper till. The evidence proves a major environmental change in this part of Fermanagh: ice had withdrawn or ceased to occupy the locality long enough for water, sediment, plants and small animals to establish a preservable wetland record, before renewed glaciation transformed the landscape again.

The Derryvree flora and fauna indicate an open tundra environment under a periglacial climate: very cold ground conditions shaped by frost and seasonal thaw, rather than a wooded countryside. The organic sediments suggest freshwater pools, slow channels, marshy margins or shallow lakeside ground. Such places can preserve pollen, plant remains and invertebrate evidence exceptionally well, but they remain local archives. They do not show that the whole island looked identical at once. It is reasonable to infer a patchwork of exposed ground, wet hollows and cold-water habitats in parts of northern Ireland during portions of this interval. It would not be responsible to turn that inference into a map of every valley in 31,782 BCE.

Related deposits beneath later glacial sediments at Greenagho near Belcoo and elsewhere in the north support the larger point that ice-free environmental windows existed during the Midlandian glaciation. They also show why Ireland's prehistoric geography cannot be reduced to a simple image of an island continuously buried beneath ice until the end of the Ice Age. Ice cover advanced and retreated unevenly, while local conditions depended on altitude, exposure, snowfall, temperature and the shifting margins of the British–Irish Ice Sheet. The better-constrained maximum extent of that ice sheet came later, during the Last Glacial Maximum. Around the Derryvree interval, the record instead captures instability.

Animals at Ireland's Western Margin

Caves in the south and south-east offer another, different line of evidence. Castlepook Cave in County Cork, along with Shandon Cave in County Waterford and Foley Cave in County Cork, has produced remains of cold-stage mammals. The wider Irish MIS 3 fauna documented from cave collections includes mammoth, reindeer, giant deer, horse, wolf, fox, brown bear and spotted hyaena. Not every species necessarily lived together, and not every recovered bone belongs to exactly the same date. Yet the revised dating programme establishes that a varied mammal community reached Ireland between at least about 45,000 and 20,000 years ago, with important pre-Last Glacial Maximum elements now placed much earlier than older studies suggested.

For a date around 33,700 calibrated years BP, this evidence permits a restrained reconstruction of ecological possibility. Large herbivores and their predators could use suitable open terrain in parts of Ireland during portions of MIS 3. Reindeer are particularly suggestive of cold, open-country conditions, while hyaena remains demonstrate that the island's Pleistocene food webs were not merely modern Irish

wildlife in a colder climate. Mammoth and giant deer point to an ecological world of large-bodied grazers and browsers, though cave assemblages do not tell us herd sizes, migration routes or whether a species was common rather than occasional.

Caves are also records of accumulation, not straightforward snapshots of ordinary life outside their entrances. Carnivores may have dragged prey or scavenged carcasses inside; animals may have died naturally; roof collapse, water and excavators could mix material. The presence of gnawed, broken or dispersed bones is evidence for these processes as much as for the animals themselves. Castlepook's importance lies precisely in this complication: it is Ireland's richest cave assemblage for the fauna of the period before the Last Glacial Maximum, but its interpretation depends on taphonomy, dating and the careful separation of deposits, not a simple species list.

Human Presence Remains Unproven

No securely dated, stratified human campsite is known from Ireland at this time. There is no accepted house floor, hearth, tool assemblage, burial, artwork or food refuse deposit that can be assigned to around 31,782 BCE. Consequently, there is no evidential basis for describing Irish families, leaders, alliances, languages, rituals, trade systems or warfare in this particular period. Political affairs, diplomacy and formal religion are not missing chapters waiting to be filled with imagination; they are subjects for which the surviving Irish record is silent.

That silence should not be mistaken for proof that no person ever entered the island during MIS 3. A reported possible stone-tool incision on a reindeer bone from Castlepook has encouraged discussion of a very early human presence. Such a mark is potentially important, but an isolated modified bone cannot demonstrate a lasting population, and its identification and context require continuing scrutiny. The much stronger currently published evidence for human activity in Ireland belongs far later, in the terminal Pleistocene and early Holocene. Even the terminal-Pleistocene cut-marked bear bone from Alice and Gwendoline Cave in County Clare remains debated by scholars. The first unambiguous evidence of sustained post-glacial settlement is later again, at the Mesolithic site of Mount Sandel, beginning around 9,800–9,600 calibrated years BP.

The responsible conclusion for c. 31,782 BCE is therefore one of possibility without assertion. During lower sea levels, Ireland's coast and surrounding shelves differed greatly from those of today, and the routes followed by animals into the region need not have matched modern shorelines. Faunal dispersal shows that animals reached Ireland in colder Pleistocene phases. Whether human hunter-gatherers ever followed them during this particular interval remains unresolved. Any visits, if they occurred, may have been short-lived and have left traces later erased by ice-sheet erosion, coastal change and the poor preservation of exposed camps.

No Economy, Yet a Living Landscape

It would be misleading to call the animal world an "economy" unless people can be shown to have exploited it. The evidence instead describes a natural landscape with its own seasonal pressures. Plants colonised wet ground and open soils; herbivores converted that vegetation into mobile biomass; predators and scavengers followed them; frost, snowmelt and water reorganised the terrain. In this sense Derryvree's freshwater interval and the southern cave faunas are complementary. One records the quieter preservation of a northern wetland ecosystem; the other preserves fragments of larger animals from a southern karst landscape.

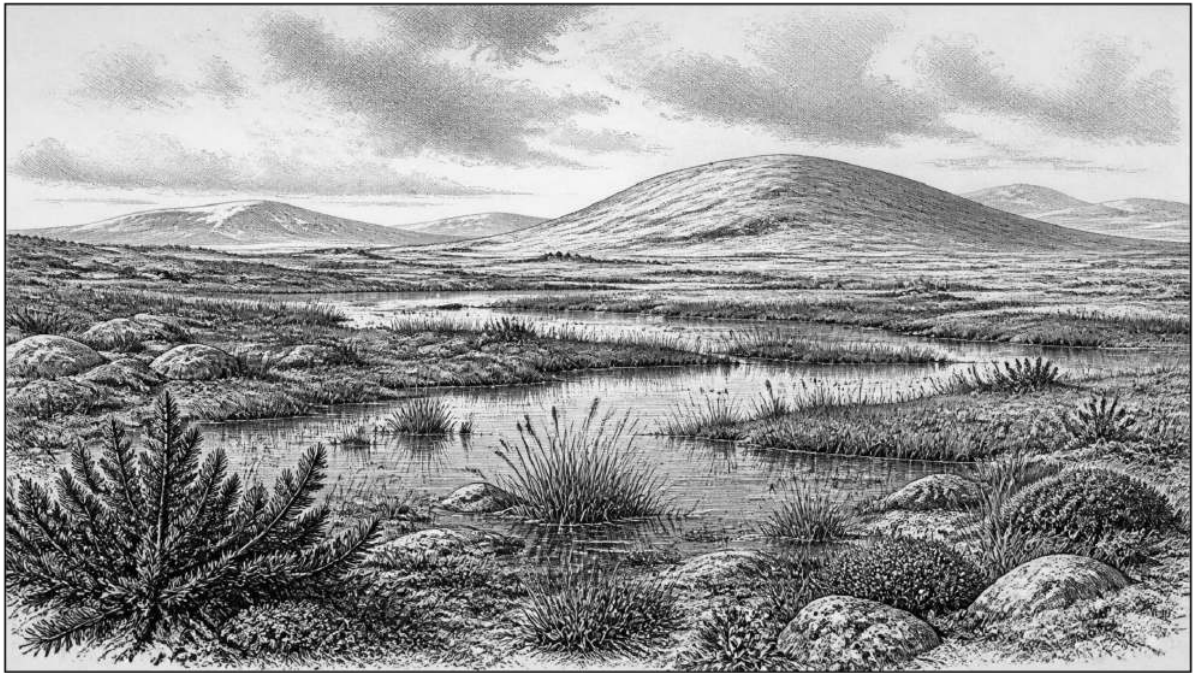
There was no Irish culture or learning in the historical sense that can be recovered for this horizon. No inscriptions, oral traditions or artefacts securely connect later peoples with the inhabitants of this Ice-Age environment. Nor can the later island be projected backwards: there were no counties, provinces, farms, churches, Gaelic-speaking communities or maritime polities. What can be recovered is more fundamental, if less personal: a fluctuating Pleistocene Ireland in which water gathered between episodes of glaciation, tundra vegetation occupied exposed ground, and a distinctive cold-stage fauna crossed or survived at Europe's Atlantic edge.

For 31,782 BCE, Derrynree is not the site of a known human drama. It is something rarer and more appropriate for the date: a buried environmental archive. Its silts and sands preserve evidence that parts of Ireland could be open, wet and biologically active during a long Ice-Age interval, before subsequent ice advance sealed the record. That conclusion is securely grounded in stratigraphy and palaeoenvironmental study. Beyond it, the story must remain deliberately provisional.

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31781 BCE

Birm-166 Beneath the Drumlin^[20]



“31,781 BCE” is a useful modern label, but it cannot describe a year in Ireland in the ordinary historical sense. No calendar, writing, named community or dated human event survives from this remote period. The number corresponds approximately to 33,730 years before AD 1950, the conventional reference point used for “BP” dating. Even that conversion should not be mistaken for precision: radiocarbon results require calibration, their uncertainty ranges can span centuries or millennia, and a sediment layer records an interval rather than a single day. What can responsibly be said is that this notional date falls in the later part of Marine Isotope Stage 3, within Ireland’s Midlandian cold stage and before the fullest expansion of the last British–Irish Ice Sheet.

The best Irish evidence relevant to this point comes not from houses, tools or graves, but from buried mud, plant remains, insect fragments, cave bones and the landforms left by later glaciers. It presents an Ireland that was cold, exposed and environmentally changeable, but not simply a featureless country sealed continuously beneath ice. The evidence is local and incomplete. Its importance lies precisely in showing how much can be recovered from small, unusual archives, while also marking the limits of what cannot be known.

A Date Range, Not a Moment

The principal anchor is a road-cut through a drumlin at Derryvree, near Maguiresbridge in County Fermanagh. Excavations in 1969 revealed organic freshwater silts and fine sands enclosed between two thick, distinct sheets of till: unsorted debris deposited by glacier ice. The sequence gives a clear relative order. An earlier glacier had laid down the lower till; a freshwater environment then developed; and a later

advance buried the deposits beneath another till. The organic horizon produced the conventional radiocarbon measurement Birm-166, 30,500 years BP, with a substantial uncertainty of minus 1,030 and plus 1,170 years.

Published discussion has converted that legacy measurement into a broad calibrated range of roughly 36,900–31,700 calendar years BP. The modern label 31,781 BCE lies within that range, but it does not identify the beginning, end or central point of the Derryvree deposit. Nor should the range be treated as a precise weather record for all Ireland. Calibration curves are refined as new evidence becomes available, while old samples and their contexts deserve continuing scrutiny. Nonetheless, the Derryvree sequence is strong evidence that north-central Ireland had ice-free freshwater ground during a cold interval broadly relevant to this date.

This distinction between measured evidence and interpretation matters. The evidence is the stratigraphy, the dated organic material and the biological remains. The interpretation is that they represent a periglacial tundra wetland during a pause between major glacial episodes. “Periglacial” means a landscape powerfully shaped by frost, seasonal freezing and cold-climate processes; it does not require an ice-front to have stood immediately beside the pool at every moment. The later ice cover preserved the fragile silts, but also means that the wider landscape that surrounded them has largely vanished.

Freshwater on Cold Open Ground

Derryvree was not a forest. Pollen, plant macrofossils, mosses and insects indicate open tundra or muskeg: wet, largely treeless terrain with shallow pools and waterlogged margins. Grasses and sedges formed much of the vegetation, accompanied by low shrubs and hardy herbs. Fossils include bogbean, an aquatic or wetland plant, and mountain avens, a plant now associated in Ireland with arctic-alpine conditions. Evidence for juniper, mosses and plant-rich wet ground further complicates any image of an entirely barren ice-age wilderness. There was freshwater, organic growth and a short but real growing season.

Such a landscape would have been visually unfamiliar beside modern Ireland’s enclosed fields, hedgerows and woodland. Trees were absent or extremely scarce locally, and the ground was likely broken by frost action, wet hollows, sedgy margins and seasonally unstable soils. Winters were severe; summer warmth was limited. Yet the preserved biological remains show that cold did not equal lifelessness. Plants and insects occupied niches around standing or slow-moving water, while the patchwork of dry ground and wetland could change with drainage, snowfall, temperature and the shifting proximity of ice.

The Derryvree deposit is particularly valuable because it records a real Irish place rather than a climate model alone. However, it cannot be enlarged without caution into a map of the whole island. Fermanagh’s interior basins, limestone geology and drainage differed from Atlantic coasts, uplands and the southern lowlands. Pollen can travel, sediments can be reworked, and a wetland favours the preservation of some organisms over others. It is safest to describe Derryvree as a well-attested local window onto a broader cold, open Irish environment, not as a complete portrait of every valley and shore.

Ice Sheet in Formation

This was before the Last Glacial Maximum, conventionally placed at about 26,500–19,000 years ago. Modern reconstructions of the British–Irish Ice Sheet show that its growth was neither instantaneous nor uniform. Research using radiocarbon dating, optically stimulated luminescence, cosmogenic exposure

dating, marine cores and glacial landforms suggests that substantial parts of Ireland remained ice-free until about 34,000 years ago, after which the ice sheet expanded greatly. By around 24,000 years ago, ice had reached the southern coast and the adjacent Celtic Sea shelf; later, it covered much of the island.

At approximately 33,730 calendar years BP, therefore, Ireland was entering a long transformation rather than experiencing a single island-wide event. The Derrynree evidence supports ice-free conditions in north-central Ireland during part of this transition. Elsewhere, the size and position of early ice masses are much less securely fixed. Reconstructions are strongest where dated sediments, offshore geomorphology and land-based evidence agree; they are less certain in areas where later ice eroded or buried older traces. It would be wrong to draw a sharp contemporary frontier between “ice-covered Ireland” and “ice-free Ireland” for this nominal year.

Sea level and coastlines were also different from those of today, but the detail most relevant to Ireland remains difficult to reconstruct. Lower global sea level exposed parts of the continental shelf, while ice, sea water and changes in the Earth’s crust affected regional shorelines in complex ways. Whether particular routes between Ireland, Britain and continental Europe were passable at any specific point in Marine Isotope Stage 3 cannot be inferred from Derrynree alone. The responsible conclusion is narrower: geography, ice extent and coastal configuration were changing over long timescales, shaping the potential movement of animals and, in principle, people.

Animals, Caves and Uncertain Associations

Caves in Cork and Waterford provide a second, different kind of evidence. Castlepook Cave near Doneraile, together with Foley and Shandon caves, has yielded remains of animals associated with Late Pleistocene Ireland, including reindeer, mammoth, giant deer, brown bear, wolf and spotted hyaena. These finds establish that a diverse large-mammal fauna reached Ireland during the broader MIS 3 interval. They also indicate that Ireland’s cold landscapes were part of wider ecological networks extending across north-west Europe, rather than an isolated biological world.

But cave assemblages must not be turned into a tidy scene set in 31,781 BCE. Many were excavated in the nineteenth and early twentieth centuries, when recording standards were uneven. Bones may have been moved by carnivores, water, digging or later disturbance; a bone’s age dates the animal’s death, not necessarily the deposition of every object beside it. Crucially, modern redating has found several Castlepook specimens to be 5,000–12,000 radiocarbon years older than earlier determinations suggested. The reassessment indicates that giant deer and spotted hyaena may have disappeared locally before about 40,000 cal BP.

Thus, mammoth, hyaena or giant deer cannot responsibly be asserted as inhabitants of the Derrynree wetland at this particular labelled year. Reindeer and other cold-adapted mammals are plausible components of the wider regional fauna, but the record does not provide an exact census. The caves offer long-range context; Derrynree gives the closer environmental setting. Together they reveal a land in which herbivores, predators, plants and freshwater systems responded to repeated climatic shifts, but they do not supply a photograph of a single season.

No Political History Yet

There is no evidence for a human population in Ireland at this date. Accordingly, there can be no responsible account of political affairs, diplomacy, warfare, settlements, trade, religion, learning or cultural institutions. There were no Irish kingdoms, ethnic communities or languages that archaeology can

identify here. It is also unsafe to infer temporary camps merely because large mammals were present: human occupation requires distinctive evidence such as securely contextualised tools, hearths, butchered remains or other traces of activity.

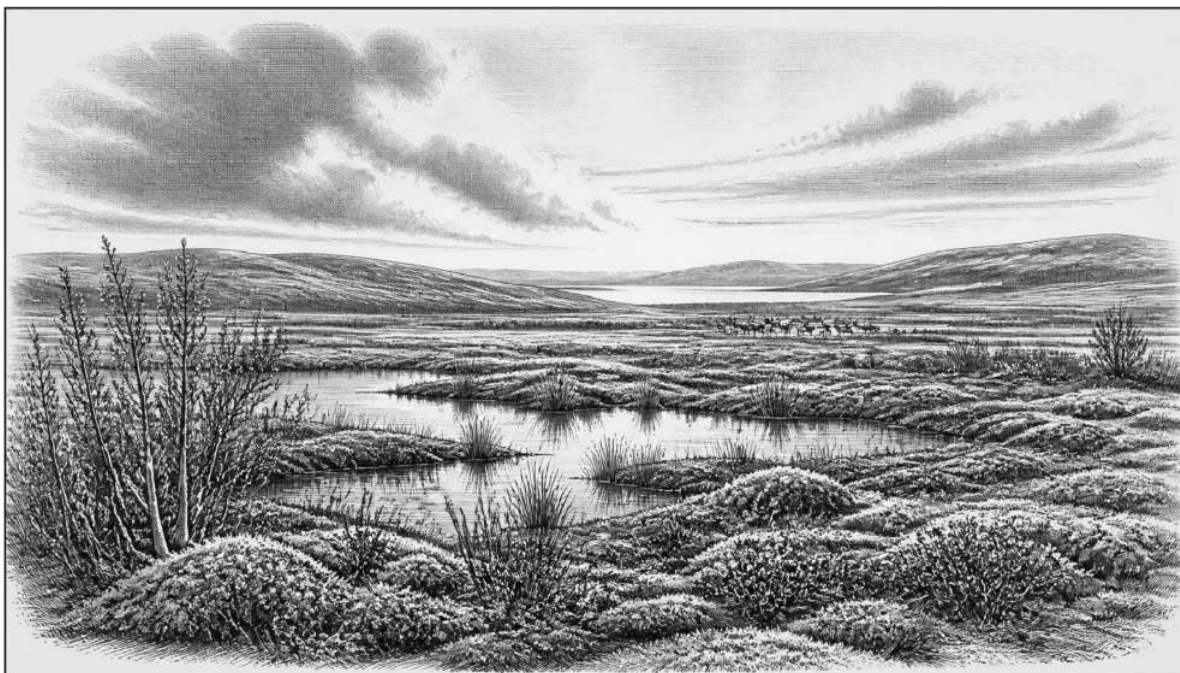
The earliest published evidence for human activity in Ireland is far later: cut marks on a brown-bear patella from Alice and Gwendoline Cave, County Clare, dated to about 12,810–12,590 cal BP. That discovery is important, but it is separated from 31,781 BCE by more than twenty thousand years. The National Museum of Ireland's caution about the Palaeolithic record remains apt in this earlier context. No confirmed artefact, human remain or occupation deposit currently demonstrates that people were in Ireland during the Derryvree interval.

That absence is itself historically significant, though it must be interpreted carefully. Subsequent glaciers repeatedly scoured, transported and buried landscapes, making evidence exceptionally hard to preserve and find. Absence of known evidence is not absolute proof that no person ever crossed this region. It does mean that a narrative of Irish hunters, camps, kinship or ritual in 31,781 BCE would be invention. The proper subject is the environmental prehistory that preceded later human settlement: cold freshwater pools beneath open tundra, animal movements through a changing north-west European world, and an ice sheet whose eventual growth would reshape almost every surviving trace.

Chapter 021 of 100

31780 BCE

The Fermanagh Tundra Ledger^[21]



The label “31,780 BCE” is useful for placing this entry in a long chronological sequence, but it must not be mistaken for a date in the historical sense. There is no Irish written record, named person, settlement, battle or calendrical event for this point. Nor can archaeology identify what happened in one particular year nearly 34,000 years ago. In conventional archaeological terms, the nominal date falls at about 33,730 calendar years before AD 1950, in the Late Pleistocene and broadly within Marine Isotope Stage 3 (MIS 3), an unstable middle phase of the last Ice Age. The responsible story is therefore one of dated ranges, sediments, animal bones and environmental change, rather than a year-by-year narrative of human affairs.

Dating a Deep Past

The difficulty begins with chronology. Radiocarbon measurements are expressed in radiocarbon years before present, where “present” conventionally means AD 1950; they are not direct calendar dates. Atmospheric carbon-14 varied through time, especially during the Ice Age, so measurements require calibration against curves assembled from independently dated records. At this antiquity the resulting calendar ranges can be broad. A deposit may overlap 31,780 BCE without showing that it formed during that exact notional year. It is better to say that evidence illuminates an interval around the date.

The closest important environmental archive is at Derryvree near Maguiresbridge, County Fermanagh. Roadworks in 1969 exposed organic freshwater silts and fine sands trapped between two layers of glacial till within a drumlin. This sequence establishes a relative order: ice deposited the lower till; an ice-free freshwater environment followed; later ice laid down the upper till. Organic material from the intervening deposits produced a conventional radiocarbon age of 30,500 years BP, with a substantial

published uncertainty. Modern calibration places the deposit within a wide span broadly overlapping the later part of MIS 3, approximately 36,900–31,700 calibrated years BP. The numbered date belongs within that large window, not at a securely identifiable point inside it.

Wet Ground in a Cold Land

Derryvree provides the clearest evidence for what at least one Irish locality could have looked like around this period. Plant remains, pollen and invertebrate evidence indicated open tundra vegetation and a periglacial climate: one governed by severe freezing and thawing, rather than by a permanent woodland cover. Mosses, sedges, grasses and hardy herbs grew around shallow freshwater pools, wet hollows and silty channels. Low shrubs may have occurred in favourable places. This was not a featureless sheet of snow or ice. Liquid water, seasonal plant growth and organic sediment accumulation show that the landscape had a productive, if short, growing season.

That local evidence should not be made to stand for every corner of the island. Derryvree was a particular freshwater basin in what is now Fermanagh, and pollen can include material carried long distances or reworked from older deposits. Nevertheless, the combined botanical and insect evidence strongly supports an open, treeless and wet landscape there. Similar inter-till deposits at Greenagho, near Belcoo in County Fermanagh, reinforce the larger conclusion that parts of north-central Ireland were ice-free during intervals before a later glacial advance overrode and preserved these fragile deposits.

The distinction matters. “Ice Age Ireland” was not a single unchanging condition. MIS 3 included marked shifts in temperature, moisture and ice extent. Speleothems in Crag Cave, County Kerry, formed episodically during parts of this wider period, indicating phases when water could percolate through the limestone and deposit calcite. Such cave records cannot tell us the precise weather at Derryvree in 31,780 BCE, but they independently demonstrate that the long cold stage contained environmental fluctuations. Ireland’s landscapes changed over generations and millennia, not according to a simple march from warmth to total ice cover.

Before the Greatest Ice Advance

The later Last Glacial Maximum is much better known than this earlier interval. Reconstructions of the British–Irish Ice Sheet indicate that the great expansion which covered most of Ireland belongs chiefly to a later phase, with maximum ice extent reached after the period considered here. At about 31,780 BCE, the island was approaching, rather than already enduring, the fullest expression of that later glaciation. Ice margins may have advanced and retreated regionally, while considerable areas remained open or periglacial. The eventual ice sheet would erode older land surfaces, redistribute sediment and conceal many potential archaeological sites beneath till or offshore deposits.

Sea level was lower than today because immense volumes of water were held in northern ice sheets. Ireland’s coastlines, river mouths and surrounding shelf therefore differed greatly from the modern map. But it would be overconfident to draw a precise shore, assert a particular land crossing, or assume continuous access from Britain or continental Europe in this exact period. Changing sea level, local ice, rivers and marshes created a shifting geography. The archaeological importance is plain: many of the landscapes on which animals or people might have travelled are now submerged, eroded or buried, while caves and protected sediment pockets have become disproportionately important archives.

The Animals of Castlepook

In north County Cork, Castlepook Cave near Doneraile—historically called Mammoth Cave—offers a contrasting window onto Ice Age Ireland. Early twentieth-century excavations recovered a large, mixed accumulation of animal remains. Later study and radiocarbon dating have shown that some of its fauna belongs to MIS 3. The assemblage includes woolly mammoth, reindeer, giant deer, brown bear, wolf, fox, Arctic fox, mountain hare, lemmings and spotted hyaena. Not every species necessarily occupied the valley at the same moment, and bones from different cave passages or deposits need not be contemporary. Yet together they demonstrate that southern Ireland was intermittently part of a wider north-west European world of cold-adapted large mammals, predators and scavengers.

This was an ecology of open ground, seasonal movement and risk. Reindeer were suited to sparse, cold environments; lemmings and Arctic fox point towards severe conditions; hyaenas and wolves indicate a landscape in which carcasses could be contested and transported. Mammoth and giant deer evoke large-bodied herbivores capable of ranging across broad terrain, though their presence at a cave does not prove that the cave lay beside a herd route. Caves are not neutral sample boxes. Carnivores may carry bones underground, animals may die in passages, water can shift remains, and nineteenth- and early twentieth-century excavators did not record contexts to modern standards. Castlepook is exceptionally rich evidence, but it is not a frozen scene preserved intact.

A Reindeer Bone and a Question

A reindeer femur from Castlepook has made the period especially significant for Irish prehistory. Zooarchaeologist Ruth Carden identified a deep mark on the bone as consistent with cutting or chopping by a sharp stone tool during carcass processing. County Cork heritage material has consequently presented the specimen as evidence for Palaeolithic hunters around c. 31,000 BC. If that interpretation is confirmed, it would push evidence for human activity in Ireland dramatically earlier than the securely established Late Upper Palaeolithic evidence from County Clare, dated to roughly 12,800–12,600 calibrated years BP.

The conclusion must remain carefully limited. The Castlepook femur comes from an old collection, not from a newly excavated occupation floor with a recorded hearth, stone-tool assemblage and associated food waste. A radiocarbon result dates the animal's death, not necessarily the instant a mark was made, the place where it was killed, or the duration of any human visit. Specialists must also distinguish intentional tool damage from carnivore modification, sediment abrasion and later handling. Current work at Castlepook is rightly examining surviving deposits and older museum collections with improved methods. The bone is a compelling lead and a potentially transformative object; it is not proof of a permanent population, a village, or continuous Irish settlement at this date.

What Cannot Yet Be Recovered

For political affairs, diplomacy and conflict, there is no direct evidence. No named communities, territories, leaders, alliances or battles can responsibly be assigned to Ireland around 31,780 BCE. If people did reach the island, the most restrained interpretation is a small and highly mobile party, perhaps exploiting animal resources during a brief visit. Comparisons with Upper Palaeolithic groups elsewhere in

north-west Europe suggest that such people could have possessed sophisticated knowledge of stone, animals, weather and seasonal routes. But comparison is not evidence that the same practices occurred in Ireland. No securely dated Irish stone tools from this interval have yet been published.

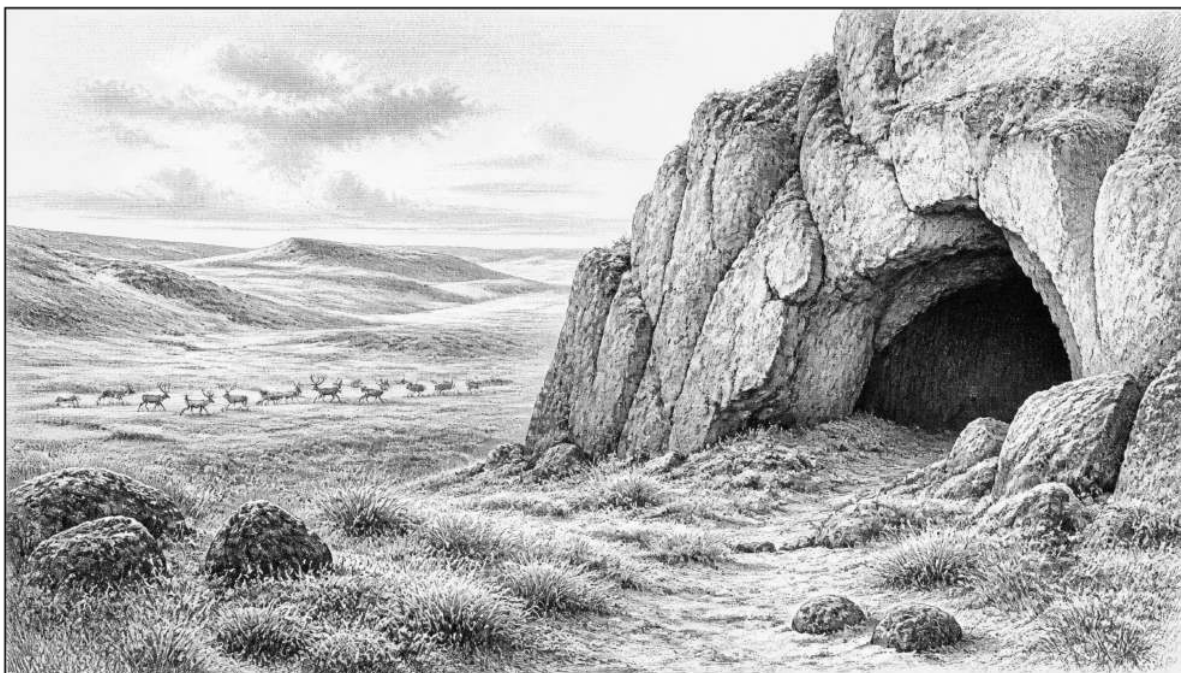
The same restraint applies to everyday life, religion, culture, learning, economy and trade. There is no basis for describing houses, clothing styles, ritual sites, exchange systems, kin groups or languages. There was certainly no agriculture, livestock husbandry, metalworking, writing or formal political institution evidenced on the island. The economy demonstrable from Irish material is ecological rather than human: plants drawing sustenance from wet ground, herbivores moving through open country, and predators and scavengers using carcasses and caves. The most important regional development was environmental instability itself, as ice-free tundra wetlands and animal habitats existed before later ice-sheet growth transformed the island.

Thus Ireland around this nominal year is best understood as a sparsely documented Ice Age landscape, not as an empty stage but as a living environment whose traces survive unevenly. Fermanagh's inter-till freshwater silts and Cork's cave bones show that cold open habitats supported varied life. Castlepook's marked reindeer bone raises the serious possibility of a human encounter with that world. Future excavation, refined dating and taphonomic analysis may alter the balance of evidence. For now, the historical integrity of the period lies in preserving the difference between what the deposits demonstrate and what they merely invite us to investigate.

Chapter 022 of 100

31779 BCE

Doneraile's Reindeer Scar^[22]



The label 31,779 BCE is useful for arranging a modern chronology, but it must not be mistaken for a date at which Irish prehistory can be resolved to a particular year, season or generation. It corresponds broadly to about 33,730 years before AD 1950, within Marine Isotope Stage 3 (MIS 3), an unstable middle phase of the last Ice Age. Radiocarbon ages from this depth of time require calibration and commonly translate into broad probability ranges; cave deposits also mix evidence accumulated over long intervals. No king, community, battle, treaty or ritual in Ireland can responsibly be assigned to this numbered year. What can be described is a changing Ice-Age world, and a small but potentially momentous body of evidence from County Cork.

A Date Within an Ice-Age Interval

MIS 3, conventionally spanning roughly 57,000 to 29,000 years ago, was not a single uniform climate. North Atlantic temperatures swung sharply between colder episodes and relatively milder interstadials. Ireland lay at the oceanward edge of north-west Europe, exposed to Atlantic weather systems and to shifts in the growth of the British–Irish Ice Sheet. The detailed reconstruction of that ice sheet is strongest from around 31,000 years ago onwards, and even then it presents alternative minimum, optimum and maximum ice limits where direct evidence is lacking. Around the notional date used here, therefore, it is safer to speak of advancing or intermittently expanded ice and of regional uncertainty than to draw a neat line between an icy north and an ice-free south.

The great ice-sheet maximum came later. Large-scale reconstruction indicates sustained growth of the British–Irish Ice Sheet between about 31,000 and 26,000 years ago, with ice spreading across Ireland, Britain and adjacent shelves; its maximum area was reached around 26,000 years ago. At roughly 33,700 calendar years ago, the process that would transform Irish landscapes was under way but had not reached

that later peak. Some ground may have been ice-covered or close to an ice margin, while other places supported cold-climate vegetation and grazing animals. The precise disposition of ice across the island at this moment remains contested because subsequent glaciers eroded, buried and rearranged older evidence.

Open Country, Not a Familiar Island

It would be misleading to imagine the wooded, wet and densely enclosed Ireland of later millennia. The available faunal and environmental evidence instead points towards a cold, largely open landscape. In favourable localities there may have been grasses, sedges, herbs and low shrubs, with scattered sheltered vegetation rather than continuous forest. Frost action, seasonal snow, strong winds, bare rock and thin soils would have shaped daily conditions. Rivers carried sediment across valleys whose later forms were extensively modified by ice; limestone caves offered cavities in which bones, sediment and water could gather.

Nor were coastlines necessarily those of the present. Global sea level was lower during the Ice Age, exposing parts of the continental shelf and enlarging the land areas around Ireland. Yet lower sea level did not automatically produce a simple, dry land bridge across every channel. The Irish Sea basin, changing ice margins, tides, estuaries and local relative sea level made movement through this north-western world geographically complex. For animals and, if people were present, for people as well, Ireland was part of a wider Atlantic-margin landscape whose routes cannot now be mapped with certainty from modern shorelines.

The Cave Fauna of Southern Ireland

The strongest direct evidence relevant to this era comes from cave collections, particularly Castlepook Cave near Doneraile in north County Cork. The cave is a maze of narrow limestone passages and chambers, excavated chiefly between 1904 and 1918. It has produced more than 2,000 surviving bones and is Ireland's richest known site for vertebrate remains dating towards the Last Glacial Maximum. Modern re-dating has been important because early radiocarbon measurements from Irish caves were made before improved pretreatment methods could better isolate surviving bone collagen. Several Castlepook results were revised substantially older, confirming that parts of its faunal archive belong in MIS 3.

The assemblage is striking. It includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena, with later cold-stage material including Arctic fox, wolf, Norwegian lemming and collared lemming. This is evidence for animals reaching Ireland across a long span of time, not a census of creatures standing together in one valley in 31,779 BCE. Caves are selective archives: carnivores can drag in prey, animals may die in chambers, water can redeposit bones, and nineteenth- and early twentieth-century excavation methods did not retain the contextual detail expected today. Brown bears may have used caves as dens; spotted hyaenas may have accumulated bones there. The existence of a mammoth or hyaena bone in a collection cannot by itself identify the habitat, season or human activity represented by any other bone.

Even so, the combined fauna supports an important conclusion. Southern Ireland was not simply an empty ice wilderness throughout the whole middle and late last glacial period. At intervals it contained, or was accessible to, substantial herbivores and carnivores associated with open cold environments. Reindeer are particularly significant because their seasonal movements and dependence on broad grazing

country make them plausible targets for mobile hunter-gatherers elsewhere in Upper Palaeolithic Europe. That is an ecological possibility, however, not proof that Irish reindeer formed a predictable annual resource for a resident human population.

The Mark on a Reindeer Femur

One Castlepook specimen has transformed the discussion. A fragment of reindeer femur in the old collection was directly dated to approximately 33,000 years ago and bears a deep incision interpreted by zooarchaeologist Ruth Carden as a cut made during carcass processing with a sharp stone implement. If the interpretation and association are sustained, it is the earliest known indication of human activity in Ireland by a very large margin: a hunter or hunters may have butchered reindeer in the Cork landscape during MIS 3.

The claim deserves attention precisely because its limits are clear. The bone dates the animal's death, not a named year and not necessarily the instant at which the incision was made. It comes from a historic cave collection rather than a newly excavated, securely stratified occupation surface. There is no associated hearth, stone-tool assemblage, dwelling, burial, repeated campsite or identifiable butcher's floor of comparable age. The incision is evidence requiring specialist taphonomic judgement, while the cave itself had been affected by water movement, carnivores and earlier excavation. The responsible conclusion is not that Ireland had a settled Palaeolithic population, but that Castlepook preserves a plausible and highly consequential trace of a human encounter with a reindeer.

People: What Can and Cannot Be Said

No human bones securely dated to this period have been found in Ireland, and no Irish artefact assemblage permits a cultural label. Modern humans were established elsewhere in north-west Europe by this broad era. Continental archaeologists use terms such as Aurignacian and Gravettian for changing Upper Palaeolithic traditions, but applying either label to Ireland would outrun the evidence. A single marked bone does not reveal language, kinship, dress, belief, artistic practice or the number of people involved.

If people did enter Ireland, the most defensible model is of small, mobile hunting and gathering parties operating within wider north-west European networks, rather than villages or permanent territorial polities. Their practical knowledge would have had to include finding fuel and shelter, processing animal carcasses, making and maintaining stone tools, reading animal movement and surviving sharp seasonal change. Such capacities are demonstrated at Upper Palaeolithic sites elsewhere; they are not yet demonstrated by an excavated settlement in Ireland. The distinction matters. Comparative archaeology can illuminate what was possible, but it cannot fill Castlepook's silence with invented households.

No Politics, No Recorded Religion

Political affairs, diplomacy and organised conflict leave no identifiable record for Ireland at this depth of time. There were no states, written institutions, named peoples or borders that historians can recover. Competition over carcasses, shelter or access to routes is conceivable among predators and humans alike, but specific conflict is unknowable. Likewise, nothing from Ireland around this date supports a claim for

shrines, ceremonial gatherings, graves, art or formal religious observance. Ice-Age Europeans elsewhere made ornaments, images and complex material culture, but none can be transferred automatically to the Irish record.

Economy, in the modern sense of farms, markets and exchange systems, is equally absent. The relevant economy was ecological: animals moving through accessible terrain, carnivores using caves, plants available in short growing seasons, and perhaps people converting a carcass into meat, marrow, hide, sinew and bone. There is no evidence for agriculture, livestock, metal, pottery, long-distance trade in goods or permanent built settlement. The reindeer femur's importance lies in its modesty. It may record an act of processing, not a society fully revealed.

A Fragile Archive

The landscape visible in Ireland today is partly an inheritance of the glaciations that followed: drumlins, sculpted valleys, rock basins, erratics and sediment blankets. Those same processes help explain why the earlier human record is so scant. Advancing ice could erode surface camps, bury deposits beneath till and alter drainage routes; later sea-level rise submerged former coastal plains. Caves and protected sediment pockets are therefore disproportionately important, but they also demand caution.

For 31,779 BCE, Ireland's history is not a chronicle of annual events. It is an evidence-based horizon of cold open country, large mammals, fluctuating ice and uncertain routes across a changing Atlantic margin. Castlepook Cave near Doneraile supplies the central clue: a dated reindeer femur with a mark plausibly made by a stone tool. It does not yield a calendar day, a personal name or a permanent settlement. It does, however, oblige Irish history to leave room for the possibility that people reached this far-western landscape long before the better documented post-glacial hunter-gatherer world.

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31778 BCE

Reindeer Beyond Doneraile^[23]



The label 31,778 BCE is a modern plotting device, not a date that anybody in prehistoric Ireland could have known, recorded or attached to an event. It corresponds approximately to 33,700 years before the conventional radiocarbon “present” of 1950, but that conversion must not imply calendar-year precision. For this depth of time, archaeologists work with calibrated ranges, stratigraphic relationships and broad climatic stages. Ireland at this horizon belongs to the later part of *Marine Isotope Stage 3* (MIS 3), a long and highly variable cold phase of the last Ice Age. The responsible subject is therefore not an invented annual occurrence, but the changing landscape, animals and exceptionally slight possible evidence of people in Ireland around 34,000–33,000 calibrated years ago.

A Cold Stage, Not a Single Winter

This was well before the Last Glacial Maximum, the period when the British–Irish Ice Sheet reached its greatest overall extent. A widely used chronological model places the main build-up of that ice sheet after roughly 35,000–32,000 years ago, with its maximum much later, broadly 27,000–21,000 years ago. Yet the approach to maximum glaciation was neither smooth nor simultaneous around every Irish coast and upland. Ice masses advanced and retreated, climates swung abruptly, and the extent of ice-free ground remains a research question in several regions. It is unsafe, therefore, to imagine all Ireland as either a continuous white ice cap or an unbroken habitable plain at 31,778 BCE.

Even the word “Ireland” needs qualification. Lower global sea levels exposed far more of the continental shelf than survives above water today, altering shorelines and possible routes between the Irish landmass, Britain and north-western Europe. But no simple map can demonstrate a dependable route

in one named year. Coasts, ice margins, rivers and seasonal terrain changed over long spans; any human movement would have depended on conditions then prevailing, not on the familiar geography of a modern island.

The wider setting was one of repeated climatic instability. Evidence from Crag Cave in south-west Ireland shows that stalagmites formed episodically through MIS 3. Because calcite growth in this shallow cave required liquid water and conditions generally above freezing, these deposits provide independent evidence for milder intervals amid the cold stage. They do not prove that every part of Ireland was mild at the same time, nor do they identify a particular season in 31,778 BCE. They do, however, caution against treating Ice Age Ireland as climatically uniform or permanently frozen.

Wet Tundra at Derryvree

The clearest Irish environmental archive relevant to this broad period lies far from Cork, at Derryvree near Maguiresbridge in County Fermanagh. Roadworks there exposed freshwater silts and fine sands trapped between two tills: in effect, a living interval preserved between episodes of glaciation. The organic deposits produced a radiocarbon determination of 30,500 years BP, with a large uncertainty; later calibration places the deposit broadly around 37,000–34,800 calibrated years BP. That range is older than the nominal year in this article, but it is close enough in the same cold-stage world to illuminate the kind of terrain that could occur during this unstable era.

The Derryvree evidence is emphatically not evidence for forest. Pollen, plant remains and insects indicate open, treeless vegetation: grasses, sedges, herbs, mosses and low shrubs, including juniper, around freshwater pools and waterlogged ground. The older literature described it as tundra or muskeg, meaning a wet, moss-rich landscape with open water and abundant decaying plant matter. Winters were severe and frost action important, but the deposits also show that shallow water, insects and vegetation persisted during productive seasons. This was a hard landscape, not a lifeless one.

Such evidence supports a careful reconstruction of everyday ecology rather than a picturesque certainty. In summer, sedge beds, stream edges and damp hollows could have concentrated forage for herbivores and prey for carnivores. In winter, snow, frozen soils, exposure and limited daylight would have constrained movement. The precise appearance of north Cork in 31,778 BCE cannot be lifted wholesale from Fermanagh, hundreds of kilometres away and represented by an older deposit. Nevertheless, Derryvree demonstrates that Ireland could contain ice-free, periglacial wetland environments during the broader Middle Midlandian cold phase.

Castlepook's Animal Archive

The most important southern Irish archive is Castlepook Cave, near Doneraile in County Cork. Formed in Carboniferous limestone, its narrow galleries and chambers accumulated more than 2,000 animal bones during a long stretch of the later Ice Age. The cave was not a neatly sealed time capsule: water disturbance, carnivore activity and early excavations complicate the original relationships between specimens. Nonetheless, it is Ireland's richest known vertebrate site for the period leading up to the Last Glacial Maximum. Individual bones from its collections have produced dates ranging from roughly 45,700 to 19,950 radiocarbon years BP.

The animal list evokes an Ireland very different from the later wooded island. Castlepook has yielded woolly mammoth, giant deer (*Megaloceros giganteus*), reindeer, brown bear and spotted hyaena, with wolf, Arctic fox, mountain hare and lemmings also represented in relevant cold-stage material. These

finds establish that large grazing and browsing mammals, predators and scavengers reached Ireland during parts of the Ice Age. They do *not* show that every species lived together at precisely the same moment, in one herd or beneath one cave roof. Nor should the traditional phrase “Irish elk” mislead: giant deer was a widespread Eurasian animal, not a species unique to Ireland.

A cave is especially difficult evidence to translate into a landscape scene. Carnivores may drag in limbs and skulls; animals can die in fissures; water can move bones; and excavators working a century ago did not have modern recording methods. Castlepook’s hyaena remains make a carnivore-den function particularly plausible for some deposits. A reindeer femur in a cave consequently does not demonstrate that reindeer were killed there, still less that people camped there. The cave preserves a valuable faunal archive, but its contents must be interpreted bone by bone and layer by layer.

The Marked Reindeer Bone

One specimen has made the period around this article’s nominal date unusually important. A reindeer femur from Castlepook has been reported by County Cork heritage material as bearing a deep mark interpreted by zooarchaeologist Ruth Carden as having been made with a sharp stone tool during butchery. The same publication dates the bone broadly to about 31,000 BCE; public accounts commonly describe it as about 33,000 years old. If the mark is correctly identified as a human cut or chop, and if its relationship to the bone is secure, it may be Ireland’s earliest known evidence of human activity by many millennia.

That “if” is indispensable. The bone derives from an old cave collection, rather than a modern excavation of an intact occupation floor. No securely associated hearth, stone-tool assemblage, dwelling, human burial or repeated living surface of this age has been published from Castlepook. The radiocarbon age dates the animal’s death, not automatically the making of the mark, the place of carcass processing or the duration of a possible human visit. Re-dating work has also demonstrated that some earlier Irish cave dates were substantially too young because of limitations in past bone-treatment methods. This is precisely why a potentially transformative find requires continuing taphonomic and archaeological scrutiny.

The strongest responsible conclusion is modest but significant: people may have reached and processed an animal in Ireland during MIS 3, perhaps as mobile Upper Palaeolithic hunters moving through a wider north-west European world. The evidence does not establish a permanent population, a named community, a migration route, or continuous occupation of the island. It cannot tell us how many people were present, whether they arrived once or repeatedly, or whether they survived locally through the worsening climate that followed.

No Kingdoms, No Recorded Wars

There were no known Irish kingdoms, chiefs, tribal names, laws, diplomatic agreements or political institutions at this horizon. There is likewise no evidence for organised warfare. Predation and competition for food or shelter were realities of Ice Age ecology, but a hyaena bone, a mammoth remain or a potentially cut-marked reindeer femur cannot be inflated into a story of raiding parties, territorial states or alliances. Political history begins here only with an honest acknowledgement that it cannot yet be recovered.

Religion, culture and learning demand the same restraint. Upper Palaeolithic people elsewhere in Europe made sophisticated stone and bone tools, ornaments, images and ritual objects. That wider comparison makes it reasonable to suppose that any people who entered Ireland possessed skills, social knowledge and symbolic lives. It does not licence the attribution of a particular art style, language, ceremony or belief to Ireland. No Irish cave art, figurine, engraved object, sanctuary or burial has been securely dated to around 31,778 BCE.

Nor is there evidence for an Irish economy in the later historical sense: no farming, livestock, fields, metalwork, markets or trade networks can be demonstrated. If the Castlepook mark proves human butchery, reindeer could have offered meat, fat, hide, sinew, marrow and bone. That is an inference from the animal and from known hunter-gatherer practices, not a documented Irish economic system. The same caution applies to settlement: a brief hunting visit, a seasonal passage or an isolated episode are possible; a village is not.

What This Date Can Bear

Around the modern date called 31,778 BCE, Ireland was part of a colder, more open and less geographically familiar north-west European world. Glacial advance was becoming increasingly consequential, while ice-free wetlands and grass-herb tundra existed at least in some intervals and regions. Mammoths, reindeer, giant deer, hyaenas and other animals are securely part of the country's broader MIS 3 record. The possibility that people also briefly entered this landscape rests largely on one remarkable but contextually difficult reindeer bone from Castlepook.

That uncertainty is not a deficiency to be filled with fiction. It is the historical fact of the period. Every recalibrated date, re-examined bone and undisturbed cave deposit has the potential to alter the picture. For now, the evidence permits an Ireland of cold wetlands, shifting ice margins and mobile Ice Age animals; it permits a carefully qualified possibility of Palaeolithic hunters near Doneraile; and it requires silence about the events, leaders and institutions that later historical writing normally expects.

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31777 BCE

Fermanagh's Juniper Muskeg^[24]



The label 31,777 BCE must not be mistaken for a date at which Ireland's history can be read year by year. No written record, settlement sequence or archaeological layer offers that degree of precision. It is a modern calendar conversion used to orient a much older and more uncertain chronology. The responsible setting is the later part of Marine Isotope Stage 3 (MIS 3), within the last glacial cycle. Radiocarbon measurements from relevant Irish deposits calibrate into broad probability ranges, not single calendar years; a revised calibration curve may alter those ranges again. The closest securely dated environmental sequence, at Derryvree near Maguiresbridge in County Fermanagh, has been placed broadly between about 36,900 and 31,700 calibrated years before present. That span overlaps the notional date, but it does not demonstrate that a particular event occurred in the year called 31,777 BCE.

A Landscape Read Through Sediment

The most illuminating Irish evidence comes not from monuments or villages, but from sediments trapped beneath later glacial deposits. At Derryvree, organic silts lay between two tills: deposits of debris left by moving ice. Before later ice covered the site, its waterlogged sediments preserved pollen, mosses and other biological traces. Their value lies in this sequence. They show that part of Fermanagh was ice-free long enough for freshwater and wet-ground environments to develop, before a subsequent phase of ice-sheet advance buried the evidence.

The fossil assemblage has been interpreted as a treeless tundra or muskeg landscape. Grasses and sedges dominate, accompanied by juniper and herbaceous plants, while the moss record points to persistently wet ground. 'Muskeg' is a useful descriptive term for this boggy, peaty tundra terrain, but it

should not conjure a uniform wilderness. Local conditions would have varied sharply between shallow pools, sedge beds, exposed mineral ground and better-drained patches. Seasonal thaw, frost action and waterlogging governed what could grow and where animals could move.

Nearby Greenagho, also in County Fermanagh, preserves an earlier but related window beneath till. Its lacustrine organic deposits have yielded a calibrated range of roughly 37,200–35,700 years before present. Greenagho and Derryvree should not be merged into one imaginary simultaneous landscape. They are separate sites, with separate age estimates and depositional histories. Together, however, they establish an important point: northern Ireland was not continuously entombed beneath the growing last ice sheet throughout this part of MIS 3. There were intervals in which open ground, freshwater habitats and cold-adapted plant communities persisted.

Cold, But Not Featureless

At the time represented by Derryvree's later deposits, Ireland was cold and largely without woodland in the sampled region. That does not mean it resembled a white, lifeless ice cap. The pollen and plant remains instead suggest an open, low-growing vegetation cover, sustained during a climatic phase colder and more seasonal than present. Insects from comparable northern Irish deposits strengthen that picture. Species with modern distributions in Arctic Fennoscandia indicate cold conditions; ecological reconstructions have proposed cool summers and very severe winters. Such numerical reconstructions are estimates derived from the ecological tolerances of fossil beetles, not thermometer readings taken in prehistoric Fermanagh.

Crag Cave in County Kerry provides a different sort of evidence for climatic instability. Calcite speleothems grow only where liquid water passes through cave rock, and uranium-thorium dates show that deposition occurred episodically during MIS 3. The record indicates repeated shifts between phases mild enough for water circulation and colder stadials in which growth stopped. It does not supply a weather report for any named year, nor does a Kerry cave prove that conditions in Fermanagh were identical. It does show that Ireland lay within a North Atlantic climate system capable of rapid, substantial oscillations. A seemingly stable ecological reconstruction may therefore represent only one interval in a fluctuating glacial world.

Animals and Cave Archives

South-western Ireland offers the period's most conspicuous vertebrate evidence. Castlepook Cave, also known as Mammoth Cave, near Doneraile in north County Cork has produced more than 2,000 animal bones from old excavations. The assemblage includes woolly mammoth, reindeer, giant deer, brown bear, wolf, fox, Arctic fox, lemmings and spotted hyaena. It confirms that Ireland supported, at various points during the Middle and Late Pleistocene, fauna now wholly absent from the island. The cave was an animal repository rather than a straightforward snapshot of one living community.

That qualification matters. The bones came from passages and chambers excavated principally in the early twentieth century, under standards far less exacting than present practice. Water movement, disturbance, the mixing of deposits and the long use of a cave by scavengers can bring remains of differing dates into apparent association. Modern re-dating has shown that some earlier determinations from southern Irish caves underestimated their age, while individual Castlepook specimens belong to a

long span. Accordingly, mammoth, hyaena and reindeer remains make a strong case for a cold-stage fauna in Ireland, but they cannot responsibly be assembled into a single herd seen crossing Cork on this particular calendrical date.

Spotted hyaena deserves particular notice because it reminds us that caves were active ecological places. Hyaenas could accumulate carcass parts, gnaw bones and use sheltered chambers as dens; wolves, bears and people, if present, would have encountered a dangerous, competitive landscape rather than an empty hunting preserve. Reindeer and giant deer indicate large herbivores capable of exploiting open vegetation, but their abundance, migration routes and seasonality in Ireland remain unknown. So too do the exact coastlines and crossing routes available at any one moment. Lower sea levels exposed more of the continental shelf, yet proximity to Britain or the European mainland should not be converted automatically into a proven land bridge or an established route of movement.

The Unsettled Human Question

There is no securely excavated dwelling, hearth, burial, stone-tool assemblage or occupation floor in Ireland that can be assigned to around 31,777 BCE. This absence rules out claims for an Irish polity, chiefdom, named people, language, formal religion, diplomacy or regular trade at this date. It also means that everyday life cannot be reconstructed as if a resident community were known. There are no houses from which to infer household size, no stores of food, no ornaments, no ritual deposits and no evidence for teaching or craft traditions on the island at this time.

One find makes the question more interesting but also more difficult. A reindeer femur from the historic Castlepook collection has been publicly reported as carrying a deep mark interpreted as possible cutting or chopping with a stone tool, and the animal has been described as dating to about 33,000 years ago. If microscopic study and secure association ultimately confirm that interpretation, it could indicate a brief Upper Palaeolithic episode of human handling or butchery in Ireland during the general period before the Last Glacial Maximum. It would be an exceptional discovery.

It is not, however, evidence for permanent settlement. The bone was not recovered from a modernly excavated living surface accompanied by a tool-kit and hearth. A radiocarbon result dates an animal's death within a probability range; it does not, by itself, date a person's visit, identify the location of butchery or establish a population's duration. Marks on bone must be differentiated from carnivore damage, trampling, sediment movement, excavation marks and later handling. The later, published butchered brown-bear patella from Alice and Gwendoline Cave in County Clare demonstrates that careful analysis can establish human activity in Ireland during the terminal Pleistocene, about twenty millennia after the period considered here. It cannot fill the much earlier evidential gap.

Approaching Glacial Transformation

The dominant long-term development was environmental: the expansion of the British-Irish Ice Sheet. Derryvree and Greenagho are important partly because their organic deposits were later overridden or covered by ice-related sediments. They record conditions before a major transformation of the land. Recent reconstructions differ in details, yet broadly indicate that much of the last Irish ice sheet expanded after the interval represented by these northern Irish organic deposits, reaching southern and offshore limits much later, particularly after about 26,000 calibrated years before present.

For people, had small mobile groups entered Ireland during favourable episodes, that impending expansion would have made any occupation precarious. For animals, it altered forage, shelter, watercourses and connections between regions. For the landscape, advancing ice later eroded, transported and buried deposits, helping explain why the archaeological record is so slight. Absence of evidence is never proof that no person entered Ireland, but in this case the known record supports caution rather than a crowded prehistoric narrative.

What Can Be Said Responsibly

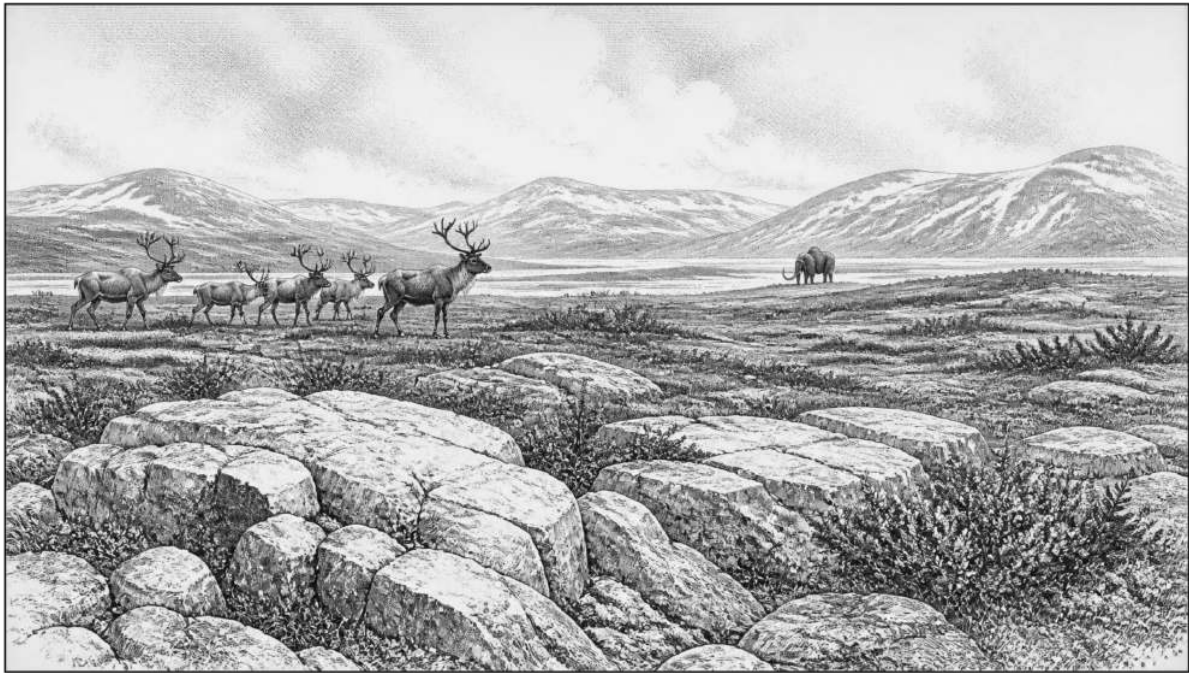
Ireland around the notional date of 31,777 BCE belonged to a cold, unstable North Atlantic world, not yet the familiar wooded island of later prehistory. In Fermanagh, the best directly relevant evidence points to open, wet, treeless ground with grasses, sedges, juniper and mosses during an ice-free interval. In Cork, cave deposits show that large mammals and formidable carnivores formed part of the wider Ice Age fauna, though not necessarily at the same moment or in the same place. The possibility of an early human visit remains a research question centred on a single remarkable bone, not a licence to invent a society.

That restraint is not a deficiency. It is the history appropriate to deep time: one recovered from silts, pollen, cave calcite, bones and calibrated ranges, with the limits of each source kept visible. The Ireland of this period has no kings, battles or treaties that scholarship can name. It has a marshy Fermanagh tundra, an evolving cave archive in Cork, and an ice sheet whose eventual growth would overwrite much of what came before.

Chapter 025 of 100

31776 BCE

Crag Cave's Living Calcite^[25]



Modern calendar-year precision is not available for prehistoric Ireland at this depth of time. “31,776 BCE” is a useful label in a modern sequence, roughly 33,725 years before AD 1950, but it does not identify a recorded year, season, generation, event or individual. The responsible historical frame is a broader one: later Marine Isotope Stage 3 (MIS 3), during the last Ice Age, when Ireland’s environments, ice margins and animal populations altered repeatedly. Radiocarbon results require calibration, carry statistical ranges and can date an animal’s death rather than every later event affecting its bone. The evidence therefore illuminates an interval around this date, not life on the island on a precisely known day.

A Changing Ice-Age Island

Ireland was not yet at the Last Glacial Maximum, the later phase when the British–Irish Ice Sheet reached its greatest overall extent, broadly between about 27,000 and 21,000 years ago. Around the horizon represented by 31,776 BCE, however, that ice complex was developing. Reviews of the ice-sheet record place its principal build-up after roughly 35,000–32,000 years ago, while emphasising that individual ice lobes advanced and retreated unevenly. It would be wrong, therefore, to picture either a wholly ice-covered Ireland or an entirely open island at this exact point. Conditions differed sharply between regions and changed over comparatively short geological intervals.

Southern Irish evidence is especially important because it demonstrates that parts of the island could support life before the glacial maximum. Cave deposits and animal remains show that mammals reached Ireland during MIS 3; revised radiocarbon work has pushed several southern Irish faunal records substantially further back than older measurements suggested. Meanwhile, a programme of uranium–thorium dating at Crag Cave near Castleisland, County Kerry, has found episodes of stalagmite growth

through MIS 3. Calcite can form only when water percolates through the cave system and temperatures above it allow liquid water to persist. Such growth does not prove mild weather, forests or human occupation outside the cave, but it is strong evidence against permanent ground-freezing and complete local ice cover during the episodes represented.

The climate was nevertheless cold, variable and exposed to North Atlantic instability. The Irish landscape was not the green, wooded island familiar today. Open vegetation, sparse scrub and herb-rich ground are more plausible for many accessible areas than dense woodland, while wind, frost, seasonal snow and freezing rivers shaped both terrain and opportunity. The precise character of the countryside at 31,776 BCE cannot be reconstructed from one site or one date. Yet the combined cave, fossil and glacial records make clear that Late Pleistocene Ireland contained habitable ecological pockets before the advance of the great ice sheet erased, buried or reworked much of the earlier evidence.

Routes Across a Different Geography

Sea level was lower than today because enormous quantities of water were held in global ice sheets. Coastlines, estuaries and the Irish Sea basin consequently had a very different form. That did not necessarily make movement simple. Whether there was a continuous, usable land connection between Ireland, Britain and continental Europe at every point in MIS 3 remains uncertain, and the answer depends on changing sea level, local crustal movement, ice extent and the practical meaning of a “bridge” in a cold landscape. It is safer to say that the barrier separating Ireland today was reduced or differently configured, allowing animals to arrive by routes that are now drowned, glaciated or both.

The faunal record proves that such connections, whether terrestrial or involving short crossings, mattered. Ireland was not an isolated biological world. Mammoth, reindeer, giant deer, wolf, brown bear, Arctic fox, mountain hare, lemmings and spotted hyaena are among the animals identified from Pleistocene contexts, particularly from the limestone caves of southern Ireland. Their presence should not be compressed into a single simultaneous menagerie: specimens may belong to different climatic pulses and deposits can have mixed histories. Still, the range reveals an island linked to wider north-west European ecological systems rather than cut off from them.

Castlepook’s Difficult Bone

The most arresting object for this period is a reindeer femur from Castlepook Cave near Doneraile, County Cork. Re-examined from an old collection, it has been reported as dating to about 33,000 years ago and bears a deep linear mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone implement during carcass processing. If that reading is ultimately sustained, it would be evidence that people handled a reindeer in Ireland far earlier than the securely established terminal-Pleistocene human trace at Alice and Gwendoline Cave in County Clare.

Its importance is matched by its limits. Castlepook was excavated by antiquarians and naturalists in the early twentieth century, before modern excavation standards. Caves are complicated archives: they can be dens for carnivores, traps for animals, places into which water moves sediment, and sites revisited across millennia. A date on the femur establishes the age of the animal’s remains, not an exact date for the incision, its location of death or the length of any human visit. There is no published, securely associated hearth, stone-tool assemblage, dwelling surface, burial or repeated occupation layer of this age from Ireland. The National Museum of Ireland’s long-standing public summary that no clear Palaeolithic human presence has yet been demonstrated reflects that evidential caution.

The proper conclusion is neither to dismiss the bone nor to turn it into a settled Ice-Age village. It is a potentially transformative trace of human butchery, preserved without the contextual security archaeologists would wish for. It may indicate a brief Upper Palaeolithic incursion by mobile people familiar with stone tools and large-animal carcasses. It cannot establish a resident population, an ancestral “first Irish” community, continuous occupation, or an Irish branch of any named continental archaeological culture. Further work at Castlepook, including renewed survey and excavation of undisturbed deposits, is valuable precisely because it may test these alternatives.

Animals, Predators and Seasonal Resources

Whatever the status of the marked femur, Castlepook’s fauna supplies a vivid, if time-averaged, picture of Ireland’s Ice-Age possibilities. Reindeer were suited to open, cold country and would have provided meat, fat, marrow, hide, sinew, antler and bone to any people able to exploit them. Giant deer, much larger than modern red deer, also occurred in Ireland during earlier Late Pleistocene phases. Mammoths signal the existence of extensive open habitats capable of sustaining huge herbivores, but their bones do not demonstrate that people hunted them. A carcass could have been scavenged by carnivores or humans, or its remains moved long after death.

Spotted hyaena is particularly revealing. Castlepook has produced the only well-known Irish evidence for this formidable social carnivore, and its presence helps explain why bone accumulations must be read critically. Hyaenas could drag prey into caves, gnaw bones and leave tooth damage that might resemble purposeful human action to an untrained observer. Wolves, foxes, bears and smaller mammals occupied overlapping food webs. The animals recorded in a cave may thus tell stories of hunting, scavenging, denning, accidental death and sediment movement rather than a single event.

For human visitors, if they were present, the economic logic would have been one of mobility and risk management rather than farming or trade in the later sense. There is no evidence for crops, domestic livestock, pottery, permanent houses, metalworking, markets or sea-borne exchange networks in Ireland at this time. People elsewhere in Upper Palaeolithic Europe possessed sophisticated stone technologies, clothing, shelters, fire use and social networks. Those wider comparisons make an Irish visit conceivable, but they cannot supply missing Irish artefacts. At Castlepook, the sole responsible inference is that a sharp stone edge may have been used on an animal bone; the wider toolkit remains unknown.

Society Beyond Recovery

Political affairs, diplomacy and formal conflict cannot be reconstructed for Ireland around this date. There are no rulers, territories, treaties, tribal names, languages, monuments or written traditions that can responsibly be assigned to it. Even “society” must be used carefully. A single possible butchery mark offers no secure count of people, no sex or age of those present, no family structure and no indication whether a visit lasted hours, days or a season. If people did reach Ireland, the most economical model is of small, highly mobile groups whose decisions were tied to weather, animal movements and safe routes, not of an organised polity.

The same restraint applies to religion, culture and learning. Human groups in Upper Palaeolithic Europe undoubtedly possessed knowledge, traditions and symbolic lives, but Ireland has yielded no contemporary art, ornaments, graves, ritual deposits or built ceremonial places that can be linked to 31,776 BCE. It would be unjustified to transfer cave art, burials or named traditions from France, Iberia or

Britain onto Irish ground. The limestone caves themselves are natural features, not evidence that they were sacred places. They become historically meaningful here because they preserve fragments of a vanished environment.

What the Record Can Sustain

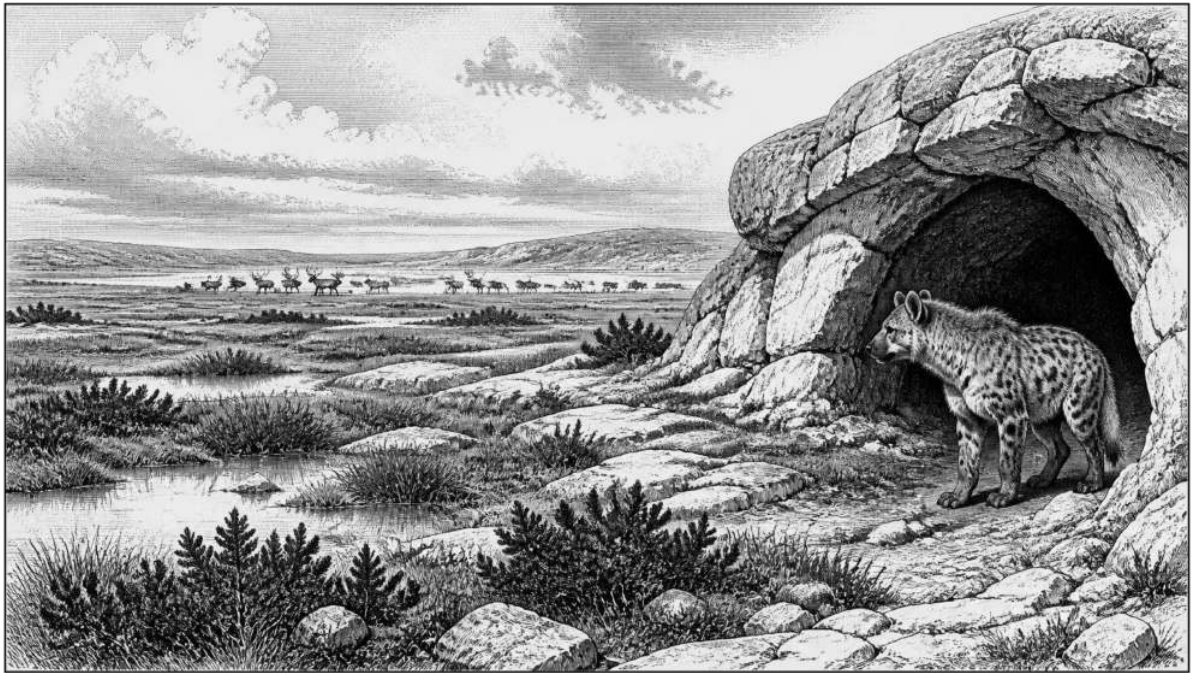
The central development around this broad date was environmental possibility under pressure: parts of Ireland supported Late Pleistocene mammals during an unstable cold phase, even as the British–Irish Ice Sheet was building towards its later maximum. Crag Cave’s dated calcite offers a climate-sensitive indication of episodes with liquid water in south-west Ireland. Castlepook offers a crucial mammal archive and a provocative, unresolved suggestion of human activity. Northern Irish deposits beneath later till sheets preserve another warning that landscapes and organic evidence could be sealed beneath advancing ice, then exposed only by modern quarrying and roadworks.

This is why the absence of ordinary archaeological sites is not proof that no person ever entered Ireland before the Last Glacial Maximum. Ice erosion, later sediment movement, drowned coasts and the small scale of any pioneering visits make discovery difficult. Conversely, absence cannot be converted into a population narrative. For 31,776 BCE, Ireland’s history is best told through its evidence: changing ice, exposed terrain, water moving through caves, migrating or resident animals, and one reindeer bone whose mark may yet alter the story. It is an age before political history, but not before history in the deeper archaeological sense.

Chapter 026 of 100

31775 BCE

Castlepook's Hyaena Country^[26]



31,775 BCE is not a date that can be attached to a recorded Irish event. No calendar, settlement sequence or historical witness allows us to identify a happening in that particular year. It is a modern chronological label, equivalent to roughly 33,700 calibrated years before AD 1950, and even that conversion should be treated as an approximation rather than an anniversary. Radiocarbon results must be calibrated, often produce ranges rather than single years, and date particular organic specimens rather than whole landscapes or human communities. The responsible subject is therefore Ireland during the later part of Marine Isotope Stage 3 (MIS 3), within the Late Pleistocene: a cold, unstable interval before the Last Glacial Maximum.

A Landscape Between Cold Phases

Around this nominal date, Ireland was not the wooded island familiar from later prehistory. The available evidence instead points to an exposed, largely treeless world, subject to sharp climatic swings. Conditions varied across time and region: “MIS 3” does not mean one uniform climate. Shorter milder episodes alternated with severe cold, and southern and northern Ireland need not have experienced precisely the same environment at the same moment. The strongest evidence comes not from villages or tools, but from pollen, beetles, plant remains, cave deposits, animal bone and calcite formations in caves.

In south-west Ireland, uranium-thorium dating of broken and reworked speleothems from Crag Cave, County Kerry, records repeated phases of calcite growth during the last glacial cycle. Because water must remain liquid for such formations to grow in this shallow cave system, the deposits provide evidence for episodes when mean annual temperatures were probably above freezing. Their timing broadly corresponds with Greenland interstadials: abrupt, temporary ameliorations within an otherwise cold Ice

Age. The result is important because it cautions against imagining Ireland as permanently frozen at 31,775 BCE. It was a climatically restless place, in which milder intervals could permit soil activity, surface water and limited vegetation before colder conditions returned.

Further north, buried organic deposits offer a different but complementary picture. At Derryvree in County Fermanagh, organic silts trapped between glacial tills preserve pollen, mosses and insect remains interpreted as evidence for open, treeless muskeg: wet, peat-forming ground with mosses, sedges, grasses, herbs, juniper and pools of standing water. Older conventional radiocarbon determinations placed the Derryvree deposits at about 30,500 radiocarbon years BP; calibration and later chronological work mean that they should not be converted mechanically into one exact BCE year. Nonetheless, they remain directly relevant evidence for the kind of cold, damp tundra environment that occurred in Ireland during MIS 3.

The North Cork Faunal Archive

The most evocative evidence for this period lies in north Cork, at Castlepook Cave near Doneraile, historically also called Mammoth Cave. Excavations there in the early twentieth century recovered a remarkable assemblage of Ice Age animal remains. Subsequent re-examination and improved dating have shown that some southern Irish cave fauna belongs much earlier than researchers once thought. Castlepook has yielded evidence of woolly mammoth, reindeer, giant deer, brown bear, wolf, fox, hare, lemmings and spotted hyaena. Not every species necessarily lived there simultaneously, and a cave accumulation is not a straightforward census of a landscape; bones may have been dragged in, scavenged, redeposited or excavated without modern stratigraphic recording. Even so, the assemblage demonstrates that Ireland could support a far richer cold-stage mammal community than its later historic fauna suggests.

Spotted hyaena gives the article its title, but not because a particular hyaena can be placed in 31,775 BCE. Rather, it represents the ecological character of the period. Hyaenas are predators and scavengers whose presence, alongside mammoth, reindeer and large deer, implies extensive open country capable of sustaining large herbivores and the carnivores that fed upon them. Caves may have served as dens, traps, shelters or natural sediment repositories. Tooth marks and bone breakage can result from carnivore feeding; water, frost and later disturbance can also alter remains. Archaeologists must therefore distinguish animal modification, geological damage and possible human work on one specimen at a time.

That caution matters especially at Castlepook because revised radiocarbon work has transformed the chronology. A 2020 study redated identified bones from Castlepook, Foley Cave and Shandon Cave using improved pretreatment methods. Several Castlepook results proved substantially older than earlier determinations, placing important elements of the fauna in MIS 3 and suggesting that giant deer and spotted hyaena had disappeared locally before the Last Glacial Maximum, around 40,000 calibrated years ago. This does not place every Castlepook bone in the same brief interval, but it makes the cave an indispensable archive for the changing animal life of Ice Age Ireland.

A Reindeer Bone and a Serious Question

The possibility of people in Ireland at this time rests principally on a single, contested but potentially momentous object: a reindeer femur from Castlepook Cave. Zooarchaeologist Ruth Carden identified a deep linear mark on the bone as consistent with cutting or chopping by a sharp stone implement during the processing of a fresh carcass. The specimen has been publicised as evidence that humans may have

handled reindeer in Ireland about 33,000 years ago. If that interpretation is sustained, it would extend the island's known human story dramatically earlier than the securely dated terminal Pleistocene evidence from County Clare, dating to about 12,810–12,590 calibrated BP.

But “may” is essential. The femur was recovered during antiquarian excavations rather than from a modernly excavated occupation floor. There is no securely associated hearth, stone-tool assemblage, dwelling, burial, repeated camp surface or dated food-preparation area of comparable age at Castlepook. A radiocarbon measurement on the bone dates the death of the reindeer, not automatically the instant of marking, the place where it was killed, or the duration of any visit. Nor does one modified bone demonstrate a settled population. Current fieldwork at Castlepook is explicitly seeking the independent evidence—charcoal, lithics, further modified bone and intact stratified deposits—that could test this interpretation.

The most defensible conclusion is consequently modest but significant: around the broader period represented by 31,775 BCE, Ireland may have been visited by Upper Palaeolithic hunter-gatherers, perhaps following or exploiting reindeer. A brief hunting or scavenging episode is conceivable; permanent settlement, population size, language, kinship, seasonal round and social organisation are unknown. It would be wrong to describe a “Cork tribe”, a camp at Castlepook, or a continuous Irish population on this evidence.

No Politics, No Diplomacy

There is no evidence for political institutions, named leaders, territorial states, diplomacy, warfare or organised religion in Ireland at this date. These are not merely missing details: the present record is too thin to justify inference. If people did reach the island, they would have belonged to small mobile hunter-gatherer groups within wider north-west European networks, but that is a general archaeological comparison, not a demonstrated fact about Castlepook. No human remains, ornaments, carvings, pigments, structures or ceremonial places of this age have been securely identified in Ireland.

Likewise, there is no basis for describing trade in the later sense. The relevant question is mobility. During lowered sea levels, coastlines and shallow seas differed greatly from those of today, though this does not prove an easy or continuous land bridge from Britain to Ireland. The geography of the Irish Sea, ice margins, rivers, exposed shelves and possible sea crossings changed through time. Any human arrival would have required movement through a difficult, shifting north-west European environment, but the route remains unproven.

Approaching a Changed Ireland

The wider trajectory was towards greater cold and the expansion of the British–Irish Ice Sheet. Modern reconstructions place the ice sheet's maximum extent later, broadly by about 27,000 years BP, with regional advances and retreats differing markedly. Thus 31,775 BCE belongs not to the maximum ice cover itself but to the preceding climatic and environmental transition. Landscapes then available to mammals—and perhaps occasional people—would later be overridden, eroded or buried by ice and glacial sediment. This helps explain why the archaeological record is so fragmentary.

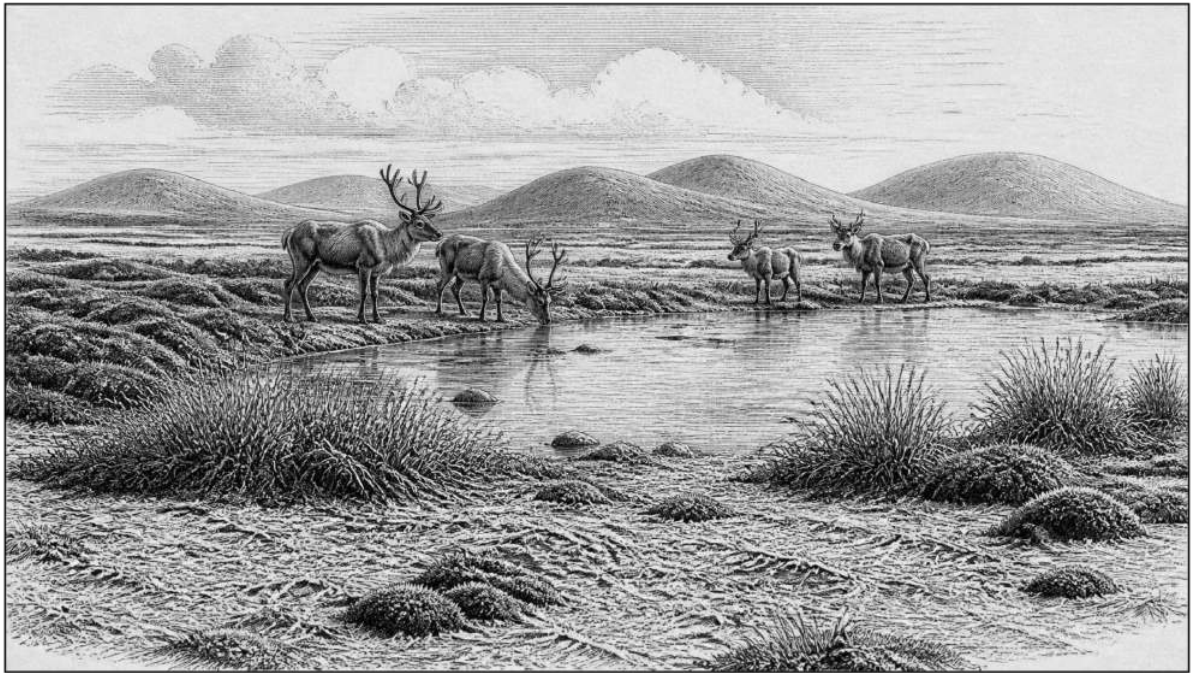
For Ireland, then, this nominal year is best understood through a small number of durable traces: calcite that formed when water flowed through Kerry limestone; silts, pollen and insects preserved beneath later tills in Fermanagh; and bones accumulated in Cork caves. Together they reveal an island of open ground, marshy hollows, cold-season hardship and large mammals. The marked reindeer femur

introduces the possibility of human action, but does not yet turn that possibility into a settled historical narrative. At 31,775 BCE, Ireland's story is still one of evidence patiently extracted from caves, sediments and bone.

Chapter 027 of 100

31774 BCE

Hollymount's Freshwater Bed ^[27]



31,774 BCE is not a year that can be recovered in the manner of a later historical date. No Irish chronicle, settlement sequence or securely dated human event identifies a moment within that calendar year. In modern chronological terms it falls roughly 33,700 calendar years before AD 1950, within the later part of Marine Isotope Stage 3 (MIS 3), a fluctuating cold phase of the last Ice Age. The responsible approach is therefore to describe a broad archaeological and environmental horizon, using calibrated ranges where they exist, rather than to invent an event, leader or community for a single year.

For Ireland, the most revealing evidence close to this horizon comes not from houses or tools but from sediments, pollen, mosses, insects, animal bones and the geology of advancing ice. These remains show an Irish landscape that was changing sharply, unevenly and regionally. It was a world before the Last Glacial Maximum, when the British–Irish Ice Sheet later expanded across most of the island and its surrounding shelf. Around this point, parts of Ireland still sustained tundra and wetland habitats, but the conditions that would bring extensive glaciation were gathering force.

Evidence Beneath the Drumlins

The key local archive is in south Fermanagh, near Maguiresbridge. Roadworks at Derryvree exposed freshwater silts and fine sands sealed between glacial deposits within a drumlin landscape. Such a sequence matters because the organic-rich sediments were laid down during an interval when this ground was not overridden by ice; later ice deposited till above them. A radiocarbon determination of about 30,500 years before present was obtained from the Derryvree material. Calibrated chronologies place the deposit broadly within about 36,900 to 31,700 calendar years before present, a range that encompasses the modern calendar label 31,774 BCE.

This does not mean that every layer at Derryvree formed in that precise year, or that the site gives a complete picture of Ireland. It does, however, provide unusually direct evidence for the sort of environment available in at least one northern Irish district during this phase. The deposits contained plant and animal remains characteristic of a cold, open, periglacial setting. Pollen was poorly preserved, but was chiefly herbaceous. Moss macrofossils were especially valuable, while insect evidence suggested wet ground with pools and productive vegetation. The reconstruction is of a marshy tundra or muskeg-like landscape rather than woodland, farmland or a bare, lifeless ice desert.

Cold Wetlands, Open Ground

In a landscape such as Derryvree's, water was fundamental. Fine sediments accumulated in quiet freshwater; sedges, mosses and low herbs could exploit damp margins; and shallow pools offered sheltered niches amid an otherwise exposed terrain. The climate was cold enough for periglacial processes—repeated freezing and thawing of ground outside permanent ice—to shape soils and slopes. Yet the preserved biology shows that plants grew and freshwater habitats functioned. This is important corrective to the popular image of Ice-Age Ireland as uniformly buried beneath an ice sheet throughout the period.

Nearby Greenagho, near Belcoo in County Fermanagh, preserves another interstadial deposit between tills, reinforcing the conclusion that northern Ireland experienced ice-free episodes during the Midlandian glaciation. Farther north, deposits at Aghnadarragh in County Antrim record similarly complicated alternations of ice advance, deglaciation and renewed glaciation. These sites should not be treated as a single synchronised national landscape. Together, however, they demonstrate that the ice sheet's history was not one simple, uninterrupted advance. Habitats opened, contracted and disappeared as climate, snowfall, ice flow and drainage altered.

The land surface was also geographically unlike modern Ireland. Global sea level was much lower than today because enormous quantities of water were stored in northern ice sheets. Exposed shelf areas and altered coastlines changed the setting of the Irish Sea and Atlantic margins. Lower seas did not necessarily create an easy, dry route for animals or people: local relative sea level depended upon ice loading, land movement, channels and the position of glaciers. It is safer to say that Ireland stood within a changing north-west European ice-and-shelf geography, not to imagine a fixed land bridge or a familiar modern coastline.

The Animals of the Irish Cold Stage

Southern cave assemblages provide the principal record of larger animals during broad MIS 3 intervals. Castlepook Cave near Doneraile in County Cork, and Shandon Cave near Dungarvan in County Waterford, have yielded remains attributed to reindeer, mammoth, giant deer, horse, brown bear, wolf, fox, Arctic fox, spotted hyaena and lemmings. These are not a photographic snapshot of a single living community. Cave deposits can accumulate over long periods, and bones may have been dragged in by carnivores, redeposited by water, disturbed during excavation or mixed with material of other ages.

That warning has gained force through modern radiocarbon re-dating. Improved pretreatment of bone samples has shown that several earlier dates from southern Irish caves were too young, shifting some fauna farther back into MIS 3. The revised evidence establishes that sizeable mammals reached Ireland before the Last Glacial Maximum, but it also makes simple species lists for one exact date unreliable. Mammoth or hyaena remains demonstrate the ecological possibilities of the wider period; they do not prove that every animal stood beside the Fermanagh pools in 31,774 BCE.

Nevertheless, the broad pattern is clear. Ireland could support animal communities adapted to open, cold landscapes with enough forage for large herbivores and enough prey or carrion for predators and scavengers. Reindeer are particularly compatible with open tundra conditions. Mammoths and giant deer indicate substantial, though seasonally variable, plant productivity. Wolves, hyaenas and bears point to a food web in which caves may have served as dens, refuges, traps for remains or places where carnivores accumulated bone. The cave record is therefore evidence for fauna and habitat, not simply a catalogue of dramatic extinct beasts.

People: A Possibility, Not a Population

The question of human presence requires even greater restraint. Ireland has no securely excavated Upper Palaeolithic house, hearth, stone-tool scatter, burial or repeated occupation sequence dated to this phase. The National Museum of Ireland accordingly continues to stress the lack of clear evidence for a Palaeolithic human population on the island. The first well-supported evidence for people comes vastly later, after the ice had retreated, with the Late Upper Palaeolithic cut-marked bear bone from Alice and Gwendoline Cave in County Clare, and with more substantial Mesolithic settlement after about 8000 BCE.

A reindeer femur from Castlepook has been reported as bearing a deep mark consistent with cutting or chopping by a sharp stone implement, and has been presented as evidence for human processing of reindeer around 33,000 BCE. If that interpretation is sustained, it would show a fleeting Upper Palaeolithic visit or episode of butchery in Ireland. It would not establish permanent settlement, a named people or a continuous Irish population. The specimen derives from an old cave collection rather than a modern excavation with a fully recorded context, so its date, modification and association demand continuing critical study.

Accordingly, there is no basis for describing political affairs, diplomacy, organised warfare, religious institutions, learning, trade networks or social ranks in Ireland at this time. Even if small groups briefly entered the island's changing landscape, their language, beliefs, family arrangements, routes and tools remain unknown. A passing hunting party would have made choices about food, shelter and risk, but those choices cannot responsibly be enlarged into a lost society. Silence in the record is not proof that nothing happened; it is a limit on what the evidence can carry.

Approaching a Transformed Ireland

The long-term significance of this period lies in its instability. The freshwater world recorded at Derrynree belonged to a window between glacial episodes. Later expansion of the British–Irish Ice Sheet would cover most of Ireland and the adjacent continental shelf, eroding, burying or reworking much older evidence. Modern reconstructions indicate that ice growth and maximum extent varied between sectors, with major advances beginning across the wider ice-sheet system from around 30,000 years ago and peak volume later, around 23,000 years ago. The precise timing in every Irish locality remains an active research question.

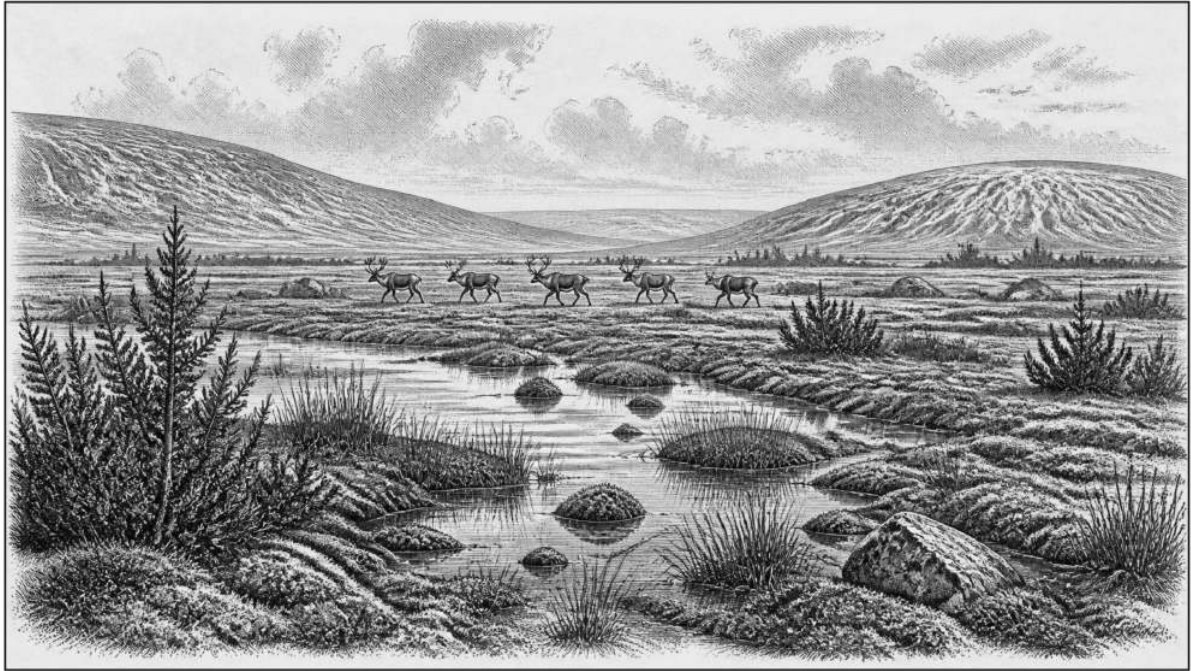
Thus Ireland around 31,774 BCE was neither a timeless frozen blank nor a recognisable prehistoric homeland. It was a cold, exposed and ecologically active land of wetlands, open vegetation and roaming animals, already vulnerable to profound glacial change. The Hollymount and Derrynree freshwater

evidence in Fermanagh, together with the cave fauna of the south, gives this otherwise anonymous point in deep time a material reality. It also teaches the central rule of Ice-Age history: calibrated ranges, depositional context and uncertainty are not obstacles to the story; they are the story.

Chapter 028 of 100

31773 BCE

Fermanagh Silts, Cork Fauna^[28]



The label 31,773 BCE is a modern device for arranging deep prehistory, not a date that can be recovered from an Irish record of events. No people in Ireland then kept a calendar of numbered years; no written source, annual sediment sequence or securely dated settlement permits a history of one particular year. In the archaeological convention of years before AD 1950, it lies roughly 33.7 millennia ago. The responsible frame is a broad one: the later part of the Late Pleistocene, within Marine Isotope Stage 3 (MIS 3), an unstable interval of the last Ice Age. Ireland can be illuminated here through cave bones, plant remains, insects, freshwater silts and glacial deposits. These sources reveal changing environments and animal communities; they do not provide a named people, polity or episode.

Dates, Deposits and Uncertainty

Deep-time dating needs careful language. Radiocarbon results are measured in radiocarbon years before present, with “present” conventionally fixed at AD 1950. They are not direct calendar dates, because atmospheric carbon-14 levels have varied. Scientists calibrate determinations against independently dated records, but at this antiquity the resulting calendar ranges can still extend across centuries or millennia and may change as methods improve. A date range therefore locates a sample within a broad environmental phase; it does not identify the day, season or year in which an animal died or a sediment layer formed.

The strongest Irish evidence relevant to this nominal date comes from Derryvree, near Maguiresbridge in County Fermanagh. Roadworks in 1969 exposed a remarkable succession in a drumlin: freshwater silts and fine sands containing organic material lay between two separate sheets of till, the sediment deposited by glacier ice. The order of those layers is more important than any attempt at false

precision. Ice had affected the locality; an ice-free freshwater environment later developed; then a subsequent advance or renewal of glacial conditions sealed the deposits beneath more till. Ireland was therefore not a single, permanently frozen block throughout the period.

The Derryvree organic horizon yielded a conventional radiocarbon age of 30,500 years BP, with a substantial published uncertainty of roughly a millennium. In calibrated discussion, the deposit has been placed broadly within about 36,900–31,700 calibrated years BP. That wide interval encompasses the modern chronological point represented by 31,773 BCE, but it cannot prove the precise conditions at Derryvree in that numbered year. It does, however, provide unusually direct evidence that north-central Ireland supported a cold, non-glacial wetland landscape during part of later MIS 3, before later ice covered it.

A Periglacial Freshwater World

The Derryvree remains describe a severe but living environment. Its flora and fauna indicate open tundra vegetation and a periglacial regime: ground shaped by frost, seasonal thaw and cold conditions at the edge of glaciated regions. Grasses, sedges, juniper, herbs and mosses point to treeless country rather than woodland. Plant macrofossils include bogbean and mountain avens, while the insects and aquatic evidence suggest wet, moss-rich ground with open pools and abundant plant matter. This was not necessarily a uniform plain. Watercourses, shallow basins, sheltered slopes and exposed ridges would have created different local habitats, especially across a landscape repeatedly altered by ice and meltwater.

It would be misleading to turn this evidence into a familiar modern scene. “Tundra” is a useful shorthand, but Derryvree was not an exact counterpart of any one present-day Arctic place. Temperature, precipitation, seasonality, snow cover and the proximity of ice changed over long periods. Nor can the Fermanagh deposit describe all of Ireland. It is a local archive, valuable precisely because later glacial deposits protected it, rather than a weather report for Cork, the western coast or every upland valley. Its chief historical importance is negative as well as positive: it rules out a simple story in which the whole island was continuously buried beneath ice at this horizon.

Castlepook’s Long Animal Record

For the animal world of southern Ireland, Castlepook Cave near Doneraile in north County Cork is the crucial site. Also known as Mammoth Cave, its limestone passages produced more than 2,000 bones during excavations in the early twentieth century. Modern reassessment and radiocarbon dating show that the cave accumulated remains over a very long span, rather than representing a single moment. Individual dates extend broadly from about 45,700 to 19,950 years BP. Its deposits are consequently a record of changing Ice-Age faunas, not a census of animals alive together in 31,773 BCE.

Even with that caution, Castlepook demonstrates that Ireland was connected to the wider north-west European world of cold-stage mammals during portions of MIS 3. The assemblage includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena; other material from the wider cave record includes lemmings, Arctic fox and wolf. The mixture is striking. Large grazing or browsing animals could use open country, while predators and scavengers followed prey or exploited carcasses. Spotted hyaena is particularly significant because the cave appears to have served, at least in part, as a carnivore repository. Bones in caves may have been carried in by animals, redistributed by water, disturbed by later digging or mixed across long intervals. Their presence proves that a species reached Ireland; it does not automatically show where it lived, died or hunted.

At the broad time represented here, reindeer are especially plausible inhabitants of suitable open habitats, but one must not assume annual mass migrations across the exact modern landscape. Animal populations expanded, contracted and shifted as vegetation, snow conditions, ice margins and access routes altered. Giant deer and hyaena, for example, belong to parts of the broader Castlepook sequence but need not have been contemporaries at every point within it. The evidence supports a dynamic fauna, not a frozen tableau.

The Reindeer Femur and People

A reindeer femur from Castlepook raises the most consequential question about human presence. It has been reported as bearing a deep linear mark interpreted by zooarchaeologist Ruth Carden as a cut or chopping trace made with a sharp stone tool during carcass processing. County Cork heritage material associates the bone with approximately 31,000 BC. If the mark is correctly identified and the dating and association are sustained, it may indicate that people handled a reindeer in Ireland during the Upper Palaeolithic, far earlier than the formerly accepted post-glacial evidence.

The distinction between evidence and interpretation is essential. The bone itself is evidence: an animal lived in the wider Irish landscape and its remains reached Castlepook. Its radiocarbon age dates the animal tissue, not a named hunter or the duration of a visit. The identification of the incision as a stone-tool mark is a specialist interpretation. The proposed behaviour—carcass processing—is a reasonable inference if that interpretation holds. It cannot establish whether people killed the reindeer, scavenged it, removed meat, hide, marrow or sinew, or worked the bone elsewhere before carnivores or natural processes brought it into the cave.

There is still no securely associated stone-tool assemblage, hearth, dwelling floor, burial, artwork, ornament or human bone from Ireland at this age. Recent excavation at Castlepook has sought surviving Pleistocene sediments, but its 2022 report recorded no cultural artefacts. Accordingly, permanent settlement, continuous occupation and a resident population remain unproven. The most defensible conclusion is modest but important: brief human incursions into Ireland around this wider period are possible, and the marked femur may preserve one such episode.

No Politics, No Proven Trade

There is no evidence for political affairs, diplomacy, organised warfare, named leaders or territorial institutions in Ireland at this depth of time. There is likewise no basis for reconstructing religion, formal ritual, language, teaching, art or collective identities. The absence is not a judgement about the capacities of any people who may have visited; it reflects the absence of securely identified human contexts. A single modified bone cannot be made to carry a social history.

Nor can an Irish economy or trade network be demonstrated. If people entered the island, they would have depended on mobility, practical knowledge of cold landscapes and the careful use of animal and plant resources, as hunter-gatherers elsewhere in Upper Palaeolithic Europe did. But that is comparative interpretation, not direct Irish proof. There is no Irish evidence from this horizon for camps, stores, exchange goods, boats, harbours or repeated seasonal routes. At most, the animal record indicates that terrestrial movement into and out of Ireland occurred at favourable times.

Coasts, Ice and Regional Change

Modern Ireland's coastline is a poor guide to this world. Global sea levels were lower during the glacial period, while local land levels and coastlines were affected by ice loading and later rebound. Exposed shelf, changing shorelines and narrowed or altered marine channels may have affected access, but lower sea level did not automatically create a simple, permanent land bridge. The geography of passages between Ireland and Britain changed over millennia, and the timing of routes available to people and animals remains a matter for palaeogeographical reconstruction rather than certainty.

The larger direction of change is clearer. MIS 3 was climatically volatile, with marked North Atlantic shifts, and the later Last Glacial Maximum brought a far more extensive British–Irish Ice Sheet. Evidence from Ireland and the surrounding seas indicates that major growth of ice lay ahead of this nominal date, with much of the island covered during the maximum several millennia later. Derryvree's silts and Castlepook's fauna therefore preserve a precarious interval: a land of open wet ground and cold-adapted animals before later ice reworked, buried or erased many traces.

What This Year Can Mean

The history of Ireland around 31,773 BCE is not a sequence of annual happenings. It is the history of evidence surviving against formidable odds. Fermanagh preserves freshwater life caught between glacial episodes. A Cork cave preserves bones from a changing community of mammals, and perhaps one trace of human action. Together they show that Ice-Age Ireland was neither empty scenery nor a settled prehistoric nation. It was an environmentally unstable northern landscape, intermittently accessible to animals and possibly to small groups of people, whose stories are almost wholly lost because the surviving record is ecological rather than historical.

Chapter 029 of 100

31772 BCE

Awbeg Reindeer Signal^[29]



“31,772 BCE” is a modern chronological label, not a recoverable year in Ireland’s Ice-Age record. There are no written records, settlements, human burials or artefact sequences that can be assigned to a particular twelve-month interval so far back. In calendar terms, the label falls roughly 33,700 years before AD 1950, within the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the Last Glacial Period. The responsible history of Ireland at this point must therefore use calibrated ranges, sediment sequences and animal remains, while distinguishing firmly between what those materials demonstrate and what they merely suggest.

A Date Within Ranges

Radiocarbon years are not the same as calendar years. The amount of radioactive carbon in the atmosphere has varied through time, so a radiocarbon measurement must be calibrated against independently dated records. At c. 34,000 calendar years ago the resulting spans can be broad, and refinement of dating methods has altered the chronology of Irish cave faunas more than once. A numbered BCE year can be useful for arranging an archive, but it should not imply a precision that the evidence cannot supply.

The best environmental range that includes this nominal date comes from Derryvree near Maguiresbridge, County Fermanagh. Organic-rich freshwater silts there lie between two deposits of glacial till. Their radiocarbon result has been calibrated to approximately 36,900–31,700 calendar years before present. That range includes the point represented by 31,772 BCE, but does not prove that every plant, insect or sediment particle at Derryvree formed in that particular year. At nearby Greenagho,

organic material beneath later till has produced an older calibrated range of roughly 37,200–35,700 calendar years before present. Together, the sites show that parts of northern Ireland retained non-glacial environments during portions of MIS 3 before later ice covered or disturbed them.

Not Yet the Ice-Sheet Maximum

Ireland was already in an Ice Age, but it was not yet at the Last Glacial Maximum. Recent reconstructions of the British–Irish Ice Sheet indicate a major phase of growth from about 31,000 to 26,000 years ago, followed by maximum ice volume around 23,000 years ago. Onshore and offshore evidence also indicates that the expansion of ice across Ireland was uneven: some areas remained ice-free longer than others, while glaciers advanced across other districts and continental shelves.

For around 31,772 BCE, then, it is misleading to imagine either a green modern island or a single, motionless blanket of ice. The available evidence supports a changing mosaic of cold environments, with local ice margins, open ground, wetlands, rivers and exposed rock. The later advance of the ice sheet is itself one reason the record is so thin. Ice eroded old land surfaces, reworked deposits and covered others beneath till. Acid soils further reduce the survival of bone and organic materials. Caves and protected sediment pockets are disproportionately important because they preserved fragments that most of the landscape did not.

Sea level was lower than today because vast quantities of water were held in northern ice sheets, but low sea level should not automatically be translated into a simple land bridge from Ireland to Britain or continental Europe. The changing Irish Sea basin, ice cover, local uplift and relative sea level make the routes available to animals and people difficult to reconstruct. Irish Pleistocene mammals prove that some dispersal occurred over long periods; they do not identify a particular crossing route, season or population movement at this date.

Fermanagh's Cold Wetlands

Derryvree provides the clearest glimpse of the kind of local setting that can be responsibly connected to this broad time. Plant macrofossils include freshwater mosses and sedges, while the insect fauna has been interpreted as one of cold northern character. Earlier syntheses described the landscape as treeless muskeg: wet, peaty ground broken by shallow water, moss and sedge communities, and subject to severe frost and marked seasonality. This was not necessarily a uniform scene across Ireland. It was a particular lowland record, preserved beneath later glacier-laid sediments.

The wider implication is important. Ireland contained habitats capable of sustaining cold-adapted plants and animals during intervals before the maximum glaciation. Open, herb-rich ground may have existed in suitable areas, but the evidence does not permit a detailed national vegetation map for the nominal year. Nor should pollen, beetles and mosses be made to carry a human story that they do not contain. Derryvree is evidence for environment and climate, not for a camp beside its waters.

Animals at Castlepook

The most significant southern Irish archive is Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork, above the Awbeg Valley. It is Ireland's richest known cave assemblage for vertebrate life in the period leading towards the Last Glacial Maximum. Excavations in the early

twentieth century recovered a remarkable collection; later research has reassessed both the individual bones and the difficult history of their deposition. Water movement, carnivores, excavation methods and disturbance mean that the cave is a time-averaged archive rather than a sealed snapshot.

Its fauna includes remains attributed to reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. These species make clear that Ireland's Pleistocene animal world was once far richer, and more cold-adapted, than the island's later historic fauna. Yet they must not be assembled into an invented herd at 31,772 BCE. Improved radiocarbon dating has shown that some Castlepook specimens are substantially older than earlier dates suggested. Research indicates, for example, that giant deer and spotted hyaena may have disappeared locally around 40,000 calibrated years ago, well before the date considered here. Species lists establish presence across broad episodes, not simultaneous companionship.

Reindeer are especially relevant. Their grazing ecology is compatible with open, cold landscapes, and Castlepook preserves a reindeer femur that has become central to discussion of Ireland's earliest possible human activity. The bone is an animal remain with a date in the broad period represented by this article; it is not a named historical event. Nevertheless, its surface carries a deep linear modification that zooarchaeologist Ruth Carden has interpreted as a cut or chopping mark made with a sharp stone edge while the carcass was fresh.

The Meaning of One Mark

If that interpretation is upheld, the implication is considerable but limited: one or more people may have processed a reindeer in Ireland during the Upper Palaeolithic, perhaps taking meat, hide, sinew or marrow. It would show practical contact with the Irish landscape, not the foundation of a settled community. The mark does not establish whether people killed the animal or encountered it after death; whether they came once or repeatedly; where they came from; or whether the bone entered the cave immediately after processing.

The qualifications matter because Castlepook's early collections lack the full stratigraphic recording expected of a modern excavation. No securely associated hearth, stone-tool assemblage, dwelling surface, grave, art or human bone of this age has yet been published from Ireland. The National Museum of Ireland accordingly still describes clear evidence for Palaeolithic human presence on the island as absent. That caution is not a dismissal of the femur. It is a distinction between a promising, specialist interpretation of a single modified bone and the much stronger evidence required to demonstrate enduring occupation.

Recent excavations at Castlepook have sought undisturbed, stratified deposits in areas including Elephant Hall and Hyæna Land. Their value lies precisely in the possibility that future micromorphology, dating and faunal analysis may connect bones to securely recorded sediments. Until those results are fully available, the reindeer femur should be treated as evidence of possible human visitation, not as licence to populate Ireland with a known Palaeolithic society.

No Politics, No Proven Settlements

Political affairs, diplomacy and organised conflict cannot be recovered for Ireland around this date. There were no kingdoms, tribes, leaders, boundaries or alliances that archaeology can name. Nor is there evidence for farming, stock-keeping, pottery, metalworking, trade networks, permanent houses,

monuments, ritual sites or formal learning. It would be an error to project the institutions of later prehistoric or historic Ireland backwards into this landscape.

Culture is similarly elusive. If people did reach Ireland, they would have belonged to wider Upper Palaeolithic worlds known elsewhere in Europe, in which stone technology, mobile hunting and sophisticated symbolic practices existed. But no Irish object of c. 31,772 BCE can securely demonstrate such practices here. The most defensible economic inference is correspondingly narrow: the possible cutting of a reindeer limb suggests the use of animal resources. It cannot prove a local hunting economy, an annual migration route, food-sharing customs, religious beliefs or exchange.

An Interrupted Human Possibility

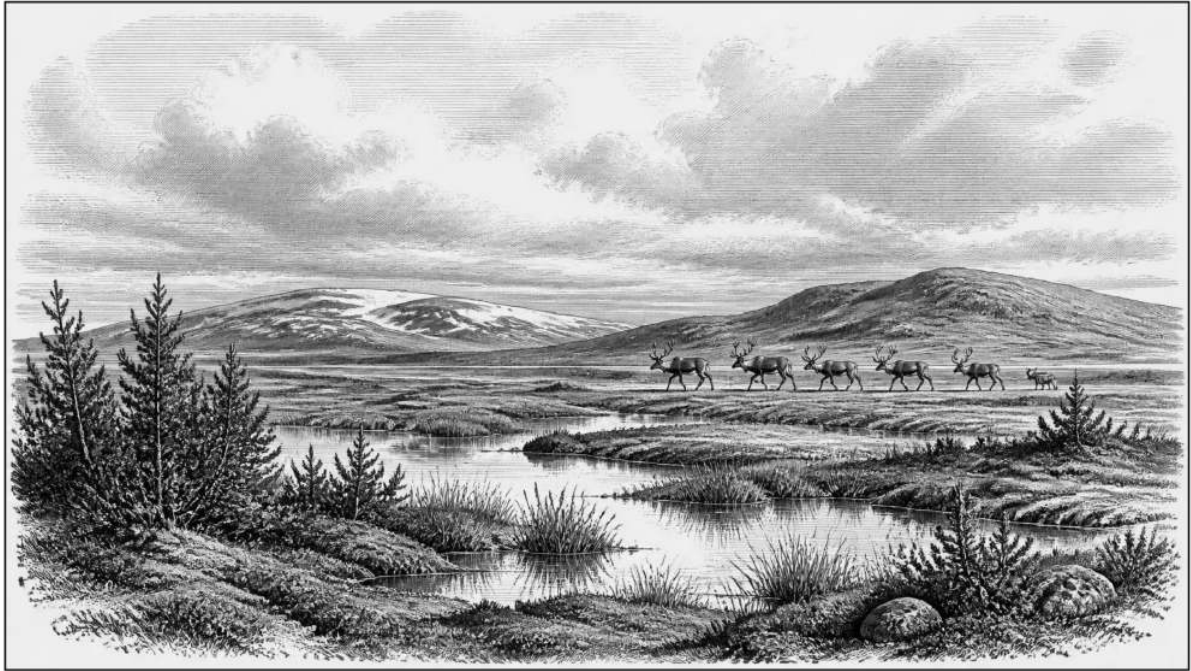
The period's greatest historical importance lies in possibility rather than continuity. Ireland was not an empty abstraction beyond history: its wetlands, caves and open cold-country habitats supported living communities of plants and animals, while its position at Europe's north-western edge made access difficult and episodic. If the Castlepook incision is anthropogenic, people briefly entered that world. Later ice-sheet growth then transformed much of the island and likely erased or buried much evidence of any such visits.

For 31,772 BCE, therefore, the evidence supports a cautious picture: a cold and changing Ireland before the glacial maximum; freshwater environments in Fermanagh within a broad calibrated range; a notable Pleistocene fauna documented especially in north Cork; and one reindeer bone that may register human butchery. It does not support an exact annual narrative, a permanent population or a first Irish society. The Awbeg reindeer signal is powerful precisely because it is so slight: a fragmentary trace, preserved against the odds, asking future research to decide how far Ireland's human story truly reaches into the Ice Age.

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31771 BCE

Birm-166, Reindeer, and Ice ^[30]



The modern label “31,771 BCE” cannot identify an event in Ireland with anything like calendar-year precision. No written calendar existed, and the scientific evidence is dated in ranges rather than years. In archaeological terms, this notional point falls about 33,720 years before AD 1950, within the Late Pleistocene and Marine Isotope Stage 3 (MIS 3), a long, unstable phase of the last Ice Age. The responsible history of Ireland at this moment is therefore not a chronicle of rulers, battles or settlements. It is a reconstruction from buried wetland sediments, cave bones, mineral deposits and the changing margins of ice.

The strongest chronological anchor relevant to this point is not a human camp but a radiocarbon determination, Birm-166, from organic silts at Derryvree near Maguiresbridge in County Fermanagh. The original result of $30,500 \pm 1,100$ radiocarbon years BP calibrates broadly to about 36,900–31,700 calendar years BP. “31,771 BCE” lies at the younger end of that wide calibrated interval. This does not mean that the Derryvree mud was formed in that particular year, or even that conditions stayed constant throughout the range. It means that a living, ice-free freshwater environment existed there during part of the wider interval.

A Landscape Between Ice Advances

Ireland was not yet the familiar island of later prehistory. Sea level was substantially lower because so much water was locked in northern ice sheets, exposing extensive parts of the continental shelf. Yet lowered seas did not automatically provide an easy, continuous land bridge from Ireland to Britain or continental Europe. Glaciers, icy seas, river systems and shifting coastlines mattered as much as distance. Any movement by animals or people depended on the conditions of a particular season and route, not on a simple map of dry land.

MIS 3 was marked by abrupt climatic oscillations across the North Atlantic world. During relatively milder episodes, parts of Ireland supported vegetation, freshwater pools and animal populations; during colder episodes, ice expanded or conditions became increasingly severe. The maximum expansion of the last British-Irish Ice Sheet came later, principally during the global Last Glacial Maximum, conventionally dated to about 26,500–19,000 years ago. At around 31,771 BCE, Ireland was approaching rather than living within that fullest late-glacial ice cover.

This distinction is important. It would be misleading to picture the entire island as a single, unbroken white wilderness, but equally wrong to imagine modern green fields or woodland. Evidence from places such as Derryvree, Greenagho, Hollymount and Aghnadarragh shows that the survival of organic deposits was highly local and that conditions varied through time. Some regions may have been under ice, others affected by periglacial cold, while sheltered lowlands or basins preserved water and plant remains. Later glacier movement also eroded enormous amounts of evidence, leaving a fragmentary archive.

Derryvree's Cold Wetland

At Derryvree, organic-rich silt and fine sand were trapped between two substantial sheets of glacial till in a road cutting through a drumlin. That stratigraphic position is the key fact: the wetland developed after one phase of glaciation and before a later ice advance buried it. Pollen, plant macrofossils, mosses and insect remains indicate a cold, open and largely treeless environment. Grasses, sedges, juniper and herbaceous plants were important; a fossil seed of bogbean points to freshwater conditions. Insect evidence suggests mossy ground, plant-rich pools and open water rather than a sterile frozen surface.

The term “muskeg” has often been used for this setting: wet, mossy, sedge-rich ground with shallow pools and accumulating organic matter. It evokes a landscape that could be biologically productive in summer but harsh in winter, with strong seasonal contrasts. Derryvree is not a complete portrait of all Ireland. It is a narrowly preserved local record. Nevertheless, it decisively demonstrates that at least part of the north-central island was not continuously smothered by ice throughout the relevant part of MIS 3.

That evidence also sets limits on confident storytelling. No hearth, dwelling, human footprint, stone tool workshop or grave has been securely excavated from Derryvree for this period. The silts illuminate weather, water and vegetation, not social organisation. They allow us to say that freshwater habitats and plant communities existed; they cannot tell us whether people watched the pools, travelled through the area, or named the land.

Cork Caves and Open-Country Animals

Far to the south, limestone caves around Doneraile in north County Cork preserve another part of the picture. Castlepook Cave produced a remarkable assemblage of Late Pleistocene animal bones during antiquarian excavations. Modern re-evaluation and improved radiocarbon procedures have shown that elements of the assemblage are older than once thought and belong within MIS 3. The fauna associated with the cave includes reindeer, woolly mammoth, giant deer, horse, brown bear, wolf, foxes, mountain hare, collared lemming and spotted hyaena.

These animals should not be treated as a single herd seen on one day. Cave collections can mix material accumulated at different times, and carnivores, natural deaths, water movement, excavation methods and later curatorial history all affect what survives. Even so, the species establish an unfamiliar

Irish ecological world. Reindeer and lemmings indicate cold, open habitats; mammoth, horse and giant deer suggest grass- and herb-rich country capable of sustaining large herbivores; wolves and hyaenas were predators or scavengers within that food web.

Spotted hyaena is especially revealing. Now associated in popular imagination with African savannas, it ranged across Pleistocene Europe and could live in cold, seasonal environments. Caves may have served as dens, refuges or places where bones accumulated after scavenging. Castlepook should therefore be understood first as a complicated palaeontological archive, not automatically as a human hunting station. Its animal remains demonstrate that Ireland formed part of a wider north-west European ecological zone, even if the routes between its different regions changed repeatedly.

The Reindeer Femur Question

A reindeer hind-leg bone from Castlepook has made this period unusually significant for Irish archaeology. The specimen bears a deep linear modification which zooarchaeologist Ruth Carden has interpreted as a mark made by a sharp stone tool during carcass processing. Public heritage material in County Cork has placed the bone at about 31,000 BCE, and the claim has been widely presented as evidence that people were active in Ireland roughly 33,000 years ago.

The interpretation deserves attention, but also care. If the mark was made by a tool on fresh bone, it is potentially Ireland's earliest evidence for human activity by more than twenty millennia. It would indicate a brief Upper Palaeolithic presence or incursion during MIS 3, rather than the later and much better evidenced Mesolithic colonisation. Yet the bone's radiocarbon age dates the animal's death, not independently the moment of marking, the place where it was killed, or the length of any human visit. A single modified bone cannot prove a permanent settlement, establish the size or identity of a group, or identify a particular stone-tool tradition.

There is, crucially, no securely associated Upper Palaeolithic assemblage of tools, hearths, structures or human remains from Castlepook. Recent investigation of the cave has added valuable geological and faunal information but has not produced a stratified camp that resolves these questions. The most defensible conclusion for around 31,771 BCE is modest but important: human presence in Ireland is possible and perhaps suggested by the reindeer femur; sustained occupation remains unproven.

Life, Exchange and Belief: What Cannot Yet Be Known

If people did reach Ireland in this interval, comparison with Upper Palaeolithic communities elsewhere in north-west Europe makes mobile hunter-gatherer lifeways plausible. Reindeer and other large mammals could have supplied meat, hides, sinew, bone, antler and fat; stone tools would have been essential for cutting and working materials. Small, seasonally moving groups might have used caves or temporary shelters and followed animal movements across open terrain. These are reasonable analogies, however, not direct observations from an Irish settlement. Ireland has not yielded the evidence needed to describe household routines, clothing, diet, language or kinship for this date.

For the same reason, political affairs, diplomacy, warfare, religion, art, formal learning and trade cannot responsibly be reconstructed. There were no known Irish polities, monuments, cemeteries, written records or exchange networks from which to infer them. Animals may have crossed the exposed shelf, and any human visitors may have come through connections with Britain or farther east, but there is no evidence for organised Irish trade. Nor can a cave bone tell us what its handlers believed, whether they made images or music, or how they understood death and landscape.

The absence of evidence is not proof that no person ever entered Ireland. It is partly a consequence of preservation. Subsequent ice advances scoured landscapes, sea-level rise drowned former coastal plains, and nineteenth- and early twentieth-century cave excavations did not record deposits to modern standards. Nonetheless, archaeology must distinguish a possibility from a demonstrated history. At this date the environmental record is firmer than the human story.

Before the Great Freeze

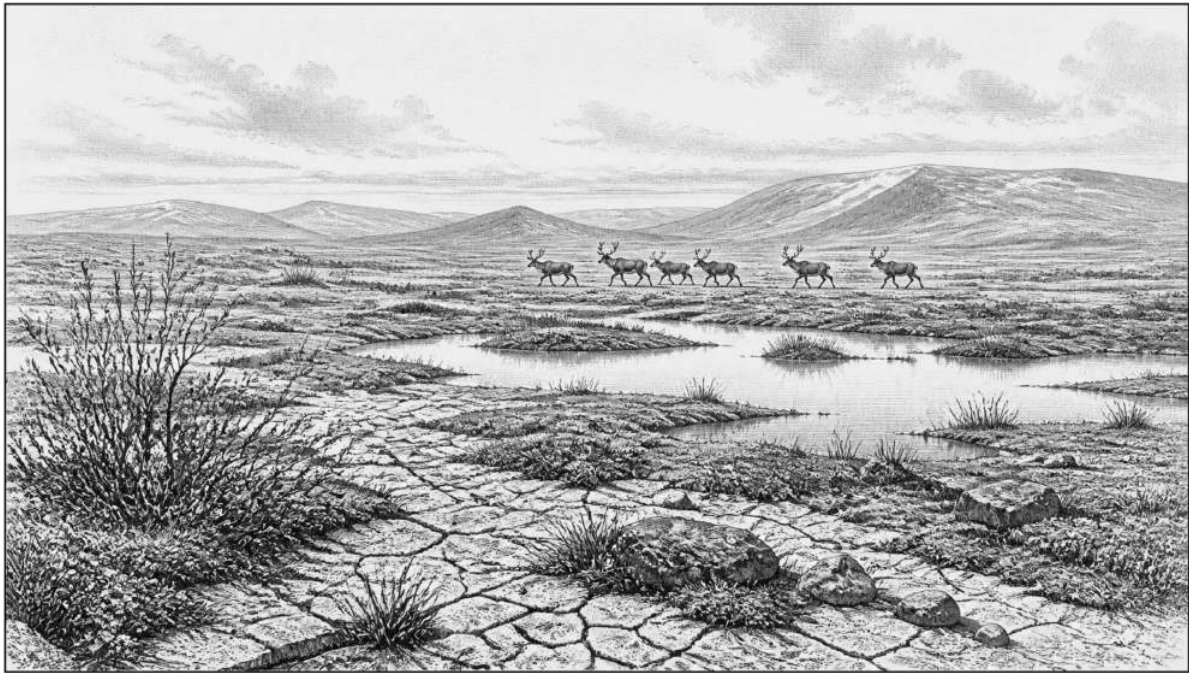
Thus, the Ireland illuminated by 31,771 BCE was a changing cold-stage land rather than a settled country. Derryvree shows sedges, mosses, pools and open ground in a northern wetland during a broad interval embracing this date. Castlepook's bones show that large herbivores and formidable carnivores occupied or reached southern Ireland during MIS 3. Together, they reveal habitats sufficiently varied to sustain life at the edge of an unstable glacial world.

What followed was not steady development towards later Irish society. Ice-sheet growth would transform, cover and erode much of the landscape; any early visitors, if they came, left no known continuous descendant community. The better documented human history of the island begins far later, after climatic recovery, with Late Upper Palaeolithic and Mesolithic evidence. Around this remote point in time, Ireland's most secure history is written in sediment layers and bones: a cold wetland in Fermanagh, a cave fauna in Cork, and one disputed-looking incision with the power to enlarge the island's human past.

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31770 BCE

Aghnadarragh's Arctic Beetles^[31]



The label 31,770 BCE is useful for organising a year-by-year chronology, but it must not be mistaken for a date that archaeology can resolve in Ireland to a single calendar year. By the conventional conversion in which “before present” means before AD 1950, it falls roughly 33,720 years before present. That places it in the later part of the Late Pleistocene, broadly within Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the last Ice Age. The responsible history of Ireland at this point is therefore not an account of a dated event, ruler or community. It is a reconstruction from cave bones, pollen, plant fragments, insects, freshwater silts, glacial deposits and the changing behaviour of the British–Irish Ice Sheet.

A Date Within Wide Ranges

The closest Irish evidence is dated in ranges rather than years. At Derrynree near Maguiresbridge, County Fermanagh, roadworks exposed organic freshwater silts and fine sands between two layers of till, the debris laid down by separate ice advances. A conventional radiocarbon measurement from the organic deposit was $30,500 \pm 1,100$ years BP. Such a result needs calibration, and at this age the calibration curve produces a broad interval rather than a precise answer. Published assessments place the Derrynree date broadly at about 36,900–31,700 calibrated years BP. Thus 31,770 BCE overlaps the possible age of that wetland, but the deposit cannot prove what happened at Derrynree, still less across Ireland, in that numbered year.

In older Irish Quaternary schemes, Derrynree and the animal remains from Castlepook Cave in north County Cork were associated with a middle Midlandian cold phase, approximately 34,000–35,000 years ago. The terminology and chronology of the last glaciation have since been refined, but the underlying caution remains important. The deposits represent episodes that may have lasted generations or millennia;

caves can contain material accumulated at different dates; and later ice repeatedly eroded, transported or buried evidence. A date in the 31,770s BCE is consequently a point within a large and unevenly illuminated landscape history, not an anniversary.

Open Ground and Frozen Seasons

The strongest picture of the Irish environment is one of cold, open country, though not necessarily a uniform white wilderness. At Aghnadarragh, Hollymount and Greenagho in Fermanagh, fossil pollen, plant remains and beetles from organic sediments beneath later glacial deposits indicate treeless or nearly treeless landscapes during cold phases of the Midlandian. Grasses and sedges, dwarf birch, willow, heaths, crowberry, mugwort and clubmoss occur in the palaeobotanical evidence. These records imply a patchwork of exposed mineral ground, sparse herb and shrub cover, wet hollows and small freshwater habitats rather than continuous woodland.

The insect evidence is especially revealing. At Aghnadarragh, beetle species included forms now associated with much more northerly, Arctic or sub-Arctic environments. Their ecological requirements suggest severe winters, a short growing season and high seasonality. Estimates drawn from the assemblage have proposed July temperatures perhaps around 11–13°C and January temperatures well below freezing, although these are regional reconstructions rather than a thermometer reading for one particular year. Frost action would have repeatedly disturbed soils and shattered rock. Meltwater, snow patches and summer rain could nevertheless sustain sedge-rich margins and shallow pools in sheltered basins.

Derryvree adds another element: moss-rich freshwater muds and silts. Its fossil flora and fauna have been interpreted as a cold, treeless muskeg or tundra wetland. That evidence matters because it prevents a simplistic account in which Ireland was either wholly ice-covered or wholly dry steppe. At intervals, and in particular places, water collected and plants established themselves. Yet one Fermanagh basin cannot stand for every coast, valley or upland. The island's relief, exposure to Atlantic weather, proximity to ice and changing sea level would have created strongly local conditions.

Before the Ice-Sheet Maximum

At around 33,720 cal BP, the ice sheet that later reshaped Ireland was not yet at its maximum known Late Pleistocene extent. The best modern synthesis of the British–Irish Ice Sheet identifies a complex, asynchronous expansion and retreat between roughly 31,000 and 15,000 years ago, with its greatest overall ice volume near 23,000 years ago. Other research shows the western margin reaching the Porcupine Bank only after about 24,720 cal BP. These findings rule out the easy assumption that all of Ireland was already buried under its later maximum cover in 31,770 BCE.

They do not, however, supply a reliable, island-wide map for that single date. Glaciers and ice streams could advance, stagnate and reorganise on regional timescales, while evidence on land has often been removed by later glaciation. It is safest to describe Ireland as lying within an increasingly severe North Atlantic glacial world: some ground was capable of supporting tundra vegetation and large mammals during particular windows, while ice was an expanding force that would subsequently cover much of the island. The great swathes of till, drumlins, erratic boulders and scoured bedrock familiar in the modern Irish landscape are the much later-visible legacy of that wider process.

Lower global sea levels also altered the geography around Ireland, exposing parts of the continental shelf that are now seabed. But exposure of shelf does not automatically demonstrate a walkable bridge from Ireland to Britain or continental Europe. Relative sea level was affected by both global ocean volume and the rise or depression of the Earth's crust under changing ice loads; channels, ice and marine water may have interrupted potential routes. Scholarship on Irish insularity has long stressed the uncertainty. Any route used by animals or people in this period must be treated as a palaeogeographical problem, not imagined as a certain open plain.

Castlepook and the Animal World

Castlepook Cave, also known historically as Mammoth Cave, near Doneraile in the Awbeg valley of County Cork, is the most vivid Irish archive for this broad period. Excavated principally in the early twentieth century by Richard J. Ussher and others, it produced a very large and complicated collection of animal remains. Mammoth, reindeer, brown bear, fox, hare, lemming and spotted hyaena are among the Ice Age animals associated with the cave record. The combination is striking: it evokes an Ireland periodically capable of sustaining cold-adapted grazers and browsers, their predators and scavengers, rather than the much more limited fauna of the modern island.

Nevertheless, Castlepook is not a photograph of one living community in 31,770 BCE. The cave's collections were excavated before modern recording standards, deposits were disturbed in places, and bones accumulated through several processes. Carnivores could drag carcass parts into a den; animals could die naturally in or near cavities; water and later disturbance could move material. Direct radiocarbon dating and taphonomic study are therefore essential. The cave's animal assemblage is best understood as a time-averaged archive of changing Late Pleistocene conditions, not a census taken in a single season.

The Human Question

A reindeer femur from Castlepook has made this period central to Irish archaeology. Zooarchaeologist Ruth Carden identified a deep mark on the bone as consistent with modification by a sharp stone implement, and radiocarbon work has publicised an age of approximately 33,000 years. If that interpretation is sustained, it is evidence that people processed a reindeer in Ireland, or at least that a butchered portion of carcass entered the Irish cave system, during the broad time horizon relevant to 31,770 BCE. It would move potential human activity on the island far earlier than the formerly accepted late-glacial evidence.

The distinction between that possibility and a settled population is crucial. No securely associated stone-tool assemblage, hearth, built shelter, burial, art panel or intact occupation surface of this age has yet been recovered in Ireland. Nor does a marked bone establish how many people were involved, where an animal was killed, or how long anyone stayed. The bone might represent a short hunting visit and subsequent carnivore transport of a discarded limb, rather than butchery inside Castlepook. Recent excavations have accordingly sought surviving stratified deposits, new dates, charcoal, lithics and further modified bone. The research question is active, not closed.

No Politics, but a Living Landscape

There is no evidence from Ireland around this time for political institutions, named groups, diplomacy, warfare, property boundaries or formal leadership. Nor can historians responsibly reconstruct a local religion, language, music, kinship system, trade network or body of learning. Such subjects require artefacts, settlements, graves, repeated practices or written testimony that do not exist here. Silence in the record is not proof that visiting people possessed no beliefs or social relationships; it means that Ireland has not yielded evidence through which to describe them.

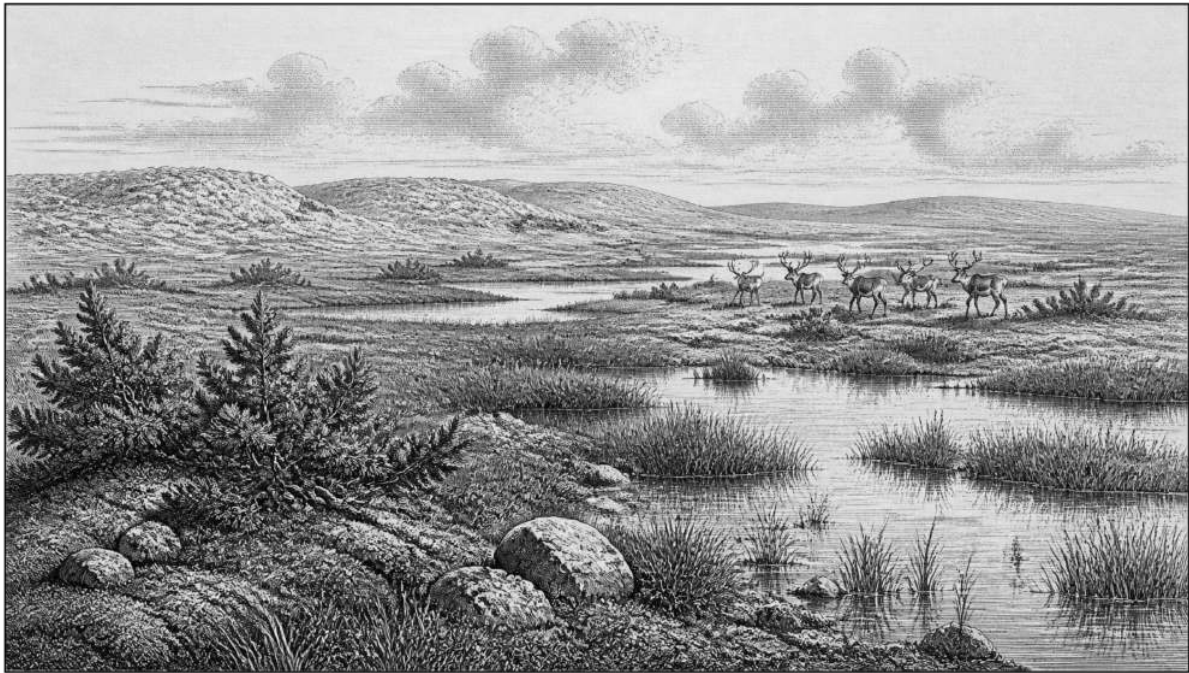
If humans did reach the island during a milder or more accessible interval, comparison with Upper Palaeolithic societies elsewhere in north-west Europe makes mobile hunting and scavenging a plausible mode of subsistence. Reindeer could provide meat, fat, hide, sinew, bone and antler, while freshwater margins might offer seasonal plant and bird resources. But this is informed comparison, not direct Irish proof. There is presently no defensible basis for claiming regular commerce, permanent camps, sea crossings, long-distance alliances or a distinct Irish cultural tradition in 31,770 BCE.

The principal development was environmental. Ireland stood at the edge of a changing ice-sheet system, with a treeless mosaic of tundra-like vegetation and wetlands in at least some regions, and with large mammals moving through habitats that later glaciers would radically transform. The peat-stained silts of Fermanagh and the bones in a Cork limestone cave are fragmentary witnesses. Together they show that this was neither a blank interval before history nor a period that can be narrated like later history. It was a deep prehistoric landscape of severe cold, ecological opportunity and profound uncertainty.

Chapter 032 of 100

31769 BCE

Maguirebridge's Periglacial Reedbed^[32]



The label 31,769 BCE is a modern chronological convenience, not a date that can be recovered from Ireland's evidence with calendar-year precision. There were no written records, rulers, settlements with annual sequences, or artefacts securely dated to that individual year. Converted to the archaeological convention of years before AD 1950, it falls about 33,718 calibrated years before present (cal BP), within Marine Isotope Stage 3 (MIS 3), an unstable interval of the last Ice Age. The responsible history of Ireland at this depth of time is therefore one of broad, calibrated ranges, fossil deposits and changing landscapes—not a narrative of a particular year.

A Date Within a Wider Window

Radiocarbon results are not calendar dates read straight from a bone or layer of silt. They measure remaining radioactive carbon and must be calibrated against a curve built from independently dated environmental archives. Beyond 30,000 years ago, the relation between radiocarbon years and calendar years is especially uneven, so errors and ranges matter greatly. The important local chronological anchor is a freshwater deposit exposed at Derryvree, near Maguiresbridge in County Fermanagh. Organic silts and fine sands trapped between two sheets of glacial till produced a radiocarbon determination of $30,500^{+1170}_{-1030}$ radiocarbon years BP. With modern calibration, that determination spans broadly about 36,900–31,700 cal BP. Thus 31,769 BCE lies close to the younger edge of a dated environmental window, rather than at a point archaeology can isolate.

That distinction is more than technical. A deposit may have accumulated over many years or centuries; a dated animal bone records the death of that animal, not necessarily the moment when it entered a cave. Old excavations, later movement by water or animals, and the reworking of sediment can

further complicate the story. The date can responsibly be used to ask what parts of Ireland were like during a late MIS 3 interval. It cannot identify a named community, a hunt in a particular season, or an event on a particular day.

Derryvree Between the Tills

Derryvree is exceptionally valuable because its silts survived between later glacial deposits. The fossil plants, mosses and insects found there point to open, treeless vegetation under a periglacial climate: ground subject to severe frost, short growing seasons and long cold winters. Grasses, sedges, herbs and juniper occur in the botanical record. The insect evidence, together with abundant mosses and the structure of the sediments, indicates wet ground with pools and plant-rich margins: a cold muskeg or sedge marsh rather than a forest or a permanently frozen white desert.

This was a living landscape, but a spare one. In summer, shallow water, reeds and sedges could have made small habitats productive for insects, birds and grazing animals. In winter, frost action, snow cover and exposed winds would have constrained both vegetation and movement. Juniper is particularly revealing. Its presence does not mean that a modern scrubland stretched across Ulster; it shows that hardy woody plants could survive locally amid predominantly open ground. Derryvree, however, is a record from one inland basin. It cannot be assumed to represent every Irish coast, upland or valley at the same time.

The interval also demonstrates a crucial geological fact: at least parts of north-central Ireland were ice-free when the organic layers formed. The lower till beneath the deposit records an earlier ice advance; the upper till records a later one. In between lay a period when freshwater sediments, plants and animals occupied the site. This does not prove that all Ireland was free of ice at 31,769 BCE. It instead gives firm local evidence for an ice-free environmental episode before the island was overwhelmed during the later maximum expansion of the British–Irish Ice Sheet.

An Island of Abrupt Change

MIS 3, conventionally extending from roughly 60,000 to 30,000 years ago, was not one unchanging climate. Greenland ice cores, European cave records and North Atlantic marine archives show repeated, abrupt swings between colder stadials and relatively milder interstadials. Ireland stood on the Atlantic edge of that volatile system. Its weather, snowfall, vegetation and the extent of local ice could alter markedly over timescales far shorter than whole geological periods. It would be unsafe to attach Derryvree confidently to one named Greenland warming or cooling event, but it is entirely appropriate to view its cold wetland as part of an intermittently shifting glacial world.

The great Last Glacial Maximum still lay ahead. Research on the British–Irish Ice Sheet indicates that its greatest late-glacial expansion, over much of Ireland and the surrounding continental shelf, occurred broadly around 27,000–23,000 cal BP, with individual sectors advancing and retreating at different times. Around the date represented here, the decisive long-term change was the approach of more extensive glaciation, not yet the island-wide maximum. Subsequent ice profoundly altered the archaeological record: it eroded surfaces, buried deposits beneath till and helped ensure that the surviving evidence for this era is scattered and difficult to interpret.

Castlepook's Animal Archive

Southern Ireland offers a different but complementary archive. Castlepook Cave, also called Mammoth Cave, in the Awbeg Valley near Doneraile in north County Cork, contains Ireland's richest assemblage of Late Pleistocene vertebrate remains. Its deposits have yielded woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. The recently reassessed radiocarbon evidence places significant components of its fauna in MIS 3. Several animals, including giant deer and spotted hyaena, may have disappeared locally before the later glacial maximum.

Such a list should not be turned into a neat scene in which every species stood together on one day. Cave deposits accumulate unevenly, and Castlepook's material was recovered during antiquarian and early twentieth-century excavations, long before modern standards of context recording. Carnivores could drag carcass parts into chambers; water, trampling and later digging could shift bones. Nevertheless, the assemblage securely changes the scale on which Ireland's Ice-Age ecology must be imagined. Parts of the island, at least during favourable phases, supported large grazers and browsers as well as predators and scavengers.

Spotted hyaena is particularly important. Far from its present African range, it belonged to north-western European cold-stage faunas and seems to have used Castlepook as a carnivore den or feeding place. Chewed bones and uneven skeletal representation can reflect hyaena activity rather than human hunting. Mammoth remains likewise establish the presence of a large cold-adapted herbivore, but not a mammoth-hunting camp. Reindeer, hare and lemmings fit the open, cold conditions indicated by Derryvree. Giant deer and brown bear caution against imagining a single uniform habitat: relief, shelter, water and the timing of climatic fluctuations made Ireland ecologically varied.

The Unsettled Human Question

The possibility of people in Ireland during this broad period rests chiefly on one remarkable but limited find: a reindeer femur from Castlepook reported as bearing a deep modification interpreted as a cut or chop mark made with a sharp stone tool. The bone has been publicised as dating to roughly 33,000 years ago. If the mark is confirmed as human-made and its date and association withstand continued scrutiny, it would be evidence that an Upper Palaeolithic person processed a reindeer in Ireland during MIS 3—far earlier than the previously accepted late-glacial evidence for human activity on the island.

That conditional language is essential. The femur was recovered from an old cave collection, not from a newly excavated, sealed occupation floor. No associated stone-tool assemblage, hearth, dwelling surface, human burial, artwork or repeated campsite of comparable age has yet been identified in Ireland. Natural breakage, carnivore damage and excavation marks must be distinguished carefully from traces made by stone tools. Current research at Castlepook is therefore seeking securely stratified deposits and further evidence, rather than treating one bone as the final word.

If people did reach Ireland around this horizon, comparison with Upper Palaeolithic groups elsewhere in north-west Europe suggests highly mobile hunter-gatherers, able to exploit animal carcasses and travel through severe seasonal environments. But that is an interpretation based on wider European archaeology, not a direct description of Irish households. The evidence does not establish a permanent population, a village, continuous occupation, family structure, language or identity. It may record a brief visit, a small foraging party, or an episode that left almost no durable trace.

What Cannot Be Claimed

There were no political affairs in the historical sense that can be identified for Ireland in this period: no states, kingship, borders, diplomacy or documentary conflict. Nor is there Irish evidence from around 31,769 BCE for trade routes, exchange networks, formal religion, burial rites, art, monuments, farming or domestic animals. There is likewise no basis for attributing tools, beliefs or an ethnic label to a possible human visitor. Absence of evidence need not mean that people elsewhere in the wider region lacked social bonds, ritual practices or technical knowledge; it means that Ireland's surviving record does not reveal them here.

The economy visible in the evidence is ecological rather than commercial. Wetland plants grew; herbivores moved through suitable terrain; carnivores exploited carcasses; water and sediment preserved fragments of that world. Any human use of reindeer would have been subsistence activity, not proof of organised hunting territory or exchange. The relevant regional change was environmental: alternating ice advances and ice-free intervals shaped which places could hold freshwater, vegetation and animal life, while lower sea levels transformed the surrounding shelf without allowing the evidence to reconstruct a precise route into Ireland.

A Fragmentary Irish Past

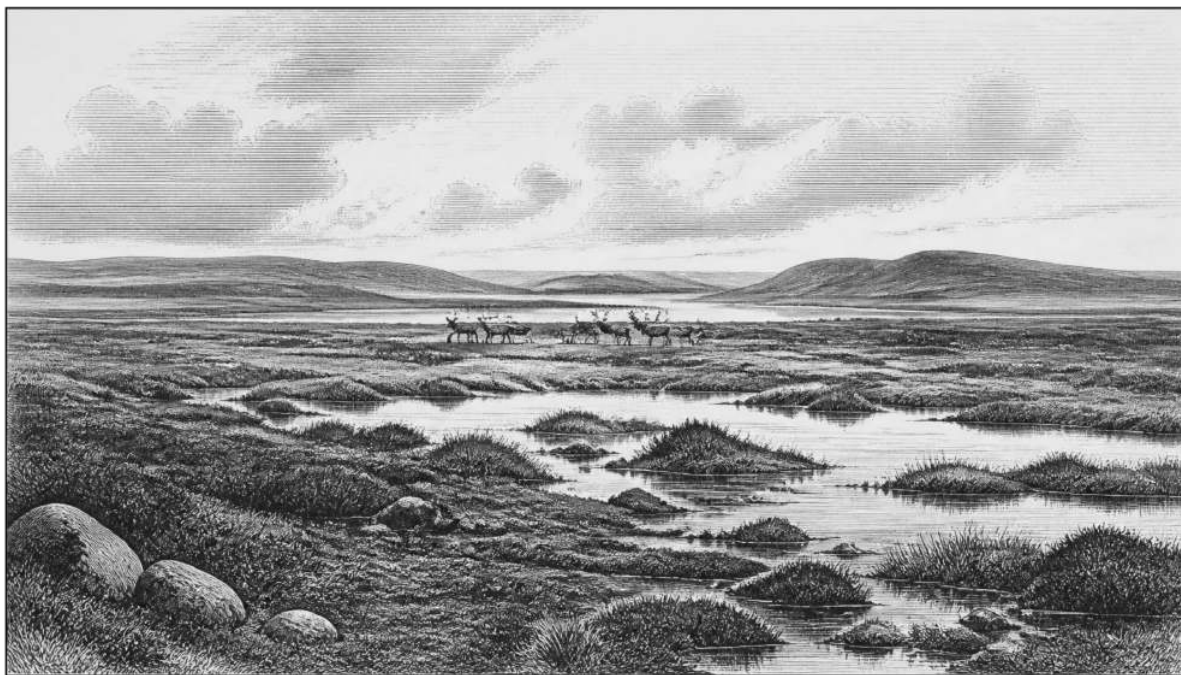
For this remote point in time, Derrynree's silts and Castlepook's bones are more historically meaningful than any invented event could be. They show that Ireland was not simply an unbroken ice sheet before the better-known later glacial maximum. During a broad late MIS 3 window, parts of the island contained frost-bound but biologically active tundra wetlands, and southern cave deposits preserve a striking community of mammoth, reindeer, hyaena and other animals. They also raise, but do not settle, the possibility of a human presence.

That is the proper scale of the year: not a national story or an anniversary, but a landscape reconstructed from fragile archives. Around 31,769 BCE, Ireland's future archaeological record was already being made—and repeatedly damaged, buried and selected by ice, water, animals and time. The uncertainty is not a failure of history. It is the central fact that makes these few surviving sediments and bones so important.

Chapter 033 of 100

31768 BCE

Derryvree's Frozen Sedge Basin ^[33]



31,768 BCE is a modern chronological label, not a year that can be recovered from the Irish archaeological record. No written calendar, settlement sequence or historical narrative permits us to identify an event in Ireland in that precise year. The most responsible approach is to place it within the later part of the Late Pleistocene, broadly Marine Isotope Stage 3 (MIS 3), before the Last Glacial Maximum. Radiocarbon ages from this remote period must be calibrated and are expressed as ranges, not as exact anniversaries. A useful Irish environmental record, at Derryvree near Maguiresbridge in County Fermanagh, has a conventional radiocarbon age of 30,500 +1,170/-1,030 radiocarbon years BP. In modern calibration, it belongs broadly within a span of roughly 36,900–31,700 calibrated years BP. The nominal date 31,768 BCE falls within that wide window, but it cannot be tied to a particular layer, season or occurrence.

That limitation is important. Ireland at this point was not the settled, wooded island familiar from later prehistory. There are no securely dated houses, hearths, tool scatters, graves, monuments or fields from 31,768 BCE. Consequently, there can be no evidence-based account of named peoples, rulers, political affairs, warfare, diplomacy, formal religion, trade institutions or learning. What survives instead is a demanding but revealing record in sediments, pollen, plant remains, insects, animal bones, cave deposits and the traces left by moving ice. It tells a story not of a nation in formation, but of a changing northern Atlantic landscape in which animal communities, water, frost and ice were the principal historical forces.

A Freshwater Record Beneath Ice

Derryvree is central because road excavations in 1969 cut through a drumlin and exposed an unusual sequence. Beneath the landform lay one thick sheet of glacial till, then freshwater silts and fine sands rich in organic material, followed by another thick till sheet. Till is debris laid down directly by glacier ice.

The order of deposits therefore demonstrates a major environmental reversal: ice had covered the area; a non-glacial freshwater landscape subsequently developed; and later ice overran and sealed it. Much of Ireland's older Pleistocene evidence was eroded, redistributed or buried by later glaciation. The Derryvree sediments survived precisely because they were protected between those tills.

The deposit is evidence, first, for a cold but locally ice-free interval in this part of Fermanagh. Its flora and fauna were described by the original investigators as being of 'full glacial aspect'; later syntheses interpret the setting as open tundra or muskeg. The latter term conveys waterlogged, mossy ground with shallow pools and sedge-rich margins, rather than a continuous frozen desert. Fine sediment settled in standing or slow-moving fresh water. Plant macrofossils, including a seed of bogbean, alongside mosses, sedges and insect remains, point to wetland habitats capable of persisting under short growing seasons and severe winter conditions. This was not a snapshot of every part of Ireland. It was a local archive, but one of exceptional value for reconstructing the island's broader climatic possibilities.

Open Ground, Pools and Frost

The most defensible picture of the Derryvree district is therefore a largely treeless, exposed terrain. Sedges, grasses, herbs, mosses and low shrubs would have occupied wet hollows and better-drained ground. Periglacial conditions mean a climate shaped by frost, seasonal thaw and ground instability at the edge of or beyond permanent glacier ice. Water would have collected in basins during thaw periods, while frozen ground, snow cover and hard winds restricted plant growth for much of the year. There is no basis for imagining the oak, elm and hazel woods of the much later Holocene, nor the hedged farms, bogs and lakes of the recent Irish countryside.

The wider North Atlantic climate was highly unstable during MIS 3. Greenland ice cores register repeated shifts between relatively milder interstadials and colder stadials over millennial rather than annual scales. Irish deposits should not be mechanically assigned to one Greenland event, but this background explains why a single region might move between glacial cover and open, wet periglacial ground. The Derryvree sequence records precisely such volatility. Conditions suitable for freshwater sedimentation did not signal a permanently benign climate; they occupied an interval between advances of ice.

At Hollymount, also near Maguiresbridge, and at Greenagho near Belcoo, organic deposits provide supporting, though differently dated and sometimes less secure, evidence for cold, open, non-forested conditions in northern Ireland. Their value lies in corroboration: Derryvree was not simply an inexplicable isolated pond. Yet the gaps between sites matter. Dating uncertainties, erosion and the patchy survival of deposits mean that archaeologists cannot draw a detailed island-wide weather map for 31,768 BCE. Regional variation in altitude, exposure, drainage and proximity to ice would have been substantial.

Castlepook's Animal World

Animal remains from Castlepook Cave, near Doneraile in the Awbeg Valley of north County Cork, add a striking southern Irish dimension. The cave, historically called Mammoth Cave, is Ireland's richest known Late Pleistocene vertebrate site. Its assemblage includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena, with wolf, Arctic fox, lemmings and mountain hare among other cold-stage animals recorded in the cave deposits. These are not all demonstrably contemporaneous: the cave

accumulated material over a long span, its deposits have been disturbed by water and animals, and early excavations did not meet modern recording standards. It is consequently wrong to picture every listed species standing together outside the entrance in 31,768 BCE.

Nevertheless, the assemblage firmly establishes that, during parts of the pre-maximum Ice Age, Ireland lay within the range of a distinctive cold-climate mammal community. Reindeer and mammoth indicate open habitats with substantial forage; lemmings and Arctic fox reinforce the northern character of parts of that environment. Spotted hyaenas and wolves were predators and scavengers, while caves could serve as dens, shelters or traps in which bones accumulated. Castlepook's bones document animal movement and ecological connectivity with Britain and continental north-west Europe. They do not demonstrate a simple, permanent dry land bridge. Sea level, local ice loading, coastlines and routes across the Irish Sea region changed through time, and the exact pathways used by animals remain uncertain.

The Question of People

A reindeer femur from Castlepook has made this period especially important for Irish archaeology. The bone has been reported as dating to about 33,000 years ago and bears a deep linear mark which zooarchaeologist Ruth Carden has interpreted as damage made by a sharp stone tool during carcass processing. If that interpretation is confirmed, it would indicate that Upper Palaeolithic people reached Ireland far earlier than the better-established terminal-Pleistocene evidence. It would be a profound finding: a human encounter with an animal in an Ice-Age Irish landscape, perhaps during a brief hunting or scavenging visit.

But the distinction between evidence and interpretation must remain clear. The reindeer bone itself is evidence; its date applies to the animal, not automatically to the instant of modification. The mark is an interpretation of human agency that must be weighed against natural breakage, carnivore action, sediment movement and the compromised context of antiquarian cave excavation. No securely associated stone tools, butchered assemblage, hearth, camp floor or dwelling has yet been identified at Castlepook for this early period. It would therefore be premature to write of a settled population, a named hunting band or a continuous Irish occupation in 31,768 BCE. The bone makes human presence plausible and potentially momentous; it does not provide a full social history.

What Cannot Yet Be Claimed

Accordingly, the political and cultural history of Ireland at this date is mostly a history of absence in the record. There is no evidence for chiefs or states, territorial boundaries, organised conflict, diplomacy, exchange networks, farming, domesticated animals, monuments, ritual sites, art or formal systems of knowledge. Even if small groups of people occasionally arrived, the evidence does not reveal their language, kinship arrangements, beliefs, seasonal rounds or relations with one another. A possible act of reindeer processing is not proof of permanent settlement. Nor should familiar later categories such as 'Irish society' be projected backwards onto a landscape that was periodically rendered uninhabitable by expanding ice.

Economy, in the narrow sense, cannot be documented. In the broad ecological sense, however, the landscape supported food webs based on tundra and wetland vegetation, herbivores and predators. If people were present, they would have depended on mobile hunting and gathering rather than cultivation.

That is a reasonable inference from the environmental and faunal evidence, not a directly observed Irish camp economy. The contrast matters: archaeology can identify what a reindeer femur may imply, but it cannot safely supply the missing settlement, technology or social organisation.

Before the Ice Peak

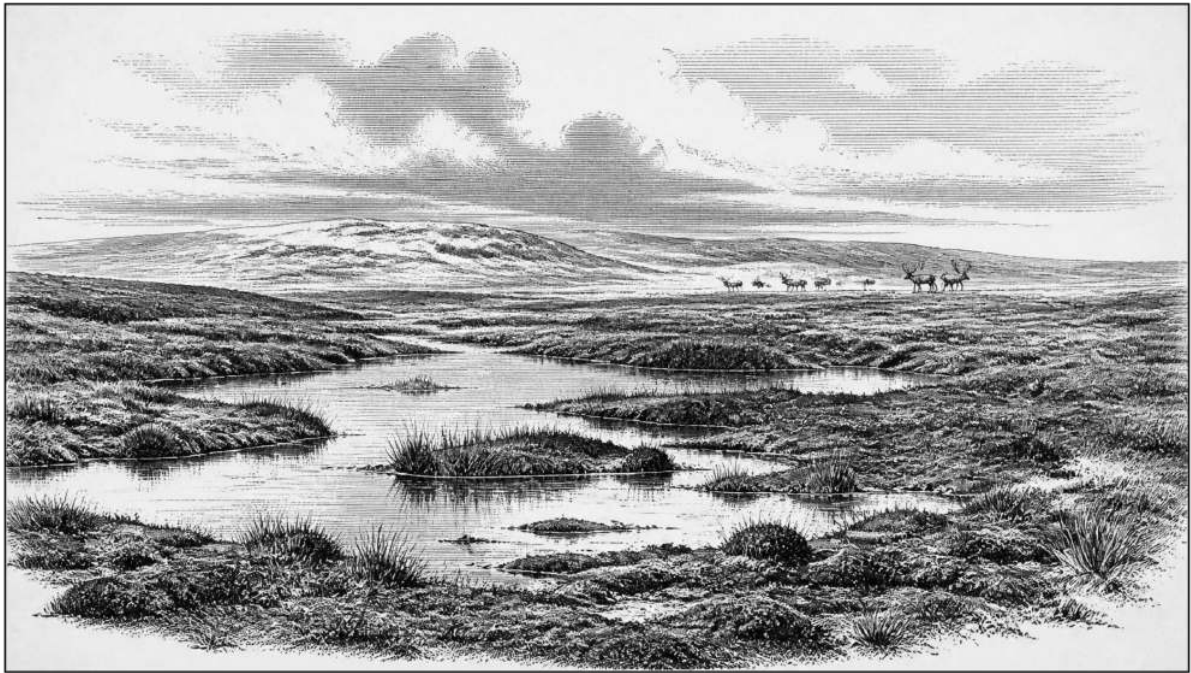
31,768 BCE also belongs to a longer transition towards much more extensive glaciation. The Last Glacial Maximum, when the British–Irish Ice Sheet covered Ireland and extended over much of its continental shelf, came later, broadly around 27,000–23,000 calibrated years BP, though timing and ice thickness varied regionally. Derryvree’s upper till is material testimony to the return of ice after the freshwater interval. The island’s future physical geography would be profoundly altered by that advance: bedrock was scoured, sediments shifted, drainage reorganised and innumerable older surface traces destroyed.

The principal development around this nominal year was thus neither a battle nor a dynasty, but environmental precariousness. In Fermanagh, a cold freshwater basin preserved sedges, mosses, insects and fine mud beneath a drumlin. In Cork, caves retained bones from a complex Ice-Age fauna and perhaps a tantalising indication of human butchery. Together they show that Ireland was not simply a blank beneath ice. It contained intermittent, regionally varied habitats before the glacial maximum, but its record is fragmentary. The honest historical conclusion is both vivid and restrained: around 31,768 BCE, Ireland was an open, cold and changing Pleistocene landscape whose most securely known inhabitants were plants and animals, while the earliest human presence remains an important question still being tested.

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31767 BCE

Frostwater at Derryvree^[34]



The label 31,767 BCE cannot denote an event in an Irish calendar. No written record, annually layered archive or excavated settlement allows historians to identify what happened in this particular year. It is a modern chronological convenience, equivalent to about 33,700 calendar years before present (cal BP, with “present” conventionally fixed at 1950). The responsible frame is therefore a calibrated range, not a date-like anniversary. This point falls within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable part of the Late Pleistocene, before the Last Glacial Maximum. Ireland’s evidence consists chiefly of buried freshwater deposits, cave fauna, radiocarbon measurements and reconstructions of advancing ice—not a human narrative.

Dating a Deep Past

At this depth of time, radiocarbon ages are not calendar ages. They measure residual carbon-14 in once-living material and must be converted through calibration curves that account for past changes in atmospheric carbon. The conversion produces probability ranges, often broad ones, rather than an exact year. The useful local range is supplied by the organic sediments at Derryvree, near Maguiresbridge in County Fermanagh: material from the deposit has been reported within approximately 31,700–36,900 cal BP. The nominal year in this article lies inside that span, but it cannot be tied to a particular layer, season, animal or human action.

The same caution applies to the term “Ireland”. The modern island is a familiar geographical unit, but its coastlines, sea levels, ice margins and habitats were radically different. Lower global sea levels altered the extent of the continental shelf, while ice and water shaped the routes by which animals—and

conceivably people—could move across north-west Europe. That does not demonstrate a simple, permanent land bridge, still less a known route into Ireland at this moment. Connectivity changed over time, and the precise geography of any crossing around 33,700 cal BP remains uncertain.

An Unsettled Cold Landscape

MIS 3 was neither one uninterrupted freeze nor a mild interval before winter. It contained abrupt shifts between colder stadials and comparatively warmer interstadials. Ireland lay close to the changing western margin of the British–Irish Ice Sheet system. Some ground could be ice-free during parts of this period, only to be overridden, eroded or buried during later advances. The great expansion associated with the Last Glacial Maximum lay ahead: major evidence indicates that the ice sheet’s maximum volume came much later, around 23,000 years ago, although advance and retreat varied markedly between regions.

That later glaciation explains why the record is so patchy. Ice can scour bedrock, remobilise older sediment and remove open-air traces of occupation. Acid soils further reduce the survival of bone and organic material. Caves and exceptional deposits beneath glacial sediments are consequently disproportionately important. They are not complete landscapes in miniature; rather, they are rare survivals from a world otherwise heavily edited by ice.

Derryvree’s Cold Water

Derryvree is one of the clearest Irish environmental windows onto this broad interval. In a road cutting through a drumlin, researchers found organic silts and fine sands trapped between two thick glacial deposits. The lower and upper tills show that the freshwater accumulation belongs between episodes of ice activity. The organic layer records an ice-free phase locally, not an assurance that all Ireland was free of ice at once.

Pollen, plant remains, mosses and insects indicate treeless, open country with wet ground, pools and abundant plant matter: a cold muskeg or tundra-like wetland rather than forest. Sedges and mosses could flourish around shallow water even in a harsh climate. Insect evidence is especially valuable because many beetles have narrow environmental tolerances. Together, these proxies support an interpretation of severe winters, short productive summers and a mosaic of waterlogged hollows and open vegetation. They do not yield temperatures for 31,767 BCE itself, nor do they map every Irish region. The safest conclusion is local and powerful: north-eastern Ireland preserved freshwater habitats during part of MIS 3 before later ice sealed them beneath till.

Castlepook’s Animal Archive

In north County Cork, Castlepook Cave near Doneraile provides the principal faunal archive for pre-Last Glacial Maximum Ireland. Excavations conducted mainly in the late nineteenth and early twentieth centuries recovered remains attributed to such animals as reindeer, woolly mammoth, giant deer, brown bear, wolf, fox, hare, lemmings and spotted hyaena. This striking combination places Ireland within the wider cold-stage fauna of north-west Europe. Large herbivores imply enough seasonal food and accessible ground to sustain them; predators and scavengers reveal a more complex food web than a bare, lifeless ice margin.

But Castlepook must not be turned into a single scene in which every listed species shares one hillside. The cave accumulated material over a long period. Carnivores could drag in carcass parts; water, trampling and sediment movement could rearrange bones; and early excavation methods did not preserve the contextual detail expected today. Modern redating has also altered the chronology. Improved collagen pretreatment showed that several old Irish cave determinations were too young, with some Castlepook specimens returning dates thousands of radiocarbon years older than earlier results. The reassessment suggests that giant deer and spotted hyaena may have disappeared from Ireland before about 40,000 cal BP. Thus the cave demonstrates repeated animal presence across a broad period, not a census for the nominal year.

The hyaena remains are particularly instructive. Spotted hyaenas were then part of European Pleistocene faunas, although their present range is in Africa. At Castlepook, gnawed bones and the uneven survival of skeletal parts are compatible with carnivore use of the cave. This is evidence of animal behaviour as well as animal distribution. It also imposes an archaeological discipline: bone damage must be distinguished carefully between tooth marks, natural fracture, sediment abrasion, excavation damage and cuts made by stone tools.

A Possible Human Episode

The question of people rests chiefly on a reindeer femur from Castlepook reported to carry a chop or cut mark consistent with a sharp stone implement. If the identification and association are accepted, it offers a remarkable possibility: human processing of an animal in Ireland during the wider MIS 3 period, far earlier than the formerly accepted post-glacial evidence. It would be evidence for an episode, however, not proof of a resident population.

No securely associated hearth, stone-tool assemblage, built shelter, burial, artwork or repeatedly occupied camp of this age has yet been established in Ireland. The marked bone came from an old cave collection, not from a newly excavated sealed living floor. It cannot disclose the language, identity, kinship system or numbers of any visitors. Nor can it tell whether they crossed the wider landscape on a single foray, returned seasonally, or merely passed through. Archaeology can responsibly preserve the possibility of a brief human presence; it cannot responsibly populate Ireland with a settled Palaeolithic community.

What Society Cannot Yet Tell Us

Accordingly, there is no evidence for political institutions, rulers, diplomacy, territorial boundaries, organised warfare, formal religion, trade networks, farming, metalworking, monuments or literacy in Ireland at this date. Such subjects are not missing chapters waiting to be filled with plausible imagination; they are beyond the resolution of the surviving evidence. If humans visited, their likely technologies and social practices would have belonged to wider Late Palaeolithic hunter-gatherer worlds known elsewhere in Europe, but applying those comparisons to Ireland is interpretation, not direct observation.

Economy, in the narrow sense supported here, was ecological. Herbivores converted sparse seasonal vegetation into meat, hides, bone and antler; carnivores competed for or scavenged carcasses; wetlands sustained plants and insects. A human group able to reach Ireland would have depended on mobility, careful knowledge of weather and animal movement, and portable equipment. Yet none of those reasonable inferences can establish hunting strategy or exchange in Ireland itself. The direct evidence is of landscape and fauna, with one possible trace of carcass processing.

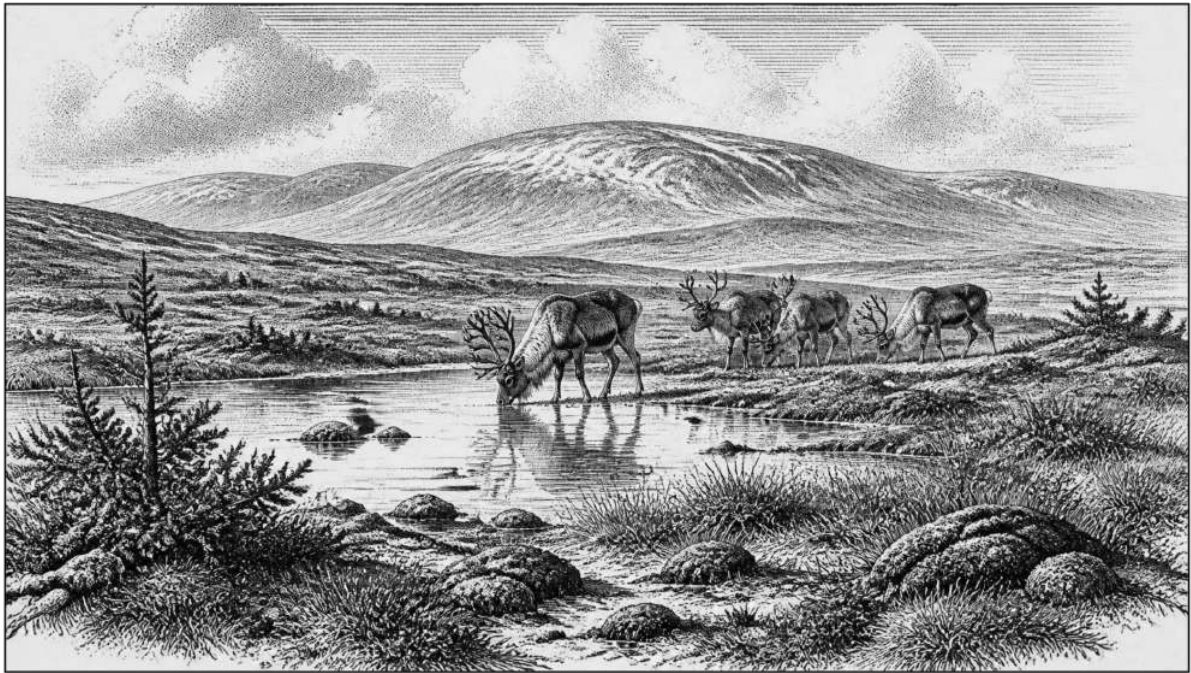
Before the Ice Advance

The most important development around 31,767 BCE was therefore environmental rather than political: parts of Ireland formed a cold but biologically active fringe of Pleistocene Europe before the later ice-sheet maximum transformed the island. Derryvree's freshwater silts show that wet tundra habitats existed during an ice-free interval; Castlepook's bones show that substantial mammals and carnivores reached southern Ireland over the wider period. Their records are separated in place, formed over long spans and affected by later processes. Taken together, they replace the old image of a wholly blank, frozen Ireland with a more demanding reality—changing habitats, mobile animals, uncertain connections and, perhaps, fleeting human footsteps that remain just beyond clear historical view.

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31766 BCE

Birm-166's Lost Waters^[35]



31,766 BCE is not a date that can be matched to an Irish event, ruler, battle or settlement in the way a later historical year can. It is a modern calendar label for a point roughly 33,715 years before AD 1950, within the later part of the Late Pleistocene and broadly within Marine Isotope Stage 3. No written record exists; nor does archaeology offer calendar-year precision at this depth of time. The responsible account is therefore one of calibrated ranges, deposits and cautious inference. Around this notional date, Ireland was a climatically unstable, sparsely documented land on the north-western fringe of Europe, where open cold-country environments and large mammals are better attested than human communities.

A Date Within a Range

The most useful evidence for this broad interval comes from Derryvree, near Maguiresbridge in County Fermanagh. There, organic freshwater silts and fine sands were found between two sheets of glacial till in a road cutting through a drumlin. The lower and upper tills show that ice occupied the locality at different times; the sediments between them preserve an ice-free interval. A radiocarbon determination on their organic content, Birm-166, was published as 30.5 ± 1.1 – 1.2 thousand radiocarbon years BP. Earlier published calibration placed that measurement within a broad range of approximately 36.9–31.7 thousand calibrated years BP. The modern label 31,766 BCE falls near the younger end of that wide range, not at a moment that can be isolated within it.

This distinction matters. Radiocarbon years are not calendar years, because atmospheric carbon-14 levels changed through time. Calibration curves translate measurements into probability ranges, and the farther back one goes, the less appropriate it becomes to speak as though a sample identifies one exact

year. The Derryvree material can illuminate a phase of cold, ice-free or locally ice-free conditions; it cannot tell us what happened in a particular winter or summer of 31,766 BCE. Nor can one Fermanagh exposure stand for every Irish coast, mountain and river valley.

The Freshwater World at Derryvree

Even so, the Derryvree sediments are unusually eloquent. Their pollen, plant remains, mosses and beetles indicate a treeless muskeg or wet tundra landscape: waterlogged ground, shallow pools and plant-rich silts rather than forest. Grasses and sedges were important components, accompanied by herbs and low shrubs, including juniper in the wider cold-phase record. Such evidence suggests a landscape with a short productive season and severe winters, but not an empty white wilderness. Wet hollows could sustain mosses, aquatic plants and insects, while surrounding open ground provided forage for grazing animals.

Comparable sub-till organic deposits at Hollymount and Greenagho in Fermanagh, and at Aghnadarragh in County Antrim, reinforce the point that parts of northern Ireland preserved cold-stage environments between episodes of glaciation. At Aghnadarragh, insect and pollen evidence has been used to reconstruct open, sparsely vegetated ground and markedly seasonal conditions. These deposits are not all precisely contemporary with Derryvree; their value lies in showing the environmental range of the broader Midlandian, or Devensian, cold stage in Ireland.

For people today, drumlins are familiar rolling elements of the Irish landscape. At Derryvree, however, the drumlin is also a chronological archive. Ice later overrode, buried and preserved the freshwater deposits. That process destroyed much of the ground surface that might once have held campsites, hearths or footprints, while protecting a small sample of plants and insects beneath till. The imbalance helps explain why Irish evidence from this period is so fragmentary: geology has left historians with environmental traces rather than settlements.

Ice Was Advancing, Not Everywhere Present

The wider picture is one of change rather than a single, uniform ice cover. Reconstructions of the British–Irish Ice Sheet place its principal growth after roughly 35–32 thousand years ago, with its later maximum much later, during approximately 27–21 thousand years ago. Thus 31,766 BCE belongs to a long transition towards more extensive glaciation, not automatically to the island-wide ice maximum often imagined as “the Ice Age”. Evidence from Derryvree and other pre-Late Glacial deposits indicates that some ground in Ireland had remained free of the ice that subsequently reshaped it.

Local conditions could nevertheless have been harsh. Permafrost, seasonal freezing and thawing, strong winds and unreliable vegetation would have shaped both watercourses and animal movement. Coastlines were also unlike those of modern Ireland because global sea level was lower, although lower sea level does not entitle us to assume a simple walkable land bridge between Ireland and Britain. The existence, timing and usefulness of any such connection have long been debated. For this date, no archaeological evidence identifies the route by which animals—or any people—might have reached Ireland.

Castlepook's Animal Evidence

Southern Ireland supplies another important, though differently preserved, record. Castlepook Cave near Doneraile, County Cork, formerly known as Mammoth Cave, produced a substantial collection of Pleistocene animal remains during antiquarian excavations. Later study and re-dating have associated the cave's older fauna with Marine Isotope Stage 3. The collection includes woolly mammoth, reindeer, spotted hyaena, brown bear, wolf, foxes, stoat, mountain or Arctic hare, and lemmings; giant deer also belongs to the wider Irish Pleistocene story. These are not a complete census of one moment or one hillside. Caves collect bones over time, and predators, water and later disturbance can mix material. Yet together they demonstrate that cold-adapted and large grazing animals reached Ireland during this broad era.

Spotted hyaena is especially revealing. It was not a harmless spectator but a powerful carnivore capable of transporting and chewing bones, and Castlepook probably functioned in part as a carnivore den. Mammoth and reindeer imply open feeding grounds somewhere within the animals' accessible range, while lemmings and cold-adapted hares support the environmental evidence for tundra-like conditions. But the cave must not be converted into a neat scene in which every recorded species stood together at once. It is a time-averaged faunal archive, and its earliest excavations did not meet modern standards of stratigraphic recovery.

The Human Question

A reindeer femur from the Castlepook collection gives this period its most provocative historical possibility. County Cork heritage publications identify it as dating to about 31,000 BC and describe a deep mark on it as a cut or chop made by a sharp stone tool during butchery, an interpretation associated with zooarchaeologist Ruth Carden. If that reading is upheld, it is evidence that Upper Palaeolithic people processed a reindeer in Ireland or handled part of its carcass there. It would push evidence of human activity on the island dramatically earlier than the long-established post-glacial archaeological record.

It is not, however, proof of a settled population in 31,766 BCE. The femur came from an old collection rather than a recently excavated, intact occupation surface. Its radiocarbon result dates the animal's death, not independently the making of the mark, the place of killing or the length of any human visit. No securely associated hearth, stone-tool assemblage, dwelling, burial, artwork or repeated occupation layer of comparable antiquity has been found at Castlepook. The classification of bone damage as a stone-tool mark is itself a specialist taphonomic judgement, which must be distinguished from damage caused by carnivores, breakage, abrasion or excavation. The bone therefore supports a serious hypothesis of human activity, not a confident narrative of Ireland's first permanent inhabitants.

Society Without a Social Record

There is no evidence from this date for political communities, named peoples, leaders, diplomacy, territorial boundaries, organised warfare or institutions in Ireland. Likewise, there is no securely demonstrated religion, burial rite, monument, art tradition, language or formal learning to describe. To supply any of these would be invention. The absence is not evidence that people everywhere lacked social lives; it means that Ireland has yielded no material basis for reconstructing them at this chronological resolution.

If the Castlepook modification was made by people, the most that can reasonably be inferred is a brief encounter by highly mobile foragers familiar with cutting technology and animal carcass processing. Reindeer could have provided meat, marrow, hide, sinew and bone, but none of those uses is independently demonstrated in Ireland by a securely excavated assemblage of this age. Hunting strategy, group size, season of arrival and the identity of any visitors remain unknown. They could have been passing through a much larger north-west European landscape rather than founding a lasting community.

Economy, Movement and Regional Change

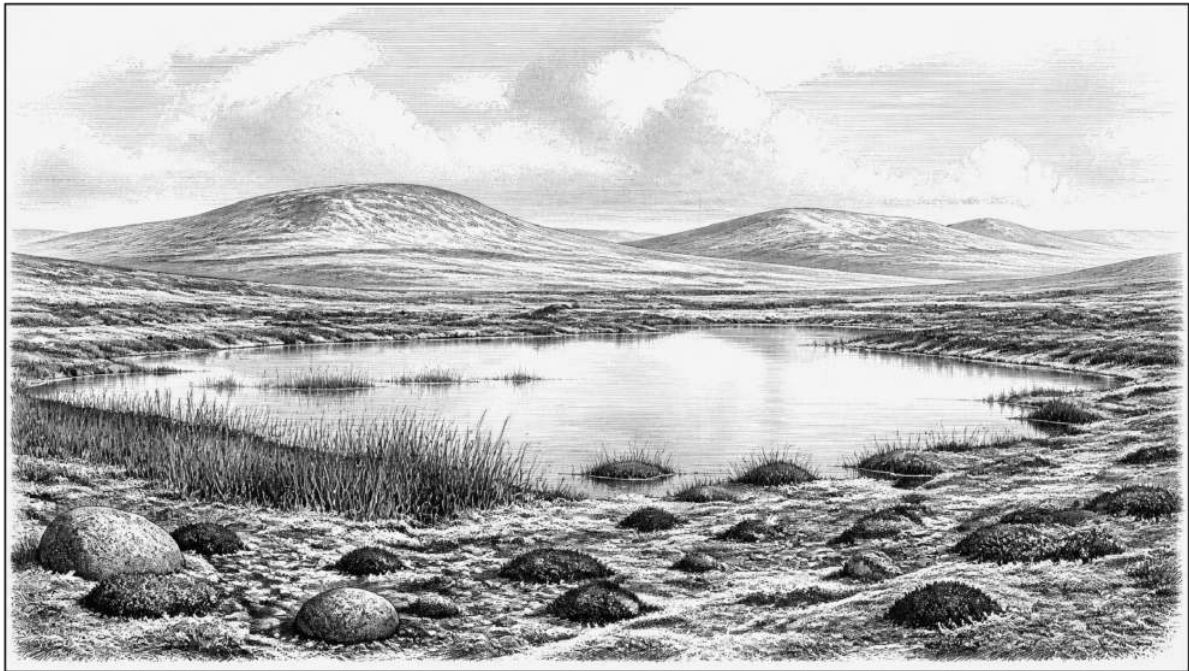
Accordingly, there is no evidence for an Irish economy in the later historical sense: no farming, herding, fields, metalworking, exchange network, market, boat-building industry or long-distance trade can be documented for this point in time. The only defensible economic setting is ecological. Animals moved through open country in response to forage, shelter and season; predators followed prey; and any humans, if present, would have depended upon knowledge of that demanding landscape. The later expansion of the British–Irish Ice Sheet then altered habitats, displaced or eliminated animal populations locally, and eroded or sealed earlier surfaces.

The most important development around 31,766 BCE was therefore environmental instability on a frontier of advancing ice. Derryvree records freshwater life on cold open ground in Fermanagh. Castlepook records a southern Irish fauna that included mammoth, reindeer and hyaena, and perhaps a single humanly modified reindeer bone. These fragments do not yield a conventional year-by-year history. They offer something more fragile but equally significant: evidence that, long before farming, monuments or the Irish historical tradition, the land was repeatedly made and remade by water, wildlife, cold and ice.

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31765 BCE

Birm-166 and the Drumlin^[36]



A modern date such as 31,765 BCE gives a useful point of reference, but it must not be mistaken for a date that prehistoric Ireland can meet with calendar precision. No Irish document, settlement layer or event can be assigned to this individual year. In scientific terms, it falls roughly 33,700 years before 1950, within Marine Isotope Stage 3, a long and climatically unstable phase of the last Ice Age. The responsible history of Ireland at this point is therefore not a chronicle of rulers, battles or anniversaries. It is a reconstruction from sediments, fossil plants and animals, cave deposits, changing ice margins, and the limits of radiocarbon dating.

The closest major Irish archive is Derryvree, near Maguiresbridge in County Fermanagh. There, roadworks in 1969 exposed freshwater silts and fine sands trapped between two thick layers of glacial till within a drumlin. Organic material from the deposit produced the radiocarbon determination Birm-166: 30,500 radiocarbon years before present, with a substantial uncertainty. Later calibration places the relevant interval broadly at about 36,900–31,700 calibrated years before present. The nominal year 31,765 BCE lies within that wide range, but cannot be isolated as a moment in the sequence. Derryvree is evidence for conditions over an interval, not a diary entry for one year.

A Freshwater Interval Beneath Ice

The physical order of the Derryvree deposits is its great importance. An earlier glacial episode left the lower till. Later, when ice was absent locally, water laid down fine sand and silt and preserved organic remains. A subsequent advance buried the freshwater bed beneath another mass of till. The sequence establishes a striking pattern: glaciation, an ice-free interval, then renewed glaciation. It also warns against an easy picture of an island continuously frozen from coast to coast throughout the Ice Age.

The plants and small animals preserved in the freshwater material indicate open tundra and periglacial conditions: ground affected by severe cold, repeated freezing and thawing, and a short growing season. Mosses, sedges and herbaceous pollen are more securely supported than any vision of dense woodland. A few grains of tree pollen were detected, but the original investigators stressed their poor preservation and the likelihood that trees, if represented at all, were not forming a local forest. Around the Derryvree waterbody, the landscape was probably sparse, low and exposed, with wet ground providing a refuge for vegetation even as the wider terrain remained cold.

This was not necessarily a scene of uniform white snow. Tundra environments can include shallow pools, sedge margins, patches of moss, bare mineral soil, gravelly slopes and seasonally productive vegetation. Yet it would have been an exacting country. Frost action disturbed soils; strong winds crossed open ground; and snow cover, surface water and the availability of forage varied sharply through the year. The evidence permits that broad environmental picture. It does not allow the weather on a particular day in 31,765 BCE to be reconstructed.

Ireland During Marine Isotope Stage 3

Marine Isotope Stage 3, conventionally dated to roughly 57,000–29,000 years ago, was neither a single cold spell nor a simple prelude to the Last Glacial Maximum. Across the North Atlantic world, temperatures and ice margins changed abruptly more than once. Ireland's terrestrial record is fragmentary, because later glaciers eroded, reworked or buried much of what had survived from earlier phases. Consequently, local evidence matters greatly, but must not be inflated into an all-island map.

Derryvree demonstrates that north-central Ireland was ice-free during part of this stage. Organic material from lacustrine deposits beneath till at Greenagho, also in Fermanagh, points to an earlier ice-free episode, while shells and sediments around the western coast offer further evidence that ice did not occupy every Irish sector continuously before the final major expansion. Syntheses of onshore, offshore and deep-sea evidence indicate that the last Irish Ice Sheet grew substantially after about 34,000 years ago and reached its greatest overall extent much later, around 26,000–24,000 calibrated years before present. The pace, timing and geographical pattern of that build-up remain subjects of research.

For the date in question, the safest conclusion is regional rather than absolute: at least some parts of Ireland had recently supported, or still supported, ice-free periglacial environments, while the climatic and glaciological system was moving towards a far more extensive glaciation. It would be misleading to say simply that Ireland was either wholly habitable or wholly ice-covered. The island's position on the Atlantic edge, with high ground, basins, coastlines and changing sea ice, ensured a varied and shifting geography.

Animals, Caves and a Sparse Record

County Cork's Castlepook Cave system, near Doneraile in the Awbeg valley, gives the clearest sense of the larger animals associated with Ireland during the wider late Pleistocene. Its old excavations recovered an exceptional cave assemblage including woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. Such finds establish that cold-adapted and open-country animals reached Ireland during parts of the Ice Age. They do not prove that every listed species lived together at Castlepook, or anywhere else, at 31,765 BCE.

That distinction is essential. Cave deposits can contain material accumulated over many millennia by carnivores, water, collapse and human excavation. Castlepook was extensively excavated in the early twentieth century, before modern standards of stratigraphic recovery and recording. Recent re-dating has shown that several older Irish cave radiocarbon results need reconsideration, with some specimens proving appreciably older than previously believed. The fauna is invaluable evidence, but it is not a neatly sealed settlement deposit.

Nonetheless, its ecological implications are substantial. Reindeer and hares point towards open, cold environments; lemmings reinforce the northern, tundra-like character of at least some habitats; mammoth and giant deer indicate that large herbivores could exploit Irish landscapes in suitable periods. Predators and scavengers, notably wolf and spotted hyaena, reveal a fuller food web than Ireland's modern fauna suggests. Caves were not necessarily homes for these animals. They could be dens, temporary refuges, places into which bones were dragged, or traps in the landscape. Each bone needs its own taphonomic history.

The Human Question

There is no securely documented community, dwelling, hearth, tool scatter or burial in Ireland that can be confidently dated to 31,765 BCE. Therefore there is no basis for describing a resident population, family structure, named cultural group, language or territory. Nor is there evidence for political authority, warfare, diplomacy, formal religion, monuments, farming, exchange networks or organised trade on the island at this point. These absences are not evidence that such things were impossible in principle; they are the limits of the present Irish record.

A reindeer femur from Castlepook has nevertheless made the question more intriguing. It has been reported as carrying a deep mark interpreted as damage made on fresh bone by a sharp stone tool, and the bone has been publicised as dating to about 33,000 years ago. If that interpretation is sustained, it would suggest that one or more people processed a reindeer carcass in Ireland during the wider later MIS 3 period. It would be a remarkable early trace of human activity, not proof of permanent settlement.

Even in that favourable reading, much remains unknown. A marked limb bone cannot establish whether people killed the animal, scavenged it, removed hide or sinew, took meat or marrow, or processed it outside the cave before the bone entered its final deposit. It cannot identify the number of visitors or demonstrate that they returned. Nor can the radiocarbon age of the animal be converted uncritically into the exact date of the mark. The cautious phrase is therefore *possible human activity*, not an Ice-Age Irish society.

Movement, Resources and Connections

If people did reach Ireland during this broad period, their practical world would have revolved around movement through an unstable cold landscape and the use of animal and plant resources. Across north-west Europe, Upper Palaeolithic hunter-gatherers made sophisticated stone tools, used animal materials, and followed seasonal opportunities. That continental context makes a brief Irish visit conceivable, but it should not be projected automatically across the Irish Sea. Ireland's separated, changing geography was a real constraint, and the evidence does not yet reveal the route, technology or frequency of any crossing.

For non-human animals, dispersal was evidently possible in favourable phases. Lower sea levels altered the outlines of the Irish Sea basin, while glacial, coastal and marine conditions changed repeatedly. But lowered sea level did not automatically create a dependable dry-land bridge from continental Europe

to Ireland. The precise accessibility of the island varied with water depth, ice extent, sea ice and the configuration of Britain and western European coastlines. The animal record shows connectivity at some times; it does not supply a simple migration map.

There was no economy in the later historical sense: no fields, livestock, markets, coinage or ports. The economy visible in the evidence is ecological. Plants captured a brief growing season; herbivores converted sparse vegetation into mobile food; carnivores and scavengers followed them; and, if people were present, animal carcasses may have supplied calories, hides, bone, sinew and antler. This is an inference from the kinds of material preserved, not direct evidence for a camp or a routine.

What This Date Can Mean

31,765 BCE is best understood as a waypoint inside a much larger interval of Irish prehistory. Derrynree supplies the strongest directly relevant environmental evidence: a freshwater tundra setting, preserved between glacial advances, dated broadly enough to encompass this nominal year. Castlepook broadens the view with a remarkable but chronologically complex animal archive and a debated indication of human bone-working. Together they replace the old image of an empty, featureless Ireland before the last great ice-sheet maximum with a more dynamic picture of cold wetlands, open ground, mobile animals and changing ice.

Yet the deeper lesson is one of restraint. The Ireland of this date has no recorded kings, no known wars and no recoverable calendar. Its history survives as silt under a drumlin, pollen and moss remains in a former pool, and bones in limestone caves. Those traces are sparse, but they are enough to show that long before the first farms, tombs and written names, the Irish landscape was already being remade by climate, ice and life.

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31764 BCE

Crag Cave's Winter Drips^[37]



“31,764 BCE” is a modern chronological label, not a year that anyone in Ireland could have named or recorded. At this depth of time, calendar-year precision is unavailable. The label falls about 33,713 years before the conventional radiocarbon-present date of AD 1950, within the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the Late Pleistocene. The safest account of Ireland at this point is therefore not a sequence of events, but a reconstruction from deposits, fossils, cave calcite and the later traces of ice. These sources offer dated ranges and environmental snapshots, not an annual chronicle.

The closest important Irish environmental archive is Derrynvree near Maguiresbridge, County Fermanagh. Roadworks there exposed freshwater silts and fine sands trapped between two substantial sheets of glacial till. The organic layer produced a conventional radiocarbon determination of 30,500 years before present, with a large uncertainty, and has been calibrated in scholarship to a broad range of roughly 36,900–31,700 calendar years before present. That range embraces the modern label used here, but it cannot identify conditions in one particular season, decade or year. What it does establish is that, during part of this cold-stage interval, freshwater and life persisted in an inland Fermanagh landscape before a later ice advance buried the deposit.

Water Beneath a Cold Sky

Derrynvree’s plant and animal remains indicate open tundra or tundra-like vegetation in a periglacial regime: ground subjected to intense freezing and thawing, but not necessarily covered by glacier ice at that precise time. Mosses, sedges and other low-growing plants mattered more than trees. A fossil seed of

bogbean, a wet-ground plant, is a small but powerful indication of shallow freshwater habitat. Insects and pollen complement this picture, pointing to a treeless, exposed environment with wet hollows, silty pools and seasonally harsh ground.

This was not the familiar green, wooded Ireland of later millennia. Nor should it be imagined as a uniform white desert. Even in a cold climate, watercourses, marshy basins, snow patches, gravelly ground and sheltered slopes created different local conditions. Vegetation would have been patchy and vulnerable to abrupt weather shifts. The environmental record supports the existence of open country and freshwater niches; it does not permit a precise map of every valley, coastline or plant community in 31,764 BCE.

South-west Ireland provides a second kind of evidence. At Crag Cave near Castleisland in County Kerry, calcite formations grew intermittently during the last glacial period. Such speleothems form only when liquid water can percolate through soil and limestone above a cave. Uranium-thorium dating of many broken and redeposited calcite pieces shows repeated growth episodes during MIS 3, broadly corresponding with warmer North Atlantic interstadials. Their existence demonstrates that Ireland's climate could ameliorate enough, at intervals, for water to move through shallow karst systems rather than remain permanently frozen. Their interruptions show that these milder phases did not last.

An Atlantic Climate of Abrupt Change

The date label falls in a world of rapid North Atlantic climatic oscillations. Greenland ice-core records provide the wider framework, while Crag Cave offers an Irish response to it. A shift from a colder stadial to a milder interstadial could be substantial on human timescales, changing snow cover, season length, ground moisture and the availability of plants for grazing animals. Yet Irish cave calcite should not be treated as a thermometer reading for a single calendar year. It records episodes favourable to deposition, not a continuous weather diary.

Nor had the last great expansion of the British–Irish Ice Sheet reached its full extent. Research on landforms, offshore sediments and dating programmes places the major Last Glacial Maximum later, broadly from the high twenties into the low twenties thousands of calendar years before present, though its timing and pattern varied around the island. At roughly 33.7 thousand calendar years before present, Ireland was approaching a more severe glacial phase, rather than already possessing the fully developed ice-covered landscape often pictured for the Ice Age. Later glaciers would erode, transport and bury much earlier evidence, making this prehistoric interval unusually difficult to recover.

Animals in the Open Country

Caves, especially Castlepook Cave near Doneraile in north County Cork, preserve the strongest evidence for the animals that could occupy Ireland during the wider MIS 3 period. Re-dating of cave bones has demonstrated a much older presence than earlier work suggested for several species. The Irish record includes reindeer, brown bear, giant deer, Arctic fox, mountain hare, lemmings, wolf, woolly mammoth and spotted hyaena. Not every one of these animals can responsibly be placed at Derryvree or in the exact notional year under discussion. Their dates span long intervals, and cave deposits may mix material accumulated at different times. Together, however, they show that Ireland could support a diverse cold-stage fauna during favourable parts of the Late Pleistocene.

Reindeer are particularly appropriate to an open, cold and seasonally variable landscape. Their presence does not prove that they moved in the enormous, predictable herds familiar from some modern Arctic settings, but it suggests that grazing and browsing animals could find usable forage. Giant deer,

despite their popular association with Ireland, were not an exclusively Irish creature; they ranged widely across Eurasia. Spotted hyaena remains are equally important because they indicate a carnivore guild unlike that of modern Ireland. A cave full of bones need not have been a human hunting camp: carnivores could carry prey in, gnaw bones, and alter the assemblage, while water and sediment could later redistribute it.

The coast and sea also require caution. Global sea level was much lower than today, but ice-sheet growth, local crustal movements and changing shorelines make simple maps misleading. The present shoreline is not the shoreline of this period. Lower sea levels expanded continental shelves and altered passages between Ireland, Britain and mainland Europe, but the evidence does not justify a confident claim that a particular dry route was open, or that any animal followed one, in 31,764 BCE. Faunal movement is real evidence; a mapped migration corridor at this date would be interpretation.

The Castlepook Human Question

The most intriguing, and most limited, evidence bearing on people is a reindeer femur from Castlepook Cave. It has been reported as roughly 33,000 years old and bears a deep incision interpreted by zooarchaeologist Ruth Carden as a possible cut or chopping mark made with a stone tool while the bone was fresh. If that interpretation is sustained, it would indicate human handling of an animal in Ireland far earlier than the island's long-recognised Mesolithic settlement record.

It must not, however, be made to carry more historical weight than it can bear. The bone dates the animal's death, not automatically the moment the mark was made; it does not establish the size, identity, technology or duration of a human party; and the old cave collection lacks the secure excavation context expected of modern archaeology. A cut-mark interpretation also needs comparison with damage made by carnivore teeth, trampling, sediment movement and excavation. The femur is therefore best described as potentially important evidence of a brief Palaeolithic human visit or butchery episode, not proof of a village, a permanent population or continuous occupation.

No excavated dwelling, hearth securely dated to this interval, worked stone-tool assemblage, human burial or unequivocal art has yet provided a corresponding Irish settlement record. Later evidence from Alice and Gwendoline Cave in County Clare demonstrates that humans did reach Ireland during the terminal Pleistocene, but that is many millennia after the period considered here and cannot be projected backwards. The responsible conclusion for 31,764 BCE is agnosticism: people may have entered or visited Ireland, but the material evidence remains too slight to describe an established community.

Society Beyond the Evidence

For that reason, there can be no evidence-based account of Irish political affairs, diplomacy, named leaders, territories, warfare or institutions at this date. There are no texts, monuments or settlement patterns from which to infer them. Likewise, there is no direct Irish evidence for ritual practice, formal religion, artistic traditions, teaching, language or shared symbolic systems. Upper Palaeolithic peoples elsewhere in Europe produced sophisticated art, ornaments and stone technologies, but nearby cultural richness is context, not proof that equivalent practices occurred in Ireland.

Economy and trade must be framed just as carefully. There were no farms, fields, livestock economies, markets or metalworking communities known in Ireland at this time. If people were present, the marked Castlepook bone would be consistent with the procurement and processing of animal food,

hides, sinew or marrow. That is a reasonable functional inference, not evidence for a settled hunting economy. Nothing demonstrates regular exchange networks, seasonal camps or a sustained system of resource ownership on the island.

What This Date Can Mean

The most important development around this notional year was environmental, not political: Ireland lay within a living but precarious Ice Age landscape, where open wet tundra, cold-adapted mammals and periodic milder intervals existed before the later maximum of the ice sheet. Derryvree preserves a freshwater world that the ice subsequently sealed beneath till. Crag Cave preserves evidence that liquid water repeatedly returned during warmer pulses. Castlepook preserves animals, and perhaps a fleeting human intervention, from a landscape that later glaciation and time largely erased.

These archives also explain why the history is fragmentary. Most evidence is indirect, local and separated from the date label by wide chronological margins. Rather than inventing a year of first settlement or a prehistoric drama, the evidence invites a more revealing picture: Ireland was a changing Atlantic frontier, ecologically connected to the wider Pleistocene world, intermittently habitable for animals, and perhaps briefly encountered by people, on the eve of far more extensive glaciation.

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31763 BCE

Maguirebridge's Windblown Pools^[38]



“31,763 BCE” is a modern chronological label, not a year that can be recovered from an Irish record of events. Nobody in Late Pleistocene Ireland kept calendars, built dated monuments or left a continuous settlement sequence from which a particular year can be isolated. For this remote period, even the most useful scientific dates are ranges with stated uncertainties. The closest responsible setting is the later part of Marine Isotope Stage 3 (MIS 3), before the Last Glacial Maximum, when climate in north-west Europe fluctuated sharply and the Irish landscape was changing on scales of centuries and millennia rather than political years.

In calendar terms, 31,763 BCE is about 33,700 years before the radiocarbon convention’s “present” of 1950. That arithmetic must not be confused with a direct radiocarbon age. Radiocarbon years and calendar years differ because atmospheric carbon-14 has varied through time; calibrating an ancient measurement produces probability ranges rather than a single secure date. The evidence discussed here therefore illuminates a broad interval around the thirty-fourth millennium BCE, not one winter, migration or human generation.

A Landscape Between Ice Advances

Ireland lay in the long cold span generally called the Midlandian glaciation, the Irish expression of the last glacial cycle. Yet it was not simply a country locked permanently beneath an ice sheet. Ice expanded and contracted across different sectors at different times. The great British-Irish Ice Sheet would later grow into its local maximum extent, but the picture for the earlier interval is one of uneven, mobile ice margins and substantial areas capable, at times, of supporting tundra plants and grazing animals.

The clearest Irish archive relevant to this world came from Derryvree townland, near Maguiresbridge in County Fermanagh. Roadworks in 1969 cut through a drumlin and exposed freshwater silts and fine sands sealed between two distinct tills: deposits left by glaciers before and after the organic-bearing layer. This geological sandwich is unusually valuable. It demonstrates that a freshwater environment existed at Derryvree during an interval between major ice advances, before later ice reshaped the drumlin and buried its contents.

A conventional radiocarbon measurement on the Derryvree organic sediments was 30,500 $\pm$ 1,170–1,030 radiocarbon years BP. Later work using modern calibration has expressed the result broadly at about 37,200–35,700 cal BP. That range is older than the numbered year considered here, and Derryvree cannot serve as a weather report for the whole island. It nevertheless remains the best excavated Irish environmental window onto the preceding and broadly comparable middle-to-late MIS 3 landscape. Its value is in showing what ice-free Irish ground could contain: wet hollows, open water, mosses, sedges and cold-adapted life.

Moss, Sedge and Open Ground

The Derryvree silts contained pollen, plant remains, mosses and insects. Together they point to an open, treeless environment rather than woodland. Grasses, sedges, herbs and juniper were important elements, while aquatic plants and mosses indicate marshy ground and pools rich in decaying plant matter. The insects supported this reading: they suggest wet muskeg-like terrain, with open water set among mossy vegetation. Such evidence is more secure than any attempt to paint a fully detailed panorama. It records plants and ecological conditions at a particular place, not a uniform island-wide biome.

The climate was severe. The original Derryvree study inferred bitter winters and cool summers, although exact temperature estimates should be treated cautiously because they depend on comparisons with modern species and habitats. Wind, frost action and seasonally frozen ground probably governed much of the surface. There may have been brief growing seasons in which grasses and herbs could flower, insects could reproduce and herbivores could graze. A low, patchy cover of shrubs and tundra plants would have offered far less shelter and far fewer reliable plant foods than the later forested Ireland familiar from the Holocene.

South-western Ireland adds a different kind of evidence. At Crag Cave in County Kerry, uranium-thorium dating of calcite speleothems shows repeated phases of cave-calcite growth during the last glacial period. Calcite deposition requires liquid water moving through the limestone, and the dated growth episodes broadly match warmer Greenland interstadials. This does not prove that every part of Ireland was mild, nor does it identify conditions in a particular calendar year. It does show that the last Ice Age contained abrupt environmental oscillations: intervals when water could circulate underground and others when cold conditions inhibited that process.

Animals at Castlepook

In north County Cork, Castlepook Cave near Doneraile preserves Ireland's richest known collection of pre-Last Glacial Maximum vertebrate remains. More than 2,000 bones have been recovered from its galleries and chambers, whose antiquarian names include Elephant Hall and Hyena Hall. The assemblage

includes woolly mammoth, giant deer, reindeer, brown bear, wolf, foxes, Arctic fox, spotted hyaena and lemmings. It establishes beyond doubt that, during portions of the Late Pleistocene, Ireland was not biologically isolated from the wider north-west European world.

That conclusion needs careful wording. The cave was a trap, den and sedimentary repository over a long period, not a neatly layered campsite. Water movement, animal activity and early twentieth-century excavation disturbed deposits. Bones of different ages entered the system, and later material could intrude. Recent redating has also shown that several earlier radiocarbon results from Irish cave collections were too young, in some cases by thousands of years, because improved pretreatment extracts more reliable collagen from ancient bone. A list of animals from Castlepook is therefore evidence for regional presence over a long interval, not proof that mammoths, hyaenas, bears and every recorded species stood together outside the cave in 31,763 BCE.

Even so, the fauna makes ecological sense for cold open country. Reindeer could exploit tundra vegetation; lemmings and Arctic foxes indicate harsh conditions; wolves and spotted hyaenas were predators and scavengers within a food web that also included large herbivores. Hyaenas may have carried some bones into the cave, affecting both what survived and what archaeologists can infer from it. The absence of some familiar mainland Ice-Age animals, such as woolly rhinoceros and bison, is also notable, but absence in Ireland's sparse fossil record is not automatically proof that a species never reached the island.

People: A Possibility, Not a Population

The human story at this date is especially uncertain. Ireland has no securely excavated dwelling, hearth, stone-tool assemblage, burial or occupation surface dated to the thirty-fourth millennium BCE. There is consequently no responsible basis for describing clans, chiefs, territorial boundaries, diplomatic relations, warfare, ritual institutions or a settled Irish society. Nor can later Gaelic, Celtic or medieval identities be projected backwards into this far older and discontinuous past.

A reindeer femur from Castlepook has, however, drawn justified attention. An incision on the bone has been interpreted as a mark made while fresh by a sharp stone tool, potentially indicating the butchery of a reindeer by people during the Late Pleistocene. If that interpretation and its association with the bone's age are sustained, it would push possible human activity in Ireland far earlier than the better-known terminal Palaeolithic evidence. But it is one contested and isolated trace from a disturbed cave context. The cut itself cannot independently supply an exact date, and a single modified bone cannot demonstrate a resident population.

The most cautious interpretation is that the island may have been visited intermittently by highly mobile hunter-gatherers when geography and climate permitted, perhaps following animal movements or exploiting a short-lived opportunity. That is an inference, not an established fact for this year. If people were present, they would have possessed knowledge, social bonds, language and cultural practices; archaeology's silence does not mean they lacked them. It means Ireland has not yet yielded sufficient securely dated material to describe those practices here.

No Politics, No Trade Network

For the same reason, there is no evidence for political affairs, diplomacy or organised conflict in Ireland around this point. No farms, crops, livestock, pottery, metalwork, settlements or trade goods are known. The economy that can be discussed is ecological rather than institutional: plants converting a brief

summer into grazing, herbivores moving through open country, predators and scavengers competing for carcasses, and water and ice repeatedly altering routes across the landscape.

Lower global sea levels changed the setting of Ireland, exposing wider continental shelves around Britain and Ireland than exist today. These shelves may have reduced marine barriers at some times, but the exact configuration, sea crossings, coastlines and land connections relevant to particular animal movements remain matters for reconstruction. Faunal arrivals show connectivity was possible; they do not prove a permanent dry-land bridge, a regular trading route or a settled migration corridor at this specific date.

A Record of Conditions

The Ireland of around 31,763 BCE is therefore best understood through conditions, not events. Derryvree's buried freshwater sediments preserve a cold, open wetland landscape from an earlier part of the same glacial world. Castlepook's difficult cave bones reveal that large mammals repeatedly reached Ireland before the Last Glacial Maximum. Crag Cave records climatic pulses in underground calcite. Together they show an island of ecological opportunity and rapid constraint, where ice, water, wind and animal movement mattered more than the historical categories of kingdom, church, market or state. The evidence is fragmentary, but its restraint is its strength: it allows a real, if incomplete, Irish prehistory to emerge without pretending that a modern calendar label was ever a date in Ice-Age life.

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31762 BCE

Birm-166's Permafrost Ledger^[39]



There can be no history of a single, knowable Irish year in 31,762 BCE. Modern calendar numbering is being projected backwards across more than thirty-three millennia, while the evidence is dated by radiocarbon measurements, stratigraphy and comparison with wider climatic records. The most responsible description is therefore of a broad interval, not an anniversary. On the conventional scale in which ‘present’ is AD 1950, 31,762 BCE is about 33,711 years ago. It falls within the calibrated range of a remarkable deposit at Derryvree, near Maguiresbridge in County Fermanagh: approximately 36,900–31,700 calibrated years before present. That range is wide, and its younger edge is close to the notional year used here. It nonetheless provides Ireland’s clearest environmental window onto this phase of the Late Pleistocene.

A Date Within a Range

Derryvree was exposed during roadworks in 1969, when a section through a drumlin revealed organic silts and fine sands between two separate layers of glacial till. The material was assigned the laboratory number Birm-166 and produced a radiocarbon age of 30,500 years before present, with a substantial error range. Subsequent calibration converts that measurement into a span rather than an exact date. This is not a defect peculiar to the site: far back in time, radiocarbon calibration curves and the accumulated uncertainty of samples make year-by-year precision impossible.

What the Derryvree sequence securely shows is that, before later ice overran and sealed the deposits, there was an interval in which freshwater sediments, plants and small animals accumulated in north-central Ireland. Its organic remains do not record a settlement, a battle or a named community. They record a local environment. The flora and fauna point to open tundra vegetation and a periglacial climate:

a cold landscape shaped by frost, with sparse woody cover rather than the dense woodland familiar from later prehistoric Ireland. Derryvree is valuable precisely because so much evidence of this age was later removed, mixed or buried by glacier ice.

Land Before the Ice Peak

This was Marine Isotope Stage 3, a long and climatically unstable part of the last glacial cycle. It was not yet the Last Glacial Maximum, the later period when the British–Irish Ice Sheet expanded much more extensively over Ireland and its surrounding shelf. The distinction matters. To picture the whole island under permanent, uniform ice in 31,762 BCE would be misleading. The Derryvree deposits and other dated evidence indicate that parts of Ireland had remained ice-free during the preceding interval, even as conditions were cold and the larger ice-sheet system was developing.

Neither does “ice-free” mean mild. The evidence from Derryvree suggests a treeless or very sparsely wooded landscape of herb-rich, sedge-rich ground, wet hollows and shallow freshwater. In such a setting, freezing and thawing would have broken rock, disturbed soils and altered drainage. Summers could support plant growth and animal grazing, but winters were severe. The country’s later patchwork of enclosed fields, hedges, villages, peatlands and woods did not exist. Rivers, lakes and slopes followed courses unfamiliar to modern observers, while low global sea level altered the coastlines and reduced marine barriers around Ireland.

Regional difference must also be retained. A short-lived freshwater environment under a Fermanagh drumlin cannot simply stand for every shore, upland and valley. Ice margins, local relief, wind exposure, water supply and changing temperatures created varied conditions. In the west, marine evidence from Donegal Bay indicates open water during parts of the wider pre-maximum interval; elsewhere, ice may have advanced or retreated at different times. The archaeological lesson is caution: Ireland was a changing glacial-edge landscape, not a single climatic zone.

Castlepook’s Animal Archive

The strongest evidence for large animals in Ice-Age Ireland comes from Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Excavations begun in the early twentieth century produced more than 2,000 bones from the cave’s galleries and chambers. Modern radiocarbon reassessment has shown that the assemblage spans a long period rather than one neatly sealed moment. That limitation is fundamental. The cave was used and disturbed by water, carnivores, excavators and later natural processes; it cannot supply a photographic snapshot of Ireland in 31,762 BCE.

Even so, its fauna demonstrates that Ireland was periodically accessible to a striking range of mammals during the middle and later Ice Age. The assemblage includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyena, alongside wolf, fox, Arctic fox, mountain hare and lemmings in cold-stage contexts. These animals did not necessarily occupy the same patch of country on the same day, nor need every specimen belong to the exact Derryvree interval. But together they overturn an older image of an entirely lifeless Ireland before the last ice maximum. At favourable moments, northern grassland and tundra habitats supported substantial animal communities.

The spotted hyena deserves particular emphasis, not because it permits sensational stories, but because its presence explains part of the archive. A cave may be a shelter, den, trap, drainage route and bone repository. Hyenas and other carnivores could drag carcass parts into chambers, gnaw them, leave

droppings, and mix remains from different episodes. Castlepook therefore tells us both that large mammals reached Ireland and why careful taphonomic study is needed before assigning every bone to hunting, scavenging or human occupation.

The Reindeer Bone Question

One Castlepook specimen has transformed discussion of the earliest possible human activity in Ireland: a reindeer hind-leg femur bearing a deep incision interpreted by zooarchaeologist Ruth Carden as a cut made by a sharp stone tool during butchery. The bone has been reported as approximately 33,000 years old, broadly around 31,000 BCE in calendar terms. County Cork heritage material consequently presents it as evidence that Palaeolithic hunters may have handled a reindeer in the Doneraile area.

This is potentially momentous, but it must not be converted into a settled history for 31,762 BCE. The radiocarbon result dates the animal's death, not automatically the moment when the mark was made, the place where the carcass was cut, or the date at which the bone entered the cave. The femur came from an old collection rather than a newly excavated, intact occupation surface. No securely associated hearth, dwelling, stone-tool assemblage, human burial or repeated domestic debris of comparable age has been recovered in Ireland. The best present formulation is that the bone is a serious and potentially very early indication of human butchery, while proof of a permanent population remains absent.

If people did reach Ireland in this broad period, they were probably highly mobile hunter-gatherers exploiting an intermittently accessible landscape. That is an inference from the cut-mark interpretation, the available game and the wider Upper Palaeolithic world, not a directly observed Irish camp. Reindeer could provide meat, fat, hide, sinew and bone; a single butchered limb, however, does not reveal the size of a party, whether a hunt succeeded locally, or whether people stayed for a day, a season or longer. Nor does it demonstrate that the visitors were ancestors of later inhabitants of Ireland.

No Politics, No Proven Trade

There were no known Irish kingdoms, chiefdoms, laws, named peoples or diplomatic relationships in this period. There is likewise no direct Irish evidence for organised warfare or political frontiers. Predators competed for carcasses and shelter; any people present would have confronted cold, hunger, injury and dangerous animals. Yet ecological competition is not evidence for human conflict. A hyena-den assemblage and a possibly cut-marked reindeer bone cannot responsibly be turned into tales of rival tribes, raids or alliances.

Economy is visible only in its most elementary possible form: the gathering, hunting, scavenging or processing of wild resources. There was no evidence of farming, livestock, crops, metalworking, pottery, permanent fields or long-distance commercial exchange in Ireland at this date. Lower sea levels may have made movement between Ireland, Britain and the wider north-west European plain easier at times than it later became, and the arrival of mammals shows that crossings were possible. But no Irish object securely dated to this horizon maps a trade route, identifies a source of flint, or proves the direction of human travel.

Culture Beyond Recovery

Upper Palaeolithic communities elsewhere in Europe made sophisticated stone and organic tools, personal ornaments, images and musical instruments. Their existence is an important reminder that Ice-Age people were culturally capable, observant and inventive. It would nevertheless be unsound to import a specific continental art style, language, ritual or social system into Ireland without Irish evidence. No cave art, figurine, ornament, inscription, ceremonial structure or human remains has been securely dated in Ireland to this period.

The same restraint applies to religion and learning. People, if present, surely possessed shared knowledge of animals, weather, routes and materials, and may have had stories, beliefs and ritual practices. Archaeology cannot recover their content from Derryvree's silts or Castlepook's mixed cave bones. Absence of evidence is not evidence that imagination or custom was absent; it defines the limit of what this particular Irish record can demonstrate.

A Fragile Window

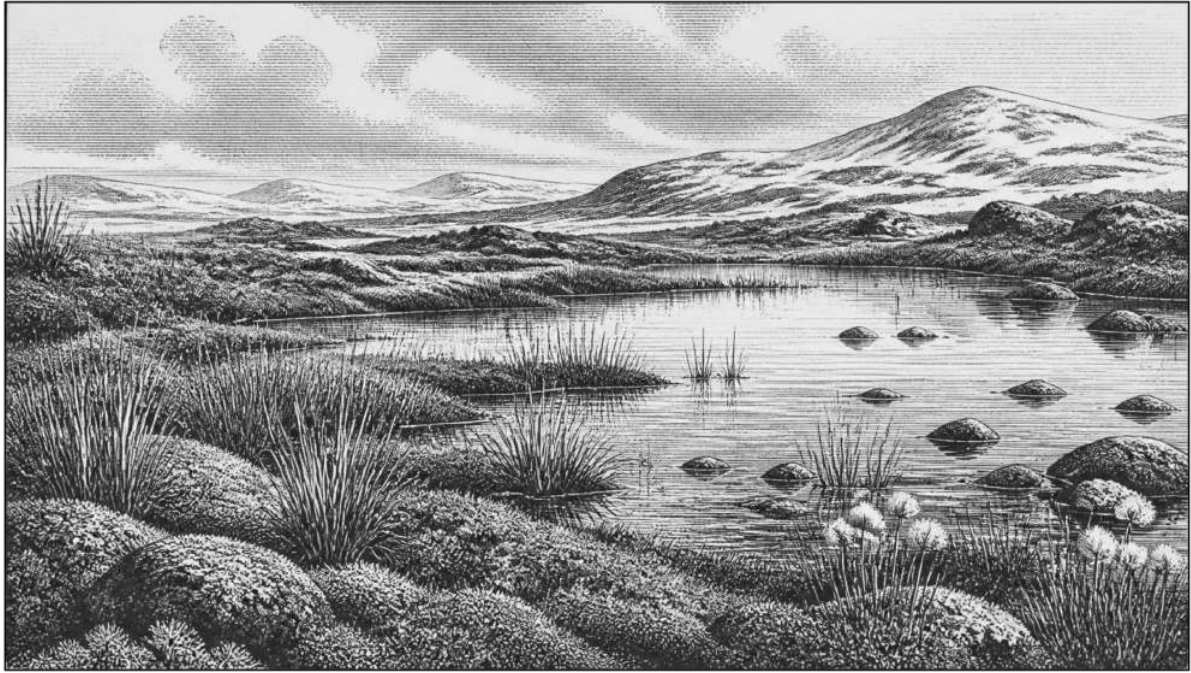
The most important development around this notional year was environmental, not political: Ireland still contained habitats capable of supporting tundra life during a volatile pre-maximum phase of the last Ice Age. Derryvree preserves the quiet evidence of that world beneath a drumlin. Castlepook preserves its larger animals and the provocative possibility that people briefly entered it. Later expansion of the Irish ice sheet would erase or bury many comparable landscapes, helping to explain why the record is so thin.

Thus 31,762 BCE should be approached not as a date of recorded events but as a carefully bounded archaeological horizon. The evidence supports cold open country, freshwater pockets, travelling herds and carnivores in parts of Ireland; it also supports the possibility, not yet the full demonstration, of human butchery in the wider era. Everything more particular—a village, a leader, a ritual, a war, a voyage or a continuous settlement—would be invention. The Birm-166 deposit remains more revealing than such invention: a small survival of silt, plants and insects from an Ireland poised before the great ice advance.

Chapter 040 of 100

31761 BCE

Castlepook's Cave-Bear Horizon^[40]



The label 31,761 BCE identifies no recoverable Irish ‘year’ in the historical sense. No people in Ireland used this calendar, and neither archaeology nor Quaternary science can assign a political act, birth, battle or journey to that precise point. In simple modern arithmetic it lies about 33,700 years before the radiocarbon convention’s reference year of AD 1950. That makes it broadly relevant to the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the last Ice Age. The responsible account is therefore of a time-range, not an anniversary: evidence from Irish deposits dated in broad calibrated ranges can illuminate the landscapes and animals that existed around this notional date, but not a particular day or human community.

A Date Within Deep Time

Even the conversion between radiocarbon and calendar time needs care. Radiocarbon years are not calendar years: atmospheric carbon levels changed through time, so laboratory measurements must be calibrated against international curves. For ages as old as this one, the calibration curve itself is built from several independently dated archives, including speleothems, lake sediments, corals and floating tree-ring sequences. The result is indispensable but not year-level precision. Dates should be read as probability ranges, while the relationship between an old bone, the sediment enclosing it and any marks upon it may involve further uncertainty.

Irish archaeologists and geologists commonly describe this part of the record as Middle Midlandian or Devensian in older regional terminology, and as MIS 3 in the wider international framework. It came before the Last Glacial Maximum, when the British–Irish Ice Sheet expanded over Ireland and the surrounding shelves. That does not mean a uniformly ice-free Ireland at 31,761 BCE. Evidence from the western seaboard indicates substantial, fluctuating ice-sheet activity over parts of the preceding 40,000 to

19,000 calibrated years. Ice margins, sea level, drainage and local habitat could change on scales far longer than a human lifetime but short in geological terms. Ireland was a varied and unstable northern environment, not a single unchanging sheet of snow.

Derryvree's Buried Wetland

The best direct environmental evidence for the broad period comes from Derryvree near Maguiresbridge in County Fermanagh. There, organic freshwater deposits survived between two tills: sediments laid down by ice before and after the intervening episode. The sequence contains freshwater mosses and sedges, aquatic plants, pollen and an insect fauna of cold northern character. It records a treeless, wet landscape with pools or slow water, mossy ground and sedge-rich margins. It is a striking corrective to any picture of Ireland as either entirely buried beneath ice or completely barren.

Derryvree is also a lesson in the limits of the evidence. Its published radiocarbon measurement of about 30,500 radiocarbon years BP has a large uncertainty and is a date for organic material within a sedimentary sequence, not for an event in 31,761 BCE. The plants and insects demonstrate conditions at that locality during a cold interval; they do not identify a nation, a village or a named people. Nevertheless, they show that freshwater ecosystems endured in at least some protected settings. Water, wet ground and vegetation would have structured the movement of animals, while frost, seasonal snow, wind exposure and poor soils constrained the possibilities of more permanent occupation.

The wider Fermanagh record reinforces this regional picture. Organic deposits at Hollymount and Greenagho also occur between glacial sediments and point to episodes when non-glacial, cold-climate environments existed between advances of ice. Their dates and correlations are not exact enough to turn them into a neat annual sequence. Taken together, however, they establish an important fact: the Irish landscape during the last glacial cycle repeatedly changed between phases of ice occupation and phases in which tundra-like freshwater and terrestrial habitats were possible.

Animals at Castlepook

For the animal world nearest to this broad chronological horizon, Castlepook Cave near Doneraile in north County Cork is indispensable. Excavations undertaken in the early twentieth century recovered a remarkable but difficult collection of animal remains from the limestone cave system. Subsequent radiocarbon work by the Irish Quaternary Fauna Project, and later reassessment, showed that the material did not represent one simple deposit or one moment in time. The cave accumulated bones over multiple phases, while antiquarian excavation and disturbance complicated the original stratigraphy.

Yet the fauna is powerful evidence in its own right. Castlepook has produced remains attributed to reindeer, woolly mammoth, giant deer, brown bear, wolf, red and Arctic foxes, spotted hyaena, stoat, mountain hare and lemmings. Re-dating has placed important southern Irish faunal material within MIS 3, with some relevant specimens falling broadly between about 45,000 and 33,000 calibrated years ago. That range overlaps the modernly numbered date considered here, though it does not demonstrate that every species shared the same valley, season or generation.

The combination suggests open, cold habitats capable at intervals of supporting grazers and browsers as well as predators and scavengers. Reindeer and lemmings are especially consistent with northern, open-country conditions; mammoth points to productive enough grazing in parts of the wider landscape; hyaena, wolf and bear reveal a more complex food web than a simple image of frozen emptiness allows. Caves, however, are not straightforward snapshots of living communities. Carnivores may carry prey in,

animals may die in traps or sheltered passages, and water or later excavation can mix material. The assemblage demonstrates animal presence in southern Ireland across a broad period, not a population census for one year.

A Possible Human Trace

The question of people is both important and unresolved. A reindeer femur from Castlepook has been reported as carrying a deep mark interpreted as the cut of a sharp stone tool. If that interpretation and its chronology are upheld, it would be evidence that a person handled or butchered reindeer in Ireland during the Pleistocene, immensely earlier than the formerly accepted archaeological record. It is a hypothesis of major significance, and it has rightly encouraged renewed excavation and analysis at Castlepook.

It is not, however, evidence for an Irish settlement in 31,761 BCE. The bone originated in an old collection rather than from a modern, intact occupation surface. The date measures the animal bone, not automatically the time when the mark was made. No securely associated hearth, stone-tool assemblage, dwelling floor, human remains, cemetery or repeated food-processing area of comparable age has yet established a resident population. Fresh investigations seek precisely the stratified material that could test these possibilities. Until that work supplies firmer associations, the careful conclusion is that Pleistocene human presence in Ireland is possible and perhaps increasingly plausible, but remains unproven as a sustained occupation.

Society Beyond Recovery

Accordingly, there is no evidence from Ireland for political affairs, diplomacy, warfare, law, leadership or territorial boundaries at this date. There were no documented kingdoms, farms, ports, markets, churches, monuments or written institutions. Nor can Irish evidence recover a language, religion, stories, artistic tradition, kinship system or formal learning. Such absences should not be confused with claims that any visiting people had no beliefs, skills or social ties; they mark the limits of preservation and discovery.

If people did enter the island during this phase, comparison with Upper Palaeolithic groups elsewhere in north-west Europe suggests highly mobile lifeways dependent on knowledge of weather, animal movements, fuel, stone, safe routes and temporary shelter. That is an informed comparison, not a description of a known Irish band. Reindeer, for example, could potentially have provided food, hides, sinew, bone and antler, but Castlepook does not permit those uses to be reconstructed beyond the contested inference of butchery. Agriculture, herding, pottery, metalworking and permanent built settlement belong to much later Irish prehistory.

Trade and sea travel must be treated with similar restraint. Lower global sea levels altered the surrounding continental shelves, but changing ice, marine channels and local relative sea level mean that no simple, permanent land bridge into Ireland can be assumed. Animals evidently reached the island during favourable phases, yet the routes, timing and frequency of their dispersal remain debated. No Irish artefact of this age identifies an exchange network or a point of origin for people.

Approaching a Harder World

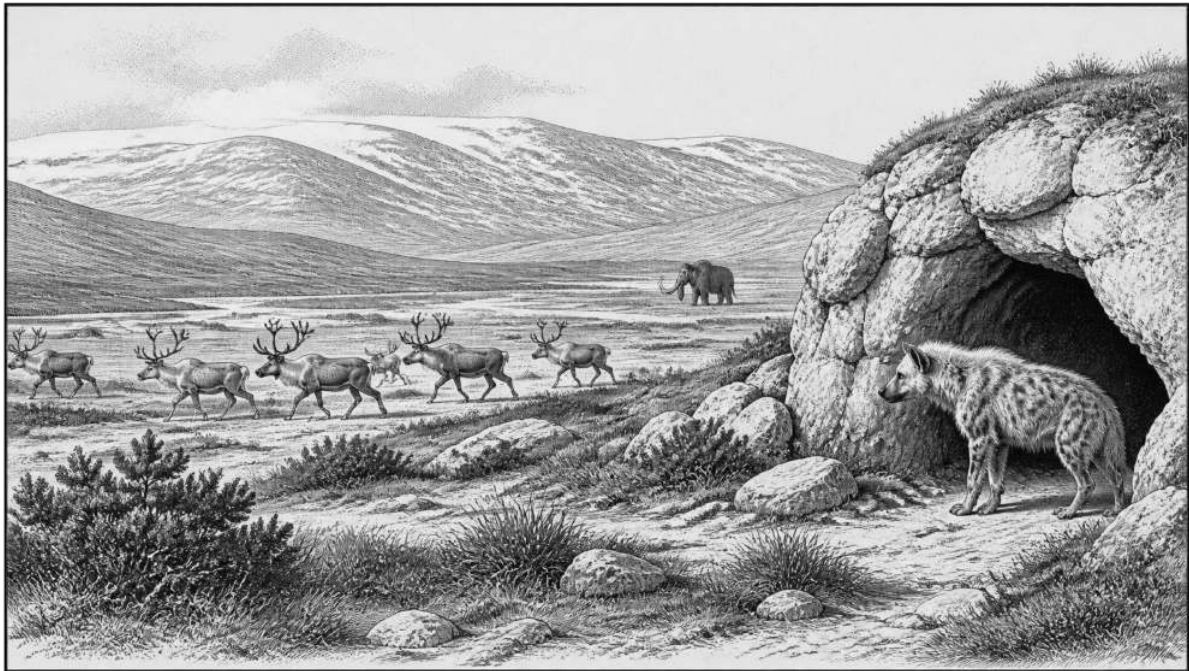
The great development visible from this distance is environmental change. In the millennia after the interval relevant to 31,761 BCE, the British–Irish Ice Sheet reached extensive Last Glacial Maximum limits. Research on the Atlantic shelf west of Ireland places grounded ice at the outer shelf around 26,800 calibrated years BP, with retreat beginning by about 25,900 cal BP. Those later results do not tell us that ice covered every place at the earlier nominal date. They do show why the Derryvree wetland and Castlepook fauna matter: both belong to a precarious world before, or amid, the major expansion and reorganisation of ice.

Glaciers subsequently eroded landscapes, redeposited sediment and removed or buried many possible archaeological traces. Rising seas after the Ice Age also drowned former coastal plains and routes. The scarcity of evidence is therefore historically meaningful but not conclusive proof of human absence. Around 31,761 BCE, Ireland can responsibly be envisaged as a changing cold-stage landscape, locally capable of sustaining freshwater vegetation and Ice Age mammals, but subject to advancing ice and profound ecological disruption. Its history at this depth is written not in annals or monuments, but in mosses beneath till, insect remains in silt and the fragmentary bones of Castlepook Cave.

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31760 BCE

Awbeg Valley Hyena Den^[41]



31,760 BCE cannot be treated as a date on which a recorded Irish event occurred. No written record, named individual, settlement plan or securely datable human occupation belongs to this calendar year. Indeed, modern calendar-year precision is not available for Ireland at so remote a point in the Late Pleistocene. In simple year-count terms it lies about 33,700 years before 1950, the conventional “present” of radiocarbon dating, but a radiocarbon result must be calibrated and expressed as a probability range rather than converted into an apparently exact BCE anniversary. The responsible frame is therefore later Marine Isotope Stage 3 (MIS 3), an unstable interval of the last Ice Age, and the archaeological and environmental traces that can illuminate Ireland broadly around it.

For this period, the most important Irish evidence lies not in a village, grave or monument but in caves and buried sediments. These are fragmentary archives, and their limits matter as much as their revelations. They show that animals entered and lived on parts of the island during phases before the Last Glacial Maximum; they do not demonstrate a permanent human population, a polity, or an Irish society comparable with later prehistory. Around the horizon represented by 31,760 BCE, Ireland was a cold, changing north-western landscape whose connection to neighbouring lands, available habitat and ice cover altered over long timescales.

A Date Within a Moving Ice Age

MIS 3, conventionally dated to roughly 57,000–29,000 years ago, was not one uniform deep freeze. Greenland ice-core records and North Atlantic research reveal abrupt shifts between relatively milder interstadials and severe stadials. The British–Irish Ice Sheet also waxed and waned unevenly. Reconstructions indicate substantial ice-sheet growth after about 31,000 years before present, culminating

later, with the principal British–Irish maximum around 27,000–23,000 years ago. That broad sequence makes 31,760 BCE a threshold in geological terms: well before the fullest Last Glacial Maximum, but within the long approach to it.

It would nevertheless be misleading to colour the entire island either white with ice or green with habitable pasture for this one numbered year. Ice margins were dynamic; evidence from different Irish regions is discontinuous; and the timing of local glaciation remains an active area of research. Some uplands may have supported local ice while lower ground, particularly in parts of the south, could at intervals sustain cold-adapted vegetation and animals. Subsequent glaciation eroded, buried and redeposited much older ground surface, leaving caves and rare sub-till deposits disproportionately important. Absence of a camp or hearth is therefore not proof that no person ever arrived; it is, however, a powerful reason not to assert an occupation without direct evidence.

Castlepook's Uneven Archive

The central site is Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork, above the Awbeg Valley. Its limestone passages were explored extensively between 1904 and 1918. Early excavators recovered an immense collection of animal bone from sands beneath calcite floors, but their methods and records do not meet modern archaeological standards. Much of the original material is no longer extant, and floodwater, animal activity and excavation disturbance mixed deposits of different ages. Castlepook is consequently a remarkable source for Pleistocene life, but not a neatly layered diary of a single moment.

Modern radiocarbon work transformed the interpretation of this collection. The Irish Quaternary Fauna Project established that a wide range of mammals reached Ireland between at least about 45,000 and 20,000 radiocarbon years ago. Later re-dating, using improved pretreatment of bone collagen, showed that several older determinations required revision and placed elements of the southern Irish fauna firmly in MIS 3. One important conclusion was that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum, perhaps around 40,000 calibrated years before present. That is an inference from dated bones and regional chronology, not a claim that every Castlepook animal lived together or that any one species can be placed exactly in 31,760 BCE.

What the cave does securely establish is the existence, over a substantial pre-maximum interval, of an Irish mammal community far richer and stranger than the historic fauna of the island. Identified material includes reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, mountain hare, collared and Norwegian lemmings, and spotted hyaena. Castlepook is Ireland's only known spotted-hyaena locality. The hyaena remains, including a skull preserved by the National Museum of Ireland, are especially suggestive because the cave appears to have served, at least at times, as a carnivore den where prey remains accumulated.

Open Ground and Predators

The animal list points towards a predominantly open, cold landscape rather than the wooded Ireland familiar today. Reindeer, lemmings, Arctic fox and mountain hare are consistent with treeless or sparsely shrubby tundra-steppe conditions, with grasses, sedges, herbs, mosses and low shrubs providing seasonal grazing and cover. Mammoth and giant deer imply substantial plant productivity in suitable places, not an

empty polar desert. Brown bear, wolf and hyaena occupied different ecological roles as predators, scavengers or omnivores. Yet the precise balance of grassland, wet ground, snow cover and scrub cannot be reconstructed from a cave inventory alone, particularly when its bones accumulated over millennia.

Derryvree, near Maguiresbridge in County Fermanagh, offers a complementary but earlier and differently dated sort of evidence: organic sediments sealed beneath glacial deposits. Its freshwater and wetland deposits preserve plant remains and other environmental indicators from a Middle Midlandian interstadial setting. They demonstrate why the phrase “Ice Age” should not be equated automatically with permanent continental ice across all Ireland. In suitable intervals, pools, sedge-rich margins and mossy ground existed in the north as well as more open terrain. Derryvree cannot be made a year-by-year weather report for north Cork, but it reinforces the picture of fluctuating, locally habitable environments before later ice advance.

The caves also caution against sentimental images of a tranquil animal paradise. Hyaenas could carry carcass parts into underground shelters; wolves and bears left their own traces; flooding shifted sediment; and bones survived or disappeared according to chance. A mammoth bone may register scavenging rather than hunting, a reindeer limb might have been carried by a carnivore rather than deposited beside a living herd, and a species represented by one specimen need not have been common. The important historical fact is not that every listed animal shared one meadow, but that Ireland intermittently supported routes and habitats through which these large mammals could reach it.

The Human Question

Human presence is the most compelling and most uncertain issue. A reindeer femur from Castlepook has been reported as bearing a deep incision interpreted by Ruth Carden as a sharp-tool cut made during butchery. Its reported age, around 33,000 years ago, has raised the possibility of a human visit to Ireland far earlier than the well-established post-glacial record. If the mark is genuinely anthropogenic and the dating and context hold, it would be exceptionally important: evidence not of an Ice-Age nation, but of people processing an animal during a fleeting incursion into a difficult landscape. Recent research excavation has sought undisturbed deposits capable of testing such questions with modern methods.

For 31,760 BCE, however, that proposition must remain precisely worded. There is no securely excavated hearth, stone-tool assemblage, dwelling, burial, genetic sample or repeated settlement sequence from Ireland at this age. Nor can a single modified bone identify the visitors’ language, kinship, culture or route of travel. Contemporary Upper Palaeolithic groups elsewhere in north-west Europe were highly mobile hunter-gatherers who possessed sophisticated stone technologies and social networks, but applying that knowledge to Ireland is interpretation by comparison, not direct Irish evidence. The most defensible conclusion is that occasional human exploration is possible and under investigation, while permanent settlement is unproven.

No Politics, No Trade Network

There can be no responsible account here of kingship, diplomacy, warfare, religious institutions or formal trade. Such categories require evidence that Ireland around this time does not provide. Even the island’s physical accessibility should not be reduced to a simple land-bridge story. Lower sea levels exposed areas of the surrounding shelf, but the changing configuration of sea, ice and land was complex,

and scholarship has long disputed when, where and whether practicable land connections linked Ireland and Britain. Animal colonisation demonstrates movement into Ireland at certain times, but it does not identify a universally open route, still less a human trading corridor.

Everyday life, if people did reach the island, would have been organised around mobility, weather and animal behaviour. A short hunting or scavenging visit might have involved stone cutting implements, knowledge of hides and meat preservation, fire-making and close co-operation; none of these can yet be recovered directly from Castlepook. There is no evidence for farming, pottery, metalworking, monuments or settled coastal communities. Nor is there evidence for ritual at the cave. Its evocative modern gallery names, such as Hyaena Hall and Elephant Hall, should not be mistaken for prehistoric meanings.

An Ireland Before Historical Ireland

The significance of this date is therefore environmental and methodological. Around the broad 33,700-years-before-present horizon represented by 31,760 BCE, Ireland belonged to a shifting Ice-Age world in which animal populations could enter, flourish locally and vanish as climate, ice and geography changed. Castlepook preserves the strongest Irish testimony to that world, even as its disturbed deposits prevent overly exact reconstruction. The future of the question rests on careful excavation, direct dating, microscopic analysis of bone modifications and willingness to revise dramatic claims.

That restraint is not a deficiency in Ireland's story. It is the story. Long before recorded communities, the Awbeg Valley cave system held the remains of reindeer, hyaena and mammoth in a landscape poised between habitable cold ground and expanding ice. The evidence permits us to see an ecological frontier and perhaps the shadow of rare human visitors. It does not permit us to populate 31,760 BCE with invented tribes, conflicts or ceremonies. In this far prehistoric Ireland, uncertainty is not an empty space to fill: it is the most important historical fact.

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31759 BCE

Castlepook's Tundra Threshold ^[42]



“31,759 BCE” is a modern calendar label, not a date at which an event in Ireland can be identified. It corresponds roughly to 33,708 years before AD 1950, the conventional reference point for “before present” (BP), but neither archaeological deposits nor palaeoclimatic records can distinguish one modern calendar year at this depth of time. The responsible setting is therefore a calibrated range: late Marine Isotope Stage 3 (MIS 3), a fluctuating cold interval broadly dated to c. 59,000–29,000 calibrated years BP. Around the notional year in question, Ireland stood near the threshold of the last great expansion of the British–Irish Ice Sheet, while its surviving evidence comes from cave bones, buried wetlands, pollen, insects, sediments and later scientific re-dating rather than chronicles or settlements.

A Landscape Measured in Ranges

The closest chronological guide comes from deposits beneath later glacial till in County Fermanagh. At Derryvree, near Maguiresbridge, organic silts and fine sands were laid down in freshwater conditions before being overridden by ice. Their radiocarbon determination, Birm-166, was reported as 30,500 radiocarbon years BP with a substantial uncertainty; older calibration placed the deposit broadly within c. 36,900–31,700 calibrated years BP. That wide interval embraces 33.7 thousand years ago. It does not date a single season, settlement or animal death, but it securely shows that a cold, organic-rich wetland existed in north-central Ireland during this portion of the Late Pleistocene, before later ice sealed it beneath till.

Greenagho, also in Fermanagh, supplies a complementary limit. Lacustrine organic material beneath till has been dated to c. 37,200–35,700 calibrated years BP, indicating ice-free ground in that district earlier in MIS 3. Taken together, such records suggest that the Irish ice sheet had not yet attained the island-wide maximum associated with the Last Glacial Maximum. They do not justify a simple map

showing all Ireland either white with ice or wholly open. Ice growth was spatially uneven, deposits are patchy, and later glaciers destroyed much of the evidence. The most defensible picture is of a cold, exposed Ireland in transition, with regional conditions changing over millennia rather than on a datable day.

Wetlands, Wind and Sparse Vegetation

Derryvree's plant and animal microfossils point to open tundra and a periglacial regime. Mosses, sedges and other low-growing plants could occupy wet ground; beetles and pollen from comparable northern Irish deposits indicate largely treeless, sparsely vegetated landscapes. Aghnadarragh in County Antrim has provided insects associated today with far northern environments, alongside evidence for open ground and little standing water. Palaeoecological reconstructions have suggested cool summers and bitter winters, although such numerical estimates remain models derived from modern species' climatic tolerances, not direct thermometer readings from ancient Ireland.

This was not necessarily an empty plain of unbroken snow. Periglacial country could include stream margins, shallow pools, sedge-rich hollows, gravelly slopes and more sheltered limestone terrain. Seasonal thaw, freeze–thaw action and strong winds helped move sediment and limited tree growth. The vegetation was likely short and discontinuous, but it could still sustain grazing animals in particular places and seasons. What the environmental evidence demonstrates is habitat, not a fixed view from every valley: a wetland in Fermanagh and a cave catchment in north Cork recorded different local worlds.

Castlepook's Animal Archive

The richest window on southern Ireland is Castlepook Cave near Doneraile, County Cork, long known in antiquarian accounts as Mammoth Cave. Its deposits and old collections include remains attributed to woolly mammoth, reindeer, giant deer, brown bear, spotted hyaena, wolf, Arctic fox, lemmings and mountain hare. Improved radiocarbon work has revised the chronology of several southern Irish cave specimens, showing that some animals once thought nearer the Last Glacial Maximum were substantially older, within MIS 3. The cave is therefore important evidence that Ireland supported a varied cold-stage fauna before the maximum ice cover.

Yet a cave assemblage is not a census of animals peacefully living together beside its entrance. Carnivores could drag prey and carrion inside; hyaenas could accumulate, gnaw and disperse bone; water could sort material; excavators working between 1904 and 1913 removed deposits by methods far less exact than those used today. Castlepook's famous galleries preserve a remarkable archive, but their contents must be read taphonomically: by asking how each bone entered, moved within and survived in the cave. Mammoth or hyaena bones prove that those animals reached the wider landscape. They do not alone prove the precise composition, density or seasonality of every herd.

The Human Question

There is no securely excavated village, hearth, cemetery, art site or stone-tool assemblage from Ireland that can be assigned to 31,759 BCE. Consequently there is no basis for describing named communities, family structures, language, leadership, religion or a continuous population at this date.

Political affairs, warfare, diplomacy and formal trade are wholly beyond the evidence. Nor should later Irish traditions, medieval origin stories or the familiar monuments of prehistoric Ireland be projected back more than thirty millennia into an entirely different landscape.

A reindeer femur from Castlepook has nevertheless made this period central to the question of Ireland's earliest human presence. The bone has been reported as about 33,000 years old and bears a deep mark interpreted by zooarchaeologist Ruth Carden as damage made by a stone tool during butchery. If that interpretation is confirmed through further analysis and contextual work, it would indicate a brief Upper Palaeolithic human presence in Ireland vastly earlier than the long-accepted postglacial settlement record. It would not demonstrate permanent colonisation. A butchered bone can record a short visit by mobile hunters as readily as a settled population.

That distinction matters. The modified femur is an important, plausible lead, but it is a single find from an old cave collection rather than a stratified camp with a suite of tools and dated activity surfaces. Recent licensed excavation at Castlepook has sought undisturbed deposits and better contextual evidence. Until those investigations produce and publish a fuller record, the cautious formulation is that humans may have entered Ireland during late MIS 3; their presence around this particular notional year remains unproven. The absence of evidence is partly geological: advancing ice later eroded and buried many former land surfaces.

Routes Across a Changing Northwest

Lower global sea levels during MIS 3 exposed broad areas of what is now continental shelf. This enlarged the terrestrial and coastal landscapes around Ireland, altered river courses and made animal movement from north-western Europe more feasible. It must not, however, be casually converted into a guaranteed dry-shod route. The exact pattern of sea, estuary, lowland and ice changed through time, while Ireland's insularity depended on local relative sea level as well as global ocean level and the weight of ice depressing the land. For people or animals, movement may have involved a mixture of land corridors, coastal passage and water crossings.

In economic terms, nothing supports trade networks, farming, herding, metalworking or stored surplus in Ireland at this date. If people did visit, their economy would have resembled the highly mobile hunting and scavenging strategies known among Upper Palaeolithic groups elsewhere in north-west Europe: obtaining meat, fat, hides, bone and perhaps seasonal knowledge from an exposed cold-country environment. That is an analogy, not direct Irish evidence. The reindeer femur, if genuinely butchered by people, would support processing of one animal; it cannot reveal how often visitors came, what tools they carried, where they slept or whether they returned.

Before the Main Ice Advance

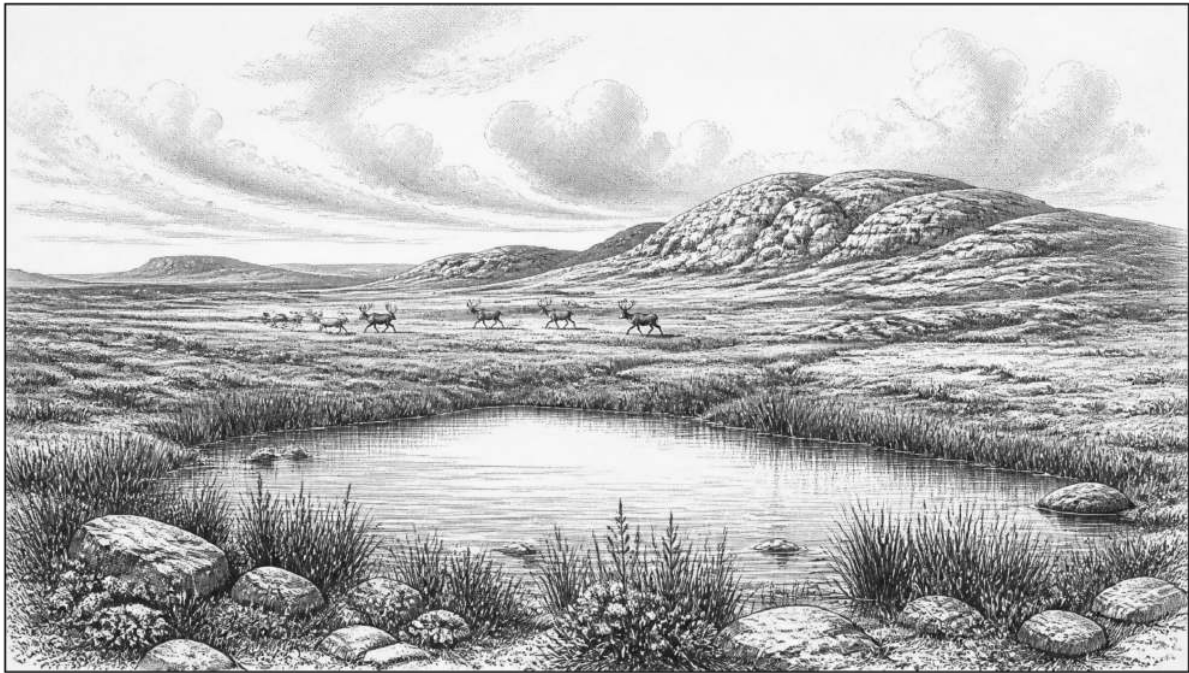
The larger historical development was environmental transformation. Reconstructions of the British-Irish Ice Sheet show major growth during the interval from roughly 31,000 years ago onwards, followed by maximum expansion later, around c. 27,000–23,000 calibrated years BP. By then ice covered Ireland and extended onto surrounding shelves. The hypothetical moment labelled 31,759 BCE therefore belongs not to a familiar Irish “age” of monuments or peoples, but to the long prelude to that maximum: a world of tundra wetlands, cold-adapted mammals, changing coasts and advancing ice.

Its history is necessarily modest in human terms but substantial in environmental ones. Ireland was not yet the green, wooded island of later millennia, nor an arena for recoverable kingdoms and institutions. It was a northern landscape whose record survives in a handful of exceptional places: silts beneath Fermanagh drumlins, fossils in Cork limestone caves, and the sediments now hidden beneath sea and ice-age deposits. Around 31,759 BCE, the strongest conclusion is not that a particular Irish event occurred, but that the conditions existed in which animals—and perhaps occasional people—could traverse and use a rapidly changing Pleistocene Ireland.

Chapter 043 of 100

31758 BCE

Shandon's Reindeer Passage^[43]



“31,758 BCE” is a modern calendar label, not a date at which an event can be placed in prehistoric Ireland. No written record, settlement sequence or annual chronicle permits that degree of precision. In archaeological terms, the point falls about 33,700 calendar years before AD 1950, within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable phase of the Late Pleistocene. The most responsible account is therefore regional and probabilistic: it considers evidence dated to broad calibrated ranges around this point, while keeping firm distinctions between what survives in the record and what archaeologists infer from it.

Ireland was then part of a north-west European world repeatedly reshaped by cold, ice, changing sea levels and mobile animal populations. It was not yet the familiar island of later history. Coastlines lay far beyond many modern shores because large quantities of the world’s water were held in continental ice sheets. Yet low sea level did not automatically create a simple, permanent land bridge from Ireland to Britain or continental Europe. The configuration of sea, ice and habitable land changed over millennia. Animals demonstrably reached Ireland during this period; the precise routes, and the degree of continuity between populations, remain subjects of investigation.

A Date Range, Not a Year

At this depth of time, radiocarbon determinations must be calibrated against changing atmospheric carbon-14 levels. A laboratory age expressed in radiocarbon years before present is therefore not identical to a calendar age, and the calibrated result is normally a range rather than a single point. The distinction matters especially around 34,000 years ago, where calibration uncertainty can be substantial. The year heading should consequently be understood as a convenient place in a modern timeline, not as evidence that a particular hunt, migration or climatic episode happened in one named year.

The Irish evidence nearest this broad interval comes mainly from cave bone assemblages in the south and south-east, and from buried sedimentary sequences elsewhere. These sources have different strengths. Bones can identify animals that reached a locality, but many were excavated long ago and often lack the secure, fine-grained stratigraphy expected of modern fieldwork. Sediments, pollen, plant remains and insects may reveal local environments, but they too represent episodes and accumulations rather than snapshots of a single season. Later glacial erosion also removed or buried vast areas of the contemporary landscape.

Reindeer at Shandon

Shandon Cave in County Waterford provides one of the clearest faunal windows onto Ireland's pre-Last Glacial Maximum world. The cave has yielded remains attributed to reindeer, mammoth, horse, red deer, brown bear and wolf. Earlier radiocarbon programmes placed a Shandon reindeer radius at $30,840 \pm 550$ radiocarbon years before present, alongside other specimens of comparable antiquity. Such dates, once calibrated, overlap broadly with the climatic world relevant to 31,758 BCE, though they must not be converted into an assertion that this particular animal lived in that exact calendar year.

The important conclusion is modest but powerful: Ireland supported, or at least received, a varied large-mammal fauna during parts of MIS 3. Reindeer suggest open, cold-country habitats; horse and mammoth reinforce the picture of extensive grassland or herb-rich tundra rather than a closed forest. Brown bears and wolves show that the food web included sizeable omnivores and predators. This was no empty frozen wasteland. It was a difficult, seasonal landscape in which grazing animals, carnivores and scavengers could move across broad territories.

At the same time, cave collections should not be read as an ecological census. Caves were traps, dens, shelters and repositories where carnivores accumulated prey and where water, sediment movement and later disturbance could mix material. A mammoth rib or reindeer limb proves neither a resident herd at the cave mouth nor a stable local population. The fauna instead establishes a range of species present in Ireland over extended spans of time. Its greatest value lies in demonstrating environmental possibility: animals characteristic of cold open country could reach and survive in parts of the island before the full glacial maximum.

Castlepook and the Human Question

Castlepook Cave near Doneraile, County Cork, is central to discussion of possible people in Ireland at this time. Its exceptionally important assemblage includes reindeer, giant deer, mammoth, brown bear and spotted hyaena. Modern redating has also shown that some earlier radiocarbon results from southern Irish cave bones were too young, underlining how readily conclusions alter when improved pretreatment and calibration are applied. The cave is consequently evidence both for a rich pre-glacial fauna and for the need for caution.

One reindeer femur from Castlepook has been reported as bearing a mark consistent with stone-tool butchery and as dating to roughly 33,000 years ago. If that identification is sustained, it would be Ireland's earliest known indication of human activity: not a settlement, nation or continuous occupation, but the processing of one animal carcass by a small party of Upper Palaeolithic people. It would show that humans could reach Ireland during MIS 3. It would not tell us their language, kinship, beliefs, numbers, homeland, length of stay or whether they left descendants.

The limitations are decisive. No securely associated hearth, house floor, tool-kit, human bone or repeated occupation horizon is presently available for 31,758 BCE. The marked bone was recovered from a cave assemblage shaped by antiquarian excavation and complex depositional history. Natural abrasion, carnivore activity and excavation damage must always be excluded when recognising a cut mark. The careful formulation is therefore that Castlepook offers suggestive, potentially transformative evidence for a human visit around this wider period, rather than proof of a settled Irish population.

Wetlands Beneath Later Ice

Far from the Cork and Waterford caves, Derryvree near Maguiresbridge in County Fermanagh preserves another kind of archive. Roadworks exposed freshwater silts and fine sands sealed between two thick tills within a drumlin. The stratigraphic position is fundamental: the organic-rich deposits record an interval between episodes of glaciation, then were overridden or enclosed by later ice-related sediment. Their plant and insect evidence has been interpreted as a treeless, cold freshwater and wetland environment, often described as muskeg or tundra wetland.

Derryvree does not furnish a neat map of all Ireland, nor can its radiocarbon evidence be pinned precisely to 31,758 BCE. It does, however, show that northern Ireland could contain standing or slow-moving fresh water, sedges, mosses and open ground during a Middle Midlandian interval broadly relevant to MIS 3. Such places would have supported insects, aquatic plants, small animals and grazing at their margins. They also remind us that Ice Age Ireland contained environmental mosaics: exposed mineral ground, wetlands, river valleys, caves and, in some districts, nearby glaciers or ice sheets.

No Politics, No Recorded Conflict

There is no evidence for political affairs, diplomacy, institutions, chiefs, organised warfare or territorial states in Ireland at this point. Nor is there evidence from which religion, artistic traditions, formal learning or social rank can responsibly be reconstructed. Later Irish monuments, myths, languages and populations are separated from this period by tens of thousands of years and must not be projected backwards.

If people did visit, their everyday economy would most plausibly have been a mobile hunter-gatherer one, dependent on knowledge of animal behaviour, weather, stone and fuel. That is an inference from the wider Upper Palaeolithic of north-west Europe, not a directly excavated Irish household. The Castlepook bone, if anthropogenic, suggests carcass processing; it does not establish regular reindeer hunting, trade in hides or antler, or a camp beside the cave. Likewise, the presence of animal species in Ireland implies ecological connections with Britain and Eurasia, but it does not demonstrate diplomatic or exchange networks among human groups.

Approaching a Colder World

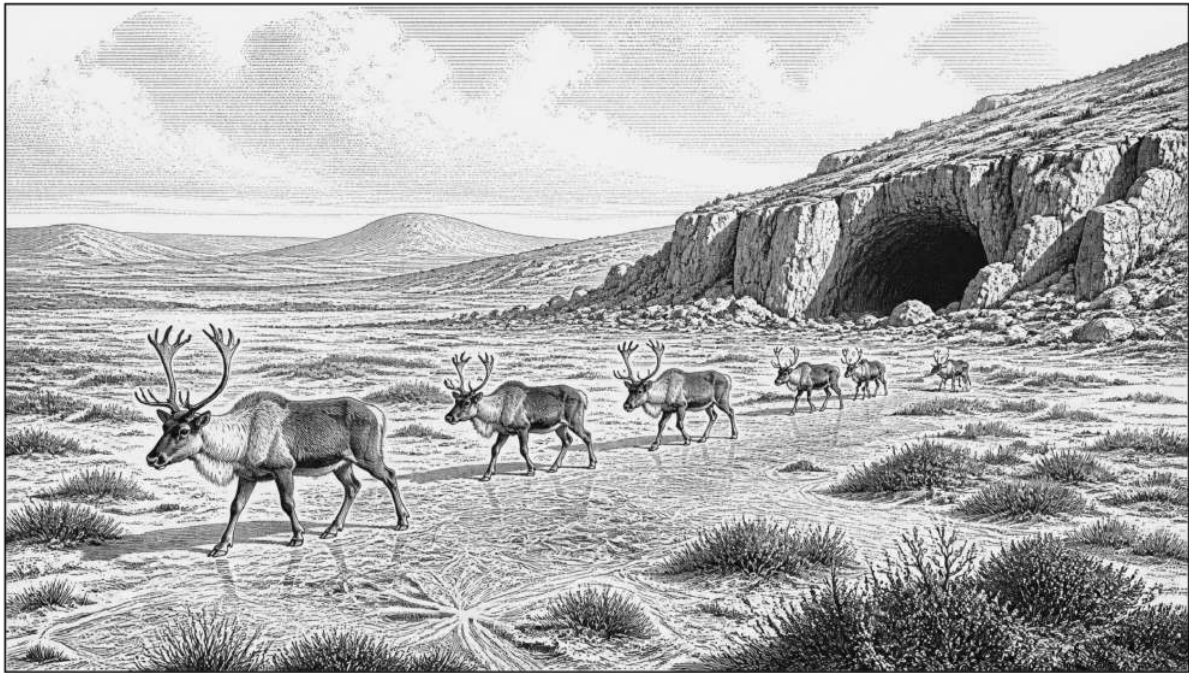
In the longer sequence, this was a precarious prelude to the Last Glacial Maximum, conventionally placed at roughly 26,000–19,000 years ago. Reconstructions differ over precisely when individual Irish sectors became ice-covered, how extensive earlier ice was and how rapidly margins moved. There is nevertheless broad agreement that later glacial conditions profoundly altered the island, eroding earlier surfaces, depositing tills and making long-term human occupation improbable or impossible across much of Ireland.

For that reason, 31,758 BCE is best remembered not as the beginning of an Irish society, but as a rare surviving window onto an older ecological Ireland. Reindeer moved through open country; large mammals occupied landscapes now buried, drowned or transformed; wetlands existed between glacial episodes; and one marked bone may record a fleeting human intervention. The evidence is fragmentary, but its restraint is its significance. It places Ireland within the Late Pleistocene world without pretending that the later history of the island had yet begun.

Chapter 044 of 100

31757 BCE

Mammoth Cave's Single Mark^[44]



“31,757 BCE” is a modern way of labelling a point far beyond the reach of calendar history. It should not be read as a date on which any recorded Irish event occurred. In conventional archaeological notation, it corresponds approximately to 33.7 thousand years before present, where “present” is fixed at 1950; but radiocarbon measurements must be calibrated and yield ranges rather than a single historical year. The responsible subject is therefore Ireland in the later part of Marine Isotope Stage 3 (MIS 3), during the last Ice Age, several millennia before the Last Glacial Maximum. At this depth of time, Ireland has no names, states, communities or narratives that can be recovered. Its evidence consists chiefly of landforms, cave deposits, animal bones, pollen, beetles and the difficult results of scientific dating.

A Date Without a Diary

Calendar precision is unavailable. An animal bone can be dated, within statistical limits, to the time when the animal died; it cannot by itself identify the season, the people who may have handled it, or an event in a numbered year. Calibration curves are essential because the concentration of atmospheric radiocarbon has changed through time, and the far past contains substantial uncertainty. Recent reassessment has also shown why older Irish cave dates require caution: improved pretreatment and ultrafiltration of bone collagen made several Castlepook results thousands of radiocarbon years older than earlier determinations. The date label used here is useful only as a navigational point within a broad, calibrated late-Pleistocene interval, not as a claim of exact chronology.

That limitation matters especially because the evidence is uneven. Northern sites such as Aghnadarragh, Hollymount and Derryvree or Greenagho in Ulster preserve organic layers trapped between glacial deposits. Their pollen, plant macrofossils and insect remains register changing

environments, but their date ranges are broad and correlations with global climate records remain debated. In southern Ireland, limestone caves have preserved animal remains, particularly at Castlepook Cave, also known as Mammoth Cave, near Doneraile in County Cork, and at Shandon Cave near Dungarvan. Such sites offer rare windows into Irish Pleistocene life, but many were excavated before modern standards of stratigraphic recording. The archive is valuable precisely because it is fragmentary, not because it permits a complete reconstruction.

Between Ice Advances

Ireland at this time was part of a changing north-west European world, not the island familiar today. Sea level was generally lower than now, and the configuration of coasts, shallow seas, ice and exposed shelf land altered repeatedly as climate changed. The presence of large terrestrial mammals in Ireland demonstrates that dispersal from Britain and continental Europe was possible during portions of the last cold stage. It does not securely establish one permanent, dry “land bridge”, nor does it show that every species crossed at the same time or by the same route. Ice, sea and terrain formed shifting barriers and corridors.

The British–Irish Ice Sheet was not yet simply the uniform, island-covering mass often imagined in popular accounts of the Ice Age. Research identifies advance–retreat dynamics during MIS 3, but also stresses that the evidence for its pre-Last Glacial Maximum extent is indirect and incompletely dated. At roughly this chronological horizon, some ground may have been ice-free while other areas were affected by glacier growth, periglacial cold and changing sea margins. The securely mapped great expansion belongs chiefly to the later Last Glacial Maximum, after about 27,000 years ago. It would be unsafe to draw a single ice edge across Ireland for 31,757 BCE.

Open Country and Mobile Fauna

The best-supported environmental picture is one of cold, exposed and strongly seasonal landscapes rather than a wooded Ireland. Pollen and beetle evidence from relevant Irish inter-till deposits points to open, treeless or sparsely shrubby ground in cold phases, with wet hollows, sedge-rich water margins and mossy habitats in some localities. The exact local mosaic differed with altitude, drainage, proximity to ice and climatic fluctuation. Wind could move fine sediment across bare ground; frost action disturbed soils and rock; short summers would have concentrated plant growth. This was not an empty white wilderness. It was a biologically productive, though demanding, Pleistocene landscape.

Irish cave collections preserve members of a cold-stage fauna that now seems extraordinary: reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, lemmings, mountain hare and spotted hyaena. Not all are securely contemporary with one another, and not every identified species can be assigned to the narrow span around this date. Yet Castlepook is exceptionally important because it contains a substantial assemblage from the last cold stage. The National Museum of Ireland describes it as Ireland’s most important cave site for mammal remains of that period; its spotted-hyaena material indicates that carnivores as well as herbivores reached southern Ireland between roughly 45,000 and 30,000 years ago.

These animals imply food webs rather than a settled human economy. Reindeer moved through open country capable of supporting grazing; mammoth and giant deer suggest extensive forage; wolves and hyaenas could scavenge, hunt and carry bones into caves. Caves were not necessarily homes for any of these species. They could act successively as dens, traps, shelters, drainage routes and repositories into

which water, sediment and animal remains accumulated. Gnawing, trampling, collapse and later excavation can all alter a bone assemblage. A bone found in a cave is therefore evidence of a chain of processes, not automatically evidence of a kill-site or camp.

The Castlepook Possibility

One specimen nevertheless makes this period unusually consequential for Irish archaeology: a reindeer femur from Castlepook bearing a deep incision that zooarchaeologist Ruth Carden has interpreted as a mark made by a sharp stone tool during carcass processing. County Cork heritage material presents it as potentially placing Stone Age hunters in the region about 30,000 years ago. If that interpretation is sustained, it is possible evidence that Upper Palaeolithic people reached Ireland far earlier than the long-established post-glacial record. The implication is striking, but it must remain conditional.

The femur is not a settlement. It was recovered from an antiquarian cave collection, rather than an intact excavation surface with a recorded hearth, stone-tool assemblage, dwelling structure or human remains. The radiocarbon result dates the reindeer's death, not necessarily the moment of cutting, where the animal was killed, or how long people stayed nearby. Nor does one incision disclose the number, language, ancestry, kinship or identity of those who may have made it. A cautious reading is both more modest and more important: it may record a brief human encounter with a reindeer carcass, perhaps involving meat, hide, sinew or marrow, but it does not prove permanent occupation, a seasonal settlement or a continuous Irish population.

No Politics, No Proven Religion

There is no evidence from Ireland around this time for political authority, warfare, diplomacy, territorial boundaries or institutions. Likewise, there are no securely associated burials, shrines, ornaments, cave art or symbolic objects from which religion, language, learning or social rank could responsibly be inferred. It would be tempting to import knowledge of contemporary Upper Palaeolithic societies elsewhere in Europe, where people made sophisticated stone tools, ornaments and images. That comparison provides context, not proof that equivalent practices occurred in Ireland. The Irish record must be allowed its silence.

Should the Castlepook mark be confirmed as anthropogenic, the smallest defensible social inference is of one or more highly mobile people with access to a sharp lithic edge and the practical knowledge to process a large animal. Such a visit would belong to hunting and foraging, not farming, trade networks or village life. There is no direct evidence for exchange, cultivation, domesticated animals, built houses or long-distance political relations. Nature itself dictated mobility: herds shifted, weather changed rapidly and useful resources were scattered across an open, hazardous terrain.

What Survives

The principal development relevant to Ireland around 31,757 BCE is not a named human deed but the preservation of a precarious archive. Inter-till organic beds reveal that Ice Age conditions varied; cave faunas show that Ireland supported, or was reached by, a rich cold-adapted mammal community; and Castlepook's marked reindeer femur raises the possibility of an early human incursion. Renewed

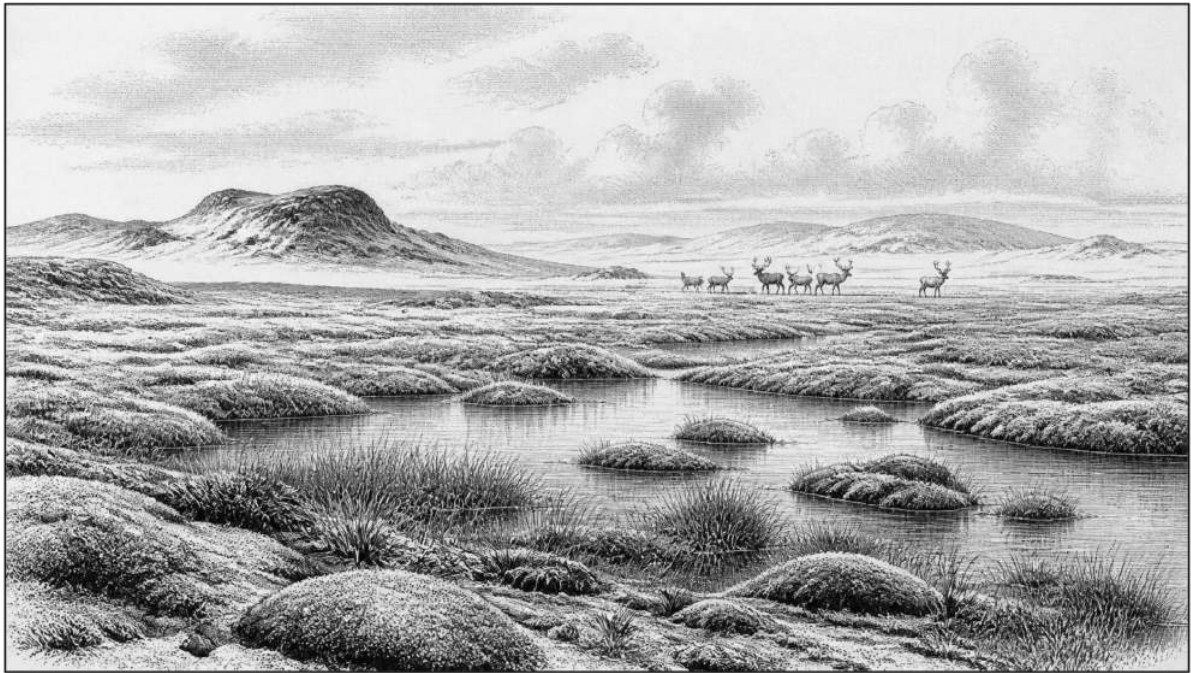
excavation at Castlepook in 2022 sought surviving Pleistocene deposits after the early twentieth-century work had removed much material. Its results underline the value of re-examining old collections and cave sediments with modern methods.

For this moment, then, the honest history is one of scale and uncertainty: a fluctuating Ice Age Ireland; open country occupied by reindeer and formidable predators; advancing and retreating ice whose local limits remain hard to fix; and perhaps a single humanly modified bone. That is not a thin version of later history. It is the beginning of the material record from which any deeper Irish past must be built.

Chapter 045 of 100

31756 BCE

Crag Cave's Thawing Calcite^[45]



31,756 BCE is best treated not as a date at which an Irish event can be assigned, but as a modern calendar marker for a far broader prehistoric interval. It falls roughly 33,700 years before AD 1950, the conventional ‘present’ used in radiocarbon reporting. No evidence permits calendar-year precision for Ireland at this depth of time, and there is no named community, ruler, battle, settlement or ceremony to place in this particular year. What can responsibly be described is Ireland during the later part of Marine Isotope Stage 3 (MIS 3), within the Upper Palaeolithic world of north-west Europe: a climatically unstable Ice Age landscape, intermittently capable of supporting animals and perhaps occasional people, but moving towards much more extensive glaciation.

Dating a Moving Landscape

The distinction between calendar years and archaeological dates is especially important here. Radiocarbon determinations are reported in years before present (BP), where ‘present’ means AD 1950, but atmospheric radiocarbon levels changed through time. A radiocarbon age must therefore be calibrated against an internationally maintained curve, and at c. 30,000–35,000 radiocarbon years BP the resulting calendar ranges may be broad and sometimes irregular. A numbered BCE year can be useful for arranging an annual archive, but it must not suggest the false precision of a diary entry.

Irish evidence relevant to this horizon comes chiefly from deposits rather than conventional archaeological sites: cave bone assemblages in southern Ireland, freshwater sediments buried beneath later glacial deposits in Fermanagh, and mineral deposits in caves. These sources do not all date to one moment. They record episodes spread across millennia, and some were disturbed by water, animals,

excavation or later geological processes. Their value lies in combination. They demonstrate that parts of Ireland supported a cold-climate fauna before the Last Glacial Maximum, while also showing how incomplete the surviving record is.

In Irish Quaternary terminology, this phase has often been associated with the Middle Midlandian and the Derryvree Cold Phase. Such regional labels are useful shorthand, but they should not be mistaken for neatly bounded historical periods. The growth of the last Irish Ice Sheet was uneven, as were local temperatures, vegetation and the availability of ice-free ground. Later ice also eroded or buried much of the evidence needed to reconstruct the preceding landscape.

Open Ground at Derryvree

The clearest environmental window is Derryvree near Maguiresbridge, County Fermanagh. Roadworks in 1969 exposed silts and fine sands lying between two substantial tills in a drumlin. The deposits produced a radiocarbon determination of 30,500 years BP, with a sizeable uncertainty, and contained plant and animal remains. The crucial evidence is geological: a freshwater environment existed between episodes of glaciation, and its sediments were subsequently sealed beneath later ice-laid material.

The fossil assemblage indicates open tundra vegetation and a periglacial climate. Mosses, sedges and other herbaceous plants speak of wet ground, pools and a short growing season rather than the familiar oak-and-hazel woodland of later prehistoric Ireland. Some pollen was poorly preserved, and a handful of tree pollen grains cannot establish local forest; they may have travelled far or been redeposited. The responsible reconstruction is therefore a largely treeless mosaic of damp hollows, sparse dry-ground vegetation and frost-affected terrain. It was not a uniform frozen desert. Water, plants and animals persisted, but in a landscape highly exposed to seasonal cold and climatic fluctuation.

Derryvree offers no evidence for a settlement. There are no houses, hearths, tools, graves or food refuse attributable to people. It instead preserves the conditions that would have shaped any human visit: difficult movement over wet and frozen ground, limited shelter, seasonal resources and an environment in which mobility mattered more than permanent residence.

Castlepook's Faunal Record

At Castlepook Cave near Doneraile in north County Cork, formerly known as Mammoth Cave, antiquarian and twentieth-century excavations recovered a striking collection of Pleistocene bones. Species represented in the wider assemblage include woolly mammoth, reindeer, giant deer, brown bear, spotted hyaena, wolf, Arctic fox, hare and lemmings. Not every animal lived there together. Modern radiocarbon work has shown that bones from different chambers and deposits accumulated across a long span, while water action and earlier digging mixed material in places.

That complication is not a reason to discard the cave. It is precisely why the site is informative when read cautiously. Accelerator mass spectrometry dating has placed several Castlepook animals in the broad MIS 3 interval. A reindeer metacarpal, for example, returned $35,200 \pm 950$ radiocarbon years BP in the earlier Irish Quaternary Fauna Project, while mammoth, brown bear and giant-deer remains produced other pre-Last Glacial Maximum ages. Subsequent redating has revised some legacy results substantially older, underlining how advances in bone pretreatment can change the chronology of an old collection.

The cave assemblage establishes the presence of a substantial cold-stage animal community in southern Ireland, not a tidy snapshot of a single ecosystem. Reindeer and giant deer imply grazing and browsing opportunities over open country; mammoth points to access by very large herbivores; hyaena,

wolf and bear indicate predators and scavengers. Caves were not necessarily places where those animals died naturally. Carnivores could drag prey remains into dens, animals could fall into openings, and moving water could redistribute bones. Castlepook is thus a record of animal movement, death and bone accumulation, rather than a prehistoric menagerie preserved in life position.

A Marked Reindeer Bone

Castlepook also raises Ireland's most difficult human question for this period. A reindeer femur from the old collection has been interpreted by zooarchaeologist Ruth Carden as bearing a cut or chop mark made by a sharp stone tool during carcass processing. A modern radiocarbon assessment placed the bone at approximately 33,000 years old in popular reporting, and the discovery has rightly prompted renewed interest in the possibility that Upper Palaeolithic people reached Ireland far earlier than once thought.

Yet the limits of the claim are as important as its potential significance. The bone did not come from a newly excavated, sealed occupation floor. No associated lithic toolkit, hearth, dwelling, burial, art object or repeated domestic deposit has securely demonstrated an inhabited camp at Castlepook. Nor can one marked bone identify the number, language, origin, route or social organisation of any visitors. If the mark is anthropogenic and contemporary with the animal's death, it supports an episode of human carcass processing. It does not prove continuous occupation, a settled population or an Irish 'society' in the later historical sense.

The most plausible interpretation remains deliberately modest: mobile hunter-gatherers may have entered this north-western European landscape during a relatively favourable interval, exploiting large game and moving on. Such groups elsewhere in Upper Palaeolithic Europe relied on stone tools, detailed knowledge of animal behaviour and flexible social networks. Those broader comparisons help explain what a brief visit to Ireland could have involved, but they cannot fill the Irish evidential gap with invented campsites or customs.

No Politics, No Trade Network

There were no demonstrable political affairs, diplomacy, institutions or territorial states in Ireland at this date. There is likewise no evidence for agriculture, herding, pottery, metalworking, formal religion, monuments or long-distance trade conducted from Ireland. These absences are not merely missing chapters: they reflect the scale and character of the evidence. Any people present would have lived by hunting, gathering and opportunistic use of seasonal resources, but the Irish record cannot presently reconstruct their food-sharing rules, beliefs, kinship or learning traditions.

Sea level was markedly lower globally during the Ice Age, and the geography of the Irish Sea region differed greatly from today. Nevertheless, it is unsafe to imagine a simple, permanent dry land bridge connecting Ireland to Britain or continental Europe. Ice margins, changing coastlines, marine channels and local crustal movements created shifting conditions. The animal record shows that faunal dispersal into Ireland was possible before the ice maximum; it does not by itself specify the route or prove that people crossed by the same means.

Brief Thaws, Approaching Ice

Crag Cave in County Kerry supplies a different kind of evidence. Uranium-thorium dates on broken and reworked calcite formations show that speleothems grew episodically during the last glacial period. Because calcite deposition in this shallow cave required liquid water filtering through the ground, these growth phases point to intervals when mean annual conditions rose above freezing. The record aligns broadly with abrupt Greenland interstadials, demonstrating that south-west Ireland responded sharply to wider North Atlantic climate shifts.

That does not mean 31,756 BCE was mild. It means that the Ice Age was volatile. Shorter ameliorations could permit soil activity, vegetation growth and animal expansion, only for colder phases to curtail them. Ireland was approaching the long advance to the Last Glacial Maximum, when the British–Irish Ice Sheet covered all or almost all of the island’s low ground. The landscape familiar today—its bogs, drumlins, valleys and coastline—would be profoundly reshaped by that later ice.

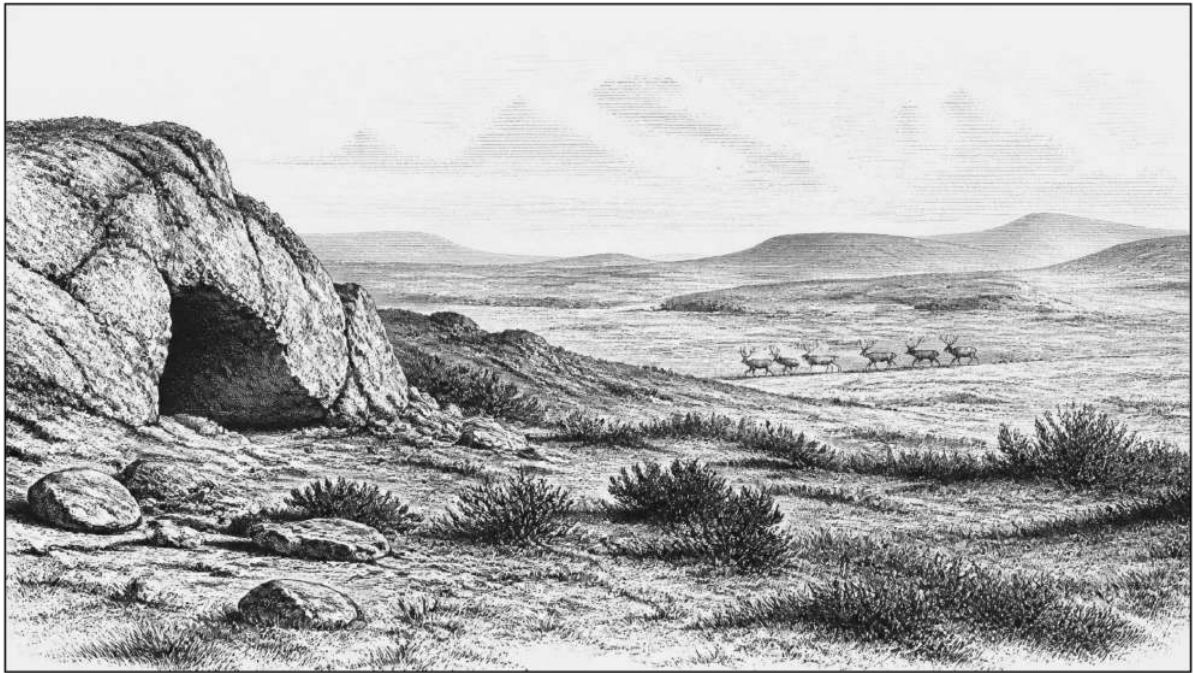
What the Evidence Allows

Around this nominal year, then, Ireland was not yet a documented human homeland but an Ice Age frontier. Derryvree preserves wet, open tundra beneath a future drumlin. Castlepook preserves the remains of a varied mammal community and a possible, still context-poor trace of human butchery. Crag Cave preserves calcite testimony to climatic breathing space. Together they support a history of environmental opportunity and constraint: animals entered and survived during suitable phases; people may have made brief incursions; advancing ice would later remove, rearrange and conceal much of their evidence. That uncertainty is not a failure of the record. It is the central historical fact of Ireland at such depth in time.

Chapter 046 of 100

31755 BCE

Elephant Hall's Long Silence^[46]



The label 31,755 BCE is a modern chronological convenience, not a date that anyone in prehistoric Ireland could have named or recorded. At this depth in time, modern calendar-year precision is unavailable. Counting back from the conventional radiocarbon reference year of AD 1950 places the nominal year at roughly 33,700 years before present, but the responsible language is one of broad calibrated ranges, laboratory uncertainty and changing scientific models. It belongs to the later part of Marine Isotope Stage 3, a volatile phase of the last Ice Age, rather than to a recoverable Irish ‘year’ of events.

There were no written records, states, rulers, political communities or calendars in Ireland from which political history could be reconstructed. Nor can archaeology currently identify a settlement, a family, a hunt or a ritual that happened in this particular year. What can be examined are the physical traces of the Ice Age: cave bones, buried sediments, landforms, pollen and insects, together with the limits and movements of the British–Irish Ice Sheet. They reveal an island at a crucial environmental threshold, and they show why certainty must be kept separate from plausible interpretation.

An Ice Sheet in Growth

About 33,700 years ago, Ireland was entering the major expansion phase that led towards the Last Glacial Maximum. A widely used chronological model places the build-up of the British–Irish Ice Sheet after about 35,000–32,000 years ago, with its broad maximum later, approximately 27,000–21,000 years ago. More recent reconstructions, built from extensive marine geophysics and hundreds of new dates, likewise show that the ice sheet was dynamic, growing in different sectors at different times rather than advancing as one uniform frozen blanket.

This distinction matters. It would be misleading to say simply that all Ireland lay beneath ice in 31,755 BCE. The eventual ice sheet did cover almost the whole island, and its grinding passage profoundly reshaped the country. Yet at the nominal date, the extent, thickness and behaviour of ice varied regionally and remain partly uncertain. Northern and western marine sectors were being transformed by advancing ice masses, while evidence from the south and from caves preserves hints of landscapes and animals that existed before later ice, water and sediment disturbed or buried them.

The older countryside cannot be recovered as a map with crisp boundaries. Glaciers later removed soils, eroded bedrock and redeposited immense quantities of till. Sea-level change also altered the outline of the island and the breadth of its surrounding shelf. The Irish Sea and Celtic Sea were not necessarily barriers in the modern sense, but neither is it safe to imagine a simple, continuous land route to Britain or continental Europe. Ice margins, shallow seas, exposed shelf, rivers and periglacial ground changed repeatedly over long periods.

Castlepook's Fragmentary Record

The most important Irish archive for this broad interval lies in north County Cork. Castlepook Cave, near Doneraile, is a limestone maze whose chambers acquired evocative names from earlier explorers, including Elephant Hall and Hyenahall. Excavations in the early twentieth century recovered more than 2,000 bones and teeth. The resulting collection is Ireland's richest record of vertebrate life in the period leading towards the Last Glacial Maximum, but it is not a neatly layered snapshot of one moment.

The assemblage includes remains attributed to reindeer, mammoth, giant deer, brown bear, wolf, fox, spotted hyaena, mountain hare and lemmings, as well as birds. Taken carefully, those finds demonstrate that Ice Age animals reached southern Ireland. They support the existence, at least during portions of the cave sequence, of cold, open habitats capable of sustaining grazing and browsing herbivores and their predators. Reindeer and lemmings especially point towards conditions far removed from the wooded Ireland of later millennia.

But the cave's bones cannot all be treated as companions. They were recovered during early excavations from sands, speleothem floors and disturbed deposits; some material may have been moved by water, carnivores, excavation or later contamination. Individual radiocarbon determinations span a long period. A mammoth bone was reported with an age of $33,400 \pm 1,200$ radiocarbon years before present, while later reassessment has emphasised the need to reconsider the dating and integrity of the Marine Isotope Stage 3 fauna. Castlepook therefore illuminates a long-lived faunal record, not a settled animal community assembled in one season around 31,755 BCE.

A Reindeer Bone and a Necessary Caution

A reindeer femur from Castlepook has made this phase of Irish prehistory especially arresting. It has been described as carrying a deep mark consistent with cutting or chopping by a sharp stone tool, and it has been associated in public heritage material with an age of about 33,000 years ago. If the mark was made by a person on fresh bone, it would indicate that somebody processed a reindeer in Ireland during the Upper Palaeolithic—many thousands of years earlier than the previously accepted evidence for human presence.

That proposition should be neither dismissed nor inflated. The bone is an important object for further specialist study, but it is not evidence for an Irish population, camp or society. Its date concerns the animal bone rather than a calendar date for the mark. The specimen also comes from an old cave collection rather

than a recently excavated occupation surface with associated tools, hearths, structures and securely documented layers. The 2022 investigation at Castlepook successfully located surviving cave sediments, but did not establish a Pleistocene occupation deposit. It confirmed how much work remains to be done.

The mark is best regarded as a potentially significant indication of human activity, not proof of permanent settlement. A single butchery trace, if confirmed, could reflect a brief visit by mobile hunters familiar with the wider north-west European landscape. It cannot tell us how many people came, where they travelled from, whether they returned, how long they stayed, or whether they lived on the island at all. The better-supported later evidence from Alice and Gwendoline Cave in County Clare—a cut-marked brown-bear kneecap dated to around 12,800–12,600 calibrated years before present—shows the standard that securely dated and studied finds can achieve, while also illustrating how sparse Ireland’s earliest human record remains.

Life Without a Human History

For the landscape itself, Castlepook allows stronger conclusions than it does for people. The fauna suggests mosaics of herb-rich grassland, tundra-like vegetation and sparse shrub cover rather than continuous forest. Such terrain could feed reindeer, giant deer and mammoth, although each species had different requirements and their presence need not have overlapped exactly. Mosses, sedges, herbs and hardy low shrubs were likely important parts of the vegetation in exposed areas, while sheltered hollows and watercourses may have supported more varied plant communities.

The climate was severe but not uniformly static. Marine Isotope Stage 3 contained abrupt climatic shifts, and Ireland stood at the Atlantic edge of a northern European world affected by changing sea ice, ocean circulation and ice-sheet growth. Seasons would have governed food availability, animal movements and the usefulness of sheltered places. Cave deposits record that predators and scavengers could make use of such places. Hyenas might accumulate bones in dens; carnivores, water and gravity could all alter a deposit long before archaeologists encountered it.

There is no evidence from this date for agriculture, livestock, pottery, metalworking, monuments, long-distance trade, named territories or organised diplomacy. There is equally no basis for describing battles or political conflict. Predation and scavenging were real features of the animal world, but they are not human warfare. If humans ever visited, their economy would have depended on highly mobile foraging and the immediate use of animal and plant resources; even that remains an inference rather than a demonstrated Irish way of life for this particular interval.

Religion, Culture and Settlement

Nothing currently recovered from Ireland around this nominal date can establish religious practice, language, music, artistic tradition or formal learning. Caves can easily invite imaginative stories about ceremonial use, but a cave containing animal bones is not automatically a shrine, a home or a hunting station. Nor is there evidence for houses, hearths, burials, tool-making floors or repeated domestic rubbish. The absence of such evidence may partly reflect the destructive power of later glaciation and the difficulty of finding ancient shorelines and surface sites, many of which may now be submerged or erased. Absence is not proof that no person ever arrived; it is, however, a firm reason not to invent a community.

Ireland’s first securely recognised substantial settlement evidence is far later. At Mount Sandel beside the River Bann, Mesolithic occupation is generally dated to roughly 7900–7600 BCE. Those people left recognisable structures, hearth debris and stone tools. The contrast is revealing: the remote Palaeolithic

record offers isolated bones and contested or limited traces, whereas the post-glacial record permits a genuine human history. Around 31,755 BCE, the island's story is principally geological and ecological.

An Edge, Not a Beginning

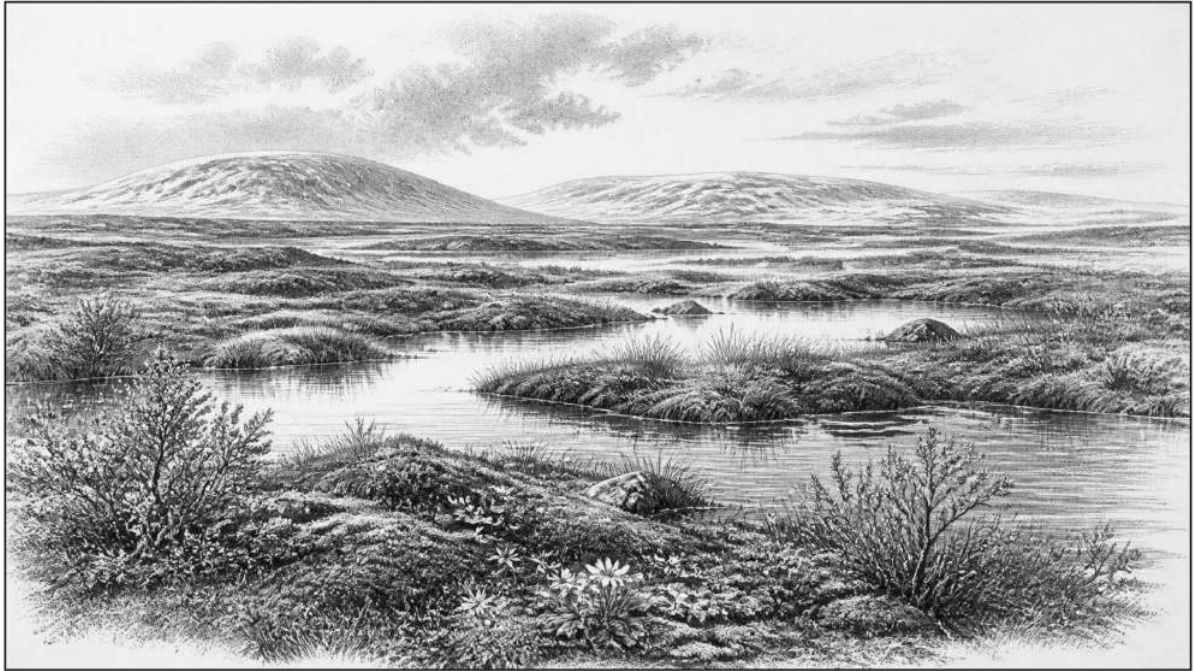
The importance of this period lies precisely in its uncertainty. Ireland was not yet a country of farms, monuments or remembered ancestors. It was an Atlantic peninsula-or-island landscape being reshaped by climate, ice and sea, intermittently available to large mammals and perhaps, on present evidence, to occasional human visitors. Castlepook's animal remains preserve an extraordinary glimpse of that vanished world, but they impose limits as well as possibilities.

The responsible historical conclusion is therefore modest. Around the nominal year 31,755 BCE, the British-Irish Ice Sheet was in a phase of growth, Irish environments were becoming colder and more exposed, and the south of the island supported—or had recently supported—an Ice Age fauna of remarkable variety. A marked reindeer bone raises the possibility of an early human encounter with that landscape. It does not yet yield a named people, a permanent settlement or an event that can be assigned to a calendar year. Elephant Hall's long silence remains one of the most important facts of Ireland's deepest past.

Chapter 047 of 100

31754 BCE

Derryvree's *Menyanthes* Seed^[47]



Modern calendar-year precision is not available for Ireland in 31,754 BCE. The number is useful chiefly as a point on a much broader timescale: it falls roughly 33,700 calendar years before present, within the later part of Marine Isotope Stage 3, a long and climatically unstable portion of the Last Glacial period. No Irish deposit can be assigned to that individual year, and no person, settlement, political act or journey can responsibly be dated to it. What can be described is an archaeological and environmental horizon whose calibrated ranges overlap this notional date.

A Date Within a Range

The key evidence comes from Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 cut through a drumlin and revealed freshwater silts and fine sands sealed between two separate sheets of glacial till. The organic deposit produced a radiocarbon determination of 30,500 +1,170/-1,030 radiocarbon years BP. Radiocarbon years are not calendar years: changing atmospheric carbon levels mean that they must be calibrated against independent records. Published calibration of this legacy measurement gives a broad range of about 36,900–31,700 calendar years BP. Thus 31,754 BCE falls within the outer edge of a range relevant to the Derryvree sediments, not at a pinpoint in their formation.

That distinction matters. A radiocarbon result dates carbon in the sampled material, with analytical uncertainty and further uncertainty in calibration; sediment may also accumulate over a considerable interval. The Derryvree bed is therefore a window on conditions in part of later MIS 3, rather than an annual chronicle. Its importance lies precisely in being buried beneath later ice-laid sediment: it preserves a landscape that subsequent glaciation largely erased elsewhere.

A Freshwater Landscape Between Ice Advances

The layers beneath and above the organic silts record profound environmental change. The lower till indicates an earlier ice advance. Afterwards, at least locally, an ice-free depression held freshwater and accumulated silt, plant remains and insects. A later advance deposited the upper till, compressing the evidence into the core of the drumlin. This sequence does not prove that all Ireland was ice-free at one moment. It does show that northern inland ground could support a cold freshwater environment between glacial episodes.

Researchers describe the Derryvree setting as treeless tundra or muskeg: a wet, peaty landscape of shallow pools, mosses, sedges and sparse low vegetation, shaped by harsh winters and periglacial conditions. Periglacial means a climate at or near an ice margin in which seasonal freezing, frost action and permanently or intermittently frozen ground could strongly affect soil and water. It does not mean that the site was necessarily beside a visible glacier every day. The image to retain is not of the familiar green, wooded Ireland, but of an exposed wetland under a severe continental-influenced climate.

Plants Recorded in Silt

Macrofossils and pollen offer the clearest local testimony. Mosses and sedges occur in the organic layers, while plants associated with cold, open ground include dwarf willow, mountain avens and bogbean. The last is especially evocative. A seed of *Menyanthes trifoliata*, the three-leaved bogbean, survived in the sediment. Its presence demonstrates freshwater or wetland habitat; it does not establish a continuous blanket of identical vegetation across the island. Pollen was poorly preserved, and some tree pollen may have travelled long distances rather than recording trees growing beside the pool. The responsible conclusion is an open, wet and cold flora, not a detailed map of every slope and valley.

Such vegetation would have been highly seasonal. Short growing seasons favoured plants able to flower, set seed and spread quickly during a brief summer. Moss cover and sedge-rich margins could retain water and organic matter, while exposed mineral ground remained vulnerable to wind and frost. There is no evidence here for fields, managed woodland or grazing by domestic stock. This was a naturally structured ecosystem, with its productivity dictated by climate, soil moisture and the repeated disturbance of freezing and thawing.

Animals and Uneven Evidence

Derryvree's insect fauna has cold northern affinities, reinforcing the environmental interpretation. Elsewhere, especially in the limestone caves around Castlepook or Mammoth Cave near Doneraile in County Cork, bones attest a striking Late Pleistocene fauna. The cave assemblage includes reindeer, horse, brown bear, wolf, giant deer, woolly mammoth and spotted hyaena, though individual species and bones belong to different parts of a long interval and should not be treated as one simultaneous herd.

Castlepook is exceptionally valuable, but it is not a photograph of a single day. Caves accumulate bones through carnivore denning, natural deaths, water movement, collapse and disturbance during excavation. The Irish Quaternary Fauna Project showed that many cave finds require direct dating and careful re-evaluation of their context. Some reliable dates demonstrate that large mammals reached Ireland during the period from at least about 45,000 to 20,000 years ago. That makes the animal record directly relevant to the world around 31,754 BCE, while still preventing certainty about which species occupied any particular Irish locality in that calendrical year.

Spotted hyaena is a useful warning against imagining an exclusively Arctic menagerie. The species is known in Ireland from Castlepook and points to an open landscape capable of supporting substantial prey. Reindeer are likewise well suited to cold, open country, but their bones cannot tell us whether a herd crossed a particular Fermanagh wetland in the year selected here. Mammoth bones reveal that the island was not biologically isolated from wider north-west European faunas, yet neither they nor hyaena remains constitute evidence for human hunting in Ireland at this date.

No Irish Society Yet Demonstrated

There is no securely dated archaeological evidence for people living in Ireland around 33,700 calendar years ago. Accordingly there were no demonstrable Irish polities, leaders, alliances, wars, diplomatic exchanges, religious institutions, settlements, farms, markets, written learning or trade systems. These are not missing details awaiting imaginative reconstruction; they are categories for which the evidence is absent. It would be misleading to transfer the known practices of Upper Palaeolithic communities in Britain or continental Europe directly across the sea.

That restraint does not deny the presence of people in neighbouring regions. Humans were present in parts of Britain and mainland Europe during the Upper Palaeolithic, and their movements, hunting strategies and symbolic cultures form the wider European context. Ireland, however, has supplied no contemporary hearth, stone-tool assemblage, butchered animal securely tied to this horizon, dwelling floor or human bone. The earliest currently dated evidence of human interaction on the island is much later: a butchered brown-bear patella from Alice and Gwendoline Cave in County Clare, assigned to the Late Upper Palaeolithic at about 12,500 BP. It cannot be used to populate Derryvree more than twenty millennia earlier.

Routes, Coasts and Ice

Lower global sea levels during the glacial period altered the outlines of the Irish coast and exposed or narrowed parts of the surrounding shelf. Animal colonisation nevertheless should not be reduced to a simple claim that Ireland was continuously joined to Britain by dry land. Water depths, changing shorelines, ice margins and the timing of cold phases all mattered, and the precise routes followed by animals remain uncertain. The presence of mainland European and British-Irish faunal connections demonstrates movement over longer spans, not a dated corridor in 31,754 BCE.

Ice-sheet reconstruction adds another layer of caution. Evidence from Derryvree and Greenagho indicates ice-free conditions in north-central Ireland until roughly 34,000 calendar years ago, whereas broader reconstructions show the British-Irish Ice Sheet building in complex, regionally asynchronous ways before its later maximum. Around the target date, Ireland was therefore not a uniform white expanse nor securely a wholly ice-free island. Some uplands and northern sectors may have supported growing ice masses or glaciers, while lowlands could retain open ground and wetlands. The distribution shifted as climate changed.

Climate Without a Calendar

MIS 3 was marked across the North Atlantic by abrupt switches between colder stadials and relatively milder interstadials. Those changes could unfold far faster than the slow, steady ‘Ice Age’ of popular imagination. A sediment sequence may preserve the result of such a swing, but it cannot tell us the

weather, season or exact temperature of 31,754 BCE. Nor can a fossil seed establish whether the locality was becoming colder or recovering from a cold pulse when it entered the pool.

The most defensible portrait is consequently modest but vivid. In the broad period overlapping this date, parts of Ireland contained cold, open and waterlogged terrain. At Derryvree, freshwater silts captured the remains of mosses, sedges and tundra plants before a later ice advance sealed them away. Across the island, mobile animal populations entered and disappeared over intervals measured in millennia. Human history, in the usual sense, had not yet been demonstrated there. Ireland's record for this remote date is not a tale of kings or communities, but of a three-leaved wetland plant, an insect fauna, cave bones and the extraordinary survival of a landscape beneath a drumlin.

Chapter 048 of 100

31753 BCE

Maguirebridge's Treeless Wetland^[48]



31,753 BCE is a modern, proleptic calendar label, not a date that anyone in Ice-Age Ireland could have recognised or recorded. It corresponds only approximately to 33,700 years before AD 1950, the conventional 'present' used in radiocarbon and Quaternary studies. No excavation, climate archive or fossil deposit can identify an event in this particular year. The responsible scale is therefore the later part of Marine Isotope Stage 3 (MIS 3), a volatile interval of the Last Glacial period. For Ireland, the evidence consists not of annals, settlements or named peoples, but of cave bones, buried wetland sediments, pollen, plant remains, landforms and the subsequent effects of advancing ice.

A Date Within a Long Cold Phase

The numbered year falls well before the Last Glacial Maximum, conventionally dated at about 26,500–19,000 calibrated years before present (cal BP), when the British–Irish Ice Sheet reached its greatest overall extent. It should not, however, be imagined as a mild prelude to an otherwise distant ice age. MIS 3 was marked by abrupt climatic oscillations across the North Atlantic world, and Irish conditions changed over centuries and millennia. Some districts may have held small glaciers or expanding ice masses while others retained ice-free ground, freshwater hollows and open vegetation. The exact outlines of ice at roughly 33.7 ka BP remain uncertain, because later glaciers eroded, buried and rearranged much of the earlier landscape.

Older Irish schemes gave names such as the Derryvree Cold Phase to part of this pre-maximum cold interval. Such labels remain useful shorthand for particular bodies of evidence, but they are not securely bounded island-wide climatic episodes. Nor should they suggest that the whole country experienced one uniform weather regime. The Irish Ice Sheet was dynamic, responding to changing snowfall, temperature,

sea level and ocean conditions. Modern reconstructions have greatly improved knowledge of its later growth and retreat, but they also underline how difficult it is to draw a precise map for an individual millennium, much less for one calendar year.

Derryvree Beneath the Drumlins

The most informative environmental evidence relevant to this broad moment comes from Derryvree near Maguiresbridge in County Fermanagh. There, organic silts were found beneath glacial deposits and between tills. Their position is crucial: the sediments accumulated during an interval when there was biologically active ground and freshwater in the locality, then were sealed beneath ice-related material during a later advance. They are not a snapshot of all Ireland, but they disprove any simple picture of an island continuously entombed beneath an unbroken ice sheet throughout the period.

Plant evidence from the Derryvree deposits points to a cold, open and treeless wetland landscape, often described as muskeg or tundra-like marsh. Mosses, sedges and other wet-ground plants could grow around shallow water and saturated soils. Such a setting would have been low in stature, exposed to wind and seasonally severe rather than wooded like modern Fermanagh. It tells us that, at least during the time represented by the deposit, freshwater habitats persisted in an ice-free locality. It does not tell us the temperature on a particular day in 31,753 BCE, the length of every season, or whether the same vegetation covered Cork, Connacht or the eastern lowlands.

This distinction matters because organic layers beneath till are unusually valuable but inherently fragmentary. A wet hollow preserves pollen, seeds and fine sediments that uplands usually lose to erosion. Conversely, it records its own drainage basin rather than an entire island. The later passage of ice both protected Derryvree's silts from surface weathering and made comparable sites scarce. Ireland's apparent archaeological silence at this date is therefore partly a story of preservation: the glacial landscape removed evidence as well as creating the drumlins, erratics and scoured rock that remain visible today.

Animals at Castlepook

In southern Ireland, Castlepook Cave near Doneraile, County Cork, provides the richest known archive of pre-Last Glacial Maximum vertebrates. The cave system has yielded remains attributed to reindeer, mammoth, brown bear, spotted hyaena, giant deer, wolves, Arctic foxes and lemmings. Taken together, the assemblage demonstrates that Ireland was connected ecologically to the broader north-west European Ice-Age world. Open country capable of supporting grazing animals existed at different times, while predators and scavengers used caves or encountered carcasses within the surrounding landscape.

Yet Castlepook is not a single living community preserved in stone. The bones came from different chambers, sedimentary settings and dates. Some were probably carried in by carnivores; some may reflect animals falling into or sheltering in the cave; water movement also disturbed and re-sorted material. Earlier excavations, undertaken before modern recording standards, removed large quantities of bone with limited contextual information. Radiocarbon programmes have shown that Castlepook's fauna accumulated over a long span of MIS 3 and later cold phases, not during one season or even one generation. Reindeer are particularly relevant to the open, cold environments of the broad period, but no responsible account can claim that a known herd was passing the Awbeg Valley in this exact year.

Re-dating has also changed the story. Improved pretreatment and accelerator radiocarbon methods produced dates for some Castlepook specimens thousands of radiocarbon years older than results obtained in the 1990s. The revised work indicates that certain animals, including spotted hyaena and giant deer,

may have disappeared locally before the Last Glacial Maximum, perhaps around 40,000 cal BP. This is a warning against compiling an imaginary, simultaneous menagerie. Animal presence is evidence for a sequence of changing habitats; it is not proof that every recorded species occupied Ireland at 33.7 ka BP.

The Reindeer Femur and People

A reindeer femur from Castlepook has made this period especially important for Irish archaeology. It has been presented as dating to about 33,000 years ago and bears a deep modification interpreted by zooarchaeologist Ruth Carden as a cut or chop made with a sharp stone tool during carcass processing. If that judgement is confirmed, it is potentially the earliest evidence for human activity in Ireland: not an abstract possibility of people nearby, but a trace of somebody handling a reindeer carcass.

The qualification is fundamental. The dated bone records when the animal died, not a conventional calendar year for human action. It derives from an old cave collection, not from a newly excavated, sealed occupation floor. No securely associated hearth, stone-tool assemblage, dwelling, burial or repeatedly used food-processing area of comparable age has yet been identified in Ireland. A single modified bone cannot establish how many people were present, where they came from, what language they spoke, whether they crossed by land, sea or ice-fringed coast, or whether they stayed beyond a short visit. It is best treated as significant but limited evidence for possible Upper Palaeolithic butchery.

Should humans have reached Ireland during this late-MIS-3 interval, the most defensible interpretation is of highly mobile foragers operating within a wider north-west European world, not a settled Irish population. Reindeer meat, marrow, hide, sinew and antler would all have been valuable resources, but none of these uses can be reconstructed in detail from the femur alone. The cave itself may not have been the place of killing or butchery; County Cork heritage interpretation has plausibly noted that carnivores or scavengers could have moved discarded remains into it. The search for undisturbed sediments and associated lithics at Castlepook is therefore more important than turning one bone into a complete social history.

No Politics, But a Human Landscape

There is no evidence from Ireland at this date for polities, chiefs, diplomacy, organised warfare, territorial boundaries, farming, trade networks, formal religion, monuments, writing or institutions. These are not subjects that archaeology has merely failed to name: the surviving evidence does not support their reconstruction. It would be misleading to project later Irish concepts of tribe, kingship, Celtic identity or sacred landscape into a period tens of millennia before the island's securely documented post-glacial settlement.

There may nevertheless have been social life if the Castlepook interpretation is correct. Hunting and carcass processing normally involve knowledge: reading animal movement, making and maintaining stone tools, sharing food, assessing danger from predators and navigating an exposed terrain. Those are reasonable general inferences from Palaeolithic lifeways elsewhere, but they remain inferences, not observations of a particular Irish camp. No artefact securely demonstrates what technical traditions were present in Ireland, and no human remains identify the visitors.

Economically, the landscape offered wild animal resources and local stone, water and shelter, but it offered no evidence of cultivation or herding. Exchange is equally unproven. Lower sea levels altered coastlines and exposed land on parts of the continental shelf, yet the Irish Sea region was affected by changing marine conditions and ice-sheet behaviour. It cannot safely be reduced to a simple land bridge

that people or animals certainly crossed at will. Connections with Britain and continental Europe were environmentally possible in various ways over long periods; the route used by any potential visitors to Ireland around this time is unknown.

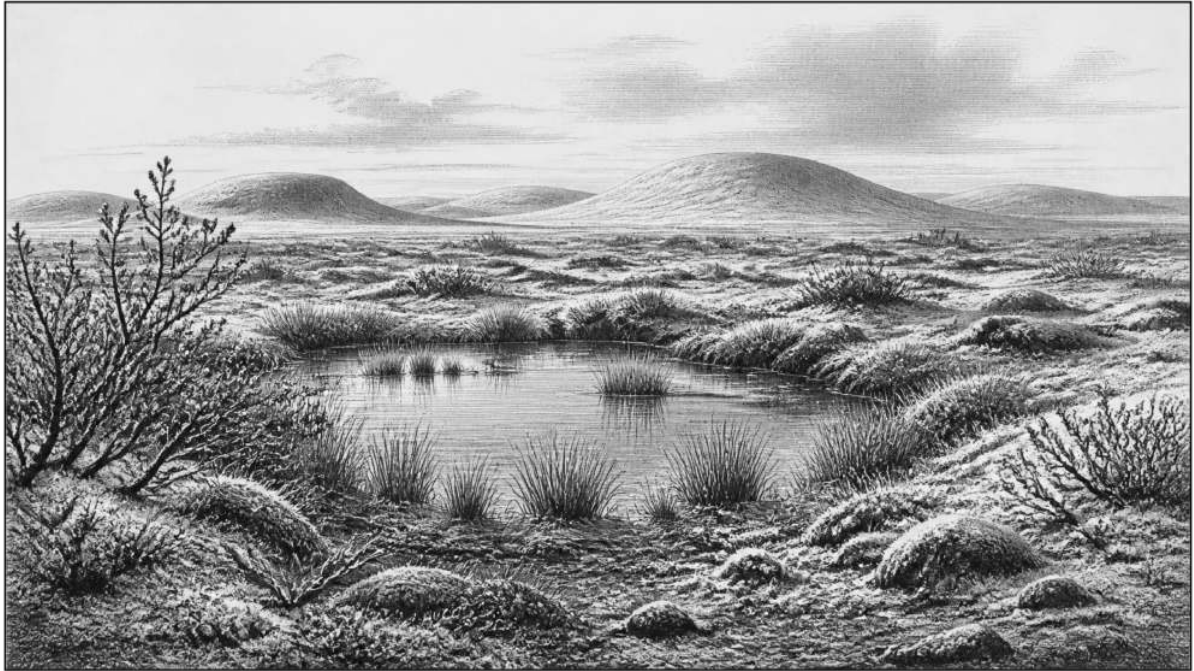
A Record of Possibility

For 31,753 BCE, Ireland's history is therefore environmental first and human only tentatively. Derryvree offers evidence of a treeless, wet, cold and living landscape later overridden by ice. Castlepook preserves an uneven archive of Ice-Age animals and a reindeer bone that may retain the mark of human butchery. Together they show an island or near-island region at the edge of major climatic and geographical change, not an empty stage but a poorly preserved one. The central fact is uncertainty disciplined by evidence: around 33,700 cal BP, parts of Ireland could sustain tundra wetlands and large mammals, while the possibility of fleeting human presence is now stronger than it once was, but still falls far short of proof of enduring settlement.

Chapter 049 of 100

31752 BCE

Derryvree's Dwarf Willow^[49]



31,752 BCE is a modern calendar label, not a year that can be recovered from the Irish archaeological record. No contemporary community in Ireland named it, and no written source, settlement layer or scientific measurement can be dated responsibly to that precise twelve-month interval. In radiocarbon terms it falls roughly 33.7 thousand calendar years before AD 1950, within the later Pleistocene and Marine Isotope Stage 3 (MIS 3). At this depth of time, calibrated ranges commonly extend across centuries or millennia. The appropriate subject is therefore Ireland *around* this horizon: a cold, changing landscape inferred from sediments, plant remains, animal bones and reconstructions of advancing ice, rather than a year of recorded events.

Dating an Uncertain Interval

The distinction between a radiocarbon age and a calendar age matters especially here. Radiocarbon years are calculated from the remaining carbon-14 in once-living material; they are not identical to calendar years. They must be calibrated against a curve that models changing atmospheric carbon-14 levels. IntCal20 extends such calibration to 55,000 calendar years before present, but its older sections draw on several natural archives and carry meaningful uncertainty. A date expressed as 31,752 BCE may be useful for arranging an archive, but it must not imply that Ireland's climate, coastlines or inhabitants can be described with annual precision.

The most valuable evidence close to this broad horizon comes from Derryvree, near Maguiresbridge in County Fermanagh. Roadworks exposed organic freshwater silts and fine sands sealed between two bodies of glacial till within a drumlin. Their sequence records an earlier ice advance, an interval in which freshwater deposits accumulated, and a later advance that buried them. The organic layer yielded a conventional radiocarbon determination of about $30,500 \pm 1,100$ radiocarbon years BP. Published

calibrations have placed it broadly at c. 36,900–31,700 calibrated years BP. The nominal date in this article lies within that wide interval, but cannot be located at a particular level, season or generation within it.

A Wet, Treeless Fermanagh

Derryvree is not evidence for all Ireland at once, yet it offers an unusually vivid local environmental record. Pollen, plant macrofossils, mosses and insects indicate open tundra or muskeg rather than mature woodland. Grasses, sedges, herbs, mossy ground and shallow freshwater pools characterised a landscape exposed to severe cold and frost action. Fossils include plants familiar today from Arctic-alpine or wetland habitats, among them dwarf willow (*Salix herbacea*), mountain avens (*Dryas octopetala*) and bogbean (*Menyanthes trifoliata*). Their presence shows that, during the formation of these sediments, suitable niches existed for cold-adapted vegetation and freshwater life.

This was neither the wooded Ireland of later prehistory nor simply a featureless white desert. In summer, wet hollows and pools could be biologically productive, with plant matter supporting insects and other small life; dry ridges and exposed ground would have offered different conditions. Winters were likely long and harsh, while the growing season was short. “Periglacial” is the useful term for a landscape profoundly shaped by freezing, thawing and seasonally frozen ground. It does not prove that an ice wall stood beside Derryvree throughout the interval. Local drainage, relief and distance from ice margins mattered, and the evidence does not permit a detailed weather map for the whole island.

Greenagho, also in Fermanagh, provides an important comparison. Organic detritus from lake deposits beneath till has been calibrated to roughly 37,200–35,700 calendar years BP. Together with Derryvree, it demonstrates that parts of north-central Ireland were ice-free during portions of MIS 3 before the major expansion of the last Irish ice sheet. That conclusion is firm at the regional scale, but it cannot establish that every Irish valley, mountain or coastline was simultaneously free of ice at 31,752 BCE.

Before the Great Ice Expansion

The broader British-Irish Ice Sheet was growing through an unstable climatic period. Reconstructions differ in detail because ice sheets do not advance as a single, even front and the evidence is incomplete, particularly where later ice eroded older deposits. A widely used working model places the main build-up after c. 35,000–32,000 years ago and maximum extent later, broadly c. 27,000–21,000 years ago. The large BRITICE-CHRONO project similarly reconstructed major advance across Ireland and Britain between 31,000 and 15,000 years ago. Around the notional date considered here, Ireland was thus approaching, rather than already experiencing uniformly, the later glacial maximum.

This changing ice geography affected coastlines and connections as well as inland habitats. Lower global sea levels exposed some continental shelf, but the Irish Sea region was altered by local crustal movements, marine conditions and glaciation as well as by falling oceans. It would be unsafe to draw a simple land bridge from Ireland to Britain or continental Europe for this exact moment. Submerged-landscape research instead stresses limited shelf exposure around Ireland and the destructive effects of later glaciation and high-energy seas on evidence that might once have survived. The absence of a known route is not proof that movement was impossible; it is a warning against treating a schematic Ice Age map as a travel itinerary.

Caves and Cold-Stage Animals

County Cork's Castlepook Cave, near Doneraile, is the principal southern archive for Ireland's pre-Last Glacial Maximum vertebrate fauna. It has yielded remains attributed to woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena, alongside other cold-stage animals. The cave is exceptionally important because it preserves evidence from before and after the Last Glacial Maximum, but it is not a snapshot of one day or one ecosystem. Cave bones can arrive through carnivore activity, natural deaths, water movement, collapse and later disturbance. Early excavations also recorded context less precisely than modern archaeology requires.

Recent redating has made that caution more consequential. Improved pretreatment of bone samples revised several earlier Castlepook determinations substantially older, and a 2020 reassessment suggested that giant deer and spotted hyaena may have disappeared locally before about 40,000 calibrated years BP. Consequently, the Castlepook fauna establishes the range and changing character of an Irish MIS 3 animal world; it does not demonstrate that mammoth, hyaena, giant deer and reindeer all met in north Cork in 31,752 BCE. The responsible conclusion is smaller but still striking: suitable Irish refuges or corridors supported, at different times, a diverse cold-adapted fauna.

The Unresolved Human Question

A reindeer femur from Castlepook has made this period central to debate about Ireland's earliest possible human activity. It has been reported as dating to about 33,000 years ago and bears a deep mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone implement during carcass processing. If that interpretation and the chronological association are confirmed, it would indicate that a person or small group handled a reindeer in Ireland during the Upper Palaeolithic, far earlier than the island's long-established record of post-glacial settlement. It would be evidence of an action, however, not proof of a permanent population.

Important limits remain. The bone belongs to an old cave collection rather than a newly excavated occupation surface with securely associated tools, charcoal and animal remains. No published Irish hearth, dwelling floor, human burial, stone-tool assemblage or repeated settlement sequence is securely dated to around 33.7 thousand calendar years BP. The National Museum of Ireland accordingly continues to state that no clear evidence has emerged for human presence in Ireland during the Palaeolithic, while recent research proposals describe Castlepook's modified bones as the strongest potential evidence requiring further excavation and testing. These positions are not contradictory: the find is significant, but not yet a foundation for certainty.

What Cannot Be Recovered

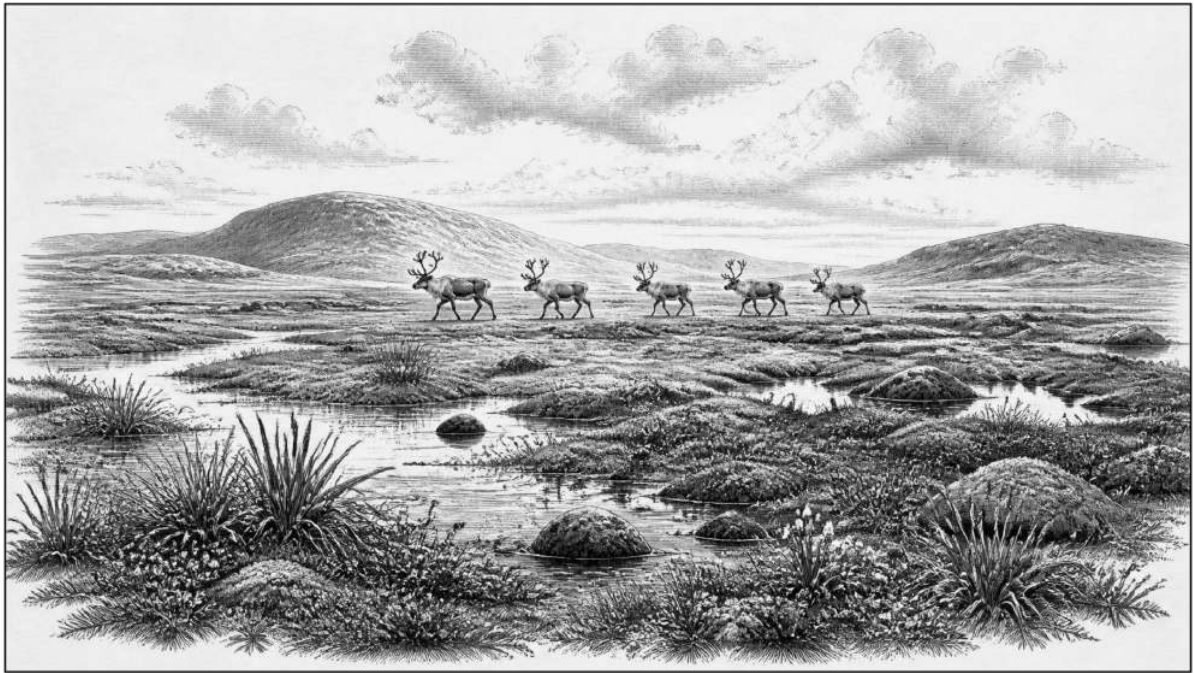
There is no evidential basis for political affairs, warfare, diplomacy, named peoples, language, religion, formal learning or trade in Ireland at this date. Nor can archaeologists identify farms, herds, fields, houses or a resident economy. If people did reach the island, the most defensible interpretation is a brief Upper Palaeolithic incursion within a much wider north-west European world of mobile hunter-gatherers, not an established Irish society. That remains an interpretation prompted by a modified bone and by the known presence of humans elsewhere in Europe, rather than an Irish settlement record.

For 31,752 BCE, the most meaningful Irish history is therefore environmental. Beneath a Fermanagh drumlin, silts preserve the signs of cold pools, dwarf willow, bogbean, mosses and sedges during an interval between ice advances. In Cork, cave deposits preserve a more fragmented history of animals moving through an unstable landscape. These records show that parts of Ireland were living places before the island's later ice cover expanded dramatically. They do not supply a calendar-year narrative, but they illuminate a severe, dynamic world whose traces endured beneath ice and inside caves.

Chapter 050 of 100

31751 BCE

Derryvree's Muskeg World^[50]



The label 31,751 BCE gives a useful place in a modern sequence, but it cannot identify a recoverable year in Irish prehistory. No Irish calendar, settlement record or dated human episode survives from this depth of time. In archaeological terms, the point falls at roughly 33,700 calibrated years before present (cal BP, with “present” conventionally fixed at AD 1950), in the later part of the Late Pleistocene and Marine Isotope Stage 3 (MIS 3). That conversion is only approximate. Radiocarbon ages from so far back require calibration and normally produce probability ranges, while a layer of silt, peat or cave bone may represent a span of years or centuries rather than a single moment.

Ireland around this notional date must therefore be approached through environmental and faunal archives: sediments sealed beneath later glaciers, pollen and plant remains, insects, animal bones, cave deposits and reconstructions of ice movement. These sources can establish broad conditions and changing possibilities; they cannot supply a year-by-year narrative. The chief historical fact is not a named event but Ireland’s position in a restless Ice Age landscape, before the last great expansion of the British–Irish Ice Sheet transformed much of the island.

Between Ice Advances

MIS 3 was not a single, uniform cold spell. Across the North Atlantic world it contained abrupt millennial-scale shifts between colder stadials and relatively milder interstadials. Ireland lay at the Atlantic edge of those changes. Its climate, vegetation, sea margins and the extent of local ice could alter profoundly over periods far shorter than the age of the deposits now used to reconstruct them. It would be misleading to picture 31,751 BCE either as an entirely ice-covered wilderness or as a stable grassland awaiting later settlement.

Research on the last Irish ice sheet indicates that extensive areas were ice-free during portions of the period before about 34,000 cal BP, and that the main late-glacial ice-sheet expansion developed subsequently, reaching the southern coast much later. This is a reconstruction assembled from several sites, not a guarantee that every Irish valley, upland and coast was free of ice at the same time. Ice sheets have also removed, mixed and buried much older evidence. The patchy survival of deposits is itself part of the story: much of the landscape that might have recorded this era was later scoured away.

At 31,751 BCE, then, the most responsible description is of a changing island or near-island landscape on the eve of more severe glaciation. Its shorelines cannot simply be projected from a modern map. Lower global sea level exposed additional shelf, but local relative sea level depended also on the weight of nearby ice and movements of the land. Animal movement between Britain and Ireland shows that connections or crossings were possible during parts of the cold stage; it does not by itself prove a continuous, dry land bridge at this particular date.

A Freshwater Record at Derryvree

The most informative Irish environmental evidence relevant to this broad interval comes from Derryvree near Maguiresbridge, County Fermanagh. There, organic freshwater silts and sands were discovered between two sheets of glacial till. The sequence is important because the later ice sealed an older wetland deposit beneath the drumlin landscape. A radiocarbon determination of about 30,500 radiocarbon years before present has been calibrated to a wide range of roughly 36,900–31,700 cal BP. The range encompasses the modern date in question, but it must not be treated as proof that the Derryvree pool existed in precisely 31,751 BCE.

The deposit nevertheless gives a rare local glimpse of conditions during a cold, ice-free interval. Its pollen, plant macrofossils and invertebrate remains point to open, treeless vegetation and wet ground beside freshwater or slow-moving water. Sedges, grasses, herbs, mosses and low-growing arctic-alpine plants formed a tundra-like mosaic rather than a forest. Finds associated with the sequence include plants such as mountain avens and bogbean. Such evidence is modest in scale but powerful in implication: at least one part of northern Ireland supported water, marshy ground and a varied low vegetation cover despite a harsh regional climate.

“Muskeg” is a useful, if imperfect, shorthand for this wet, moss- and sedge-rich world. It should not conjure a modern bog unchanged through time, nor should Derryvree stand for the whole island. Local drainage, exposure, altitude and proximity to ice would have mattered greatly. Summers may have brought brief productive growing seasons; winters were probably prolonged, with frost, snow and seasonally frozen ground limiting plant growth and animal movement. The record demonstrates life under cold conditions, not comfort or abundance.

Castlepook’s Animal Landscape

Southern Ireland supplies a complementary archive. Castlepook Cave, also known as Mammoth Cave, near Doneraile in County Cork, is Ireland’s richest known source for vertebrate remains dating to the period leading towards the Last Glacial Maximum. Its old excavations recovered more than 2,000 bones from a complex limestone cave system. Subsequent radiocarbon work has shown that the assemblage spans a long interval, rather than one occupation or one ecological moment. That chronological breadth is crucial: a bone from Castlepook illuminates the wider middle-to-late Ice Age, but does not automatically describe the precise conditions at Derryvree or elsewhere in 31,751 BCE.

The fauna nevertheless evokes an open, cold-country ecosystem. The cave assemblage includes reindeer, woolly mammoth, giant deer, mountain hare, arctic and Norway lemmings, foxes, wolves, brown bears and spotted hyaenas. Predators and scavengers mattered as much as herbivores in forming the bone deposits. A cave may have been a den, a place where carnivores dragged carcass parts, a natural trap, or a location disturbed by water and later excavation. The bones are evidence of animals in the regional landscape; they are not a census of animals present together on one day.

Reindeer are especially evocative because their presence fits a cold, open environment and because their seasonal movements could connect distant grazing areas. Mammoth and giant deer add to the impression of a large-herbivore landscape, while lemmings indicate severe northern conditions. Yet ecology should not be overdrawn. The absence of a species from a small and complicated cave archive may reflect preservation and collecting history rather than its true absence from Ireland. The strongest conclusion is that parts of Ireland could sustain a distinctive Pleistocene fauna during this broad phase, not that every familiar “mammoth-steppe” animal ranged across the entire island.

The Unresolved Human Question

Castlepook also raises the most consequential human question. A reindeer femur from the historic cave collection has been reported as dating to around 33,000 years ago and bearing a deep mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone tool during carcass processing. If that interpretation is upheld, it may indicate that Upper Palaeolithic people visited Ireland during the broad era represented by 31,751 BCE. County Cork heritage material has reasonably emphasised the importance of the find, because it would move evidence of human activity on the island far earlier than the securely documented terminal-Pleistocene evidence previously known.

But a possible cut-marked bone is not a village, a people or a continuous occupation. The femur derives from a collection made during early twentieth-century cave excavations, before modern standards of stratigraphic recording. It has no securely associated hearth, stone-tool assemblage, dwelling floor, burial, artwork or repeated occupation horizon of comparable age. Recent work at Castlepook has sought intact deposits precisely because the older excavation history leaves major questions unanswered. The careful formulation is that the bone may record a brief human encounter with a reindeer, perhaps elsewhere before carnivores or natural processes brought the fragment into the cave. It does not demonstrate permanent settlement at Castlepook.

Accordingly, political affairs, diplomacy, formal conflict, religion, learning, trade and social organisation cannot be described for Ireland in this year. There are no names, languages, institutions, ritual sites or exchanged objects from which to infer them. Nor is there evidence for farming, livestock, pottery, metalworking, monuments or a settled economy. Should the Castlepook interpretation prove correct, a passing hunting party is conceivable; reindeer could have supplied meat, hide, sinew, bone and fat. That is an inference from hunter-gatherer practice elsewhere and from the animal bone, however, not direct evidence for an Irish hunting economy.

What the Silence Means

The apparent silence of human evidence must be handled in two directions. It cannot prove that no person ever reached Ireland before the Last Glacial Maximum: later glaciation, rising seas and limited investigation have greatly reduced the chances of preservation and discovery. Equally, the lack of securely excavated tools and habitation evidence means that archaeologists cannot responsibly populate the island

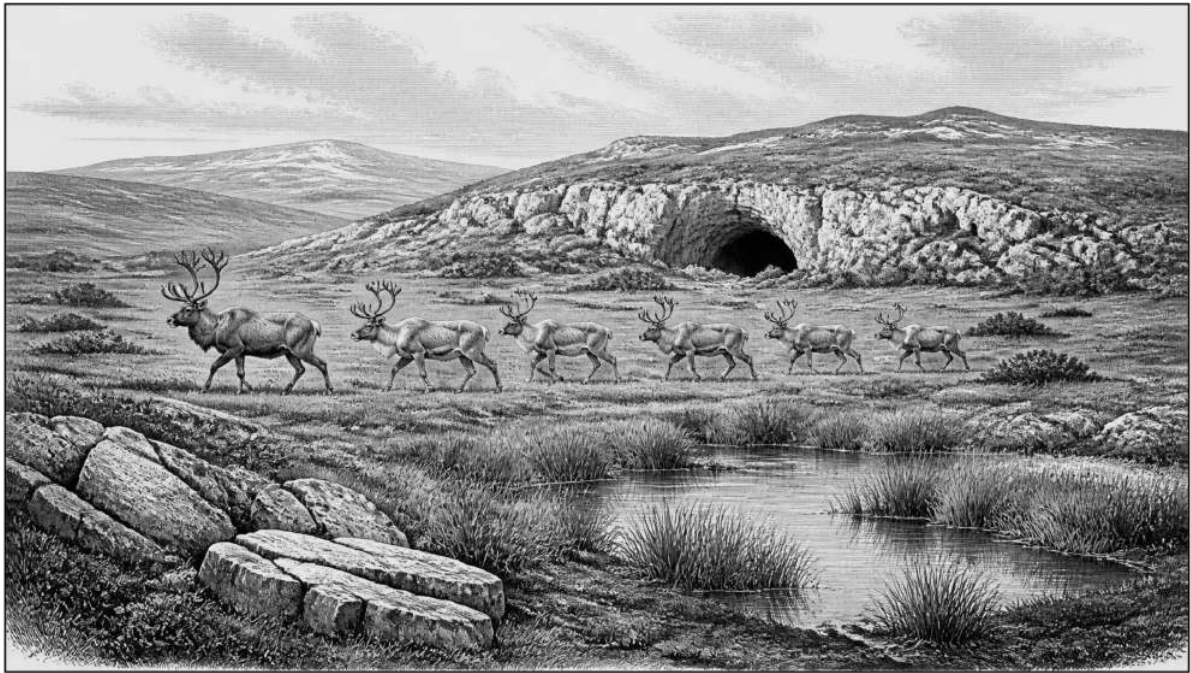
with established bands of hunters. Ireland's remote position on the north-western edge of Europe, its shifting coasts and the difficult passage through cold landscapes made any visit consequential, but perhaps intermittent and vulnerable.

The decisive history around 31,751 BCE is therefore environmental. Derrynree preserves a northern freshwater tundra setting; Castlepook preserves the bones of an unusually rich cold-stage animal world; ice-sheet research shows that the more extensive glaciation still lay ahead. These are fragments, but they are not trivial ones. They reveal an Ireland with living wetlands, grazing animals, predators and seasonal constraints, within a rapidly changing North Atlantic climate. They also set firm limits on imagination. Before Ireland had recorded communities, chiefs, shrines or farms, its history was written chiefly in silt, pollen, bone and ice.

Chapter 051 of 100

31750 BCE

Cork's Reindeer Femur^[51]



“31,750 BCE” is a modern chronological label, not a year that can be recovered from Ireland’s prehistoric record. No Irish community used this calendar; no written source, named individual, political event or datable settlement belongs to it. In conventional archaeological terms, the label falls roughly 33,700 years before 1950, within Marine Isotope Stage 3 (MIS 3), a long and climatically volatile part of the Late Pleistocene. At this depth of time, responsible history must use broad calibrated ranges, rather than pretend that evidence distinguishes one winter, generation or calendar year from another.

The evidence is fragmentary but important. It comes chiefly from buried freshwater deposits in County Fermanagh, fossil animal remains from limestone caves in County Cork, and reconstructions of the growing British–Irish Ice Sheet. Together, these sources show that Ireland was neither the familiar green island of later history nor a simple, permanently frozen wilderness. Parts of the island had ice-free ground during this broad interval; cold-adapted plants and animals occupied changing habitats; and the eventual expansion of ice would erase, bury or disturb much of the earlier record. What cannot yet be demonstrated is a settled human population in Ireland at this time.

Reading a Date Beyond History

Radiocarbon dates are not calendar dates. A measurement on organic material gives an estimate in radiocarbon years before present, with “present” conventionally fixed at 1950. It must then be calibrated against records of past atmospheric carbon-14 variation. At around 34,000 calendar years ago, calibrated estimates are necessarily broad, and the results depend on the material, its preservation and the quality of its archaeological or geological context. The modern IntCal20 curve reaches this period, but it does not turn a single bone or silt layer into an annual chronicle.

A useful Irish benchmark is Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 exposed organic freshwater silts and fine sands sealed between two tills inside a drumlin. The lower till records an earlier glacial episode; the organic beds record an intervening period in which water, vegetation and animals occupied the site; the upper till represents a later advance of ice. The organic deposit produced a legacy radiocarbon determination of $30,500 \pm 1,170/1,030$ radiocarbon years BP. Published discussion places its broad calibrated span at approximately 36,900–31,700 cal BP. The notional date 31,750 BCE lies within that wide interval, but it does not date a discrete layer, event or day at Derryvree.

Derryvree's Cold Wetland

Derryvree is unusually valuable because later glaciers have removed so many older Irish deposits. Its biological traces indicate a freshwater setting in a cold, largely treeless and periglacial landscape. Pollen was dominated by herbaceous plants, although poorly preserved. Plant macrofossils included a remarkable moss flora, while insect remains added evidence for wet, open ground. The combined interpretation is of tundra or muskeg-like terrain: shallow pools, mossy and sedgy margins, damp mineral soils, sparse dry-ground vegetation and landscapes repeatedly affected by frost.

This should not be imagined as a uniform blanket of snow or bare stone. Summer growth could make wetlands and herb-rich patches productive, while low shrubs, grasses and sedges offered forage where drainage and shelter permitted. Yet the growing season was short, winters severe and tree cover negligible. Any comparison with modern Ireland must therefore be resisted. There were no oak and hazel woods, no pasture fields, no enclosed farms and no peat bog landscapes shaped by millennia of Holocene vegetation. The Derryvree sediments illuminate a particular Fermanagh locality, not the entire island; nevertheless, they decisively complicate any claim that all Ireland was continuously under ice at this point.

Ice, Land and Changing Coasts

Ireland's physical geography was in transition. The Last Glacial Maximum, when the British–Irish Ice Sheet reached its greatest overall scale, came later, broadly during the period from about 27,000 to 21,000 years ago in different sectors. Ice-sheet growth and maximum extent were asynchronous rather than one island-wide event. Reconstructions based on seafloor mapping, sediments, landforms and numerical dating show advancing and retreating margins responding to regional topography, marine conditions and climate. Around the broad horizon represented by 31,750 BCE, the future large-scale expansion of the ice sheet was approaching, but local evidence still preserves ice-free intervals.

Sea level was much lower than today because vast volumes of water were stored in continental ice sheets. The Irish coastline therefore lay far beyond many modern shores, and the Irish Sea and Atlantic shelf landscapes differed profoundly from their present form. That created ecological links between Ireland, Britain and the exposed shelf at some times, but it does not licence a simple claim of a particular land bridge on this particular year. Routes changed with sea level, ice margins, rivers and terrain. The safest conclusion is that animals could reach Ireland during favourable phases and that the island formed part of a wider north-west European Ice Age zone, not that every migration route is known.

Castlepook's Faunal Record

The clearest southern Irish evidence comes from Castlepook Cave, also known as Mammoth Cave, near Doneraile in north County Cork. Excavations undertaken principally in the early twentieth century recovered a major collection of Pleistocene animal remains. Subsequent reassessment and improved radiocarbon pretreatment have shown that some specimens are substantially older than earlier results suggested. Castlepook contains evidence for a striking cold-stage fauna, including reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena.

The list does not mean that all these species stood together outside the cave in one season, nor that every bone retained its original position. Cave deposits can be reworked by animals, water, collapse, earlier digging and later disturbance. The collection nevertheless proves that Ireland supported, at intervals during MIS 3, animal communities unlike any living on the island today. Spotted hyaena is especially revealing: Castlepook is Ireland's principal last-cold-stage site for this predator. Carnivores could carry prey and bones into caves, gnaw them, disturb them and create accumulations that resemble human food debris to an untrained eye. Careful taphonomy is therefore as important as a radiocarbon result.

The Marked Reindeer Bone

A reindeer femur from Castlepook has made this period especially consequential. It has been reported as carrying a deep incision interpreted by researcher Ruth Carden as consistent with cutting by a sharp stone tool, and the animal bone has been presented as dating to about 33,000 years ago. If that interpretation is confirmed, it would be potentially transformative evidence: a person may have processed a reindeer in Ireland far earlier than the formerly accepted beginning of human activity on the island.

But “potentially” matters. The femur is not accompanied by a securely associated stone-tool assemblage, hearth, shelter floor, human remains or undisturbed occupation surface of comparable age. Nor can a single marked bone establish whether people hunted the animal, scavenged it, visited briefly, travelled seasonally or lived locally. Recent archaeological work at Castlepook has found surviving cave sediments and further faunal material, but its 2022 investigation identified no cultural artefacts. That negative result does not disprove a short-lived Palaeolithic visit; it does show why the case cannot responsibly be inflated into a colony, camp or named ‘first settlers’.

Society Beyond Recovery

Political affairs, diplomacy and warfare are not recoverable for Ireland at this date. There is no evidence for kingdoms, tribes, territorial boundaries, leaders, treaties or organised conflict. Likewise, no artefact, burial, artwork or structure permits claims about language, religion, ritual, kinship or formal learning. The lack is not evidence that people lacked culture elsewhere in north-west Europe; Upper Palaeolithic societies certainly possessed sophisticated skills and social lives. It is evidence that Ireland has not yet yielded securely dated material through which such matters can be described here.

Economy and everyday life can be addressed only conditionally. If people reached Castlepook or another Irish locality, reindeer would have offered meat, marrow, hides, sinew and bone, while a mobile hunting party would have needed intimate knowledge of weather, animal movement, fuel and safe routes. These are plausible inferences from the ecology of reindeer hunting, not facts demonstrated for Ireland.

There is no direct evidence for Irish exchange networks, boats, trade goods, dwellings or repeated seasonal rounds around 31,750 BCE. The more certain economy was ecological: plants converting a short summer into fodder; herbivores moving through open country; predators and scavengers competing for carcasses; and caves acting as shelters, dens and traps for bone.

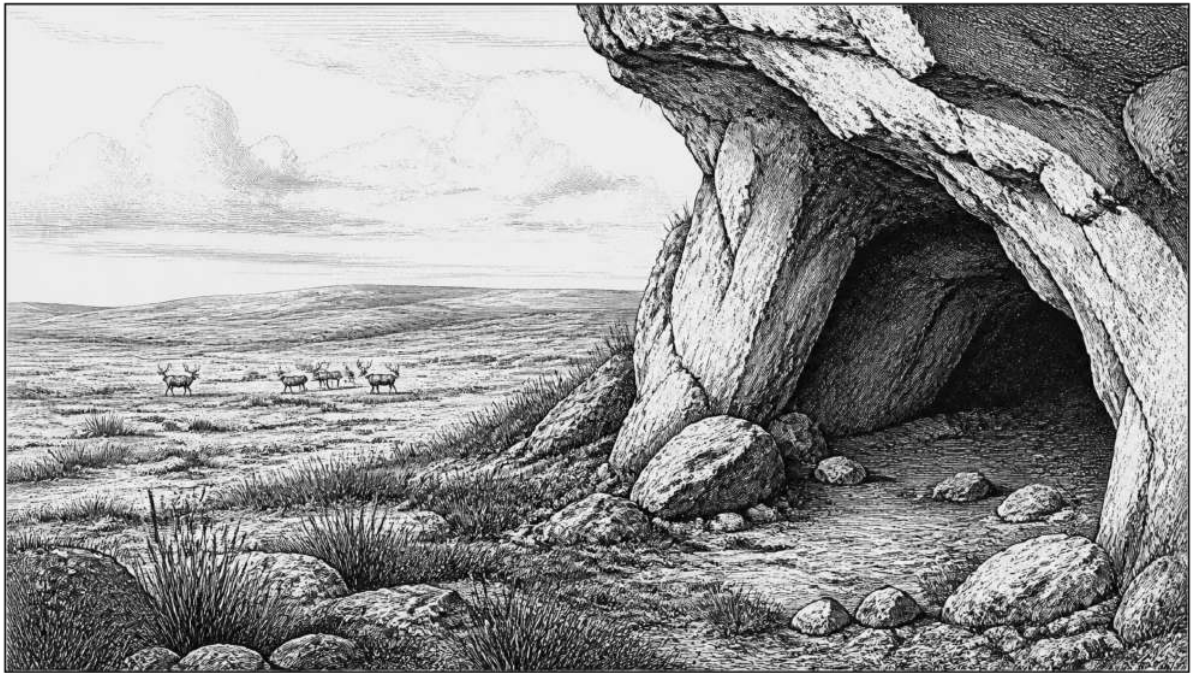
An Archive of Possibilities

Ireland around 31,750 BCE is therefore best understood as a contested environmental horizon rather than a year of recorded human events. Derryvree provides a calibrated, local window onto cold freshwater tundra before a later ice advance. Castlepook preserves evidence of Ice Age mammals and a debated reindeer bone that may one day establish an early human visit. Future excavation, direct dating, microscopic study of marks and better stratigraphic control may alter the balance of evidence. For now, the responsible conclusion is both modest and remarkable: Ireland was a changing, living Pleistocene landscape, and the question of whether people briefly entered it remains open rather than answered.

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31749 BCE

Castlepook's Limestone Gateway^[52]



“31,749 BCE” is a modern way of placing a very remote point in time, not a date that people in Ireland could have recognised or recorded. Calendar-year precision is not available here. The responsible historical setting is instead a broad interval around c. 34,000 calibrated years before present (where “present” conventionally means 1950), during Marine Isotope Stage 3 of the Late Pleistocene. Even that conversion carries uncertainty: radiocarbon measurements have error ranges, calibration curves are uneven at great age, and deposits may have been disturbed long after they formed. Ireland at this point was not a country with named peoples, rulers or borders. It was a changing north-western European landscape whose fragmentary record survives in caves, buried sediments, animal bones, pollen, insects and the landforms later ice sheets left behind.

At Europe's Atlantic Edge

Ireland's geography was profoundly different from that of the modern island. Global sea levels were far lower during the last glacial cycle, exposing broad continental shelves around Britain and Ireland. The Irish Sea and Celtic Sea basin did not form the familiar marine barriers of today in the same way; connections across low-lying terrain could open or narrow as sea level, river systems and ice margins changed. This did not mean an easy or permanent land bridge, nor does it prove a particular route taken by animals or people. It does mean that Ireland belonged to a wider western European ecological zone, rather than being the isolated island of later prehistory and history.

Its position on that margin made it exceptionally sensitive to North Atlantic climate. Marine Isotope Stage 3, broadly c. 57,000–29,000 years ago, was cold overall but not climatically uniform. Greenland ice-core records document abrupt shifts between relatively milder interstadials and harsher stadials. The Irish evidence cannot yet assign every local deposit to one of these short phases with confidence. Around

the date represented by this article, therefore, the safest picture is not of an eternally frozen country, but of a cold, open and unstable environment repeatedly altered by frost, shifting vegetation, changing watercourses and advances or retreats of ice.

A Landscape Before the Maximum

This was before the fullest late-glacial expansion usually called the Last Glacial Maximum. The British–Irish Ice Sheet was growing and its extent varied markedly by region and through time. Recent reconstructions begin at 31,000 years before present precisely because earlier limits are poorly constrained; they indicate accumulating ice in northern Ireland and other upland centres, while acknowledging wide zones of uncertainty. Other work, including evidence from raised beaches in southern Ireland and offshore sediment records, suggests substantial ice-sheet loading and earlier glaciation during Marine Isotope Stages 4 and 3. It would be misleading to draw a single sharp ice edge across Ireland for c. 34,000 years ago.

What can be said is that later ice was to transform, erode and cover much of the evidence from this period. Drumlins, tills, eskers and scoured rock are the visible legacy of repeated glaciation, but they are poor guides to the exact conditions of one moment before the Last Glacial Maximum. In places, organic sediments survived beneath till. The Derryvree and Maguiresbridge sequences in County Fermanagh, and deposits at Aghnadarragh in County Antrim, show why these rare windows matter: plant macrofossils, pollen and beetle remains can reveal freshwater pools, sedge-rich ground, mosses and tundra or cool-temperate communities that no later surface landscape could preserve intact.

Open Ground and Mobile Herds

The strongest direct indication of Irish conditions in the broad period comes from vertebrate remains, especially cave collections in the south. Castlepook Cave near Doneraile in north County Cork has yielded Ireland's richest well-known assemblage of pre-Last Glacial Maximum mammals. Its fauna includes reindeer, woolly mammoth, musk ox, horse, wolf, arctic fox, brown bear, giant deer and spotted hyaena. This list is powerful evidence that Ireland at different points in the Late Pleistocene could sustain, or at least receive, animals now strongly associated with cold open country and the mammoth-steppe world.

But the list must not be turned into a single postcard scene. Cave deposits are palimpsests: bones may have accumulated over thousands of years; scavengers, water, falling sediment and excavators can mix material; and not every species necessarily lived together. Modern re-dating has changed the chronology dramatically. Research led by Ruth Carden, Thomas Higham and Peter Woodman found that some Castlepook samples were between about 5,000 and 12,000 radiocarbon years older than earlier determinations had suggested. It follows that individual specimens, not the entire catalogue, must be used to discuss any particular time range.

Nevertheless, the fauna supports a cautious environmental reconstruction. Reindeer and musk ox point towards sparse, productive grazing landscapes rather than dense forest. Mammoth, horse and giant deer also imply extensive open habitats, though their precise local ranges and dates differ. Such ground may have combined grasses, herbs, sedges, dwarf shrubs, patches of bare mineral soil and wet hollows. Seasonal contrasts would have been demanding. Winter cold, wind and limited cover would restrict

forage; spring and summer growth could draw herbivores along routes determined by water, terrain and the distribution of vegetation. Predators and scavengers, including wolves and hyaenas, followed opportunities within that mobile food web.

The Reindeer Femur Question

Castlepook also matters because a reindeer femur recovered from the cave has been reported with marks interpreted as having been made by a stone tool during butchery. Its dating, publicised as roughly 33,000 years ago, has been presented as evidence for an exceptionally early human presence in Ireland. If that interpretation is upheld, it shifts the island's human story far back beyond the securely documented post-glacial settlement of the early Holocene. It would suggest that people reached the Irish landmass during a more connected Ice Age phase, probably as highly mobile hunter-gatherers exploiting a landscape shared with large herbivores.

The limits of the claim are as important as its excitement. No human skeleton of this age has been found in Ireland, no contemporary dwelling floor is known, and there is no securely associated tool-kit, hearth, camp or repeated occupation sequence at Castlepook. The original cave excavations were undertaken in the early twentieth century, before present-day standards of stratigraphic recording, residue recovery and geoarchaeological sampling. A modified bone is evidence about an encounter with an animal, not proof of a permanent settlement, population size, language, kin group or route of arrival. The possibility of a brief visit is not the same as evidence that Ireland was continuously inhabited.

People Without a Polity

Accordingly, there are no political affairs to narrate for Ireland at this date: no chiefs, kingdoms, assemblies, diplomatic ties, laws or territorial frontiers can responsibly be identified. Nor can conflict be inferred simply from the presence of people, predators or large game. Hunting itself may have involved cooperation, planning and the controlled use of stone-edged tools, but this remains an inference from Upper Palaeolithic lifeways elsewhere in Europe, not a demonstrated social institution at Castlepook.

Should the cut-mark interpretation represent human activity, everyday life was likely organised at a small scale. A successful reindeer kill could provide meat, marrow, fat, hide, sinew and bone, resources valuable in a cold environment. Such processing need not have happened inside the cave; the cave may instead have received a discarded or transported portion of carcass. Fire, clothing, temporary shelters, wooden implements and skin containers are all plausible components of contemporary human adaptation elsewhere, but none has been recovered in Ireland from this horizon. They should be understood as comparative possibilities, not as discovered Irish possessions.

Culture Beyond Recovery

There is no evidence from c. 34,000 years ago for religion, formal burial, visual art, music, story, language or learning in Ireland. That silence cannot be filled by importing the famous painted caves, carved figurines or elaborate burials of continental Europe. Those achievements demonstrate the cultural capacities of Upper Palaeolithic *Homo sapiens*, but they do not establish an Irish counterpart. Likewise, there is no recoverable evidence of trade in the usual sense. Movement of people, animals and raw materials across the wider exposed shelf is likely to have been possible at times, yet no identifiable exchange network or imported Irish object belongs securely to this date.

The most meaningful regional change was environmental. Ireland lay within a dynamic frontier between habitable open ground and expanding ice. The continued movement of animals across the broader landscape shows that ecological connections existed; the later near-total transformation of the island by the Last Glacial Maximum shows how precarious those connections were. Any small human presence would have faced that same instability. A route usable in one generation could be blocked by ice, water, boggy ground or a changed coastline in another.

What This Date Can Mean

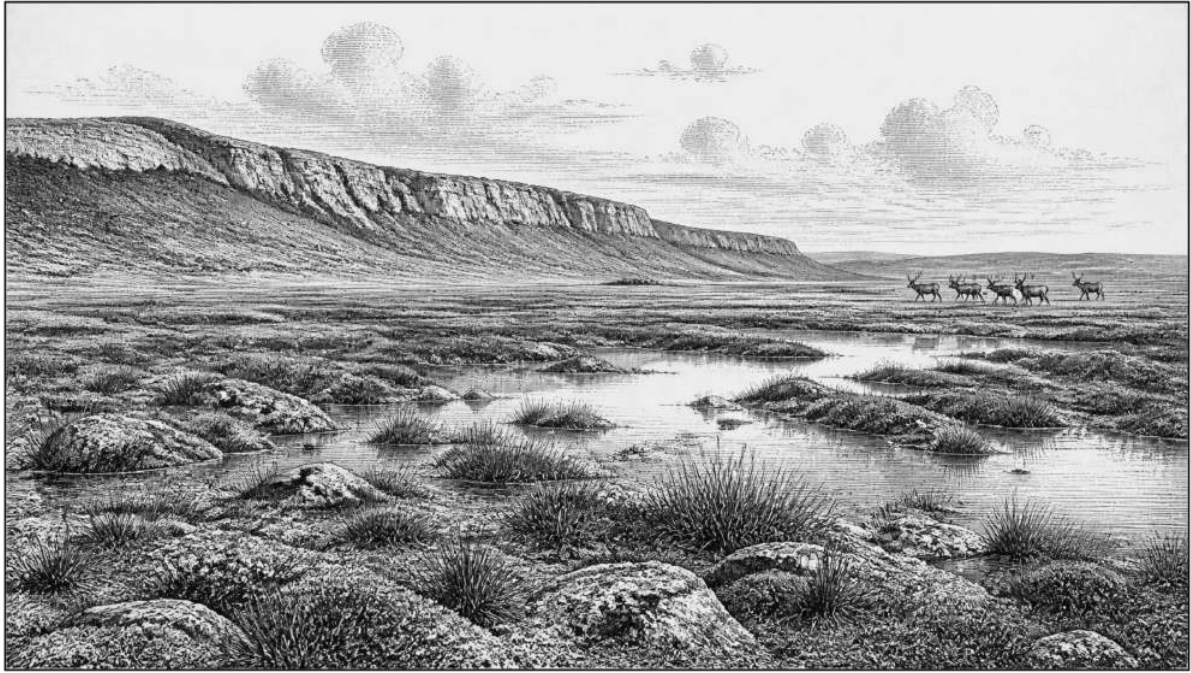
For a point styled 31,749 BCE, the best history is therefore one of evidence and scale. The date belongs to the Late Pleistocene, not to a historical year with events. Cave bones from north Cork, freshwater sediments beneath northern tills, offshore records and ice-sheet reconstructions together establish an Ireland connected to Ice Age ecological processes across north-west Europe. They indicate cold open habitats, varied large-mammal communities and a landscape increasingly vulnerable to glaciation. A marked reindeer femur offers a serious, consequential but still limited indication that humans may have visited.

That restraint is not a failure of the record. It is what makes the record valuable. Every improved bone pretreatment, calibrated radiocarbon determination, sediment study and re-examination of old collections can revise the chronology. Ireland's deep past around this time is not a blank page awaiting invention; it is a difficult archive, in which the survival, context and dating of a single bone can change the boundaries of the possible.

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31748 BCE

Hyenahall's Mammoth Toothmarks^[53]



A Date Beyond Annals

31,748 BCE is not a year that can be recovered from an Irish chronicle, a royal list or an archaeological diary. It is a modern calendar label, equivalent to roughly 33,700 years before AD 1950, the conventional “present” used in radiocarbon science. At this depth of time, precision to a single calendar year is unavailable. The responsible approach is to place the date within broad calibrated ranges, archaeological phases and environmental sequences. Around this point Ireland belonged to Marine Isotope Stage 3, part of the last cold stage known locally as the Midlandian. It was a world before Irish farming, monuments, metalworking, writing or any demonstrable political community.

The closest Irish chronological anchor is the freshwater deposit exposed beneath a drumlin at Derryvree, near Maguiresbridge in County Fermanagh. Organic silts and sands, trapped between two tills, produced a radiocarbon determination of 30,500 $\pm$ 1,170/–1,030 BP. Later calibration places the deposit broadly around 31.7–36.9 thousand calibrated years BP. That is a wide span, approximately 34,950–29,750 BCE, but it includes 31,748 BCE. Derryvree therefore illuminates the kind of environment that may have existed in parts of Ireland around this nominal date; it does not prove what occurred in any particular season or valley in 31,748 BCE.

An Unstable Cold World

Ice-Age Ireland was neither permanently frozen nor uniformly habitable. Greenland ice cores show that the North Atlantic climate of MIS 3 changed abruptly and repeatedly between comparatively milder interstadials and colder stadials, often on timescales far shorter than conventional historical periods. Irish evidence is much patchier than the Greenland record, because later glaciers eroded, buried and rearranged older deposits. Yet Derryvree's silts, together with organic deposits at places such as Greenagho and Aghnadarragh, demonstrate that ice-free episodes and freshwater habitats existed between advances of glacier ice.

At Derryvree, pollen, plant macrofossils, mosses and insects point towards open, treeless country. Grasses, sedges, herbs and juniper formed a low, discontinuous vegetation, while mossy ground and plant-rich pools occupied wet hollows. The term *muskeg*, used by researchers for this waterlogged setting, should not suggest a familiar Irish bog under modern woodland and rainfall. This was a cold, exposed landscape with severe winters, short growing seasons and frozen or seasonally frozen ground. Insects associated with pools and wet vegetation are important precisely because they make the reconstruction more secure than a picture based on pollen alone.

Such evidence supports an image of varied local habitats rather than an empty white wilderness: sedge marshes, shallow freshwater, mineral ground, sparse shrubs and open slopes. It does not support an exact temperature for Ireland on this date. Nor should the Derryvree sequence be treated as a map of the entire island. Ireland's coasts, uplands, interior basins and glacier margins would have differed markedly. The island's later familiar pattern of dense hedgerows, woodland and peatland had not yet developed.

Ice Building Towards Its Maximum

This was also a time of growing glacial power. Syntheses of the British–Irish Ice Sheet place major build-up after about 35–32 thousand years ago, with maximum extent later, broadly between 27 and 21 thousand years ago. More recent reconstructions show that different sectors advanced, peaked and retreated at different times. Thus 31,748 BCE lay near the onset of the long approach to the Last Glacial Maximum, not at its climax. It would be misleading to say simply that all Ireland was ice-covered, or that all was open ground, in this one notional year.

The deposits at Derryvree make the point physically. Freshwater sediments are enclosed by tills: layers of debris laid down by ice. They record a habitable interval between glacial episodes, then its destruction or burial as ice returned. Across Ireland, later ice moulded bedrock, transported stones, altered drainage and helped create the drumlin landscapes now especially characteristic of the north and midlands. Those prominent landforms are the distant legacy of ice movement, but they cannot be assigned to 31,748 BCE alone.

Lower global sea levels exposed more continental shelf than exists today, changing the outline of coasts and the routes available to animals. Whether there was a practicable continuous dry land connection between Ireland and Britain at particular phases remains a complex question of ice, sea level and local topography. Scholarship has challenged simple land-bridge narratives. For people or terrestrial animals, access may instead have involved shifting coastal plains, ice-linked northern routes, islands, crossings over water, or combinations that cannot now be reconstructed securely. Mobility was possible; the precise route is not known.

Castlepook's Cave Archive

The strongest evidence for the animal world near this broad interval comes from Castlepook Cave, also called Mammoth Cave or Doneraile Cave, in north County Cork. Excavations conducted between 1904 and 1918 recovered a remarkable collection of bones from chambers given vivid names including Hyenahall and Elephant Hall. Geological Survey Ireland regards Castlepook as Ireland's richest vertebrate-fauna site for the period leading towards the Last Glacial Maximum. More than 2,000 bones have been recovered, although water movement, early excavation methods and the mixing of deposits mean that the collection is not a single undisturbed moment in time.

Its fauna includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena, as well as wolf, Arctic fox, mountain hare and lemmings in deposits of different ages. These creatures demonstrate that Ireland could at times sustain a substantial cold-stage food web. Reindeer and giant deer browsed or grazed the open landscape; mammoths imply access to extensive productive vegetation; wolves and hyaenas were predators and scavengers. A mammoth bone bearing paired damage consistent with hyaena teeth offers a vivid indication of carnivore activity. But it does not prove that a hyaena killed a mammoth at the cave entrance, still less that either animal was alive in 31,748 BCE.

Re-dating has sharpened this caution. Improved collagen pretreatment and ultrafiltration have shown that several earlier radiocarbon results from Castlepook and other southern Irish caves were thousands of years too young. The 2020 reassessment placed significant elements of the Castlepook fauna firmly in MIS 3 and suggested that giant deer and spotted hyaena may have disappeared locally before the later glacial maximum. This is a major result, but it also shows why older cave collections require continual reassessment. A cave is a repository: bones may be carried in by carnivores, water or gravity, then moved again long after the animal died.

A Possible Human Signal

The most consequential, and most limited, human evidence connected with this era is a reindeer femur fragment from Castlepook. Zooarchaeologist Ruth Carden identified a deep mark interpreted as having been made by a sharp stone tool during butchery. Public heritage accounts have associated the specimen with about 31,000 BCE, making it potentially far older than the formerly accepted evidence for people in Ireland. If that interpretation and dating are upheld, it indicates that one or more people processed at least part of a reindeer carcass during a cold-stage visit.

Its implications must remain proportionate to the evidence. No securely associated hearth, stone-tool assemblage, dwelling, human bone, burial or occupation floor has yet been reported from Castlepook for this time. The bone does not identify the hunters' language, group name, kinship rules, clothing, beliefs or length of stay. It cannot establish a permanent settlement, much less an Irish population. Nor can it demonstrate that people hunted the reindeer rather than found and butchered a carcass. A cautious formulation is therefore best: the marked bone is important possible evidence of Upper Palaeolithic human activity in Ireland, rather than proof of continuous colonisation.

By this period, any human visitors in north-west Europe would most probably have been *Homo sapiens*, but the Castlepook evidence is an animal bone rather than a human fossil. Their practical knowledge, if present, would have had to be formidable: reading animal movement, finding fuel and shelter, producing cutting edges from stone, preserving food and negotiating sudden shifts in weather. These are reasonable inferences from the environmental challenge and wider Upper Palaeolithic record, not directly recovered facts about an Irish camp.

No Politics, No Proven Institutions

There is no evidence for political affairs, diplomacy, warfare between organised Irish polities, formal religion, trade networks or institutions in Ireland at this date. There were no farms, fields, ports, roads, mines or known settled villages. The appropriate history is environmental and archaeological: movements of ice, plants and animals; the formation of sediments; and perhaps fleeting human use of the landscape. Any claim to identify tribes, chiefs, rituals or territorial boundaries would be invention.

Economy and everyday life, if people were present, are visible only at their most elementary scale: the potential procurement and cutting of animal resources. A reindeer femur with a putative tool mark is a clue to subsistence, not evidence for commerce. Likewise, a cave full of animal remains was not necessarily a home. Hyenas may have used parts of Castlepook, while water and repeated disturbance affected deposits. The cave's importance lies in its archive of evidence, not in a story of continuous cohabitation by people and Ice-Age animals.

What This Year Can Mean

For 31,748 BCE, Ireland should be understood as a fluctuating northern edge of opportunity. In favourable intervals it contained wetlands, tundra vegetation and enough forage to support large herbivores and their predators. In worsening phases those opportunities contracted beneath advancing ice and deepening cold. Derryvree preserves one environmental window; Castlepook preserves a time-mixed faunal archive and a potentially transformative trace of butchery. Together they replace the old image of an entirely lifeless Ice-Age island with a more demanding one: a landscape intermittently viable, constantly changing, and only imperfectly known.

The decisive lesson is methodological. The calendar year is precise, while the evidence is not. Calibrated ranges, stratigraphy, palaeoecology and taphonomy provide the real chronology. They allow a responsible account of an Ireland inhabited by cold-adapted animals, shaped by an expanding ice sheet, and possibly visited by people. They do not permit a year-specific narrative. At this distance, uncertainty is not a defect to be concealed; it is part of the history itself.

Chapter 054 of 100

31747 BCE

The Awbeg Reindeer Femur^[54]



The label 31,747 BCE cannot be treated as a recoverable Irish calendar year. No written chronology, settlement sequence or archaeological layer can identify what happened in Ireland in that particular year. It is a modern conversion used to place a very remote point in time before the present era. In archaeological terms, it lies broadly around 33,700 calendar years before 1950, within the later part of Marine Isotope Stage 3 (MIS 3), a long and climatically unstable interval of the Last Glacial Period. The responsible history of Ireland at this date is therefore a history of environments, animal remains, sediments and a small number of tantalising but uncertain human traces.

A Landscape Before the Ice Maximum

This was well before the Last Glacial Maximum, conventionally dated in north-west Europe to roughly 26,000–19,000 calibrated years before present, when ice was at its greatest. It was also before the British–Irish Ice Sheet reached its overall maximum volume, reconstructed at about 23,000 years ago. That does not mean that the whole island enjoyed mild or stable conditions. Ice sheets and glaciers grew and retreated unevenly, while cold phases, windblown sediment, frozen ground and rapid climatic shifts repeatedly changed the terrain. Modern reconstructions indicate that the final great ice advance was underway on a regional scale over the following millennia, but its precise footprint at any one moment remains difficult to establish.

At this broad date, Ireland's geography was not that of the familiar modern island. Global sea level was far lower because immense quantities of water were stored in northern ice sheets. Coastal plains now submerged beneath the Atlantic and Irish Sea would have been exposed or greatly altered, and crossings between Ireland, Britain and continental Europe were easier in some periods than they later became. Yet

lower seas should not be simplified into a guaranteed dry land bridge. The changing seaways, ice margins, rivers and coastal lowlands of the western European shelf formed a complex, shifting borderland. Any movement of animals or people depended on conditions that changed over centuries and millennia, not on a fixed route.

Cold Ground, Pools and Open Vegetation

The best Irish environmental evidence for the wider period comes not from a single place but from scattered, exceptional deposits. Beneath drumlins at Derryvree near Maguiresbridge, County Fermanagh, organic layers survived between deposits left by separate ice advances. Their plant and insect remains describe a cold, open landscape with freshwater mosses, sedges, herbs, juniper and wet ground. Researchers have interpreted the setting as a treeless muskeg or tundra wetland: shallow pools and slow water surrounded by mossy, plant-rich ground, subject to severe winters and strong seasonality.

Derryvree must not be mistaken for a photograph of all Ireland in 31,747 BCE. Its deposits accumulated over an interval, their chronology has margins of uncertainty, and north-eastern lowland conditions cannot automatically stand for Cork limestone or western uplands. Nonetheless, they provide a valuable corrective to the idea of an eternally ice-covered or barren Ireland. In parts of the island during MIS 3, freshwater habitats and open vegetation existed between glacial episodes. Such ground could support grazing animals, predators and scavengers, even if it was harsh for much of the year.

This was not the wooded Ireland later familiar from Holocene pollen records. Trees were limited or absent in the colder landscapes represented by the Fermanagh evidence. Low shrubs, grasses, sedges and herbs would have offered seasonal food, while exposed soils and periglacial processes shaped the surface. Rivers carried sediment, frost disturbed the ground, and cave entrances could trap or receive material from outside. The climate's most important political consequence, if the word can be used at all, was environmental: access to land, food and routes was governed by cold, ice and seasonality rather than by territories, rulers or borders.

Castlepook's Animal Archive

In north County Cork, Castlepook Cave near Doneraile, sometimes called Mammoth Cave, preserves the most important faunal archive for this article's broad age. Antiquarian excavations between 1904 and 1912 recovered a remarkable collection of bones. Later work has identified remains associated with a varied Pleistocene fauna, including reindeer, woolly mammoth, giant deer, brown bear, wolf, fox, mountain hare, lemmings and spotted hyaena. Improved radiocarbon procedures have shown that some older dates from Irish cave collections were unreliable and that several Castlepook animals were substantially older than once thought. The cave is consequently central to understanding pre-Last Glacial Maximum Ireland.

The list of species should nevertheless be read carefully. It does not prove that every animal lived beside the Awbeg Valley at the same time, nor that they formed one stable local community. Cave deposits often combine bones accumulated in different episodes. Carnivores may drag prey or scavenged carcass parts underground; water, collapse and later excavation can move material; and early twentieth-century collecting did not meet modern standards of stratigraphic recording. Castlepook is therefore an archive of repeated encounters between animals, landscape and cave processes, not a neatly preserved Ice Age scene.

Even with that qualification, the fauna is significant. Reindeer point to open, cold-adapted grazing country and potentially seasonal movements across the wider region. Mammoth and giant deer demonstrate that Ireland could, in suitable phases, sustain large herbivores needing extensive plant resources. Hyaenas and wolves indicate predators and scavengers able to exploit those herbivores and their remains. A hyaena den is a plausible explanation for part of the assemblage: bones might have entered the cave through carnivore activity rather than human disposal. The evidence establishes an ecologically richer Pleistocene Ireland than the modern island's fauna might suggest.

The Mark on a Reindeer Bone

One Castlepook object gives this date unusual historical interest: a fragment of reindeer femur, reported as about 33,000 years old and broadly presented by County Cork heritage publications as circa 31,000 BCE. Zooarchaeologist Ruth Carden identified a deep incision on the bone as consistent with a sharp stone tool used in carcass processing. If that assessment is correct, it may indicate that Upper Palaeolithic people handled a reindeer in Ireland during the wider period represented by this article. It would be a strikingly early sign of human activity, many millennia before the better-attested terminal Pleistocene and Mesolithic records.

That conditional wording matters. The femur derives from an older collection, not from a modern excavation of an intact occupation floor. There is no securely associated hearth, stone-tool assemblage, dwelling, burial, butchered animal concentration or dateable campsite at Castlepook. Radiocarbon dating establishes the age of the animal bone's organic material; it does not independently date the incision, identify the person who made it, show where the reindeer was killed, or reveal how long any visitors remained. Distinguishing a stone-tool mark from damage made by carnivores, trampling, breakage, weathering or excavation requires specialist taphonomic analysis. The specimen is important evidence under continuing assessment, not a licence to invent an Irish hunting camp.

If people did reach Ireland around this broad date, the safest interpretation is modest. They may have been a very small, mobile Upper Palaeolithic party exploiting a reindeer carcass during a short incursion, rather than a resident population. Reindeer could have supplied meat, fat, hide, sinew, antler and bone, but none of those uses can be demonstrated from this individual femur alone. Their route may have involved exposed shelf landscapes, coastal crossings or changing connections to Britain and Europe; the Irish evidence cannot decide which. Nor can it tell us whether the people were travelling, hunting seasonally, scouting new ground or simply passing through.

What Cannot Be Recovered

There is no responsible evidence for named communities, leaders, kin groups, political institutions, warfare, diplomacy, languages or religious rites in Ireland at this point. There are no Irish houses, graves, artworks, hearths or toolkits securely dated to around 31,747 BCE. It would be equally unwarranted to assign a trade network, a ritual system or a settled economy to the possible makers of the Castlepook mark. Upper Palaeolithic societies elsewhere in Europe certainly possessed sophisticated social knowledge and practical skills, but that wider fact cannot fill the Irish record with details it does not preserve.

For the same reason, "economy" at this date means ecology more than commerce. The demonstrable resources are the plants and animals indicated by sediments and bones; the possible human economy is limited to inferred opportunistic hunting or scavenging. "Settlement" means no more than the possibility

of brief visits. “Conflict” is visible only in the ordinary ecological sense of predator, prey and competition for carcasses. Cave hyenas, wolves and humans—if humans were present—may all have valued the same animal resources, but archaeology has not shown them meeting at Castlepook.

Evidence, Revision and Deep Time

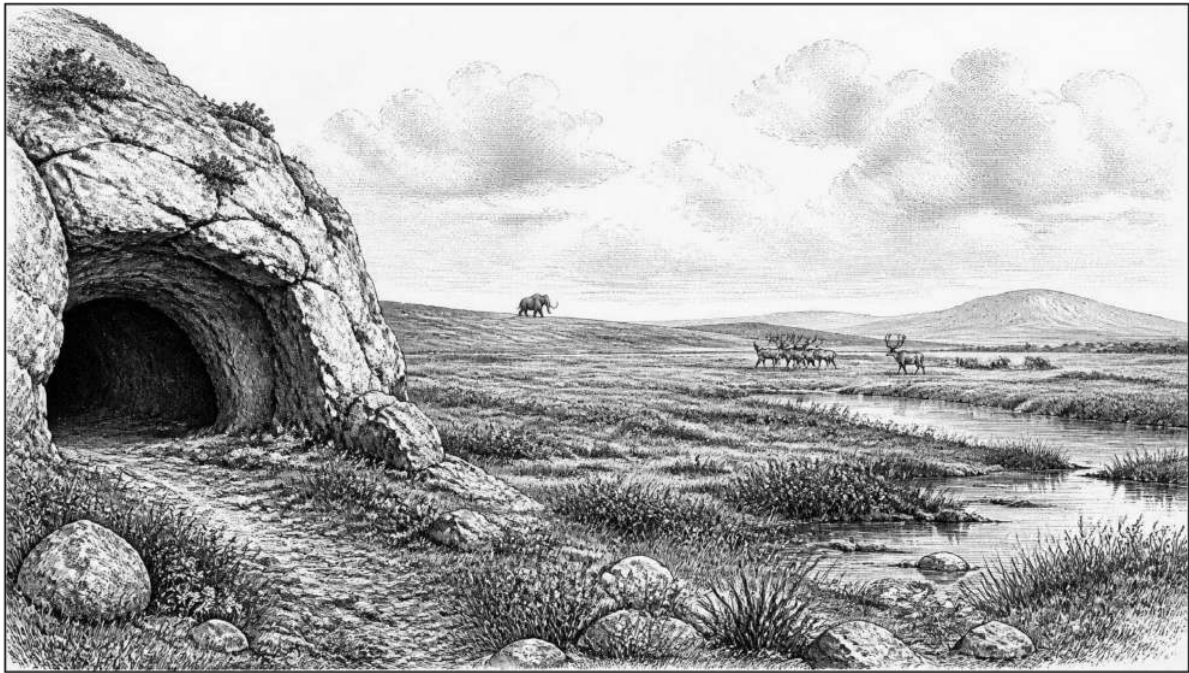
The most important development around this date is thus not an event but a revision of possibility. Irish Pleistocene research has moved beyond a simple image of an empty, wholly frozen island before post-glacial settlement. Re-dating has made the Castlepook fauna older; palaeoecological deposits in Fermanagh show that cold but biologically productive environments existed in parts of Ireland; and renewed fieldwork seeks undisturbed cave sediments that may test old conclusions. Improved ultrafiltration in radiocarbon dating has also demonstrated why legacy dates must be revisited rather than accepted uncritically.

For 31,747 BCE, the clearest conclusion remains deliberately restrained. Ireland was part of a dynamic Ice Age world of open vegetation, wetlands, large herbivores and carnivores, with the great glacial maximum still ahead. Castlepook’s reindeer femur may preserve the earliest known sign that people entered that world. It does not yet demonstrate a settled Irish population. The distinction between those claims is not a weakness in the story; it is the central lesson of archaeology at deep time, where a single scored bone can widen history while still leaving most of it unknown.

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31746 BCE

Hyaena Hall's Bone Map ^[55]



The label 31,746 BCE is useful only as a modern point of reference. No community in Ireland used a calendar at this time, and neither archaeology nor palaeoclimatology can identify an occurrence within this particular twelve-month span. Counted back from the conventional radiocarbon reference year of 1950, it lies about 33,695 calendar years ago. The responsible setting is the Late Pleistocene, broadly within Marine Isotope Stage 3 (MIS 3), a long, climatically unstable part of the last Ice Age. Evidence is normally expressed as laboratory radiocarbon ages and calibrated ranges, not as exact BCE years; calibration itself carries substantial uncertainty this far back.

A Cold-Stage Island, Not a Frozen Certainty

Ireland at this notional date was neither the familiar wooded island of later prehistory nor necessarily an island wholly buried beneath the final great ice sheet. The global Last Glacial Maximum is conventionally placed at about 26.5–19 thousand calendar years before present, later than 31,746 BCE. Research on the British–Irish Ice Sheet shows that its advance and retreat varied greatly from region to region; a single map cannot safely represent all of Ireland throughout MIS 3. Southern and western coastal deposits, caves and buried sediments instead preserve glimpses of changing local conditions before the ice sheet reached its later maximum.

The climate was cold, but ‘cold’ should not be mistaken for uniform. MIS 3 contained abrupt warmer and colder phases, and Ireland’s coastlines, rivers, vegetation cover and animal routes altered accordingly. Sea level was far lower than today because much water was stored in continental ice sheets. The Irish Sea and Atlantic shelf therefore looked very different, exposing broad areas now submerged and at times

making movement between Ireland, Britain and the wider north-west European landmass easier than it would later become. Exactly where dry land ended and shallow water began around this one notional year remains a matter for reconstruction rather than direct observation.

Castlepook's Uneven Archive

The most informative Irish evidence for this broad interval comes from Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Excavated principally between 1904 and 1918 under the auspices of the Royal Irish Academy's cave investigations, its narrow limestone passages and chambers produced more than 2,000 animal bones. Places given evocative names by the early excavators, including Hyaena Hall and Elephant Hall, are not archaeological settlements. They are parts of a cave system in which animals, carnivores, water, sediment movement and human excavation all helped create the surviving record.

This distinction matters. A bone in a cave does not automatically mean that the animal died there, that every species represented was contemporary, or that people occupied the cave. Some remains were brought in by predators and scavengers; some may have washed or fallen into fissures; and early excavations pre-dated modern standards of stratigraphic recording. Later reassessment has also shown that several old radiocarbon determinations from southern Irish caves were too young, owing to limitations in earlier sample treatment. Re-dating has placed important Castlepook fauna firmly in MIS 3, while making the site at once more significant and more difficult to narrate simply.

The evidence nevertheless establishes an important point. At intervals in the middle and later part of the Ice Age, southern Ireland supported, or was accessible to, a striking cold-stage mammal community. Castlepook's recorded fauna includes woolly mammoth, giant deer, reindeer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. Not every animal need have lived on the landscape at precisely 31,746 BCE, and some identifications and dates continue to be tested. Yet the combined assemblage rules out any image of Ireland as an utterly lifeless periphery before the Last Glacial Maximum.

Open Ground and Seasonal Lives

The animals provide the strongest basis for reconstructing the wider environment. Reindeer, lemmings, Arctic fox and mountain hare point towards open, cold landscapes rather than closed woodland. Mammoth and giant deer required extensive feeding grounds, while wolves and spotted hyaenas depended upon prey and carrion. The plausible picture is of a patchwork of herb-rich grassland, sedge-rich wet places, exposed mineral ground and low tundra vegetation, with shrubs locally present when conditions allowed. It was a demanding but productive seasonal environment, not a blank expanse of snow.

Other Irish deposits add depth without providing a photograph of the same moment. Organic silts beneath glacial sediments at Derryvree near Maguiresbridge, County Fermanagh, have yielded mosses, plant macrofossils and poorly preserved pollen from an earlier ice-free or less severely glaciated interval. They demonstrate that wetland and tundra-like environments could develop in Ireland between phases of ice advance. Such sites are valuable warnings against treating glaciation as a single uninterrupted event. They cannot, however, be used to specify the weather, vegetation or shoreline in north Cork in 31,746 BCE.

There is no responsible basis for describing farms, permanent villages, fields, boats, trade goods or routine domestic life in Ireland at this date. There are no securely identified houses, hearths, lithic workshops, burials, ornaments, rock art or food stores from a contemporary Irish settlement. Nor is there evidence from which to infer political authority, diplomacy, named groups, language or organised religion. The absence is partly historical and partly geological: later ice repeatedly eroded, rearranged and buried older landscapes, while caves tend to preserve animal bone more readily than open-air camps.

The Reindeer Femur Question

One object makes this period unusually important for Irish prehistory: a reindeer femur from the Castlepook collection has been reported as bearing a deep incision consistent with a sharp stone tool used in carcass processing. A date of roughly 33,000 years ago has been associated with the specimen in public discussion, and County Cork heritage material places the relevant cold-stage fauna broadly around 30,000 BC. If the mark is genuinely anthropogenic and contemporary with the bone, it would be an exceptionally early trace of human action in Ireland, far earlier than the securely dated Late Upper Palaeolithic butchery evidence from a brown-bear bone at Alice and Gwendoline Cave, County Clare, dated to about 12,810–12,590 calibrated years BP.

That conditional wording is essential. A cut mark must be distinguished microscopically from damage caused by carnivore teeth, trampling, sediment abrasion, excavation tools or post-depositional breakage. A date on a bone estimates the death of the animal, not automatically the instant at which any mark was made. Moreover, the Castlepook femur derives from an old collection rather than a newly excavated, tightly sealed occupation layer. The most cautious conclusion is therefore modest: the bone raises a serious possibility that one or more people gained access to a reindeer carcass in Ice-Age Ireland and used a sharp edge upon it. It does not demonstrate a settlement, a population continuous through millennia, or an Irish society comparable to later hunter-gatherer communities.

People Beyond the Evidence

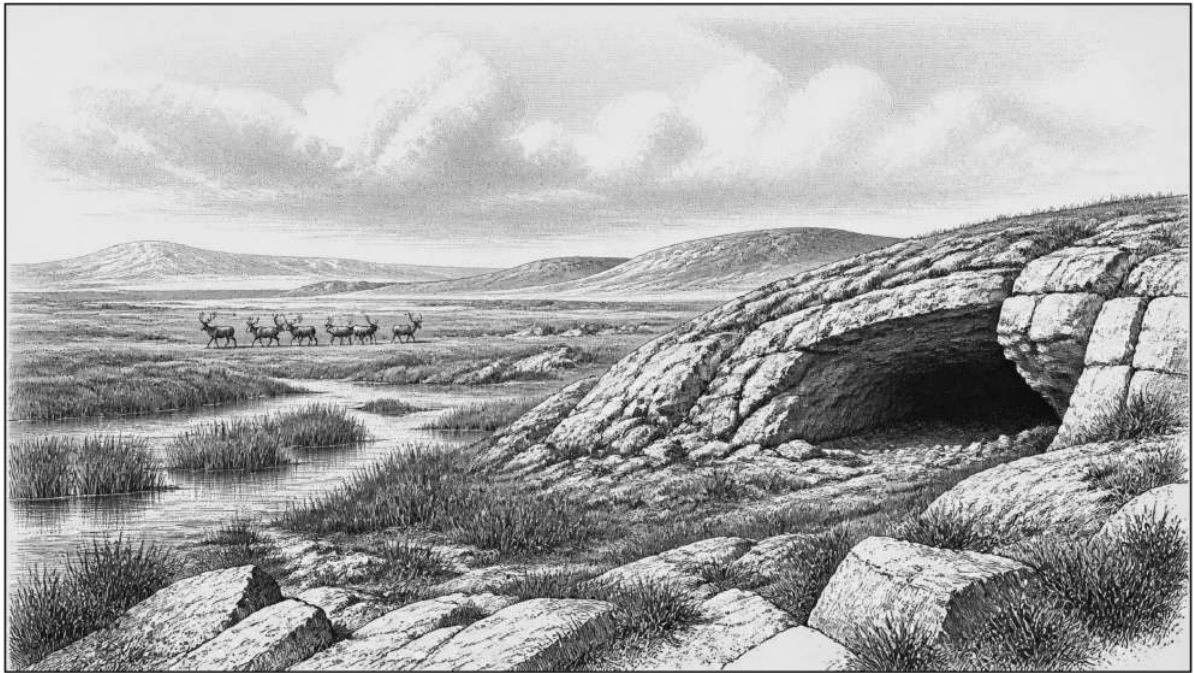
If people did visit, their lifeways would have depended on mobility, knowledge of animal behaviour, warm clothing, fire and effective stone technology. Those are reasonable general inferences from Upper Palaeolithic hunter-gatherers elsewhere in north-west Europe, but they are not finds from Castlepook. A single processed carcass could record a brief hunting stop, scavenging, or a small party passing through a landscape that was only periodically suitable. It cannot disclose kinship, leadership, ritual, exchange networks or a political map. At present, the faunal landscape is better evidenced than any human landscape.

For that reason, 31,746 BCE is best understood not as a year of recorded events but as a point within a difficult, revealing interval. Ireland lay within a fluctuating Ice-Age world of low seas, shifting ice margins and open-country mammals. In Hyaena Hall and the neighbouring chambers at Castlepook, fossils preserve the outline of that world: prey, predators, shelters and natural traps. The debated reindeer femur may add the faintest human trace. Continued excavation, improved dating, sediment analysis and careful study of bone surfaces may strengthen, qualify or overturn that interpretation. The uncertainty is not a failure of the evidence; it is the central historical fact of Ireland at this depth of time.

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31745 BCE

The Castlepook Bone Archive ^[56]



31,745 BCE is a modern chronological label, not a recoverable Irish date in the manner of a medieval annal or a later historical year. No community in Ireland recorded a calendar at this depth of time, and neither archaeology nor palaeoclimate research can attach a particular hunt, migration, birth or political decision to this single year. In modern scientific terms, the point lies approximately 33,700 calendar years before AD 1950, within the Late Pleistocene and broadly within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable interval of the last Ice Age. Evidence must therefore be read in calibrated ranges of centuries or millennia, not as a diary of one year.

For Ireland, the most important evidence relevant to this horizon comes from animal bones, cave sediments, glacial deposits and environmental remains. It does not establish a settled population, named people, a polity or a continuous human presence. Yet it does reveal an Irish landscape which, at least during parts of the wider period, sustained large mammals and their predators. The limestone cave system at Castlepook, near Doneraile in north County Cork, is central to that picture. Its difficult, fragmentary archive has also raised the striking possibility that people briefly reached Ireland far earlier than the long-accepted post-glacial settlement record.

A Date Range, Not a Moment

The conversion of a BCE year into an Ice-Age age is necessarily approximate. Radiocarbon years are not calendar years: changing concentrations of atmospheric carbon-14 mean that laboratory results must be calibrated against an internationally maintained curve. IntCal20 extends calibration back to 55,000

calendar years before present, but its results are probability ranges rather than annual timestamps. Consequently, “31,745 BCE” should be understood as an editorial point within the mid-34th millennium before present, not as proof that a specific event occurred on that date.

Ireland then stood on the north-western fringe of Europe, where ice sheets, sea level, vegetation and animal ranges changed repeatedly. The later Last Glacial Maximum, when the British–Irish Ice Sheet covered almost all of Ireland, still lay ahead. Newer reconstructions indicate a rapid growth of ice masses in the wider British–Irish region after about 35,000 years ago, with major expansion by 31,000–30,000 years ago. They do not, however, allow a confident map of every Irish valley or coastline for this precise point around 33,700 cal BP. The responsible conclusion is regional variation and uncertainty: glaciers were becoming more important, but the country cannot simply be imagined as either wholly ice-covered or wholly open.

Castlepook and Its Animals

Castlepook Cave is a maze of narrow galleries and chambers formed in Carboniferous limestone. Excavations between 1904 and 1918, supplemented by later work, produced one of Ireland’s richest Pleistocene collections. The cave’s evocative chamber names, including Hyaena Hall and Elephant Hall, recall the animals whose remains were found there. Direct radiocarbon determinations from individual bones extend over a very long span, approximately 45,700 to 19,950 years before present. That is precisely why the site is so valuable, and why it cannot be treated as a single, undisturbed occupation floor.

The wider Castlepook fauna includes woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena, while other deposits have produced Arctic fox, wolf and lemmings. These are direct material traces of animals, not merely an artist’s reconstruction of “Ice-Age Ireland”. Together they indicate that, during favourable intervals of MIS 3, parts of the island or its adjoining landscapes could support a varied cold-climate fauna. Reindeer point towards open country; lemmings and Arctic foxes are consistent with cold conditions; hyaenas and wolves show that carcasses were contested by predators and scavengers. Mammoth and giant deer speak of extensive grazing landscapes, though neither species can responsibly be assigned to the exact year in question merely because it occurs in the cave collection.

Caves are not neutral cupboards of the past. Carnivores can drag in prey; animals can die in fissures; water can transport and mix bone; later excavation can disturb layers. Castlepook’s deposits were also investigated before modern standards of spatial recording, stratigraphic sampling and taphonomic analysis became routine. The bones preserve an exceptional record, but their original associations are often uncertain. A reindeer bone in a cave does not necessarily mean that the reindeer was killed there, and a hyaena-rich chamber need not have been occupied by hyaenas at every moment represented by its sediments.

The Reindeer Femur Question

One object makes this broad period unusually important for Irish human history: a reindeer femur from Castlepook. The bone has been reported as approximately 33,000 radiocarbon years old and bears a deep linear modification interpreted by zooarchaeologist Ruth Carden as a cut or chopping mark made with a sharp stone implement while the bone was fresh. County Cork heritage material has presented this as possible evidence that Palaeolithic hunters processed reindeer in the Doneraile area around 31,000 BCE.

If that interpretation is upheld, the implication is considerable. It would push evidence for human activity in Ireland back many millennia beyond the securely demonstrated terminal Pleistocene evidence from Alice and Gwendoline Cave in County Clare, where a butchered brown-bear patella has calibrated dates of roughly 12,810–12,590 cal BP and 12,810–12,685 cal BP. It would also place a possible Irish human visit within the world of Upper Palaeolithic north-west Europe, whose mobile hunter-gatherers used stone tools and followed seasonal resources across landscapes very different from those of later Ireland.

But possibility is not the same as confirmation of colonisation. The Castlepook femur derives from an older cave collection, not from a newly excavated surface containing the bone alongside demonstrably associated tools, hearths, shelters, butchered refuse and repeated occupation deposits. The radiocarbon result dates the death of the animal; it does not itself date the mark, identify the maker or establish where the carcass was processed. Identifying a mark as a stone-tool cut requires comparison with damage caused by carnivores, trampling, sediment movement, weathering, breakage and excavation. No securely associated lithic assemblage, human remains or dwelling of comparable age has yet been recovered from Ireland.

Landscape, Food and Movement

The available evidence permits a cautious reconstruction of ecological opportunity rather than a detailed account of daily life. Ireland was not an island of familiar green fields, woodland and settled farms. During cold phases, vegetation was likely open, sparse and treeless or shrub-rich, with grasses, sedges, mosses and hardy herbs varying according to drainage, exposure and season. Freshwater deposits at Derryvree near Maguiresbridge, County Fermanagh, sealed beneath later glacial deposits, preserve silts and sands containing a full-glacial flora and fauna radiocarbon dated to 30,500 $\pm$ 1,170/–1,030 BP. Although younger than the editorial date and not a snapshot of Cork, they demonstrate the kind of tundra or wet, muskeg-like habitats that developed in Ireland during the broader cold-stage world.

There is no evidence for farming, permanent villages, livestock, fields, pottery, monuments or long-distance exchange networks in Ireland at this time. If people did reach the island, their economy would have been based on foraging, hunting and the use of animal materials rather than agriculture. Reindeer are particularly relevant because their meat, hides, sinews, antler and bone were valuable resources to Upper Palaeolithic groups elsewhere in Europe. That comparison can suggest what a brief human party might have sought; it cannot demonstrate that a particular Irish group hunted in a particular season or used a particular tool-kit.

Sea levels were lower than today, exposing more of the continental shelf around north-west Europe and changing the geography of the Irish Sea approaches. Nevertheless, lower sea level did not automatically create a simple, permanent dry land bridge from Ireland to Britain or the continent. Any human arrival would have depended on changing coasts, ice margins, water crossings and the capacity of small mobile groups to travel through a hazardous northern environment. There is no archaeological evidence for diplomacy, warfare, leadership or territorial institutions in Ireland at 31,745 BCE. Such categories belong to later social worlds for which evidence exists.

Culture Beyond Recovery

Nor can religion, language, kinship rules, stories or artistic traditions be recovered from the Irish evidence for this horizon. Upper Palaeolithic Europe elsewhere had complex cultural traditions, symbolic objects and sophisticated stone technologies, but none of those finds has been securely linked to Castlepook. It would be misleading to import cave art, named archaeological cultures or ritual practices from France, Iberia or Britain and describe them as Irish facts. The most that can be said is that any humans responsible for the reindeer mark, if it is anthropogenic, were people capable of using a sharp stone edge and operating within wider north-west European networks of movement and knowledge.

The greatest development illuminated by this date is therefore not an ancient event but a modern research question. Improved radiocarbon pretreatment has shown that some earlier Irish cave dates were thousands of radiocarbon years too young, bringing part of the Castlepook fauna securely into MIS 3. Recent excavation and survey have sought intact deposits in areas left untouched by earlier digging. Further stratigraphic, microscopic, genetic and dating work may strengthen, qualify or overturn current interpretations.

For now, Ireland around 31,745 BCE is best understood as a changing Ice-Age environment with an animal record of exceptional importance and a tantalising, contested indication of human activity. The Castlepook femur may mark a fleeting encounter between people and reindeer at the western edge of Upper Palaeolithic Europe. It does not yet reveal an Irish settlement, society or nation. Its power lies in that distinction: one bone can open a new chapter in Ireland's past, while still demanding restraint about what the evidence can bear.

Chapter 057 of 100

31744 BCE

Maguirebridge's Arctic Marsh^[57]



Modern calendar-year precision is not available for Ireland in 31,744 BCE. No local calendar, written record, named ruler, settlement sequence or annually resolved natural archive can identify anything that happened in that particular year. Converted only as a modern chronological convenience, the label lies roughly 33,700 calendar years before AD 1950, within the later part of the Late Pleistocene and Marine Isotope Stage 3 (MIS 3). At this depth of time, the responsible historical unit is a broad, calibrated time-window of centuries or millennia, not a date in an annal.

The evidence that can illuminate Ireland around this horizon is unusually fragile: waterlogged silts beneath glacial deposits in County Fermanagh; animal bones, often from old cave excavations, in the limestone country of north Cork; pollen, mosses, seeds and insect remains; and the landforms left by advancing and retreating ice. These records are powerful, but they answer limited questions. They can show that parts of the island supported cold-climate plants and animals, and that ice was reshaping the region. They cannot securely supply a political history, a social map or a narrative of named people.

A Date Range, Not an Anniversary

Radiocarbon results are not calendar dates read directly from a specimen. They measure remaining radiocarbon and must be calibrated against independent records of past atmospheric carbon-14. The internationally used IntCal20 curve extends this work to 55,000 calendar years before present, but uncertainty remains substantial in the distant past. A date such as 31,744 BCE should therefore be treated as an approximate point within a calibrated chronology, not as evidence for an event on an exact winter's day or summer's evening.

Ireland's relevant archaeological period is the Midlandian glaciation, the Irish expression of the last Ice Age. More specifically, the date falls in a late MIS 3 world that preceded the full Last Glacial Maximum. The latter is generally placed much later, approximately 26,000–19,000 calendar years before present, though the British–Irish Ice Sheet did not grow in a single simple pulse. Modelling, offshore evidence and landform studies show a dynamic ice complex, with changing centres of accumulation and margins. Around the broad horizon represented by this article, conditions were worsening towards major glaciation, but Ireland should not be imagined as uniformly entombed beneath ice at all places and times.

Derryvree Beneath the Drumlin

The most evocative local evidence comes from Derryvree near Maguiresbridge, County Fermanagh. Roadworks in 1969 cut through a drumlin and revealed freshwater silts and fine sands sealed between two separate layers of till, the unsorted sediment deposited by glacier ice. The organic beds included plant and animal remains, then were buried by a later ice advance. They preserve a brief geological window into a landscape that glaciers subsequently concealed.

The original radiocarbon determination from the Derryvree deposit was 30,500 radiocarbon years before present, with a large uncertainty range. Calibrated dating places the deposit in a broad late-MIS-3 interval rather than at a single point; it is consequently relevant to, but does not date, 31,744 BCE itself. Its significance is environmental. Mosses, sedges, bogbean and other freshwater or wet-ground plants, together with pollen and insect evidence, indicate open vegetation and periglacial conditions. Periglacial does not mean permanently ice-covered: it describes a cold environment shaped by frost, seasonal freezing, sparse cover and processes operating around glaciers.

In this setting, low shrubs and herb-rich ground could occupy sheltered or wetter patches, while exposed terrain was likely open rather than forested. Freshwater pools, sedge margins and mossy ground made a varied small-scale habitat within a generally harsh climate. Yet Derryvree was one locality, not a weather station for the whole island. Its buried wetland should be used to illuminate north Fermanagh's environment during a dated interval, not to impose an identical landscape on every Irish valley, coast and upland.

Castlepook's Animal Archive

In County Cork, Castlepook Cave near Doneraile provides the principal faunal archive for Ireland before the Last Glacial Maximum. Also known as Mammoth Cave, it is a maze of limestone galleries excavated intermittently from the nineteenth century into the early twentieth. More than 2,000 bones were recovered. The assemblage includes woolly mammoth, reindeer, giant deer, brown bear, wolf, hare and spotted hyaena, alongside smaller cold-adapted mammals in later parts of the sequence.

These animals should not be pictured as an orderly herd living together on one afternoon. Cave deposits accumulate over long periods; bones can be dragged in by carnivores, washed or disturbed by water, moved during excavation, or derived from more than one episode. Re-dating and improved collagen pretreatment have shown that some older radiocarbon determinations for the southern Irish caves were too young. Modern reassessment places important Castlepook fauna securely in MIS 3, and indicates that some species, including spotted hyaena and giant deer, had disappeared locally before the Last Glacial Maximum.

Nevertheless, the animal record establishes an important fact: portions of Ireland were reachable and habitable for large mammals during this broad phase of the Ice Age. Reindeer point to open, cold-country grazing; mammoth and giant deer indicate that the available land supported substantial herbivore biomass at certain times; brown bears and wolves demonstrate a predator and scavenger guild beyond the modern Irish fauna. Spotted hyaena are particularly revealing. Their presence at Castlepook, the only securely known Irish locality for the species, helps explain why caves can contain mixed accumulations of prey remains: a cave was potentially a carnivore den and bone repository, rather than a human home.

The Unsettled Human Question

One reindeer femur from Castlepook has become central to discussion of Ireland's possible earliest human activity. It bears a deep linear mark interpreted by zooarchaeologist Ruth Carden as a cut made by a sharp stone implement during carcass processing. The bone has been reported as approximately 33,000 years old in radiocarbon terms, placing its calibrated age broadly within the period under discussion. If the mark is anthropogenic, it would indicate that one or more Upper Palaeolithic people handled a reindeer carcass in Ireland far earlier than the formerly accepted post-glacial settlement record.

That is an important interpretation, not a settled foundation for a year-by-year history. The femur was recovered from an old cave collection, not from a modern excavation in an intact living floor alongside stone tools, hearths, food debris, structures or human remains. Cut-mark identification requires close assessment against natural abrasion, carnivore damage, breakage and later disturbance. New fieldwork at Castlepook has located surviving Pleistocene deposits in previously unexplored or undisturbed areas, offering the prospect of stronger contextual evidence. For now, the most careful conclusion is that the bone raises a serious possibility of very early human visits or butchery, while failing to demonstrate a permanent Irish population around 31,744 BCE.

What Cannot Be Claimed

There is no evidence for political communities, leaders, territorial boundaries, warfare, diplomacy, formal religion, monuments, art, schooling, farming, metalworking, domestic animals or trade networks in Ireland at this horizon. It would be misleading to invent hunter bands, tribal rivalries or spiritual practices merely because such subjects suit later historical categories. Even if people did reach the island, the evidence currently supports no more than brief and perhaps repeated visits by mobile foragers, probably enabled by lower sea levels and changing routes across the wider north-west European landscape. It does not reveal their language, kinship, beliefs or destination.

Nor can Castlepook be made into proof of a settled economy. The cave fauna tells us that animal resources existed and that carcasses entered the cave system; it does not establish regular hunting territory, exchange or seasonal camps. If people made the reindeer mark, the most economical inference is a single practical act of dismemberment or meat removal. Such an act would belong to a wider Upper Palaeolithic world in Britain and continental Europe, but Ireland's record remains too sparse to identify a local cultural tradition.

An Island in Formation

The word “island” also needs care. Sea level during the Ice Age was much lower than today, exposing broad areas of the Irish Sea basin and changing the configuration of coasts, channels and possible land routes. Ireland’s modern shoreline did not exist. Connections with Britain and the European mainland varied with ice, sea level and local topography. Animal movement to Ireland during MIS 3 is therefore not surprising, but neither is it evidence that every crossing was easy or that human movement was continuous.

The defining development around this notional year was environmental instability. Freshwater wetlands at Derryvree, open cold-country vegetation, the mammals of Castlepook and the growing British–Irish Ice Sheet together depict an Irish landscape on the threshold of more extensive glaciation. Later ice would erode, bury and redistribute much of the evidence. That destructive legacy helps explain why the history of Ireland at 31,744 BCE is written chiefly in silts, bones and probabilities. It is not a blank past, but it is a past in which the most honest achievement is to describe the limits of what the surviving evidence can bear.

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31743 BCE

Derryvree's Moss Beds^[58]



The label 31,743 BCE offers a useful point on a modern timeline, not a date at which an Irish event can be identified. There are no written records, calendar systems, named communities or archaeological layers precise enough to describe a single year so far back. In conventional “before present” terms, this label lies roughly 33,700 calendar years before 1950, within Marine Isotope Stage 3 (MIS 3), a long, climatically unstable phase of the last Ice Age. The responsible history of Ireland at this point is therefore regional and probabilistic: it concerns what dated sediments, fossils, cave deposits and landforms can tell us about a changing landscape over centuries or millennia, rather than what happened on a particular day.

An Inter-Till Landscape

The closest major Irish environmental archive is at Derryvree near Maguiresbridge in County Fermanagh. Road works there exposed organic-rich freshwater silts and fine sands trapped between two layers of glacial till: deposits left by ice at different times. The Derryvree organic beds produced a radiocarbon measurement of 30,500 years BP, with a substantial uncertainty. When assessed against modern calibration, the evidence has been placed broadly within c. 31.7–36.9 thousand calibrated years BP. That range encompasses the modern calendar label used here, but it does not make Derryvree a snapshot of 31,743 BCE. It identifies an interval during which a freshwater environment existed in south Fermanagh between glacial advances.

This setting matters because it shows that Ireland was not uniformly buried beneath ice throughout the whole last glacial period. At Derryvree, an earlier ice sheet had laid down till; later, water, plant matter and fine sediment accumulated; eventually another glacial phase covered the sequence. The surviving organic layer is consequently both precious and incomplete. It records a local lowland basin, not the entire

island, and its preservation depended on subsequent burial. Nevertheless, it is among the clearest windows into Irish conditions around the middle part of the Midlandian, the Irish name for this late Pleistocene glacial cycle.

Moss, Sedge and Open Water

The Derryvree fossils point to treeless, cold-country vegetation. Pollen of herbaceous plants, seeds and plant macrofossils, including several mosses, indicate open ground rather than forest. Sedges and wetland plants grew around shallow freshwater; beetle evidence suggests a mossy, organic-rich wetland or muskeg with open pools. The wider scene was not an empty sheet of snow, but a patchwork of wet hollows, mineral ground and sparse tundra vegetation. Summers may have allowed a brief burst of plant and insect activity, while winters were severe and the growing season short.

Such a reconstruction is evidence-led, but its limits should be kept in view. Fossil pollen may travel, preservation is uneven, and a wetland basin naturally over-represents nearby water-loving plants. It would be unsafe to claim that every Irish valley looked identical. Nor should modern Irish woodland, bog and coastline be projected backwards. The island's terrain had already been repeatedly altered by ice, while its soils, drainage systems and vegetation were still vulnerable to abrupt climatic swings. Derryvree gives an unusually intimate view of one cold freshwater habitat, not a complete map of Ice Age Ireland.

Climate in Pulses

MIS 3 was neither a single steady freeze nor a warm interval. Greenland ice-core records reveal repeated abrupt warmings and coolings, often termed interstadials and stadials. Irish cave calcite offers an important local counterpart. At Crag Cave in County Kerry, uranium-thorium dating of speleothems shows that calcite formed episodically during the last glacial period. Because shallow cave calcite needs liquid water and conditions generally above freezing, these growth episodes imply intervals of climatic amelioration. The researchers found particularly frequent deposition in later MIS 3, consistent with warmer pulses affecting Ireland as well as the North Atlantic region.

For people and animals, the consequences of this volatility would have been profound. A modest warming could lengthen a growing season, alter snow cover, improve grazing and reconnect wetlands. Renewed cold could rapidly reduce productivity and make travel or survival harder. But exact temperatures for Derryvree in this particular calendar-labelled year cannot be recovered. The careful conclusion is that around the 33,700-calibrated-years-BP horizon, Ireland belonged to a periodically ice-free, periglacial north-west European world whose habitats shifted sharply with climate.

Animals on a Northern Margin

Southern Irish caves supply a different kind of evidence: animal bones. Castlepook Cave near Doneraile in north County Cork, along with caves at Shandon and Foley, has yielded remains dating to MIS 3. The Irish Quaternary Fauna Project showed that mammals including reindeer, woolly mammoth, giant deer, brown bear and spotted hyaena occurred in Ireland during parts of the period between at least about 45,000 and 20,000 years ago. Not every species was necessarily present together, nor at Derryvree itself, and cave assemblages were accumulated over long spans. Yet the finds demonstrate that an Irish landmass, or connected nearshore landscape, supported a recognisably cold-stage fauna before the Last Glacial Maximum.

At Castlepook, reindeer and mammoth bones evoke open landscapes with enough seasonal forage for large herbivores. Giant deer, despite the later popular name “Irish elk”, were not uniquely Irish; their presence is part of a wider Eurasian story. Carnivores complicate the picture. Spotted hyaenas and wolves could scavenge or carry bones into caves, while bears might use caves or fissures in quite different ways. A cave bone is therefore proof that an animal lived in the broader region, but not automatically proof of a kill, a den, or a human camp at the spot where it was recovered.

That distinction has become more important as dating techniques have improved. Re-dating of selected cave bones has shown that some earlier radiocarbon results underestimated their age by thousands of years, moving elements of the Castlepook fauna further back into MIS 3. The revised work suggests that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum, around 40,000 calibrated years BP. The animal record is consequently dynamic: Ireland was not a permanent refuge for a fixed Ice Age menagerie, but a marginal landscape repeatedly entered, abandoned or made unsuitable as habitats changed.

The Human Question

The most arresting, and most qualified, possibility concerns a reindeer femur from Castlepook. The bone bears a deep linear mark interpreted by zooarchaeologist Ruth Carden as damage made with a sharp stone implement during carcass processing. It has been publicly presented as evidence that people may have butchered reindeer in Ireland about 33,000 years ago. If that interpretation is upheld, it would bring human activity in Ireland dramatically earlier than the island’s securely evidenced post-glacial settlement.

It should not, however, be made to carry more weight than it can bear. The bone dates the animal, not an excavated campsite; Castlepook’s historical excavations disturbed deposits and did not produce a securely associated lithic assemblage, hearth, dwelling floor or burial of this age. The mark may be compelling evidence of a human action, but it does not establish a settled population, the number of visitors, their route, their season of arrival or their length of stay. The most defensible wording for the period around 31,743 BCE is that short Upper Palaeolithic visits to Ireland are possible, with one important bone offering potential evidence, while sustained occupation remains unproven.

No Politics, No Proven Trade

There is no Irish evidence at this date for political institutions, named leaders, territorial states, warfare, diplomacy, formal religion, monuments, farming or long-distance trade networks. It would be anachronistic to describe a government, tribe or conflict. Equally, silence about these subjects is not evidence that any visitors lacked social relationships, beliefs, skills or shared knowledge. Upper Palaeolithic groups elsewhere in Europe possessed sophisticated ways of making tools, acquiring food and communicating identity. The problem is specifically Irish: none of those cultural practices can yet be securely reconstructed from an Irish assemblage of this age.

If people did reach Ireland, their economy was almost certainly based on mobile foraging and the opportunistic use of seasonal animal and plant resources, not agriculture. Reindeer would have been a valuable source of meat, marrow, hide, sinew and bone; waterways and wetlands could supply other resources in warmer months. But this is a reasonable inference from the environment and the possible modified femur, not a documented Irish economy. There is no evidence that a 31,743 BCE community lived at Derryvree, hunted at Castlepook, or exchanged goods across a known route.

Before the Ice Peak

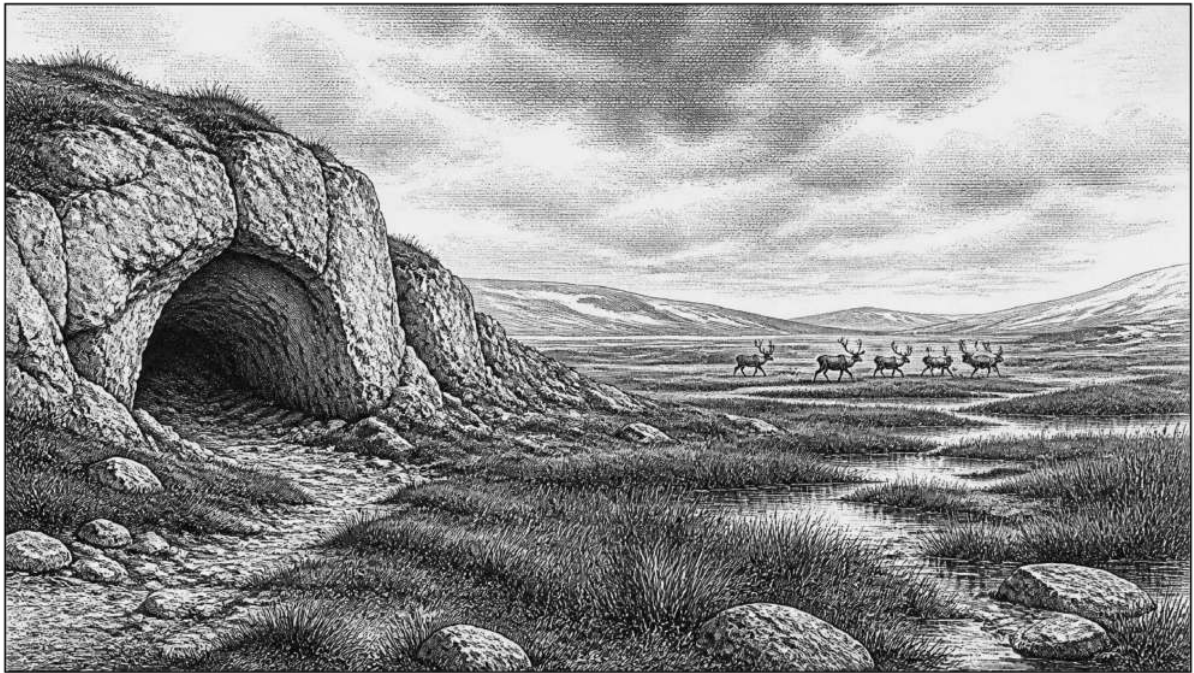
The longer trajectory gives the moment its significance. Within several thousand years, the last British-Irish Ice Sheet would expand to its maximum extent, profoundly reshaping Ireland and erasing or burying many earlier land surfaces. Reconstructions place maximum ice extent by about 27,000 years BP, with Irish ice extending across the continental shelf in several directions. The relatively open, wet tundra landscapes represented at Derryvree belonged to an earlier and unstable interval before that glacial culmination.

Thus Ireland around the modern label 31,743 BCE is best understood not as a year of kings, battles or inventions, but as a fragile environmental interval. Freshwater moss beds in Fermanagh, calcite growth in a Kerry cave, and animal remains in Cork caves collectively show that portions of the island supported life during MIS 3. They also show why caution is essential. The evidence illuminates cold wetlands, open tundra, mobile fauna and perhaps a fleeting human encounter; it does not yet yield a calendar-year history or a settled human past.

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31742 BCE

Castlepook's Deep Incision^[59]



The label 31,742 BCE is useful only as a modern filing device. No community in Ireland then kept a calendar, and the evidence cannot identify a particular year, season, person or event. Arithmetically, that numbered year falls about 33,691 years before AD 1950, the conventional ‘present’ used in radiocarbon reporting; it should not be mistaken for a precise archaeological date. At this depth of time, dates are expressed as radiocarbon measurements and broad calibrated ranges, with substantial uncertainty. The responsible historical setting is therefore later Marine Isotope Stage 3, or MIS 3, an unstable interval of the last Ice Age before the Last Glacial Maximum.

Ireland at about this point was not the green, wooded island familiar from later prehistory. It was part of a changing north-west European world of cold climates, lower sea levels and shifting ice margins. The island's evidence is exceptionally fragmentary: bones in caves, buried organic sediments, pollen, beetle remains, glacial landforms and laboratory dates. There are no settlements, hearths, stone-tool assemblages, graves or human remains securely attributable to this moment. Yet one difficult object from north County Cork gives the period unusual importance: a reindeer femur from Castlepook Cave near Doneraile, bearing a deep mark that has been interpreted as evidence of carcass processing with a sharp stone implement.

A Date Range, Not a Dateline

Radiocarbon years are not identical to calendar years, because atmospheric carbon-14 has varied through time. The IntCal20 calibration curve, which reaches back to 55,000 calibrated years before present, helps convert laboratory measurements into calendar estimates, but its older section relies on

several independent natural archives and retains wide uncertainty. Consequently, an article anchored to 31,742 BCE can responsibly describe a millennial-scale context, not announce what happened in Ireland in that calendar year.

The relevant Irish evidence commonly clusters around the mid-30th millennium before present. Older reconstructions associated deposits at Derryvree, County Fermanagh, with a cold phase around 30,000 radiocarbon years ago, while modern reviews stress that the build-up of the British–Irish Ice Sheet was regionally complex. Some sectors had experienced earlier glaciation; elsewhere, conditions and ice margins changed through MIS 3. By the global Last Glacial Maximum, conventionally placed around 26,000–19,000 calibrated years before present, Ireland was much more extensively glaciated. Around 31,742 BCE, therefore, the principal story is not an island uniformly entombed beneath its final ice cover, but a landscape entering a harsher and increasingly unstable phase.

The Doneraile Cave Archive

Castlepook Cave, also called Mammoth Cave or Doneraile Cave, lies in limestone country near the Awbeg valley. It is a long cave system whose chambers received animal remains over very long spans of the Pleistocene. Early twentieth-century excavators recovered a remarkable bone collection, later held by the National Museum of Ireland. Such antiquarian work preserved material of immense value, but it also created an interpretative problem: excavation methods then did not record layers, positions and associations to modern standards. Water movement, sediment disturbance and carnivore activity could also have mixed remains before excavators ever reached them.

Re-dating has made Castlepook more important and more complicated. Ruth Carden and colleagues showed in 2020 that improved pretreatment and ultrafiltration of bone collagen produced dates substantially older than several earlier measurements from Castlepook and other southern Irish caves. Their results support the presence in Ireland of a MIS 3 fauna including animals such as reindeer, giant deer and spotted hyaena well before the Last Glacial Maximum; some species may have disappeared locally before about 40,000 calibrated years before present. This is secure evidence for Ice-Age animal communities, though not for a single, continuous fauna across the entire island.

The especially arresting find is a fragment of reindeer hind-leg femur reported as dating to roughly 33,000 years ago. It carries a deep incision which zooarchaeologist Ruth Carden has interpreted as a fresh-bone cut or chop mark, consistent with a sharp stone tool used during butchery. If that interpretation is sustained, it pushes evidence of human activity in Ireland far earlier than the previously accepted terminal-Pleistocene evidence from Alice and Gwendoline Cave in County Clare, dated to about 12,800–12,600 calibrated years before present.

But the wording matters. The bone's radiocarbon date measures the death of the reindeer, not the exact moment when the mark was made. The mark may indicate that people processed the carcass; it does not identify their language, ancestry, social organisation, route into Ireland or duration of stay. Nor does it prove butchery occurred inside the cave. County Cork heritage material reasonably suggests that a carcass could have been processed outdoors and the discarded bone later carried into the cave by scavengers. No securely associated stone tools have yet been found. Castlepook is thus best understood as powerful, provisional evidence for a human visit or activity episode, not as proof of a settled Palaeolithic population.

Open Ground and Mobile Herds

Even without a human camp, animal and environmental evidence gives a vivid outline of the world in which any visitors moved. Castlepook's fauna includes cold-adapted and open-country species: reindeer, woolly mammoth, spotted hyaena, wolf, fox, hare and large deer among them. The precise overlap of every species cannot be assumed, since cave accumulations combine deposits of different ages. Nonetheless, the assemblage demonstrates that southern Ireland could at times sustain a rich Pleistocene food web. Reindeer were particularly suited to seasonal, exposed environments, while large herbivores supported predators and scavengers.

At Derryvree, organic silts sealed between tills beneath drumlins preserve a different sort of archive. Pollen, plant macrofossils and invertebrate evidence have been read as a treeless, wet tundra or muskeg environment, with sedges, mosses and other cold-climate vegetation. These records do not provide a photograph of Castlepook in 31,742 BCE, and their chronology has long been debated. They do, however, independently support the broad picture of open vegetation, shallow water and seasonal extremes in parts of Ice-Age Ireland. Trees were scarce or absent in these cold phases; woodland, farming clearances and peat bogs of the later Irish landscape belonged to a far distant future.

Lower global sea level changed the map. Ireland was not necessarily connected by a simple, dry land bridge throughout this interval, and sea level, coasts, ice and currents altered repeatedly. It is safer to say that the distances and barriers separating Ireland, Britain and continental Europe differed fundamentally from those of today. If people did reach Cork, they came into a northern Atlantic frontier where access was possible only under particular geographical conditions and where survival depended on detailed local knowledge. Their movement may have followed herds, river valleys, exposed coastal plains or seasonal opportunities, but these remain models rather than demonstrated routes.

People Without a Recorded Society

The marked femur permits only the narrowest inferences about human life. If it is anthropogenic, the cutter had access to a sharp stone edge and understood how to reduce an animal carcass. That might imply a small, mobile hunting party rather than a village; it might also represent a brief expedition by people normally based elsewhere. Similar Upper Palaeolithic populations elsewhere in Europe made sophisticated blades, projectile points, clothing, shelters and ornaments, but none of those things has been securely recovered from Ireland for this time. It would be misleading to assign Castlepook's possible visitors a named archaeological culture, let alone an ethnicity.

There is no evidence for political authority, territory, chiefs, diplomacy, formal warfare, law or institutions on the island in this period. Nor can archaeologists identify households, kin groups, marriage customs, gendered tasks, languages or social rank. Human conflict may have existed wherever people lived, but the Irish record provides no battle site or weapon cache from which to discuss it. Predation was more immediate and better evidenced: hyaenas and other carnivores could dismember carcasses, gnaw bones and transport them into caves. Their agency is one reason cave bone assemblages demand meticulous taphonomic analysis before human action is claimed.

Religion and learning are equally beyond the evidence. No Irish cave art, portable art, burial rite, shrine or symbolic object can securely be placed in this interval. A cut on a reindeer bone is not a ritual, an inscription or an artistic tradition. The absence is significant: it tells us that Ireland's record, unlike that of

some mainland European regions, has not yet yielded material through which belief or symbolic culture can responsibly be reconstructed. That is not evidence that visiting people lacked stories, beliefs, skills or traditions; it is a limit on what archaeology can recover.

Economy at the Edge of Ice

There was no Irish agriculture, herding, metalworking, pottery production or market exchange in the evidence for this time. Any economy was based on the direct use of wild resources. Reindeer offered meat, marrow, hide, sinew, antler and bone; other large herbivores may have supplied comparable materials. The practical importance of a stone cutting tool, if the Castlepook mark is correctly identified, lies not merely in obtaining food but in converting a carcass into portable, useful materials. Still, a solitary modified bone cannot establish a specialised hunting economy or a regular trade network.

Nor should Ireland be imagined as an isolated stage with a self-contained history. Its fauna, climate and possible human visitors belonged to wider north-west European ecological systems. The nearest useful comparisons are continental and British Upper Palaeolithic landscapes, but comparison must not become substitution. Evidence from elsewhere shows what people in cold Europe were capable of; it does not supply the missing Irish campsites. The direct Irish record remains cave fauna, environmental sequences and one potentially transformative modification on a reindeer bone.

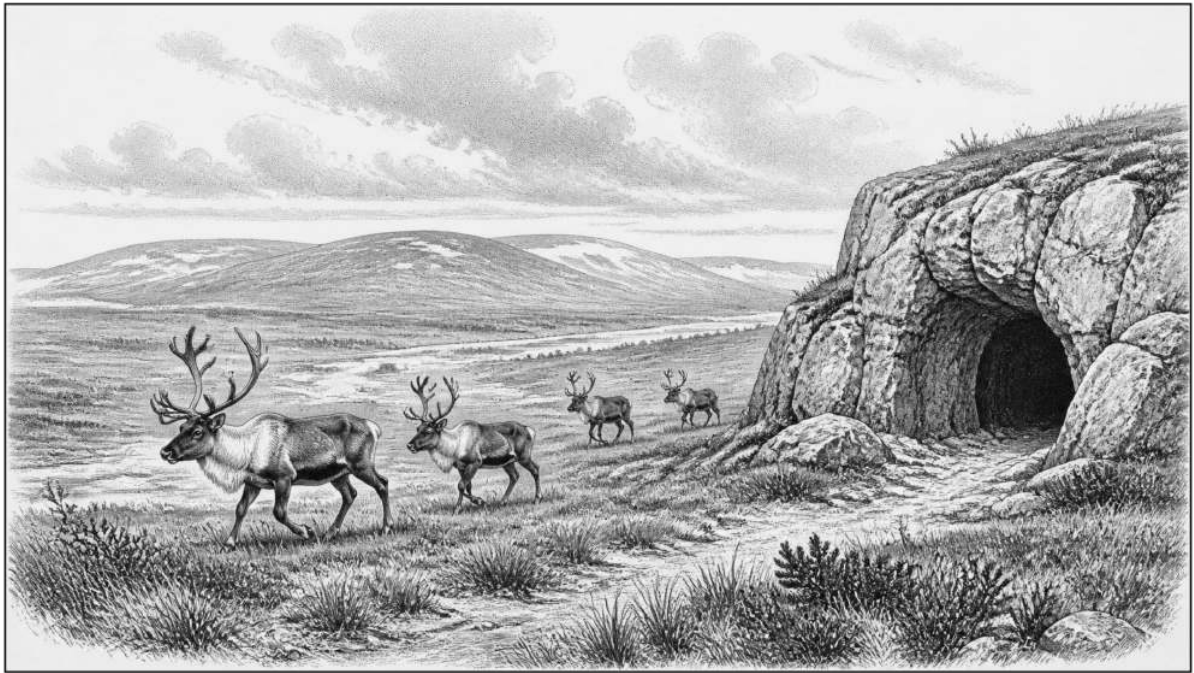
The Importance of Uncertainty

Recent excavation at Castlepook has sought surviving, stratified Pleistocene deposits in parts of the cave not fully explored by earlier investigators. That work is crucial because deposits found in secure context, alongside modern dating, microscopic wear study and sediment analysis, could test whether the marked femur represents human butchery, carnivore damage or another process. It could also clarify when animals entered the cave and whether people ever occupied its chambers. Until then, the most defensible account of Ireland around 31,742 BCE is modest but compelling: an open, cold and changing land supported Ice-Age mammals; ice-sheet growth was reshaping its geography; and a reindeer bone from north Cork may preserve the earliest known trace of a human hand in Ireland.

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31741 BCE

Castlepook's Stone-Edge Question^[60]



The label 31,741 BCE is a modern chronological convenience, not a year that anybody in Ireland could have named or recorded. It falls roughly 33,700 years before AD 1950, within the Late Pleistocene and the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the last Ice Age. Archaeology cannot responsibly describe a particular Irish day, season or event at this depth of time. Its dates are normally expressed as radiocarbon ages, often with substantial uncertainty, and then converted into broad calibrated ranges. What can be recovered is a fragmentary picture of changing habitats, animals, ice and, perhaps, a fleeting human presence.

The most important Irish object for this broad period is a marked reindeer femur from Castlepook Cave near Doneraile, in north County Cork. Its significance is potentially enormous, but so are the limits of the evidence. The bone has been reported as dating to about 33,000 years ago, while a County Cork heritage publication places it broadly around 31,000 BC. It bears a deep incision interpreted by zooarchaeologist Ruth Carden as a cut or chopping mark made with a sharp stone implement while the bone was fresh. If that interpretation and association are sustained, it would indicate that people handled and processed reindeer in Ireland far earlier than the previously accepted evidence for human activity on the island.

A Date Measured in Millennia

There is no legitimate annual narrative for 31,741 BCE. The number should not be confused with a precisely dated visit to Castlepook, let alone the first arrival of a settled people. At this age, even a carefully measured radiocarbon determination represents a probability distribution rather than a calendar

anniversary. Calibration is essential because atmospheric carbon-14 has varied over time; the current IntCal20 curve extends back to 55,000 calibrated years before present. But calibration cannot repair every weakness in an old excavation or prove that a surface mark was made by a person.

Castlepook's original deposits were excavated between 1904 and the years before the First World War, principally under the naturalist Richard J. Ussher. The cave's galleries and chambers yielded many thousands of bones. Their discovery was a major contribution to Irish Quaternary research, yet the work pre-dated modern expectations of fine stratigraphic recording, systematic sieving, three-dimensional plotting and laboratory analysis of bone surfaces. Surviving specimens have since been studied and redated, but the assemblage accumulated over a long interval and in different parts of a complex cave. It is not one camp, one hunting episode or one season frozen in time.

That context matters. A reindeer femur is direct physical evidence of a reindeer; its date concerns the death of that animal. An incision is physical evidence of damage to bone. The proposition that the damage was made by a stone tool during human butchery is an expert interpretation based on its form, position and fresh-bone character. It is a serious and testable interpretation, not a licence to populate north Cork with a known tribe, named leader or permanent settlement. No securely associated hearth, stone-tool assemblage, dwelling surface, human burial or repeated occupational sequence of this age has yet been published from Castlepook.

The Cave Above the Awbeg

Castlepook, sometimes called Mammoth Cave in earlier accounts, lies in limestone country above the Awbeg Valley, north of the Blackwater. Its fossil archive demonstrates that Ireland was not an empty, featureless ice-world throughout the later Pleistocene. Reindeer are prominent among the remains, alongside animals recorded from the cave collection or closely relevant Irish deposits including woolly mammoth, giant deer, brown bear, wolf, Arctic fox, hare, lemmings and spotted hyaena. These names should not be read as a single, perfectly contemporary community. Different animals and bones may belong to different phases, while cave sediments can be disturbed by water, collapse, scavengers and earlier excavation.

Spotted hyaena is especially important to interpretation. Hyaenas often used caves as dens and could carry carcass portions underground, gnaw bones and create dense mixed deposits. Wolves and other scavengers could also move remains. Thus, even if people cut the reindeer femur, the animal was not necessarily killed or butchered inside the cave. The cave may have received a discarded limb later dragged in by carnivores. This possibility does not nullify the human interpretation; rather, it defines its modest scale. At most, the bone currently suggests an episode of human-animal contact somewhere in the surrounding landscape.

The broader faunal evidence nevertheless gives that landscape substance. Reindeer, mammoth and giant deer imply productive plant resources, particularly during favourable seasons. Arctic foxes and lemmings point towards cold conditions and open habitats. Predators and scavengers followed prey and competed over carcasses. The scene was probably a shifting mosaic rather than an unbroken white wilderness: herb-rich tundra, grasses and sedges, patches of low shrub, bare mineral ground, wet hollows and streams, all influenced by slope, drainage, snowfall and the changing position of ice.

Derryvree's Northern Counterpart

Evidence from Derryvree near Maguiresbridge, County Fermanagh, offers the clearest Irish environmental window onto the wider later-MIS-3 world. Roadworks in 1969 exposed freshwater silts and fine sands trapped between two thick tills in a drumlin. The organic sediments yielded a radiocarbon age of 30,500 years BP, with reported laboratory uncertainty of +1,170/-1,030 years. That is not an exact equivalent of 31,741 BCE, and it must not be treated as one. Yet it shows that, during part of this broad climatic phase, the locality was free of overriding glacier long enough for a freshwater environment to develop before later ice covered it.

Pollen, plant macrofossils, mosses and insect remains from Derryvree indicate treeless, open tundra or muskeg conditions, with pools rich in plant matter and surrounding wet ground. The evidence supports a periglacial climate: severe winters, short growing seasons and frozen or seasonally frozen soils. It does not tell us that every part of Ireland looked alike. Fermanagh's lowland wetland, north Cork's limestone cave country, exposed uplands and the then-altered coast all had distinct local conditions. Still, together they rebut any simple assumption that Ireland was either uniformly ice-covered or uniformly habitable at every moment before the Last Glacial Maximum.

The future direction of change was towards more persistent cold and major ice-sheet growth. Recent BRITICE-CHRONO reconstructions place substantial expansion of the British-Irish Ice Sheet within the interval from about 31,000 years ago, with its maximum overall ice volume later, around 23,000 years ago. Reconstructions remain revised as new dates are assessed, and Irish ice margins did not necessarily advance at the same time as Scottish or marine sectors. Around the notional year addressed here, therefore, Ireland stood near an important threshold: climatic oscillations still permitted ice-free habitats in some times and places, but the onset of the main glacial advance was approaching.

Visitors, Not Yet a Society

If the Castlepook cut mark was made by people, those people were highly mobile Upper Palaeolithic hunter-gatherers, probably exploiting a short-lived opportunity rather than establishing a demonstrable permanent colony. Reindeer could provide meat, fat, hide, sinew, antler and bone. Cutting a limb from a carcass required practical knowledge and a sharp edge; this much can reasonably be inferred from the proposed butchery trace. But the evidence does not reveal clothing, language, family size, seasonal route, tool-making tradition or whether the visitors came once or repeatedly.

There is likewise no evidence for political affairs, warfare, diplomacy, chiefs, territorial boundaries or institutions in Ireland at this date. Such terms belong to later human societies and cannot be supplied by analogy merely because they make a narrative more familiar. Cooperation would have been vital for any travellers in a severe landscape, and knowledge of weather, animals, raw materials and safe routes would have been socially shared. That is a general inference about survival, not proof of a particular Irish community.

Religion, art and learning must be handled with the same discipline. Upper Palaeolithic groups elsewhere in Europe made sophisticated tools, ornaments, images and burial places, but none of those achievements can automatically be transferred to Ireland. Castlepook is not known as a shrine, and there are no Irish monuments, artworks, graves or inscriptions attributable to this time. Nor is there a bridge from this possible episode to later Celtic traditions, medieval place-names or modern identities. Any learning present was embodied expertise: the accumulated skills needed to move, hunt, process food and endure cold.

An Island at the Edge

Low global sea levels altered Ireland's coastal outline because vast quantities of water were stored in continental ice. This did not automatically create a simple land bridge to Britain or mainland Europe. Deep basins, channels, ice margins and rapidly changing shorelines mattered, and the precise routes available to animals or people varied over time. The Castlepook fauna does show ecological connections with the wider north-west European Ice-Age world. It does not demonstrate a permanent highway, regular trade or a settled population linked by routine travel.

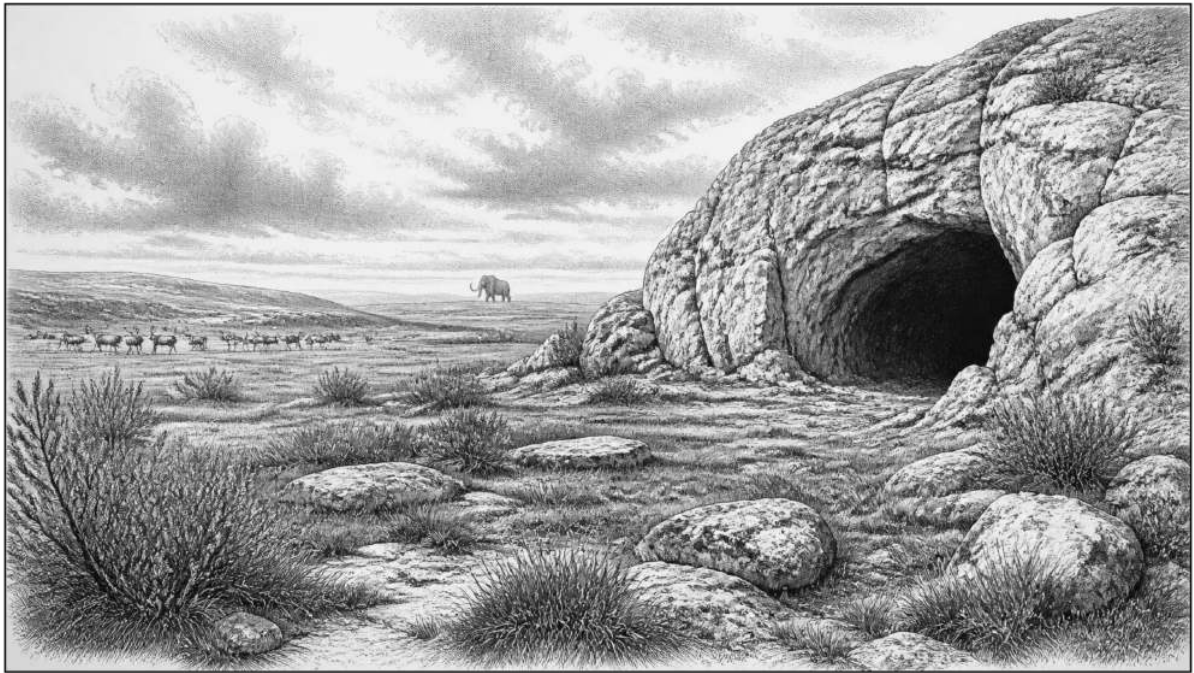
Accordingly, the economy of Ireland in this period cannot be described as an Irish economy in the later sense. There were no demonstrated farms, fields, herds, villages, markets or exchange networks. If people visited, their subsistence may have included opportunistic hunting and carcass processing, but even this remains a cautious reading of one exceptional bone. The cave fauna records an ecosystem in which large herbivores, carnivores and scavengers moved through an exposed landscape; it does not supply a census of human residents.

Castlepook's marked femur is valuable precisely because it is so small and difficult. It opens the possibility that people reached Ireland during a much earlier phase of the Ice Age than once believed. It cannot yet answer how often they came, by what route, or whether they stayed. For 31,741 BCE, the most responsible history is therefore not a story of kingdoms or founders, but of evidence under pressure: a cold, changing island; wet tundra in Fermanagh; reindeer and carnivores in north Cork; advancing ice in the wider region; and one bone that may preserve the earliest known trace of a human stone edge in Ireland.

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31740 BCE

Doneraile's Reindeer Incision^[61]



The label 31,740 BCE is a modern chronological convenience, not a date that anybody living in Ice Age Ireland could have known or marked. Archaeology cannot distinguish one particular year at such depth in time. In calendar arithmetic it falls roughly 33,700 years before AD 1950, the conventional reference point for “BP” (“before present”), but the evidence is dated in broad radiocarbon and calibrated ranges, not to a single season or generation. The responsible subject, therefore, is Ireland during the later part of Marine Isotope Stage 3, a highly variable interval within the last Ice Age.

There is no historical record, no named people, no political community and no securely dated dwelling from Ireland for this point in time. What survives is more fragmentary but still consequential: cave bones, cave sediments, traces of ancient vegetation, glacial landforms and the changing outline of the land itself. Together they show that the island’s deep past was not simply a blank prelude to later settlement. Parts of Ireland supported cold-climate animal communities before the fullest expansion of the last British–Irish Ice Sheet, and one object from north Cork raises the important, still unsettled possibility of very early human visits.

A Date Within Moving Ice

At about 33.7 thousand calendar years BP, Ireland lay in the Late Pleistocene and within Marine Isotope Stage 3, conventionally a span of roughly 57,000 to 29,000 years ago. This was not a single unchanging “Ice Age climate”. North Atlantic temperatures, sea ice, precipitation and glacier extent altered repeatedly across centuries and millennia. Any reconstruction of conditions in Ireland must therefore avoid picturing a uniform frozen island.

The greatest expansion of the last British–Irish Ice Sheet came later. Modern reconstructions show a rapidly growing and geographically uneven ice sheet between about 31,000 and 28,000 years BP, with much of Ireland eventually buried beneath ice during Marine Isotope Stage 2. Around the target date, the exact margin in every Irish region remains uncertain. It is more secure to say that southern cave evidence demonstrates that some land, at least at intervals before the main glacial maximum, was available to animals. Ice was an advancing and retreating regional force, not an on-off condition imposed identically across the whole island.

Sea level was substantially lower than today because water was held in continental ice sheets. The present coastline did not exist. Wider coastal plains and exposed shelves changed the relationship between Ireland, Britain and the continental landmass, though they did not automatically provide a simple, permanent walking route everywhere. Rivers ran across landscapes now drowned; shorelines shifted; and glacial advances could repeatedly obstruct or remake possible routes. For animals, and perhaps for people, access was an ecological and geographical opportunity that opened and closed rather than a permanent bridge.

Castlepook's Cold-Climate Fauna

The most revealing Irish archive is Castlepook Cave, also known as Mammoth Cave, near Doneraile in north County Cork. Excavated principally in the early twentieth century, its complicated limestone passages yielded a notable collection of Pleistocene animal remains. Later dating and reassessment have been essential because the old excavations did not preserve the stratigraphic precision expected today, and cave deposits can be disturbed, mixed or redeposited.

Even with that caution, the faunal evidence is substantial. Castlepook has produced remains attributed to woolly mammoth, reindeer, giant deer, spotted hyaena, brown bear, wolf, fox, mountain hare and both Arctic and Norway lemmings. Not every species need have lived together at the same moment, and not every bone belongs to the same episode. Yet the assemblage establishes a cold-adapted, open-country world in southern Ireland during the Middle Devensian, another name often used for this part of the last glacial cycle.

Reindeer and lemmings point towards treeless or sparsely wooded landscapes with grass, herbs, sedges and low shrubs rather than the familiar wooded Ireland of later millennia. Mammoth and giant deer suggest grazing and browsing opportunities across open terrain. Carnivores, especially spotted hyaena, remind us that caves were not quiet shelters by default: they could be dens, scavenging places and traps in which animal remains accumulated through many different processes. The cave fauna provides evidence of an ecosystem, not a simple menu left by hunters.

Other Irish deposits help place this animal world in a wider environmental setting. Organic silts preserved beneath later glacial deposits at Derryvree and nearby sites in Fermanagh contain pollen, plant macrofossils and insect evidence associated with cold, largely treeless wetland conditions. These records belong to differing parts of the Pleistocene and cannot be assigned directly to 31,740 BCE. Their value is comparative: they show that Irish landscapes between glacial advances could include sedge-rich pools, mossy ground, shallow water and shrub tundra, habitats capable of sustaining specialised plants and animals.

The Single Incision

Castlepook's importance to Irish human history rests especially on a reindeer femur. A deep mark on the bone has been interpreted by zooarchaeologist Ruth Carden as a fresh-bone cut or chop made by a sharp stone implement during carcass processing. Public heritage interpretation has associated the specimen with an age around 31,000 BCE; radiocarbon reassessment of the wider Castlepook fauna has also demonstrated that several animal remains are much older than early dating programmes had indicated.

This is potentially remarkable evidence, but "potentially" matters. A cut-marked bone is not the same as a settlement. No securely associated stone-tool assemblage, hearth, house floor, human skeleton, burial or repeated occupation surface of comparable age has yet been recovered in Ireland. The femur was also found in an old cave collection rather than in a recently excavated, sealed deposit. Its significance lies in the character of the incision and in the direct dating of the animal bone, while its limitation lies in context. Continued excavation, micromorphology, faunal analysis and improved dating are intended to test what survives in situ.

If the mark is confirmed as human-made and contemporary with the animal's death, the most cautious interpretation is a brief Upper Palaeolithic presence, perhaps the butchery of a reindeer by a very small travelling party. It would not demonstrate a permanent population, an Irish cultural tradition or uninterrupted ancestry leading to later inhabitants. People could have arrived, used a carcass or cave vicinity briefly, and disappeared from an archaeological record later heavily damaged by ice, erosion, rising seas and antiquarian excavation.

Comparison with north-western Europe makes such a visit plausible but cannot prove it. Upper Palaeolithic groups elsewhere used stone tools, exploited large mammals and moved through severe but resource-bearing environments. Ireland's evidence, however, must stand on its own. A practice documented in Britain or continental Europe cannot be transferred automatically across the Irish Sea. The Castlepook femur is valuable precisely because it may provide an Irish trace, while also showing how much remains unknown.

Life Beyond the Evidence

There is no basis for describing political affairs, diplomacy, warfare, tribal territories, chiefs, laws or alliances in Ireland at this date. There are no names, monuments, weapons caches or settlement distributions from which to infer them. Nor is there evidence for farming, herding, cereal cultivation, pottery, metalworking, formal trade routes or exchange institutions. These belong to much later chapters of Irish prehistory.

Religion, learning and artistic culture are equally beyond direct recovery here. Ireland has no securely dated cave art, engraved object, ceremonial structure or human burial from around 33,700 calendar years BP. It would be reasonable in a general human sense to suppose that people capable of travelling, hunting and sharing practical knowledge had social lives and systems of meaning; it would not be responsible to label those systems Irish religion, identify rituals, or connect them to later Gaelic traditions. Silence in the record is not proof that thought or culture were absent. It is proof that specific claims cannot yet be supported.

Everyday life can only be approached conditionally. A party responsible for processing a reindeer would have needed cooperation, cutting technology, knowledge of animal movement and ways to keep warm and mobile in an exposed climate. Reindeer could provide meat, fat, hide, sinew and bone, but none

of those uses is securely demonstrated in Ireland by this one specimen. The strongest conclusion remains narrow: the bone may preserve a moment of animal processing, not a complete picture of domestic life.

An Island Before Settlement

The essential development around this modernly numbered year is environmental possibility under pressure. Southern Ireland could, during favourable intervals, sustain an open cold-climate fauna. Castlepook records that fauna with unusual richness, while its reindeer femur offers a disputed but serious challenge to the older assumption that humans first reached Ireland only after the last great ice retreat. Subsequent growth of the ice sheet would profoundly reduce the chances of survival for landscapes, camps and bone deposits alike.

Later, better-dated evidence confirms human activity at Alice and Gwendoline Cave in County Clare between about 12,810 and 12,590 calibrated BP, based on a butchered brown-bear patella. That much later result should not be conflated with Castlepook, but it demonstrates why cave collections and fresh fieldwork matter. Ireland's earliest human story is not settled by a single dramatic claim. It is being rebuilt slowly from carefully dated material, with uncertainty stated openly. For 31,740 BCE, Doneraile's marked reindeer bone remains the most evocative clue: slight, contested and historically important.

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31739 BCE

Fermanagh's Buried Bogbean^[62]



The label 31,739 BCE is a modern chronological convenience, not a year that can be recovered from the Irish archaeological record. Nobody in Ireland then used a calendar of this kind, and no excavation can isolate events to a particular season, let alone a numbered year. In the conventional ‘before present’ system, whose present is AD 1950, it lies roughly 33,700 calendar years ago. The responsible setting is therefore a broad interval of the Late Pleistocene, within Marine Isotope Stage 3 (MIS 3), rather than a diary-like account of one year.

For Ireland, this is a period of exceptional uncertainty and importance. It preceded the Last Glacial Maximum, when the British–Irish Ice Sheet later expanded across much of the island and adjacent seas. Ireland was not simply a white, lifeless block of ice throughout the preceding millennia. Geological, botanical and animal evidence instead indicates shifting conditions: cold open ground, freshwater hollows, wetland vegetation, caves used by animals, and advancing or retreating ice margins. Yet evidence for people is radically thinner. There are no securely excavated homes, hearths, graves, stone-tool scatters or art assemblages in Ireland that can be assigned to this time.

A Landscape Measured in Millennia

At such depth in time, dating needs careful language. Radiocarbon ages are not calendar ages: atmospheric carbon levels changed, so laboratory determinations must be calibrated against an internationally maintained curve. IntCal20 reaches back 55,000 calendar years, but it does not provide annual precision for an isolated Irish bone or sediment layer. Calibrated results may span centuries or millennia, and they can be revised as methods, samples and calibration datasets improve.

The relevant climate phase, MIS 3, lasted for tens of thousands of years and was marked across north-west Europe by abrupt climatic swings. Conditions around Ireland were generally colder than today, but not uniformly identical from Cork to Fermanagh or from one millennium to the next. The later maximum of the last ice sheet belongs mainly to a younger period, broadly after 27,000 years ago. Modern reconstructions accordingly caution against projecting that later ice cover unchanged back to 31,739 BCE. There were ice-free sectors and biologically active landscapes before the final great expansion, even as glaciers and periglacial processes increasingly shaped the island.

Sea level was much lower than at present because so much water was held in global ice sheets. The geography of the Irish Sea basin and the Atlantic shelf was consequently different, with more land exposed around coasts. That fact matters for animal movements, but it should not be inflated into a simple claim of a dry, walkable route from continental Europe to Ireland. Changing sea, ice and land configurations created barriers as well as corridors, while the evidence does not securely document how any people might have crossed them.

Derryvree's Freshwater Archive

The clearest northern Irish guide to the wider environment comes from Derryvree, near Maguiresbridge in County Fermanagh. Roadworks in 1969 exposed organic silts and fine sands enclosed between two substantial sheets of glacial till in a drumlin. The sequence records a vital geological fact: an earlier phase of ice, followed by an interval in which freshwater sediments accumulated, followed by renewed glaciation. It is evidence against any picture of continuous island-wide ice cover through the whole Late Pleistocene.

A conventional radiocarbon measurement on the Derryvree organic deposit was $30,500 \pm 1,100$ radiocarbon years BP. Published calibrations have placed it approximately in the mid-30,000s calendar years BP, although the breadth of that estimate, and the evolution of calibration methods, are themselves reasons for restraint. The deposit cannot identify weather on the requested numbered year, and it may pre-date it by millennia. It does, however, illuminate the kind of cold-stage environment available in Ireland during the broader MIS 3 world to which this date belongs.

Plant macrofossils, pollen and insects point towards open, treeless or nearly treeless ground around freshwater. Sedges, mosses and bogbean were part of this wetland setting; the presence of mountain avens, an Arctic-alpine plant, reinforces the cold-climate character. Such evidence is direct proof of plants and depositional conditions at one locality, not a complete map of the island. Nevertheless, it suggests a mosaic of pools, saturated ground and open terrain rather than a forested countryside. Winters were severe, growing seasons short, and exposed ground subject to frost action. Water, vegetation and sediment continued to gather between episodes of glaciation.

Cork Caves and Ice-Age Animals

Southern Irish caves provide the principal evidence for animals living in or reaching Ireland during this broad period. Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork, is especially important. Its collections include remains attributed to woolly mammoth, giant deer, reindeer, brown bear, wolf, Arctic fox, both collared and Norwegian lemming, and spotted hyaena. Nearby Shandon Cave, County Waterford, has yielded mammoth, reindeer, horse, bear and wolf. Together, these animals demonstrate that parts of Ireland supported a striking Late Pleistocene fauna, quite unlike the island's later historic ecosystems.

These lists need to be read as cave evidence, not as a census. Caves are selective archives. Animals may have died in them, fallen into them, been dragged in by predators, or been moved by water after death. At Castlepook, gnawed bones and the presence of spotted hyaena indicate that carnivores helped form the assemblage. The deposits were excavated largely in the early twentieth century, before modern stratigraphic standards, and later water disturbance obscured relationships between some bones. Different specimens can therefore represent different moments spread across many thousands of years.

Improved accelerator radiocarbon dating has transformed the chronology. The Irish Quaternary Fauna Project showed that a range of mammals entered Ireland between at least about 45,000 and 20,000 years ago. A 2020 reassessment found that several earlier Castlepook determinations had been too young, placing significant elements of the southern Irish fauna firmly in MIS 3 and suggesting that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum. Geological Survey Ireland summarises Castlepook's dated material as extending over a long span, approximately 45,700 to 19,950 years BP. It follows that the cave is a long-lived faunal archive, not a single moment frozen in time.

The Reindeer Femur and Human Presence

One object has made 31,739 BCE especially consequential: a reindeer femur from Castlepook. Zooarchaeologist Ruth Carden identified a deep linear mark on it as consistent with cutting or chopping fresh bone using a sharp stone implement. County Cork heritage material presents the bone as dating to around 30,000 BCE, and the find has been widely described as possible evidence of human activity in Ireland roughly 33,000 years ago. If the interpretation is sustained, it would push Ireland's earliest known human trace far back beyond the well-established post-glacial record.

Its potential is real, but its limits are equally important. The date measures the death of the reindeer, not necessarily the precise time, place or purpose of any human action. A mark judged to be made by a tool is an expert zooarchaeological interpretation, distinct from the radiocarbon result. Nor was the bone recovered from a modern excavation of an intact occupation floor. No associated stone tool, hearth, dwelling, burial, food-processing area or human bone has yet been published from Ireland at a comparable age.

The marked femur can therefore support a narrow proposition: it may show that one or more people handled a reindeer carcass in Ireland during the Upper Palaeolithic. It cannot demonstrate a permanent settlement, continuous population, named group, language or migration route. The National Museum of Ireland still properly states that clear evidence for human presence during the Palaeolithic has not emerged. That institutional caution and the Castlepook interpretation are not incompatible: the latter is a significant, promising claim whose wider implications require securely stratified corroboration.

Society Beyond the Evidence

For this reason, conventional historical categories largely fall silent. There is no evidence from Ireland for political authority, diplomacy, warfare, social rank, organised religion, formal learning, trade networks or built settlements at this date. It would be misleading to populate the island with tribes, chiefs or rituals borrowed from better-documented Upper Palaeolithic communities elsewhere in Europe. Continental hunter-gatherers did use stone tools, hunted large animals and created remarkable art in some regions, but analogy is not evidence that the same practices occurred in Ireland.

If people did make brief visits, their economy may have involved the opportunistic acquisition or processing of animal resources, perhaps meat, hide, marrow or sinew from reindeer. That is only an inference from the marked-bone interpretation, not a demonstrated Irish subsistence system. There is no basis for claiming regular reindeer hunts, seasonal camps or exchange. The most securely documented 'economy' is ecological: herbivores grazing cold open landscapes, predators and scavengers exploiting carcasses, and freshwater plants thriving where sediment and water collected.

What can responsibly be said is that Ireland was neither historically empty in the ecological sense nor securely inhabited in the human sense. Derryvree preserves a northern wetland episode between glaciations. Castlepook and Shandon preserve fragments of a southern fauna adapted to an unstable Ice-Age world. The reindeer femur holds out the possibility that humans briefly entered that world. Future excavation of undisturbed cave deposits, improved dating and microscopic study of bone surfaces may alter the balance of evidence. For now, the history of Ireland around 31,739 BCE is a history of wetlands, animals, caves and ice — and of the discipline required not to claim more than they can prove.

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31738 BCE

Derryvree and Castlepook^[63]



31,738 BCE is not a date at which Ireland can be described year by year in the modern sense. No written record, settlement sequence or annual archaeological horizon permits that precision. The numbered year is best treated as an approximate point roughly 33,700 years before AD 1950, within the Late Pleistocene and Marine Isotope Stage 3. Radiocarbon results from this remote period must be calibrated, and their ranges commonly span centuries or millennia. What can responsibly be said is that the date falls within a cold and highly variable phase of the last glacial cycle, when Ireland's landscapes, animal populations and ice margins changed repeatedly.

A Landscape Between Ice Advances

Modern political Ireland did not exist, nor did an island with fixed modern coastlines. "Ireland" here means the landmass that would become the island, together with its changing coastal and shelf environments. Lower global sea levels altered shorelines, but the exact arrangement of sea, seasonal ice, exposed ground and possible animal routes cannot be reconstructed for a single moment. The Irish Sea basin was not simply a dependable land corridor, and the movement of animals or people into Ireland remains a problem of shifting geography rather than a settled fact.

The broad climatic context was the Midlandian, Ireland's name for the last glacial stage. Around this time the British-Irish Ice Sheet had not yet reached its later maximum extent. Major reconstructions place the build-up of the ice sheet after roughly 35,000–32,000 years ago, with its maximum phase substantially later, broadly between about 27,000 and 21,000 years ago. That does not mean that all Ireland was comfortably ice-free in 31,738 BCE. Ice sheets are dynamic: lobes advance and retreat, while local

conditions differ sharply by elevation, exposure and proximity to the sea. The reliable conclusion is one of instability, with non-glacial environments surviving or developing in some places before later ice buried, eroded or rearranged much of the evidence.

Derryvree's Buried Wetland

The clearest Irish environmental window relevant to this date lies at Derryvree near Maguiresbridge, County Fermanagh. Roadworks exposed freshwater silts and fine sands enclosed between two deposits of till, the unsorted sediment left by glacier ice. This order of layers is important. It shows an earlier glaciation, then an interval in which freshwater sediment and organic matter accumulated without ice over the site, followed by a later ice advance that sealed the deposit beneath another till.

Organic material from Derryvree produced a determination of about 30,500 radiocarbon years before present. When calibrated using modern curves, this is commonly expressed as an interval of approximately 36,900–31,700 calibrated years BP. The nominal year 31,738 BCE, roughly 33,688 years BP, lies within that broad range. Yet this does not date a particular season, generation or event at Derryvree. Nor does it prove that each part of Ireland had the same conditions. It establishes that, during part of this long interval, north-eastern Ireland contained an ice-free freshwater and periglacial environment.

Pollen, plant remains and other environmental traces indicate open, treeless ground rather than the wooded island familiar from later prehistory. The older description of this setting as muskeg conveys its wet, moss-rich character: sedges, herbs, low shrubs, shallow pools and waterlogged channels occupied a landscape subject to severe cold and short growing seasons. Such a place was not necessarily a featureless snow desert. Summer growth around wetlands could sustain insects and grazing animals, while winter frost and seasonal freezing imposed hard limits on both plants and animals.

Derryvree therefore corrects two misleading extremes. Ireland was not continuously temperate and forested, but neither should it be imagined as uniformly entombed beneath permanent ice throughout the entire glacial period. It was a marginal North Atlantic landscape responsive to abrupt climatic oscillations. The fragmentary survival of the Derryvree bed is itself exceptional: subsequent glaciation destroyed or disturbed many comparable deposits.

Crag Cave and Climatic Change

Evidence from Crag Cave in County Kerry adds a second, quite different record. Uranium-series dating of cave calcite shows episodic speleothem growth during Marine Isotope Stage 3. Stalagmites grow only when water can infiltrate the cave and conditions permit soil-derived carbon dioxide and dissolved limestone to circulate. Their growth in intervals of the last glacial therefore signals episodes milder than the coldest phases, rather than a permanently frozen south-west.

Crag Cave cannot supply a weather report for 31,738 BCE, and its broken and reworked speleothems do not preserve a domestic landscape. Nevertheless, it supports the larger interpretation drawn from Derryvree: Irish climates during this period changed on millennial scales. Warmer interludes and colder reversals mattered profoundly. They affected vegetation, soil development, water flow, the availability of grazing and the extent to which animals, and perhaps people, could use particular areas.

Castlepook's Animal Archive

For animal life, the most important Irish site is Castlepook Cave, also called Mammoth Cave or Doneraile Cave, in the Awbeg Valley of north County Cork. Excavations in the early twentieth century recovered an extraordinary Pleistocene bone assemblage. The cave has yielded evidence of woolly mammoth, giant deer, reindeer, brown bear, wolf, Arctic fox, lemmings and spotted hyaena. Geological Survey Ireland describes it as the country's richest vertebrate-fauna site for the period leading towards the Last Glacial Maximum.

These finds demonstrate that parts of Ireland could support a striking cold-stage fauna over a long span. Reindeer imply open grazing country; lemmings and Arctic fox point to cold conditions; mammoth and giant deer underline the ecological productivity that open herb-rich landscapes could sometimes attain. Spotted hyaena is especially significant. Its remains show that Ireland's fauna included a large social carnivore now absent from Europe, and that caves could serve as carnivore dens or bone accumulators as well as geological shelters.

But Castlepook must not be turned into a neatly dated snapshot. Its bones derive largely from antiquarian excavations, from deposits affected by water movement and by the activities of carnivores. Individual bones have radiocarbon dates, but they do not all belong to one animal community or one occupation episode. A bone in a cave need not mark the spot where its animal died: it may have been dragged in, scavenged, washed in or redeposited. The cave's value lies in its long faunal archive, not in a claim that every listed species stood together in the Awbeg Valley in 31,738 BCE.

The Reindeer Femur Question

One Castlepook object has particular relevance to human history: a reindeer femur carrying a deep incision that zooarchaeologist Ruth Carden has interpreted as a cut made by a sharp stone tool during carcass processing. County Cork heritage material presents the bone as dating to about 31,000 BC, while renewed work at Castlepook has sought stratified deposits and fresh material that may test the earlier collections more fully. If the modification is confirmed as human-made and securely related to the bone's age, it would be potentially the earliest evidence for people in Ireland.

That possibility is important, but it remains narrower than popular retellings can suggest. The date of the animal's death is not automatically the date of a cut; the mark is an expert taphonomic interpretation; and the old collection lacks a securely excavated occupation floor linking tools, hearth, people and food waste. No contemporary house, camp, human burial, lithic assemblage, artwork or hearth has yet established a settled human community in Ireland at this time. Nor can the femur reveal whether a person killed the reindeer, found a carcass, removed meat, hide or sinew, or processed the limb elsewhere before carnivores carried it into the cave.

No Politics, but Possible Passage

Accordingly, political affairs, diplomacy, organised conflict, religion and formal learning are beyond the evidence for Ireland around this date. There are no named communities, territories, leaders, monuments or ritual deposits. It would be wrong to invent an Ice Age tribe, assign a language, or imagine a religion from the silence of the record. The absence of evidence does not prove that no person ever crossed this northern Atlantic margin; it means that archaeology has not yet demonstrated a sustained population or its social institutions.

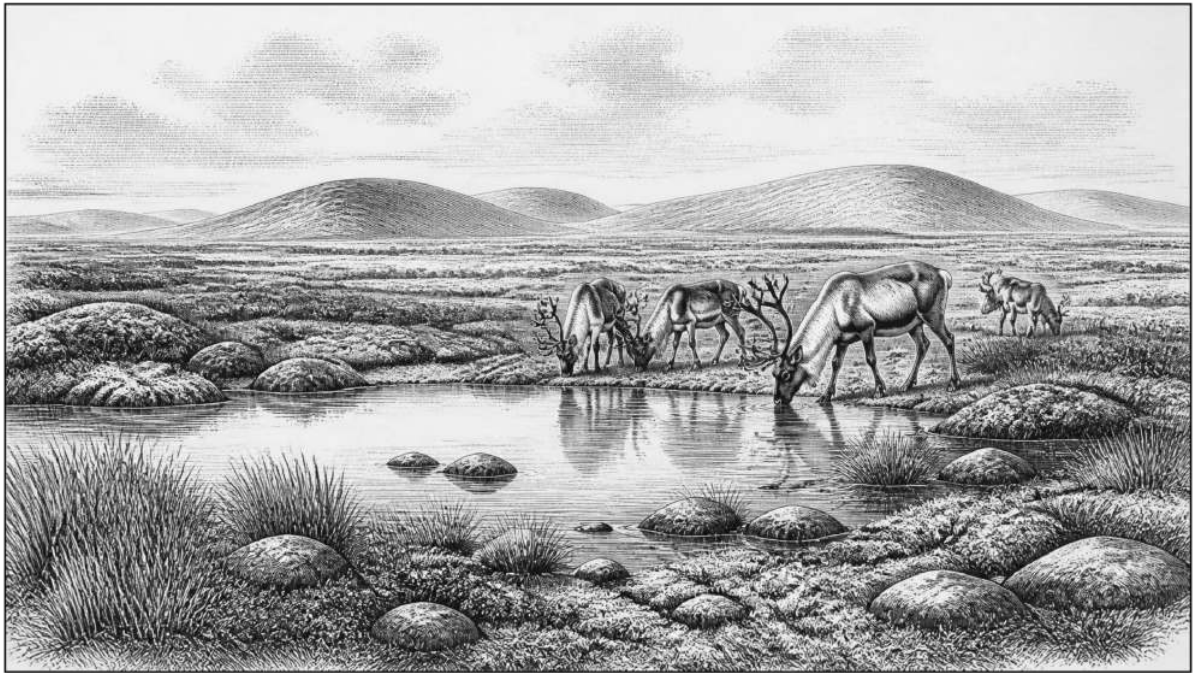
If the Castlepook incision ultimately proves anthropogenic, the most that can be inferred is a brief episode of human contact with an animal carcass in a cold landscape. Such people, if present, would have belonged to wider Upper Palaeolithic worlds documented in Britain and continental Europe. Their practical economy would have depended on mobility, knowledge of animal behaviour, seasonal conditions and stone technology. Those are reasonable comparative possibilities, not demonstrated details of an Irish society.

The principal history of Ireland around 31,738 BCE is therefore environmental and evidential. Wetland silts beneath a Fermanagh drumlin record an interval without glacier cover. Calcite in a Kerry cave records climatic amelioration within a generally cold age. Bones in a Cork cave show that large mammals and carnivores used Irish landscapes before the ice sheet's later maximum. One marked reindeer bone raises the possibility of human activity. Together these remains offer not a calendar-year narrative, but a disciplined glimpse of Ireland at the edge of habitable Ice Age Europe.

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31737 BCE

Maguirebridge's Inter-Till Waters^[64]



A date without a diary

31,737 BCE is a modern calendar label, not a year from which Ireland preserves a record of events. There were no written calendars, named rulers, states or documentary traditions on the island, and archaeology cannot identify something that happened in that particular twelve-month interval. In the archaeological convention that counts backwards from AD 1950, the date is roughly 33,700 years before present. It belongs to the Late Pleistocene, within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable phase of the last Ice Age.

The responsible picture is therefore a broad one. Evidence from caves, buried wetland sediments, pollen, insects, animal bones, geological landforms and isotope dating can illuminate Ireland around this part of the Ice Age. It cannot supply a political chronology or a biography of “the Irish” in 31,737 BCE. The most important conclusion is also the most restrained: parts of Ireland supported animal life and freshwater environments during portions of this era, but a permanent human population at this date has not been demonstrated.

Freshwater Between the Tills

The most revealing Irish environmental archive for this general period was exposed at Derryvree near Maguiresbridge, County Fermanagh. Roadworks cut through a drumlin and revealed organic freshwater sediments and fine sands sealed between two deposits of glacial till. The sequence matters more than any

single specimen. Ice had laid down the lower till; an interval followed in which freshwater sediment accumulated; then a later ice advance covered the deposits beneath another till. This is powerful evidence that glacial conditions changed markedly through time in northern Ireland.

Plant remains, pollen and insect evidence from the Derryvree succession point to a cold, open, periglacial landscape rather than the familiar wooded island of later prehistory. Mosses, sedges and other wet-ground plants could grow beside shallow water. Such evidence does not turn Derryvree into a pleasant lakeside setting: summers may have been brief, winters severe, and frozen ground a major influence on drainage and vegetation. Yet the deposits show that this was not simply a featureless waste of permanent ice. Water, mud, plants and invertebrates formed a small but functioning ecosystem during an ice-free interval.

The chronology has unavoidable margins of error. Older radiocarbon determinations, stratigraphic correlations and changing calibration methods produce ranges rather than a single date for the Derryvree inter-till deposits. They are generally assigned to the Middle Midlandian, broadly MIS 3. That makes them highly relevant to the world denoted by 31,737 BCE, but not proof that a particular pool, plant or animal existed there in that exact calendar year. The distinction is essential: sedimentary sequences register phases of landscape history, not annual chronicles.

A Cold-Stage Animal World

Southern Irish caves provide another, richer but complicated line of evidence. Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork, yielded a remarkable assemblage during excavations conducted in the early twentieth century. Museum collections and later reassessments identify animals associated with cold-stage Europe, including woolly mammoth, reindeer, giant deer, brown bear, fox, wolf, hare and spotted hyaena. The National Museum of Ireland's Castlepook hyaena skull is a tangible reminder that Ireland's Pleistocene fauna was once far different from its modern wildlife.

These animals did not necessarily belong to one moment or one ecological community. Cave deposits can be mixed by water, digging animals, collapse, carnivore activity and early excavation methods. Re-dating has shown that material in the southern Irish cave record can derive from more than one period. Nevertheless, the broader conclusion is firm: during parts of MIS 3, large mammals reached and lived in Ireland. Reindeer and mammoth imply open feeding grounds; predators and scavengers, including hyaena, indicate a food web capable of sustaining large carnivores. The bones are evidence for animals moving through the landscape, and sometimes using caves, not evidence for an Ice Age zoo confined underground.

Some dated Irish red-deer remains from County Waterford caves have calibrated ranges of approximately 32,930–31,280 and 30,297–29,594 cal BP. Those ranges show that large deer occupied southern Ireland close to the broad time under discussion. They also illustrate why calendar precision is misleading: even excellent scientific dating normally locates a specimen within a range of centuries or more at this depth of time. A fauna may be dated; the day, season and circumstances of its arrival ordinarily cannot.

Castlepook's Human Question

Castlepook is important for one further, unresolved reason. A reindeer femur from the cave has been reported as carrying a deep linear mark interpreted by zoologist Ruth Carden as damage made by a sharp stone implement during carcass processing. The bone has been publicised as approximately 33,000 years

old. If the mark is confirmed as an anthropogenic cut or chopping mark made when the bone was fresh, it would be potentially significant evidence that Upper Palaeolithic people reached Ireland many millennia earlier than the island's previously accepted late-glacial human record.

Potentially is the vital word. The specimen comes from an old collection rather than a modern excavation of a sealed occupation floor. Its date concerns the animal, not independently the mark, the location where it died, or the length of any human visit. No securely associated stone-tool assemblage, hearth, dwelling surface, burial, art or repeated occupation sequence of comparable antiquity has yet established a 32nd-millennium BCE community at Castlepook. Natural breakage, carnivore damage, trampling and recovery damage must be carefully excluded whenever marks on bone are assessed.

Recent research excavations at Castlepook have located surviving deposits and recovered faunal material, but reported no cultural artefacts from the 2022 work. This is not a negative verdict on the femur; it is a reminder that archaeology progresses through testing, context and replication. At present, the reindeer bone can responsibly be described as a provocative possible trace of human activity in the wider period, not as proof of a settled population, a named culture or an unbroken ancestry leading to later inhabitants of Ireland.

Land, Sea and Moving Ice

Ireland's geography was also unlike that of today. Global sea level was far lower during the Ice Age, exposing extensive shelf landscapes around the island. But exposed land did not automatically provide a simple, dry land bridge or an easy route for people and animals. Coastlines, river systems, marshes, marine inlets and the margins of expanding ice varied through time. The British–Irish Ice Sheet was growing and changing, with local ice caps and glaciers already present in parts of Ireland by about 31,000 years ago; its later maximum, around 27,000–23,000 cal BP, covered the island and surrounding shelf extensively.

For a time around 31,737 BCE, the island should thus be imagined as a geographically connected but environmentally demanding north-western edge of Europe. The open habitats indicated by the fauna may have allowed grazing mammals to range widely when routes were available. This creates a plausible context for short human incursions from western Britain or continental Europe, where Upper Palaeolithic hunter-gatherers are well evidenced. It does not demonstrate that such groups regularly crossed into Ireland. Possibility supplied by geography is not the same as archaeological proof of travel.

No Politics, but an Ecological Frontier

Political affairs, diplomacy, organised warfare, formal religion, trade systems and learning cannot be recovered for Ireland at this date. There is no evidence for chiefs, tribes, territories, ritual monuments, exchange networks, farms, villages or graves. Nor should later Irish identities, languages or traditions be projected backwards across more than thirty millennia. If people did visit, comparisons with Upper Palaeolithic communities elsewhere suggest small mobile groups able to use stone tools, fire, clothing and animal resources. But that is an inference from wider European evidence, not a description of a known Irish camp.

The material record does support a narrower account of everyday possibility. Reindeer, deer and other large mammals could offer meat, fat, marrow, hide, sinew and bone; carnivores made carcasses and caves contested resources. Freshwater basins such as Derryvree supported plant and insect life in cold conditions. Caves such as Castlepook could preserve bones over immense periods, although their role as

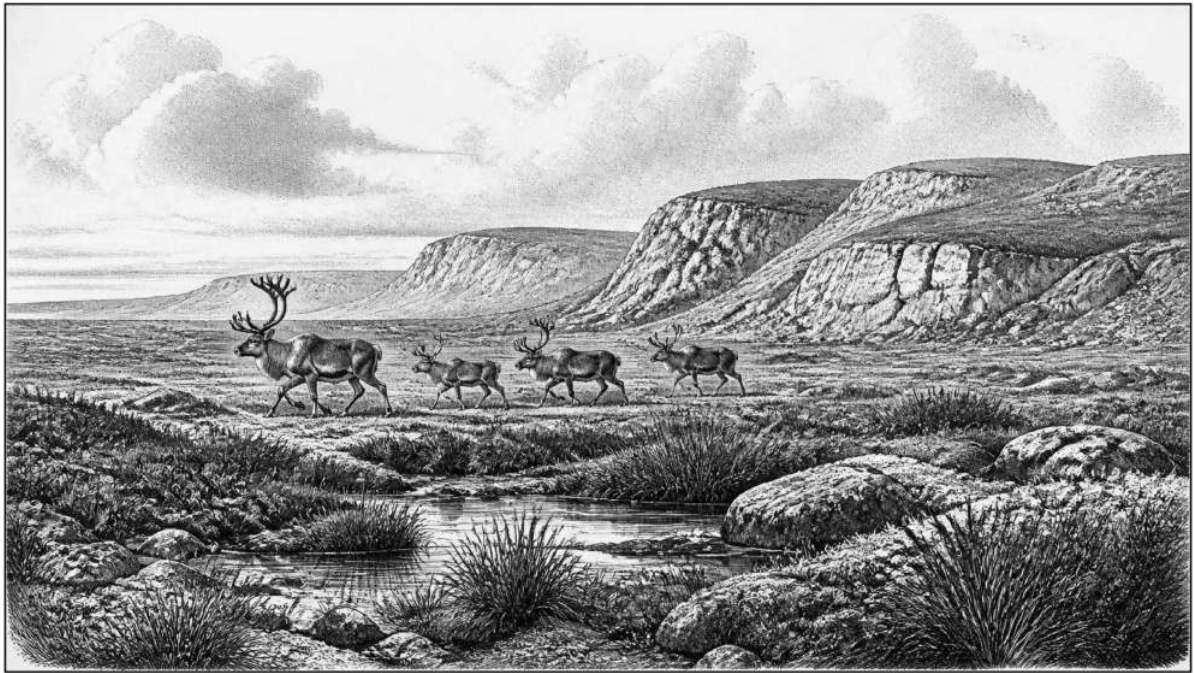
shelters for people remains unproven for this time. Economy, in the only defensible sense, was ecological: survival depended on movement through a volatile landscape of grazing, predation, water, frost and advancing ice.

That volatility is the central development around 31,737 BCE. Ireland was not yet the fully ice-covered landscape of the Last Glacial Maximum, nor was it the forested island later settled by Mesolithic hunter-gatherers. It was a changing cold-stage frontier. Its evidence survives fragmentarily beneath drumlins, in cave chambers and in museum drawers. Those traces reveal a country of sedge-fringed water and roaming Ice Age animals, while leaving open—deliberately and scientifically—the question of whether any people stood among them.

Chapter 065 of 100

31736 BCE

Castlepook's Faunal Mosaic^[65]



“31,736 BCE” is a modern calendar label, not a date that can be recovered from an Irish Ice Age deposit. It corresponds only approximately to 33.7 thousand years before the radiocarbon convention of AD 1950. No excavation, fossil layer or climatic record can presently distinguish this particular calendar year from the centuries around it. The responsible setting is therefore a broad one: later Marine Isotope Stage 3 (MIS 3), within the Midlandian Cold Stage of Irish Quaternary history. Calibrated radiocarbon ranges, sediment sequences and ice-sheet reconstructions illuminate that world; they do not yield an annal for a single year.

This was Ireland long before agriculture, villages, monuments, writing or named peoples. The island’s history at this depth is chiefly environmental and zoological. Caves in south Munster, buried organic beds in Ulster, marine sediments and the landforms left by later ice allow archaeologists and geologists to reconstruct fragments of a changing northern landscape. Their evidence is valuable precisely because it is fragmentary: it can show that animals lived in Ireland, that climates altered sharply and that ice advanced and retreated, while also defining the limits of what can be claimed about human life.

A Cold Stage Without Annual Dates

MIS 3 conventionally spans roughly 57,000 to 29,000 years ago. It was not one unchanging winter. Greenland ice-core chronologies reveal abrupt swings between comparatively milder interstadials and colder stadials across the North Atlantic world. Irish sequences preserve local expressions of these changes, but their dates are seldom precise enough to align confidently with one named climatic pulse, much less with 31,736 BCE. Older radiocarbon measurements also require particular care: at this age calibration produces broad probability ranges, and improvements in collagen extraction have materially altered the ages obtained from cave bones.

The broadest chronological point is secure. Ireland was moving towards the great expansion of the last British–Irish Ice Sheet, not yet living through its fullest island-wide glacial maximum. The precise extent of ice over Ireland around 33,700 years ago remains debated. Recent syntheses identify evidence for earlier, dynamic growth and retreat of ice during MIS 3, including signs of glacial loading around southern coasts. Yet the much firmer reconstruction of the ice sheet begins nearer 31,000 years ago, when constraints are still sparse. It would be wrong, therefore, to picture either a uniformly ice-covered Ireland or an entirely open island on the authority of this date alone.

Ground, Water and Vegetation

Evidence from beneath tills is crucial because later glaciers destroyed, displaced or buried so much of the earlier landscape. At Derryvree in County Fermanagh, organic silts between glacial deposits have been interpreted as the remains of a cold, open wetland: a treeless muskeg of mosses, sedges and aquatic plants rather than a familiar Irish woodland. Such deposits are assigned broadly to a middle Midlandian, MIS 3 phase, with some schemes placing the Derryvree phase at about 44,000–28,000 years ago. That is an informative range for this article, but it is not proof that precisely the same pool survived in 31,736 BCE.

At Aghnadarragh in County Antrim, freshwater deposits, pollen and beetle remains record other episodes of markedly less severe conditions during the same long cold stage. Pollen from trees and shrubs, together with insects whose modern distributions favour cool-temperate environments, demonstrates that the climate and vegetation could change profoundly over millennia. Taken together, Derryvree and Aghnadarragh warn against treating Ice Age Ireland as a single tundra tableau. Around this notional year, regional terrain may have included open herb-rich ground, wet hollows, streams and periglacial surfaces, while the positions of glaciers and the coastline were shifting on longer timescales.

Lower global sea levels altered the surrounding shelf seas, but they do not by themselves demonstrate an easy dry crossing between Ireland and Britain. The Irish Sea basin had a complicated topography and its relative sea level was affected both by global ocean volume and by the loading and flexing of the Earth's crust beneath ice. Any routes used by animals, if they existed at a given time, remain matters for geological reconstruction. No Irish evidence identifies a trackway, a crossing point or a journey in this period.

The Castlepook Record

Castlepook Cave, near Doneraile in north County Cork, is the key Irish site for imagining the animal world of MIS 3. Its old excavations produced remains attributed to reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, lemmings and spotted hyaena. This is not a census of one landscape on one day. Cave deposits accumulated over long periods, and a carnivore den can mix prey brought in at different times with animals that died naturally, material washed in by water and sediments disturbed by collapse. Early twentieth-century collecting removed large quantities of bone and left imperfect records of original position and association.

Nevertheless, the revised radiocarbon programme has changed the scale of the story. Re-dating of Castlepook, Foley and Shandon cave fauna with improved methods showed that several older determinations had underestimated the antiquity of the bones by thousands of radiocarbon years. The results support a substantially older MIS 3 presence in Ireland for mammals including giant deer and

spotted hyaena, with some local populations apparently gone before the Last Glacial Maximum. Castlepook therefore preserves evidence for a succession of cold-stage animal communities, not merely the sparse fauna of the final thaw.

Reindeer and lemmings point towards cold, open habitats; hyaena and wolf demonstrate the presence of large carnivores; mammoth and giant deer evoke a productive but demanding grazing world. Yet these species should not be forced into a single, simultaneous “Ice Age herd”. Individual dates, cave context, preservation and later re-analysis matter. The strongest conclusion is that Ireland supported, at intervals in MIS 3, more varied large-mammal communities than its modern fauna would suggest. It does not establish the exact mix of species in 31,736 BCE, their seasonal movements or their population sizes.

The Human Question

A reindeer femur recovered at Castlepook has been reported as bearing a deep mark consistent with stone-tool butchery and has been publicised as possible evidence for people in Ireland about 33,000 years ago. If the mark was made on fresh bone by a human tool and is contemporary with the animal’s death, it would be exceptionally important: it would indicate an Upper Palaeolithic visit to Ireland more than twenty millennia before the better-established late-glacial evidence from Alice and Gwendoline Cave in County Clare.

But the distinction between possibility and demonstration is essential. A radiocarbon result dates the bone, not the hand that may have marked it. A single modified bone does not establish a camp, a resident population, a hunting party’s route or a continuous tradition of occupation. Castlepook’s disturbed history makes secure association especially difficult, and no closely associated hearth, lithic assemblage, dwelling surface, burial or human remains has yet defined a 32nd-millennium BCE settlement in Ireland. The most cautious interpretation is that a brief human incursion is conceivable, perhaps involving the processing of a reindeer carcass, but remains unproven as a settled presence.

What Cannot Be Recovered

There is no evidence from Ireland around this point for rulers, political communities, diplomacy, warfare, law or territorial boundaries. Nor can archaeology identify language, kinship rules, ritual, religious belief, formal learning, art or social rank. The absence of such evidence must not be mistaken for an assertion that any people who reached Ireland lacked culture. Upper Palaeolithic communities elsewhere in Europe possessed complex practical knowledge, social relations and symbolic traditions. The problem is evidential: Irish finds of this age are too few and too disturbed to transfer those details safely to the island.

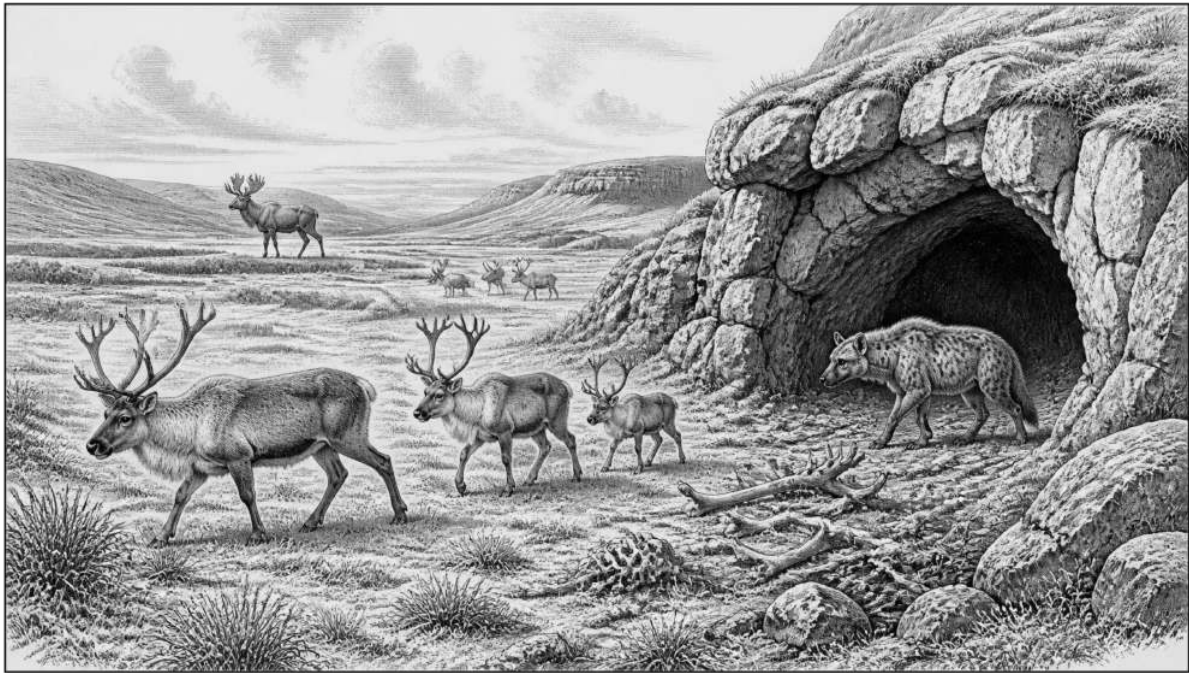
The same restraint applies to economy and trade. If Castlepook’s reindeer mark proves anthropogenic, it would indicate a practical act of carcass processing: meat, hide, sinew, marrow or bone may have been valued. It would not demonstrate farming, regular exchange, a specialised hunting economy or a permanent coastal network. The cave fauna can describe ecological opportunity and hazard; it cannot reveal an Irish market, household or community.

Thus the most important development around 31,736 BCE was not a political event but an environmental threshold. Ireland lay within a volatile North Atlantic cold-stage system, inhabited at intervals by striking mammal communities and increasingly shaped by expanding ice. Castlepook, Derryvree and Aghnadarragh preserve different kinds of testimony to that deep past. They offer a richer history than silence, but not the false certainty of a year-by-year chronicle.

Chapter 066 of 100

31735 BCE

Hyenahall's Carnivore Archive^[66]



The label 31,735 BCE cannot identify an event in Ireland in the way that a later historical year can. There were no written records, named polities or calendar-keeping communities from which an annual narrative survives. Indeed, modern calendar-year precision is unavailable at this depth of time. The date is best treated as a convenient point within a broad Late Pleistocene window, approximately 33,700 calibrated years before AD 1950, during Marine Isotope Stage 3 (MIS 3). Evidence from Ireland must therefore be read in ranges: dated animal bones, deposits beneath glacial sediments, cave stratigraphy, pollen, plant remains and landforms. These illuminate an Ice Age environment, not the business of one particular year.

A Landscape Before Maximum Ice

Around this point in the late Ice Age, Ireland was approaching, but had not yet reached, the most extensive phase of the last British–Irish Ice Sheet. Scholarship has revised the timing and pattern of ice growth repeatedly as new dates have become available. The broad conclusion is clear: substantial parts of Ireland could still be ice-free during parts of MIS 3, while conditions were cold, unstable and increasingly severe. The later maximum ice expansion belongs principally to the period after this broad horizon, rather than to a single sudden island-wide advance.

This distinction matters. Ireland at roughly 33.7 thousand calibrated years ago was not simply an island buried beneath uniform ice. It was a changing north-west European landmass of exposed ground, valleys, uplands, watercourses and caves, subject to periglacial conditions. Frost action disturbed soils and shattered exposed rock; seasonal thaw could feed streams, pools and marshy hollows. Sea level was lower globally than today, changing coastlines and the extent of the surrounding shelf. Yet neither the exact

outline of every shoreline nor a continuous land route into Ireland can responsibly be reconstructed for this precise date. Movement by animals, and perhaps people, depended on shifting combinations of sea, ice, terrain and climate.

Derryvree's Cold-Climate Wetland

The strongest environmental evidence close to this broad period comes from deposits at Derryvree near Maguiresbridge in County Fermanagh. Roadworks exposed organic silts and fine sands lying between glacial tills: a rare survival of a landscape interval later overridden or enclosed by ice-related deposits. The material produced a radiocarbon age of 30,500 radiocarbon years BP, with a published calibrated range of approximately 36,900–31,700 calibrated years BP. That is not an exact date for the nominal year considered here, but it overlaps its wider chronological setting and demonstrates that north-central Ireland retained ice-free terrain during part of the preceding cold stage.

Pollen, mosses, plant macrofossils and invertebrate evidence from Derryvree indicate open tundra-like vegetation and a periglacial regime. Sedges, grasses, dwarf shrubs and hardy herbs could grow where short summers permitted, while trees were absent or extremely restricted locally. Such evidence should not be translated into a photographic reconstruction of the entire island. It represents one locality and one sedimentary sequence. Nevertheless, it establishes that an Irish landscape capable of sustaining wet ground and cold-adapted plant communities existed within the relevant time range, rather than a featureless wasteland.

Castlepook and the Cave Record

For animal life, Castlepook Cave near Doneraile in north County Cork is indispensable. Its maze of limestone passages includes chambers given evocative names by early investigators, among them Hyenahall and Elephant Hall. Excavations in the early twentieth century recovered a large and complicated assemblage of bones. Geological Survey Ireland regards Castlepook as Ireland's richest known site for vertebrate fauna in the period leading towards the Last Glacial Maximum. The cave is consequently a central archive for what could live in Ireland before the most severe later glaciation.

Its importance is matched by its difficulty. The assemblage accumulated over a long span, and cave deposits were affected by water movement, excavation and repeated use by animals. Individual bones cannot automatically be treated as belonging to one moment, one hunting episode or even one undisturbed layer. Modern redating has shown that some older radiocarbon determinations from Castlepook and other southern Irish caves were too young by several thousand radiocarbon years. The reassessment places important elements of the Castlepook fauna firmly within MIS 3, but it also reinforces the need to date particular specimens rather than rely on a general label for the cave.

The fauna represented at Castlepook and comparable Irish cave collections includes woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. Not every species is securely contemporary with every other, nor can every record be assigned to 31,735 BCE. The responsible conclusion is narrower and more valuable: during favourable cold-stage intervals, Ireland supported a varied community of large herbivores, smaller mammals and formidable predators. Reindeer and lemmings point towards cold, open habitats; mammoth and giant deer demonstrate the potential richness of grazing landscapes; hyaenas, wolves and bears remind us that carcasses and shelter sites were contested resources.

Carnivores, Carcasses and Caution

Hyenahall is a useful corrective to simplistic stories of human beginnings. Spotted hyaena was a Pleistocene European predator, not an exotic curiosity accidentally transported from its modern African range. At Castlepook, hyaena remains, coprolites and bone damage indicate that carnivores helped create the archive. A cave could serve as a den, a refuge, a place where prey was dragged, or a trap into which material was washed. Tooth marks, breakage and displacement can resemble the traces that archaeologists seek when identifying human butchery. Cave bones therefore record ecological processes before they record human acts.

A reindeer femur fragment from Castlepook has been publicised as bearing a deep mark consistent with butchery using a stone tool and as dating to about 33,000 years ago. If the mark is confirmed as human-made and contemporary with the animal's death, it would be remarkably early evidence that Upper Palaeolithic people reached Ireland. It would fit broadly with the presence of *Homo sapiens* and specialised big-game hunters elsewhere in north-west Europe. But the claim remains much less secure than a site containing a dated hearth, stone-tool assemblage, occupation surface and several independently modified bones. A single marked specimen raises a serious possibility; it does not demonstrate a settled population.

No Politics Yet Recoverable

There is no evidence from Ireland at this date for political authority, diplomacy, organised warfare, ethnic names, law or territorial boundaries. Nor can historians identify a language, a religion, a seasonal festival, a formal artistic tradition or a system of teaching on the island. It would be misleading to call any possible visitors "Irish" in a later national, linguistic or ancestral sense. There are no farms, livestock, cereal crops, villages, monuments or trade goods from which to reconstruct an economy. The familiar categories of historical writing simply exceed the archive.

Even so, the absence of direct Irish evidence does not mean that possible human visitors, if present, lacked society or knowledge. Upper Palaeolithic groups elsewhere in Europe possessed sophisticated stone-working skills, intimate environmental knowledge and extensive social connections. A party able to reach an Ice Age Ireland would have required practical competence in travel, shelter, clothing, food-sharing and risk management. Those are reasonable inferences from wider human prehistory, not observations made at Castlepook. Ireland has not yielded the tools, campsites or burials needed to describe such people's social organisation here.

The difference between a brief visit and enduring settlement is especially important. A hunter group might have followed or intercepted migrating game, processed a carcass and departed, leaving very little behind. Conversely, the lack of finds may partly reflect destruction: later ice sheets eroded much of the older terrestrial record, while rising seas altered or submerged former coastal landscapes. These processes explain why caves and buried wetland deposits carry so much evidential weight. They do not permit archaeologists to replace missing evidence with certainty.

An Island of Ecological Connections

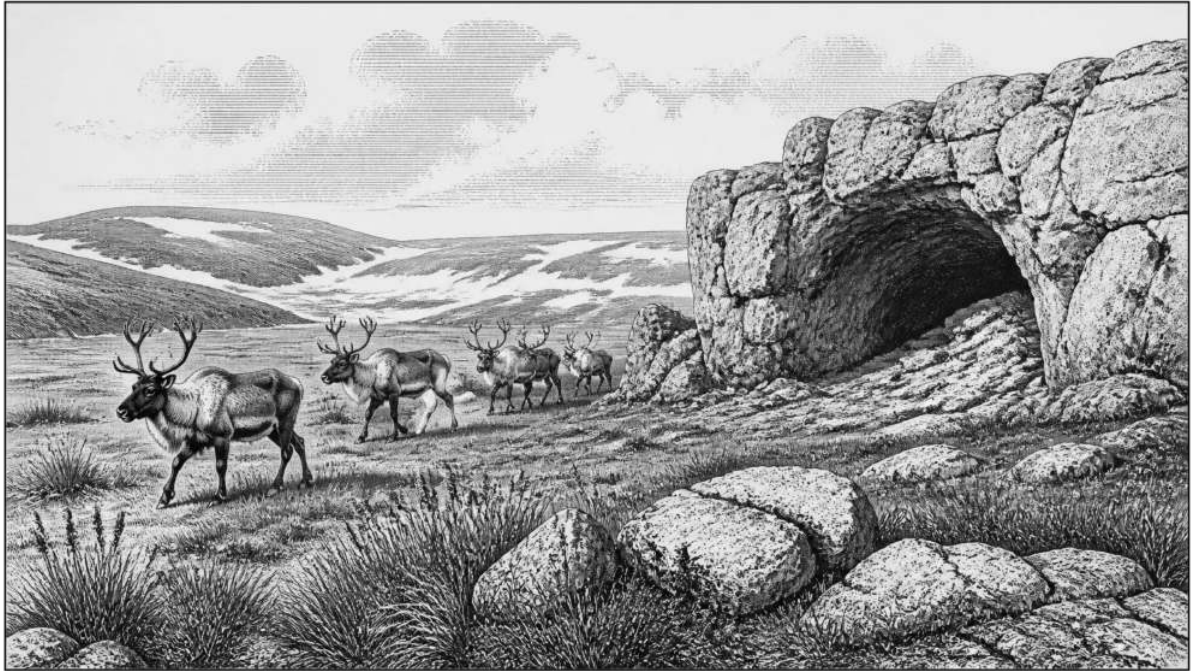
The animals themselves show that Ireland was connected ecologically to the wider European north-west during suitable phases. Mammals did not develop in isolation within a permanently sealed island ecosystem. Their presence implies episodes of dispersal across changing landscapes and seaways, although the routes, timing and frequency differed by species. The Irish record is patchy, and the cave assemblages may preserve predators and den occupants disproportionately well. Still, it shows that Ireland's prehistory was shaped long before human settlement by movements of fauna responding to climate, vegetation and ice margins.

At 31,735 BCE, then, the principal Irish story is not one of kings, communities or recorded conflict. It is the story of an unstable Ice Age environment with open cold-climate ground in some regions, wetland vegetation in Fermanagh, and a rich but time-mixed animal archive in the limestone caves of north Cork. Castlepook's carnivore-modified bones and Derryvree's buried silts make the period intelligible precisely because they impose limits on imagination. They show a habitable, changing landscape and leave open—without yet proving—the possibility that people briefly entered it before the great ice expansion transformed the island again.

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31734 BCE

The Awbeg Reindeer Mark^[67]



Modern calendar-year precision is not available for Ireland in 31,734 BCE. The date is a retrospective label, roughly equivalent to 33,683 years before AD 1950, rather than a moment that can be isolated in an excavation layer or connected to an event remembered by anyone alive then. At this depth of time, radiocarbon measurements must be calibrated and normally produce ranges rather than a single calendar year. The responsible historical frame is therefore the later part of the Late Pleistocene, within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable phase of the last Ice Age.

Ireland at this point has no known rulers, peoples, place-names, settlements or political boundaries. There is no evidence for diplomacy, organised warfare, religion, writing, trade routes or a resident society that can be described year by year. Yet Ireland was not an empty abstraction. Its caves, buried sediments, fossils and the changing footprint of ice preserve evidence for real landscapes and animals, while one controversial but important bone from north Cork raises the possibility that people may have entered this world.

A Date Measured in Millennia

“31,734 BCE” should not be read as an exact anniversary. A radiocarbon result measures the remaining carbon-14 in once-living material, not a Gregorian-style date. Calibration against independently dated archives converts such results into calendar-age probability ranges, and uncertainty becomes substantial beyond 30,000 years ago. Moreover, a date on an animal bone establishes when the animal died; it does not by itself date every scratch upon it, identify where it was killed, or prove that people lived beside it.

The climate was also far from steady. Greenland ice-core records show that the North Atlantic world of MIS 3 was punctuated by abrupt cold and milder episodes. Irish conditions did not reproduce Greenland's record exactly, but the island stood directly within the North Atlantic climatic sphere. A landscape suitable for grazing animals during one interval could be transformed by colder conditions, changing snowfall and an advancing ice margin over a comparatively short geological span. The meaningful unit is consequently a broad interval of centuries or millennia, not this individual numbered year.

Ice, Open Ground and Uncertain Coasts

The Last Glacial Maximum, when the British–Irish Ice Sheet covered nearly all Ireland and extended onto the surrounding continental shelf, still lay ahead. Most reconstructions place its fullest extent in the broad period about 27,000–23,000 calibrated years BP, though its growth and local margins varied greatly. Around the early thirties millennium BCE, ice was already an important and dynamic force in the region, but scientists continue to debate precisely when particular sectors of the Irish ice sheet expanded, thinned or withdrew.

That uncertainty matters. Marine and coastal evidence from western Ireland has been interpreted as showing substantial ice loading during much of the period from about 40,000 to 19,000 calibrated years BP. Other records show that the dramatic maximum advance into the Celtic Sea came later. It is therefore unsafe to picture every part of Ireland in 31,734 BCE either as bare, ice-free tundra or as a single unbroken white ice cap. Conditions differed between regions and changed through time; much potentially decisive evidence has been eroded, buried beneath later till, or lies offshore.

Sea level was lower than today because large quantities of water were locked in global ice sheets, but this does not demonstrate a simple dry-land bridge from Ireland to Britain or continental Europe at this date. Changing sea level, local crustal depression under ice, channels and glacier fronts made the geography complex. Any possible human approach to Ireland remains unproven. The exposure of wider coastal plains in some places does, however, remind us that the modern shoreline is not the boundary of the Pleistocene landscape.

Castlepook's Difficult Evidence

The most relevant Irish site is Castlepook Cave, near Doneraile in north County Cork, within the Blackwater–Awbeg drainage. Excavated principally in the early twentieth century, it yielded a remarkable but complicated collection of Ice Age animal remains. Its chambers acquired evocative names, including Mammoth Cave, Elephant Hall and Hyaena Hall, from the animals represented in the deposits. Modern re-dating has shown that some earlier determinations greatly underestimated the antiquity of material from Castlepook and nearby southern Irish caves.

The Castlepook record demonstrates that Pleistocene animals reached Ireland during parts of MIS 3. Reindeer, giant deer, spotted hyaena and mammoth are among the animals represented in the wider cave collection, though their bones need not all be contemporary or have entered the cave in the same way. A cave can be a carnivore den, a natural trap, a place where water reworks sediment, and an archive disturbed by later digging. The assemblage is powerful evidence for changing animal communities over a long period; it is not a census of one day's wildlife.

A reindeer hind-leg bone has given Castlepook exceptional importance. It was directly radiocarbon dated to around 33,000 years ago in reporting associated with Ruth Carden's research, and it carries a deep linear mark interpreted as damage made by a sharp stone tool while a fresh carcass was being processed. If that interpretation is confirmed, it would be Ireland's earliest known indication of human activity by a very large margin, potentially placing a human visit in the broad early-thirties-millennium-BCE setting.

The qualification is essential. The femur came from an old collection, not from a newly excavated, intact occupation surface. No securely associated stone-tool assemblage, hearth, dwelling floor, human remains, burial, art or repeated domestic refuse of comparable age has yet been recovered in Ireland. Nor does the bone prove continuous occupation. It is best treated as a potentially transformative trace of butchery: evidence that may indicate one or more brief visits by people, but not evidence for a known Irish population.

Animals Before Communities

The strongest picture is ecological. Reindeer suggest open terrain capable of supporting mobile grazing herds. Giant deer, where present, indicate further large-herbivore habitat, while mammoth and spotted hyaena evoke a fauna very different from modern Ireland. Predators, scavengers and caves themselves complicate the story of each bone: hyaenas could transport carcass parts, carnivores could gnaw or fracture them, and water or collapse could move them after deposition. Archaeologists must distinguish such natural modifications from marks made by people.

Plant evidence from Irish inter-till organic deposits, especially in Fermanagh, provides a broader though not year-specific guide to the sorts of landscapes that could develop during milder Pleistocene intervals. Pollen, mosses, sedges and freshwater plants point to open, treeless or sparsely wooded environments with wetlands and shallow water. They do not furnish a direct environmental photograph of Castlepook in 31,734 BCE. Nevertheless, when read alongside faunal evidence, they support a vision of cold open country with wet hollows, grass- and herb-rich patches, and only limited woody vegetation rather than the familiar oak-and-hazel Ireland of much later prehistory.

Such terrain was productive, but harsh. Winters could be severe, weather volatile and food availability seasonal. The survival of large herbivores depended on migratory movement, forage and access to shelter; carnivores followed them. For any people who may have reached Ireland, the island would have offered opportunity as well as danger: meat, marrow, hide, sinew, antler and bone from a large animal were valuable resources, but the evidence does not show how a carcass was obtained or how long anyone remained.

Human Possibility, Not a Lost Nation

Upper Palaeolithic hunter-gatherers elsewhere in north-west Europe possessed sophisticated knowledge of animals, stone technology and seasonal movement. It is reasonable to use that wider world to understand what a stone-made cut on a reindeer bone might mean. A small party could have travelled widely, stopped briefly at a favourable place and processed part of a carcass before moving on. This is interpretation by comparison, however, not a direct portrait of an Irish camp.

Nothing supports claims about language, ethnicity, kin groups, chiefs or a distinctive "Irish" culture at this time. Nor can religion be reconstructed from the Castlepook evidence. Caves can acquire ritual meanings in some later societies, but their physical usefulness to animals and people is enough to explain

their archaeological importance; no ritual deposit of this age is known in Ireland. Similarly, there is no evidence for organised conflict or diplomacy. The nearest defensible social scale is a possible small, mobile hunting party, and even that remains conditional on the anthropogenic reading of the marked femur.

There is equally no demonstrated trade system. A visitor carrying a stone tool may have brought it from elsewhere, but no securely dated tool survives to identify its raw material or origin. The absence of evidence is partly a consequence of preservation: exposed camps may have been overridden by ice, destroyed by erosion or drowned beneath later seas. Yet preservation problems cannot be used to turn possibility into proof. Ireland's record remains markedly thinner than those of several contemporaneous regions of Britain and mainland Europe.

A Landscape on the Edge

The principal development illuminated around this date is not state formation or settlement, but environmental instability at the north-western edge of Upper Palaeolithic Europe. Ireland contained, at least during parts of MIS 3, habitats that large Ice Age mammals could reach and occupy. Castlepook preserves their remains, while the scored reindeer femur poses a carefully bounded question: did people also come?

For now, the answer is “possibly, briefly, and not yet demonstrably as permanent residents”. That modest conclusion is historically significant. It moves Ireland's deep past beyond an older assumption that human presence began only after the final retreat of the ice, while insisting that a single cave bone cannot carry the weight of an invented national origin story. Continued excavation, direct dating, microscopic study of bone surfaces and analysis of cave sediments may refine the picture. In 31,734 BCE, Ireland is best understood as a changing Ice Age landscape of animals, water, rock and ice—one in which the human trace, if genuine, is tantalisingly slight.

Chapter 068 of 100

31733 BCE

Derryvree's Tundra Interval^[68]



“31,733 BCE” is a useful modern label, not a date at which events in Ireland can be placed with calendar-year precision. No contemporary written record, settlement sequence or annually resolved archaeological layer allows historians to say what happened on the island in that particular year. The responsible view is broader: this notional point falls about 33.7 thousand years before present, within the later part of the Late Pleistocene and broadly Marine Isotope Stage 3, a highly variable phase of the last Ice Age. Ireland’s story at this depth of time is reconstructed from cave bones, buried freshwater sediments, pollen, mosses, insects, calcite deposits and the landforms left by advancing ice.

Dating an Unwritten Landscape

The distinction between radiocarbon and calendar dating matters especially here. “Before present” conventionally counts back from AD 1950, while radiocarbon years measure the remaining carbon-14 in organic material. They are not identical to calendar years, because atmospheric carbon-14 has fluctuated substantially. Modern calibration curves make conversion possible, but the further back one goes, the broader and less exact the resulting calendar ranges become. A numbered BCE year can therefore be aligned only approximately with an archaeological horizon, never treated as a historical anniversary.

The most useful Irish comparison is Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 exposed organic freshwater silts and fine sands trapped between two tills: glacial sediments deposited by ice. The organic horizon produced a radiocarbon determination of 30,500 BP, with a large laboratory uncertainty. Later syntheses have expressed its calibrated range at approximately 36.9–31.7

thousand calibrated years BP. That broad span includes the general timescale denoted by 31,733 BCE, but it cannot show that the Derryvree pool existed, or had precisely the same character, in that individual year. Its value lies in documenting conditions during a stretch of time, not in supplying a date-by-date narrative.

Ground Between the Ice Advances

Derryvree is important because its position beneath later till preserves a rare interval when north-central Ireland was not smothered by the ice that subsequently crossed the district. The lower till, freshwater deposits and upper till form a compressed geological sequence of major environmental change: glacial conditions, an ice-free or ice-margin landscape with standing or slow-moving freshwater, then renewed glaciation. This is evidence for changing ice extent, not proof that all of Ireland was simultaneously free of ice. Conditions varied considerably between regions, and later glaciers destroyed or disturbed many deposits that might otherwise have enlarged the picture.

Across the island, the last British–Irish Ice Sheet was not a single immobile blanket. It expanded and contracted in response to shifts in temperature, snowfall, sea level and the behaviour of ice streams. Research on Irish glacial chronology indicates that substantial parts of north-central Ireland remained ice-free until around 34,000 years ago, while the major expansion that carried ice to the southern coast occurred much later, after about 24,000 years ago. Around the broad interval represented here, Ireland was therefore a changing frontier of frozen ground, wetlands, open terrain and, in some places, encroaching ice rather than a uniformly white, lifeless island.

Mosses, Sedges and Shallow Water

The Derryvree sediments contain plant and animal remains which give this otherwise remote landscape texture. Pollen was poorly preserved, but plant macrofossils included mosses and plants associated with cold, open conditions. The assemblage has been interpreted as tundra or muskeg-like wetland vegetation: sedges, mossy ground and patches of low-growing plants around freshwater, with no evidence for a forest. Such a setting would have been shaped by severe seasonality. Long cold periods, repeated freezing and thawing, and short productive summers influenced soils, runoff and the availability of grazing.

This was not necessarily a barren plain. Open tundra can support a rich but low vegetation cover, especially where water, mineral sediment and summer light promote growth. Yet Ireland at this time did not resemble the later wooded island familiar from historical landscapes. Trees were absent or extremely scarce in the evidence from Derryvree. The few grains of pine and hazel pollen recovered there are not grounds for reconstructing local woodland: they may have travelled long distances or derived from redeposited material. The firmer conclusion is negative but significant—there was no established forest canopy at the site.

Crag Cave in County Kerry adds a different kind of environmental record. Stalagmites and other calcite formations grow only when liquid water can percolate through the cave system. Uranium-series dates show that such growth occurred episodically in south-west Ireland during the last glacial period, particularly during milder phases of MIS 3. This does not provide a weather report for 31,733 BCE, nor does it prove that Fermanagh and Kerry experienced identical conditions. It does demonstrate that Ice Age Ireland repeatedly experienced climatic ameliorations sufficient for unfrozen water and active soils, punctuating harsher intervals.

The Cave Fauna of North Cork

Animal bones from Castlepook Cave, also called Mammoth Cave, in the Awbeg Valley near Doneraile, County Cork offer the strongest evidence for the wider living world of southern Ireland before the Last Glacial Maximum. The cave has yielded one of Ireland's richest Pleistocene vertebrate assemblages. Its recorded fauna includes woolly mammoth, reindeer, giant deer, brown bear, wolf and spotted hyaena, animals suited in differing ways to open, cold or seasonally cold landscapes. Carnivores are especially important to interpretation: a cave bone collection need not represent animals peacefully living together at the entrance. Hyenas and other scavengers could carry carcass parts into dens, while water, sediment movement and early excavation methods could mix material from different episodes.

Recent redating has made the chronology more complicated but more reliable. Work on Castlepook and other southern Irish caves has shown that several older radiocarbon results underestimated the true age of specimens; improved pretreatment can remove contaminants that make ancient bones seem younger. Some key Castlepook fauna now appear to belong well before 40,000 calibrated years BP. Accordingly, the fauna establishes that such animals reached Ireland during portions of MIS 3, but it should not be used to claim that every listed species shared one valley in 31,733 BCE. The bones are a time-averaged archive, not a census.

The Reindeer Femur and Human Possibility

One Castlepook object bears directly on the question of people. A reindeer femur from the old cave collection has a deep linear mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone tool during carcass processing. County Cork heritage material places the bone at about 31,000 BCE. If that interpretation and dating relationship are sustained, it is potentially evidence that Upper Palaeolithic hunter-gatherers reached Ireland far earlier than the island's securely documented Mesolithic settlement.

Potential is not the same as proof of a resident community. The bone was recovered from an antiquarian collection rather than a modern, tightly recorded excavation context. Its radiocarbon date is the age of the animal, while identifying the mark as a human tool cut is a separate specialist interpretation. No securely associated stone-tool assemblage, hearth, dwelling surface, grave, human bone, ornament or artwork has been published from Ireland for this early horizon. A marked femur could indicate a brief visit by hunters, the processing of a carcass, or activity whose location and duration cannot be recovered. It cannot establish a permanent population, a named people or an unbroken Irish human history from this time.

No Politics, but a Demanding Ecology

There is no evidence from Ireland around this date for political authority, warfare, diplomacy, law, farming, trade institutions, formal religion or learning in the later historical senses. Nor can ethnicity, language, kinship rules or gender roles be reconstructed from one possible butchery mark. It would be equally misleading to infer an absence of social knowledge if people did make short journeys to the island: Upper Palaeolithic groups elsewhere in Europe maintained learned technologies, social ties and adaptable ways of surviving in cold environments. But that European context cannot substitute for Irish evidence.

Economy, if humans were present at all, would have centred on immediate access to animals, fuel, shelter and raw materials rather than agriculture or market exchange. Reindeer would have offered meat, hide, sinew, antler and bone; large herbivores may have drawn predators and scavengers as well as hunters. These are reasonable ecological possibilities, not demonstrated activities at Castlepook. The exposed continental shelf and lower sea levels of the Ice Age altered routes and distances around Ireland, but they do not prove a continuous land bridge or regular traffic. Any movement into Ireland remained contingent on changing coasts, channels, climate and animal distributions.

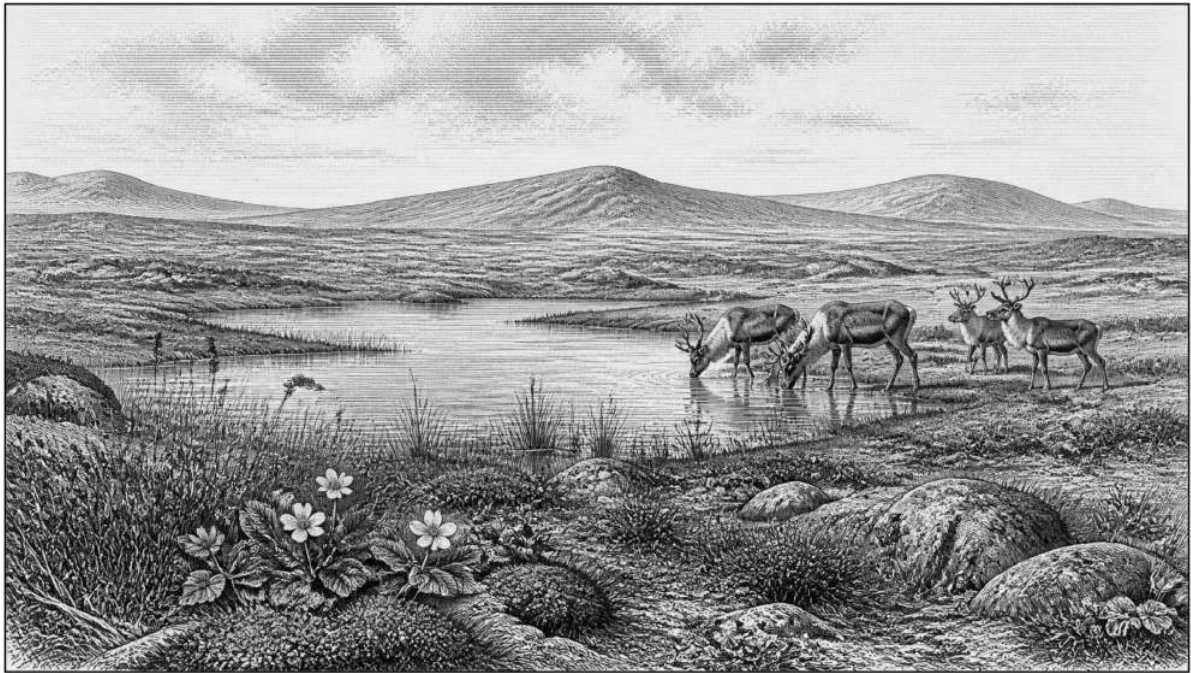
An Archive Rather than an Annal

The most important development around 31,733 BCE was environmental instability on an island at the edge of an expanding ice-sheet system. Derryvree preserves a cold freshwater tundra interval later sealed beneath glacier-laid sediment; Crag Cave records episodes when liquid water returned to the south-west; Castlepook preserves a complex faunal record of Ice Age animals and a provocative possible human trace. Together they replace the tempting image of an empty frozen void with a more careful one: parts of Ireland supported dynamic, open habitats, but the evidence is fragmentary and its dates are ranges rather than moments. For this year, geology and palaeoecology speak more clearly than conventional history—and they insist on uncertainty as part of the story.

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31732 BCE

Fermanagh's Mountain Avens^[69]



The numerical label 31,732 BCE cannot be treated as a recoverable year in Irish history. No calendar, inscription, named leader, settlement sequence or environmental record permits an event to be placed in that single year. In the conventional archaeological scale, it lies about 33,682 years before AD 1950, or roughly 33.7 thousand calibrated years before present (cal BP). That puts it in the Late Pleistocene, within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable part of the last Ice Age. The responsible history of Ireland at this point is therefore a history of dated ranges, buried sediments, animal remains and changing ice margins—not an annual chronicle.

Radiocarbon results do not translate directly into calendar dates. Atmospheric carbon-14 changed through time, and older samples require calibration against several independently dated records. IntCal20 extends the Northern Hemisphere calibration framework to 55,000 cal BP, but uncertainty remains substantial at this depth of time. The modern BCE date is useful as a filing point; it must not be mistaken for a precise ancient anniversary.

A Freshwater Interval at Derryvree

The most illuminating evidence close to this broad horizon comes from Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 cut through a drumlin and exposed fine sands and organic freshwater silts lying between two thick deposits of till. This sequence is unusually valuable. The lower till records an earlier phase of glaciation; the silts accumulated when water, plants and animals occupied an ice-free local basin; and the upper till shows that later ice overran and sealed the deposit. It is a rare surviving fragment of a landscape that subsequent glaciation mostly destroyed or buried.

A conventional radiocarbon measurement from the Derryvree organic deposit was $30,500 \pm 1,170$ radiocarbon years BP. In later discussion, its calibrated span has been given broadly as c.36,900–31,700 cal BP. The nominal date considered here falls within that wide window, but this does not mean that the layer formed in 31,732 BCE, nor that all its plants and animals were contemporary. It means that Derryvree provides the closest securely relevant Irish environmental archive for understanding this stretch of time.

The assemblage describes a severe but not empty world. Pollen was poorly preserved, yet it was predominantly herbaceous. Plant macrofossils, mosses and invertebrates indicate open tundra-like vegetation, wet ground and freshwater conditions under a periglacial climate. Bogbean, a plant of shallow water and marshy margins, is represented by a fossil seed. Mountain avens and other Arctic-alpine elements point to short growing seasons, exposed soils and a treeless landscape rather than forest. Grasses, sedges, herbs and mosses could nevertheless make sheltered wet places productive during summer. The title image of an unbroken desert of snow would be as misleading as an image of a green modern countryside.

Ice, Water and Uncertain Coasts

Derryvree does not provide a map of all Ireland. It records a particular basin in the north-western part of the island, and its date range is broad. Nevertheless, it decisively complicates any simple belief that Ireland was continuously entombed under ice throughout the late Ice Age. Nearby Greenagho, also in County Fermanagh, has lacustrine organic material beneath till dated to c.37,200–35,700 cal BP. Together, such deposits suggest that north-central Ireland retained ice-free ground until at least about 34,000 cal BP, before the major build-up of the last Irish ice sheet. The exact position of glacier margins around 33.7 ka remains uncertain.

This uncertainty matters. Recent work shows that the British–Irish Ice Sheet had a longer and more dynamic pre-maximum history than once assumed, including retreat-and-advance phases during MIS 3. Its later growth was not a single wall moving evenly across the island. Uplands, basins, coastal waters and ice streams responded differently. The large-scale BRITICE-CHRONO reconstruction begins at 31,000 years ago, after this article's notional date, because evidence for earlier margins is patchier and less securely dated. It depicts ice accumulating in northern Ireland as well as Scotland, while stressing the uncertainty inherent in reconstructing an ancient moving ice mass.

Sea level was far lower than today because water was held in continental ice sheets. Coastlines lay farther out over parts of the continental shelf, and the geography of the Irish Sea and Celtic Sea was profoundly altered. Yet lowered sea level should not automatically be turned into a convenient land bridge. Local ice, broad rivers, tidal channels, rising and falling shorelines, and changing marine basins shaped possible routes. For a precise point around 33.7 cal ka, there is no evidence for a particular crossing route linking Ireland, Britain and mainland Europe. Connectivity was a shifting geographical possibility, not a demonstrated road.

Animals in a Cold Mosaic

Southern Irish caves provide the principal evidence for the island's MIS 3 mammals. Castlepook Cave—also called Mammoth Cave or Doneraile Cave—in north Cork yielded a rich but complicated collection during antiquarian excavations in the early twentieth century. The cave's deposits were disturbed and material from different periods could become mixed, a problem that makes modern re-

dating and contextual excavation essential. Reassessment using improved radiocarbon preparation has shown that several Castlepook bones are much older than earlier results suggested, firmly placing important parts of the faunal record in MIS 3.

The fauna known from Castlepook includes reindeer, woolly mammoth, giant deer, brown bear, fox, Arctic fox, hare, lemmings, wolf and spotted hyaena. These remains do not prove that every species lived together at one moment, or that each ranged across the whole island. They do establish that Ireland, during phases of MIS 3, supported or received a substantially richer cold-stage fauna than the later historical island. The combination suggests a mosaic of open grazing ground, rocky shelter, wetlands and routes along which large herbivores and their predators could move. Carden and colleagues have argued that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum, perhaps around 40,000 cal BP; this is a regional interpretation from dated samples, not a claim that their final Irish disappearance can be fixed to a year.

The Castlepook Human Question

People may have entered this landscape, but the evidence is presently too slight to describe an Irish population. A reindeer femur from Castlepook has been reported as bearing a deep incision consistent with cutting during carcass processing and as dating to about 33,000 years ago. If the mark is confirmed as anthropogenic, it would be exceptionally early evidence for human activity in Ireland—far earlier than the well-established terminal-Pleistocene and Mesolithic record. It could indicate a brief visit by Upper Palaeolithic hunters who obtained meat, marrow, hide, sinew or bone from a reindeer carcass. It cannot demonstrate a village, a permanent homeland or a continuous occupation.

The caution is more than academic. No securely associated Upper Palaeolithic stone-tool assemblage, hearth, dwelling floor, human burial or stratified camp at this age has been identified in Ireland. Castlepook's early excavations removed much of the original sedimentary context, and a 2022 investigation found surviving deposits but no cultural artefacts. The responsible conclusion is that an early human incursion is possible, perhaps even plausible in a wider north-west European setting, while a sustained Irish occupation around this time is unproven. A different interpretation, emphasising ecological constraints and the absence of diagnostic artefact assemblages, holds that lasting colonisation did not occur until the Early Holocene.

Society Beyond Recovery

There is no evidence for political institutions, rulers, territories, diplomacy, organised warfare, law or social ranks in Ireland at this horizon. Nor is there Irish evidence from which to reconstruct language, kinship rules, clothing styles, music, ritual or religious belief. The absence of such evidence must not be mistaken for proof that any visitors lacked social lives, knowledge or spiritual ideas. Mobile hunter-gatherers elsewhere in Upper Palaeolithic Europe had sophisticated technologies, seasonal knowledge and extensive social networks. But transferring those facts directly to Ireland would be interpretation, not evidence.

Even the basic question of everyday life has to remain conditional. If people reached Ireland, they would have needed formidable practical skills: reading the movements of reindeer and predators; selecting sheltered ground; managing fire; preserving food; and navigating a landscape where weather,

frozen ground and water could change the cost of travel dramatically. Such a party may have carried tools and supplies with it and left little behind. Those are reasonable inferences from the environment and from Upper Palaeolithic lifeways elsewhere, but no excavated Irish camp allows them to be observed directly.

No Economy, No Trade Network

Farming, herding, metalworking, pottery, monumental construction and market exchange belong to much later Irish prehistory. Around this date there is no evidence for fields, livestock, granaries, mines, trade goods or built settlements. The only defensible economic setting is a natural one: the seasonal use of wild plants and animals, if people were present at all. Reindeer would have offered concentrated food and raw materials; wetland plants and freshwater may have supported birds, fish or small mammals, though no Irish evidence demonstrates their human use in this interval.

Regional change, rather than human politics, is the central development. The Derryvree silts preserve an interval when freshwater life and sparse vegetation endured between glacial advances. Castlepook preserves traces of animals moving through a southern limestone landscape. In the millennia ahead, the British–Irish Ice Sheet would expand far more extensively, reworking the ground and erasing much of the evidence needed for a fuller human history. What survives around 31,732 BCE is therefore precious precisely because it is incomplete: mountain avens and bogbean at a Fermanagh water margin, cave bones in north Cork, and an Ice-Age Ireland whose changing environments can be studied more securely than its people.

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31731 BCE

Derryvree's Sealed Freshwater Bed^[70]



Modern calendar-year precision is not available for Ireland at this depth of time. “31,731 BCE” is a retrospective label, equivalent only approximately to 33,680 years before AD 1950. No community in Ireland marked such a year, and no excavated sequence can identify its particular season, generation or event. The responsible frame is the Late Pleistocene, broadly Marine Isotope Stage 3 (MIS 3), and a wide calibrated interval rather than a date on a modern calendar.

The closest unusually informative Irish archive is at Derryvree, near Maguiresbridge in County Fermanagh. Road works in 1969 exposed organic silts and fine sands trapped between two separate sheets of glacial till within a drumlin. A conventional radiocarbon determination from the freshwater deposit, 30,500 radiocarbon years BP with a substantial error range, has been calibrated in later discussion to approximately 36,900–31,700 calendar years BP. The nominal year considered here falls at the younger edge of that broad range. It cannot be tied to a single layer, but Derryvree offers an exceptional, if necessarily general, glimpse of an Irish landscape around this part of the Ice Age.

A Wetland Between Ice Advances

Derryvree's importance lies in its position between tills. The lower till records an earlier episode of ice movement; the freshwater silts accumulated during an ice-free interval; the upper till records renewed glaciation. Thus the deposit does not depict a settled, stable Ireland, but a temporary environmental window between expansions of the British–Irish Ice Sheet. It survived precisely because later ice buried it. Much of the evidence that may once have lain on open ground was instead scoured, displaced or concealed by subsequent glacial activity.

The fossils point to open tundra or muskeg-like wetland, not to forest. Sedges, grasses, herbs, mosses and low woody plants occupied waterlogged ground around shallow pools and sluggish channels. Pollen, plant macrofossils and insects together indicate a cold, treeless setting in which frost was a powerful ecological and geological force. Periglacial does not mean lifeless: it describes ground shaped by repeated freezing and thawing, short growing seasons, seasonal waterlogging and thin or discontinuous vegetation. At Derryvree, wet hollows could preserve plants and small animals even while exposed higher ground was austere.

This was not necessarily the condition of every valley or coast simultaneously. Ireland's western Atlantic exposure, uplands, drainage basins and proximity to growing ice masses produced local differences. Yet the Derryvree record is strong evidence against imagining the island simply as a white, uniform wasteland. It contained freshwater, vegetation and usable animal habitat. It was nevertheless a difficult country in which winter cold, wind, frozen ground and rapid climatic shifts limited the resources available in any one place.

Climate in an Unstable Ice Age

MIS 3 was climatically unstable across the North Atlantic world. Greenland ice-core chronologies record abrupt oscillations between colder stadial and relatively milder interstadial conditions. Irish evidence cannot be matched securely to a particular Greenland event at the resolution of one calendar year, but the Derryvree age range overlaps several such oscillations. Its open vegetation and freshwater sediments are best understood as part of that wider, fluctuating system, not as proof that Fermanagh experienced one unchanging climate for thousands of years.

Further south-west, calcite formations in Crag Cave, County Kerry, offer a different kind of environmental proxy. Speleothems grow only when liquid water percolates into caves; their episodic growth during MIS 3 indicates intervals when local annual conditions were sufficiently mild for water to circulate. That does not turn Ireland into a temperate refuge. Rather, it reinforces the picture of a climatically variable western edge of Europe, where cold phases, milder episodes, ice growth and changing drainage repeatedly rearranged the landscape.

By this stage global sea level was much lower than today because great quantities of water were held in continental ice sheets. But the physical geography around Ireland cannot safely be reduced to a simple map of exposed land. Local relative sea level was also affected by the weight, growth and movement of ice, while shorelines changed through time. It is therefore unsafe to assert a particular land bridge, crossing route or coastline for 31,731 BCE. Animals and, if present, people faced a changing north-west European margin, not the familiar island geography of the modern Republic and Northern Ireland.

Animals and the Cave Record

Ireland's best evidence for larger animals of this earlier Late Pleistocene phase comes principally from cave collections, especially Castlepook Cave near Doneraile in north County Cork. Excavations led by Richard J. Ussher and colleagues between 1904 and 1913 recovered a remarkable assemblage from what was then often called Mammoth Cave. It included remains attributed to cold-stage animals such as reindeer, woolly mammoth, wolf, Arctic fox, brown bear, giant deer and spotted hyaena. The assemblage demonstrates that Ireland formed part of wider animal movements in the north-west European region during the Ice Age.

It does not, however, give a reliable wildlife census for this one notional year. Early cave excavation lacked modern standards of stratigraphic recording, sieving and spatial plotting. A cave is also not a neutral sample of a surrounding landscape: it may act as den, shelter, trap, bone-collecting hollow and drainage route. Modern redating has shown that some older radiocarbon results from Castlepook were too young, in part because of limitations in earlier bone-treatment methods. Revised work places elements of the fauna much further back in MIS 3 and suggests that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum, perhaps around 40,000 calibrated years BP.

Accordingly, mammoth, hyaena, deer and reindeer should not be assembled into a single imaginary herd beside the Awbeg in 31,731 BCE. The evidence supports a succession of animal communities across a long climatic phase. Reindeer are particularly relevant to the open vegetation indicated at Derryvree: they could exploit tundra plants and seasonal grazing. Carnivores, meanwhile, followed prey, scavenged carrion and used sheltering places. Their presence reminds us that a bone bearing marks, or found in a cave, need not automatically record human action.

The Human Question

A reindeer femur from the Castlepook collection has made this period exceptionally important for Irish prehistory. It has been reported as dating to about 33,000 years ago and carries a deep linear mark interpreted by zooarchaeologist Ruth Carden as a fresh-bone cut or chop made with a sharp stone implement. If that identification is sustained, the specimen is potential evidence that people processed a reindeer in Ireland during the earlier Upper Palaeolithic, vastly earlier than the traditionally accepted post-glacial human record.

The claim deserves attention, but also restraint. The radiocarbon result dates the animal bone, not necessarily the exact instant when the mark was made. The specimen derives from an old collection, rather than a recently excavated and securely sealed occupation floor. No associated stone-tool assemblage, hearth, dwelling, burial, ornament, artwork or repeated food-processing deposit of comparable age has been securely established in Ireland. The mark is therefore significant evidence under specialist interpretation, not a licence to reconstruct a village, named people or a continuous population.

If humans did reach Ireland at this time, the most defensible interpretation is of a small, highly mobile hunter-gatherer presence: perhaps a brief incursion, a carcass-processing episode, a seasonal hunting movement or an exploratory journey. This is an inference from the possible bone modification and from Upper Palaeolithic lifeways elsewhere in north-west Europe; it is not directly demonstrated by an Irish camp. Whether the people killed the reindeer, found it already dead, removed hide or sinew, took meat, or cracked the limb for marrow cannot be established from the reported incision alone.

Society Without a Historical Record

There is no evidence from Ireland around this point for political institutions, rulers, territorial states, diplomacy, organised warfare or formal alliances. Nor can archaeology identify a language, ethnic name, kin group or ancestry from the Derryvree sediments and Castlepook bones. It would be misleading to turn ecological competition among predators into human conflict, or to project later Irish peoples backwards across more than thirty millennia.

Religion and culture are similarly beyond direct recovery. No shrine, grave, image, musical object or personal ornament securely belongs to this date in Ireland. A possible stone-tool cut on bone would imply practical knowledge of sharp-edged lithic technology, but no particular tool is tied to the femur. It cannot

reveal what people believed, taught children, remembered about places or how they organised themselves. The absence of such evidence is not evidence that people lacked culture; it is a limit imposed by preservation and discovery.

“Economy” must also be used carefully. There is no sign of farming, domestic livestock, pottery, metalworking, fields, markets or trade networks in Ireland at this time. Any visitors would have relied on wild resources: animal meat, marrow, hides, sinews, fuel and perhaps seasonally available plants. Their ability to endure would have depended on mobility, detailed environmental knowledge and social co-operation, but these are reasonable general inferences rather than recorded Irish facts. There is no basis for claiming regular trade across the sea or permanent control of territory.

The Coming Transformation

The most important development illuminated by 31,731 BCE is therefore environmental rather than political: Ireland was approaching a profound transformation as the last ice sheet expanded. Research on glacial landforms and dates indicates that substantial areas were still ice-free around the earlier part of this period, while later advances overwhelmed much of the island. The eventual Last Glacial Maximum would erase, bury and fragment earlier landscapes, leaving cave collections and rare protected deposits such as Derryvree as incomplete witnesses.

For this reason, Derryvree’s sealed freshwater bed is more than an obscure road-cut discovery. It preserves evidence for an Ireland of tundra wetlands and shifting ecological opportunity before the later Ice Age maximum. Castlepook raises the tantalising possibility that people briefly entered that world. Neither archive provides a year-specific human story. Together, however, they show that Ireland around this broad interval was environmentally dynamic, inhabited by cold-adapted fauna, and perhaps visited by humans whose traces remain exceptionally slight.

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31730 BCE

Derryvree's Coldwater Archive^[71]



31,730 BCE is a modern chronological label, not a year that can be recovered from Irish evidence. It falls roughly 33,700 calendar years before AD 1950, within the later part of the Last Ice Age's Marine Isotope Stage 3 (MIS 3). No calendar, writing, named people or recorded events existed in Ireland. At this depth of time, even radiocarbon results produce ranges rather than anniversaries. The responsible history of this point is therefore a history of deposits, animal remains and changing climates: evidence which can illuminate a broad interval, but cannot tell us what happened in one particular year.

A Date Within a Range

The closest Irish chronological guide is Derryvree, near Maguiresbridge in County Fermanagh. Roadworks there exposed organic silts and fine sands trapped between two thick till sheets: material laid down by water in an ice-free interval, later buried beneath glacial sediment. The deposit yielded the conventional radiocarbon determination Birm-166, 30,500 radiocarbon years before present, with a substantial uncertainty of +1,170 and -1,030 years. A published calibration places it broadly between about 36,900 and 31,700 calibrated years before present. The nominal date of 31,730 BCE therefore lies near the younger end of that broad calibrated span, not at a precisely identified moment within it.

This distinction matters. The date relates to organic material in a sedimentary sequence, not to a political episode, a settlement foundation or a human life. It shows that freshwater conditions existed at Derryvree before a later ice advance covered the site. It does not prove that every part of Ireland was ice-free at once, nor that the plants and animals represented there all flourished in the same decade. Radiocarbon calibration has become more sophisticated, but the method cannot turn a deep Ice Age deposit into a modern-style annual record.

Water Between the Tills

Derryvree nevertheless gives a vivid, if local, picture. Its organic layers preserved freshwater mosses and sedges, together with an insect fauna of cold northern character. The original investigators interpreted the evidence as open tundra vegetation under a periglacial climate: ground and shallow water shaped by severe cold, seasonal freezing and thawing, rather than by forest. This was not the wooded Ireland of later prehistory. It was a sparse, exposed landscape in which wetlands and pools could persist among low vegetation, with few or no trees.

Other northern deposits strengthen that broad environmental interpretation while also demonstrating how fragmentary the record is. Organic beds at Hollymount, also near Maguiresbridge, and at Greenagho near Belcoo preserve evidence of cold, open, non-forested conditions during phases of the Midlandian, the Irish term long used for the last glacial cycle. The Greenagho date is itself a minimum age and cannot be treated as a precise contemporaneous counterpart to Derryvree. Together, however, these sites show that parts of north-central Ireland experienced intervals of non-glacial, tundra-like terrain before the major late-glacial expansion of the Irish ice sheet.

Cold, But Not Unchanging

MIS 3 was cold on the long view, yet it was climatically unstable. Greenland ice cores record repeated abrupt shifts between colder stadials and relatively milder interstadials, and Irish cave evidence indicates that those North Atlantic changes affected the island. At Crag Cave in County Kerry, episodes of calcite growth during the last glacial period imply intervals when liquid water could percolate through the cave and average annual temperatures rose above freezing. Such evidence should not be read as a weather report for 31,730 BCE. It does, though, warn against imagining a single permanent Ice Age climate.

For Ireland, local geography mattered as much as the wider climatic rhythm. A sheltered limestone cave in north Cork, a wet basin beneath what became a Fermanagh drumlin, and an upland or coastal margin could have offered sharply different conditions. Ice, snow cover, meltwater and seasonally frozen ground changed the available habitat from place to place. The landscape was already moving towards the far more extensive glaciation of the Last Glacial Maximum, but that maximum came later, principally after about 27,000 calibrated years before present. No reconstruction can responsibly draw an exact Irish ice margin for this numbered BCE year.

Caves and Animal Worlds

Southern Irish caves preserve a different kind of archive. Castlepook Cave, also called Mammoth Cave, near Doneraile in County Cork, produced a remarkable collection of Late Pleistocene animal bone during excavations in the early twentieth century. The National Museum of Ireland holds material from the cave, including spotted hyaena remains. Research on Castlepook and neighbouring caves has identified a fauna that included such cold-stage animals as reindeer, woolly mammoth, giant deer, brown bear, hare and carnivores including spotted hyaena. Not all of these animals need have occupied the cave, or even Ireland, at exactly the same time.

That qualification is crucial because caves are not neat snapshots. Carnivores may drag prey inside; scavengers, water, sediment movement and early collecting practices can mix bones from separate episodes. Modern redating has shown that several older radiocarbon measurements from southern Irish

caves underestimated the antiquity of the material, sometimes by thousands of radiocarbon years. Castlepook is consequently important evidence for a diverse MIS 3 fauna in southern Ireland, but it cannot supply a tidy census of animals present on the island in 31,730 BCE.

The Human Question

The most arresting claim associated with Castlepook concerns a reindeer femur bearing a deep linear mark. Zooarchaeologist Ruth Carden has interpreted the modification as consistent with a sharp stone tool used on fresh bone, perhaps during carcass processing. The bone has been reported as about 33,000 years old, making it potentially relevant to this broad period. If that interpretation is sustained, it would suggest that people reached Ireland during the Upper Palaeolithic, far earlier than the well-established post-glacial hunter-gatherer record.

But the wording must remain cautious. The dated object is animal bone, not a hearth or dwelling; no securely associated stone-tool assemblage, occupation surface or human remains establishes a settlement at Castlepook. A mark on a bone is important evidence requiring continued study, not proof of a permanent population, a hunting camp or a migration route. The National Museum of Ireland has continued to describe clear Palaeolithic human presence in Ireland as unproven, while recent research projects seek improved dating and ancient-DNA evidence from cave collections. For this year, the sound conclusion is that brief human visits are a live possibility, not an established chapter of Irish settlement history.

No Kingdoms, No Trade Network

Accordingly, the customary headings of political history have very limited application. There is no evidence for rulers, territories, diplomacy, warfare, tribes with recoverable names or institutions in Ireland at this time. Nor is there evidence for agriculture, livestock, villages, exchange networks or seaborne trade. The island's later traditions, languages and religious landscapes belong to vastly later eras and cannot be projected backwards into the Pleistocene.

If people did enter this environment, they would have depended on knowledge, mobility and co-operation: the ability to find shelter, fuel, water and animal resources in a severe seasonal landscape. That is an inference from the practical demands of Upper Palaeolithic life elsewhere in north-west Europe, not direct evidence for a particular Irish group. There is no basis for assigning a language, belief system, artistic tradition or social hierarchy to Ireland around this date. Even the route of any possible visitors remains uncertain. Lower sea levels altered the surrounding shelves, but neither a simple land bridge nor an easy crossing should be assumed.

A Landscape Later Erased

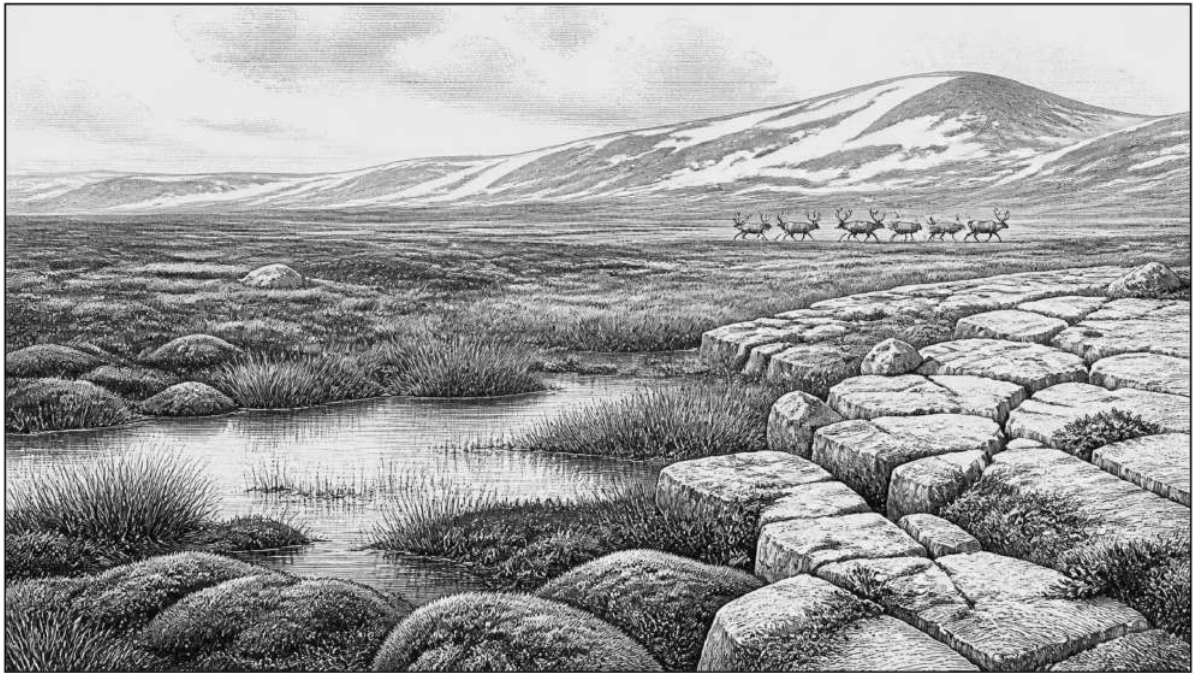
The scarcity of evidence is partly historical and partly geological. The later British–Irish Ice Sheet overran much of Ireland, eroding older surfaces, redepositing sediment and burying selected survivals beneath till. Subsequent sea-level change drowned former coastal ground. These processes mean that the absence of a campsite is not absolute proof that nobody ever stood on Irish ground; equally, loss of evidence cannot be used to invent a vanished society. Derryvree survived precisely because its water-laid sediments were sealed between tills, while Castlepook's caves protected bone in a landscape otherwise repeatedly remodelled.

The most defensible portrait of Ireland around 31,730 BCE is therefore narrow but compelling: portions of the island had recently supported, or still supported, cold open terrain with freshwater wetlands; large mammals and carnivores formed part of a changing Ice Age fauna; and climatic conditions varied on scales far beyond any calendar year. Derryvree's coldwater sediments are the clearest local anchor. They reveal an Irish landscape before the last great ice advance, and they also define the limit of what can honestly be claimed about it.

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31729 BCE

Castlepook's Reindeer Corridor^[72]



The label 31,729 BCE cannot describe a year in the ordinary historical sense. There are no written records, annual environmental archives, named communities or securely dated settlements from Ireland at this depth of time. If translated mechanically into the convention used by archaeologists, it falls around 33,700 calibrated years before present (cal BP, where “present” is AD 1950), within the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the last Ice Age. That conversion is only a modern chronological co-ordinate, not a date on which an Irish event can be placed. The responsible account is therefore one of broad, calibrated ranges and physical evidence: cave bones, buried organic sediments, pollen, insects, landforms and ice-sheet records.

At this approximate point, Ireland was not the permanently ice-covered island sometimes imagined from popular accounts of the Ice Age. Nor was it a settled country in any demonstrable sense. The best current reconstruction suggests a landscape changing rapidly over millennia and centuries as cold conditions, vegetation, sea level and expanding glaciers interacted. In some districts there was ice or an ice margin; in others, particularly at earlier stages of the period, cold open ground and freshwater habitats could support animals. The later Irish Ice Sheet would grow to a much greater extent, but its maximum expansion lay thousands of years ahead.

A Date Range, Not a Year

Radiocarbon results are not calendar dates read straight from bone or plant matter. They measure the remaining radioactive carbon in once-living material, then require calibration because atmospheric carbon-14 levels have varied. IntCal20, the standard Northern Hemisphere calibration curve, extends to 55,000 calendar years before present, but uncertainty increases substantially at great age. A single radiocarbon measurement can calibrate to a wide range, sometimes with several possible ranges.

Moreover, many Irish Ice-Age finds came from antiquarian excavations whose layers were imperfectly recorded or removed altogether. It would be misleading to say that a particular animal, let alone a person, was certainly in Ireland in the precise year 31,729 BCE.

The evidence is strongest when it is treated as overlapping windows. Organic deposits from Derryvree near Maguiresbridge, County Fermanagh, produced a conventional radiocarbon determination of 30,500 BP, with a quoted uncertainty of more than a millennium. In calibrated terms this belongs broadly to the middle and later MIS 3 world, rather than to one calendar year. Southern Irish cave fauna have likewise been re-dated using improved bone pretreatment; the new results demonstrated that several older measurements had made animals appear thousands of years too young. Such revisions are not minor technicalities: they change the chronology of when particular species occupied Ireland and caution against easy narratives.

Cold Water Beneath Fermanagh

Derryvree is among the most informative sites for conditions near this horizon. Beneath later glacial deposits, excavators found freshwater silts and fine sands containing plant and animal remains. The assemblage points to a treeless, cold landscape with wet ground: a muskeg or sedge-rich fen rather than woodland. Mosses, sedges, dwarf shrubs and cold-adapted freshwater organisms provide direct evidence of local conditions at the time the sediments accumulated. They do not reveal an unbroken national landscape. Derryvree was one basin, shaped by its own drainage, geology and proximity to ice; nevertheless, it establishes that parts of Ireland retained freshwater habitats during an interval that was later overwhelmed or transformed by glaciation.

The picture is neither an empty frozen desert nor a version of modern Ireland with fewer trees. Summer growth would have been short, winters long, and exposed ground vulnerable to frost action, wind and seasonal flooding. Tree cover was absent locally. Vegetation probably formed a patchwork of herbs, grasses, sedges, mosses and low shrubs, varying with soil moisture and shelter. Such country could feed grazing mammals, but it was a precarious resource base. The next severe climate shift or ice advance could erase habitats, redirect rivers and bury the evidence beneath till. The later draped, streamlined and drumlin-rich Irish landscape owes much to those glacial processes, although most surviving forms record later phases rather than one moment in MIS 3.

Castlepook and the Animal Record

In north County Cork, Castlepook Cave near Doneraile—also historically called Mammoth Cave—offers a very different archive. Excavations conducted chiefly between 1904 and 1913 produced a large collection of Pleistocene animal bone. Only a fraction of the originally reported material survives, but it includes remains attributed to reindeer, woolly mammoth, giant deer, wolf, Arctic fox, lemming, brown bear and spotted hyaena. The combination is powerful evidence for an open, cold environment connected ecologically to north-western Europe. It demonstrates that mammals could reach and live in Ireland during parts of the last cold stage; it does not show that all species occupied the cave together or that the cave itself was a human camp.

Hyaenas matter especially because caves can preserve the accumulated traces of carnivore activity. A cave bone assemblage may include animals dragged in as food, creatures that died naturally, bones moved by water or people, and materials disturbed by later excavation. Castlepook should therefore be read taphonomically: as a place where bones acquired, lost and mixed their histories. Modern re-dating has

placed important elements of its fauna securely within MIS 3 and suggests that giant deer and spotted hyaena disappeared locally before the Last Glacial Maximum, perhaps by about 40,000 cal BP. That is evidence for regional ecological change, not a precise extinction date.

People: A Possibility, Not a Population

The most consequential but least secure human question concerns a reindeer femur from Castlepook. It has been reported as bearing a deep mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone tool during carcass processing, and it has been publicised as evidence of human activity around 33,000 years ago. If that interpretation withstands continued scrutiny, it would indicate that people reached Ireland in the Upper Palaeolithic far earlier than the formerly accepted terminal-Pleistocene evidence. It would not prove continuous occupation, a village, a named culture or a resident population.

Caution is essential. The bone derives from an old cave collection rather than a modern, tightly excavated hearth or living floor; no associated house, stone-tool assemblage, human burial or repeated occupation surface establishes how people used the place. A 2022 excavation sought surviving Pleistocene sediments precisely because the earlier work had removed so much of the cave fill. The sensible interpretation for this period is therefore modest: perhaps occasional hunter-gatherers entered or used parts of Ireland while tracking mobile game across a broader north-west European landscape. Whether they arrived seasonally, briefly or repeatedly remains unknown.

No Politics, No Diplomacy

There is no evidence from around this date for political institutions, territorial lordship, warfare, diplomacy or organised religion in Ireland. These are not merely missing names from a record; the archaeological evidence itself is too slight to infer such structures. If people were present, they would have belonged to small, mobile Upper Palaeolithic foraging groups whose social connections, languages and identities cannot be recovered from Irish material. It is reasonable to infer practical co-operation in travel, food sharing, tool use and knowledge of seasonal animals, but not to turn that inference into a detailed social system.

Equally, there is no responsible basis for describing trade. During glacial low sea levels, the outlines of the Irish Sea basin and Celtic shelf differed greatly from those of today, and routes between Ireland, Britain and continental Europe may at times have been more practicable than later sea crossings. Yet changing coastlines do not automatically demonstrate a land bridge at this exact time, and no imported artefacts document exchange in Ireland around 33,700 cal BP. Connectivity is an environmental possibility; commerce is an unsupported claim.

Everyday Survival and Cultural Silence

If hunters visited, their economy would have depended upon wild animals and gathered plant foods, not farming. Reindeer, giant deer and other herbivores were potentially valuable sources of meat, fat, hides, sinew, antler and bone; carnivores were competitors and scavengers as well as dangers. Flint or other sharp stone flakes would have been useful for cutting hides and carcasses, though no securely associated Irish tool kit currently allows archaeologists to reconstruct techniques. Fire, clothing and temporary shelter are plausible necessities in such climates, but none is directly attested at Castlepook for this date.

Religion, art, music and formal learning are similarly beyond the Irish evidence. Human groups elsewhere in Upper Palaeolithic Europe made ornaments, images and carefully worked tools, but it is methodologically wrong to transfer those finds wholesale to Ireland. Castlepook's importance lies in its restraint: it preserves an animal world and a possible human trace rather than a complete cultural archive. The lack of evidence is not proof that people had no beliefs or knowledge; it means that neither can responsibly be specified.

An Island Becoming Harder to Occupy

The large historical development surrounding this date was environmental deterioration and ice-sheet growth. Research on the British–Irish Ice Sheet indicates significant build-up in the Irish Sea Basin by around 30,000 years ago, followed later by rapid extension towards maximum limits in the Celtic Sea and across the Atlantic shelf. Ireland's glaciation was asynchronous: ice did not advance everywhere at once, and local topography shaped the survival of ice-free ground, wetlands and animal corridors. Around 31,729 BCE, Ireland belonged to that long transition, not yet to the simplest image of total glacial cover.

For Ireland, then, the most meaningful history of this notional year is not a king, battle or foundation. It is the coexistence of cold freshwater basins in Fermanagh, open-animal habitats evidenced in Cork caves, possible fleeting human use, and an ice-sheet system gaining strength. Later ice would scour, transport and bury much of the earlier record. What remains is fragmentary but significant: a warning against year-by-year certainty, and a rare glimpse of Ireland as a changing Ice-Age frontier.

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31728 BCE

Derryvree's Water-Milfoil Record ^[73]



The label 31,728 BCE is a modern chronological convenience, not a date that can be matched to a recorded Irish event. No people in Ireland used a calendar of this kind; there are no writings, rulers, settlements or securely dated episodes from which the history of one exact year can be recovered. In the scientific convention of years before AD 1950, it falls roughly 33,677 years before present. That places it in the Late Pleistocene, broadly within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable part of the last Ice Age.

Modern calendar-year precision is not available at this depth of time. Radiocarbon measurements must be calibrated, their uncertainty is substantial, and a dated deposit may have formed over years, centuries or longer. The responsible question is therefore not what happened in Ireland in one notional year, but what the best archaeological, geological and palaeoenvironmental evidence can illuminate about the island around the later part of MIS 3. The answer is a history principally of cold environments, changing ice margins, animal movement and very fragmentary traces whose interpretation remains contested.

A Date Within a Wide Range

The closest well-known Irish environmental sequence is at Derryvree near Maguiresbridge, County Fermanagh. Road works exposed organic freshwater silts and fine sands lying between two layers of glacial till within a drumlin. Till is debris deposited directly by glacier ice. The sequence therefore establishes an important order of events: an earlier phase of glaciation, an interval in which freshwater sediments, plants and small animals accumulated, and a later ice advance that sealed the deposit beneath more till.

Organic material from Derryvree produced a conventional radiocarbon age of about $30,500 \pm 1,100$ radiocarbon years BP. When translated through modern calibration methods, this has been placed broadly around 36,900–31,700 calibrated years BP. The notional year 31,728 BCE falls within that broad range, but it cannot be identified as the moment when the basin formed, when a particular plant grew, or when a particular animal passed by. Derryvree is evidence for an interval, not a diary.

That distinction matters because Irish Ice Age chronology has repeatedly been refined. Older schemes applied local names such as the Derryvree Cold Phase or Middle Midlandian; modern researchers commonly relate the wider interval to MIS 3 and compare it with evidence from the British–Irish Ice Sheet, surrounding seas and continental Europe. These frameworks are useful, but they should not conceal uneven evidence. A deposit in Fermanagh cannot provide a complete weather map for Ireland, while dates from a Cork cave cannot demonstrate that every animal listed there lived together.

Freshwater on Cold Ground

Derryvree's fossils nevertheless offer an unusually vivid local picture. Plant macrofossils, pollen and insect remains indicate a cold, open, largely treeless setting with freshwater and wet ground. Mosses, sedges, bogbean, water-milfoil, dwarf willow, lesser clubmoss and mountain avens occur among the indicators discussed from the deposit. Such species do not reconstruct a familiar green, wooded Ireland. They point instead towards a periglacial landscape: one strongly shaped by severe cold, frost action, short growing seasons and probably seasonal contrasts.

“Periglacial” should not be imagined as a permanent wall of ice standing immediately beside every pool. It describes terrain affected by conditions associated with glaciation, including frozen or seasonally frozen soils, sparse vegetation and unstable surfaces. At Derryvree, shallow water and marshy margins evidently persisted long enough for organic sediments to form. That is significant evidence that at least some north-central Irish ground was not continuously smothered by glacier ice during the relevant span.

Other deposits in Ulster, including organic horizons at Greenagho, Hollymount and Aghnadarragh, reinforce the broader point that the island's Ice Age history was not a simple alternation between total ice cover and modern-like countryside. They preserve evidence for changing cold environments between phases of glaciation. Yet their ages and local settings differ. They support regional comparison, not the invention of a single island-wide landscape for 31,728 BCE.

Castlepook and the Animal World

The strongest evidence for large mammals comes from Castlepook Cave, also known as Mammoth Cave, near Doneraile in north County Cork. Its limestone chambers yielded one of Ireland's richest Pleistocene bone collections during excavations undertaken mainly in the early twentieth century. Later dating and reassessment have shown that its faunal record spans a long portion of the Ice Age, rather than one brief episode. Individual dates range broadly from about 45,700 to 19,950 years BP.

Among the cold-stage animals represented are woolly mammoth, reindeer, giant deer, brown bear, wolf, red fox, Arctic fox, collared lemming, Norwegian lemming and spotted hyaena. The assemblage demonstrates that Ireland was accessible to a varied cold-climate fauna during parts of the period leading towards the Last Glacial Maximum. Reindeer and lemmings are especially useful reminders that the ecological setting could be far more open and northern in character than later Irish landscapes.

But the cave was not a census point. Bones may have been brought in by hyaenas, washed or disturbed by water, moved during earlier excavations, or derived from different deposits and ages. Spotted hyaena in particular may have accumulated carcass remains in the cave. Castlepook therefore supports the presence of these animals in Ireland across a long interval; it does not prove that mammoth, hyaena, reindeer and every smaller species shared the Awbeg Valley in the same decade, still less the same year.

The landscape beyond the cave was also different in scale. Lower global sea levels exposed continental shelf areas now submerged, although local ice loading, changing coastlines and sea level make the exact routes between Ireland, Britain and mainland Europe difficult to reconstruct. The fauna confirms that dispersal occurred when conditions allowed it. It does not establish a simple, continuously dry land bridge available at every point in MIS 3.

The Human Question

Human presence is the most sensitive issue. A reindeer femur from Castlepook, recovered in 1972 and later re-examined, has been reported as approximately 33,000 years old and as bearing a deep modification interpreted by Ruth Carden as a sharp-tool cut or chop associated with carcass processing. If that interpretation is confirmed, it would be extraordinarily important: it could indicate a brief Upper Palaeolithic human visit to Ireland more than 20,000 years before the previously accepted evidence of human activity.

It should not, however, be enlarged into a story of an established Ice Age population. The bone is not accompanied by a securely stratified stone-tool industry, hearth, dwelling, burial, artwork or occupation surface of comparable age. Recent archaeological work at Castlepook has confirmed that Pleistocene deposits survive and merit further investigation, but it has not produced proof of a permanent settlement in the period considered here. The National Museum of Ireland continues to state that clear evidence for humans in Ireland during the Palaeolithic has not yet emerged.

The careful conclusion is thus twofold. The marked reindeer bone is a serious and potentially transformative piece of evidence, deserving continued specialist study of its dating, surface modification and archaeological context. It is not yet a basis for naming a people, describing a camp, assigning territory or claiming continuous occupation. At 31,728 BCE, the archaeological record permits possibility, not a settled human history.

No Politics, No Recorded Beliefs

There is no evidence from Ireland around this time for political institutions, chiefs, kingship, diplomacy, warfare, law or collective identities that can responsibly be described. Nor is there evidence for religious monuments, formal burials, ritual practice, art, language or learning. These absences are not proof that no visiting people possessed beliefs, skills or social relationships; any human group entering Ireland would necessarily have had them. Rather, the Irish evidence does not preserve them in a form that allows historical description.

For the same reason, economy and trade must be treated narrowly. There were no demonstrated farms, fields, livestock, metalwork, exchange networks or built settlements. The most defensible economic interpretation concerns the animal world: herbivores such as reindeer and mammoth could exploit seasonal vegetation, while carnivores and scavengers followed prey or carcasses. If people briefly reached the island, the proposed modification of the Castlepook reindeer bone suggests the practical processing of meat or hide, but one bone cannot reveal a wider subsistence system.

Approaching a Greater Freeze

The larger historical development was environmental change. The Last Glacial Maximum lay ahead rather than precisely at this point: major reconstructions show that the British–Irish Ice Sheet grew and changed configuration over time, with different sectors advancing and retreating differently. By roughly 29,000–12,000 years ago, during MIS 2, extensive parts of Ireland, Britain and their surrounding shelves were covered by kilometre-thick ice. The advance and later erosion of that ice destroyed, displaced or buried many older land surfaces, helping to explain why Ireland’s record of this age is so sparse.

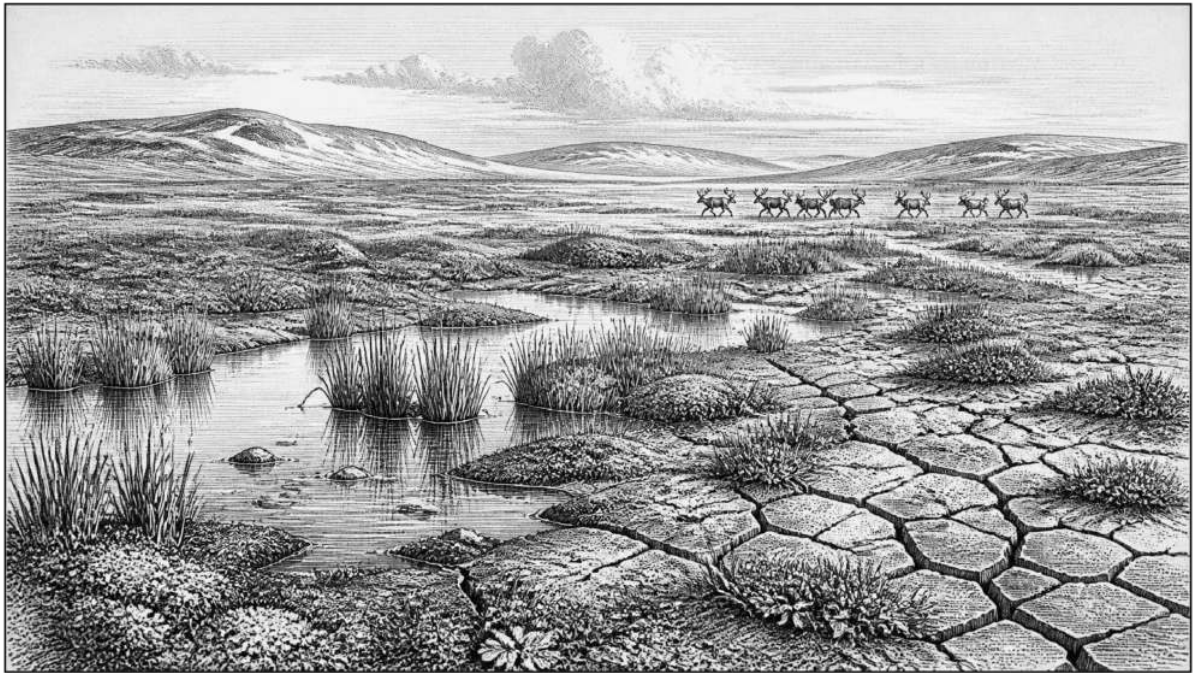
Accordingly, Derryvree’s water-milfoil pollen and wetland silts are historically weightier than any imagined scene of tribal life. They reveal that cold freshwater habitats and hardy plants existed during a window between glacial episodes. Castlepook’s bones show that large mammals entered or occupied parts of Ireland during the wider Ice Age interval. Together they replace an outdated picture of an eternally frozen island with one of environmental fluctuation, local refuges or ice-free ground, and repeated ecological opportunity constrained by severe cold.

Ireland around 31,728 BCE was not yet a country of recorded communities. It was a changing Ice Age landscape whose story survives unevenly in sediments, fossils, cave deposits and the difficult science of dating them. The evidence is enough to establish cold wetlands, open ground, mobile fauna and looming glacial transformation. It is not enough to populate the island with named hunters, conflicts, beliefs or a calendar-bound event. That restraint is not a failure of history; it is the clearest account the evidence permits.

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31727 BCE

Derryvree's Muskeg Interlude^[74]



31,727 BCE is a modern calendar label, not a recoverable Irish historical year. No written record, settlement sequence or deposit can be assigned to that single year. In archaeological terms it indicates a point roughly 33,700 calendar years before 1950, during the Late Pleistocene and broadly within Marine Isotope Stage 3 (MIS 3). The evidence is necessarily regional and ranged: radiocarbon determinations, fossil bones, pollen and insect remains, cave sediments, and traces of ice movement. These can illuminate the kind of Ireland that existed around this time, but not provide an annual chronicle.

The period lay before the Last Glacial Maximum, when the British–Irish Ice Sheet achieved its greatest late-ice-age extent. It was nevertheless a severe and unstable world. MIS 3 was not one uniform “Ice Age climate”, but a long span of alternating cold phases and relatively milder interstadials. Ireland stood at Europe’s north-western edge, exposed to Atlantic weather, shifting ice margins and changing sea levels. Later glaciers eroded or buried much of the older terrain, leaving a fragmentary archive rather than a continuous landscape history.

Dating a Lost Landscape

The apparent precision of 31,727 BCE must not be mistaken for scientific precision. Radiocarbon laboratories measure the residual carbon-14 in a sample and report an age in radiocarbon years before present, where “present” is conventionally 1950. Such measurements have margins of error and must be calibrated because atmospheric carbon-14 has varied markedly through time. At an age of more than thirty millennia, calibration commonly produces broad and sometimes irregular probability ranges rather than a neat calendar date.

The best relevant northern Irish sequence is at Derryvree, near Maguiresbridge in County Fermanagh. Road cutting through a drumlin in 1969 exposed freshwater silts and fine sands trapped between two thick sheets of till, the unsorted debris deposited by glacier ice. The order of those layers is decisive evidence: ice had occupied the locality; an ice-free interval followed in which water, sediment and organic remains accumulated; later ice advanced and sealed the deposit beneath another till.

Organic material from the Derryvree silts produced the important determination Birm-166, approximately 30,500 radiocarbon years BP, with a substantial uncertainty. Published discussion and modern calibration place its relevant calendar-age range broadly in the later MIS 3 interval, approximately 36,900–31,700 calibrated years BP, depending on the calibration model and confidence range used. The nominal year in this article falls within that broad window. It cannot, however, identify a particular season, generation or event at Derryvree.

Freshwater Between the Tills

Derryvree provides an unusually direct environmental picture. Its fossil plants and animals indicated open tundra vegetation and a periglacial regime: ground affected by frost and cold seasonal conditions, but not covered by an active glacier at the moment the freshwater sediments formed. The older terminology of a “muskeg” landscape usefully conveys wet, peaty or marshy ground, although it should not be imagined as an exact replica of any modern northern bog.

Low vegetation, sedges, mosses and hardy herbaceous plants could occupy wet hollows, pool margins and shallow channels. Dwarf shrubs may have found shelter where soils, slope and snow cover allowed. There is no evidence for a dense forest comparable with later Holocene Ireland. The ecological mosaic was likely open, exposed and highly seasonal, combining wetland pockets with bare mineral ground, grass- and herb-rich patches, frost-shattered slopes and local drainage lines.

This was not necessarily the same landscape across the whole island. Derryvree records one Fermanagh locality, not a national average. Yet its position between tills demonstrates a major regional change: northern ground that had supported freshwater life during this interval was subsequently overridden or buried as the last Irish ice sheet expanded. The landforms familiar in modern Ireland—drumlins, tills, erratic boulders and altered drainage systems—are in part the long-term legacy of those later glacial advances.

Castlepook’s Animal World

For the animal life of Ireland near this broad horizon, Castlepook Cave near Doneraile in north County Cork is indispensable. Excavations and collections from the cave have produced more than two thousand bones. They include remains attributed to woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena; other late-ice-age finds include wolf, Arctic fox and lemmings. Improved radiocarbon pretreatment has shown that parts of the southern Irish cave fauna are older than earlier dating suggested, reaching well back into MIS 3.

The assemblage should not be read as a single day’s census, or even as one perfectly simultaneous community. Caves are selective archives. Carnivores carry prey and carrion into them; hyaenas can accumulate bones in dens; water and gravity can move deposits; and early twentieth-century excavation took place before modern stratigraphic practice. Individual bones from Castlepook span a long period. Nevertheless, the collection establishes that Ireland supported, or was repeatedly visited by, cold-adapted large mammals and predators before the maximum ice expansion.

Reindeer are especially informative. Their presence supports an interpretation of open country capable of sustaining grazing herds, rather than closed woodland. Mammoth and giant deer reinforce the impression of a richer Pleistocene fauna than historic Ireland possessed. Predators and scavengers were also part of this food web. Spotted hyaenas in particular help explain the cave's bone concentrations, while wolves and bears point to a varied carnivore guild. Fossils show occurrence, not population size: they cannot establish how common any species was in a particular county or year.

The Uncertain Human Trace

A reindeer femur from Castlepook has made this period especially significant for Irish archaeology. It has been reported as about 33,000 years old and bears a deep linear mark interpreted by zoologist Ruth Carden as damage made by a sharp stone implement during the processing of fresh bone. If that interpretation is confirmed through continuing study, it would indicate a remarkably early episode of human activity in Ireland, far before the island's better-established terminal-Pleistocene and Mesolithic evidence.

The proper conclusion remains cautious. The femur derives from an old cave collection, rather than a newly excavated camp floor with an intact sequence of associated tools, hearths and habitation debris. A radiocarbon result dates the animal bone itself; it does not automatically date the making of every mark upon it, nor establish a human settlement. Carnivore damage, sediment movement, weathering and the history of recovery all matter in taphonomic assessment. No securely associated stone-tool assemblage, dwelling, burial or repeatedly occupied site of this age has yet transformed Castlepook into proof of a permanent population.

Thus, human presence around 31,727 BCE is possible and potentially momentous, but not settled fact. The reindeer femur is best treated as a question of early visitation or animal processing, not evidence for an Irish people, tribe or enduring colony. It is precisely the kind of fragile clue that warrants further microscopic study, redating and controlled excavation.

Life Without a Political Record

There is no basis for describing governments, leaders, territories, diplomacy, warfare, religious institutions, formal learning or named communities at this date. Nor is there evidence for farming, permanent villages, craft specialisation or regular trade within Ireland. If people did reach the island, they would have belonged to Upper Palaeolithic hunter-gatherer worlds known elsewhere in north-west Europe, dependent upon mobility, detailed environmental knowledge and flexible use of animal and plant resources. That is an inference from wider European archaeology, not a directly demonstrated social portrait of Ireland.

The practical challenges would have been considerable. Cold, wind, variable snow cover and sparse winter food placed a premium on sheltered ground, fuel, clothing, routes and timely movement. The reindeer femur, if humanly modified, could imply the value of meat, marrow, hide or sinew; it cannot reveal the size of a group, its language, beliefs or duration of stay. The absence of evidence for homes or tools may partly reflect later glacial erosion and the limited survival of open-air sites, but absence cannot be converted into proof that people were present.

Changing Shores and Approaching Ice

Sea level was lower than today because vast quantities of water were held in northern ice sheets. Ireland's coastline and the surrounding shelf were therefore markedly different, with more land exposed in some coastal areas. This did not necessarily create a simple, permanent walking route to Britain or continental Europe. Deep basins, tidal channels, sea ice, glaciers and changing shorelines made connectivity variable. Animal or human arrival depended on the geography and weather of particular intervals, not upon an assumed land bridge.

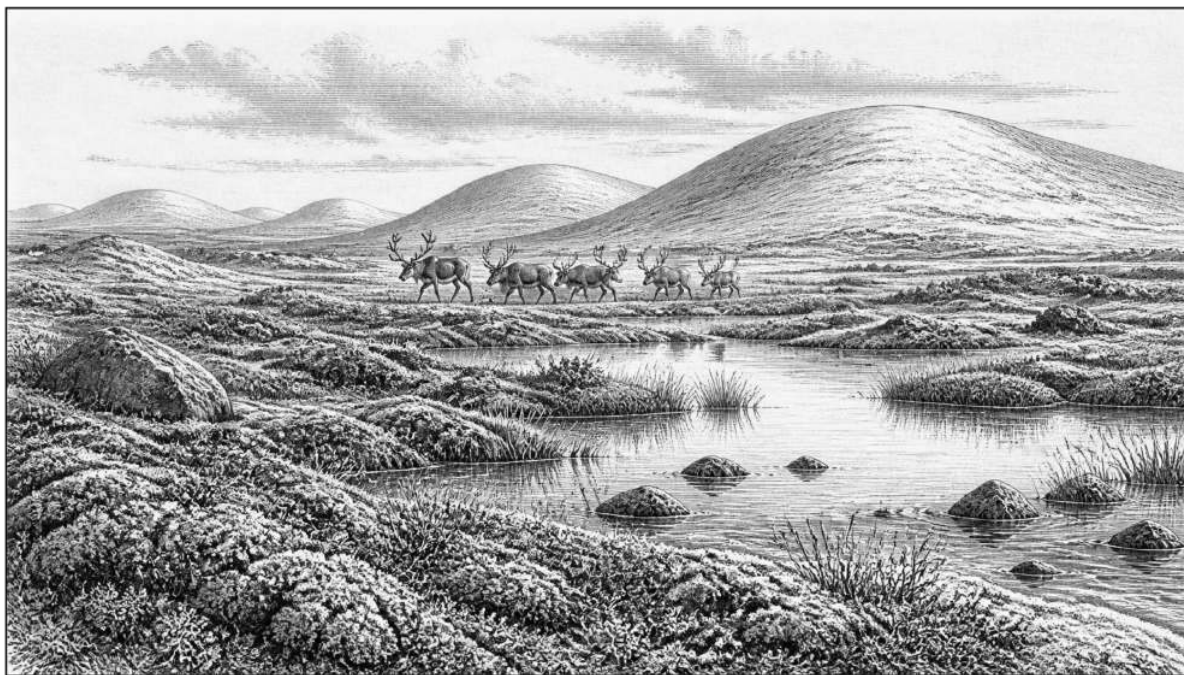
The larger development was the approach of renewed glaciation. Derryvree's upper till shows that its freshwater tundra environment did not last indefinitely. During the following millennia the last Irish ice sheet thickened and expanded, ultimately remodelling much of the island. Around 31,727 BCE, therefore, Ireland was neither an empty white ice cap nor a familiar green island. It was a changing, partly ice-free northern landscape in which wetlands and open tundra could coexist with an increasingly powerful glacial system.

Its history survives in silts beneath a Fermanagh drumlin and bones in a Cork cave. Those records do not yield a year-by-year narrative, but they do preserve something more valuable than speculation: evidence that late-Pleistocene Ireland was ecologically active, climatically unsettled and still open to profound questions about animals, people and the coming ice.

Chapter 075 of 100

31726 BCE

Birm-166's Pollen Archive^[75]



31,726 BCE is a modern chronological label, not a year that can be recovered from Ireland's prehistoric record. No Irish community wrote a date, named a ruler or left an event that can responsibly be assigned to this particular year. In calendar terms it corresponds to roughly 33,676 years before AD 1950, but archaeological dating at this depth works with probability ranges rather than annual precision. The most useful evidence comes from Late Pleistocene deposits dated broadly to Marine Isotope Stage 3 (MIS 3), especially the organic sediments at Derryvree near Maguiresbridge in County Fermanagh. Their calibrated range of about 36,900–31,700 years before present encompasses this point in time, but does not isolate it.

A Date Within a Range

The distinction matters. A radiocarbon result measures the remaining carbon-14 in once-living material; it is not a direct reading of a calendar. Atmospheric carbon-14 varied through time, so results must be calibrated against internationally maintained curves. Even with modern calibration, a sample this old commonly produces a wide calendar interval. The Derryvree material yielded a conventional age of 30,500 radiocarbon years BP, with substantial uncertainty; later calibration places it somewhere within a long span that roughly overlaps several abrupt Greenland interstadial episodes. It is therefore sound to say that Derryvree illuminates Ireland *around* 31,726 BCE, but not that its plants, insects or watercourse belonged to that exact year.

This was the later part of the Last Ice Age, but not the Last Glacial Maximum. The British–Irish Ice Sheet eventually reached its greatest overall volume much later, around 23,000 years ago, while its margins expanded and retreated asynchronously between roughly 30,000 and 22,000 years ago. Ireland at

this earlier point should not be imagined either as uniformly ice-covered or as a mild, wooded island. It was a climatically unstable northern landscape in which conditions varied sharply between regions and through time.

The Derryvree Freshwater Record

Derryvree is invaluable because a road cutting through a drumlin exposed freshwater silts and fine sands trapped between two thick tills: deposits left by separate phases of glacial action. The intervening organic layer showed that, for a period, the locality had not been overridden by ice. It preserved pollen, plant remains and insects from a wet, cold environment. The evidence indicates open, treeless tundra-like ground and a periglacial climate, rather than forest or farmland. Mosses and sedges grew around shallow water and plant-rich pools; the assemblage has been described as a muskeg environment, a waterlogged mosaic rather than a single uniform plain.

That is evidence of a particular locality, not a complete weather report for Ireland. The organic silts prove that an ice-free or ice-marginal freshwater setting existed at Derryvree during the dated interval. They do not establish identical conditions in Cork, the western seaboard or every upland. Nor can they identify an exact season, rainfall total or temperature for 31,726 BCE. Nevertheless, they correct the old picture of an unchanging frozen island. Northern Ireland contained places where standing or slowly moving water, low vegetation and small invertebrate communities persisted between glacial episodes.

Open Ground and Moving Ice

The wider setting was one of ecological opportunity constrained by cold. Periglacial conditions mean that ground could freeze deeply and experience repeated thawing, with frost disturbance, sparse shrub growth and long winters. The vegetation inferred at Derryvree would have offered seasonal forage to grazing animals, but it was not the rich deciduous woodland familiar from later Irish history. Ice was an active regional force: earlier till lay beneath the organic bed and later till sealed it. In that simple sequence lies a large historical fact—habitable or at least biologically productive ground could be overtaken and its surface evidence destroyed by later glaciation.

Sea level was markedly lower than today because so much water was held in continental ice sheets. Yet lower seas do not prove an easy, continuous land route from continental Europe to Ireland. Coastlines, channels, ice margins and the extent of exposed shelf changed repeatedly, while the relevant geography remains difficult to reconstruct at fine chronological resolution. Animals and, if present, people may have moved through changing north-west European landscapes, but the evidence does not permit a precise route, crossing point or migration calendar.

Castlepook's Animal Evidence

The richest direct evidence for Irish animal life in the broad period comes from Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Antiquarian excavations recovered more than 2,000 bones from its limestone passages. Direct dates on individual specimens span a very long interval, approximately 45,700 to 19,950 years BP. The cave is thus a repository accumulated across many millennia, not a snapshot of one herd or one season. Water disturbance, carnivore activity and early excavation methods further limit attempts to arrange every bone into a single story.

Even so, Castlepook demonstrates that Ice Age Ireland supported a fauna far more varied than the island's later historic mammal community. Its assemblage includes woolly mammoth, reindeer, giant deer, brown bear and spotted hyena; later cold-stage material also includes wolf, Arctic fox and lemmings. A National Museum of Ireland specimen records the physical presence of spotted hyena at Castlepook, while the cave's fauna points to open grazing country, carrion, predation and mobile animal populations. It would be wrong, however, to assume that every listed species lived together at 31,726 BCE. They are securely relevant to the cave's long Pleistocene history, not a census for a single year.

For everyday animal life, reindeer are especially suggestive. In seasonal open country they could supply meat, fat, hide, sinew and bone to human hunters; equally, they formed prey and carrion within a carnivore-rich ecosystem. Mammoths, giant deer and hyenas make clear that Ireland's ecological past cannot be projected backwards from the later island of cattle, sheep, red deer and humans. The cave record also warns that survival in a museum drawer is selective: robust bones, sheltered caves and nineteenth- and early twentieth-century collecting practices shape what can now be known.

The Human Question

A reindeer femur from Castlepook is the most provocative object relevant to this era. County Cork heritage material dates it broadly to about 31,000 BC and reports a deep mark interpreted by zooarchaeologist Ruth Carden as damage from a sharp stone tool during butchery. If that interpretation is confirmed, it would indicate that people handled and processed a reindeer in Ireland during the Upper Palaeolithic, enormously earlier than the better-attested terminal Pleistocene evidence. The object deserves attention precisely because it challenges a long-standing assumption that human activity began much later.

But the limits are as important as the possibility. The radiocarbon result dates the animal bone, not an identifiable person, camp or social group. The diagnosis of a human-made incision is a separate taphonomic interpretation, which must be distinguished from carnivore damage, breakage, sediment movement and collecting damage. Nor was the femur recovered from a modern excavation of an intact occupation floor with associated stone tools, hearths, shelters and repeated food debris. No securely dated Upper Palaeolithic lithic assemblage has yet been established at Castlepook. The responsible conclusion is therefore modest: the bone may preserve evidence of human butchery, but it does not prove a permanent population, a village or continuity with later inhabitants.

No Kingdoms, No Recorded Wars

There is no basis for describing political affairs, diplomacy, chieftainship, territorial boundaries or organised warfare in Ireland at this date. There are no names, monuments, burials, houses, written words or recognisable cultural assemblages from which such institutions could be reconstructed. If small groups of people did reach the island, they would have operated within the practical demands of movement, shelter, fuel, food and safety in a cold landscape. That inference follows from the environment, not from direct evidence of Irish social organisation.

The same restraint applies to religion, language, learning and art. Caves have acquired ritual significance in many later societies, but Castlepook's Ice Age fauna does not make it a shrine. There is no evidence here for ceremonies, sacred places, exchange networks or formal teaching. Nor can the possible

butchery mark tell us whether hunters came from Britain, farther continental Europe or a local group. It offers a narrow potential trace of an encounter between people and an animal, not a recoverable biography.

Regional Change and Historical Loss

What can be said with confidence is that Ireland was not historically empty in the environmental sense. Its landscapes contained water, tundra vegetation, insects and mammals; in some places they lay beyond, or temporarily between, advances of ice. The Derryvree deposits in Fermanagh and the Castlepook bones in Cork are separated by geography, depositional setting and chronological uncertainty, yet together show an island of regional contrasts. Freshwater silts record cold wetland life in the north; cave remains record large mammals and carnivores in the south.

Later glacial expansion erased or buried much of the evidence that might have answered larger questions. That destruction is itself part of the history of 31,726 BCE. Rather than supplying a conventional annual chronicle, Ireland offers fragmentary archives: pollen in silt, insect remains, cave bones, radiocarbon measurements and the marks left by ice. Their combined message is compelling but bounded—an unstable, open and inhabited-by-animals landscape at Europe's north-western edge, with a serious but still incomplete possibility of very early human visitors.

Chapter 076 of 100

31725 BCE

Derryvree's Bogbean Marsh^[76]



The label 31,725 BCE is a modern filing device, not a recoverable Irish year of events. No calendar, writing, named ruler, community, battle or settlement allows historians to describe what happened in Ireland in that particular year. In archaeological usage it falls roughly 33,700 calibrated years before present, where “present” conventionally means AD 1950. That conversion is only approximate. At this depth of time, radiocarbon results have laboratory errors, require calibration against changing atmospheric carbon, and normally resolve ranges of centuries or millennia rather than a single year.

The responsible subject is therefore Ireland during the later part of the Late Pleistocene, broadly Marine Isotope Stage 3 (MIS 3): a long, climatically unstable phase before the Last Glacial Maximum. The nearest useful Irish evidence is not an annal but a sequence of buried sediments at Derryvree near Maguiresbridge, County Fermanagh. It gives a rare, local glimpse of cold-country life in a landscape later altered and sealed by glacier ice. Cave bones in Cork, cave calcite in Kerry, and landforms and offshore sediments around the island extend the picture, but none provides a day-by-day history.

Between Two Ice Advances

At Derryvree, road-cutting through a drumlin in 1969 exposed organic silts and fine sands between two tills: dense, unsorted deposits left by moving ice. The lower till belongs to an earlier glacial episode; the upper till records a later advance. Between them lay the remains of a freshwater environment. Organic material from this middle unit returned a conventional radiocarbon age of 30,500 years BP, with a large uncertainty. Later calibration places its possible age broadly around 36,900–31,700 calibrated years BP.

The modern label 31,725 BCE lies close to the younger edge of that wide span. It is reasonable to use Derryvree as evidence for the environmental world around this date-range, but not to claim that the marsh existed in precisely 31,725 BCE.

The deposits indicate that south Fermanagh was not continuously buried beneath ice throughout the relevant interval. Freshwater mosses and sedges, pollen of herbaceous plants, plant macrofossils and cold-adapted insects accumulated in a wet hollow. One notable find was a seed of bogbean, *Menyanthes trifoliata*, a plant of shallow, wet ground. Such evidence points to a marshy or muskeg-like freshwater setting surrounded by sparse, open vegetation. It does not recreate a complete landscape map: pollen can travel, preservation is selective, and the exposed section represents one place rather than all of Ireland. Nevertheless, it is unusually direct evidence that living plants, insects and standing or slow-moving freshwater existed in at least part of the country before the later ice advance.

The climate was periglacial: intensely cold and shaped by repeated freezing and thawing, but not necessarily glaciated at the spot where the organic layers formed. The broad inference is a treeless tundra or tundra-steppe environment, with mosses, sedges and herbs exploiting wet ground and a thin seasonal growing period. Bare mineral soil, frost-disturbed surfaces and exposed slopes probably alternated with wetter basins. This was not the Ireland of oak woods, blanket bogs and enclosed fields. Yet it was not simply a lifeless white expanse either. The Derryvree record matters because it preserves a functioning cold-climate ecosystem.

An Uneven Irish Ice Sheet

It would be misleading to imagine one simple frontier between an ice-covered north and an ice-free south. The British–Irish Ice Sheet changed repeatedly in size and flow during the last glacial period. Evidence from tills, marine sediments, exposure dating and landforms shows that its margins were mobile and that different sectors responded differently to climate and sea level. In western Ireland, radiocarbon evidence from marine deposits has been interpreted as showing substantial ice loading and fluctuations before the Last Glacial Maximum. Other reconstructions indicate that large parts of Ireland were ice-free until at least about 34,000 years ago, while also emphasising regional uncertainty.

For the period represented by 31,725 BCE, the safest description is one of change rather than a fixed national condition. Northern freshwater deposits such as Derryvree and Greenagho show that non-glacial conditions occurred in parts of Fermanagh during MIS 3. Conversely, earlier and later tills prove that glacier ice had reached those areas at other times. In the south-west, uranium-thorium dates from broken and reworked speleothems in Crag Cave, County Kerry, show episodic calcite growth through MIS 3. In shallow caves, dripstone can form only when liquid water infiltrates the ground and conditions are sufficiently mild for soil carbon dioxide and percolation. Its growth is therefore evidence for intervals of climatic amelioration, not for permanently benign weather.

These Irish records fit a wider North Atlantic pattern of abrupt millennial-scale shifts, often correlated with Greenland interstadials and stadials. Correlation is useful but should not erase uncertainty. A Greenland ice-core event, a Fermanagh marsh deposit and a Kerry stalagmite are dated by different methods and have different resolutions. They show that Ireland was affected by wider climatic oscillations; they do not permit the weather, season or shoreline of 31,725 BCE to be specified exactly.

Animals and Their Fragile Record

Animal bones from Irish caves offer another, separate line of evidence. Castlepook Cave, near Doneraile in north County Cork, is especially important because it has yielded pre- and post-Last Glacial Maximum faunal material. The wider MIS 3 cave record includes large mammals associated with cold, open environments, among them giant deer, reindeer, brown bear, wolf, Arctic fox, lemmings and, in some deposits, spotted hyaena and woolly mammoth. These animals establish that Ireland could be reached by a varied Pleistocene fauna during favourable phases of the last glacial period.

That statement needs two qualifications. First, a cave assemblage is not a census of animals living together on one day. Carnivores may carry bones into caves; water, collapse and excavation can mix deposits; and an individual bone may pre-date or post-date another by thousands of years. Secondly, improved ultrafiltration pretreatment and re-dating have shown that several older Irish radiocarbon determinations were too young. A major reassessment of Castlepook material moved some specimens substantially further back in time and suggests that giant deer and spotted hyaena may have disappeared locally before about 40,000 calibrated years BP. The cave evidence is consequently powerful, but it must be read specimen by specimen rather than as an unchanging Ice Age menagerie.

Reindeer are particularly evocative because their seasonal movements and use of open ground make them plausible inhabitants of this cold world. Their presence in the broader Irish Pleistocene record does not prove a herd at Derryvree in this exact calendar-labelled year. Nor do the bones demonstrate a stable land bridge or a single route of arrival. Lower global sea levels altered the configuration of coasts and shallow seas, but the changing ice sheet, local sea level and routes across the Irish Sea basin were complex. It is safer to say that animal movement between Ireland and the wider north-west European region was possible at intervals than to draw a definite corridor for 31,725 BCE.

The Human Question

No securely dated human habitation, hearth, stone-tool assemblage or burial establishes a resident human population in Ireland at about 33,700 calibrated years BP. This absence is central, not a gap to be filled with a story. Mainland north-west Europe had Upper Palaeolithic hunter-gatherers, and Britain preserves evidence of human visits in parts of the period, but neither fact demonstrates that people crossed into Ireland. The island's changing geography and harsh climate may have made such movement difficult, while the scarcity and disturbance of surviving deposits make detection difficult as well.

A reported possible cut mark on a reindeer bone from Castlepook has sometimes been discussed as potential evidence that people processed an animal in Ireland during MIS 3. It is an intriguing claim, but it is not a securely associated archaeological occupation. One ambiguous modification on a cave bone cannot establish the date, scale, continuity, identity or route of human activity. The evidence permits the possibility of brief human incursions; it does not responsibly support a settled Irish Upper Palaeolithic society at this point.

Accordingly, there is no evidential basis for political affairs, diplomacy, warfare, law, language, religious institutions, formal learning, trade networks, villages or households in Ireland in 31,725 BCE. If humans did visit, they would have depended on mobile hunter-gatherer knowledge: reading animal movements, finding shelter and fuel, maintaining tools and surviving severe seasonality. But that is an inference from comparable Upper Palaeolithic societies elsewhere, not a description of documented Irish people. No Irish artefact or settlement allows those possibilities to be converted into fact.

A Landscape Without an Annal

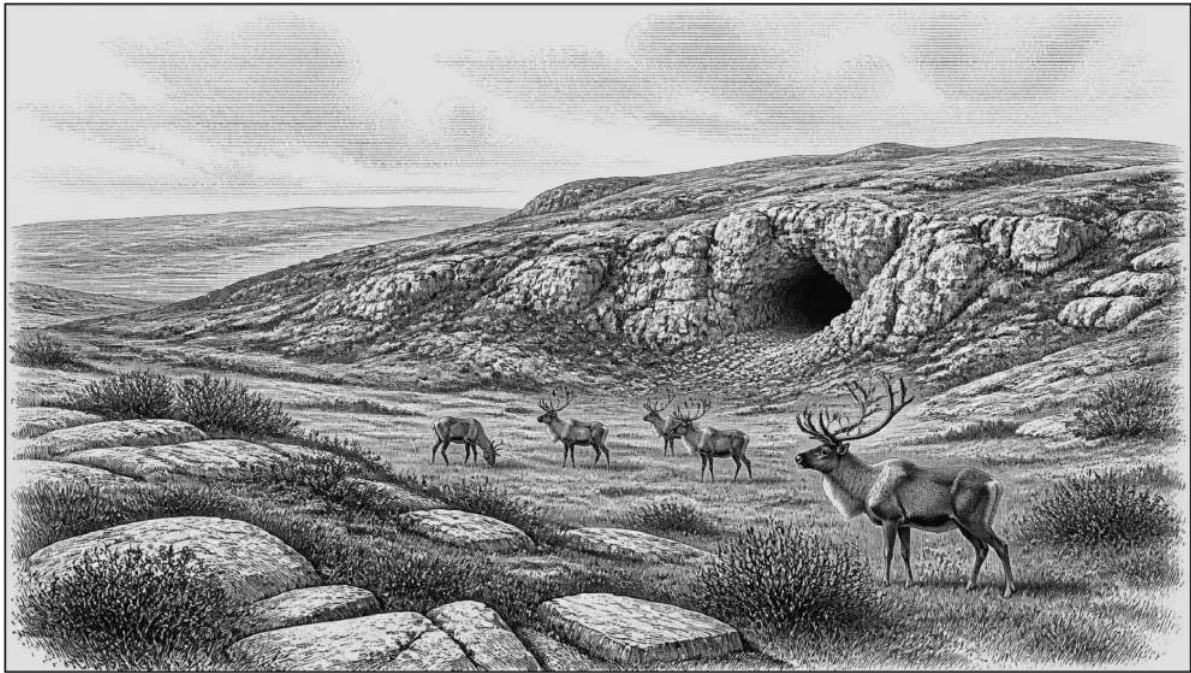
The economic reality that can be securely described is ecological rather than human. Wetland plants captured sunlight during a short growing season; insects and small animals occupied the marsh and its margins; larger mammals ranged through some Irish landscapes over the wider MIS 3 interval. Predation, scavenging and migration were the forms of conflict we can observe most closely. The deposits themselves show environmental succession: waterborne silts, organic matter and fossils accumulated in a basin, then later ice overran or covered the landscape, preserving the evidence beneath till.

The most important development around this modernly numbered date was therefore neither a king's accession nor a migration recorded in speech or writing. It was Ireland's position near an environmental threshold. Derryvree's bogbean, mosses, sedges and insects record an ice-age wetland during a cold, open phase. Castlepook's difficult bone archive shows that substantial mammals reached Ireland at various times before the ice sheet's maximum expansion. Crag Cave registers repeated climatic improvement and deterioration. Together they reveal a country of local refuges, exposed ground, freshwater hollows and advancing ice—real, dynamic and inhabited by plants and animals, yet still beyond the precision of annual human history.

Chapter 077 of 100

31724 BCE

Doneraile's Cave Interval^[77]



The label 31,724 BCE is a modern calendar projection, not a date that people in Ice-Age Ireland could have recognised or recorded. It corresponds only approximately to 33,674 years before AD 1950, the conventional ‘before present’ reference point used in radiocarbon science. At this depth in time, a single calendar year cannot responsibly be assigned to an Irish event. The useful historical frame is therefore a broader one: the later part of Marine Isotope Stage 3 (MIS 3), before the full Last Glacial Maximum, when climate and ice cover changed repeatedly over centuries and millennia.

For Ireland, the evidence is unusually fragmentary. There are no written sources, named peoples, settlements, graves, tools securely linked to this date, or political institutions to describe. What survives instead is a difficult archive of cave bone, sediment, pollen, geological landforms and scientific dates. Around this point in time, Ireland was not the familiar green, wooded island of later prehistory. It was part of a cold and unstable north-west European world in which ice sheets were growing, sea levels were lower, and animal populations could move through landscapes whose coasts and connections have since vanished.

Before the Ice Maximum

This was not yet the Last Glacial Maximum itself. The global maximum of the last glacial cycle is commonly placed at about 26,500–19,000 calendar years before present, while reconstructions of the British–Irish Ice Sheet indicate substantial growth after roughly 35,000–32,000 years ago and maximum ice extents later, broadly between 27,000 and 21,000 years ago. Those ranges are models assembled from many sites, not a timetable applying identically to every valley, coast and upland.

At about 33,700 calendar years before present, Ireland stood near the beginning of that major expansion. Ice may already have occupied important upland and northern or western source areas, but its extent was neither uniform nor permanently fixed. Successive advances, stagnations and retreats could alter the local landscape markedly. The island's later glacial deposits were themselves capable of eroding, burying or displacing earlier evidence, which is one reason why so little is known about conditions at any one moment.

The Irish term for this last major glacial episode is the Midlandian; in wider British scholarship it is often called the Late Devensian. Such labels are useful shorthand, but they should not suggest an unchanging frozen state. MIS 3 contained rapid climatic swings, including relatively milder interstadials and harsher stadials. Ireland's available environmental sequences are too patchy to reconstruct the weather of a particular year, yet they demonstrate that open ground, wetlands and cold-adapted vegetation existed during intervals between or ahead of ice advances.

Castlepook's Fossil Record

The most informative Irish locality for this horizon is Castlepook Cave, also known as Mammoth Cave or Doneraile Cave, in the limestone country near Doneraile in north County Cork. Its narrow galleries and chambers trapped or received animal remains over a very long span. Excavations between 1904 and 1918 recovered more than 2,000 bones. Geological Survey Ireland describes the cave as Ireland's richest vertebrate-fauna site for the period leading towards the Last Glacial Maximum.

The assemblage is striking: woolly mammoth, reindeer, giant deer, brown bear and spotted hyaena occur among the earlier Ice-Age fauna, with later cold-stage remains including lemmings, Arctic fox and wolf. No single list of species should be mistaken for a census of animals alive together on one day. The cave accumulated bones across many episodes, and some were moved by water, scavengers or excavation. Nevertheless, the combined record establishes an important point: at intervals during MIS 3, southern Ireland could sustain large herbivores, predators and scavengers in a varied cold-climate ecosystem.

Reindeer and lemmings are particularly suggestive of open, treeless or sparsely shrubby country. Mammoths indicate extensive grazing habitat somewhere within reach, while hyaenas, wolves and bears point to a food web more complex than the later Irish fauna. Such animals would have used broad ranges rather than respecting modern county boundaries. Castlepook was not necessarily a place where all were resident. A cave can be a den, a refuge, a place where carnivores drag carcass parts, or simply a geological trap. Its fossils reveal regional possibility and recurring animal movement, not a settled 'Cork community'.

Dates, Bones and Doubt

The cave's importance has increased because improved radiocarbon techniques have revised parts of its chronology. The Irish Quaternary Fauna Project first brought accelerator mass spectrometry dating to many old cave collections in the 1990s. Later work by Ruth Carden, Thomas Higham and Peter Woodman re-dated selected specimens with improved pretreatment methods. Several Castlepook results proved substantially older than earlier measurements, strengthening the case that significant elements of the fauna belong in MIS 3. The researchers also warned that old cave deposits and old museum collections demand caution rather than simple confidence.

That caution matters especially for claims about people. A reindeer femur from Castlepook has been reported as carrying a deep incision interpreted as a stone-tool cut mark made during carcass processing. If that interpretation is correct, it would offer remarkable evidence that a small Upper Palaeolithic party reached Ireland in the broad period around 33,000 years ago. It would not demonstrate permanent settlement, a named culture, a village, a hunting territory or continuous descent from those visitors.

The claim remains limited because there is no securely associated hearth, stone-tool assemblage, dwelling, human bone or undisturbed butchery floor from the cave. The National Museum of Ireland continues to state that no clear evidence has emerged for human presence in Ireland during the Palaeolithic. The responsible conclusion is therefore neither dismissal nor certainty: the marked reindeer bone may preserve a very early trace of human activity, but the evidence is too slight to reconstruct a population or its way of life in detail.

Movement Without States

There were no Irish kingdoms, borders, diplomacy or warfare in the documentary sense. Nothing permits claims about chiefs, alliances, language, ritual authority or social rank. Nor is there evidence for farming, domesticated animals, pottery, metalworking or organised trade within Ireland at this date. If people did visit, the most defensible inference is of highly mobile hunter-gatherers using perishable equipment and sharp stone edges, travelling through a landscape in which animal herds represented food, clothing materials and perhaps opportunities for brief seasonal camps.

That inference draws on comparison with Upper Palaeolithic societies elsewhere in Europe, not on an excavated Irish camp. Contemporary populations on the continent made sophisticated stone technologies, worked bone and antler, used pigments, and in some regions created portable and cave art. None of those cultural achievements can presently be assigned to Ireland around 31,724 BCE. Castlepook is evidence for a potential encounter with people, not proof that Ireland shared every practice known farther south or east.

Likewise, lower global sea levels did not automatically provide an easy dry route to Ireland. The shape of the Irish Sea basin depended on changing sea level, local crustal movement and the advance of ice. Later studies debate the timing and nature of possible connections between Ireland and Britain. At this earlier date, animal movement and any possible human movement may have involved exposed shelf landscapes, ice-bound terrain, shallow-water crossings or shifting coastal corridors. It is safer to say that Ireland was less isolated geographically than it would become after deglaciation, while refusing to draw a simple, continuous land bridge across the map.

A Changing Regional Landscape

The most important development around this date was environmental rather than political: the progressive transformation of north-west Europe as the British–Irish Ice Sheet expanded. Ice reshaped drainage, scoured bedrock, transported sediment and eventually covered or overwhelmed habitats that had supported parts of the MIS 3 fauna. Open grassland and herb-rich tundra could be productive for grazing animals during favourable phases, but their persistence was precarious. Cooling, ice growth and altered routes of movement would have fragmented populations and changed the range of predators as well as prey.

This helps explain both the richness and the silence of the record. Castlepook preserves bones because its limestone cave provided a rare repository; most camps or activity areas on exposed ground would be exceptionally vulnerable to later glacial erosion and post-glacial change. Absence of known settlements is therefore not proof that no person ever entered Ireland. Equally, preservation bias cannot be used to turn one disputed incision into a substantial prehistoric population. Archaeology must hold both possibilities at once.

For religion, learning and culture, the honest answer is that the Irish evidence says nothing specific. Caves were natural features, not demonstrated sanctuaries. Animal bones are not offerings merely because they were found underground. There are no images, inscriptions, musical instruments or burials from which to infer belief. The material record illuminates ecology much more securely than imagination.

Thus 31,724 BCE is best understood not as a year of an Irish event but as a point within a narrowing window. Southern Ireland still lay within the reach of a cold-adapted animal world, and perhaps of occasional human visitors. Yet the approaching glacial maximum would radically alter that world. The cave beneath the Doneraile limestone preserves its most tangible legacy: not a lost nation or a first Irish settlement, but a fragile archive of animals, climate change and a tantalising, unresolved possibility of human contact.

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31723 BCE

Doneraile's Scored Reindeer Femur^[78]



The label 31,723 BCE is a modern chronological convenience, not a year that anyone in Ireland could have named, recorded or experienced as a fixed point in a calendar. At this depth of time, archaeology cannot identify an Irish event, ruler, battle or generation for one particular year. The responsible approach is to place it within a broad environmental and archaeological horizon: about 33.7 thousand calendar years before AD 1950, during Marine Isotope Stage 3 (MIS 3), a climatically unstable interval of the last Ice Age.

This is also an age at which precision has firm limits. Radiocarbon measurements are not calendar dates; they must be calibrated against changing past levels of atmospheric carbon-14, and the resulting ranges may be wide. Cave deposits and glacial sediments add further complications because bones, water-laid material and sediments may have been moved after their original deposition. Therefore, 31,723 BCE should be read as a position within a long span, not as the date of a recoverable occurrence.

An Island Before the Ice Peak

Ireland was not yet at the Last Glacial Maximum, the later interval, broadly c. 26,500–19,000 years ago, when the British–Irish Ice Sheet reached its greatest overall extent. It was, however, moving through the long approach to that maximum. The growth of the last Irish Ice Sheet was uneven in time and place. Reconstructions differ in detail, but evidence from Irish deposits indicates that extensive ice cover did not simply descend upon the whole island at once. Around the notional year in question, areas of Ireland could still sustain terrestrial animal life and wetland vegetation, even as colder conditions and expanding ice were becoming increasingly consequential.

County Fermanagh provides one of the most valuable windows onto this wider period. At Derryvree, near Maguiresbridge, organic-rich silts lay between glacial tills. A radiocarbon determination from the sediments has been reported in later syntheses as 36.9–31.7 thousand calibrated years before present. That range encompasses the broad chronological position represented by 31,723 BCE. The deposit does not reveal what happened on a particular day or in a particular year. It does show, however, that north-central Ireland contained an ice-free landscape before the later overriding and burial of the site by glacier ice.

Greenagho, also in Fermanagh, supplies a comparable warning against imagining an island already uniformly entombed beneath ice. Organic material from lake deposits beneath till has produced a calibrated range of roughly 37.2–35.7 thousand years before present. Such dates are not a continuous weather diary, and the sites are not interchangeable. Together, though, they support a picture of changing, locally habitable ground in parts of Ireland during MIS 3, followed by the much more extensive glacial expansion of the later last glaciation.

Treeless Ground and Shallow Water

The Derryvree evidence is especially important because it includes biological remains as well as sediment. Pollen, plant macrofossils and insect evidence have been interpreted as indicating an open, treeless muskeg or sedge-rich wetland under periglacial conditions. “Periglacial” does not mean that the ground was necessarily covered by a glacier. It describes a cold environment shaped by frost, seasonal thaw, sparse vegetation and processes associated with land near ice or persistent frozen ground.

For a visitor standing in such a landscape, Ireland would not have resembled the familiar green, wooded island of later millennia. Trees were absent from the Derryvree setting. Wet hollows, pools, sedges, mosses and low-growing tundra plants could occupy sheltered ground, while exposed surfaces were vulnerable to wind, frost-shattering and seasonal instability. The character of any one valley, limestone hollow or upland slope would have depended on drainage, altitude, aspect and the shifting regional climate. It is safer to describe a mosaic of open ground and wetlands than to give the entire island one uniform appearance.

Rivers and ponds were not merely scenery. They concentrated plant growth, attracted animals and preserved pollen, insects and organic sediment. They also became archives. Most evidence for this period is indirect in exactly this way: a buried bed of silt, a beetle fragment, a seed, a pollen grain, a bone recovered from a cave. These surviving traces permit environmental reconstruction, but they do not disclose names, languages or social identities.

Castlepook’s Animal Archive

In north Cork, Castlepook Cave near Doneraile is the outstanding Irish faunal site for the period leading towards the Last Glacial Maximum. The cave’s galleries acquired evocative names during early exploration, including Hyenahall and Elephant Hall. Excavations between 1904 and 1918, followed by later investigations, produced a large collection of animal remains. Modern re-dating has demonstrated that the cave archive is chronologically complex: individual bones span a long period rather than representing one short-lived animal community.

Its Ice Age fauna includes woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena; later parts of the collection include Arctic fox, wolf and lemmings. The list is powerful evidence that animals adapted to cold, open environments reached Ireland. It should not be treated as a roll-call of

creatures all standing together outside the cave in 31,723 BCE. Individual specimens can differ markedly in age, and cave deposits can combine bones brought in by carnivores, moved by water, left by dying animals or disturbed by excavation.

That distinction matters particularly at Castlepook. A cave is not automatically a human home. Hyenas and other carnivores could drag bones underground; scavenging, trampling, water movement and later digging could alter their original positions. Geological Survey Ireland describes Castlepook as a repository for mammal remains over many millennia and notes that water disturbance has obscured part of the evidence. The cave therefore illuminates the ecological possibilities of Ice Age Ireland more securely than it yields a simple settlement story.

The Reindeer Femur

One bone has transformed the discussion. A reindeer femur from the Castlepook collection bears a deep score interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone implement during butchery. It has been reported as dating to about 33,000 years ago, and County Cork heritage material places it broadly around 31,000 BC. It is directly relevant to the chronological world represented by 31,723 BCE, although its reported age is necessarily approximate and should not be converted into an exact anniversary.

If the score is correctly identified as a cut or chopping mark, the femur is evidence that people handled a reindeer carcass in Ireland during the Upper Palaeolithic. It would be an exceptionally early indication of human activity on the island. A reindeer's leg provides meat, marrow, hide and sinew in addition to bone; the mark is therefore compatible with practical carcass processing by mobile hunter-gatherers. But compatibility is not proof of a fully documented hunting camp.

The limits are as significant as the discovery. The femur came from an old cave collection, rather than a modern excavation of a sealed occupation surface. No securely associated hearth, dwelling, stone-tool assemblage, human burial or food-preparation area of the same age has been identified at Castlepook. The radiocarbon result dates the animal's death, not automatically the moment of butchery, the location of the kill or the length of a human visit. The score itself remains a specialist interpretation of bone-surface evidence. It is sound to call the femur a potentially momentous trace of Palaeolithic butchery; it is not sound to claim a permanent Irish population from one marked bone.

People Without Politics

There is no evidence at this date for political institutions, rulers, diplomacy, territorial states, formal warfare or religious monuments in Ireland. Nor is there evidence for farming, villages, craft workshops, long-distance trade networks or writing. Those absences are not trivial gaps in an otherwise complete record. They define the historical situation. Any humans represented by the Castlepook femur were likely to have belonged to small, highly mobile foraging groups, but even that is an inference from wider Upper Palaeolithic lifeways rather than a demonstrated social map of Ireland.

Such groups elsewhere in north-western Europe used stone technology, possessed sophisticated knowledge of animal behaviour and seasonal terrain, and relied on co-operation to travel and obtain food in demanding conditions. If people reached Ireland, they would have needed comparable practical knowledge: where animals gathered, how weather changed, which waters and coastlines could be crossed, and how to make temporary use of a cold landscape. Nothing in the Irish evidence presently permits statements about their language, kinship rules, ceremonies, art or collective memory.

Likewise, “economy” in this context can only mean subsistence, movement and the use of natural materials, not commerce in the later sense. Reindeer and other large mammals could have supplied food and useful tissues. Yet Castlepook has not produced the securely associated implements needed to reconstruct methods of hunting, transport, hide-working or exchange. There is no responsible basis for identifying trade or diplomatic contact across the Irish Sea.

Changing Coasts, Vanishing Evidence

Lower global sea levels altered the margins of north-west Europe, but they did not make movement to Ireland simple or certain. The form of coastlines, channels, sea ice and exposed shelf changed through time. Marine-shell dates from Glenulra in the west indicate open water in adjacent Donegal Bay during much of the wider pre-maximum interval. That is a useful corrective to easy assumptions about a permanent land bridge. Routes available to animals or people at one stage may have been blocked, submerged, hazardous or absent at another.

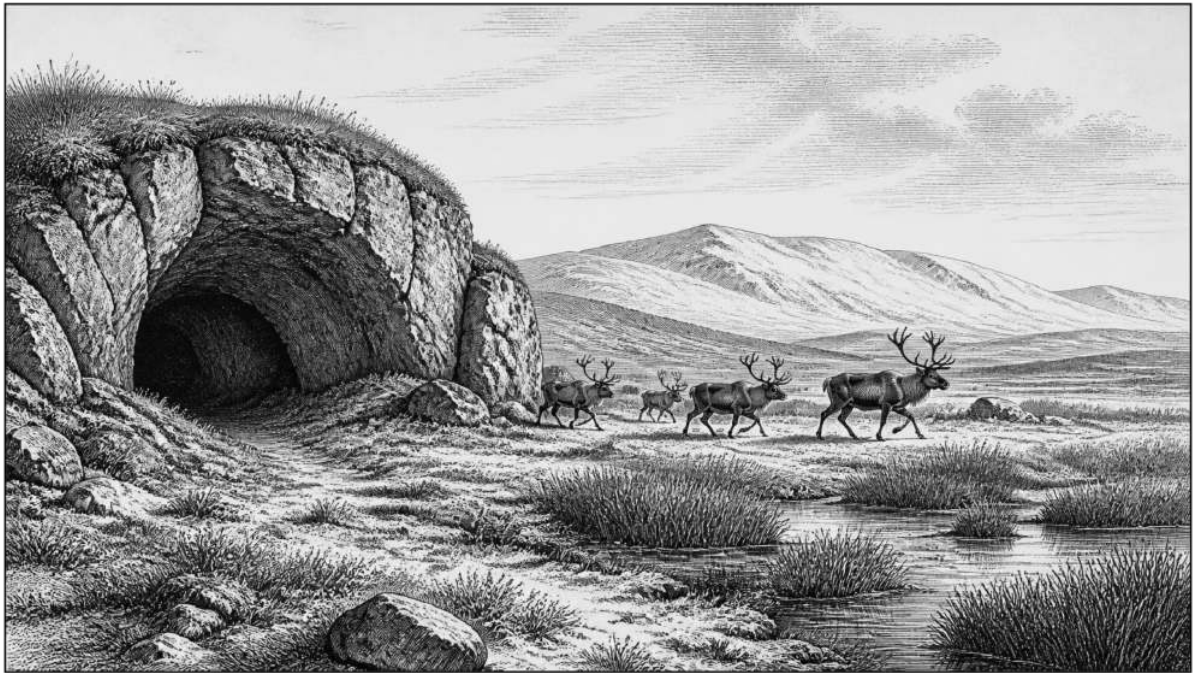
The later Irish Ice Sheet also helps explain why the record is so thin. Glacial erosion removed older surfaces, while till buried or displaced sediments and archaeological traces. Rising seas after the Ice Age then drowned former coastal landscapes, where early human evidence might once have been concentrated. The absence of campsites is therefore not proof that nobody ever arrived, but neither does it justify filling the silence with imagined settlements.

For 31,723 BCE, the central historical fact is uncertainty disciplined by evidence. Ireland was part of a cold, fluctuating MIS 3 world in which open wetlands and tundra supported animal life in at least some regions before the later ice maximum. Castlepook preserves a remarkable faunal archive and a reindeer femur that may record human butchery. It offers the prospect of fleeting Palaeolithic visitation, not yet a known society. Future excavation, re-analysis of museum collections and improved dating may refine that conclusion; for now, restraint is part of accuracy.

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31722 BCE

Elephant Hall's Reindeer Femur^[79]



“31,722 BCE” is a modern label, not a date that people or animals in Ice-Age Ireland could have recognised. At this depth of time, calendar-year precision is unavailable. The label falls about 33,700 years before AD 1950 in simple calendar arithmetic, but archaeological and environmental evidence is dated in radiocarbon years, calibrated ranges and broad climatic phases, each with margins of uncertainty. The responsible subject is therefore not an event in a single year, but Ireland during the later part of Marine Isotope Stage 3: a cold, variable interval before the fullest expansion of the last British–Irish Ice Sheet.

A Landscape Before Full Glaciation

Ireland was not yet the wholly ice-buried land often imagined from the phrase “Ice Age”. The British–Irish Ice Sheet grew and changed over a long period, with maximum extent reached later and at different times in different sectors. Large parts of Ireland would eventually be transformed by moving ice, but the evidence from caves, buried wetland sediments and glacial landforms shows that there were earlier phases when animals could occupy portions of the island. Around the notional date represented here, the climate was cold and sharply seasonal, but conditions were neither uniform nor permanently fixed.

Marine Isotope Stage 3, conventionally spanning roughly 57,000 to 29,000 years ago, contained repeated abrupt shifts between colder and somewhat milder conditions recorded especially clearly in Greenland ice cores. Irish deposits cannot always be tied securely to one of these short-lived oscillations. They are fragmentary, often disturbed by later ice or water, and frequently lack material suitable for modern dating. What can be said is that the island’s habitable ground expanded and contracted in response to temperature, snowfall, ice advance, vegetation and access from neighbouring lands.

Sea level was far lower than today because immense quantities of water were locked in northern ice sheets. The outlines of Ireland, Britain and the continental shelf were consequently different. Yet low sea level must not be turned into a simple map of an easy “land bridge”. Ice margins, lakes, rivers, sea channels, exposed sediment plains and seasonal weather mattered as much as distance. The routes by which animals, and perhaps people, could enter Ireland remain a major research question rather than an established prehistoric road.

What the Caves Preserve

The most important Irish evidence relevant to this period comes from Castlepook Cave, near Doneraile in north County Cork, within the Awbeg Valley. This limestone maze contains chambers named by nineteenth-century investigators, including Elephant Hall and Hyaena Hall. Excavations in the early twentieth century recovered thousands of bones, while later reassessment and new fieldwork have demonstrated both the exceptional importance and the difficulty of the archive. A cave is not a time capsule: bones can be dragged in by carnivores, washed through fissures, redeposited by sediment movement, or mixed by excavation.

Nevertheless, Castlepook establishes a crucial point. Ireland supported a much richer cold-stage mammal fauna before the Last Glacial Maximum than its later insular fauna would suggest. The identified animals include reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, hare, lemmings and spotted hyaena. Not every species belonged to one moment, one herd or even one climatic episode. Direct dates from individual bones span a substantial interval, and the assemblage must be read as a sequence of presences over time. It does, however, show that southern Ireland could at intervals sustain large herbivores, predators and scavengers in an open Ice-Age environment.

Reindeer are especially evocative because they imply extensive grazing country, but they should not be made into a complete reconstruction of the landscape. Reindeer can range through varied northern habitats. Mammoth and giant deer likewise signal productive terrain somewhere within reach, while hyaenas point to carcasses, prey and sheltered denning spaces. Hyaenas may have been active agents in building the cave bone collection: tooth marks, broken bones and the selective transport of parts of carcasses can record their feeding and denning behaviour rather than human hunting.

The Femur and Its Limits

A reindeer femur associated with Castlepook has attracted particular attention because it bears a deep mark interpreted as having been made by a sharp stone tool during carcass processing. Public reporting placed the bone at about 33,000 years ago, close in broad terms to the date represented by this article. If the modification is confirmed as anthropogenic and securely connected with the age of the bone, it would be extraordinary: evidence that people reached Ireland tens of millennia before the well-established terminal-Pleistocene traces in County Clare.

That conditional language is essential. The modified reindeer bone is not a settlement, a hearth, a stone-tool assemblage or a human skeleton. It does not identify a named population, prove a permanent colony, or allow us to describe a camp at Castlepook in 31,722 BCE. The bone’s older excavation history and the complex processes that accumulated the cave deposits restrict what can be inferred. A cut-like groove may be highly suggestive, but its interpretation must be tested against microscopic study, taphonomy, secure dating and comparison with carnivore damage, sediment abrasion and other natural alterations.

Recent work has also changed the chronology of Irish cave fauna. Improved collagen preparation, including ultrafiltration, can remove contaminants that made some older radiocarbon results appear too young. Re-dating of selected southern Irish material showed that previously published dates required serious revision, in some instances by thousands of radiocarbon years. This is not a technical footnote. It is why a precise BCE heading cannot be used to fasten every Castlepook bone, or every mark on a bone, to a single point in time. The evidence is real; the chronological and behavioural interpretation remains under active refinement.

No Politics, but Ecological Pressures

There is no evidence for political institutions, diplomacy, warfare, leaders, territories or organised religion in Ireland at this date. Nor is there evidence for farming, pottery, metalworking, villages, monuments, writing, formal trade networks or a settled economy. To supply them would be invention. If people did reach the island during this part of the Upper Palaeolithic, they would have been small, mobile hunter-gatherer groups operating at the extreme north-west of Europe, dependent on knowledge of weather, animal movement, fuel, shelter and safe routes. But even this is a regional inference, not an excavated Irish social world.

The more secure history is ecological. A human visitor, if present, would have entered a landscape in which food was mobile and seasonal. Reindeer and other herbivores could offer meat, fat, hide, sinew, antler and bone; stone tools could be used to divide carcasses efficiently. Predators were competitors as well as dangers. Cave spaces might provide short-term shelter or a place to process a carcass, but they also belonged to bears and hyaenas. The surviving Castlepook record therefore describes a contested animal landscape, not a human homeland.

There is no Irish evidence from which to infer ceremonial practice or learning at Castlepook. Elsewhere in north-west Europe, people of broadly comparable Upper Palaeolithic antiquity made sophisticated stone and bone objects, wore ornaments and sometimes treated the dead in striking ways. The Paviland burial in south Wales, dated to roughly 33,000–34,000 years ago, is an important reminder that such cultural capacities existed within the wider region. It cannot, however, be projected across the water into Ireland. Similar age does not demonstrate direct contact, shared identity or Irish ritual.

Wetlands, Tundra and Change

Irish palaeoenvironmental sites offer the wider setting. Organic sediments beneath and between glacial deposits in Ulster, including records at Derryvree, Hollymount, Greenagho and Aghnadarragh, preserve pollen, plant remains and insects from different parts of the last cold stage. Some indicate cold, open, treeless ground, sedge-rich wetlands and muskeg-like vegetation; an earlier interstadial at Aghnadarragh preserves evidence for cool-temperate woodland. These sites do not deliver a weather report for north Cork in one numbered year. Together, they show just how rapidly Ireland could move between more hospitable and more severe environments.

For the period closest to 31,722 BCE, the most supportable visualisation is therefore not a frozen white wilderness. It is a patchwork: exposed grass- and herb-rich ground, dwarf shrubs and sedges, wet hollows, river corridors, bare mineral soil, limestone shelter and distant snow or ice. The precise balance varied regionally and through time. Such country could support grazing mammals, but it was vulnerable

to climatic deterioration. As ice expanded towards its later maximum, habitats were erased, animal movements were disrupted and any short-lived human use of Ireland may have ended without leaving an easily recognisable archaeological signature.

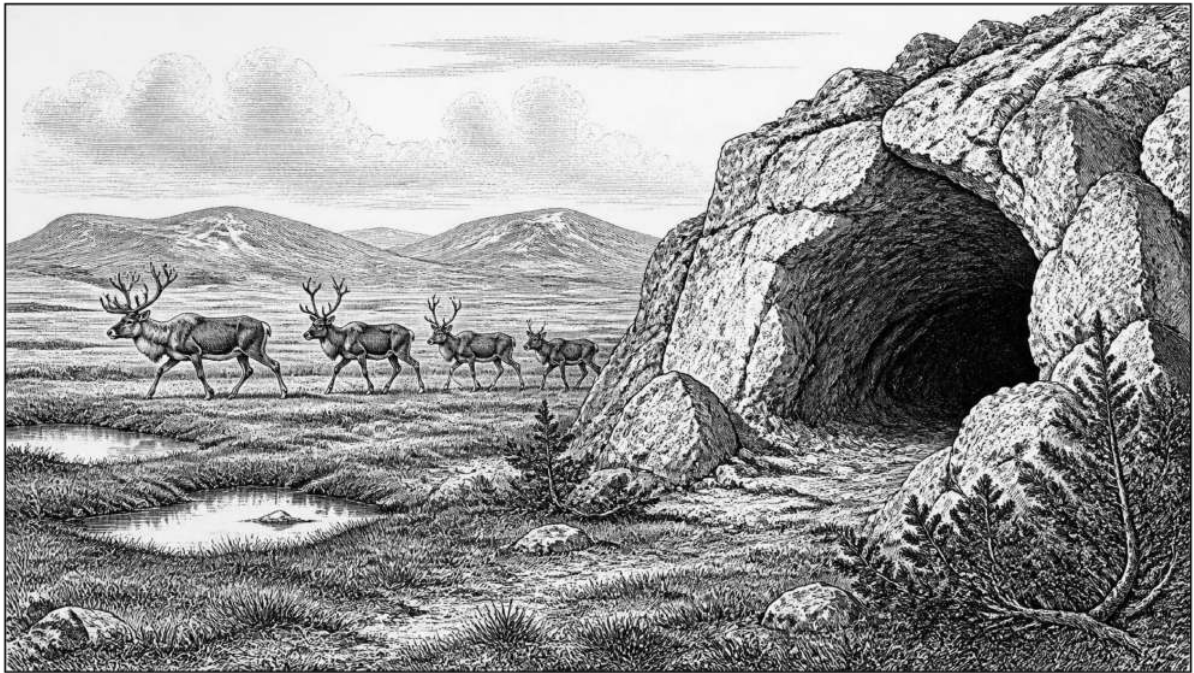
A Fragile Beginning

This date belongs to a period before Ireland's documented human story, yet not outside the range of responsible historical enquiry. Castlepook Cave makes clear that late Ice-Age Ireland was sometimes biologically connected to wider north-west European worlds. Its animals prove access and habitability; its reindeer femur raises the possibility of a fleeting human encounter. Neither proves an enduring population. The lasting lesson is methodological as much as dramatic: Ireland's deepest past is reconstructed from bones, silts, pollen and ice-sculpted landforms, and every new date or re-examination can alter the map of what was possible.

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31721 BCE

Castlepook's Marked Reindeer^[80]



31,721 BCE cannot be treated as an anniversary in Irish history. No written record, settlement sequence or precisely dated event permits modern calendar-year precision at this depth of time. Expressed in the archaeological convention, the nominal year falls roughly 33,670 calendar years before AD 1950, within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable portion of the Last Glacial period. The responsible approach is therefore to examine dated ranges that overlap it, rather than claim that anything happened in Ireland in that exact year. The clearest relevant evidence comes from cold-stage sediments in Fermanagh, calcite deposits in Kerry, and, above all, animal remains from Castlepook Cave near Doneraile in north County Cork.

A Date Range, Not a Year

Radiocarbon measurements do not initially produce calendar dates. They measure the remaining carbon-14 in organic material and report an age in radiocarbon years before present, where “present” is conventionally AD 1950. That age must be calibrated against records of changing atmospheric carbon-14. At more than 30,000 years ago, calibrated results commonly span broad, sometimes irregular ranges. The international IntCal20 curve reaches back to 55,000 calibrated years before present, but its older section necessarily combines several environmental archives and retains substantial uncertainty.

This matters particularly at Derryvree, near Maguiresbridge, County Fermanagh. Organic silts and fine sands there lay between two tills: one left by an earlier advance of ice and another deposited later. A conventional radiocarbon determination of 30,500 radiocarbon years BP, with a large error margin, has been calibrated to approximately 31.7–36.9 thousand calendar years ago. That wide interval encompasses

the notional year considered here. It demonstrates that an ice-free episode capable of sustaining freshwater and tundra habitats occurred in this part of Ireland during later MIS 3; it does not date a particular season, generation or historical occurrence.

Marsh Between the Ice

Derryvree is important because its sediments preserve more than bare geology. Pollen, plant remains and insects indicate a treeless, cold landscape with freshwater pools and wet, moss-rich ground. Sedges and grasses were prominent, with juniper and herbs in the wider vegetation. The older term “muskeg”, used in discussions of the site, conveys the probable character of the local environment: waterlogged, organic ground, shallow pools and low vegetation rather than forest or farmland. Insect evidence similarly points to northern, cold-adapted conditions.

Such evidence provides a local environmental reconstruction, not a map of the entire island. Ireland’s climate and ice margins were variable, and an exposed deposit near Maguiresbridge cannot simply be projected unchanged to Cork, Kerry or the western seaboard. Nevertheless, it decisively corrects the misleading image of a permanently uniform white wilderness. During MIS 3, ice advanced and retreated regionally, while cold, open habitats could form in ice-free or lightly glaciated areas. The landscape near Derryvree was harsh, seasonal and largely without trees, but it was biologically active.

Crag Cave, near Castleisland in County Kerry, adds a different kind of evidence. Uranium-thorium dating shows that calcite formations in this shallow cave grew episodically through the last glacial period, including intense phases in later MIS 3. Calcite growth requires liquid water percolating through the cave, and is therefore evidence for episodes when average annual conditions were sufficiently mild for water not to remain permanently frozen. It does not mean that Ireland was warm or wooded. Rather, it records sharp climatic oscillations in an Atlantic-margin landscape, in which comparatively favourable intervals alternated with much colder stadials.

The Castlepook Animal World

Castlepook Cave is the most vivid Irish archive for this broad period. Excavations led by Richard J. Ussher and colleagues in the early twentieth century recovered an exceptionally large cave-bone assemblage from limestone galleries north of Doneraile. Later research has identified a striking range of Pleistocene mammals: woolly mammoth, giant deer, reindeer, spotted hyaena, wolf, brown bear, foxes, stoat, mountain or Arctic hare, and lemmings. The combination is consistent with extensive open-country habitats and a food web able to support large herbivores, predators and scavengers during portions of MIS 3.

That list must not become a census for 31,721 BCE. Cave assemblages accumulate over long periods. Carnivores can drag carcass parts into dens; water can move bone and sediment; roof collapse can disturb deposits; and the methods of the original excavations did not provide the layer-by-layer recording expected today. Modern redating has also altered the chronology. A reassessment of bones from Castlepook and other southern Irish caves found that several older measurements had been thousands of radiocarbon years too young because of limitations in earlier sampling and pretreatment. The revised work securely places major elements of the southern Irish fauna in MIS 3, but it also makes caution more, not less, necessary when assigning individual bones to a narrow moment.

At the broad scale, Castlepook shows that Ireland was accessible to substantial cold-adapted fauna before the Last Glacial Maximum. Mammoths and reindeer imply productive vegetation over wide areas, even if that vegetation was low and seasonal. Giant deer, often misleadingly called “Irish elk”, were not uniquely Irish; their presence instead connects Ireland to a much wider north-west European Pleistocene world. Spotted hyaenas are especially revealing. They were formidable scavengers and hunters whose use of caves could create complicated bone deposits. A cave holding hyaena remains and herbivore bones may record a den, a scavenging place, a natural trap, several separate episodes, or a mixture of all these processes.

The Reindeer Femur

A fragment of reindeer femur from Castlepook has made this period central to debates about Ireland’s earliest human presence. Zooarchaeological re-examination identified a deep incision interpreted as consistent with cutting or chopping by a sharp stone tool. The bone has been reported as dating to about 33,000 years ago, and County Cork heritage publications place it broadly around 31,000 BC. If the mark is confirmed as anthropogenic, it is evidence that a person processed a reindeer in Ireland during the Upper Palaeolithic, far earlier than the island’s formerly accepted record of human activity.

The qualification is essential. A dated bone dates the animal’s death, not necessarily the time at which a person handled it. Nor is the femur from a securely excavated occupation floor accompanied by hearths, stone tools, a dwelling, burials or human remains. Natural marks, damage in a carnivore den and movement after deposition are all issues which must be tested when interpreting bone surfaces. The most defensible conclusion is limited but important: Castlepook preserves a plausible, potentially very early trace of human butchery, not proof of a permanent Irish population or a named archaeological culture at this date.

People Without a Settlement

There is no evidence for political authority, diplomacy, organised warfare, territory, trade routes, formal religion or literacy in Ireland at this horizon. Such subjects cannot responsibly be supplied with invented chiefs, tribes or rituals. If people did reach the island, they would have been mobile hunter-gatherers operating in a cold-stage landscape, a possibility compatible with Upper Palaeolithic lifeways elsewhere in north-west Europe. Yet comparison is not direct evidence. The Irish record lacks the camps, tools and repeated activity areas needed to reconstruct family size, language, social organisation, seasonal round or belief.

Nor should “island” be understood too literally in the modern sense. Lower global sea levels during the glacial period exposed large areas of continental shelf and changed the geography of the Irish Sea region. Animal and possibly human movement between Ireland, Britain and continental Europe could have been easier at some times than it is now, though the precise routes and water crossings varied with changing sea level, ice and local topography. Castlepook’s fauna supports connectivity in a broad biogeographical sense; it cannot identify a particular migration path or establish regular exchange.

Everyday life, if it occurred in Ireland around this time, would have been structured first by weather, mobility and animal availability. Reindeer could provide meat, fat, hide, sinew and bone; other herbivores offered potential resources but also required hunters to understand dangerous, shifting terrain. That is an

inference from the animal evidence and the broader Upper Palaeolithic world, not something demonstrated at Castlepook itself. The cave's main historical importance is precisely that it preserves the possibility of such encounters while refusing an easy narrative about them.

Before the Ice Peak

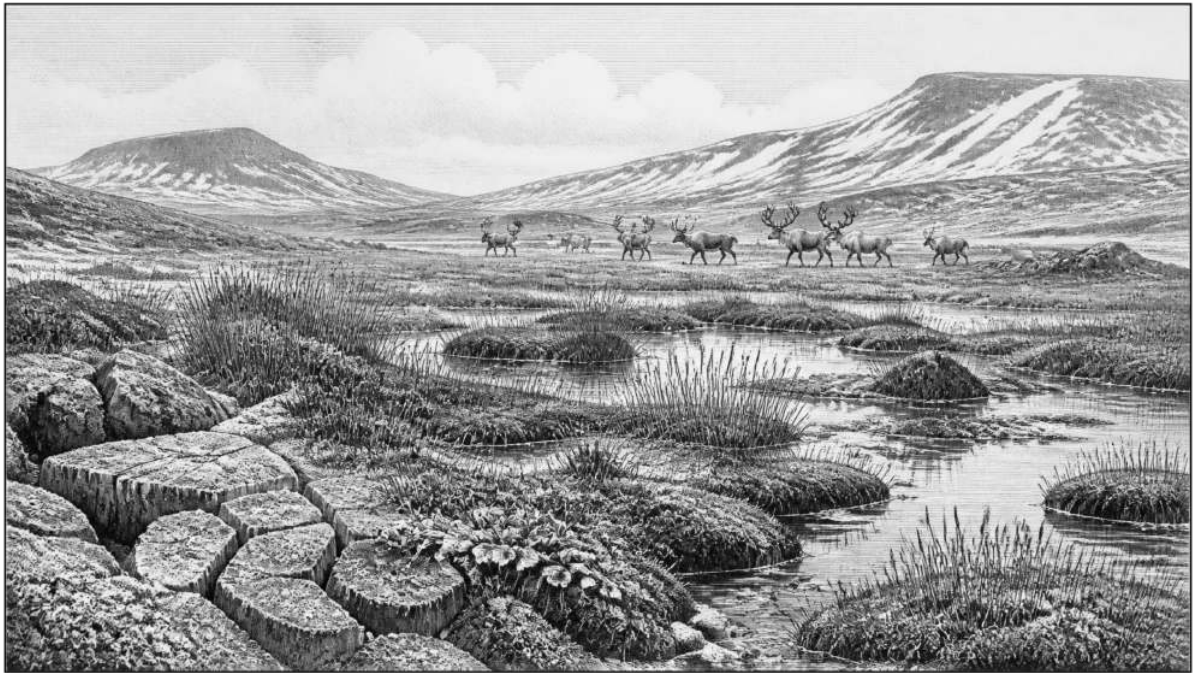
The nominal date lies well before the Last Glacial Maximum, when the British-Irish Ice Sheet later expanded dramatically, with maximum conditions broadly falling around 26,000–21,000 years ago and varying between sectors. Research on Ireland's mountains, shelves and surrounding seas shows that this was not a single instant of uniform advance. Some sectors reached their maxima at different times, and subsequent retreat was equally uneven. By the glacial peak, all or almost all Irish low ground was ice-covered; the delicate evidence for earlier landscapes and possible human activity was therefore vulnerable to erosion, burial and destruction.

That later ice explains much of the silence. It is not proof that people were absent before it, but it helps explain why traces are rare, displaced and difficult to interpret. Around 31,721 BCE, Ireland was not a Gaelic homeland, a prehistoric kingdom or an empty stage awaiting later settlers. It was a changing cold-stage environment within a wider European ecological zone: sometimes open enough for freshwater wetlands, tundra vegetation and large mammals; climatically unstable; and perhaps visited by people whose presence is presently represented by no more than one contested mark on a reindeer bone. That small, demanding piece of evidence is the appropriate centre of the story.

Chapter 081 of 100

31720 BCE

Derryvree's Periglacial Wetland^[81]



31,720 BCE is a modern label, not a date that anybody in prehistoric Ireland could have known or recorded. Arithmetically, it lies about 33,670 years before AD 1950, but archaeology cannot distinguish events in one calendar year at this depth of time. The responsible scale is a broad calibrated range, not a date-by-date chronicle. This point belongs to the later part of the Middle Midlandian, broadly within Marine Isotope Stage 3 (MIS 3), a long and climatically unstable phase of the Last Ice Age. The evidence for Ireland is exceptionally fragmentary: buried freshwater sediments, pollen and plant remains, insect fossils, cave bones, glacial landforms and radiocarbon measurements. It tells us about environments and occasional animal presence, but not about a named people, an Irish polity or a continuous human community.

The most useful close Irish comparison is Derryvree near Maguiresbridge, County Fermanagh. Roadworks in 1969 cut through a drumlin and exposed organic silts and fine sands enclosed between two thick, distinct sheets of till. The arrangement matters. Ice had deposited one till sheet; a freshwater environment then existed long enough for sediment and organic remains to accumulate; later ice overrode and buried the deposit beneath another till. The conventional radiocarbon determination from the organic series was 30,500 +1,170/-1,030 BP. When allowance is made for uncertainty and calibration, it represents a wide calendar interval, roughly c.36,900–31,700 cal BP. The notional year 31,720 BCE falls within that broad window, but does not make Derryvree a record of that particular year.

A Freshwater Interval Beneath Ice

Derryvree is important because it preserves a local landscape rather than merely a later landform. Pollen, mosses, seeds and insect remains indicated open tundra vegetation and a periglacial climate: ground subject to intense frost, short growing seasons and severe exposure, but not necessarily

permanently sealed under glacier ice. Sedges, grasses, herbs, low shrubs and mosses could occupy wet patches, lake margins and better-drained ground. Freshwater plants indicate that at least some water remained open seasonally or locally. This was not the forested island familiar from later prehistory or the present day. Nor was it simply an empty white plain. It was a heterogeneous cold environment, in which water, slope, snow cover, soils and shelter created small but significant differences in available habitat.

The wider climate was unsettled. MIS 3, conventionally placed between about 60,000 and 27,000 years ago, contained repeated abrupt shifts between colder stadials and relatively milder interstadials recorded particularly clearly in Greenland ice cores. Irish deposits cannot be matched confidently to every one of those North Atlantic oscillations, nor can they reveal a precise annual temperature. They do show why a fixed picture of Ireland as either wholly frozen or wholly hospitable is misleading. Ice margins, river systems, vegetation and animal ranges changed over millennia, and sometimes much faster, as climate altered.

At this time the geography of “Ireland” was also unlike that of the modern state or island. Lower global sea level exposed wider coastal shelves, while ice loading changed relative sea levels regionally. Yet no securely demonstrated, simple land bridge across the Irish Sea should be assumed for this horizon. The routes by which animals, and potentially people, entered or left the landmass remain questions of palaeogeography rather than facts supplied by a single fossil. Any connection may have involved changing coastal lowlands, islands, sea ice, swimming animals or crossings by people; the available Irish evidence does not decide between them.

Animals at Castlepook

The principal animal archive lies far to the south at Castlepook Cave, near Doneraile in north County Cork. Excavations begun in the early twentieth century recovered more than 2,000 bones from the cave system. Its Ice Age fauna includes woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena; later cold-stage material includes Arctic fox, wolf and both collared and Norwegian lemmings. Some of these animals would have required open ground and substantial grazing, while others were predators, scavengers or shelter-users. Together, they demonstrate that Ireland supported, or intermittently received, a far richer cold-stage mammal fauna than survives today.

That list must not be converted into a single imagined herd moving across Cork on one day. Castlepook was a cave repository operating over a very long span. Geological Survey Ireland summarises dates from individual bones ranging from about 45,700 to 19,950 years BP. Water movement, carnivore activity, deaths in caves, scavenging and the disturbance caused by historic excavations all affected what survived and where it was found. A mammoth bone gnawed or transported by hyaenas, for example, records animal behaviour and cave processes as much as it records the place where the mammoth died. The faunal collection supports the existence of varied cold-stage ecosystems; it cannot prove that every recorded species lived together, or that each was present at 31,720 BCE.

For everyday life, the animals are more informative than any supposed human settlement. Reindeer, mammoth and giant deer imply food webs based on extensive vegetation, while wolves, Arctic foxes, bears and hyaenas occupied different predatory and scavenging roles. Their presence also suggests seasonality: migratory movement, breeding, winter shelter and carcass availability would have structured the landscape. But these are ecological interpretations, not direct observations. There is no excavated living surface from this date in Ireland from which to reconstruct meals, clothing, hearths or seasonal camps in the manner possible at better-preserved Upper Palaeolithic sites elsewhere in Europe.

The Human Question

Castlepook nevertheless contains the most provocative clue to human activity near this period. A reindeer femur from the old collection has been reported as dating to about 31,000 BC and bears a deep incision identified by zooarchaeologist Ruth Carden as consistent with a sharp stone tool used while the bone was fresh. County Cork heritage publications have presented it as potential evidence for Palaeolithic hunters processing a reindeer in the Doneraile area. If that judgement is confirmed, it would push evidence for human presence in Ireland far beyond the previously established Late Upper Palaeolithic bear-bone evidence from Alice and Gwendoline Cave in County Clare, dated to c.12,810–12,590 cal BP.

Its importance requires equal caution. The femur was recovered in an antiquarian cave excavation, not from a modern, sealed occupation floor with associated stone tools, charcoal, animal remains and spatially recorded features. The date establishes the age of the animal's death, not automatically the date, location or maker of the incision. Identifying a mark as human-made is a specialist taphonomic interpretation: it must be distinguished from carnivore damage, trampling, sediment abrasion, breakage and later handling. No securely associated lithic assemblage, hearth, dwelling, burial, art or repeated domestic debris of comparable age has yet been published from Ireland. Recent work at Castlepook confirms both the site's significance and the difficulty of recovering intact deposits after earlier investigations.

The most that can responsibly be said is conditional. The marked reindeer femur may preserve evidence that a person used a stone edge on an animal carcass in Ireland during the Upper Palaeolithic. It could represent a brief hunting or scavenging episode by a small, mobile group. It does not demonstrate permanent settlement, a stable population, uninterrupted ancestry, or an identifiable cultural tradition. It certainly does not identify a language, ethnicity or nation. "Ireland" here is only a geographical shorthand for the territory of the modern island.

No Politics, No Proven Trade

Political affairs, diplomacy and organised warfare cannot be reconstructed for 31,720 BCE because there is no evidence for states, chiefs, territories or even securely documented human groups in Ireland at this date. The conflict visible in the record is ecological: predators competed for carcasses, herbivores faced severe climates and expanding ice repeatedly altered habitable ground. It would be misleading to turn those natural pressures into human warfare.

Likewise, there is no evidence for farming, domesticated animals, fields, stores, metalworking, markets or trade networks. A possible act of reindeer butchery would concern subsistence, perhaps meat, hide, sinew, marrow or bone, rather than an economy in the later historical sense. No imported ornament, quarry source, exchange good or tool assemblage can presently map contacts between Ireland and neighbouring lands. Religion, art, formal learning and burial custom are equally beyond the evidence. The absence of such finds does not prove that no beliefs or knowledge existed among any visitors; it means that Irish archaeology cannot responsibly describe them.

Approaching Greater Glaciation

The central development was environmental change. Derryvree shows that ice-free or lightly glaciated freshwater habitats existed in at least part of Ireland during a cold interval before the full Last Glacial Maximum. Castlepook shows that cold-adapted and large mammals had occupied parts of the island over a broad period. In the millennia after this notional date, the British–Irish Ice Sheet expanded

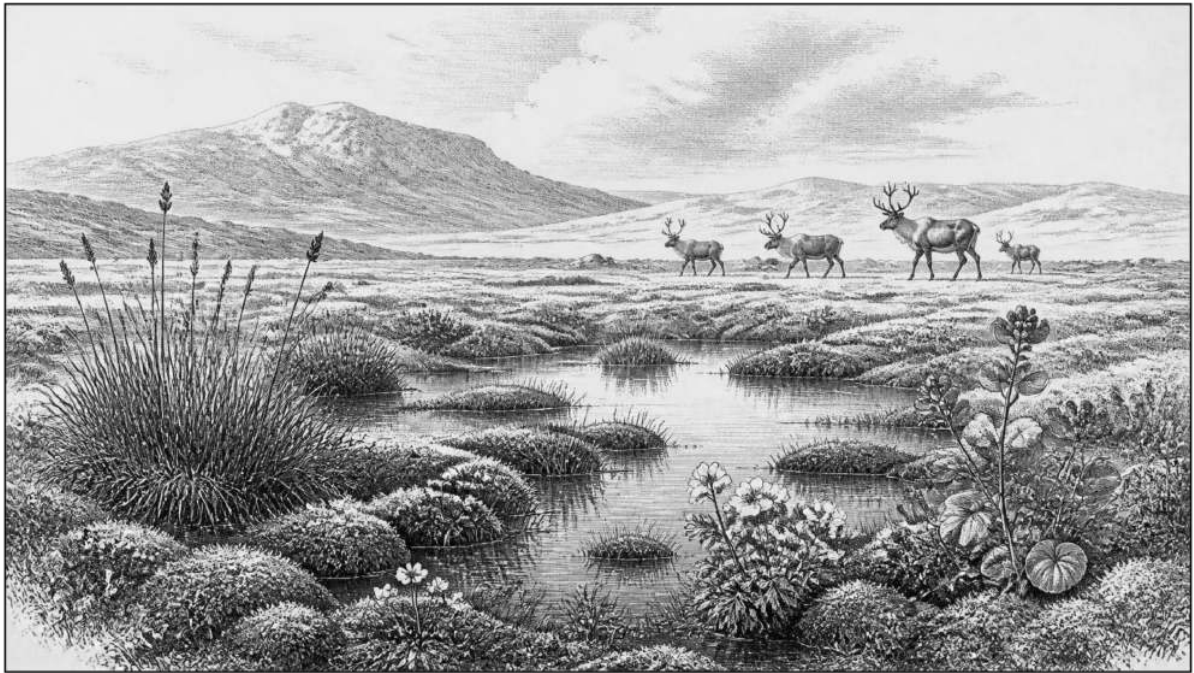
unevenly. Reconstructions place different sectors' maximum extent between roughly 30,000 and 22,000 years ago, while evidence from the Irish and Celtic seas points to extensive ice around Ireland by the later maximum, especially c.25,000–23,000 BP.

That later glaciation helps explain the thinness of the record. Moving ice eroded soils, displaced sediments and destroyed or buried many earlier surfaces. The history of Ireland around 31,720 BCE is therefore not a story of rulers or monuments, but of a periglacial wetland beneath later ice, cave accumulations of remarkable animals, and one unresolved mark on a reindeer bone. Its uncertainty is not an inconvenience to be filled with invention. It is the most truthful feature of Ireland's deep past.

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31719 BCE

Maguirebridge's Bogbean Seed ^[82]



31,719 BCE is a modern chronological label, not a recoverable year in Irish history. No calendar, written record, named community or annually resolved archaeological sequence allows an event to be assigned to this point in time. In archaeological terms it lies roughly 33,668 years before AD 1950, within the later part of the Late Pleistocene, broadly Marine Isotope Stage 3 (MIS 3), an unstable interval of the last Ice Age. The responsible history of Ireland at this depth of time must therefore be written through calibrated ranges, sediment layers, fossils and cautious comparison—not through kings, battles or dates of arrival.

The most illuminating Irish evidence comes from sites that are not directly synchronous with one another. A freshwater sequence at Derryvree, near Maguiresbridge in County Fermanagh, offers an unusually valuable environmental window. Castlepook Cave, near Doneraile in north County Cork, preserves an important but complicated collection of animal bones. Together they show that parts of Ireland could support life during cold phases before the expansion of the last British–Irish Ice Sheet. They do not demonstrate what occurred in a particular season of 31,719 BCE, and they cannot be treated as a complete map of the island.

A Broad Dating Window

At approximately 34,000 calendar years before present, precision is necessarily limited. Radiocarbon measures the decay of carbon-14, not a direct calendar date. Because atmospheric carbon-14 has varied over time, laboratory ages must be converted through calibration curves. IntCal20, the internationally used Northern Hemisphere curve, reaches back to 55,000 calendar years before present, but its older

sections integrate evidence from several archives and retain meaningful uncertainties. A date written as 31,719 BCE should consequently be understood as a filing point within a long span, rather than as a day, year or generation that archaeology can isolate.

Derryvree makes the issue clear. Organic freshwater silts and fine sands there were discovered beneath a drumlin, sandwiched between separate layers of till, the unsorted sediment deposited by glacier ice. The sequence records an earlier ice advance, an interval in which water, plants and animals occupied the locality, and a later advance that covered and preserved the deposit. A conventional radiocarbon determination of $30,500 \pm 1,170$ radiocarbon years before present has been calibrated broadly to about 36,900–31,700 cal BP. The nominal year falls within that wide range, but the deposit does not date a human visit, a migration or an individual year.

This is evidence of relative sequence as much as of age. At some point during the dated interval, the Derryvree area was not overridden by glacier ice. It cannot establish that all Ireland was ice-free at once. Conditions differed according to altitude, proximity to ice margins, drainage and Atlantic exposure; glaciers themselves did not advance or retreat everywhere in unison. The later, far more extensive ice sheet would rework terrain across much of Ireland and erase or bury many earlier traces. Survival of an organic deposit below a drumlin is therefore exceptional.

Freshwater on Cold Ground

The Derryvree plants and insects indicate a cold, open and wet landscape rather than a wooded Irish countryside. Pollen, mosses, plant macrofossils and beetles point to tundra-like or muskeg conditions: sedges and grasses around pools and slow water, herb-rich ground, low shrubs and extensive mossy wetland. The fossil record includes bogbean (*Menyanthes trifoliata*) and mountain avens (*Dryas octopetala*), plants well suited to cold conditions and now familiar in Ireland chiefly from specialised habitats. Their survival in the sediment is direct evidence that vegetation grew locally or very nearby; it is not proof of a uniform island-wide plant cover.

Periglacial processes mattered as much as plants. Repeated freezing and thawing could fracture rock, disturb surface soils and alter drainage. A short growing season nevertheless supported freshwater life and ground vegetation. These were productive patches in a severe world, not a featureless snowfield. The presence of organic sediment itself implies standing or slow-moving water in which plant remains could accumulate and escape complete decay. Yet it would be misleading to turn a single Fermanagh basin into a landscape painting of every Irish region. Derryvree records one locality at one broad interval within a climatically changeable stage.

The modern Irish physical landscape had not yet acquired all its later forms. Some limestone caves, valleys and bedrock uplands already existed, but many familiar superficial features—drumlins, eskers, widespread tills and glacially modified basins—were still being made, remade or would be substantially altered by later ice. The principal regional change was the growing importance of the British–Irish Ice Sheet. Modern reconstructions show that its growth towards maximum extent was asynchronous, with different sectors advancing and reaching their maxima at different times. By the Last Glacial Maximum, after this nominal date, ice would cover almost all of Ireland and adjacent shelf areas.

Animals at Castlepook

Southern Ireland provides a contrasting archive. Castlepook Cave, also called Mammoth Cave, lies in the limestone country north of Doneraile. Excavations conducted in the early twentieth century yielded a remarkable assemblage of Late Pleistocene fauna. Reindeer, woolly mammoth, giant deer, brown bear, wolf, foxes, mountain hare, lemmings and spotted hyaena are among the animals identified from the cave system. This is firm evidence that Ireland, over the wider Late Pleistocene, was intermittently accessible to a far richer and colder-adapted fauna than its later historical animal communities.

It does not mean that all these creatures gathered outside Castlepook in 31,719 BCE. Cave deposits are accumulated histories. Carnivores can carry prey and carrion into caves; animals may die in or near entrances; water, roof falls, burrowing and excavation can redistribute bones. Moreover, Castlepook's early excavation predates modern stratigraphic methods. The collection is immensely important, but its original contexts were incompletely recorded. Re-dating with improved bone pretreatment has also revised several ages significantly older than results obtained in the 1990s. The 2020 reassessment suggested that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum, perhaps around 40,000 cal BP. Species lists must therefore be read as a time-extended fauna, not as a single simultaneous ecosystem.

Reindeer remain especially relevant to the broad climatic setting. They are well adapted to open, cold country and their Irish remains accord with the picture from Derryvree of treeless, herb- and sedge-bearing habitats. Mammoth and giant deer imply substantial forage in suitable seasons; wolves and hyaenas indicate predators and scavengers following animal concentrations. The workings of this food web were ecological, not economic in the human sense. It would be anachronistic to describe herds as Irish resources unless there is secure evidence that people exploited them.

The Human Question

That question is important because one reindeer femur from Castlepook has been publicised as bearing a deep mark interpreted by zooarchaeologist Ruth Carden as a modification made by a sharp stone tool during butchery. The bone has been reported as about 33,000 years old, making it potentially close in age to the broad period represented by this article. If the interpretation and context are sustained, it would be striking evidence for a human presence in Ireland vastly earlier than the well-established later prehistoric record.

Potential is not the same as demonstration. A single modified bone, particularly one from an old cave collection, cannot establish a settlement, a continuing population, a family group or a route of migration. No securely associated stone-tool assemblage, hearth, dwelling floor, burial, human remains or occupation surface of this age has yet defined an Upper Palaeolithic community in Ireland. Bone surface modifications also require exacting analysis, because carnivore teeth, trampling, weathering, sediment movement, handling and excavation damage can produce marks that resemble human action. Renewed work at Castlepook has sought surviving deposits, but the scale and survival of undisturbed Pleistocene evidence remain limited.

The most careful conclusion is that Ireland around this broad date may have been visited by people, but permanent or recurrent human occupation has not been established. Elsewhere in north-west Europe, Upper Palaeolithic groups were mobile hunter-gatherers who made stone tools and followed seasonal landscapes. That comparison helps identify what a short Irish visit might have involved; it does not permit

the importation of their camps, social identities or artistic traditions into Ireland without local evidence. There is no basis for identifying language, ethnicity, political authority, diplomacy, warfare, religion or formal learning here.

What Cannot Be Recovered

Political history is absent. No chiefdom, territory, alliance or conflict can responsibly be described for Ireland at this date. Nor can archaeology identify households, gender roles, kinship systems, food-sharing rules, belief or ritual. The caves and sediments have not produced art, ornaments, structures or funerary practice attributable to this period. There is likewise no evidence for agriculture, herding, metalworking, long-distance trade or a settled economy. Ireland's earliest securely documented farming societies belong tens of millennia later.

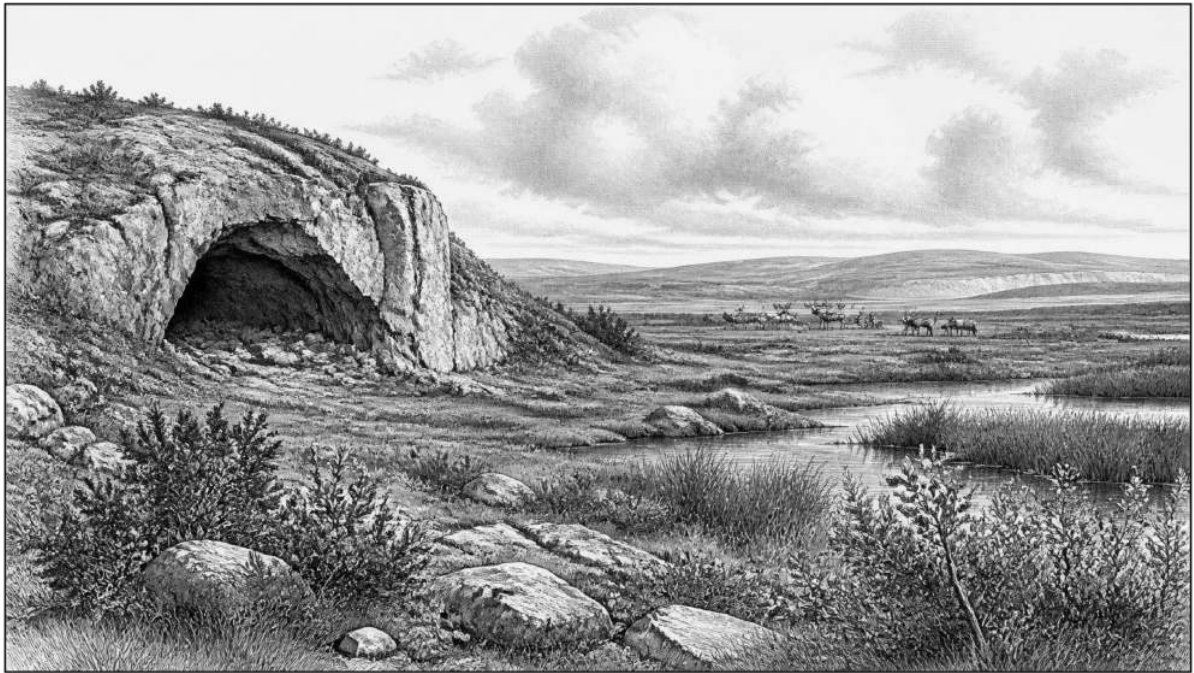
Even travel requires restraint. Global sea level was lower during the Ice Age, but Ireland's connections to Britain and the European mainland depended on shifting sea level, local uplift and subsidence, ice margins, river systems and coastal geography. It is unsafe to imagine a simple permanent land bridge, still less a known human route. Animal colonisation proves that land or ice-crossing pathways existed at some times, not that they remained continuously open or that people used them.

The most meaningful story around 31,719 BCE is thus one of environmental possibility and evidential limits. Derrynvree preserves cold freshwater life between glacial episodes. Castlepook preserves the remains of animals that ranged through very different Ice-Age Ireland. One marked reindeer bone raises the prospect of human activity, but does not yet furnish a settled prehistoric society. Far from being empty, the evidence is exacting: it tells of wet tundra, mobile animals, unstable ice margins and a landscape repeatedly reshaped by climate. It also insists that the apparent precision of a modern BCE year must yield to the broader, calibrated time spans through which the distant Irish past can actually be known.

Chapter 083 of 100

31718 BCE

Cork's Palaeolithic Cutmark^[83]



31,718 BCE is not a year to which Irish prehistory can be dated with calendar-like precision. The label is a modern conversion, roughly placing the horizon around 33,700 years before present (where “present” is conventionally AD 1950). No document, settlement layer or event can be assigned to this individual year. The responsible historical setting is the later part of Marine Isotope Stage 3 (MIS 3), a climatically volatile interval of the last Ice Age, before the fullest development of the last British–Irish Ice Sheet. Evidence for Ireland at this depth of time is sparse, uneven and often recovered from old cave excavations; calibrated date ranges and broad environmental phases are more meaningful than a numbered year.

A Landscape Before Maximum Ice

Ireland was not the green, wooded island familiar today. Across north-west Europe, long cold phases were interrupted by comparatively milder interstadials, sometimes with striking rapidity. In Ireland, the surviving evidence suggests a patchwork rather than a single uniform “ice-age landscape”: open grassland and herb-rich tundra, bare or stony ground, low shrubs, wet hollows, streams and sedge-rich marshes. Conditions varied greatly with altitude, exposure, season and the changing proximity of ice. Pollen, plant macrofossils, insects, cave deposits and glacial sediments can all illuminate parts of that world, but none supplies a weather report for a particular day in 31,718 BCE.

The larger direction of change was ominous. Reconstructions of the last British–Irish Ice Sheet place its build-up after roughly 35–32 thousand years ago, with extensive growth continuing towards a maximum reached much later, around 27–21 thousand years ago. This does not mean that all Ireland was simultaneously swallowed by ice at the date represented here. Ice-sheet growth was regionally uneven,

and southern Irish cave faunas show that animals had occupied at least some Irish landscapes during MIS 3. Yet the eventual advance and erosion of ice help explain why the island retains so little direct evidence of early people: camps, surfaces and shallow deposits were vulnerable to destruction or burial.

Castlepook's Extraordinary Archive

The most important evidence close to this horizon comes from Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Its limestone passages, including galleries given names such as Hyaena Hall and Elephant Hall by early investigators, produced more than 2,000 animal bones during excavations between 1904 and 1918. The cave is Ireland's richest known archive of vertebrate life from the period leading towards the Last Glacial Maximum. It is therefore central not because it proves a complete story of Irish settlement, but because it shows that a remarkable Ice-Age fauna reached the island.

That fauna includes reindeer, woolly mammoth, giant deer, brown bear and spotted hyaena, alongside wolf, Arctic fox, mountain hare and lemmings in the wider cave record. A species list should not be mistaken for a snapshot of one community living together in one season. Individual bones carry different ages; carnivores accumulated some remains; water and sediment shifted others; and early excavators could not apply the fine stratigraphic recording expected today. Nevertheless, the assemblage strongly indicates that open-country grazing animals and their predators could move through parts of Ireland during the later Pleistocene. The presence of spotted hyaena is especially revealing: Castlepook is Ireland's sole known site for this formidable scavenger and predator.

The Reindeer Femur

One bone gives this date its particular historical interest. A reindeer femur from Castlepook has been reported as dating to about 33,000 years ago and bears a deep incision interpreted by zooarchaeologist Ruth Carden as consistent with cutting by a sharp stone edge during carcass processing. If that reading is sustained, it would be potentially the earliest evidence of human activity in Ireland, far earlier than the better-established terminal Pleistocene and Mesolithic record. It would show that at least one person, or a small party, had contact with a reindeer in Ireland or brought a butchered portion of that animal into the cave's wider setting.

But the distinction between evidence and interpretation is crucial. The radiocarbon result dates the animal bone, not a named human visitor or a permanent occupation. Identifying a mark as a cut made by a stone tool is a taphonomic judgement: it must be weighed against carnivore damage, trampling, breakage, weathering and damage incurred during excavation and storage. Nor does a modified bone establish where the animal was killed, where it was processed, or whether the bone entered the cave immediately afterwards. Castlepook has not yet yielded a securely associated lithic assemblage, hearth, dwelling floor, burial, art or intact occupation surface of this age. It is a major clue to possible Upper Palaeolithic activity, not proof of an Irish village or continuous population.

People, If Present

If humans did visit Ireland around this broad period, they would have belonged to mobile Upper Palaeolithic hunter-gatherer societies within the wider north-west European world. Their economy would have depended on knowledge of animal movement, seasonal resources, shelter, fire and sharp stone tools.

Reindeer could provide meat, fat, hide, sinew and bone, but it would be unsafe to reconstruct a specialised reindeer-hunting culture from one Irish femur. Woolly mammoth and giant deer were also present in the regional faunal record, while hyaenas and wolves made encounters with carcasses and caves complicated and potentially dangerous. A cave may have been a den, a refuge, a place where remains accumulated naturally, or only an occasional human stopping-place; it need not have been a home.

There is no evidence from Ireland for political communities, named leaders, warfare, diplomacy, territorial states, formal trade institutions, farming, pottery, monuments, writing or organised religion at this horizon. Those are not gaps waiting to be filled by imaginative storytelling; they are matters beyond the reach of the evidence. Small groups may have maintained social ties across sea channels and adjacent lands, but even the route into Ireland cannot be described confidently. Low global sea level altered coastlines and exposed areas of seabed, yet whether dry connections, ice routes, short crossings or combinations of these enabled movements remains debated and depended on changing local topography and ice.

Insularity and Movement

For animals as for people, Ireland was not simply either an island or a peninsula. Glacial loading, lowered sea level, crustal movement, sea ice and shifting ice margins created a changing geographical problem. Some reconstructions have proposed connections between Britain and Ireland during glacial lowstands, while other work stresses the depth and complexity of the Irish Sea and rejects a straightforward, enduring southern land bridge. The prudent conclusion is that mammal colonisation demonstrably occurred at intervals between at least about 45,000 and 20,000 years ago, but the precise pathways, duration and frequency of crossings remain uncertain.

This uncertainty matters for the human question. The well-supported later evidence from Alice and Gwendoline Cave in County Clare concerns a butchered brown-bear patella calibrated to the terminal Pleistocene, many millennia after the Castlepook reindeer. That find was based on modern analysis of old collections and demonstrates both the promise and the limits of Irish cave archaeology. Recent reassessment of the Clare cave also warns that cave sediments may be redeposited and that human action cannot automatically be inferred from every bone-bearing context. Castlepook's reindeer therefore deserves neither dismissal nor exaggeration: it directs research towards undisturbed deposits, repeat dating, microscopic analysis and the search for associated artefacts.

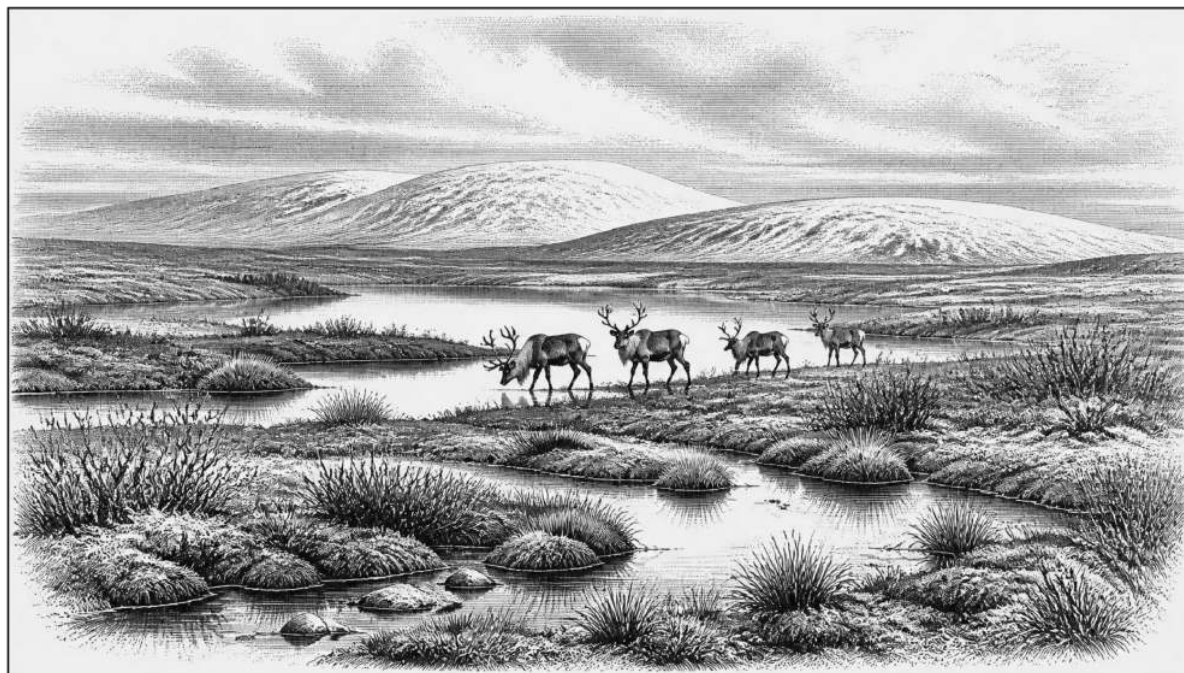
What Can Be Said Responsibly

Around the broad interval represented by 31,718 BCE, Ireland was an Ice-Age land of open habitats, wet ground and changing cold conditions, inhabited at least intermittently by large herbivores and carnivores now absent from the island. Castlepook Cave in north Cork preserves the strongest faunal window onto that lost world. Its reindeer femur raises the serious possibility that Upper Palaeolithic people processed animals in Ireland before the last ice sheet reached its greatest extent. Yet the evidence does not permit claims for a permanent settlement, an Irish population, a political landscape or a calendar-year event. The history of this moment is not one of kings or chronicles, but of bones, sediment, climate and a single contested mark that has made Ireland's deep past newly important.

Chapter 084 of 100

31717 BCE

Derryvree's Mossy Basin^[84]



31,717 BCE is a modern calendar label, not a date that can be recovered from Irish prehistory with year-by-year precision. It falls roughly 33,667 years before 1950, in the later part of Marine Isotope Stage 3, a volatile phase of the last Ice Age. Radiocarbon measurements from this depth of time must be calibrated into broad calendar ranges, and the calibration curve itself carries uncertainty. The most responsible account, therefore, is not a supposed event in one Irish year but an evidenced reconstruction of the landscapes, animals and possible human activity that belong to the surrounding millennia.

For Ireland, the crucial evidence comes from deposits beneath later glacial sediments, from cave bones in the south, and from cave mineral growth in the south-west. It establishes a changing, cold country before the full expansion of the last British–Irish Ice Sheet. It does not provide named peoples, a settlement plan, a political boundary or a historical narrative in the ordinary sense. Even the date most closely relevant here, from organic layers at Derryvree in County Fermanagh, is a range rather than a pinpoint: an old radiocarbon determination of $30,500 \pm 1,200$ radiocarbon years BP was formerly calibrated to about 36,900–31,700 calendar years BP. This nominal year sits within that wide interval, not at a securely observed moment within it.

A Wetland Between Ice Advances

Derryvree offers one of the clearest Irish windows onto this earlier Ice Age world. In a road cutting through a drumlin, investigators recorded organic-rich freshwater silts and fine sands between two layers of till: stony sediment left by glacier ice. The sequence matters more than any single sample. An earlier ice advance had laid down the lower till; later, ice-free conditions allowed a wetland deposit to form; a

subsequent advance covered it beneath the upper till. The buried organic beds are consequently evidence for a real interval of exposed ground and fresh water in north-central Ireland before the great ice-sheet growth of the Last Glacial Maximum.

The environment represented was not Ireland's later green, wooded landscape. Plant remains include freshwater mosses and sedges, while the insect fauna has cold, northern affinities. In the older terminology of Irish Quaternary research it was described as a treeless muskeg: waterlogged, mossy ground, with sedgy margins, shallow pools and slow channels. "Tundra" is a useful broad shorthand, provided it is not imagined as a uniform white desert. Such ground could be biologically productive during a short growing season, yet exposed to severe winters, frost action and a strongly seasonal climate. Pollen and insect evidence from related Fermanagh and Antrim sequences supports a generally open landscape of grasses, sedges, dwarf birch or willow, heath and herbs rather than closed forest.

There is an important limit to that picture. These remains accumulated at particular wet sites, not across every hill and valley. Pollen may travel long distances or be redeposited; a plant preserved at a pool edge cannot be converted into a complete map of the island. Nevertheless, the convergence of botanical, insect and sedimentary evidence makes the central conclusion robust: during portions of this broad period, parts of Ireland had cold but unglaciated habitats, with vegetation sufficient to support animal life. The landscape was dynamic, and different regions could have experienced different conditions at the same time.

Ice Was Advancing, Not Yet Supreme

This was a prelude to a much harsher transformation. The Irish Ice Sheet did not simply appear everywhere at once. Recent reconstructions use onshore landforms, offshore sediments and numerical dating to show a long build-up from broadly ice-free conditions in parts of Ireland around 34,000 years ago towards a far more extensive ice sheet after about 24,000 years ago. The maximum phase came later still, conventionally within the Last Glacial Maximum, broadly around 26,500–19,000 years ago. Thus 31,717 BCE belongs to an era of approaching, uneven glaciation rather than securely to the peak ice cover.

That distinction has human importance as well as geological importance. Ice margins, frozen ground, meltwater rivers and exposed lowlands could rearrange routes and habitats repeatedly. Farther south-west, uranium-series dates from broken speleothems in Crag Cave, County Kerry, show that calcite grew episodically during Marine Isotope Stage 3. Since cave calcite needs water moving through the rock and conditions conducive to liquid water, this is independent evidence that comparatively milder episodes interrupted the long cold stage. It does not mean a stable warm Ireland; rather, it confirms abrupt climatic oscillation at a scale far beyond a single calendar year.

Castlepook's Animal World

In north Cork, Castlepook Cave near Doneraile preserves a different kind of archive. Early twentieth-century excavations recovered a large, complex collection of animal bones from several cave passages. Subsequent research has identified an Ice Age assemblage including mammoth, reindeer, giant deer, brown bear, wolf, fox, mountain hare, Arctic and Norway lemmings, and spotted hyaena. Individual bones need not all be contemporary, and cave deposits can mix material through carnivore activity, water movement, collapse and earlier excavation methods. Yet modern redating confirms that significant parts of the assemblage belong to Marine Isotope Stage 3, well before the Last Glacial Maximum.

This fauna gives substance to the Fermanagh wetland record. Reindeer and giant deer point to open country with grazing and browsing opportunities; lemmings and mountain hare accord with cold conditions; mammoth belongs to the wider northern European mammoth-steppe world. Predators and scavengers show that carcasses had more than one possible destination. A cave bone is not automatically a record of an animal dying where it was found. Hyenas, wolves and other carnivores could carry remains underground, while caves might also trap animals or receive sediment and bones from outside. Castlepook therefore documents an ecological community and a set of taphonomic processes, not a tidy scene of animals living permanently in the chambers.

The animal list should also be handled with restraint. It demonstrates that particular species reached Ireland at intervals during this part of the Pleistocene; it cannot establish their abundance across the entire island in 31,717 BCE. Nor do faunal remains reveal a fixed coastline. Sea level was substantially lower than today during glacial conditions and the outlines of the Irish Sea region differed greatly, but routes between Ireland, Britain and continental Europe changed with sea level, ice and local topography. Physical access for animals was evidently possible at some times; the exact pathways and timing remain subjects of reconstruction rather than settled fact.

The Human Question

The most arresting possibility is a reindeer femur from Castlepook bearing a deep mark interpreted by zooarchaeologist Ruth Carden as damage made by a sharp stone tool during butchery. County Cork's heritage record presents the bone as dating to about 31,000 BC, and public reporting has described it as evidence of human activity roughly 33,000 years ago. If that interpretation is sustained, it would push the evidence for people in Ireland far beyond the long-accepted post-glacial record. It would fit a world in which mobile Upper Palaeolithic hunters could have followed large herbivores through north-west Europe.

But the wording matters. The bone is compelling evidence for a dated reindeer and a potentially humanly modified surface; it is not, by itself, proof of a permanent settlement, a population size, language, ancestry or named archaeological culture. Castlepook was excavated long before present-day standards of stratigraphic recovery, and its bone deposits accumulated through multiple natural processes over long periods. No securely associated stone-tool assemblage, hearth, dwelling floor or cemetery of this age has yet been identified in Ireland. Recent excavations have located further Pleistocene bone-bearing deposits and have shown why careful re-examination of the cave remains valuable, but they have not converted the one marked femur into a complete occupation record.

No Kingdoms, No Known Trade

Accordingly, there are no political affairs, diplomacy, warfare, rulers or institutions that can responsibly be assigned to Ireland at this date. There is no evidence for farming, villages, metalworking, monuments, writing, formal religion or exchange networks. It would be equally misleading to fill the silence with a generic "tribal" society. If people did visit, the evidence is compatible only with small-scale, highly mobile hunter-gatherer activity focused on animal resources. Meat, hides, bone, antler, sinew and fat would have been valuable materials in such a lifeway elsewhere in Upper Palaeolithic Europe, but their use in Ireland at this date remains an inference, not something directly demonstrated by the Castlepook bone.

Religion, art and learning likewise leave no identifiable Irish trace from this period. The capacity for complex social life and symbolic culture among contemporary people elsewhere in Europe should not be mistaken for evidence that a particular artistic or ritual tradition existed on this island. The strongest cultural lesson is methodological: Ireland's earliest past is reconstructed through patient comparison of sediments, pollen, insects, bones, cave minerals and dating techniques, each with its own uncertainty. The absence of a conventional historical record is itself a defining fact of the period.

A Future Ice-Bound Island

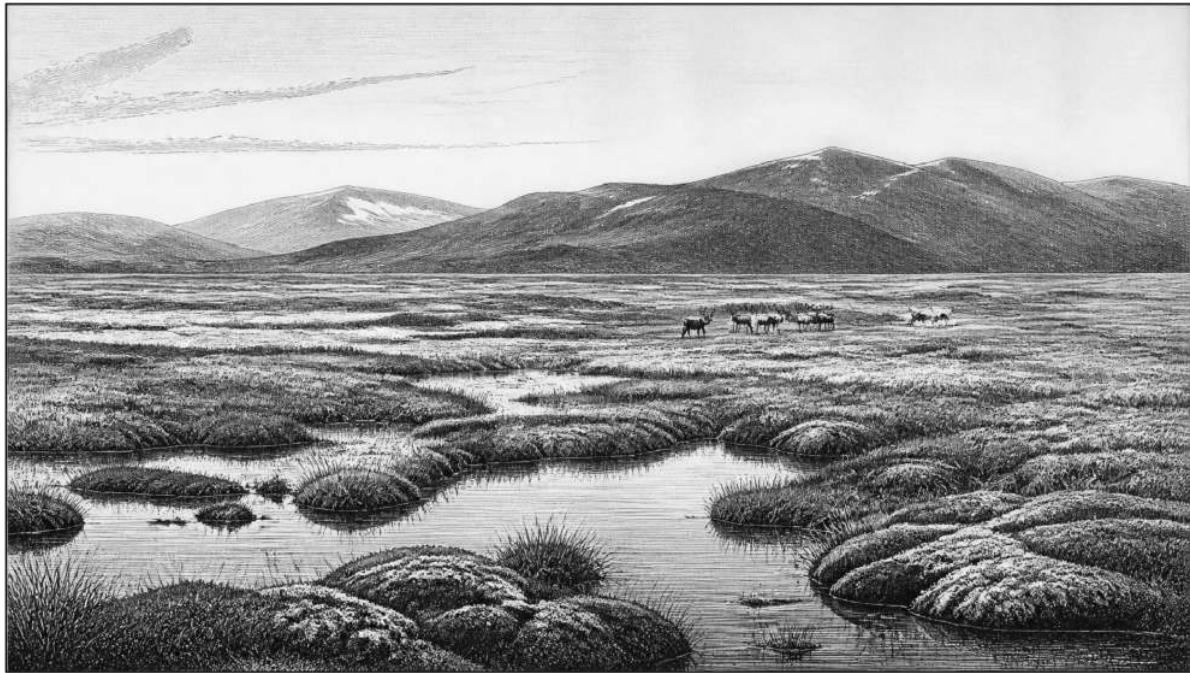
What followed was not gradual progress towards later prehistoric Ireland. The growth of the British-Irish Ice Sheet erased, buried or displaced much of the evidence that might once have existed, while changing climates repeatedly altered habitats and connections. A later, full-glacial Ireland was far less hospitable over extensive areas. Only after deglaciation would new plant and animal communities spread, and only much later would the securely documented Mesolithic settlement record begin. The fragmentary archives at Derryvree, Crag Cave and Castlepook are precious precisely because they preserve glimpses from before that destructive ice advance.

For the notional year 31,717 BCE, then, the defensible picture is of an unsettled Ice Age Ireland: at least some ground free of the later ice sheet; cold freshwater wetlands in the north; open, seasonal habitats supporting large herbivores and carnivores in the south; and a provocative but still limited indication that humans may have briefly processed a reindeer. It is not a year of kings or battles. It is a deep-time threshold, where environmental evidence is strong, animal evidence is substantial, and the human story remains tantalisingly incomplete.

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31716 BCE

Castlepook's Ambiguous Chopping Mark ^[85]



The label *31,716 BCE* is a modern chronological convenience, not a year that anybody in prehistoric Ireland could have named, recorded or remembered. It corresponds roughly to 33,665 years before AD 1950, the conventional ‘present’ used in radiocarbon reporting. At such depth in time, however, neither archaeology nor earth science can identify an Irish event within a single calendar year. The most responsible approach is to place this point within the later part of the Late Pleistocene, broadly Marine Isotope Stage 3, and to use wide calibrated ranges rather than pretend to annual precision.

For Ireland, the evidence is unusually thin and unusually important. It comes not from settlements, graves, rulers, weapons or written traditions, but from cave bones, buried wetland sediments, pollen, insects, glacial deposits and the difficult task of dating them. Around the time represented by this date, Ireland was a cold, changeable north-western edge of Europe. It was not yet the fully ice-covered landscape of the Last Glacial Maximum, although the expansion of the last Irish Ice Sheet was approaching. Whether people briefly visited it remains an open archaeological question rather than an established chapter of continuous habitation.

A Date Within Broad Ranges

Radiocarbon years and calendar years are not interchangeable. Atmospheric carbon-14 levels altered over time, so laboratory determinations must be calibrated against internationally maintained curves. At around 34,000 calendar years before present, the results are necessarily broad and sometimes irregular ranges. The modern label 31,716 BCE therefore cannot be matched to a cave visit, an animal death or a change of season.

One of the most relevant Irish sequences lies at Derryvree, near Maguiresbridge in County Fermanagh. There, organic silts and sands were found between separate layers of till, sediment laid down by glacier ice. A conventional radiocarbon determination of $30,500 \pm 1,200$ radiocarbon years BP from the intervening deposits has been calibrated to a broad range of approximately 36,900–31,700 calendar years BP. The range overlaps the time represented by 31,716 BCE, but that overlap does not prove that the Derryvree wetland existed in this precise numbered year. It shows, more cautiously, that north-central Ireland retained ice-free freshwater environments during part of the long interval before later ice overran them.

Nearby Greenagho, also in County Fermanagh, produced organic material beneath till with a radiocarbon age of $32,500 \pm 300$ BP, calibrated broadly to about 37,200–35,700 calendar years BP. Taken together, the sites illuminate a regional landscape before the island's last extensive glaciation. They are not annual chronicles, and their old measurements and disturbed geological settings require continuing scrutiny. Yet they decisively complicate any simple picture of Ireland as permanently buried under ice throughout the Ice Age.

Wetlands on Open Ground

The Derryvree deposits preserve clues to a cold, treeless environment. Mosses, sedges, bogbean and other plant remains, together with insect evidence, point to freshwater pools, marshy ground and tundra-like vegetation. 'Tundra' here should not conjure a featureless white wilderness. It describes open country where low-growing plants could survive short summers and severe winters, where water collected in hollows, and where freezing and thawing repeatedly disturbed soil and sediment. Local shelter, aspect, drainage and season would have mattered greatly.

Such deposits offer a more secure picture of environment than of human life. They indicate vegetation and water, but cannot reveal a political territory, a population total or a social group. There were no Irish states, chiefs, boundaries, diplomatic agreements or named communities recoverable from this evidence. Nor is there evidence for farming, permanent villages, pottery, metalworking, long-distance commerce or organised religion in Ireland at this time. Those subjects belong to vastly later prehistoric periods. To fill their absence with imagined Ice-Age tribes would be misleading.

The landscape itself was also geographically unfamiliar. Global sea level was lower than today because immense volumes of water were locked in ice sheets. Nevertheless, lower seas did not automatically provide a simple, dry land bridge from continental Europe to Ireland. The evolving Irish Sea basin, ice margins and local relative sea levels made routes variable and contested. Animals plainly reached Ireland in favourable phases, while any human crossing would have demanded knowledge, opportunity and substantial resilience. Possible access across exposed or narrowed coastal zones is an interpretation based on palaeogeography, not evidence of a particular journey.

The Castlepook Question

The most arresting evidence relevant to human activity comes from Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Excavations undertaken from the late nineteenth century into the early twentieth recovered a remarkable Ice-Age fauna. The wider assemblage includes remains attributed to woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare,

lemmings and spotted hyaena. A cave is not automatically a human site: carnivores carry bones into caves, gnaw them, scatter them and use protected chambers as dens. Water, sediment movement and antiquarian excavation can further mix deposits.

A reindeer femur from the Castlepook collection has become central to debate. It was reported as dating to roughly 33,000 years ago and bears a deep linear mark interpreted by palaeozoologist Ruth Carden as consistent with the use of a sharp stone implement during carcass processing. If that interpretation is confirmed, it would represent exceptionally early evidence that people handled a reindeer in Ireland during the Upper Palaeolithic, long before the better-established post-glacial settlement of the island.

But the qualifications are as important as the possibility. The bone derives from an old collection rather than a modern excavation with a fully documented stratigraphic context. No securely associated stone tool, hearth, dwelling floor, human bone or camp deposit has yet demonstrated an occupation at Castlepook around this time. A cut-like mark must be distinguished from damage caused by carnivore teeth, trampling, excavation or geological processes. The femur may support an episode of butchery; it cannot, on its own, demonstrate a resident population, a settlement or a continuous lineage of inhabitants.

This is why the word ‘ambiguous’ is not a dismissal. It describes a productive scientific condition. The Castlepook bone has directed attention back to museum collections, old cave records and surviving sediments that were once thought exhausted. New excavations have sought undisturbed deposits in the cave system, while improved dating, microscopic study and ancient biomolecular techniques offer ways to test older conclusions. The evidence is potentially transformative precisely because it is being subjected to stronger tests.

Animals, Predators and People

The fauna suggests that parts of Ireland could sustain substantial animal life during suitable late-Pleistocene intervals. Reindeer are particularly evocative because their presence implies open, cold-adapted grazing landscapes. Mammoth and giant deer indicate that large herbivores sometimes entered the wider region, while hyaena, wolf and bear reveal a food web with formidable predators and scavengers. These animals did not necessarily live together at precisely the same moment; cave collections can combine remains accumulated across many centuries or millennia. The assemblage is evidence for a changing faunal world, not a single neatly reconstructed scene.

If people did reach Ireland, their economy would have been based on immediate survival rather than trade in any later sense: mobile hunting and gathering, the use of stone tools, and careful use of meat, fat, hide, sinew, bone and perhaps antler. This is a reasonable inference from Upper Palaeolithic lifeways elsewhere in north-west Europe and from the proposed processing mark at Castlepook. It is not a directly excavated Irish household. No evidence currently permits claims about language, kinship rules, ritual practice, art, leadership or exchange networks on the island in this interval.

Nor should the possible visitors be turned into an uncomplicated origin story. At about 31,716 BCE, anatomically modern humans were widespread in Europe, but no human remains from Ireland securely identify who, if anyone, made the Castlepook mark. Even a genuine butcher’s cut would record an encounter with one animal, perhaps during a short visit, rather than the foundation of ‘the Irish’ as a people. The later ice-sheet advance would in any case have transformed and eroded many landscapes in which a camp might once have stood.

Approaching a Glacial Transformation

Research on the British–Irish Ice Sheet indicates that its build-up followed roughly after 35,000–32,000 years ago, with maximum extent generally placed later, around 27,000–21,000 years ago, though timing varied by sector. Ireland’s ice cover was therefore neither an on-off event nor uniform across the island. At the time indexed by 31,716 BCE, evidence from Fermanagh supports some ice-free ground and freshwater habitats, while the broader climatic trend was towards a harsher, increasingly glaciated world.

That later advance explains the paradox of this period. Ireland may have offered habitable windows for animals and perhaps very occasional people, yet the geological force that followed destroyed, buried or displaced much of the evidence they left. Caves and sealed sediments are precious because they escaped that erasure imperfectly. They provide fragments rather than a full social history.

The Ireland of this date, then, has no politics or diplomacy that can responsibly be narrated, and no confirmed community whose customs can be described. It has cold wetlands at Derryvree, faunal evidence in Cork caves, shifting coastlines, and the prospect of expanding ice. Above all, it has the Castlepook reindeer femur: not proof of a settled Palaeolithic Ireland, but a serious and still-testing clue that human activity may have reached the island during one of the last openings before the great ice-sheet transformation.

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31715 BCE

Cork's Pleistocene Crossroads^[86]



31,715 BCE is a modern retrospective label, not a date that can be matched to a recorded Irish event. At this depth of time, modern calendar-year precision is unavailable. The useful chronological language is instead Late Pleistocene, broadly Marine Isotope Stage 3 (MIS 3), and calibrated ranges measured in millennia. This nominal year falls about 33,664 years before the conventional radiocarbon reference point of AD 1950. It lies within a cold, unstable part of the last Ice Age, before the Last Glacial Maximum, when ice sheets later expanded across much of Ireland. What can be known of Ireland at roughly this point comes from cave bones, buried freshwater sediments, pollen, mosses, insect remains and glacial landforms—not chronicles, settlements or named peoples.

A Date Range, Not a Diary Entry

Radiocarbon years are not the same as calendar years. The amount of radioactive carbon in the atmosphere has varied through time, so dates must be calibrated against an internationally maintained curve. Even with modern calibration, a specimen more than 30,000 years old commonly produces a broad calendar range rather than a precise annual result. Nor does a date on animal bone automatically date every later mark, movement or burial process affecting it. For 31,715 BCE, then, it is responsible to describe conditions around the mid-34th millennium before present, rather than to claim that a particular event happened in this one numbered year.

This caution matters especially in Ireland, where later glaciation damaged or removed many older land surfaces. The archaeological record is consequently thin and uneven. A cave deposit may preserve bone brought in by carnivores, water or collapse; a road cutting may reveal a pocket of organic sediment

sealed between tills. Such evidence is exceptionally valuable, but it is not equivalent to a carefully excavated camp floor. The history of this period is therefore one of environments and possibilities, with the limits of the evidence forming part of the story.

Castlepook and the Reindeer Bone

The most consequential evidence close to this date comes from Castlepook Cave, near Doneraile in north County Cork. Excavations undertaken principally in the early twentieth century recovered a large and varied collection of Pleistocene animal remains from its limestone galleries. Later researchers, working with museum collections and improved radiocarbon methods, have shown that Castlepook preserves material from more than one phase of the last glacial cycle. The assemblage includes reindeer, woolly mammoth, giant deer, brown bear, wolf, Arctic fox, lemming and spotted hyaena. It records an Irish fauna far richer, colder-adapted and more changeable than the island's recent fauna.

A reindeer femur from the cave has particular importance. It has been presented as dating to roughly 33,000 years ago and bears a deep mark interpreted by zooarchaeologist Ruth Carden as damage made with a sharp stone edge while the bone was fresh: possible evidence of carcass processing by people. If that interpretation is confirmed, it would push evidence for human activity in Ireland far earlier than the long-established post-glacial record. It would not, however, establish a permanent settlement, a continuous population, a named culture or a particular hunting party in 31,715 BCE.

The distinction is fundamental. The bone derives from an old cave collection, not a newly excavated, intact occupation layer with associated tools, hearths and living surfaces. Castlepook's deposits were affected by carnivores, sediment movement, cave processes and early excavation practices that did not meet modern recording standards. The radiocarbon measurement dates the animal's death, while identifying a cut mark requires a separate taphonomic judgement. No securely associated lithic assemblage, dwelling, human burial or fire-place of comparable age has yet been published from the site. The femur is therefore a potentially transformative trace of a human action, not proof of an established Ice-Age community.

A Carnivore Cave in Open Country

The cave itself was probably often a carnivore place rather than a human home. Early investigators named chambers Elephant Hall, Hyaena Hall and Wolf Hall because of the animals represented there. Reindeer did not need to enter a narrow cave voluntarily for their bones to arrive within it: predators and scavengers could drag portions of carcasses underground, consume them, leave gnawed remains and mix bones from separate episodes. Spotted hyaenas, now absent from Europe, were powerful bone collectors. Their presence warns against treating the Castlepook assemblage as a simple list of animals living simultaneously outside the entrance.

Even so, the fauna offers a powerful environmental picture. Reindeer and lemming point to cold, open habitats. Mammoth, giant deer and other grazers required extensive feeding grounds, while bears, wolves and hyaenas occupied different positions in the food web. The best reconstruction is neither an unbroken snowfield nor a modern green Ireland. It is a shifting mosaic of herb-rich tundra or steppe-tundra, grasses and sedges, patches of bare or frost-disturbed ground, damp hollows, pools, mossy ground and low woody plants where conditions allowed. Seasonal contrasts would have been severe, and the availability of forage, carrion and shelter would have varied sharply across the year.

Fermanagh's Buried Wetlands

North Cork is not the only guide. At Derryvree near Maguiresbridge in County Fermanagh, road works exposed freshwater silts and fine sands sealed between two thick tills within a drumlin. Organic material from this sequence produced a conventional radiocarbon determination of 30,500 years before present, with a substantial uncertainty; calibration places it broadly across a span that includes the time represented by this article. Its pollen, plant macrofossils, mosses and insect remains indicate an open tundra landscape and a periglacial climate. The sediments preserve a wetland world with pools and plant-rich ground, rather than a landscape buried continuously under ice.

Nearby Greenagho and the important Pleistocene sequence at Aghnadarragh, County Antrim, add to the picture of regional variation. Their inter-till deposits show that cold-stage Ireland did not have one fixed climate or one unchanging ice margin. Some organic horizons preserve evidence for treeless open ground; others suggest intervals in which shrubs or trees could survive locally under less severe conditions. Pollen can be reworked from older deposits, and individual sequences require careful interpretation, but collectively they demonstrate fluctuation. Around this broad period, parts of Ireland were ice-free enough to sustain freshwater habitats, vegetation and large mammals, while the growth and movement of ice remained a major threat to their persistence.

Before the Ice Maximum

The British–Irish Ice Sheet was not yet at its last and fullest expansion. Modern reconstructions show that its advance and retreat were complex, asynchronous and regionally variable. Some areas may have supported ice while others remained exposed, and the timing of maximum coverage differs by sector. The later Last Glacial Maximum is generally placed around 26,000–19,000 years before present, though the timing of local advances must not be reduced to a single date. At approximately 33,700 years before present, Ireland stood in the lead-up to that more extensive glaciation: a place of rapidly changing climate and landscapes rather than a uniformly frozen island.

Lower global sea levels altered coastlines and exposed parts of the continental shelf. That would have narrowed some sea crossings and changed routes available to animals and, potentially, people. Yet it should not be assumed that Ireland was simply joined to Britain by a permanent dry corridor. Sea level, local topography, ice position and changing drainage made connections complex. Animal remains demonstrate that species reached Ireland at different times; they do not reveal one universal route, nor do they prove a human migration path. Any people represented by the marked reindeer bone may have arrived during a short favourable window, not necessarily as part of a lasting occupation.

People at the Edge of Evidence

If humans did butcher the Castlepook reindeer, they were mobile hunter-gatherers whose social world cannot be recovered in detail from one modified bone. Reindeer could provide meat, fat, hide, sinew, bone and antler; a stone edge could serve in dismembering a carcass or separating useful tissues. Such practical knowledge implies skill and cooperation, but population size, language, kinship, clothing, routes and length of stay remain unknown. There is no basis for identifying an Irish Aurignacian or Gravettian community, though Ireland lay on the far north-western fringe of European Upper Palaeolithic worlds.

Nothing supports claims about political institutions, leaders, territories, warfare, alliances or diplomacy. Nor is there evidence for trade in the later sense of regular exchange between known communities. The relevant economic activity, if people were present, was direct subsistence: obtaining animal and plant resources, finding stone suitable for sharp edges, moving through safe terrain and carrying valuable materials. These are reasonable inferences from the environment and the possible butchery trace, not documented facts about a local society.

No Recoverable Religion or Tradition

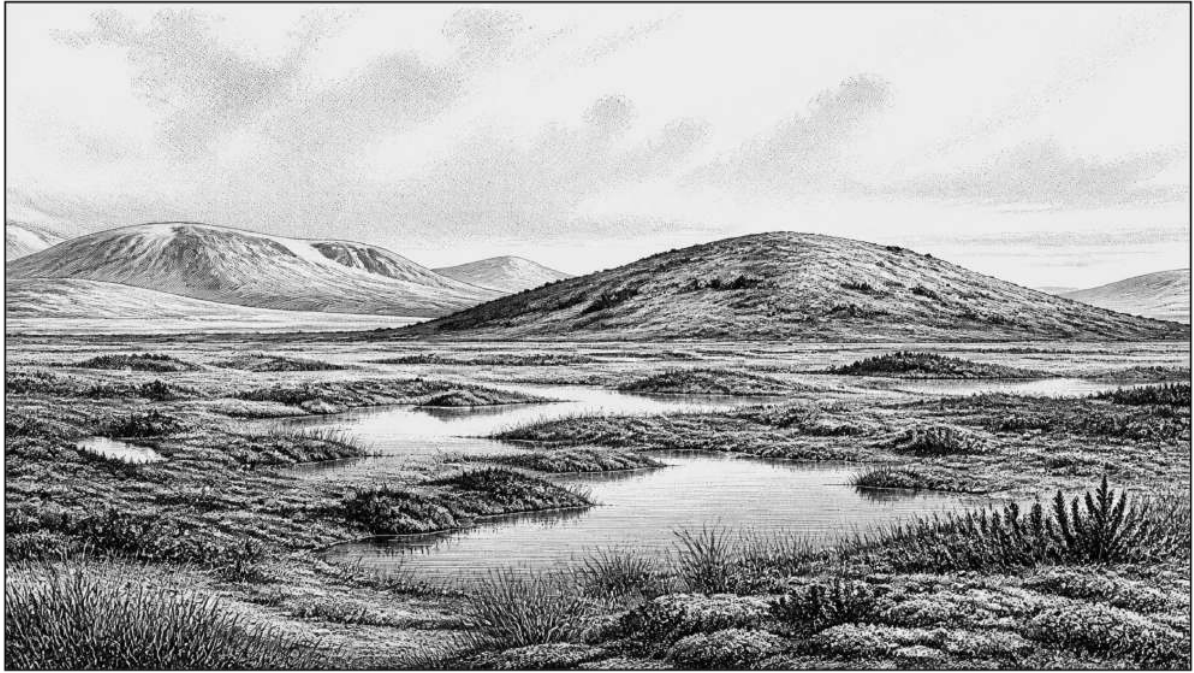
There are no Irish monuments, graves, figurative artworks, ornaments or written traditions securely attributable to this period. It would be an anachronism to project Celtic religion, Gaelic identities, medieval place-names or later sacred landscapes back more than thirty millennia. Caves can hold ritual meaning in many societies, but Castlepook provides no evidence that it was a shrine. Its demonstrated importance is as a difficult natural archive containing the remains of animals and perhaps the faintest material sign of people.

The lasting significance of this moment is therefore not a known event but a research question. Castlepook's marked reindeer femur, Derryvree's freshwater sediments and the wider record of glacial change show that Ireland was neither historically empty nor archaeologically simple during the later Ice Age. They also insist on restraint. Around 31,715 BCE, Ireland had cold open habitats, wetlands, large herbivores and carnivores; it may also have received brief human visitors. Whether those visitors formed part of a repeated, wider pattern of Upper Palaeolithic movement remains unresolved, awaiting securely stratified discoveries, further dating and transparent publication.

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31714 BCE

Derryvree's Drumlin Window^[87]



The label 31,714 BCE is useful for ordering a modern chronology, but it must not be mistaken for a date that could be recovered from the Irish evidence. Nobody in Ireland recorded a year, season or event by a calendar at this depth of time. In conventional archaeological terms, the label falls approximately 33,663 calendar years before AD 1950, within the Late Pleistocene and Marine Isotope Stage 3 (MIS 3), a climatically volatile portion of the last Ice Age. Radiocarbon results from this period require calibration and usually provide broad probability ranges, not a pinpoint year. The responsible subject, then, is Ireland during a wider environmental interval around the nominal date.

This was not an Ireland of settlements, chiefs, farms, monuments or securely known communities. Its history is preserved unevenly in buried silts, pollen, plant remains, insects, animal bones, cave sediments and the landforms left by ice. Those sources can establish much about habitat and animal life, and a little about possible human contact. They cannot supply a conventional political narrative. The most informative evidence comes from a freshwater deposit sealed beneath a drumlin at Derryvree near Maguiresbridge, County Fermanagh, and from the very different cave-bone archive at Castlepook near Doneraile, County Cork.

Dating an Unrecorded World

Marine Isotope Stage 3, broadly spanning about 57,000 to 29,000 years ago, was neither a single permanent freeze nor a steady march towards colder conditions. Greenland ice-core and North Atlantic records show abrupt climatic shifts on scales of centuries and millennia. Ireland, exposed to Atlantic

weather and lying near the changing margins of the British–Irish Ice Sheet, would have experienced the consequences in temperature, snowfall, growing seasons, drainage patterns, vegetation and animal movement.

The specific place of ice at 31,714 BCE cannot be reconstructed with confidence for every Irish region. Recent work does show that the ice sheet was dynamic before its later maximum, with advances and retreats varying around the archipelago. The principal maximum expansion associated with the Last Glacial Maximum came later, especially between roughly 30,000 and 22,000 years ago in different sectors, rather than occurring as one simultaneous island-wide event. At the notional date considered here, parts of Ireland may have been ice-covered or close to glacial margins, while other localities supported tundra-like or wetland environments. That regional unevenness is central, not an inconvenient qualification.

It also explains why the evidence is so fragmentary. Later glaciers eroded, buried and rearranged much of the older surface. Acid soils are poor conservators of bone. Open-air camps, if any existed, were exceptionally vulnerable to destruction. A cave or a waterlogged basin could preserve material, but each is a specialised archive: cave bones may have been gathered by predators or moved by water; pollen and plant fragments describe the surroundings of a particular former pool, not every hillside in Ireland.

A Wetland Beneath the Drumlin

Derryvree provides the clearest environmental window relevant to this period. During road works in 1969, workers exposed organic silts and fine sands beneath glacial deposits near Maguiresbridge. The sequence had formed beside freshwater during an ice-free interval and was subsequently overridden and sealed by renewed glaciation. Its organic material produced a conventional radiocarbon age of about 30,500 radiocarbon years before present. Calibration places the relevant environmental interval broadly within later MIS 3; published discussions give a range extending approximately from 36,900 to 31,700 calibrated years before present. Such figures illuminate the era around 31,714 BCE, but they do not date that numbered year itself.

The Derryvree deposits contain pollen, plant macrofossils, mosses and insect evidence. Taken together, they support an interpretation of open, mostly treeless ground with wet, mossy and sedgy habitats, shallow freshwater and areas affected by cold, frost-dominated conditions. Herbs and low shrubs, rather than closed woodland, formed the main vegetation. The old descriptive term “muskeg” has sometimes been used for parts of this landscape: an imperfect modern analogy, but one which conveys saturated, organic-rich ground broken by pools and plant cover.

This was not necessarily a featureless snow desert. In favourable seasons, wet ground could be biologically productive. Mosses, sedges, grasses and herbs supported insects and offered forage for grazing mammals; pools and marsh edges created habitats unlike nearby exposed mineral soils. Yet it would be wrong to turn the deposit into a detailed scene of daily weather. Derryvree records one local basin over a substantial interval. It demonstrates that northern Ireland had living, freshwater-associated terrain during part of the cold stage. It does not prove that every part of the island was similarly open, habitable or ice-free at precisely the same time.

Animals and Cave Archives

Castlepook Cave, in north County Cork, offers a complementary record of animals rather than a continuous landscape sequence. This limestone maze cave, also called Mammoth Cave or Doneraile Cave, was excavated mainly between 1904 and 1918. It is Ireland's richest known pre-Last Glacial Maximum vertebrate archive, with more than 2,000 recovered bones and directly dated remains spanning a long period, roughly 45,700 to 19,950 years before present. The breadth of that range is a warning: Castlepook is a record of many episodes, not a snapshot of one year or one animal community.

Its fauna includes woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena, as well as wolf, fox, hare and, in later deposits, lemmings and Arctic fox. These finds establish that, at different times, Irish environments could support or be reached by animals typical of cold-stage north-western Europe. They do not mean that mammoths, hyaenas, reindeer and every other species formed one herd outside the cave in 31,714 BCE. Re-dating and improved collagen preparation have revised the ages of several southern Irish specimens, in some cases by many thousands of years, while water disturbance and early excavation methods have complicated the original contexts.

Spotted hyaena is especially important for interpreting the cave. Carnivores could drag carcass parts underground, chew bones and use chambers repeatedly. Water could later redistribute material. A bone in a cave is consequently not, by itself, proof that people hunted its owner, camped nearby or visited the cave. The geological and palaeontological value of Castlepook lies precisely in its capacity to preserve a long and complicated animal archive, rather than in providing a simple prehistoric scene.

The Human Question

A reported reindeer femur from Castlepook has made this era unusually significant. Zooarchaeologist Ruth Carden identified a deep mark on the bone, and public reporting in 2021 described it as a possible fresh-bone cut or chop made during processing with a stone tool. The specimen was reported to date to about 33,000 years ago, close in broad chronological terms to the nominal date here. If that interpretation is sustained, it would indicate a brief human presence or activity in Ireland during the Upper Palaeolithic, far earlier than the well-established Mesolithic settlement record.

But the appropriate conclusion remains cautious. One modified bone is evidence for a possible action upon a carcass, not for a resident population, a settlement, a named archaeological culture or a migration route. No associated hearth, securely stratified stone-tool assemblage, dwelling surface, burial or artwork has yet established an Upper Palaeolithic community at Castlepook. The National Museum of Ireland continues to state that no clear evidence has emerged for human presence in Palaeolithic Ireland, while recent Castlepook research has sought better-contexted deposits, lithics, charcoal and further modified bone. The tension between the promising individual find and the absence of a wider assemblage is the central fact, not a flaw to be concealed.

It follows that neither politics nor diplomacy can responsibly be supplied for Ireland at this point. There is no evidence for groups exercising territory, conducting warfare, exchanging goods or maintaining formal alliances on the island. Nor can religion, language, learning, art or kinship arrangements be reconstructed. If people did arrive, they may have been highly mobile foragers operating within wider north-west European networks; that is an interpretation drawn from the broader Upper Palaeolithic world, not a demonstrated Irish social history. Ireland's own record cannot yet show whether such a visit was seasonal, singular, repeated or successful in establishing any lasting presence.

Connections, Coasts and Change

Lower global sea levels altered the geography around Ireland, exposing areas now under the Irish and Celtic Seas. It is tempting to describe this automatically as a dry land bridge to Britain or continental Europe. The reality was more complicated. The availability of a crossing depended on local sea level, glacial loading and rebound of the Earth's crust, the relief of the sea floor, river systems and the position of marine-terminating ice. Research on Irish insularity stresses that usable land connections could have been short-lived and geographically variable. For this date, ecological connection with neighbouring regions is safer language than a confidently drawn highway of land.

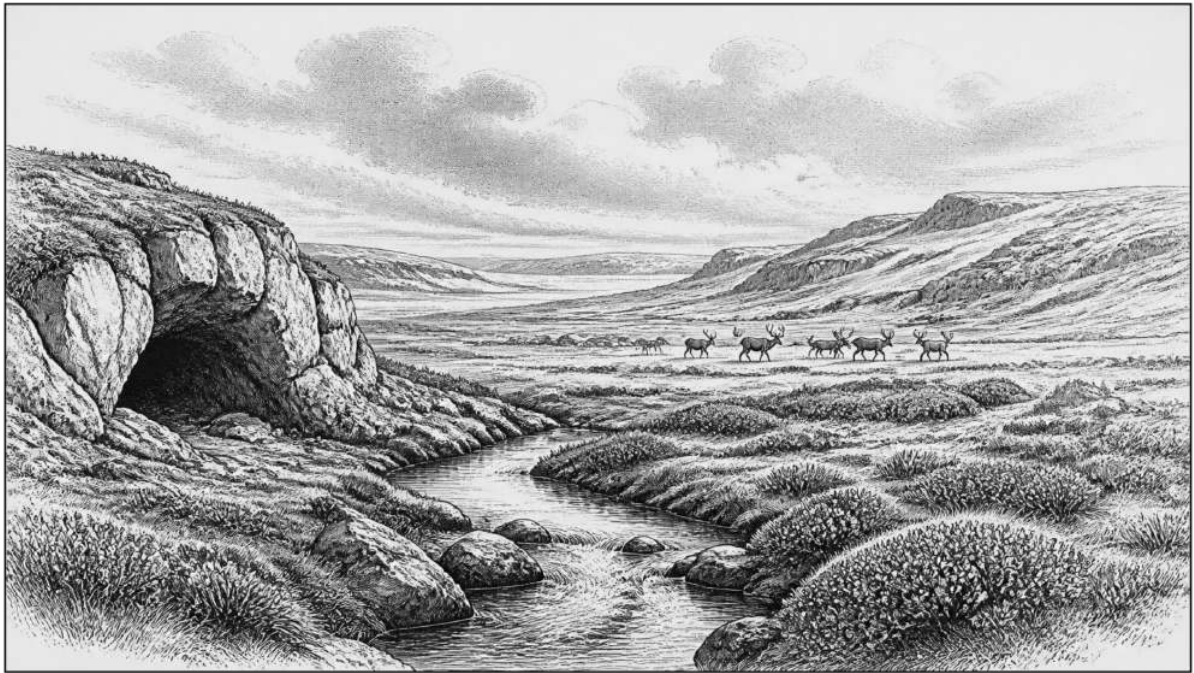
The decisive development around 31,714 BCE was therefore environmental instability. Open wetland-tundra landscapes survived in some localities; large mammals and predators reached Ireland at intervals; and ice later expanded across much of the country and continental shelf. The resulting erosion helps account for the silence of the archaeological record. Derryvree's buried organic layers and Castlepook's bone chambers are rare survivals from a world mostly removed by later cold, water and ice.

Ireland at this nominal date was not empty of history, but its history is chiefly geological and ecological. The evidence securely reveals a changing Ice Age landscape and an intermittent, varied fauna. It permits a carefully qualified possibility of human activity in Cork. Beyond that, the honest answer is uncertainty: the absence of year-by-year precision is not ignorance that can be repaired by invention, but the defining condition of studying Ireland so far beyond written memory.

Chapter 088 of 100

31713 BCE

Castlepook's Reindeer World ^[88]



Modern calendar precision cannot responsibly be projected into this part of prehistory. “31,713 BCE” is a useful point on a modern timeline, roughly 33,660 years before AD 1950, but no event in Ireland can be assigned to that single year. Radiocarbon ages have margins of error; their conversion into calendar ages requires calibration; and cave deposits often represent material accumulated over long intervals. The appropriate setting is therefore the later part of Marine Isotope Stage 3, a fluctuating cold phase of the Late Pleistocene, before the fullest expansion of the last British–Irish Ice Sheet.

For Ireland, the most illuminating evidence comes not from a settlement, a grave or a monument, but from animal bones, cave sediments, glacial landforms and the scientific re-examination of old museum collections. These sources reveal a country that was very unlike later, wooded Ireland: a northern Atlantic landscape affected by severe climatic swings, with open ground capable at times of supporting large mammals. They do not, however, yield a year-by-year narrative, a named people, or proof of a permanent human population.

A Date Within a Long Cold Phase

The date falls well before the Last Glacial Maximum, conventionally placed at about 26,000–19,000 years ago, when ice covered almost all of Ireland. Yet it was not simply a calm prelude to an inevitable freeze. Research on the British–Irish Ice Sheet shows that its growth was geographically uneven and rapid. Scottish ice had advanced through the North Minch by roughly 32,000–31,000 years before present, while separate ice masses and ice caps affected parts of Ireland. Models and geological evidence remain less secure for the earlier growth phase than for subsequent retreat. Accordingly, it is unsafe to draw a single, hard ice margin across Ireland for 31,713 BCE.

The wider Late Pleistocene climate was abrupt and variable rather than uniformly cold. Greenland ice-core chronologies record alternating stadials and interstadials, intervals of relative warming and deterioration which could transform vegetation, snow cover and animal ranges over centuries or less. Conditions in the Irish west, south and north would also have varied with altitude, exposure, distance from the sea and proximity to ice. A particular valley might have offered sheltered grazing while high ground, frozen soils or advancing glaciers made adjacent country hostile.

Lower global sea levels exposed much more of the surrounding continental shelf than exists today, although changing sea level, local ice loading and crustal movement make simple claims about a reliable “land bridge” misleading. Ireland’s coast was not its modern coastline. The Irish Sea and Atlantic approaches were reshaped by ice and shallower waters; any movement of animals or people depended on a changing and hazardous regional geography rather than on the later familiar island map.

The Cave Beneath North Cork

Castlepook Cave, also called Mammoth Cave or Doneraile Cave, near the Awbeg Valley in north County Cork, is central to understanding this period. The limestone cave system was extensively excavated between 1904 and 1918 under Richard J. Ussher. Its galleries acquired memorable names, including Hyaena Hall and Elephant Hall, reflecting the remarkable fossil finds. Although early excavation removed much sediment without the recording standards expected today, surviving bones in the National Museum of Ireland and later investigations have made Castlepook the richest known Irish site for vertebrate life leading towards the Last Glacial Maximum.

Radiocarbon results from individual bones show that the cave’s Ice Age fauna spans a long period, approximately 45,700 to 19,950 years before present. That is the first essential caution: Castlepook is an archive, not a snapshot. A bone discovered in one gallery cannot automatically be treated as contemporary with every other bone there, still less as evidence for a single moment in 31,713 BCE. Water movement, roof collapse, scavenging, redeposition and twentieth-century digging have all affected the assemblage.

Nonetheless, its fauna demonstrates that Ireland was reached by an impressive range of cold-stage mammals. Woolly mammoth, giant deer (*Megaloceros giganteus*), reindeer, brown bear and spotted hyaena are recorded from the cave; later Ice Age deposits include Arctic fox, wolf and two kinds of lemming. Other Irish cave and fossil localities add further, sometimes uncertain, records. The traditional name “Irish elk” is misleading: giant deer were neither elk nor uniquely Irish. Their huge antlers make them famous, but they belonged to a European species whose Irish fossils happen to be especially abundant.

Open Country and Mobile Herds

The animal record supports an interpretation of broadly open, cold-adapted habitats, often described as steppe-tundra, herb-rich grassland or shrub tundra. Reindeer and lemmings particularly point towards conditions very different from later Atlantic woodland; mammoth and giant deer indicate that enough plant biomass was available, at least seasonally, to sustain large herbivores. This was not necessarily a featureless white wilderness. In favourable intervals it may have included grasses, sedges, herbs, dwarf shrubs, patches of willow or birch, wet ground and river corridors, set among stony slopes and areas of permafrost.

Predators and scavengers gave this landscape a demanding ecological structure. Spotted hyaenas could carry or consume carcass material in caves, while wolves and bears were also present in the wider faunal picture. A cave bone may therefore record an animal killed nearby, a carcass scavenged elsewhere and dragged underground, or remains washed in from outside. Castlepook provides powerful evidence for an Ice Age food web in southern Ireland; it does not demonstrate that mammoths, hyaenas, reindeer and giant deer all stood together outside the cave on one day.

Everyday life can be reconstructed more confidently for these animals than for humans. Reindeer likely moved in response to grazing, season and snow conditions. Carnivores followed prey and exploited carrion. The cave itself was probably used repeatedly as a repository by non-human agents rather than as a domestic dwelling. There is no evidence at this date for Irish farming, pottery, metalworking, built villages, field systems, seafaring trade, writing or any of the institutions familiar from later prehistory.

The Marked Reindeer Femur

A single reindeer femur fragment from Castlepook gives this date exceptional importance. Re-examined by zooarchaeologist Ruth Carden, it bears a deep linear mark interpreted as consistent with cutting or chopping by a sharp stone implement while the bone was fresh. A County Cork heritage publication places the object broadly at about 31,000 BC. If that interpretation is confirmed, it would suggest that a person or small group processed a reindeer in Ireland during this earlier Ice Age phase—far earlier than the traditionally accepted post-glacial settlement evidence.

The claim must be expressed carefully. The femur is a direct object, but it derives from an old and disturbed cave collection, not a newly excavated camp floor. No securely associated stone tool, hearth, dwelling, human bone, butchered assemblage or occupation layer of comparable age has yet been recovered at Castlepook. A radiocarbon determination establishes the age of the animal bone within a statistical range; identifying a surface modification as a human toolmark is a separate taphonomic judgement. Carnivore damage, sediment abrasion, breakage and handling can complicate such assessments.

Thus the evidence supports a measured conclusion: reindeer occupied, or at least reached, southern Ireland during the relevant broad period, and one bone has been interpreted as possible evidence of human butchery. It does not yet establish a permanent population, a settlement at Doneraile, or continuous occupation of Ireland. Recent fieldwork has sought intact deposits in the cave system, but the survival of undisturbed Pleistocene archaeology is limited. The question remains open precisely because the clue is promising enough to deserve further testing.

People Beyond the Western Sea

Elsewhere in north-west Europe, *Homo sapiens* communities had long made sophisticated stone tools, worked animal materials, used fire and occupied landscapes that could be climatically severe. Upper Palaeolithic groups were mobile hunter-gatherers, linked across extensive territories by movement, marriage, information and the circulation of materials. Such continental evidence makes a short Irish incursion plausible in principle, especially during a favourable phase and where animal movements created opportunities. It cannot substitute for Irish finds.

If people did reach Ireland around this time, the most defensible model is not an established nation or a sizeable colony, but a small, highly mobile party operating within a wider western European world. They may have followed herds or explored new ground; they may equally have left no durable material

record beyond the contested bone mark. A brief visit could leave very little archaeology, especially when later ice and erosion repeatedly reworked the landscape.

Political affairs, diplomacy and organised conflict are therefore beyond the evidence. There are no chiefs, territories, alliances or wars that can be responsibly described for Ireland in 31,713 BCE. Nor is there direct Irish evidence for ritual practice, art, language or formal learning. It would be wrong to fill that silence with continental cave art or later Irish folklore. The cultural significance lies instead in the possibility that the island formed, however briefly, part of the humanly explored edge of Upper Palaeolithic Europe.

An Archive, Not an Origin Story

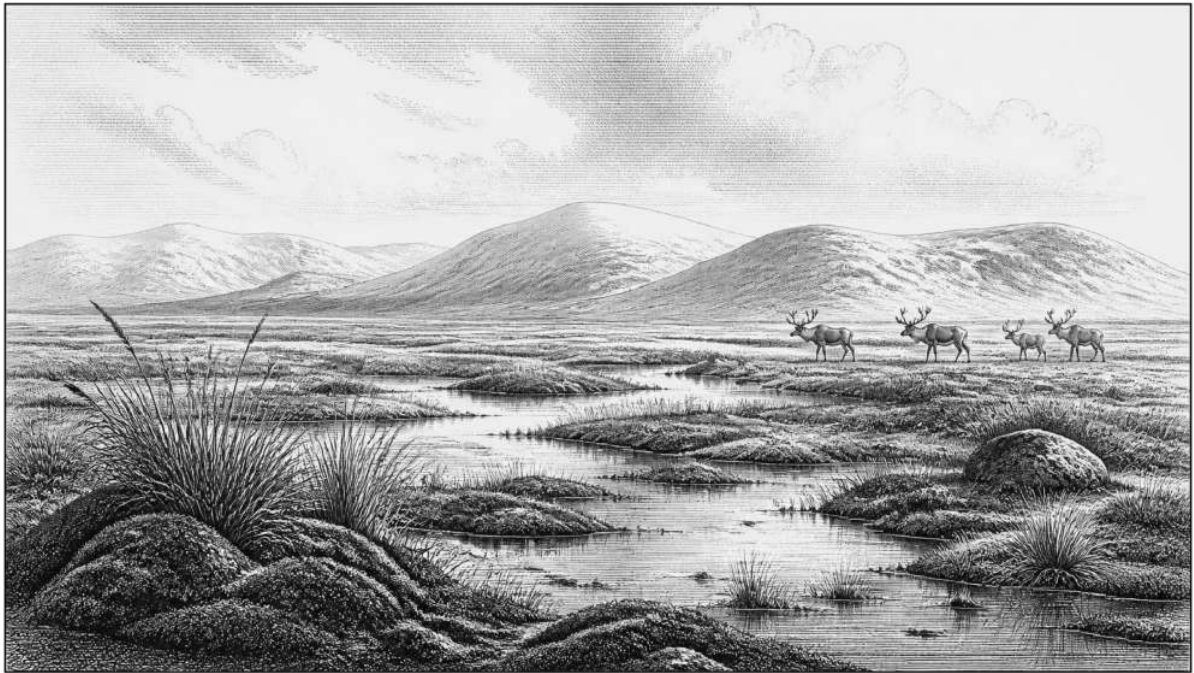
Castlepook's importance is methodological as well as historical. Its bones were first collected in an era when the priority was retrieval rather than fine-grained context. Later accelerator radiocarbon dating and improved sample pretreatment showed that some earlier dates from Irish caves were unreliable or too young. Modern study combines dating, zooarchaeology, sediment analysis, cave survey and, increasingly, biomolecular approaches. Each advance can revise a seemingly settled story.

For this reason, 31,713 BCE should be remembered not as the birthday of Ireland's first inhabitants but as a point within a wide, uncertain interval. The strongest picture is of an open and changing Ice Age environment, inhabited by reindeer and other large mammals, while glaciers were growing elsewhere in the archipelago. The Castlepook femur may preserve a rare human trace within that world. Until securely dated tools or an undisturbed occupation deposit are found, possibility must remain distinct from proof.

Chapter 089 of 100

31712 BCE

Derryvree's Open-Water Interval ^[89]



The label 31,712 BCE is a modern chronological convenience, not a date recoverable from an Irish calendar, historical record or human memory. In the conventional archaeological scale measured from AD 1950, it falls about 33,661 years before present: roughly 33.7 thousand calendar years ago. At that depth of time, neither a radiocarbon determination nor a buried sediment bed can identify a particular year, season or generation. Radiocarbon ages must be calibrated against changing atmospheric carbon levels, and their results are expressed as ranges. This article therefore concerns Ireland during the later part of Marine Isotope Stage 3 (MIS 3), a climatically unstable phase of the Late Pleistocene, rather than inventing an event for one numbered year.

There was no Ireland in the political, cultural or territorial sense of later centuries. No kingdom, people-name, language, treaty, battle, religion or settlement is demonstrable here. What can be responsibly reconstructed is an environmental history, based on sediment, pollen, plant remains, fossil insects, cave bones, glacial landforms and scientific dating. It is a fragmentary record, but it shows that parts of the landmass now called Ireland supported cold-stage life before the later expansion of the British–Irish Ice Sheet transformed much of the terrain.

Dating a Changing Landscape

The most valuable caution is chronological. An age of 30,500 radiocarbon years before present is not equivalent to 30,500 calendar years. The amount of radiocarbon in the atmosphere has fluctuated substantially through time, so a laboratory measurement must be compared with an internationally maintained calibration curve. IntCal20 extends the Northern Hemisphere curve to 55,000 calibrated years

before present, but it does not turn every Pleistocene sample into a precise annual date. The uncertainties widen markedly at this age, while older samples, their preparation and the histories of their deposits can be reassessed as methods improve.

For 31,712 BCE, the appropriate frame is a broad one: later MIS 3, before the maximum of the last glaciation. The Last Glacial Maximum was not a single moment everywhere, and the British–Irish Ice Sheet grew and retreated asynchronously. Recent reconstruction places its sustained growth from about 31,000 to 26,000 years before present, with its greatest total volume around 23,000 years before present. The nominal date considered here is therefore earlier than that documented growth phase, though ice, snowfields and upland glaciers were already important regional forces and the evidence for any one ice margin remains incomplete.

Freshwater Beneath a Drumlin

The closest Irish archive for this broad interval lies at Derryvree near Maguiresbridge, County Fermanagh. Road construction exposed organic freshwater silts and fine sands enclosed between two layers of glacial till. That simple sequence is historically powerful. The lower till records an earlier ice advance; the silts and sands accumulated after ice had withdrawn or ceased to cover the locality; the upper till records later renewed glaciation. Derryvree thus preserves a rare interval when this part of Ireland was not beneath moving glacier ice.

The principal organic sample produced a conventional radiocarbon determination of 30,500 with a substantial asymmetric uncertainty of plus 1,170 and minus 1,030 years. Published discussion has placed its calibrated implications broadly at about 36,900–31,700 calibrated years before present. That is a range of several millennia, not a date for the end of 31,712 BCE; nevertheless, the modern year-label lies within its relevant chronological neighbourhood. The deposit supports an interpretation of an ice-free freshwater environment in Fermanagh during part of late MIS 3. It cannot tell us that every part of Ireland shared its conditions at the same moment.

Derryvree is especially valuable because later glaciation protected the sediments even as it remade the surrounding ground. Elsewhere, ice erosion, redeposition, rising seas and thousands of years of soil formation have removed or obscured comparable surfaces. The familiar drumlin landscape of Fermanagh is itself evidence of that later glacial power. Beneath one of those streamlined hills, however, the silts retained a small but important environmental archive.

Mosses, Sedges and Frost

Pollen, plant macrofossils, mosses and insect remains from Derryvree point to an open, mostly treeless periglacial landscape. It has often been described as tundra or muskeg: wet, moss-rich ground with sedges, grasses and herbs, low shrubs in suitable places, and shallow freshwater pools or channels. This was not a uniform white wilderness. During the growing season, plants could establish around waterlogged hollows and exposed ground; organic matter accumulated in sheltered wet places. Yet it was a landscape shaped by long cold winters, short productive summers, frost action and unstable drainage.

The evidence does not justify a neat map of vegetation. Pollen preservation was limited, and isolated grains of tree pollen need not prove nearby forest: pollen can travel long distances or be redeposited. The stronger inference comes from the combined evidence, which favours sparse, open vegetation rather than

established woodland. Comparable inter-till sequences at Hollymount in Fermanagh and Aghnadarragh near Lough Neagh demonstrate that Ireland's Late Pleistocene record contains repeated changes between glacial and non-glacial conditions, not a single continuous freeze.

Evidence from Crag Cave in County Kerry adds a different kind of environmental signal. Uranium-series dates from cave calcite show episodic speleothem growth through the last glacial period, broadly coinciding with warmer Greenland interstadials. Calcite formation requires water to move through the cave system and is unlikely under persistently frozen conditions. It does not mean that Kerry's weather duplicated Fermanagh's, or that every mild episode was comfortable by modern standards. It does show that the Irish Atlantic margin experienced pronounced climatic oscillations within the long cold stage.

Animals in the Southern Caves

In southern Ireland, caves preserve another partial view. Castlepook Cave near Doneraile, County Cork, yielded remains of woolly mammoth, reindeer, giant deer, spotted hyaena, brown bear, wolf, Arctic fox, hare and lemmings. The Irish Quaternary Fauna Project established that a broad range of mammals reached Ireland between at least about 45,000 and 20,000 years ago. That finding corrected older assumptions that Pleistocene Ireland had been almost devoid of large animals.

It would nevertheless be wrong to paint all these species together in one exact scene for 31,712 BCE. A cave bone is evidence that a species existed in the region at some point within a dated range; it is not a census of a single valley. Cave assemblages are also difficult archives. Carnivores carried in prey and scavenged carcasses, animals may have died in natural traps, water could move bones between deposits, and nineteenth- and early twentieth-century excavations did not preserve the stratigraphic controls expected today. The Castlepook collections have been particularly important because later work found that some older radiocarbon dates were too young by thousands of years.

Even with those limits, the faunal evidence is striking. Reindeer and lemmings accord with cold, open environments; mammoth and giant deer point to extensive feeding grounds, though not necessarily to permanent local herds. Spotted hyaena and wolf indicate predators and scavengers operating within a more complex food web than that of later historic Ireland. The animals moved in response to forage, snow cover, predators and changing land corridors. Their presence is evidence of ecology, not of human management, hunting territories or trade.

The Unsettled Human Question

There are no securely dated houses, hearths, occupation layers, stone-tool assemblages, burials or food-processing sites in Ireland from around 33.7 thousand years ago. Consequently, political affairs, conflict, diplomacy, social rank, everyday domestic life, art, language, ritual, religious belief and learning cannot be described as Irish history at this date. No economy of farming, herding, craft production or exchange is evidenced. The National Museum of Ireland continues to state that clear evidence for human presence during the Irish Palaeolithic has not emerged.

A reindeer femur from the Castlepook collection has, however, reopened the question. Zooarchaeologist Ruth Carden identified a deep mark interpreted as having been made on fresh bone by a sharp stone tool during carcass processing; County Cork heritage material presents the object as dating to about 31,000 BCE. If the mark is confirmed as anthropogenic and contemporary with the animal's death, it would be important evidence for a brief Upper Palaeolithic human visit. It remains one modified bone

from an old, complex cave collection, not proof of a resident population, a camp or a community. Recent excavation at Castlepook, supported by the Royal Irish Academy, reflects the need for better-controlled evidence.

Human groups certainly lived elsewhere in north-west Europe during the Upper Palaeolithic. Lower sea levels placed coastlines farther from their modern positions, but the practical routes into Ireland, the duration of any crossings or land connections, and the frequency of visits remain uncertain. It is reasonable to say that people may have reached the island in favourable circumstances; it is not reasonable to assign them a culture, a religion or political relationships without Irish archaeological contexts.

A Precarious Interval

The most responsible portrait of Ireland around 31,712 BCE is therefore neither an empty void nor a populated Ice Age drama. It is a cold, variable landmass in which some lowland places, including the Derryvree locality, could sustain freshwater wetlands, mosses, sedges, insects and visiting or resident animals during an ice-free interval. In the south, cave deposits preserve traces of a richer mammal fauna, while also warning how easily deposits can mix and dates be revised.

The large ice-sheet expansion lay ahead. As ice accumulated and extended in later millennia, it altered drainage, buried deposits, reworked sediments and narrowed the ecological opportunities recorded at Derryvree and Castlepook. The enduring historical significance of this nominal year is thus environmental: it falls within a broad calibrated horizon when Ireland was still a changing mosaic of cold open ground, freshwater pockets and animal movement, before the ice sheet reached its later dominance. Evidence supports that much; beyond it, restraint is part of the history.

Chapter 090 of 100

31711 BCE

Doneraile's Reindeer Question^[90]



“31,711 BCE” is a modern numerical label, not a year that can be recovered from Irish evidence. No calendar, writing system, named ruler or chronicle existed on the island, and archaeology cannot isolate an event, a person or even a single generation to that precise point. Converted mechanically to the archaeological convention of calibrated years before present, with “present” fixed at 1950, it lies about 33,660 cal BP. That places it in the Late Pleistocene, during Marine Isotope Stage 3 (MIS 3), a long and climatically unstable part of the last Ice Age. The appropriate history is therefore one of dated ranges, deposits and probabilities, rather than an invented annual narrative.

A Date at the Edge of Resolution

At this depth of time, even a radiocarbon result is not a calendar date until it has been calibrated against evidence for changing atmospheric carbon. Calibration produces ranges, sometimes broad ones, rather than the certainty suggested by a numbered BCE year. A date around 33,660 cal BP also falls very close to the beginning of Greenland Interstadial 6 in widely used North Atlantic chronologies: a comparatively milder pulse within an overall cold age. That does not mean that weather in Ireland changed everywhere on the same day, or that a Greenland ice-core signal can be read as an Irish weather report. It does, however, underline the volatility of the wider climatic setting.

Ireland was not yet at the Last Glacial Maximum, the later period when the British–Irish Ice Sheet attained its greatest extent. Recent syntheses show that ice-sheet growth and maximum extent were regionally asynchronous: expansion was under way during the later part of MIS 3, while major maximum conditions belong principally to the period after roughly 27,000 cal BP. Around the nominal date

considered here, the island should not be pictured either as wholly entombed beneath ice or as a familiar green and wooded country. Conditions varied sharply by region, season and century; glacier margins, periglacial ground, exposed mineral soils, wetlands and open vegetation all mattered.

Derryvree's Buried Wetland

The best Irish environmental evidence relevant to this broad interval comes from Derryvree, near Maguiresbridge in County Fermanagh. Roadworks in 1969 exposed freshwater silts and fine sands enclosed between two layers of glacial till within a drumlin. The sequence itself is important: an earlier ice advance laid down till, a non-glacial freshwater environment developed, and a later advance buried it. Organic material from the freshwater deposits produced a radiocarbon determination of 30,500 BP, with substantial uncertainty. Modern calibration places it broadly within later MIS 3, rather than at an annual resolution.

Pollen, plant macrofossils, mosses and small animal evidence from Derryvree indicate open tundra vegetation and a periglacial climate. The researchers described a muskeg-like setting: waterlogged ground with sedges, mosses and shallow pools, subject to frost and a short growing season. Herbs, grasses and sedges are better supported than woodland. A few tree-pollen grains cannot safely be treated as proof of nearby forest, since pollen may be reworked or carried from afar. Derryvree therefore offers a secure lesson about environmental possibility: parts of Ireland could contain cold, ice-free freshwater landscapes during MIS 3. It is not a complete map of the island, nor evidence for people at Maguiresbridge.

The Cave at Castlepook

In north County Cork, near Doneraile, Castlepook Cave—also called Mammoth Cave in older accounts—provides the most consequential faunal archive for this article. Antiquarian excavations, particularly those associated with Richard J. Ussher in the early twentieth century, recovered a large assemblage of animal bones. Subsequent study has identified remains including reindeer, woolly mammoth, giant deer, brown bear, wolf, fox, mountain hare, lemmings and spotted hyaena. This is not a list of creatures known to have stood together outside the cave on one day. The bones accumulated over a long period and could have been brought in by carnivores, water movement, denning animals and excavation disturbance.

Nevertheless, the Castlepook record establishes that Ireland was periodically part of a much richer Ice-Age animal world than its later fauna suggests. Reindeer are particularly informative: they are compatible with cold, open country and mobile seasonal grazing. Mammoth and giant deer point to a varied large-herbivore community, while hyaena and wolves reveal a food web that included powerful predators and scavengers. The combination makes Ireland's Late Pleistocene landscape seem less like an empty frozen margin and more like a changing, thinly productive northern environment. But it remains essential not to turn a time-averaged cave collection into a single painted scene.

Dating has also changed the interpretation. The Irish Quaternary Fauna Project first demonstrated the importance of cave bones, but later re-dating showed that some older measurements had produced ages that were too young. Improved pretreatment and ultrafiltration of collagen pushed several Castlepook specimens thousands of radiocarbon years further back. The revised work places important parts of the cave fauna in MIS 3 and suggests that some species, especially giant deer and spotted hyaena, may have

disappeared locally before the later glacial maximum. Such revisions are a reminder that Irish Pleistocene history remains evidence-led and provisional, especially where old collections lack modern excavation records.

A Reindeer Femur and Human Possibility

The greatest historical question raised by Castlepook is a reindeer femur bearing a deep mark interpreted by zooarchaeologist Ruth Carden as damage made on fresh bone by a sharp stone tool during carcass processing. Public heritage documentation associates the specimen with an age of about 33,000 years ago, conventionally expressed as around 31,000 BCE. If the mark is correctly identified as a human cut or chop mark and is contemporary with the animal's death, it would be evidence that Upper Palaeolithic people reached Ireland far earlier than the long-established late-glacial and Mesolithic record.

That is an important possibility, but its limits must be stated plainly. The bone is not accompanied by a securely excavated camp floor, hearth, stone-tool assemblage, shelter, human burial or repeated occupation sequence. It came from a cave archive whose deposits were investigated before modern stratigraphic standards and whose animal remains may have been moved after death. A marked bone can demonstrate an action on an animal carcass more readily than it can demonstrate permanent settlement, the size of a group, a named culture or an ancestral population. The most responsible conclusion for around 31,711 BCE is that a brief human incursion into Ireland is possible; sustained occupation is unproven.

Life Without a Recoverable Society

If people did reach the island in this period, they were not "Irish" in any later ethnic, linguistic or political sense. Nothing permits the identification of a tribe, chiefdom, territory, language or kin group. There is no evidence for government, diplomacy, warfare, formal law or institutional leadership. Nor can archaeology identify a meeting, alliance or conflict from this date. Such absences do not mean that visitors lacked social ties, decision-making, stories or obligations; every human group had them. They mean only that none can yet be described from Irish material.

Similarly, there is no secure Irish evidence of religion, burial rite, cave art, monument building or formal learning at this date. Upper Palaeolithic communities elsewhere in Europe made sophisticated lithic tools, ornaments and art, and some pursued highly mobile hunting economies. Those comparisons help explain what might have been technically possible for any visitors to Ireland, but they cannot be used to populate Castlepook with ceremonies, styles or beliefs that have not been found there. Context is not proof.

Subsistence, Movement and Exchange

The reindeer femur allows one modest economic inference. If its mark was made by people, they understood how to process a carcass using a sharp lithic edge. Meat, fat, marrow, hide, sinew and bone can all be valuable products, though the mark alone cannot establish which were taken. It does not demonstrate whether hunters killed the animal, encountered it already dead, processed it near the cave or lost the bone to scavengers later. Reindeer herds could have been a mobile resource; any human use of them may have been opportunistic and seasonal rather than the foundation of a settled local economy.

No evidence supports agriculture, animal husbandry, permanent villages, pottery, metalworking, markets or regular trade networks in Ireland at this time. Nor should lower Ice-Age sea levels be simplified into an assured overland route. Coastlines and sea passages were very different from today, but their detailed configuration, the extent of ice and the practical routes available to animals or people changed through time. Ireland's later separation from Britain is better understood than the exact accessibility of every MIS 3 episode. Mobility is plausible; a mapped migration corridor is not yet demonstrated.

An Unfinished Prehistory

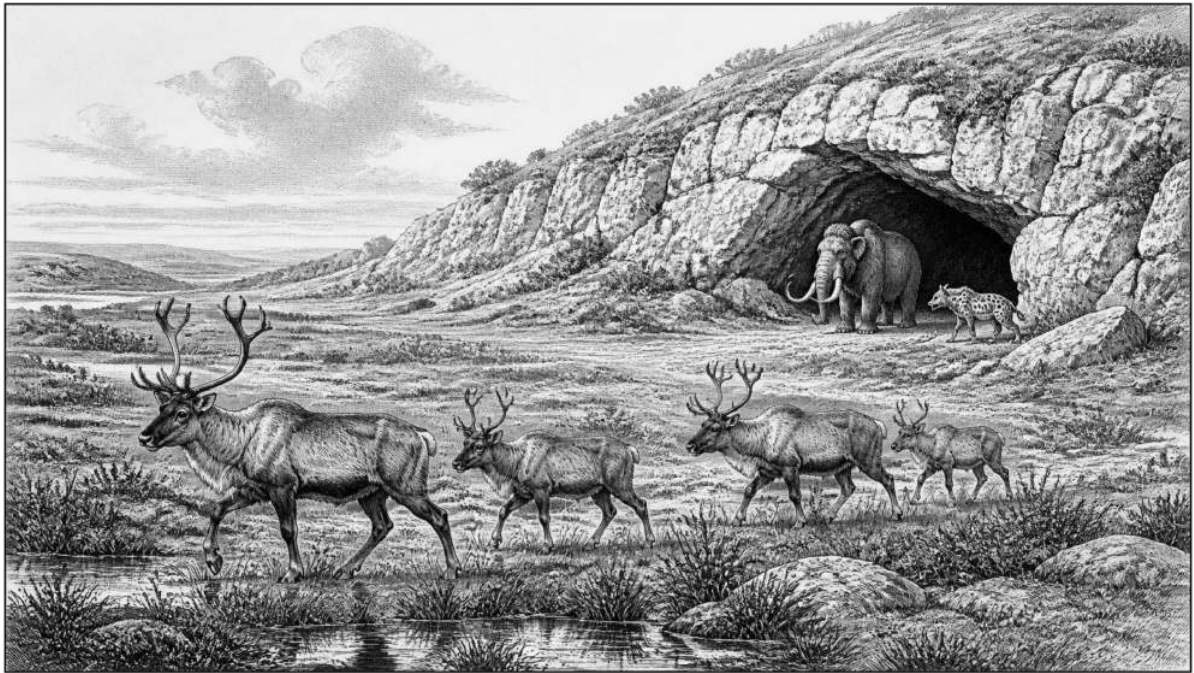
The principal development around this nominal year is therefore environmental and archaeological rather than political. Ireland lay within a shifting northern world of cold grass- and sedge-rich ground, wetlands, ice advances and retreats, and episodic access for large mammals. Derryvree preserves a rare freshwater record of that world; Castlepook preserves its animal remains. The debated reindeer femur adds the possibility that humans, too, entered this landscape.

Further work may clarify the picture. Re-excavation at Castlepook in 2022 identified surviving sediments in parts of the cave, while continuing advances in radiocarbon pretreatment, zooarchaeology, sediment analysis, ancient DNA and the survey of submerged landscapes can test older assumptions. For now, the evidence does not support a year-specific story of an Irish settlement in 31,711 BCE. It does support something more valuable: an honest view of a changing Ice-Age Ireland, where reindeer, hyaenas and mammoths could move through open country, and where the faintest possible trace of human hands remains under examination.

Chapter 091 of 100

31710 BCE

The Cork Reindeer Mark ^[91]



The label 31,710 BCE is a modern chronological convenience, not a year that can be recovered from Irish evidence. No written record, political sequence, named person or calendar date exists for this remote part of the Late Pleistocene. Even radiocarbon measurements do not produce single-year precision here: they must be calibrated against changing atmospheric carbon levels and are expressed as probability ranges. The most responsible setting for this notional year is therefore the middle of Marine Isotope Stage 3 (MIS 3), roughly 34,000 calendar years before present, during the last cold stage but before the Last Glacial Maximum that would later overwhelm much of Ireland with ice.

For Ireland, this is a period known principally through bones, cave sediments, pollen and glacial geology. The evidence is sparse, unevenly preserved and often recovered long ago. Yet it shows that parts of the island could, at intervals, sustain an unexpectedly varied cold-climate fauna. The most evocative Irish clue for a possible human presence is a marked reindeer femur from Castlepook Cave near Doneraile, County Cork. It is important precisely because it may illuminate a fleeting encounter between people and an Ice Age animal; it is also important because it cannot responsibly be made to prove more than the evidence allows.

Between Cold Phases

At this point in the last glacial cycle, Ireland was not the familiar green island of later millennia. Climate fluctuated sharply during MIS 3, with relatively milder interstadial episodes punctuating severe cold. The terminology can be confusing: ‘milder’ did not mean modern conditions, and a landscape that

supported mammals was still often open, windy and treeless or only thinly vegetated. Temperatures, ice extent, sea level and the availability of routes into Ireland changed over long spans, not according to an annual timetable.

Glacial research increasingly stresses that the British–Irish Ice Sheet had a complex history before its better-dated peak. There is evidence for major ice growth in and around Ireland during earlier phases of the last cold stage, alongside evidence that some areas were ice-free at other times. Around the date represented by 31,710 BCE, it is safer to speak of a changing mosaic than of an island uniformly buried beneath ice or uniformly open for habitation. The full Last Glacial Maximum lay ahead: ice expanded dramatically around 27,000–24,000 calendar years ago and would reshape much of the land surface.

Lower global sea levels altered coastlines, but they do not licence a simple picture of Ireland as permanently joined to Britain or continental Europe. Local sea level was also affected by the weight of nearby ice and by the sinking and later rebound of the Earth's crust. The precise passages available to animals, and potentially to people, remain debated. What the fossil record establishes is more modest but significant: mammals reached Ireland during parts of MIS 3. Their movement was possible, although the exact route, season and frequency cannot be reconstructed from bones alone.

Castlepook's Mixed Bone Archive

Castlepook Cave, historically called Mammoth Cave, sits in limestone country near the Awbeg valley in north County Cork. Excavations undertaken in the early twentieth century by the Royal Irish Academy's cave-exploration committee produced a large collection later deposited in the National Museum of Ireland. It is Ireland's key pre-Last Glacial Maximum cave-fauna archive. The collection includes remains attributed to woolly mammoth, reindeer, giant deer, brown bear, wolf, foxes, Arctic fox, mountain hare, lemmings and spotted hyena.

This list should not be mistaken for a census of animals alive together on one day in County Cork. Caves are complicated archives. Carnivores can drag prey into them; animals can die in or near entrances; water can move bones; later digging can disturb deposits; and nineteenth- and early twentieth-century excavation methods rarely recorded layers as precisely as modern excavators would require. Castlepook's remains also came from several galleries and deposits. Individual specimens may represent different episodes separated by centuries or millennia.

Recent reassessment and redating have nevertheless strengthened the case that much of the older Castlepook fauna belongs within MIS 3. The revised chronology indicates that some animals previously thought much younger were thousands of radiocarbon years older. It also suggests that species such as giant deer and spotted hyena may have disappeared locally before the Last Glacial Maximum, around 40,000 calendar years before present. That conclusion is a reminder that the fauna of 31,710 BCE cannot be treated as static. Reindeer were among the animals able to exploit the open northern landscapes of this wider era, but the exact local combination of species at any one moment remains uncertain.

A Single Deep Mark

A fragment of reindeer femur from Castlepook has become central to Ireland's deep prehistory because zooarchaeologist Ruth Carden identified a deep incision on it as a mark made by a sharp stone tool. The bone has been radiocarbon dated to approximately 33,000 years ago in broad public description,

conventionally rendered as about 31,000 BCE. This makes it directly relevant to the chronological neighbourhood of the present entry. If the incision was made while the carcass was processed, it would be potentially the earliest evidence that people handled animal food in Ireland.

That is a consequential interpretation, but it is not equivalent to evidence for a settled population. The dated result primarily concerns the death of the reindeer, while the proposed cut-mark identification concerns the later history of its bone. The specimen was recovered from an old cave collection rather than a securely excavated occupation floor. There is no associated hearth, stone-tool assemblage, dwelling, burial, art or repeated domestic refuse of comparable age from Castlepook. Nor is there proof that an animal was killed at the cave: a carcass portion could have been processed elsewhere and subsequently carried or scavenged into the cavern.

The phrase ‘possible human butchery’ therefore captures the present state of the evidence better than declarations that Ireland was settled in 31,710 BCE. A tool mark would suggest a visit by people able to reach and exploit this landscape, perhaps as highly mobile hunters. It does not reveal their number, language, kinship, season of residence or ancestry. It would be unsound to assign them a tribe, nation, religion or political identity. In European terms, people of this date would normally be discussed within the Upper Palaeolithic, but Ireland has not yielded the securely contextualised material needed to describe a local Upper Palaeolithic culture.

Predators, Prey and Open Ground

The animal evidence gives a stronger picture of ecology than of human society. Reindeer point towards open, cold-adapted terrain, feeding across broad ranges and moving in response to vegetation and weather. Woolly mammoth and giant deer add to the impression of substantial herbivores using at least some Irish landscapes, while Arctic fox and lemmings indicate severe conditions and a northern character. Spotted hyena, represented at Castlepook by skulls, jaws and other remains, was not merely an exotic visitor: its bone-collecting habits may explain why the cave became such a rich but difficult archive.

Hyenas, wolves and bears also demonstrate why a cave should not automatically be imagined as a human shelter. A cave mouth could be a carnivore den, a trap, a place where bones accumulated through scavenging, or a temporary refuge at different times. Teeth marks and damaged bones record competition and consumption within the food web, not human conflict. The Irish evidence does not permit a narrative of battles, territorial chiefs or diplomacy. Its nearest equivalent to ‘regional affairs’ is the changing access of animal populations across the wider north-west European world as climate and ice margins shifted.

Plant evidence from Irish deposits of broadly comparable cold phases supports a landscape in which low shrubs, grasses, sedges, mosses and herbs mattered more than woodland. Local wet hollows and freshwater basins could sustain richer vegetation than exposed ground. In Fermanagh, buried inter-till organic deposits preserve pollen, seeds, mosses and insects which show that ice-age environments were not lifeless white deserts. Such records cannot be transplanted uncritically to north Cork, but they demonstrate the kinds of periglacial wetlands and open habitats available on parts of the island during colder Pleistocene intervals.

Life Without a Visible Society

If people did enter Ireland in this period, their economy would have depended on immediate knowledge of seasonal animals, stone, shelter, fuel and safe movement through a hazardous landscape. Reindeer would have offered meat, marrow, fat, hide, sinew and bone, but Castlepook does not

demonstrate a complete hunting economy. There is no evidence for farming, herding, pottery, metalworking, exchange networks or permanent villages. There are likewise no objects from which to infer ritual practice, artistic traditions or formal learning. Silence in these categories is not evidence that humans had no culture; it is evidence that Ireland has not yet produced the archaeological traces required to describe it.

For the same reason, there were no identifiable Irish political affairs or diplomacy to report. ‘Ireland’ itself is an anachronistic geographical shorthand for a landscape whose coastlines, ecological connections and ice cover differed radically from today’s. The appropriate historical story is environmental and evidential: a changing north-western edge of Europe, occasionally accessible to cold-adapted mammals; a limestone cave that accumulated their remains; and one reindeer bone that may preserve a human action.

What This Date Can Mean

Thus 31,710 BCE should not be presented as the date of Ireland’s first settlement, nor as the year of a particular hunt at Castlepook. Modern calendar-year precision is unavailable. The reindeer femur belongs to a calibrated chronological range and to a wider MIS 3 context, rather than to a known day, season or generation. Its mark is compelling evidence under continued scrutiny, not a licence to fill the cave with invented hunters.

Even so, the find changes the questions worth asking. For generations, Ireland’s earliest human story began after the retreat of the last ice. Castlepook raises the possibility of a much deeper and more intermittent human past, one later ice advances may have erased almost completely. Continued work at the cave, including modern excavation and re-examination of museum collections, may clarify whether the marked bone represents a lone episode or the edge of a lost Palaeolithic record. For now, its value lies in its restraint: a single damaged reindeer femur opens a window onto an Ice Age Ireland that was populated by animals, shaped by climatic instability, and perhaps briefly visited by people.

Chapter 092 of 100

31709 BCE

Maguirebridge's Frostbound Fen^[92]



“31,709 BCE” is a modern chronological label, not a date that can be isolated in Ireland’s archaeological record. Counted back from 1950, it sits roughly 33,658 calendar years before present, but that arithmetic conversion must not be mistaken for an anniversary. At this depth of time, radiocarbon measurements require calibration, their probability ranges may extend across many centuries or millennia, and the Irish evidence normally records broad environmental intervals rather than a named year, season or event. The most responsible setting is the Late Pleistocene, within Marine Isotope Stage 3, during the long and unstable run-up to the Last Glacial Maximum.

For Ireland at this point, the principal historical evidence is geological, botanical and zoological. It comes from freshwater silts, pollen, mosses, beetle remains, bones and cave sediments—not documents, settlements, graves or monuments. These sources can show that parts of the island supported life in severe conditions. They cannot identify a people’s name, language, political order or beliefs. They do, however, reveal a changing landscape in which animals, cold-adapted plants, water and ice determined what was possible.

An Interval, Not a Snapshot

Ireland was not yet at the full extent of the last British–Irish Ice Sheet. The later maximum, broadly around 27,000–23,000 calibrated years before present in reconstructions of Ireland and its continental shelf, would bury or transform much of the country. Around the notional year used here, ice, climate and sea level were already changing on a continental scale, but the pattern was regionally uneven. Some ground was ice-free; other areas may have been affected by advancing ice or severe periglacial conditions, in which repeated freezing and thawing shaped exposed soils and sediments.

That qualification matters. It would be misleading to picture a uniform white island, and equally misleading to describe a benign grassland. The surviving records show a mosaic: open ground, sparse tundra vegetation, wet hollows, shallow freshwater and areas susceptible to frost, wind and seasonal inundation. The coasts and crossings familiar today did not exist in their modern form. Lower global sea level changed the outlines of the Irish Sea basin, yet the exact availability of dry routes between Ireland, Britain and continental Europe remains a question of changing topography, ice margins and water barriers rather than a simple, permanent “land bridge”.

Derryvree’s Buried Wetland

The clearest Irish environmental window close to this remote horizon lies at Derryvree near Maguiresbridge, County Fermanagh. Roadworks in 1969 cut through a drumlin and revealed freshwater silts and fine sands between glacial tills. The organic deposit produced a radiocarbon determination of 30,500 BP, with a large quoted uncertainty of +1,170/–1,030 years. It is therefore evidence for a broad Middle Midlandian interval, not for one particular year. Under current calibration practice, such an old determination belongs in a wide calibrated range measured in millennia; it should not be translated into a falsely exact calendar date.

Within those silts were plant macrofossils, pollen and small animal remains. The assemblage indicates open tundra and a periglacial climate. Mosses, sedges and other hardy plants grew where water and seasonally thawed ground allowed them to do so. Finds including bogbean (*Menyanthes trifoliata*) and mountain avens (*Dryas octopetala*) are especially evocative: neither makes the place hospitable by modern standards, but both demonstrate that this was a living landscape rather than sterile ice. Sparse herb pollen is consistent with exposed, largely treeless terrain. A few grains of tree pollen do not demonstrate local woodland; they may have travelled long distances or been reworked from older deposits.

The best interpretation is of a cold wetland or muskeg-like patchwork, with mossy ground, sedge-rich margins and pools surrounded by thin vegetation. It offers no evidence of a human camp at Maguiresbridge. Its importance lies elsewhere: it proves that freshwater ecosystems persisted in at least part of Ireland during a cold stage and helps explain how herbivores and their predators could occupy the island intermittently.

Castlepook’s Animal Archive

In north County Cork, Castlepook Cave near Doneraile—also called Mammoth Cave—provides the richest Irish cave archive for vertebrate life leading up to the Last Glacial Maximum. Excavations undertaken chiefly in the early twentieth century recovered more than 2,000 bones. Later radiocarbon work showed that the assemblage spans a very long period: individual specimens range from about 45,700 to 19,950 radiocarbon years BP. The collection is consequently not a census of animals living together in 31,709 BCE, but evidence that the cave accumulated remains across many millennia.

Its fauna includes woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena, with Arctic fox, wolf, mountain hare and lemmings also represented. Such animals point to an open, cold-stage environment capable of supporting grazing and browsing herbivores as well as large carnivores and scavengers. A hyaena den or scavenging site can concentrate bones from many places and moments; water, sediment movement and excavation can later alter their positions. Castlepook is therefore a record of ecological possibilities and animal movement, not a ready-made scene of a single herd or hunt.

The 2020 redating programme is an important caution as well as a breakthrough. Using improved pretreatment methods, Ruth F. Carden, Thomas Higham and Peter Woodman found that some Castlepook dates were substantially older than earlier results. Their work places elements of the southern Irish fauna firmly within Marine Isotope Stage 3 and suggests that giant deer and spotted hyaena may have disappeared locally before the Last Glacial Maximum. In historical terms, the result expands the time-depth of Ireland's known Ice Age fauna while reminding us that old cave collections require continual reassessment.

The Reindeer Femur Question

One Castlepook reindeer femur has made this era especially important for Irish archaeology. County Cork heritage material identifies the specimen as dating broadly to about 31,000 BCE and presents a deep incision that zooarchaeologist Ruth Carden has interpreted as having been made by a sharp stone tool during carcass processing. If that interpretation is sustained, it would be evidence that Upper Palaeolithic people handled reindeer in Ireland tens of millennia before the island's securely established Mesolithic settlement.

The distinction between evidence and interpretation must remain clear. The bone itself, its species identification and its age are material evidence. The proposition that the mark was made by a human tool is a specialist taphonomic interpretation that needs to exclude carnivore damage, sediment abrasion, weathering, excavation damage and later handling. Moreover, the dated bone records the animal's death, not automatically the precise timing of the incision, the location of its killing, or the length of any human visit.

Nor does one potentially cut-marked bone establish a settlement. Castlepook has not yielded a securely associated stone-tool assemblage, hearth, dwelling floor, burial, art panel or repeated domestic debris from this period. Modern excavation in 2022 located surviving deposits but reported no cultural artefacts; it also confirmed how comprehensively earlier investigators had disturbed or removed much of the cave fill. The cautious conclusion for around 31,709 BCE is therefore that a human visit and reindeer butchery are plausible and potentially transformative, but not yet a demonstrated, continuous Irish population.

What Cannot Be Written

There is no evidence for political affairs in the later sense: no chiefs, kingdoms, assemblies, territories, diplomacy, laws or named communities. There is likewise no Irish evidence at this date for organised warfare, agriculture, livestock, trade routes, permanent villages, monuments, formal religion, writing or learning institutions. It would be irresponsible to fill those silences by borrowing stories from much later prehistoric Ireland or by assuming that every practice known from Upper Palaeolithic Europe occurred at Castlepook.

If people did enter Ireland in this broad period, they were almost certainly mobile hunter-gatherers operating in a landscape of demanding seasonal resources. That is an inference from the possible butchery trace, the reindeer bone and the wider north-west European context, not a direct description of Irish daily life. It permits no reliable statement about the visitors' group size, kinship, clothing, shelters, routes, language or identity. They should not be called "Irish" in an ethnic or national sense. The archaeological question is more modest and more compelling: whether small human parties sometimes reached and used parts of the island before advancing ice erased, buried or scattered much of their evidence.

Landscape Before Oblivion

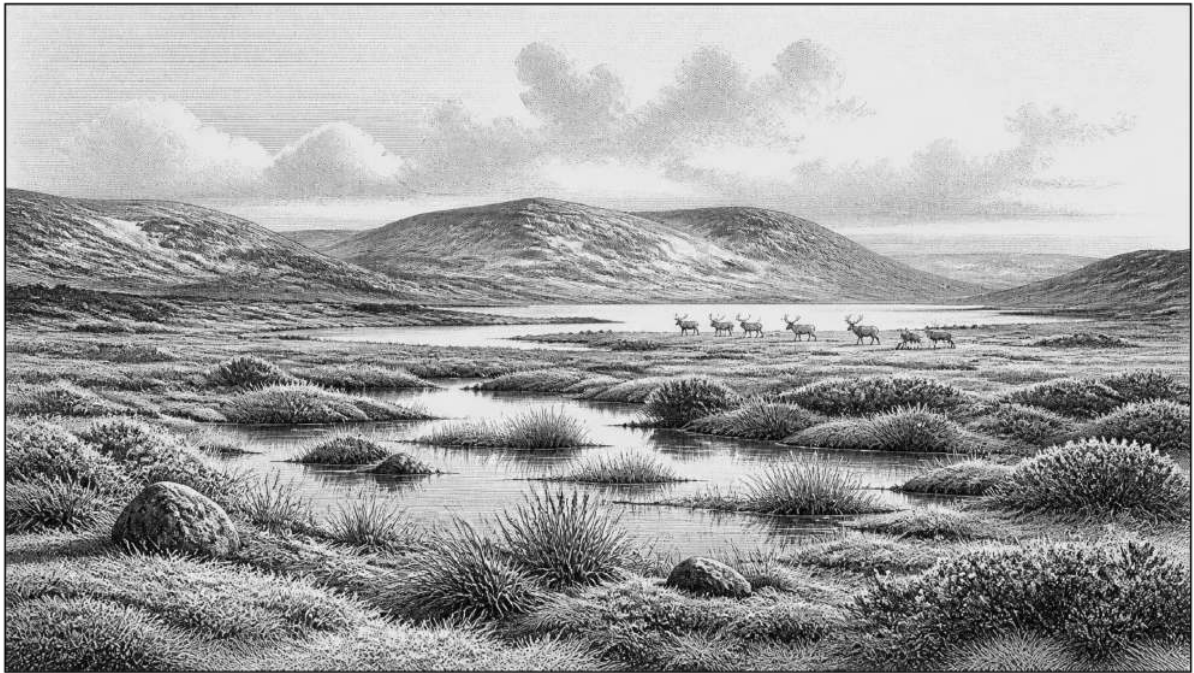
The broader history is one of environmental change. During the succeeding millennia, the British-Irish Ice Sheet expanded to its last maximum, remodelling valleys, plains and seabeds and destroying or concealing many older surfaces. That geological violence helps explain why Ireland's Palaeolithic record is so sparse. The absence of camps is meaningful, but it is not absolute proof that no one ever arrived: cold-stage erosion, later glacial deposition, sea-level change and nineteenth- and early twentieth-century collecting all limit what survives and what can be reconstructed.

Thus the most faithful account of Ireland around 31,709 BCE centres not on an invented episode but on a testable frontier of knowledge. Fermanagh's buried wetland indicates treeless, frost-prone tundra with freshwater life. Castlepook records a remarkable community of mammals, including reindeer, mammoth and hyaena, over a prolonged Ice Age span. A marked reindeer bone raises the possibility of an exceptionally early human encounter. Together, these traces reveal an Ireland that was cold, open, ecologically active and changing rapidly—an island landscape on the threshold of far more extensive glaciation.

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31708 BCE

Crag Cave's Interrupted Calcite^[93]



Modern calendar-year precision is not available for Ireland in 31,708 BCE. The label is a retrospective filing device, not a date that anyone then recorded or recognised. It falls approximately 33,700 years before AD 1950, within the Late Pleistocene and broadly within Marine Isotope Stage 3 (MIS 3), a volatile interval of the last Ice Age. Archaeology cannot identify an Irish event, ruler, community or season in this particular numbered year. The responsible account is instead built from calibrated date ranges, cave bones, buried wetland deposits, pollen, insects, plant remains and evidence for changing ice margins.

The closest securely useful Irish chronologies are measured in centuries or millennia. At Derryvree near Maguiresbridge, County Fermanagh, organic sediments lying between two tills produced a radiocarbon determination of 30,500 +1,170/−1,030 BP; a published calibration places the deposit broadly about 36,900–31,700 calibrated years BP. That range embraces the modern label 31,708 BCE, but does not turn it into a precisely dated environmental snapshot. The date refers to sampled organic material, while the sediments accumulated over time and preserve conditions at one locality, not a complete map of Ireland.

A Climate in Motion

Ireland was in the long approach to the Last Glacial Maximum, rather than at its peak. Recent syntheses place major British–Irish Ice Sheet growth after roughly 35–32 thousand years ago, with maximum overall extent later, conventionally around 27–21 thousand years ago. Yet an advancing ice sheet was not a simple, steady white front. Ice margins could expand, thin, retreat and reorganise; sea level, drainage and the availability of vegetation altered with them. On western Irish evidence, substantial ice loading and high relative sea level occurred at intervals between about 40 and 19 calibrated thousand

years ago, while a rapid ice-margin fluctuation is recorded around 28 calibrated thousand years ago. The exact distribution of ice and ice-free ground at any moment around 33.7 thousand years ago remains debated.

That uncertainty matters. It prevents a confident claim that all of Ireland was either ice-covered or open at the same time. The island's modern coastline also offers no straightforward guide. Globally lower sea level exposed more continental shelf, but the shape of land, sea and ice around Ireland changed repeatedly and locally. The evidence supports Ireland as part of a shifting north-west European cold-zone landscape, not a stable island with a known route for animals or people. Its later glacial landforms—drumlins, streamlined rock, moraines and meltwater channels—are the durable outcome of these changes, but they do not by themselves date a single advance to a single year.

Derryvree's Cold Wetland

Derryvree supplies the clearest environmental window close to this broad date. Beneath a later till, investigators found organic-rich layers containing freshwater mosses and sedges, alongside an insect fauna of cold northern aspect. These remains indicate a cold, open and wet setting: shallow freshwater, sedge and moss communities, and ground exposed to severe frost. They do not demonstrate a forest, cultivated land or settled countryside. Rather, they support an interpretation of tundra-like or muskeg conditions—waterlogged hollows and pools amid sparse, largely treeless vegetation.

This was nevertheless a living environment, not an empty wasteland. Mosses, sedges and aquatic plants capture the existence of freshwater habitats; beetle and other insect evidence can register the character of local temperatures and ground cover. Comparable middle-Midlandian deposits at Hollymount and Greenagho, also in Fermanagh, show that cold non-glacial environments existed in parts of the region between episodes of ice advance. Greenagho's radiocarbon result, about 32,460 BP, is treated cautiously as a minimum age, a useful reminder that apparent numerical exactness may conceal difficult stratigraphy and limits in the dating method.

Crag Cave, County Kerry, provides a different kind of climatic evidence. Uranium-series dating of stalagmites shows that calcite growth occurred episodically through MIS 3, in phases linked to relatively milder Greenland interstadials. Calcite needs water moving through soil and rock under conditions unlike those of a deeply frozen, dry cave system. It therefore confirms climatic oscillation in south-west Ireland, although it cannot tell us that a particular Derryvree plant community existed in Kerry, or specify weather in 31,708 BCE. The cave record and the wetland record illuminate a regional pattern of instability through separate local archives.

Caves and the Animal Record

South-western and southern caves reveal a striking, but unevenly dated, Pleistocene fauna. Castlepook Cave near Doneraile, County Cork—also called Mammoth Cave—has yielded more than 2,000 bones and is Ireland's richest known vertebrate archive for the period leading towards the Last Glacial Maximum. Its broad assemblage includes woolly mammoth, giant deer, reindeer, brown bear and spotted hyaena; later deposits include lemmings, Arctic fox and wolf. A cave, however, is not a census point. It may receive bones through predators, scavengers, water movement, collapse, natural deaths and excavation disturbance. Individual species need not have occupied the surrounding land simultaneously.

Spotted hyaena is especially significant because it indicates an ecosystem far removed from later Irish experience. Hyaenas could accumulate and gnaw carcasses in dens, complicating any attempt to identify hunting or butchery from damaged bone. Revised radiocarbon work has pushed some Castlepook animal dates substantially older than results obtained in the 1990s and suggests that giant deer and spotted hyaena may have disappeared locally before about 40,000 calibrated years BP. This revision means that the old cave collection must not be treated as one contemporaneous 'Ice Age fauna'. Its value lies in demonstrating repeated animal presence during a long, changing interval.

Shandon Cave near Dungarvan, County Waterford, adds separately dated remains of brown bear, reindeer, horse, wolf and mammoth from a middle-Midlandian sequence. The range of dates reinforces the broader conclusion that Ireland supported, or at least received, cold-stage mammals during MIS 3. It does not prove that every species was present in every county, nor that any particular herd passed through Ireland in this year. Animal bones give robust evidence of species and broad environmental opportunity; they rarely supply a continuous narrative of population size, migration route or seasonality.

The Unsettled Human Question

One Castlepook reindeer femur has made this period unusually important for Irish prehistory. Ruth Carden identified a deep mark on the bone as consistent with cutting or chopping fresh bone using a sharp stone implement, and County Cork heritage publications report that the animal died around 30,000 BCE. If this interpretation is confirmed, it would be evidence that a person processed a reindeer in Ireland during the Upper Palaeolithic, vastly earlier than the long-established post-glacial record of human activity.

The distinction between evidence and interpretation must remain firm. The bone was recovered from an historic cave collection rather than a modern excavation of a sealed occupation surface. Its radiocarbon result dates the animal's death, not automatically the mark, the place of death, or the length of any human visit. Identifying a cut mark requires ruling out carnivore damage, trampling, sediment abrasion, excavation damage and later handling. Nor are there securely associated hearths, dwelling floors, stone-tool assemblages, human burials, artworks or food-processing areas in Ireland that can be assigned to this broad period. The femur is a serious and potentially transformative clue, not proof of a permanent settlement or continuous population.

Accordingly, political affairs, warfare, diplomacy, named peoples, language, religion and formal learning cannot responsibly be reconstructed. Nor can an economy of trade or farming be inferred. If people did visit, animal carcasses could have offered meat, hide, sinew, fat, bone and antler; that is a general possibility, not evidence for an Irish subsistence system. Terms such as kingdom, tribe, chief or Irish community would project much later social categories onto a record too slight to bear them.

What Can Be Said

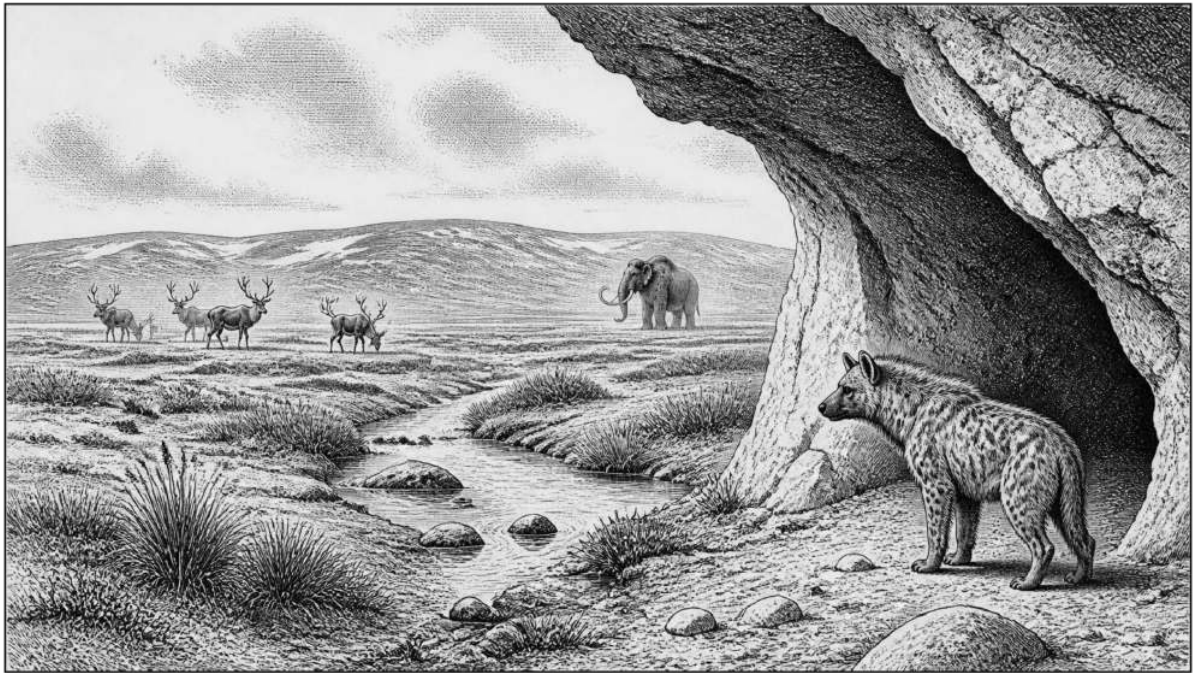
The most important development around this modern date was environmental rather than political: Ireland lay within a rapidly changing cold-world system in which wetlands, open vegetation, mammals and ice margins shifted over long timescales. Derryvree demonstrates that cold freshwater habitats existed in Fermanagh during a broad interval that includes this date. Southern cave records demonstrate an Ice Age animal world of unusual diversity. Castlepook's marked reindeer femur raises the possibility of a brief human encounter, but not yet a demonstrable settlement history.

Later ice expansion would erode, bury and rearrange many earlier deposits, helping to explain why the evidence is sparse and discontinuous. The appropriate history of 31,708 BCE is therefore not a fabricated annual chronicle. It is a disciplined account of what deposits and bones can show: a cold, variable Ireland; local open wetlands; intermittently available animal habitats; and one unresolved object that may yet alter the story of the island's earliest human visitors.

Chapter 094 of 100

31707 BCE

Hyenahall's Open-Country Fauna^[94]



31,707 BCE is a modern, proleptic calendar label, not a date that people in prehistoric Ireland could have recognised or recorded. It corresponds only approximately to 33,656 years before AD 1950, the conventional “present” of radiocarbon chronology. At this depth of time, modern calendar-year precision is unavailable. Evidence is dated in broad calibrated ranges, and even well-tested samples can carry uncertainties of centuries or more. The responsible subject, therefore, is not an event in a single Irish year, but Ireland during the later part of Marine Isotope Stage 3: a fluctuating cold phase of the last Ice Age, well before the Last Glacial Maximum.

For this broad period, Ireland is illuminated by a sparse and uneven archive: animal bones from caves, organic deposits buried beneath later glacial sediments, pollen, insect remains, cave mineral formations, landforms, and radiocarbon measurements. These do not provide a continuous national narrative. They do, however, show that parts of Ireland could support cold-adapted animal communities before the expanding British–Irish Ice Sheet transformed much of the island. The richest single window is Castlepook Cave, also called Mammoth Cave, near Doneraile in north County Cork. Its galleries include the evocatively named Hyenahall, a reminder that the evidence is not solely of a frozen wilderness but of a living, contested animal landscape.

A Date Within a Broad Cold Age

The label “31,707 BCE” should not be treated as a pin fixed precisely into a sediment layer. Radiocarbon dates measure the decay of carbon-14 and must be calibrated against changing atmospheric carbon levels before they can be expressed as calendar-age ranges. IntCal20, the internationally used Northern Hemisphere calibration framework, reaches back to 55,000 calibrated years before present, but

its older sections rely on several kinds of natural archive rather than annually resolved tree rings. This makes it especially important not to convert a prehistoric date into an imagined day, season, or political generation.

In climatic terms, the nominal date falls within MIS 3, conventionally spanning roughly 57,000 to 29,000 years ago. This was not a single unchanging “Ice Age climate”. Greenland ice-core records and European environmental archives show repeated swings between relatively milder interstadials and colder stadials. Ireland’s local record is poorer and has frequently been disturbed or removed by later ice, so it cannot simply be assigned the weather of a particular Greenland oscillation. What can be said is that the island lay in a northern Atlantic world of severe seasonal conditions, open vegetation and advancing or recurrent ice margins, not in the wooded and agriculturally transformed landscape familiar today.

The full Last Glacial Maximum came later. Ice-sheet syntheses generally place its most extensive phase in the British–Irish region around 26,000–21,000 years ago, while the newer BRITICE-CHRONO reconstruction models ice-sheet growth and retreat from 31,000 to 15,000 years ago. That chronology warns against a simple map of Ireland either wholly ice-covered or wholly ice-free at 31,707 BCE. Ice extent changed through time and differed by region; evidence for significant earlier ice cover in MIS 3 also survives in parts of Britain and Ireland. At the broad date considered here, the best interpretation is of an environmentally unstable interval before the later maximum, when at least some Irish landscapes and cave entrances remained available to animals.

Castlepook and the Animal World

Castlepook Cave is central because it has yielded more than 2,000 bones and is Ireland’s most important known repository of vertebrate remains from the period leading towards the Last Glacial Maximum. Individual bones have produced dates ranging broadly from about 45,700 to 19,950 radiocarbon years before present. That very span is a warning: Castlepook is an archive accumulated across many millennia, not a sealed deposit representing one moment. Water movement, earlier excavation and the habits of carnivores have mixed or obscured parts of its history. A bone from the cave can illuminate the wider era, but need not describe conditions in every part of Ireland or precisely in 31,707 BCE.

Nevertheless, the faunal list is remarkable. Finds attributed to the older cold-stage assemblage include woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, spotted hyaena and both collared and Norwegian lemmings. The combination indicates open country capable, at intervals, of supporting large grazing and browsing mammals, smaller cold-adapted mammals and formidable scavengers or predators. It bears little resemblance to modern Ireland’s fauna. Mammoth and reindeer suggest wide feeding grounds rather than closed woodland; lemmings and Arctic fox reinforce the conclusion that cold, exposed habitats occurred. Yet such a list should not be turned into an illustrated procession of animals all present together on one day. Species have separate dates, and the cave received bones by different routes.

Hyenahall is particularly significant because spotted hyaena is represented at Castlepook, the only Irish site known to have yielded this animal. Hyaenas may have used caves as dens, dragging in prey or scavenged carcasses; gnawing, breakage and the spatial distribution of bones can therefore reveal animal behaviour as much as climate. A cave is not automatically a hunting camp, and a concentration of bones is not automatically a human food store. The cave’s evidence instead evokes overlapping animal territories: reindeer and mammoth moving through open ground, carnivores exploiting carcasses, and bones becoming trapped in a limestone maze over a long period.

People: A Possibility, Not a Population

The most consequential human question is also the least secure. A reindeer femur from Castlepook has been reported as about 33,000 years old and bears a deep modification interpreted by zooarchaeologist Ruth Carden as a cut or chopping mark made with a sharp stone implement during carcass processing. If that interpretation is confirmed, it would indicate a human visit to Ireland in the broad era represented by this article, vastly earlier than the long-established Mesolithic settlement record. Research funded through the Royal Irish Academy has described modified bones from several phases of the last glacial cycle as the best documented evidence so far for a Pleistocene hominin presence on the island.

But the limits of the claim matter as much as its excitement. The bone came from an old cave collection, not a newly excavated, intact occupation floor. No securely associated lithic assemblage, hearth, built shelter, burial, cave art panel or repeated settlement sequence of this age has been recovered at Castlepook. The National Museum of Ireland accordingly still characterises the Palaeolithic human record as lacking clear evidence of sustained human presence. The careful conclusion is that a brief Upper Palaeolithic visit, hunt or episode of carcass processing is plausible on the present evidence; permanent occupation, a named community, or an island-wide population cannot responsibly be asserted.

That distinction governs every social question. There is no evidence for a polity, leaders, territorial diplomacy, formal conflict between human groups, farming households, villages or any enduring exchange system in Ireland at this time. Nor is there Irish evidence from which to infer language, kinship rules, religious practice, ritual monuments, formal learning or artistic traditions. If hunters did reach the island, they would have belonged to wider Upper Palaeolithic worlds known elsewhere in north-west Europe; that is a reasonable regional context, not proof that Irish visitors carried any particular tool-kit, belief or custom.

Everyday Survival and Movement

The landscape itself imposed the decisive conditions of life. Open, low-growing vegetation would have offered forage for herbivores, while exposed ground, frost, wind and rapidly changing weather limited shelter and food security. The Fermanagh record is valuable here, though it should not be forced into exact synchrony with Castlepook. At Derryvree near Maguiresbridge, organic-rich freshwater layers trapped between glacial tills preserve mosses, sedges and a cold-climate insect fauna. A conventional radiocarbon age of 30,500 years before present was obtained from the organic layers. The deposits demonstrate that northern Ireland experienced cold, non-glacial, freshwater and tundra-like conditions during part of Middle Midlandian time; they do not provide a diary for the numbered BCE year.

For animals, rivers, wetlands and cave mouths were important elements in a broken landscape of feeding grounds and refuge. For any people, the practical economy would necessarily have been one of movement, observation and opportunism: following game, finding fuel and water, using animal fat, hides, bone and meat where available, and seeking shelter from wind and cold. Yet this is an inference from Ice Age hunter-gatherer lifeways elsewhere, not direct evidence for an Irish camp. There is no basis for claiming regular trade, long-distance commerce or a maritime economy within Ireland. Lower global sea levels altered the shape of the surrounding seas, but the precise availability of a usable route between Ireland, Britain and the continent remains debated and changed with ice, sea level and local topography.

An Ireland Without Later Ireland

At this point in deep time, none of the familiar institutions or cultural markers of Irish history existed: no Gaelic kingdoms, fields, monuments, churches, towns or written memory. Even Ireland's later insularity should not be projected backwards uncritically. Glacial cycles repeatedly remodelled coastlines, drainage and ecological routes. The later ice sheet eroded and buried evidence, helping to explain why the archaeological record is so fragmentary. What survives is therefore unusually precious but also unusually difficult to interpret.

The strongest historical picture is one of ecological possibility under pressure. Around the broad interval denoted by 31,707 BCE, Ireland was part of a changing north-west European cold-stage environment. Its open landscapes could, at least intermittently, sustain reindeer, mammoth and predators. Castlepook Cave preserved traces of those animals; Fermanagh sediments preserve evidence of cold freshwater vegetation; ice-sheet research shows that more extensive glaciation was still to come. A potentially cut-marked reindeer bone holds out the prospect that people briefly entered this world. It does not yet allow us to write a conventional human history. The real story is the survival of clues: bones, silts and cave passages that make an otherwise silent Ireland faintly visible.

Chapter 095 of 100

31706 BCE

Hollymount Between the Tills^[95]



The label 31,706 BCE gives a misleading impression of precision. No written record, ruler list, settlement sequence or annual chronology exists for Ireland at this depth of time. In terms used by Quaternary scientists, it falls roughly 33,650 calendar years before present (where “present” is AD 1950), within Marine Isotope Stage 3 (MIS 3), a fluctuating phase of the last Ice Age. That conversion is only a modern chronological convenience. It does not mean that an excavator can identify what happened in Ireland in this particular calendar year.

The responsible subject is therefore Ireland during the broader later MIS 3 interval, perhaps around 37,000–32,000 calibrated years before present. The island’s evidence is fragmentary and uneven: a few buried freshwater deposits in Fermanagh, cave-bone assemblages in the south, glacial landforms and wider records of North Atlantic climate. These sources illuminate habitats, animals and changing ice conditions. They do not reveal named peoples, governments, battles, treaties, farms or villages.

Dating a Landscape, Not a Year

Radiocarbon dates are not calendar dates in themselves. The concentration of radioactive carbon in the atmosphere has varied over time, and especially so during the Pleistocene. Dates must therefore be calibrated against internationally maintained curves, including IntCal20. At around 30,000 radiocarbon years ago the relationship between radiocarbon age and calendar age is particularly complex. A result may calibrate to a broad range, sometimes with several possible intervals. Stratigraphy—the physical order of layers—remains as important as the numerical determination.

This matters greatly for the deposits at Derryvree near Maguiresbridge, County Fermanagh, and at nearby Hollymount and Greenagho. They are not annual snapshots. Rather, they preserve episodes within a long and unstable cold stage. The Derryvree sequence contained organic-rich freshwater sediments

between two tills: a lower mass left by an earlier glacier and an upper deposit emplaced when ice returned. Organic material produced a radiocarbon determination of 30,500 years BP, with a large error range. Its calibrated age belongs broadly to later MIS 3, making it highly relevant to the world represented by 31,706 BCE, but not a direct date for that nominal year.

The order of layers is decisive. Before the freshwater silts accumulated, ice had affected the locality. Afterwards, enough open ground and liquid water existed for sediment, plants and insects to build up in a basin. Later glacial activity covered and protected the deposit. That sequence proves major environmental change in northern Ireland. It cannot, by itself, show the precise extent of ice across every county at one moment, nor demonstrate that people lived beside the water.

Cold Water and Open Ground

Derryvree provides Ireland's clearest environmental window onto this broad period. Its mosses, sedges and other plant remains, together with pollen and an insect fauna of cold northern aspect, point to a treeless or nearly treeless landscape. The setting has been interpreted as tundra-like wet ground: mossy and sedgy margins, shallow freshwater, exposed mineral soils and frost-affected terrain. Finds linked to plants such as bogbean, mountain avens and water-milfoil suggest that local conditions included both wet hollows and open ground, rather than a single uniform plain.

This was not the wooded island familiar from later prehistory and modern Ireland. Oak woods, hazel scrub, enclosed pasture, fields and blanket bog lay far in the future. Growing seasons were short, winters severe and the weather subject to sharp change. In such terrain, topography mattered. Sheltered basins could retain water and vegetation while ridges, slopes and exposed surfaces experienced strong winds, seasonal freezing and sparse plant cover. Rivers and meltwater channels were not merely features of scenery: they sorted sediment, created local refuges and connected habitats across otherwise difficult country.

Hollymount and Greenagho reinforce the larger point while also demonstrating the limits of certainty. Each provides evidence for non-glacial deposits during the Middle Midlandian, the older regional term broadly corresponding to MIS 3. Their dates and fossil preservation differ, and correlation between them is not straightforward. Ireland was not a homogeneous climatic unit. A freshwater basin in Fermanagh cannot be made a complete map of conditions in Cork, the western uplands or the Irish Sea basin.

Castlepook's Animal World

In north County Cork, Castlepook Cave near Doneraile supplies a different kind of archive. It is Ireland's richest known cave site for vertebrate remains from before the Last Glacial Maximum. Excavations in the early twentieth century recovered a large collection, now much reduced and complicated by the methods of its recovery, water movement and disturbed deposits. Modern radiocarbon re-dating has nevertheless transformed its importance. It indicates that animal remains once attributed to younger phases can be substantially older, with parts of the assemblage belonging to MIS 3.

The cave fauna demonstrates that Ireland supported, at different points in this long interval, a far richer large-mammal community than the island would possess later. Woolly mammoth, giant deer, reindeer, brown bear and spotted hyena are all represented at Castlepook; wolf, Arctic fox and lemmings occur among the wider cold-stage fauna. This is evidence for animals in Ireland during the relevant

climatic world, not proof that every species stood together outside the cave in 31,706 BCE. Individual bones have different ages, and caves often gather material over centuries or millennia through carnivore activity, natural deaths, water transport and collapse.

Spotted hyena is especially revealing. A hyena skull from Castlepook, held by the National Museum of Ireland, confirms that a large social carnivore now associated with Africa ranged through Ice Age Ireland. Hyenas could accumulate bones in dens, crush them and move them around, complicating any attempt to treat a bone deposit as a human food refuse heap. Their presence also implies sufficient prey and a landscape capable of sustaining large carnivores. But it does not establish a “hyena kingdom”, nor can it tell us how many animals lived on the island at once.

The most reasonable reconstruction is an open, mobile food web. Reindeer and perhaps giant deer would have exploited seasonal forage; mammoth, where present, required extensive plant resources; carnivores followed prey and competed for carcasses. Such animals could move widely when terrain and sea conditions allowed. Lower global sea levels altered coastlines and narrowed water barriers in the Irish Sea region, but the exact availability of land routes or crossings at any particular point remains debated. The faunal evidence shows connectivity with Britain and north-west Europe, not the exact route taken by every animal.

People: A Possibility, Not a Settlement

This is the point at which caution is most necessary. For decades, the accepted archaeological position was that no convincing Upper Palaeolithic occupation of Ireland had been demonstrated. Castlepook produced extraordinary animal remains, but no securely associated stone-tool assemblage, hearth, dwelling floor, burial or occupation surface. Early excavation was thorough in places but did not meet modern standards of recording; much stratified material was removed, mixed or left with uncertain provenance.

A reindeer bone from Castlepook has more recently been discussed as bearing possible human modification and has been presented publicly as potential evidence for people in Ireland about 33,000 years ago. If confirmed, it would be profoundly important: it could indicate that hunter-gatherers reached Ireland long before the better-established terminal-Pleistocene evidence from a butchered bear bone at Alice and Gwendoline Cave in County Clare. Yet one modified bone, especially from a disturbed cave archive, cannot establish a settled population, a camp at Castlepook, or an event in 31,706 BCE. Marks on bone must be distinguished from carnivore damage, trampling, sediment abrasion, excavation damage and other taphonomic processes.

The most defensible conclusion is therefore deliberately modest. Short, seasonal human visits are possible within an Irish landscape that supported large herbivores and predators, and the Cork find deserves further specialist testing and contextual study. Permanent residence at this time is unproven. We cannot responsibly describe family structures, language, clothing, ritual, artistic traditions or hunting practices in Ireland itself, however plausible comparisons with contemporary hunter-gatherers elsewhere in Europe may seem.

No Politics, No Diplomacy

There is no evidence for political affairs, diplomacy or organised warfare in Ireland at this date. There were no known territories, chiefs, boundaries, assemblies or institutions. Equally, no evidence supports trade in the later sense of regular exchange between settled communities. Animals and, possibly, people

moved through a wider north-west European ecological zone, but movement is not commerce. The relevant “regional change” was environmental: repeated shifts between glacial advance, ice-free ground, wetland formation and renewed cold.

Religion and culture are similarly beyond direct recovery. Caves may have been shelters, carnivore dens, traps for sediment and repositories for bones; without secure human artefacts or activity surfaces, they cannot be identified as sacred places. There was no writing and no recoverable body of formal learning. What survives is another kind of record: spores, pollen, seeds, mosses, beetle fragments, bones, cave sediments and glacial tills. Together they show that Ireland was neither timeless nor empty of life. It was a dynamic Ice Age landscape whose human history, if present at all, remains on the threshold of demonstration.

For 31,706 BCE, that threshold is the history. The crucial development was not a recorded deed but the persistence, in a few protected deposits, of evidence that later ice did not erase: cold freshwater in Fermanagh, a complex large-mammal fauna in Cork, and a challenging question about whether people ever entered this demanding world.

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31705 BCE

Castlepook's Unfinished Question^[96]



31,705 BCE is not a date that can be recovered from the Irish archaeological record with calendar-year precision. It is a modern retrospective label, approximately 33,654 years before the conventional radiocarbon reference year of AD 1950. At this depth of time, evidence is dated in calibrated probability ranges, radiocarbon ages and broad climatic phases rather than by individual years. The most responsible way to approach Ireland around this point is therefore through the Late Pleistocene, within the long and unstable interval known as Marine Isotope Stage 3 (MIS 3), and through a small number of unusually informative deposits: cave bones in north Cork, organic sediments beneath Fermanagh drumlins, and records of advancing ice and changing seas around the island.

A Changing Ice-Age Island

In modern geographical terms Ireland was already an island, though its coastlines, neighbouring seas and possible routes of animal movement differed profoundly from those of today. Global sea level was lower during the Ice Age, exposing substantial areas of the continental shelf, but that does not establish a simple dry-land crossing between Ireland and Britain. Geological reconstructions have long treated an enduring Irish Sea land bridge with caution; routes, if available at all, depended upon local ice, water depth, shifting shorelines and short-lived environmental conditions. Animals evidently reached Ireland in some phases of the Pleistocene, but their presence cannot by itself demonstrate the route taken or prove that humans followed them.

Nor should “Ice Age” suggest a single, uniform frozen wilderness. MIS 3, conventionally spanning roughly 59,500 to 24,000 years ago, included abrupt swings between colder stadials and comparatively milder interstadials across the North Atlantic world. Ireland’s local evidence indicates that open, treeless

or sparsely vegetated environments could alternate with wetter and somewhat more productive phases. The major Late Midlandian expansion of the British–Irish Ice Sheet was still developing around the broad date represented by 31,705 BCE; its maximum western advance is dated substantially later, after about 24,720 calibrated years BP. Consequently, neither a wholly ice-covered Ireland nor a benign, stable landscape is an adequate picture for this moment.

What the Fermanagh Sediments Show

One of the clearest Irish environmental archives comes from Derryvree near Maguiresbridge, County Fermanagh. Road works exposed freshwater silts and fine sands later buried beneath glacial deposits. Their plant remains, mosses, pollen and small-animal evidence describe an open tundra landscape under periglacial conditions. A radiocarbon measurement from the organic material produced an age of 30,500 radiocarbon years BP, with a large uncertainty; calibration places such measurements in broad calendar ranges rather than a single calendrical point. Derryvree cannot tell us what happened in the particular notional year 31,705 BCE, nor can it be assumed to represent all Ireland at once. It does, however, demonstrate that cold, open wetlands existed in the island's north during the wider middle part of the last glaciation.

The plants matter because they correct an image of complete lifelessness. Mosses, sedges, bogbean and other cold-adapted or wet-ground vegetation could sustain small freshwater habitats amid exposed ground. Such settings would have changed with season, drainage and temperature. Inferences about dense forest, settled farmland or widespread human clearance are therefore impossible: trees were not shaping the Irish landscape as they would after the Ice Age, and no pollen record supports agriculture or deliberate woodland management at this date. The surviving record instead suggests a patchwork of wet hollows, mineral ground, open vegetation and areas affected by frost, wind and ice.

Castlepook's Bone Archive

The strongest evidence for late-Pleistocene animal life around this broad period lies far to the south, at Castlepook Cave near Doneraile in north County Cork. Also known as Mammoth Cave, its passages produced a large fossil collection during excavations directed by Richard Ussher and the Royal Irish Academy's cave-exploration committee in the early twentieth century. Although only part of the original collection survives, Castlepook remains Ireland's richest archive of vertebrate remains from the long interval leading towards the Last Glacial Maximum. Individual bones have returned dates spanning approximately 45,700 to 19,950 radiocarbon years BP, a reminder that the assemblage is not one sealed episode or one contemporaneous animal community.

The recorded fauna is striking: woolly mammoth, reindeer, giant deer, brown bear, wolf, fox, Arctic fox, lemmings and spotted hyena are among the animals represented. Their bones show that Ireland could, during favourable phases, support a cold-climate fauna far richer and more unfamiliar than its later historic wildlife. Yet a cave assemblage is not a landscape census. Carnivores may have carried prey into chambers; water, collapse and later excavation may have moved material; and bones of different ages can be mixed in one collection. Spotted hyena is particularly important because gnawing and carcass transport can help explain bone accumulations without invoking human activity.

The Human Question

Castlepook also raises the most consequential, and most unresolved, question for Ireland at this date. A reindeer femur from the cave, recovered from an old collection and later examined by zooarchaeologist Ruth Carden, has been reported as approximately 33,000 years old and bears a deep incision interpreted as damage made by a sharp stone tool while the bone was fresh. If that interpretation is confirmed, it would indicate a human encounter with a reindeer in Ireland many millennia before the securely documented Late Glacial and Mesolithic occupation of the island. It would not, however, establish a village, a permanent population, a named people or continuous settlement.

The distinction is crucial. The bone's date concerns the death of the animal; the identification of its mark as a human tool cut is a separate judgement; and the old excavation context does not provide an intact occupation floor. Castlepook has not yet yielded a securely associated suite of stone tools, hearths, constructed shelter, repeated food-processing deposits or human remains of this age. Recent work has aimed to identify undisturbed, stratified Pleistocene deposits in chambers including Hyaena Land and Elephant Hall, precisely because such contexts might test older interpretations with modern methods. Until that work produces decisive associations, a possible brief visit by mobile hunters remains an interpretation, not an established chapter of settlement history.

No Politics, No Proven Trade

There is no evidence from Ireland around 31,705 BCE for political institutions, chiefs, territories, diplomacy, warfare, law, formal religion, writing, monuments or organised trade. It would be misleading to fill those silences with analogies from much later Celtic, medieval or even Neolithic Ireland. No language can be identified, no ethnic name attached, and no ancestry traced securely from this possible Palaeolithic episode to later Irish communities. Even the word “society” must be used cautiously: the evidence may record animal movements and, at most, an isolated human action rather than a resident human group.

If people did reach Ireland, comparison with contemporaneous Upper Palaeolithic groups elsewhere in north-west Europe suggests that they would have needed flexible, mobile strategies: knowledge of seasonal animal behaviour, stone-working skills, clothing and shelter suited to severe weather, and routes through a dangerous coastal and glacial margin. These are reasonable archaeological inferences, not facts demonstrated in Ireland itself. There is no Irish evidence at this date for exchange networks, ritual practice, art, teaching traditions or domestic life. The safest conclusion is that the material record is presently too slight to describe any of them.

Animals, Weather and Survival

What can be said with greater confidence is that animal life and climate were the governing forces in this landscape. Reindeer were adapted to open, cold-country feeding; lemmings and Arctic fox point towards tundra-like conditions; mammoths and giant deer evoke the large-herbivore component of the wider Pleistocene world. Wolves and spotted hyenas were competitors and scavengers as well as predators. Their presence makes any imagined human journey more demanding: a carcass could attract dangerous carnivores, while caves offered not only shelter but also den sites, traps for sediment and repositories of bones.

Castlepook's evidence also exposes the fragility of the archive. Late nineteenth- and early twentieth-century excavators recovered remarkable quantities of material, but their methods did not meet present expectations for fine-grained stratigraphic recording, sieving, spatial plotting or contamination control. Later radiocarbon re-dating has shown that some earlier determinations required revision, in certain cases by thousands of radiocarbon years. This is not a reason to dismiss the collection; rather, it explains why direct dating, microscopic study of modifications and excavation of undisturbed sediments are essential before confident historical claims are made.

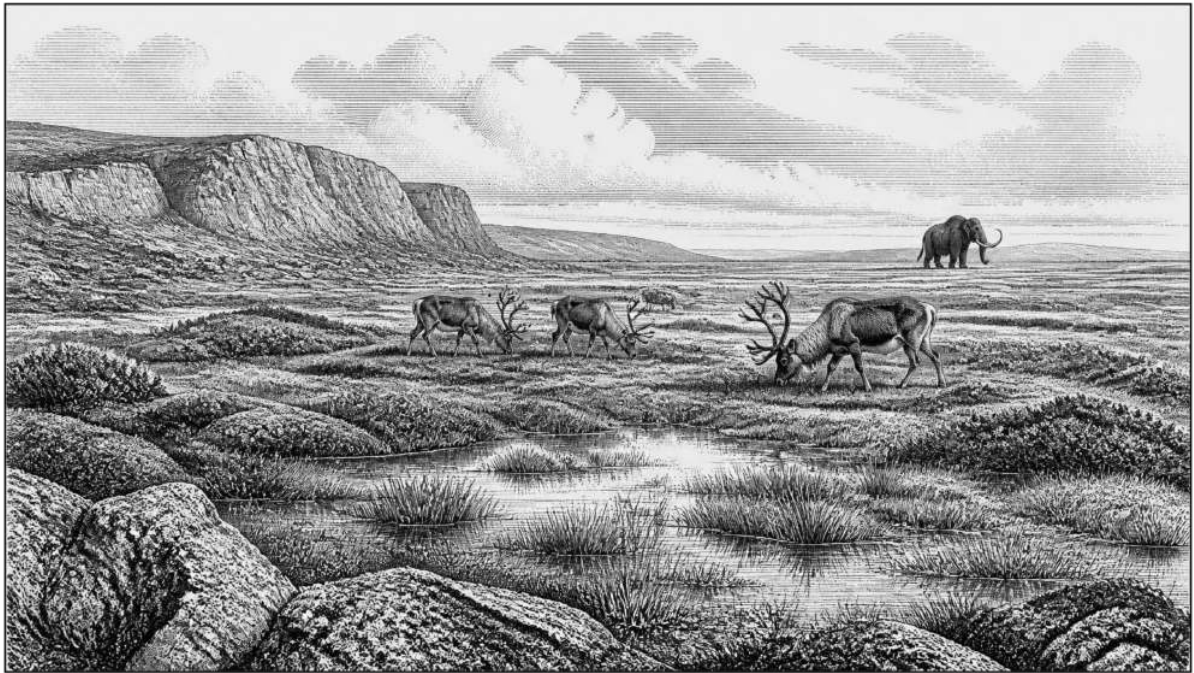
An Ireland Before History

The Ireland illuminated by 31,705 BCE is therefore neither a blank page nor a recoverable national story. It is an Ice-Age environment glimpsed through deposits that have survived later glaciation, erosion and excavation. Fermanagh preserves evidence for open periglacial wetlands; Castlepook preserves the remains of a remarkable cold-climate fauna; one marked reindeer bone raises the possibility of a human presence that research has not yet securely demonstrated. The most important development is not a king's accession, a battle or a migration recorded in words. It is the recognition that the island's deep past may contain fleeting Palaeolithic human traces, and that testing this possibility requires patience, calibrated chronologies and an honest acceptance of uncertainty.

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31704 BCE

Mammoth Cave's Thin Evidence^[97]



The label 31,704 BCE is a modern chronological convenience, not a date that can be recovered from the Irish archaeological record with calendar-year precision. No one in Ireland recorded a year, season or event at this depth of time; there are no written sources, named communities, monuments or excavated settlements to attach to it. In modern chronological terms it falls around 33,650 years before AD 1950, within the Late Pleistocene and broadly Marine Isotope Stage 3. Responsible discussion must therefore use wide, calibrated ranges and evidence from the surrounding millennia rather than pretend that a particular occurrence can be dated to this one year.

For Ireland, this was a difficult interval before the fullest expansion of the last British–Irish Ice Sheet. It was not simply the familiar green island made colder, nor can it safely be pictured as uniformly buried beneath permanent ice. Ice margins, sea levels, vegetation and animal distributions changed repeatedly over long spans. The best evidence suggests a strongly seasonal, unstable cold-stage world in which some areas could support freshwater basins, tundra plants and large mammals, while ice was growing and conditions were becoming more severe. Its contours remain debated because later glaciation eroded or buried much of the earlier landscape.

A Date Measured in Millennia

Radiocarbon and other scientific dates are estimates with ranges, not timestamps. At about 34,000 calibrated years ago, calibration itself is technically challenging: atmospheric radiocarbon varied over time, and the conversion from a radiocarbon measurement to calendar years depends on calibration curves and stated probability ranges. Older Irish cave collections bring a further problem. Many were excavated

before present-day recording standards, so the original position of a bone within a deposit, and its relationship to other material, can be uncertain. A date on bone establishes when the animal died within a statistical range; it does not automatically date an apparent cut, a human visit, or a whole occupation.

The period is conventionally called the Middle Midlandian or, in wider north-west European terminology, part of the later Weichselian/Devensian cold stage. Such labels are useful shorthand, but they should not obscure local variation. The long glacial cycle included milder episodes, cold phases and advancing ice, rather than one unchanging “Ice Age”. At this approximate point the future Last Glacial Maximum lay ahead. Reconstructions agree that the British–Irish Ice Sheet later reached a far greater extent, but differ on precisely how much Irish ground was already glaciated and when separate sectors advanced. Recent work has particularly stressed that pre-maximum ice history remains less securely resolved than the better dated retreat after about 30,000 years ago.

Wet Tundra at Derryvree

The clearest Irish environmental evidence close in broad age comes from Derryvree, near Maguiresbridge in County Fermanagh. Roadworks there exposed freshwater silts and fine sands trapped between glacial deposits. A radiocarbon determination of $30,500 \pm 1,170/1,030$ radiocarbon years BP places the deposit within the Middle Midlandian, although it must not be converted into an exact BCE year. Its pollen, plant macrofossils, mosses and insects indicate a cold, open and largely treeless landscape around pools and waterlogged ground. Researchers used the term *muskeg* for this moss-rich, wet terrain with shallow water and accumulating plant matter.

Among the significant remains are sedges, grasses, herbs, low shrubs and cold-adapted plants including bogbean and mountain avens. These finds demonstrate that there were places with unfrozen seasonal water, growing vegetation and insect life. They do not supply a photographic map of the entire island. Pollen can travel long distances, can be reworked from older deposits, and represents a catchment rather than every hillside. Nonetheless, the combined evidence firmly rules out an image of uninterrupted forest or an entirely lifeless ice sheet. In the north-western Irish landscape represented at Derryvree, exposed ground, wet hollows, short growing seasons and harsh winters were more plausible than woodland.

Crag Cave in County Kerry provides another, very different kind of clue. Uranium-series dates on cave calcite show that speleothem formation occurred episodically during Marine Isotope Stage 3. Calcite requires water moving through the cave system, so it indicates intervals when liquid water was available. It does not mean that all of south-west Ireland was mild or forested, but it reinforces the larger lesson: Ireland’s late Ice Age environment shifted through changing conditions and cannot be reduced to a single frozen tableau.

Castlepook and Its Animals

The most evocative evidence comes from Castlepook Cave, also known as Mammoth Cave, near Doneraile in north County Cork. Excavations directed by the naturalist Richard J. Ussher between 1904 and 1912 produced a substantial collection of animal remains, now associated with the National Museum of Ireland’s natural-history collections. Later work, including accelerator mass spectrometry dating and reassessment of species identifications, has made this cave central to the study of pre-maximum Irish fauna.

The cave record shows that Ireland was reached, at intervals, by a much wider Pleistocene fauna than survived into later historic times. Material attributed to the broader Castlepook assemblage includes woolly mammoth, reindeer, giant deer, brown bear, wolf, foxes, hare, lemmings and spotted hyaena. Not every species necessarily lived together at exactly the same time, and a cave accumulation is not a census of one landscape. Carnivores could carry prey in, animals could die in or near openings, water and sediment could move remains, and early excavation disturbed original relationships. Even so, the assemblage is compelling evidence that suitable habitats and routes existed for cold-stage mammals during portions of the period.

Spotted hyaena is particularly informative. The animal is now strongly associated with Africa in the public imagination, but during the Pleistocene it ranged across parts of Europe. Its presence at Castlepook signals that ecological communities could include large scavengers and predators as well as herbivores. Mammoth and reindeer point towards open habitats capable of sustaining grazing animals, while lemmings and mountain hare fit cold conditions. This was not necessarily a uniform “mammoth-steppe” extending without interruption across Ireland; it was probably a varied mosaic of exposed mineral ground, grasses and herbs, wetland edges, sheltered limestone terrain and seasonally productive patches.

The Reindeer Femur Question

A reindeer femur from Castlepook has made this period archaeologically important beyond its animal history. Zooarchaeologist Ruth Carden identified a deep mark on the bone as consistent with modification by a sharp stone edge during butchery, while public reporting and local heritage material have associated the specimen with an age of roughly 33,000 years. If that assessment is confirmed, it would indicate that Upper Palaeolithic people processed a reindeer in Ireland tens of millennia before the island’s long-established post-glacial human record.

That is a consequential possibility, but it is not the same as proof of a settled Ice Age population. The object derives from an older cave collection rather than a modern excavation of a sealed occupation floor. Its date relates to the animal’s bone, not independently to the mark. No securely associated hearth, stone-tool assemblage, dwelling surface, human remains, burial, artwork or repeated food-processing area of comparable antiquity has yet demonstrated a resident community in Ireland. Natural damage from carnivores, trampling, sediment movement or excavation must be distinguished microscopically and contextually from human tool use. The careful conclusion is that the femur is a potentially important indication of human activity, not a basis for inventing a village, named group or continuous settlement.

If people did reach Ireland in this phase, they would have belonged to the wider Upper Palaeolithic world of north-west Europe, whose communities depended on mobility, detailed environmental knowledge and stone technology. Yet no Irish artefact assemblage permits a secure cultural attribution. Nor can lowered sea level be casually converted into a land bridge. Coastlines lay differently, but water barriers, ice, shifting channels and difficult terrain mattered. Travel from Britain or continental Europe remains an inference requiring evidence, not a demonstrated route for a particular party.

No Politics, but a Living Landscape

There is no evidence from Ireland around this time for political institutions, rulers, territories, diplomacy, organised warfare, formal religion, trade networks or learning in the later historical senses. There are no farms, crops, domestic livestock, towns, pottery traditions or monuments that can

responsibly be placed in this horizon. The absence is meaningful: these are not missing details of a known society, but categories unsupported by the surviving Irish record. A putative butchery trace could suggest a brief encounter between people and prey; it cannot reveal language, kinship, beliefs or authority.

The economy visible in the evidence is ecological rather than commercial. Herbivores fed on what the open country and wetlands could produce; predators and scavengers followed animal populations; caves served as natural traps, dens, shelters or sedimentary archives. If humans were present, the reindeer-femur interpretation suggests opportunistic hunting or carcass processing, perhaps within a highly mobile subsistence strategy. It does not demonstrate regular hunting territories or exchange with other groups. Seasonal movement by animals is plausible, but the precise routes and timing are unknown.

The most important development, then, was environmental and evidential. Ireland stood in a narrowing climatic window before later ice-sheet expansion transformed much of its surface and erased much of what had gone before. Derryvree preserves water, plants and insects from cold open ground; Castlepook preserves the bones of a striking fauna and a disputed possible human trace. Together they show a country neither empty of life nor securely known as a human homeland. For 31,704 BCE, that disciplined uncertainty is not a failure of history. It is the most accurate account the evidence allows.

Chapter 098 of 100

31703 BCE

Aghnadarragh's Treeless Plain^[98]



The label 31,703 BCE gives a seductive impression of precision. It should not be read as the date of a recorded occurrence in Ireland: no settlement, journey, battle, ruler or ritual can be assigned to that calendar year. In archaeological terms it lies roughly 33,650 years before the conventional radiocarbon “present” of AD 1950, during the Late Pleistocene and Marine Isotope Stage 3 (MIS 3). For this depth of time, evidence is dated in radiocarbon years and calibrated ranges, not annual anniversaries. The responsible question is therefore what the surviving evidence can say about Ireland in the broad millennia around this point, and where its limits lie.

A Landscape Before the Ice Peak

This was an age of pronounced climatic instability, long before the last Irish ice sheet reached its fullest extent. A widely used reconstruction places the major build-up of the British–Irish Ice Sheet after about 35,000–32,000 years ago, with maximum ice extent later, broadly between 27,000 and 21,000 years ago. That framework does not mean that every part of Ireland followed one timetable. Ice masses, margins, rivers, lakes and coastal environments altered at different times in different regions. Around the modern calendar label of 31,703 BCE, Ireland was entering a colder phase in which glaciation was becoming increasingly important, but its precise local reach remains debated.

Much of the physical evidence has itself been damaged by later ice. Glaciers eroded older soils, redistributed sediments and buried fragments of former ground surfaces beneath till. The island’s Pleistocene archive is consequently uneven. It survives most clearly in protected or accidental repositories: caves in the limestone country of Cork and Waterford, organic beds trapped beneath later glacial deposits in Fermanagh and Antrim, and scattered bones recovered from old excavations. These

sources illuminate episodes rather than offer a continuous national picture. They are enough to show a changing cold-country environment; they are not enough to draw a precise map of Ireland in one nominal year.

Cold Ground in Ulster

The most direct environmental clues come from buried sediments in the north. At Aghnadarragh, Hollymount, Greenagho and Derryvree, deposits enclosed between till sheets have preserved pollen, plant remains and beetles from parts of the Midlandian glaciation. Their individual dates and correlations are complicated, and they should not simply be treated as a diary for 31,703 BCE. Taken together, however, they establish that intervals of open, cold terrain existed in northern Ireland during MIS 3 before later ice covered or reworked the landscape.

Pollen from the older Fermanagh and Antrim sequences points towards sparse vegetation dominated by grasses and sedges, with dwarf birch, heaths, crowberry, willow, herbs and clubmosses. Insects from Aghnadarragh include species now characteristic of Arctic Fennoscandia, supporting the interpretation of exposed ground with little sheltering woodland. Reconstructions based on those beetles suggest cool summers and very cold winters, though such figures describe the deposit's climatic setting rather than a measurement for all Ireland. At Derryvree, younger organic muds indicate treeless tundra or muskeg: wet, mossy ground with pools, sedges, juniper and herbaceous plants.

These records correct a common mental picture of an Ireland that was either entirely ice-covered or uniformly empty. Parts of the land could support vegetation, freshwater habitats and grazing animals during favourable intervals, even while the wider climate was severe and ice was advancing elsewhere. Open country did not mean an easy landscape. Seasonal snow, frozen ground, powerful winds, shallow soils and abrupt climatic shifts would have constrained plants and animals alike. The evidence supports mosaic environments, not a stable northern wilderness of the modern kind.

Caves and the Animal Record

Southern cave collections provide the clearest indication that mammals reached Ireland before the Last Glacial Maximum. Castlepook Cave near Doneraile in County Cork is especially important, alongside Foley Cave in Cork and Shandon and Ballynamintra in County Waterford. Reassessment of their animal bones has identified a cold-stage fauna that included reindeer, giant deer, brown bear, wolf, fox, hare, spotted hyaena and, in the wider cave record, woolly mammoth. These were not necessarily animals living together at one moment, nor proof that every species occupied every county. Each directly dated bone records the death of one animal, while cave accumulation may span many centuries or millennia.

Nevertheless, the fauna has large historical significance. Reindeer and mammoth point to open habitats and connections with the wider north-west European world. Giant deer required substantial forage, while predators and scavengers such as wolves and spotted hyaenas reveal functioning food webs rather than isolated animal arrivals. Caves may have served as dens, shelters, traps or places where bones accumulated after scavenging and water movement. They were not automatically human camps. A concentration of bones is evidence of animal history and geological process before it is evidence of settlement.

Chronology has changed markedly as dating techniques have improved. The Irish Quaternary Fauna Project showed that many mammals had reached Ireland during the broad interval from at least about 45,000 to 20,000 radiocarbon years ago. More recent work using improved collagen pretreatment and ultrafiltration redated several Castlepook specimens substantially older than measurements obtained in the 1990s. This matters greatly at the edge of radiocarbon's useful range. A radiocarbon result is not a calendar date; calibration against changing atmospheric carbon-14 levels produces a probability range, often broad at this antiquity. Modern calendar precision is therefore unavailable.

The Castlepook Human Question

One Castlepook reindeer femur has attracted exceptional attention because a deep incision has been interpreted by zooarchaeologist Ruth Carden as consistent with cutting by a sharp stone tool during carcass processing. The bone has been reported as dating to roughly 33,000 radiocarbon years before present. If both the identification of the mark and its association with the animal's death were confirmed, it could indicate a very early, brief human visit to Ireland during MIS 3. It would be a striking revision to the long-standing view that secure evidence for people on the island belongs much later in the Late Pleistocene and early Holocene.

The claim must remain carefully bounded. The femur came from an historic cave collection rather than a newly excavated, securely stratified occupation floor. Its date establishes the age of the animal's death within statistical uncertainty, not the exact moment when a mark was made, the place where it was killed, or the duration of any human presence. Natural abrasion, carnivore activity and breakage can complicate the interpretation of marks on old bone. No associated hearth, stone-tool assemblage, dwelling surface, human remains or repeated sequence of occupation securely demonstrates a community in Ireland around 31,703 BCE.

Accordingly, it would be wrong to populate this year with a named hunting band, a camp beside the Awbeg, or a routine of reindeer butchery. At most, the Castlepook specimen supports a carefully framed possibility of transient human activity in the broad period. It does not demonstrate permanent settlement, population continuity or a society with institutions that archaeology can identify. The distinction is important: the animal record is substantial, while the claimed human evidence remains singular and under scrutiny.

Connections Without a Known Society

Lower global sea levels altered the geography of the Irish Sea region, but a simple land-bridge story is not supported. Geological studies stress that insularity depended on shifting combinations of sea level, crustal movement, ice distribution and local topography. Any possible connections were short-lived and geographically complex. The presence of mammals proves that movement into Ireland occurred at various points in the Pleistocene; it does not reveal a single route, nor establish a dry, permanent corridor available in the year under discussion. Animals and, potentially, people may have moved through landscapes now drowned, eroded or sealed below later deposits.

This is as far as political and economic history can responsibly go. There is no evidence for polities, diplomacy, warfare, trade networks, farming, seafaring, built settlements, language, religion or art in Ireland at this date. Nor can social roles, learning or domestic routines be recovered from the known Irish record. If people did reach the island, comparable Upper Palaeolithic societies elsewhere in Europe were

mobile hunter-gatherers using sophisticated stone, bone and organic technologies; that comparison supplies context, not evidence that such practices occurred in Ireland. Irish evidence must not be filled with borrowed continental detail.

What This Date Can Mean

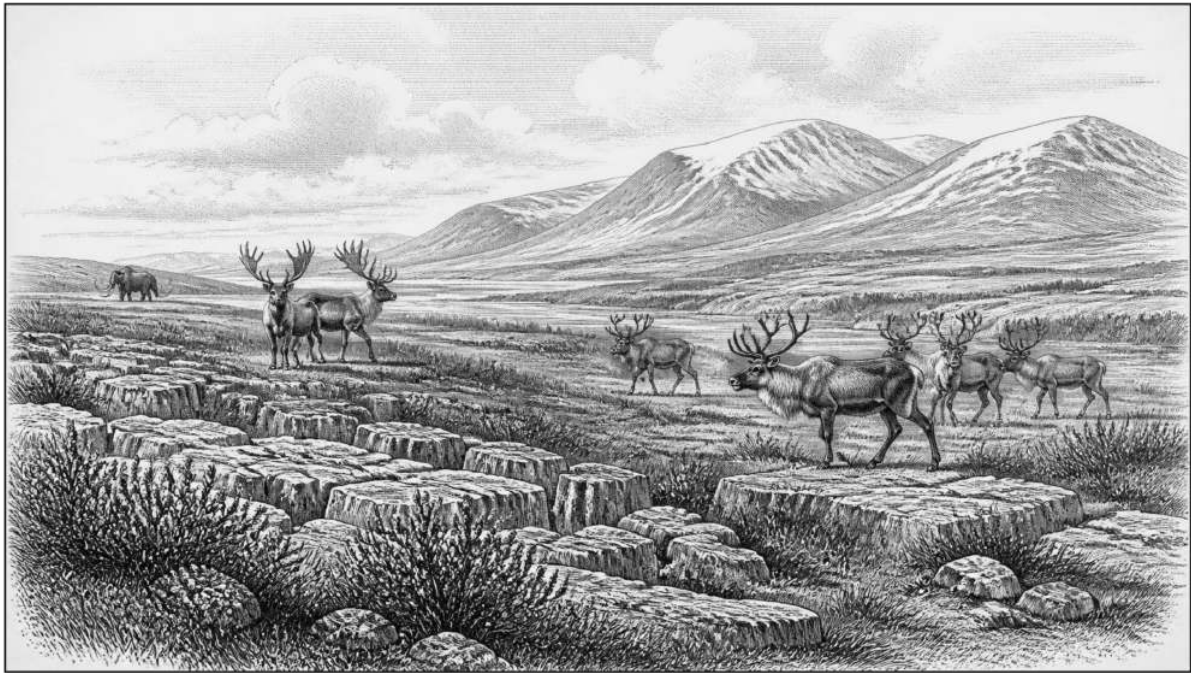
Ireland around the broad horizon represented by 31,703 BCE was a place of ecological opportunity and risk on the north-western edge of Europe. Treeless grass-sedge landscapes, wet mossy hollows and pools are supported by pollen and insect records in the north. Caves in the south preserve tangible traces of large herbivores and carnivores that crossed changing regional landscapes. Growing ice, severe cold and later glacial erosion shaped both the lives that were possible and the fragmentary record left behind.

The most important fact is not an invented event but an evidential transformation. Ireland was not merely a blank interval before the last ice maximum: its sediments and cave bones show episodes of living tundra, animal movement and ecological change during MIS 3. Yet the archive is patchy, dates are ranges, and the human question is unresolved. The honest history of this nominal year is therefore one of deep time measured through calibrated probabilities, buried muds and carefully re-examined bones—not a calendar page on which a particular Irish event can be written.

Chapter 099 of 100

31702 BCE

Castlepook's Mammoth Galleries^[99]



Modern calendar-year precision cannot responsibly be claimed for Ireland in 31,702 BCE. The numbered year is a useful point on a modern retrospective timeline, but no Irish deposit, animal bone, landscape surface or human trace can be assigned to that single year. In terms of calendar years before present, it lies roughly 33.6 thousand years ago, within the Late Pleistocene and Marine Isotope Stage 3 (MIS 3). Dates from this depth of time are normally expressed as ranges, especially after radiocarbon calibration; they are not annual historical dates. The evidence therefore illuminates broad intervals around this point, rather than an event that happened in Ireland in “31,702 BCE”.

A Landscape Before the Ice Peak

This was an Ice Age world, but not yet simply the fully ice-covered Ireland often imagined for the Last Glacial Maximum. The British–Irish Ice Sheet grew and changed unevenly, with different sectors advancing and retreating at different times. Recent reconstructions place major expansion across the wider ice sheet between about 31,000 and 22,000 years before present, with maximum ice volume later, around 23,000 years ago. Thus, around 33.6 ka BP, Ireland was moving towards a colder and more unstable phase, but the precise extent of glacier ice in every Irish region cannot be recovered.

That uncertainty matters. Later glaciers scoured, buried and rearranged much of the older ground surface. Their tills and meltwaters destroyed or concealed campsites, soils and riverbanks where people or animals might once have left evidence. Caves and sediments protected beneath glacial deposits are consequently disproportionately important. They do not offer a complete map of Ireland; rather, they are rare windows into particular places and episodes. The absence of a site in much of the island is not proof that no life existed there.

Climate proxies from Greenland ice cores show that MIS 3 was marked by abrupt shifts between relatively milder interstadial phases and severe stadials. These records cannot be converted directly into a daily forecast for Ireland, but they establish the larger North Atlantic setting: conditions could alter sharply over comparatively short geological timescales. Open ground, sparse vegetation, exposed mineral soils, wetlands and patches of low scrub are more defensible images than woodland. Yet there was no single uniform “Irish tundra” stretching unchanged from Cork to Donegal. Altitude, coast, drainage, ice margins and the changing Atlantic climate would all have shaped local habitats.

What Castlepook Can Tell Us

The best-known Irish evidence relevant to this broader period comes from Castlepook Cave, also called Mammoth Cave or Doneraile Cave, in the limestone landscape of the Awbeg Valley in north County Cork. Excavations directed by the naturalist Richard J. Ussher in the early twentieth century recovered a remarkably large bone collection. Later examination identified a cold-stage fauna including woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena. Not every species belongs to precisely the same moment, however. The material derives from different cave chambers, deposits and collecting episodes, and it accumulated over a long span.

Radiocarbon re-dating has made this caution still more important. Better chemical pretreatment of bone samples has produced substantially older results than some earlier measurements and has shown that parts of the southern Irish cave fauna belong to MIS 3, well before the Last Glacial Maximum. Some Castlepook specimens have conventional radiocarbon ages in the broad range of roughly 32,000 to more than 38,000 radiocarbon years before present; their calibrated calendar equivalents are older and carry statistical ranges. Such results show that animals inhabited or reached southern Ireland in different phases of the Late Pleistocene. They do not turn the cave into a photograph of the island in one calendrical year.

Nonetheless, Castlepook changes the scale of the question. The presence of reindeer, mammoth and lemmings supports the interpretation of cold, open environments with substantial grazing or browsing resources. Giant deer, *Megaloceros giganteus*, were not an exotic symbol invented by later Irish tradition but real animals of Pleistocene Ireland, though the familiar name “Irish elk” is misleading: they were giant deer, not elk. Brown bears and wolves indicate large carnivores within the wider food web. Most strikingly, Castlepook remains Ireland’s key evidence for spotted hyaena. Hyaenas could transport carcass parts, gnaw bones and use sheltered cavities as dens, making the cave both a biological archive and a difficult archaeological context.

Animals, Caves and Food Webs

The animal assemblage permits secure conclusions about ecological possibility, not exact population counts. Reindeer suggest cold-adapted herds capable of moving seasonally across open terrain. Mammoths imply access to extensive forage, while lemmings and Arctic fox point towards environments markedly different from modern Ireland. Hyaena bones and tooth-modified remains show that scavenging and predation, as well as natural deaths, helped form the cave deposit. A bone found in a cave may therefore record an animal killed elsewhere, carried in by a carnivore, moved by water or disturbed long after its burial.

For everyday life, the responsible answer is largely that no human everyday life is securely known from Ireland at this exact point. There are no excavated hearths, houses, tool-making floors, burials, ornaments or art that can be confidently placed in 31,702 BCE. Nor is there evidence for agriculture,

domesticated animals, pottery, metalworking, permanent villages or managed fields. Terms such as Irish “tribes”, chiefs, territories and religions would impose far later concepts on a fragmentary Pleistocene record.

There is, however, one important and debated clue. A reindeer femur from Castlepook bears a deep incision that Ruth Carden has interpreted as a cut made with a sharp stone tool during carcass processing. If that interpretation is upheld, it is evidence that people handled a reindeer in Ireland during an earlier part of the Late Pleistocene than previously recognised. It is not proof of a permanent settlement at Castlepook, continuous occupation of the island, a named population or a date-specific hunting party. The bone’s date is the date of the animal’s death within a calibrated probability range; it does not automatically date the incision, the cave’s use, or every other bone beside it.

People at the Edge of the Record

Any people who visited Ireland during favourable intervals would have been Palaeolithic hunter-gatherers, part of the wider European world of mobile *Homo sapiens*. Across north-west Europe, such groups made sophisticated stone and organic technologies, hunted and scavenged large animals, shared raw materials and sustained cultural traditions over wide areas. But this continental context must not be mistaken for direct Irish evidence. No securely dated Palaeolithic lithic assemblage of this age has yet been recovered from Castlepook, and no human remains are known from the site.

Movement into Ireland is also an inference rather than a documented route. Lower sea levels altered the outlines of the Irish Sea basin and expanded coastal lowlands, but ice, water channels, estuaries and shifting shorelines created practical barriers as well as opportunities. People may have travelled over exposed terrain, followed animal movements, crossed water, or never entered particular regions at all. The present evidence cannot choose confidently between these possibilities. It can only show that Ireland was not ecologically isolated from the wider Pleistocene fauna of western Europe.

There is no evidence for political affairs, formal diplomacy or organised conflict in the historical sense. If people did enter the island, their most consequential relationships would have been social ties within small mobile groups and ecological relationships with prey, predators, weather and terrain. Competition over carcasses or shelter is conceivable, particularly in a landscape used by hyaenas and bears, but it is not demonstrable. Likewise, exchange may have linked hunter-gatherer communities beyond Ireland, yet no Irish object of this date securely documents trade.

Culture Without Written Memory

Religion, learning and culture are almost invisible here because the material evidence is so thin. It would be unreasonable to claim shrines, ancestral ceremonies, gods, languages or myths for Ireland in this period. Palaeolithic societies elsewhere in Europe made art and transmitted complex knowledge, including close observation of animal behaviour and seasons. That comparison reminds us of what human communities were capable of; it does not demonstrate that equivalent practices occurred in Ireland. Archaeology must preserve that difference between possibility and evidence.

The later history of Irish settlement should not be projected backwards either. The first substantial and sustained archaeological record of people in Ireland belongs much later, in the Mesolithic after the ice had retreated. The Pleistocene indications from Castlepook instead raise a more limited but profound prospect:

Ireland may have received short-lived human visits, or perhaps small populations, during earlier habitable intervals that were subsequently erased by climatic deterioration and glaciation. The record is too incomplete to say whether those visitors endured, departed or died out locally.

The Meaning of an Empty Map

Around the notional date of 31,702 BCE, the most important Irish development was environmental rather than political: an inhabited-by-animals, climatically volatile landscape was approaching the much harsher glacial conditions that would later transform the island. Southern limestone caves preserve evidence that Ireland could support or receive a surprisingly varied Ice Age fauna. They also preserve a tantalising possibility of human action. Neither point authorises a detailed narrative of a community in this particular year.

Castlepook's galleries therefore stand for both discovery and restraint. Their bones demonstrate reindeer, mammoth, giant deer, bears and hyaenas in Ireland during portions of MIS 3. Their mixed deposits warn against compressing thousands of years into one scene. The careful history of Ireland at this depth of time is not a tale of kings or settlements, but of a changing northern landscape, intermittent biological connections with Europe, and rare remains that survived the ice.

Chapter 100 of 100

31701 BCE

Doneraile's Ice-Age Hinterland^[100]



“31,701 BCE” is a modern retrospective label, not a year that can be recovered from the Irish archaeological record. At this depth of time, calendar-year precision is unavailable: radiocarbon measurements require calibration, their ranges are often broad, and cave deposits can contain material accumulated over many millennia. The useful frame is therefore later Marine Isotope Stage 3 (MIS 3), the unstable middle portion of the last Ice Age, conventionally dated c. 57,000–29,000 calibrated years before present. The numbered year falls approximately 33,650 years before the 1950 reference point used in radiocarbon chronology, but it cannot responsibly be tied to a particular season, event or individual.

For Ireland, the strongest evidence relevant to this distant horizon comes not from settlements, monuments or written tradition, but from animal bones, cave sediments, pollen and the physical legacy of ice. These sources reveal an island—or a changing north-west European landmass whose coastlines and routes differed greatly from today—on the edge of profound environmental change. They do not permit a conventional political or social history. There were no known states, rulers, borders, diplomatic missions or named peoples in Ireland at this time; nor is there evidence from which religion, language, formal learning or artistic tradition in Ireland can be reconstructed.

A Cold-Stage Landscape

Later MIS 3 was not a single, unchanging freeze. Greenland ice-core records show repeated abrupt shifts between colder stadial conditions and relatively milder interstadials across the North Atlantic world. Ireland’s local evidence is too sparse to assign a precise Irish weather pattern to 31,701 BCE, but it is reasonable to see the country within a cold, highly variable climatic regime rather than as either

permanently ice-covered or permanently temperate. Open ground, sparse vegetation, exposed soils and seasonally severe conditions formed the broad environmental setting in the periods represented by southern Irish fossil assemblages.

The familiar wooded Ireland of later prehistory did not exist. Trees were limited or absent across much of the cold-stage landscape, while grasses, sedges, herbs, dwarf shrubs and hardy tundra plants could occupy suitable ground. In northern deposits, plant remains and insect evidence have been used to identify episodes of treeless, cold-adapted vegetation, including arctic-alpine species. Such records do not provide a photograph of every region at one moment, but they establish the kinds of environments that could develop in Ireland before the Last Glacial Maximum.

Water and coastlines were also unlike those of the modern island. Large volumes of water were locked in continental ice sheets, lowering global sea level, but local relative sea level was complicated by the weight and movement of ice and by the shape of the Irish Sea basin. It is unsafe simply to imagine a continuous, dry land bridge from Ireland to Britain. Geological studies have challenged that old assumption, especially for routes across the Irish Sea. Nevertheless, animals demonstrably reached Ireland during the Pleistocene. Their movements may have involved changing coastal plains, short crossings, ice margins, temporary connections or combinations of these. The exact route remains an archaeological and geomorphological question, not a settled fact.

Castlepook's Fossil Archive

The principal Irish place for this period is Castlepook Cave near Doneraile in north County Cork, above the Awbeg Valley. Excavated principally in the early twentieth century and once popularly called Mammoth Cave, its passages yielded a remarkable collection of Pleistocene animal remains. The National Museum of Ireland identifies it as the country's most important cave site for mammal remains from the last cold stage. Among bones recovered from Castlepook are remains attributed to woolly mammoth, reindeer, giant deer, brown bear, wolf, Arctic fox, mountain hare, lemmings and spotted hyaena.

That list must be read carefully. It does not mean that every species grazed or hunted beside the Awbeg on one day in 31,701 BCE. The cave was excavated before modern standards of stratigraphic recording, and later research has shown that its deposits were complex, disturbed and sometimes re-sorted. A cave may be a carnivore den, a natural trap, a place into which bones fall through fissures, and a sedimentary archive at different times. Individual specimens have been directly dated, but the assemblage as a whole is a time-depth record rather than a neatly sealed living surface.

Even so, it changes the scale on which Ireland's Ice-Age ecology must be imagined. Reindeer indicate cold, open country and mobile grazing herds. Lemmings and Arctic fox point towards severe environments, while mammoth and giant deer evoke a large-herbivore community wholly absent from later historic Ireland. Spotted hyaena is especially striking. Castlepook is the only Irish locality currently known to have produced its remains, and its presence demonstrates that the island's Pleistocene carnivore world was more varied than the later Irish fauna. Predators, scavengers and herbivores together imply connected food webs, though not necessarily a single simultaneous community.

Scientific re-examination has sharpened, but also complicated, the chronology. The Irish Quaternary Fauna Project showed that a broad range of mammals reached Ireland between at least about 45,000 and 20,000 radiocarbon years ago. Improved pretreatment and redating of bones from Castlepook, Foley Cave and Shandon Cave later produced dates thousands of radiocarbon years older than some earlier

determinations. The revised work suggests that giant deer and spotted hyaena may have disappeared locally before about 40,000 calibrated years ago. Thus those species are highly relevant to the wider MIS 3 environment, but cannot automatically be placed at the specific calendar label used here.

The Marked Reindeer Femur

One Castlepook object gives this era a special, if cautious, human dimension: a reindeer femur bearing a deep mark interpreted by zooarchaeologist Ruth Carden as a cut or chop made with a sharp stone implement while the bone was fresh. County Cork heritage material presents the specimen as dating to about 31,000 BC and as possible evidence that Palaeolithic hunters processed reindeer in the Doneraile area. If the mark is confirmed as humanly made and contemporary with the death of the animal, it would be dramatically earlier than Ireland's long-established record of post-glacial occupation.

Yet this is evidence for a possible action, not a proven settlement. The bone was recovered from an antiquarian cave collection, rather than from a modern excavation exposing an intact hearth, floor or campsite. No securely associated stone-tool assemblage, dwelling, burial, fire-place, butchered bone concentration or repeated occupation layer of comparable age has been demonstrated at Castlepook. The radiocarbon date measures the age of the animal's death, not automatically the date of the incision, the place where the animal was killed, or the length of any human visit.

The most responsible conclusion is therefore modest. Around the broad period to which 31,701 BCE belongs, people may have entered Ireland or its southern landscape briefly as part of wider Upper Palaeolithic movements through north-west Europe. They may have followed or encountered reindeer herds and used sharp stone edges to process carcasses. But Ireland cannot yet be described as permanently inhabited, nor can a particular group's identity, route, technology or social organisation be recovered from the femur alone. The National Museum of Ireland continues to state that clear evidence of Palaeolithic human presence has not yet emerged, a useful reminder that the Castlepook claim remains exceptionally important but not fully settled.

Daily Life Beyond the Evidence

If people were present, their economy would have been based on hunting, scavenging, gathering and the careful use of animal materials, not farming. There were no crops, livestock, pottery villages, metal tools or managed fields in Ireland. A reindeer carcass could have supplied meat, fat, hide, sinew, bone and antler; the marked femur is at least compatible with such practical processing. But compatibility is not proof. It cannot tell us whether a party was large or small, whether it camped nearby, whether the hunt was successful, or whether the bone was later moved into the cave by carnivores.

For the same reason, trade and diplomacy cannot be inferred. Long-distance connections are plausible in the broad biological sense: the Castlepook fauna proves that Irish environments were not sealed off from wider north-west European ecological processes. Human movement, if the cut mark is anthropogenic, would likewise imply some route into the region. But no imported object, exchange network, alliance or territorial boundary is identifiable. Nor can archaeologists responsibly assign beliefs, ceremonies, cave art or a language to this sparse trace. Absence of evidence is not proof that people lacked culture; it is recognition that the surviving Irish record has not preserved it.

Approaching the Ice Maximum

The era's greatest historical force was environmental rather than political. The British–Irish Ice Sheet did not reach its greatest reconstructed volume until about 23,000 years ago, while major growth across Ireland and Britain occurred from roughly 31,000 to 26,000 years ago. From the standpoint of 31,701 BCE, the fullest expansion lay in the future, but the climatic trajectory was towards greater cold and enlarged ice. Subsequent ice advance, erosion and reworking would remove, bury or disrupt much of the evidence for earlier landscapes and any fleeting human presence.

This destructive history helps explain why the archive is so thin. Ireland's archaeological story at this date is not one of kings, battles or institutions, but of a difficult threshold: open cold-stage habitats capable of supporting substantial mammals; changing routes through a reshaped seascape; perhaps a passing human encounter with reindeer; and, later, the expansion of ice that transformed the land and obscured its oldest traces. Castlepook's bones therefore matter not because they furnish a complete narrative, but because they show how much life—and how much uncertainty—lies beneath Ireland's later prehistoric past.



About the Author

Gerard J. Hannan is an Irish author, historian, journalist and broadcaster with a lifelong interest in the people, places and events that have shaped Ireland's past. Based in Limerick, he spent more than twenty-five years working in journalism and broadcasting, developing a particular interest in local history, social change and the preservation of historical memory.

He is the founder and curator of Emerald Archives, an expanding digital historical collection dedicated to preserving, restoring and sharing material connected with Ireland's social, cultural and political history. Through the archive and its associated publishing projects, he aims to make historical information accessible to both general readers and serious researchers.

Hannan holds a BA in History and Media, a Master of Business Studies in International Entrepreneurship Management, and an MA in Teaching English to Speakers of Other Languages. His academic background complements decades of practical experience in writing, research, broadcasting and historical documentation.

He is also the author of several books and long-form historical projects exploring Irish life, identity and memory. As creator of Emerald Gazette, Hannan continues to develop a growing chronological collection designed to bring Ireland's extraordinary historical record to a broad international readership.

Endnotes

1. Chapter 001 — Trifoliate Seed Beneath a Drumlin (31800 BCE). Sources: References 1, 6, 24, 32, 34, 40, 45, 72, 108, 126, 176, 183, 187, 251–252, 305, 308, 350, 396, 409–410, 449.
2. Chapter 002 — Maguirebridge’s Buried Wetland (31799 BCE). Sources: References 1, 17, 31–32, 35, 59, 101, 137, 161, 176, 192, 200, 207, 240, 266, 288, 376, 397, 400, 410, 450.
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5. Chapter 005 — Awbeg Valley Faunal Archive (31796 BCE). Sources: References 1, 13, 32, 35, 64, 72–73, 86, 105, 145, 173, 176, 226, 253, 266, 295, 327, 400, 410, 446.
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15. Chapter 015 — Derryvree’s Roadcut Tundra (31786 BCE). Sources: References 15, 31, 77, 101, 110, 135, 161, 176, 201, 251, 261, 268, 295, 304, 310, 323, 329, 356, 400, 409, 430, 436.
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17. Chapter 017 — Derryvree’s Mossy Waters (31784 BCE). Sources: References 35, 80, 82, 104, 132, 137, 176, 193, 240, 252, 266, 273, 291, 295, 304, 340, 342, 347, 380, 382, 402, 428.
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- 21.** Chapter 021 — The Fermanagh Tundra Ledger (31780 BCE). Sources: References 1, 32, 34, 104, 112, 138, 161, 176, 199, 211, 242, 251, 253, 266, 281, 295, 341, 400, 409, 454.
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