

Figure 1. Drawing of Megaloceros antlers found in 1588 in County Meath, Ireland.

Such another Head, with both the Horns intire was found some Years since by one Mr. Van Delure in the County of *Clare*, buried Ten Foot under Ground in a sort of *Marle*, and were presented by him to the late Duke of *Ormond*, then Lord Lieutenant of *Ireland*, who valued them so highly for their prodigious largeness, that he thought them not an unfit Present for the King, and sent them for *England* to King *Charles* the Second, who ordered them to be set up in the *Horn-Gallery* at *Hampton-Court*; where they may still be seen among the rest of the large Heads both of Stags and Bucks that adorn that Place, but this so vastly exceeds the largest of them, that the rest appear to lose much of their Curiosity

Figure 2. Description of the antlers found by James van de Leur, in Molyneux, 1697.



# MEGALOCEROS

## THE ICE AGE GIANT DEER OF IRELAND AND SOME DUTCH CONNECTIONS

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### Abstract

*Megaloceros giganteus* is a species of gigantic deer, or 'reuzenhert' in Dutch. The classic locality is Ireland but these animals ranged widely across Europe and much farther east into Asia. They are found throughout the Pleistocene, but are most abundant in sediments of latest Pleistocene age. Many examples have been found in Doggerland, and fragments of antler, jaws, teeth and other bones have been discovered along the Dutch coastline. Their fossils have attracted attention for over 400 years. They have been called 'Irish Elk' because of their large flat antlers, similar to true elk. Dutch settlers in Ireland as far back as the 17<sup>th</sup> century have contributed to discoveries that ended up in English royal palaces and Irish castles.

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Figure 3. The Duke of Ormonde who received the antlers from James van de Leur at some time before 1641.

## EARLY DISCOVERIES OF MEGALOCEROS GIGANTEUS IN IRELAND

The oldest recorded find of a giant deer in Ireland dates to 1588 when a skull with antlers of the giant deer *Megaloceros giganteus* was discovered in a bog in Co. Meath (Monaghan, 1997). This information comes from a drawing that was part of a letter from Adam Loftus (c.1533–1605) to Robert Cecil (Fig. 1). England had claimed Ireland as part of its Kingdom in 1171 AD and Loftus was the official representative of the British Crown in Ireland. Cecil was Secretary of State to Queen Elizabeth I, one of her highest officials. The drawing was accompanied by a letter in 1597 that was sent with the antlers to England where it is assumed that Cecil put them up on the wall of his home at Theobalds House, Hertfordshire. He built Hatfield House in 1611 which is still standing today, but the antlers have not been traced by the curators.

Ireland was a contested country in the seventeenth century. The British Crown was keen to populate the island with loyal supporters and looked to the continent of Europe for new settlers. Dutch settlers were a good source because of their knowledge of drainage in wet ground. The religion of most of the Dutch population as Protestant was also an advantage, compared to the native Irish population of Roman Catholics. There was also British support for the United Provinces or ‘Verenigde Provinciën’ as they escaped from Spanish rule in the Netherlands at that time. One of these Dutch settlers found a set of giant deer antlers on the Irish land that he rented.

James van de Leur is mentioned in an important early publication by Sir Thomas Molyneux of Dublin (Molyneux, 1697). The scientific paper mentions that the Duke of Ormonde received the antlers from a ‘Mr. Van Delure’ who found them some years earlier (Fig. 2). Ormonde was the British Crown representative in Ireland, the ‘Lord Lieutenant’ and owned the land that Van De Leur farmed in County Clare (Fig. 3). Ormonde was so impressed with these antlers that he sent them to his close friend King Charles II who put them on the wall of his castle at Hampton Court, near London where they are still displayed today (Fig. 4). James van de Leur (or ‘Vandeleur’) is shown with two plots of land in the Thomond estate in a manuscript titled “An abstract Of Such Rents and Revenewes as doe belonge to the right Hon:ble. Henrye Earle of Thomond” [An abstract of such rents and revenues as do belong to the Right Honorable Henry, Earl of Thomond], dated 1626 (Breen, 2014). The surname is spelled with many variations. Irish descendants today are usually ‘Vandeleur’ but the common Dutch form today seems to be ‘van de Leur’.

We know that James van de Leur must have made this gift before 1641, a period when Irish native Catholics rebelled against English rule. Following the Rebellion of 1641, people who had suffered were able to claim compensation. The books recording these claims have survived and recently been digitised and available online (Trinity College Dublin, 2010). In these reports we learn that van de Leur lost cattle, sheep, horses and pigs worth £522, he also lost £123 of household goods and clothes, £10 worth of fruit on the trees

in his orchard, animal hides worth £160, and trees, wood, stored grain and other items to a total of £1,836 which is about €140,000 in today’s value. It sounds like he may have been burned out of his house and had to abandon his farm. Many people died in the Rebellion of 1641, so at least his family was not that unfortunate.

## WHAT WAS THOUGHT ABOUT MEGALOCEROS BEFORE THE 19<sup>TH</sup> CENTURY?

The first published discussion on the nature of giant deer horns from Irish bogs came in 1697 when a medical doctor firmly established the idea that animals that once lived in these islands were no longer present, yet their remains could be discovered buried in surface sediments (Molyneux, 1697). The title of Molyneux’s paper makes it clear that he was convinced that the animal was the same as a moose (*Alces alces*). He made the argument that it was not an extinct animal, on the basis of his limited knowledge of north American descriptions of moose which were alive, even if this was on another continent. Extinction of any species would have posed problems for Molyneux and his contemporaries who followed the bible for their interpretation of nature. God does not make mistakes, so extinct animals would challenge that view.

The paper by Molyneux is often bound together in editions of the first natural history book about Ireland that was written in Leiden. Gerard Boate (also known as Gérard de Boot, Bootius or Botius, born Gerrit/Gerard Boot) was born in 1604 in Gorinchem in Zuid-Holland and studied medicine in Leiden (Molhuysen & Blok, 1911-1937). He managed to produce a book on Ireland while based in London as doctor for King Charles I. Boate did his research without visiting Ireland until shortly before his death in 1650. It is assumed that his sources were primarily his brother Arnold Boate (1606-1653) and other Dutch settlers in Ireland. The book was written in 1645 but not published until seven years later (Boate, 1652).

Hermann von Meyer (1832) published an antler that was supposed to be from Ireland, that was held in the natural history collections in Leiden at that time (Fig. 5). The antler was known to von Meyer only from a drawing provided by “Dr Schlegel”, who was Hermann Schlegel (1804-1884) of the Rijksmuseum van Natuurlijke Historie, Leiden. It is clearly an elk (*Alces alces*) and was matched by John de Vos to a specimen (Fig. 6), now in Naturalis (Monaghan, 1989). It was described by von Meyer as “*Cervus euryceros*”, one of the many synonyms of *Megaloceros giganteus*, and he referred to how common these were in Ireland. This indicates confusion of *Megaloceros* with *Alces* which was a common mistake at a time when objects with definite provenance were not readily available in all museums and *Megaloceros* was not yet properly described or illustrated in any detail. *Alces* is not found in Ireland (Monaghan, 1996) so the antler in Leiden is not an Irish one in any event.



Figure 4. Megaloceros antlers (top right) in Hampton Court Palace.

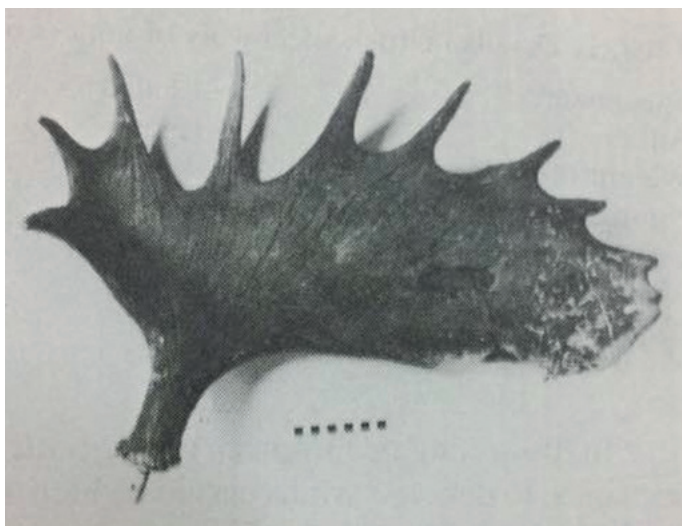


Figure 5. Alces antler illustrated by Von Meyer (1832, plate 32, figure 3).

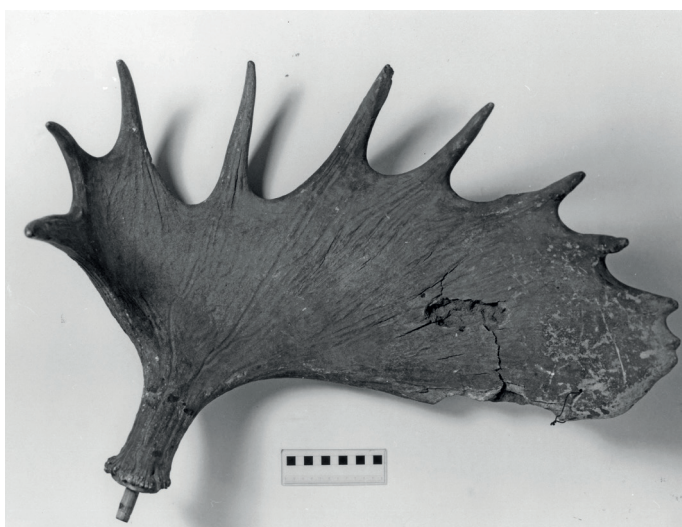


Figure 6. Antler of elk (*Alces alces*) mistakenly described by Hermann von Meyer in 1832 as Irish and believed by him to be a typical *Megaloceros*. Specimen RGM:388999 in *Naturalis*, Leiden.



## WHAT IS KNOWN ABOUT MEGALOCEROS GIGANTEUS TODAY?

The giant deer (*Megaloceros giganteus* (Blumenbach, 1799)) is known from many hundreds of localities across the island of Ireland (Monaghan, 1995, 2017). It is found almost everywhere that deposits of the right age and sedimentary facies are to be found (Mitchell & Parkes, 1949; Chritz *et al.*, 2009). The iconic ‘Irish Elk’ is the best known Quaternary vertebrate in Ireland and is to be found in museums and private collections worldwide. Full antler sets are prized possessions, often fetching high prices (Monaghan, 1997). Over €86,000 was reached in a sale in Amsterdam in 2001 which appears to be the current record price.

Much has been written about this species yet even recent accounts include many inaccuracies. The names applied to this species include ‘Irish Elk’ which is based on an old suggestion (Molyneux, 1697) that it matched the moose of North America (*Alces alces* (Linnaeus, 1758), which is the same species as the ‘elk’ of Europe. The deer genera *Alces* and *Megaloceros* are not close on the family tree, yet the nickname ‘Irish Elk’ persists (Gould, 1974). Among living deer, *Megaloceros* is most closely related to fallow deer (*Dama dama* (Linnaeus, 1758)) as determined by DNA analysis (Lister *et al.*, 2005).

Other common names for *Megaloceros giganteus* include the little-used ‘shelk’ which is based on a German mythical animal (Guthrie, 2000), or more commonly ‘giant Irish deer’ and variants that emphasise its type locality, or simply *Megaloceros*. Incorrect scientific names in almost twenty variations have been used over the two centuries since the species was established, including the widely cited *Megaceros* but all have been ruled out (ICZN, 1989).

The species has a wide distribution in the Pleistocene being found over a 400,000 year timeframe across Europe, Asia and China. It is far from being exclusively Irish yet its fossils occur in Ireland in large numbers and it was a very successful animal on the island in the Woodgrange Interstadial (Allerød oscillation) in particular (Woodman *et al.*, 1997). There are a number of factors that appear to make Ireland the most productive source of *Megaloceros* in the world’s museums. The species certainly flourished in Ireland and limestone bedrock producing lime rich grasslands and shrub cover played an important role then as it does now in Irish livestock farming of cattle and horses. The social context of nineteenth century Ireland in particular plays a big part in recovery of remains.

The low lying areas where lakes developed during the melting of ice sheets as climate warmed 15,000 years ago at the end of the Last Glacial Maximum (LGM) became sites for bog development during the Holocene. Peat extraction from these bogs was the primary source of ‘turf’ fuel for Irish people in the absence of significant coal deposits on the island. Digging for turf was by hand and bogs were dug down to the base of the peat, exposing layers contemporaneous with *Megaloceros*, occasionally encountering the bones. Land ownership meant that these skeletons or skull and antler sets belonged to the

wealthy educated classes who lived in grand homes and had contacts with scientists through membership of the learned societies in Dublin. The largest antlers in the animal kingdom attracted collectors. Museums wanted examples of the animal mentioned in debates on evolution and increasing prices encouraged a regular trade. Some of the early publications were by giant deer hunters and taxidermists and included tips on prospecting for specimens (Millais, 1897; Richardson, 1846; Williams, 1881). One suggested technique was to probe through the soft sediment in the same way that mountain rescue teams search for people buried in avalanches (Fig. 7).

Another factor in Ireland being such a rich hunting ground for specimens of giant deer is taphonomy. Two settings appear to have led to important sources of *Megaloceros*. The most productive single site for giant deer in Ireland was Ballybetagh, Co. Dublin (Barnosky, 1985), excavated in 1876 (Fig. 8). The large collection of skulls of young males was compared with the museum exhibits and it became clear that the Ballybetagh specimens were young males. Barnosky came to the conclusion that the site represented bachelor herds, with occasional deaths at a watering hole each winter. There are several comparable sites yielding giant deer now in the NMI collections in Dublin. These were found during drainage works at the Glen of Imaal, Co. Wicklow in 1990 and at Suncroft, Co. Kildare in 2012, neither of which has been scientifically excavated. This model of burial also appears to apply at Lough Boora, Co. Offaly where fragmentary, possibly trampled, bone has been found at the lake edge underneath an archaeological site (Ryan, 1984).

The population of younger males at Ballybetagh does not match the situation at all other bogs however. The large males with complete antler racks seen in many museums have mostly turned up as isolated animals, often at the margins of raised bogs. These are in lowland settings in sites where the depth of marl is significant. Miring has been suggested as a burial mechanism by several authors and although the evidence is circumstantial it is worth considering for these specimens. Barnosky ruled out miring at Ballybetagh, but at that site the sticky marl available for miring is only a metre deep, shallow enough for giant deer to walk through if necessary. Major excavation for a road at Dunleer, Co. Louth unearthed remains of two large males in 1991 (NMI specimens NMING:F20936-8) where marl was metres deep (Fig. 9).

An old drainage ditch had been cut through the marl at Dunleer, allowing peat to dry out enough for harvesting. During examination of the site, local people told the story of a young cow that had become mired in the marl forming the base of the ditch. The animal was roped up but it could not be pulled clear by a tractor due to the sticky nature of the sediment. Large male giant deer were as big as a horse, they had small footprints, and the large antlers weighing up to 35 kg or more, front-loaded weight distribution, and a total body weight that may have reached 680 kg or more. They were substantially heavier than moose (Kolb *et al.*, 2015). Once mired, they would have little chance of escaping unless their feet sunk through the marl to reach solid ground. Testing of the hypothesis will require detailed excavation of a skeleton showing classic spread-eagled legs typical of miring in mud (Weigelt & Schaefer, 1989).

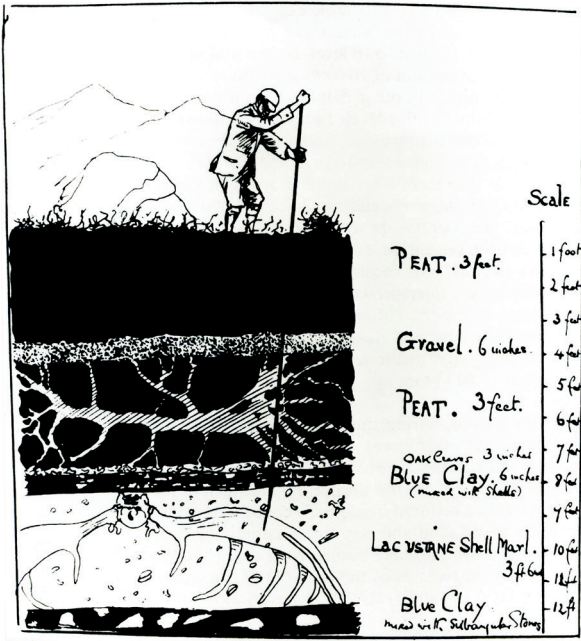


Figure 8. Collection recovered from Ballybetagh Bog, Co. Dublin in a single excavation of 1876.



Figure 7. Guide to probing for Megaloceros in Irish bogs (Millais, 1897).



Figure 9. Thick layers of sticky marl at Dunleer, Co. Louth, 1991.



It is notable that both scenarios, bachelor herds and miring, favour representation of males rather than females which matches the known collections in museums. It is significant that females are extremely rare, perhaps 2 % of finds. While there may be some bias from overlooking of female skeletons because they could be mistaken by farmers for cattle or horses. Females could have been missed by giant deer hunters using the prospecting techniques suggested in publications at the time. Females might also be seen as of lesser value, but even females had some value and the ratio cannot be explained fully by these suggestions. The very low numbers of females and juveniles known in museum collections indicates a taphonomic bias.

The dietary demands of large deer dictate a high requirement for minerals that would be met by exploiting lakeside vegetation. Modern moose living in the glaciated wilderness areas with poor soils of Isle Royale on Lake Superior, Canada have a strong dietary dependence on aquatic plants with a high sodium content which they graze in pools during the daytime when the water is warm. They return to woodland areas for shelter where they eat the leaves of ash, maple and birch (Belovsky, 1984). These elk may provide an example of an ecology similar to that of the giant deer. Wallowing to avoid insect bites would be another reason to stray into dangerous marl-lined lakes. Miring would be expected to favour heavy ungainly males over lighter females and more cautious juveniles.

Irish examples of giant deer have been assigned to the subspecies *Megaloceros giganteus giganteus* (Blumenbach, 1799) by Vislobokova in her significant monographs (2012, 2013). There are many subtleties of anatomy between subspecies but all *Megaloceros* are readily identifiable by the very large antlers found on males. Speculation around the evolution of such large antlers was addressed by Gould (1973) who demonstrated that they were not out of proportion for such a large animal. Kitchener (1987) demonstrated convincingly that they were not just for display but had a genuine function in combat. As with modern deer the antlers would have been shed seasonally and regrown each year. Dietary input must have been significant and nutrition and development have been examined by a number of authors (Moen *et al.*, 1999; Chritz *et al.*, 2009; Kolb *et al.*, 2015).

Many attempts have been made to reconstruct the appearance of *Megaloceros* in drawings, paintings, sculpture and computer generated imagery including animation. Artists have drawn inspiration for colour and coat pattern on a small number of examples of contemporary cave art in France. At Lascaux there are likely *Megaloceros* with rather stylised antlers but at Cougnac there are good drawings showing a large shoulder hump and lines indicating areas of different colour in the hide. Skeletons in museums are assembled by people who may have no scientific training, using incomplete sets of bones occasionally supplemented with other species, and are not necessarily anatomically correct (Carr, 2006). These are often very simple mounts, and not as dynamic as the modern examples. One good example of a modern dynamic mount is a skeleton bought in the 1950s from the Museum in Trinity College Dublin (Fig. 10). This was transported to England where it joined the collection of John Willett and

was later sold (Philips, 1992). Acquired by Dierenpark Emmen and on display there in Biochron for several years it was again re-mounted by Manimal Works in Rotterdam in 2018 (Fig. 11) and sold to an overseas client by North Sea Fossils BV (Remie Bakker, pers comm. 2018; Bakker, 2019).

Extinction of the giant deer in Ireland and across Europe is explained by climate change, with the collapse of the vegetation required to maintain large bodies taking place at the onset of the Younger Dryas. The species did survive elsewhere, although published reports of post Woodgrange Interstadial dates from the Isle of Man (Gonzalez *et al.*, 2000) were re-dated as being older than this, and the only accepted dates in the Holocene are from Western and Southern Siberia where the youngest remains are 7,716-7,593 cal BP (Lister & Stuart, 2019).

Dutch connections with giant deer can still be traced in Ireland today. As recently as November 2018 a set of *Megaloceros* antlers was sold as part of the contents of a wealthy family home. These were excavated in the early 1900s in the west of Ireland by a descendant of the prominent Irish-Dutch family Verschoyle (Mason, 2001). Walter Isley Hamilton Verschoyle-Campbell had an interest in archaeology and brought the antlers to the family home at Tassagart House, in County Dublin. His daughter Chloe Verschoyle-Greene married John Alexander (1917-1927), and after his death, their family home Milford House in County Carlow was sold (Naughten, 2018), along with all contents (Wallace, 2018).

Trade in Irish specimens of *Megaloceros* will continue to be monitored by the National Museum of Ireland. Any information on Irish specimens should be sent to the author to add to our database and archives. These are also available for help in tracking the history of specimens that are now found all around the world.

## ACKNOWLEDGEMENTS

The author is most grateful to Werkgroep Pleistocene Zoogdieren for their hospitality in Rotterdam in June 2018 where this paper was presented. In particular, the support from Dick Mol and Bram Langeveld of Het Natuurhistorisch in Rotterdam for assistance in the seminar and encouraging this publication.

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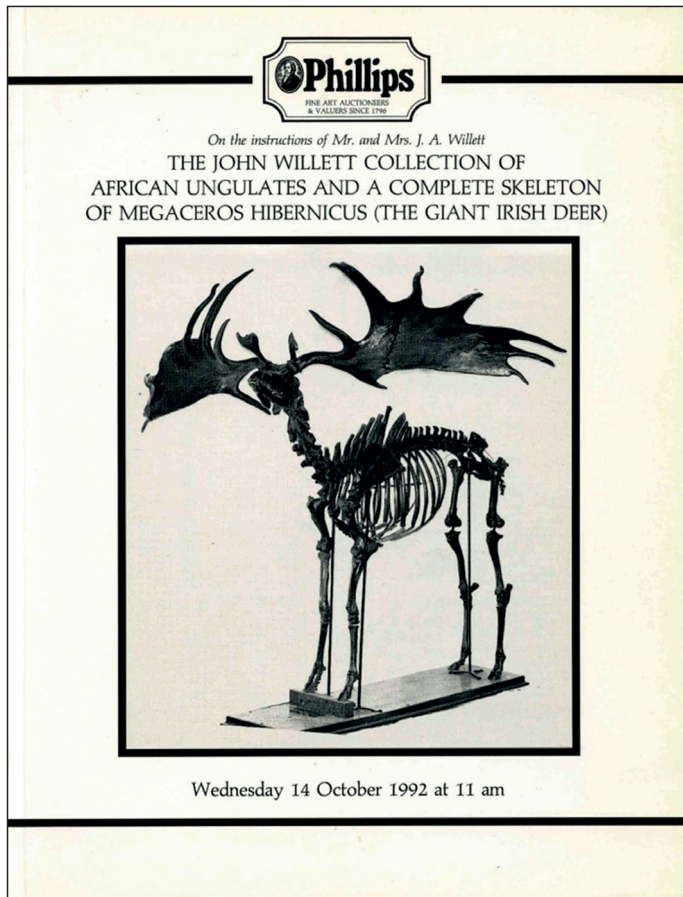


Figure 10. The John Willett Megaloceros skeleton mounted in traditional pose.



Figure 11. The John Willett Megaloceros skeleton re-mounted by Manimal Works in 2018.



- taken out of the ground. And lastly of the nature and temperature of its air and season, and what diseases it is free from or subject unto. Conducing to the advancement of navigation, husbandry, and other profitable arts and professions. Written by Gerard Boate, late Doctor of Physick to the State in Ireland, and now published by Samuel Hartlib, Esq., for the common good of Ireland, and more especially for the benefit of the Adventurers and Planters there. Hartlib, London.
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