The horse in early Ireland

Finbar McCORMICK
School of Geography Archaeology and Palaeoecology
Queen's University of Belfast
BT7 1NN, Belfast, Northern Ireland (United Kingdom)
f.mccormick@qub.ac.uk

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ABSTRACT
The main object of this paper is to review the development of horse exploitation in Ireland between its introduction in the Bronze Age and the medieval period. The review considers the evidence of the use of horse for riding and traction and contrasts this with the evidence from neighbouring Britain. The change in horse size is traced as is the development of horse-related technology. The association of horse with burial ritual and the inauguration of kings is also considered.

KEY WORDS
Horse,
Ireland,
traction,
chariots,
ritual,
horse technology.

RÉSUMÉ
Le cheval au début de l'Irlande
L'objectif principal de cette contribution est d'examiner le développement de l'exploitation du cheval depuis son introduction à l'âge du Bronze jusqu'à la période médiévale. Cet article présente l'évidence de l'usage du cheval pour la monte et la traction qu'il met en parallèle avec la proche Grande Bretagne. Le changement de la taille des chevaux est mis en relation avec le développement des technologies liées aux chevaux. L'association du cheval avec les rites d'enterrements et l'intronisation des rois est aussi considérée.

MOTS CLÉS
Cheval,
Irlande,
traction,
chars,
rite,
technologies liées au cheval.

INTRODUCTION

About 30,000 years ago, wild horses were present across large parts of Eurasia and the Americas. Remains from Shandon Cave, Co. Waterford, show that wild horse was present in Ireland about 28,000 years ago (Woodman *et al.* 1997: 146) Subsequently, an increase of glacial cover led to their extinction in Ireland and they did not manage to re-establish themselves when the glaciers retreated. In Britain the wild horse was still in existence in post-glacial times, the

latest secure recording dating from between 9,000 and 10,000 B.P. (Yalden 1999: 65). Horse have been found at late Neolithic Durrington Walls and other sites but whether they are wild or domesticated is not easy to ascertain. The possible late survival of wild horse in Britain makes the identification of any early domesticated horse problematic.

This problem does not arise in Ireland and all early prehistoric equid remains can reliably be accepted as domesticated. The earliest evidence for the presence of domesticated horse is from Early Bronze Age contexts at Newgrange, Co. Meath dating to about 2,400 B.C. (Van Wijngaarden-Bakker 1975: 345) (Fig. 1). In a few instances, horse remains have been found in Neolithic megalithic tombs but these are likely either to be secondary intrusions or mis-identifications. For instance, a horse skull fragment from the Neolithic Audleystown court-tomb on the shores of Strangford Lough, Co. Down, is likely to be associated with the secondary Bronze Age Food Vessel burials that were inserted into the tomb (McCormick 1986, 41). Again, a burnt bone pin from the Neolithic Fourknocks passage tomb, Co. Meath, was described by the excavator as made of a horse shin bone (Hartnett 1957: 245) but examination of the pin by the present writer has indicated that it was not possible to identify the bone at species level. There is therefore no evidence for the presence of the horse in Ireland before the Bronze Age.

BRONZE AGE (*c.* 2300-500 B.C.)

The Early Bronze Age settlement at Newgrange was characterised by a type of pottery known as Beaker pottery. The arrival of this pottery coincides with the arrival of metal. Van Wijngaarden-Bakker (1975a) has noted that in parts of north western Europe Beaker pottery, metal and the horse appear at the same time. There seems also to be a general acceptance that the earliest unequivocal evidence for domesticated horse in Great Britain also dates to the Early Bronze Age (Yalden 1999: 98). The arrival of metal and the horse must have precipitated a social and economic revolution comparable to the arrival of the same commodities to the Amerindians in the sixteenth centuries. Anthony (1994: 191) remarks that in that case "trade and exchange systems extended further, became socially more complex, and carried a higher volume of goods than would have been possible with pedestrian transport". Most importantly, those in possession of horses had a clear military advantage over neighboring peoples and the political basis of the Amerindians was totally changed by the advent of the horse. It is likely that the numbers of horse present in Early Bronze Age Ireland would have been low so their military potential is likely to have been limited. This rarity, however, would have heightened their prestige and emphasised the social standing of their owners.

The horse bones from Newgrange were found intermixed with food refuse from other domesticated livestock. It could be suggested that while the horse may have been kept primarily for transport, they were also eaten. Some of the horses were quite old, up to fifteen years (Van Wijngaarden-Bakker 1986: 85), suggesting that they were only killed and eaten after a useful life of transport or traction had finished. One of the horse foot bones from Newgrange displayed evidence of an arthritic problem that could have been the result of either old age or physical stress due to overwork (Van Wijngaarden-Bakker 1986: 84). This, coupled with the presence of old animals that had long before reached optimal size for meat production, must imply that they were used for transport. Some of the horses, however, were young, still at their milk teeth stage, and suggests natural mortality or that young animals may have been occasionally culled for their meat.

In Ireland, and elsewhere in western Europe, horse would appear to have provided little advantage over other domesticates for anything other than for riding. They were of little use for heavy traction (see below), and were inferior to cattle, sheep or goat as far as milk production was concerned. They did not produce wool and were not as fecund as the pig. In the eastern European steppes they had a clear advantage over other

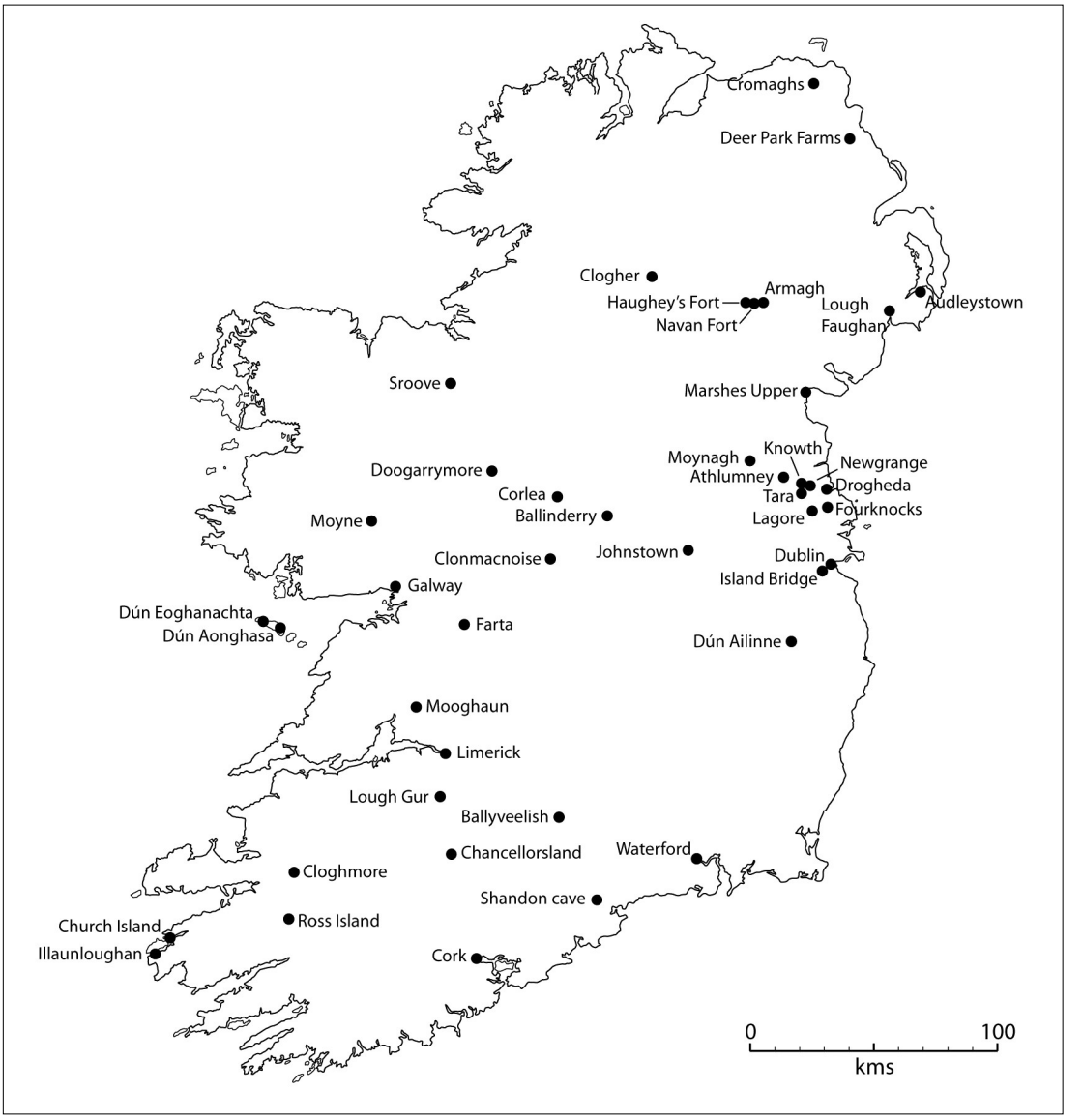

FIG. 1. – Map showing location of sites mentioned in the text.

domesticates because of their ability to survive steppe winters when other domesticates did not. Horses use their hooves to scrape deep snow away in order to access the vegetation beneath. In a similar depth of snow cattle and sheep would have perished as they use only their noses to push aside snow (Anthony 1994: 185-186). It is unsurprising, therefore, that horses tended to be kept in larger numbers in these areas compared with the temperate west.

The Newgrange horses were rather small and slender (Table 1). Two complete bones allowed shoulder heights of 111 cm and 120 cm to be estimated (Van Wijngaarden-Bakker 1986: 84). Figure 2 shows the range of shoulder heights from Irish sites of different periods using May's

TABLE 1. – Horse measurements after von den Driesch and Boessneck (1974) from Newgrange (Van Wijngaarden-Bakker 1975: 248; 1986: 85), Tara (McCormick 2002: 112) and Dún Ailinne (Crabtree, forthcoming).

Site	Bone	GL	GLl	Bp	Bd	SD
Newgrange	Metacarpal	197		40.3	41.1	
	Metacarpal	182	178			22.9
Tara	Tibia	328	298.2		61.4	42.2
	Radius	323	307.4	69.9		37.9
Dún Ailinne	Metatarsal	238.0	232.0	42.8	42.9	33.5

TABLE 2. – Horse epiphyseal fusion data from Moynagh crannog, Co. Meath after Silver (1969: 285-286). (P. = proximal; D. = distal).

	Fused	Unfused	Approx. age age at fusion (after Silver 1968)
Humerus P.	2	0	3-3.5 yrs
Humerus D.	1	0	15-18 months
Radius P.	8	0	15-18 months
Radius D.	8	1	3.5 yrs
Ulna P.	2	1	3.5 yrs
Metacarpal D.	3	0	15-18 months
Pelvis	7	0	18-24 months
Femur P.	5	1	3-3.5 yrs
Femur D.	1	0	3-3.5 yrs
Tibia P.	4	2	3-3.5 yrs
Metatarsal D.	3	0	16-20 months

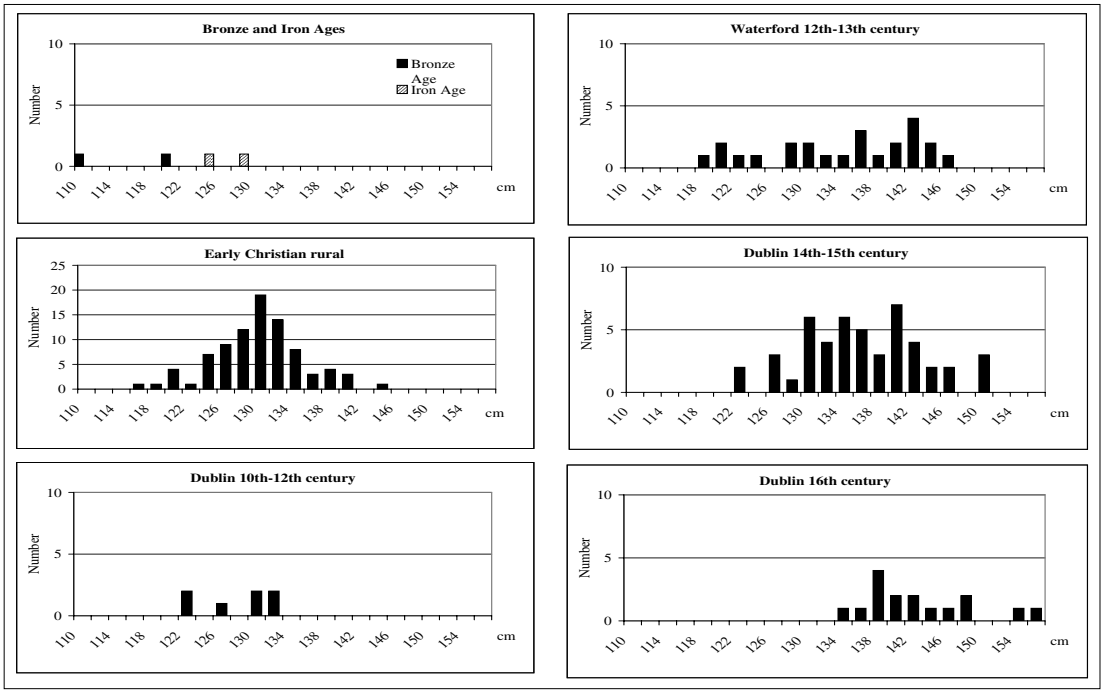

FIG. 2. – Horse shoulder heights. The shoulder heights as estimated from a range of longbones using the multiplication factors of May (1985).

(1985) multiplication factors for the greatest length (GL) of the long- bones. It can clearly be seen that the Newgrange material lies at the lower end of the size range encountered in Ireland.
Horse remains are extremely scarce throughout the Bronze Age in Ireland, rarely comprising more than 1.5% of the mammal bone totals found (Table 2). The relatively high incidence of horse from Ballyveelish, Co. Tipperary, is a result of bias due to small sample size coupled with the large quantity of horse teeth present. Only one individual was represented in each of the two samples from the site (McCormick 1987a). They are absent from the Beaker/Early Bronze Age levels at Ross Island, Co. Kerry (Van Wijngaarden-Bakker 2005), as well as Late Bronze Age Chancellorsland, Co. Tipperary (McCarthy, forthcoming), and Dún Aonghasa, on Inis Mór, Co. Galway. In the latter case it could be argued that horses may simply not have been deemed suitable for the uneven, deeply fissured karst land surface that surrounds the site but it is difficult to account for the absence of horse at other sites. Ross Island was a copper mining industrial site so perhaps the absence of horse is not unexpected. Chancellorland, however is a settlement consisting of a succession of rather large houses surrounded by a substantial ditch (Doodey 1999: 98-100). This, coupled with the presence of imported amber (*ibid.*: 100) implies high status. There is, however, no evidence for high-status at Lough Gur, Co. Limerick (Cleary 1995) as this house site lacks both an enclosure or imported materials. It did, however, produce horse. The evidence, therefore, shows no direct relationship between status and the presence of horse. The substantial enclosures of hillforts imply a defensive, and perhaps, a military, function. There is nothing exceptional, however, about the incidence of horse remains at either Mooghaun, Co. Clare or Haughey's Fort, Co. Armagh (Table 3, in appendix).
All the horse remains from Bronze Age Irish sites are found intermixed with food remains of other species. This, indeed, is the case in the sites of all periods discussed in this report with the exception of a very small number associated with human burials, primarily of Viking period date (below). The Bronze Age horse remains are generally broken, implying marrow removal, and cut marks have been noted where the bone preservation is good (Murphy & McCormick 1996: 30). Horse meat was clearly not a preferred food and it is likely that it was only consumed during periods of food shortage. This is particularly the case when the bones of adult horse are broken for marrow, as their marrow has a lower fat value than the other main domesticates and is therefore of less nutritional valuable (Nickel *et al.* 1984: 19).
The situation is little better in Bronze Age Britain. In Early Bronze Age West Row Fen, Suffolk, horse comprised less than 0.1% of the assemblage (Olsen 1994: 119). At Middle Bronze Age Grimes Graves they comprise about 1% of the assemblage (Legge 1981: 109) while in Late Bronze Age Potterne, Wiltshire, horse comprise between 0.1% and 0.3% of the faunal assemblages (Locker 2000: 105). Locker (*ibid.*) noted that the horse bones on that site tended to be fairly complete compared to the other food refuse, suggesting that they were not generally eaten. Neither did any of the horse bones on the site display butchery marks. At Late Bonze Age Runnymede Bridge, however, horse comprise some 3.6% of the fragments total in a moderately sized assemblage of *circa* 2 200 identifiable bones. The site also included a semi-articulated, but disturbed, skeleton of an adult horse of about 10 years (Done 1991: 334). The animal had been disarticulated prior to burial. While Done (*ibid.*) suggests that it may constitute a ritual burial she also suggests that the disarticulation may have occurred simply to facilitate inserting a large horse into a comparatively small hole. Done does not mention any evidence for the eating of horse at the site but the higher percentage of horse bone could indicate that horse were now being consumed more extensively than before.
Despite the fact that horses were present in Ireland since the earliest Bronze Age there is no direct evidence as to how they were used prior to the Iron Age. Wear on the front premolars, indicative of abrasion from a bit, has not yet been

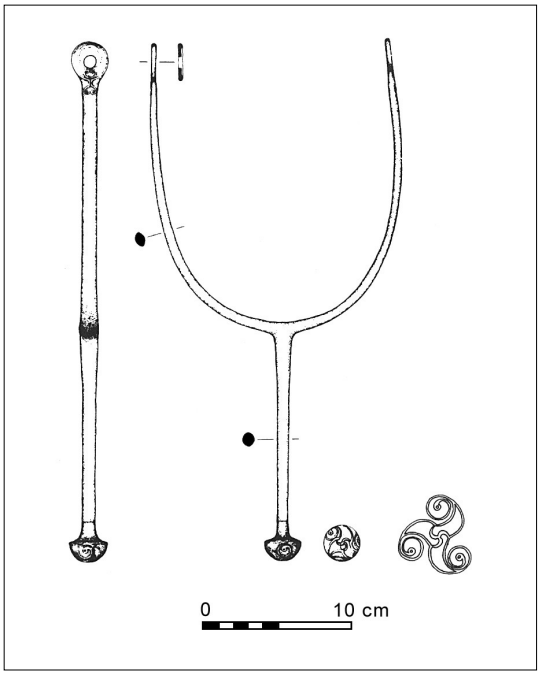

FIG. 3. – Y-shaped bronze pendent (Waddell 1998, 300).

identified but this may to some extent be a result of the small quantities of horse bones found to date on Irish archaeological sites of the period. Furthermore, no Bronze Age horse bits or harness trappings are known from Ireland though such material is known from Britain, albeit on a limited scale. Identifying horse bits can be problematic but the earliest possible examples are those from middle Bronze Age Grimes Graves (Legge 1992: 48, 66). Later Bronze Age examples have been found at Potterne (Seager Smith 2000, 229, 236) and Runnymede Bridge (Needam & Serjeantson 1996: 189, 193).

As the evidence stands, we have virtually no direct knowledge that the horse was used for anything but food during the Bronze Age although the presence of old animals at Newgrange implies their use for transport or traction. The single exception is evidence for the use of horse hair in textile production. A hoard of Late Bronze Age metal objects from a bog at Cromaghs, Co. Antrim, was found wrapped in textiles including a belt with an elaborate tassel made of horsehair (Coffey 1906).

IRON AGE (*c.* 500 B.C. – AD500)

Much of the evidence for the use of horse in Ireland during the Iron Age is again of an indirect nature. The earliest evidence for wheeled vehicles in Ireland, is from a bog in Doogarymore, Co. Roscommon. This comprises a pair of large composite wheels made of three planks of wood each with a length of about 1m. It has been radiocarbon dated to the middle centuries of the first millennium B.C. and could date to either the end of the Bronze Age or the beginning of the Iron Age (Waddell 1998: 275). The wheels are rather heavy and it is likely that they would have been unsuitable for horse before the introduction of the neck harness (see below). Spoked wheels, which are more suitable for horse traction, originate in the Near East at about 1900 B.C. (Clutton-Brock 1992: 70) and for most of the second millennium B.C. are confined to Eastern Europe (Piggott 1983). The evidence for the presence of spoked wheels in Western Europe during the later Bronze Age is based on bronze or pottery models (*ibid.*: 109) and in the case of Britain the earliest evidence derives from the chariot burials of the Iron Age Arras culture of Yorkshire (Stead 1979). Ireland has yet to produce any physical evidence for spoke-wheeled chariots. Circumstantial evidence would suggest that they were in use at this time, but again the evidence is equivocal.

Horse bits are the most common metal find in early Iron Age Ireland (Raftery 1994: 107) and the use of wheeled transport is implied by the fact that bits are sometimes found in pairs. The development of the shaft-cart, which allowed a vehicle to be pulled by a single horse, is a medieval occurrence in north-western Europe (see below). The horse-bits are sometimes found along with Y-shaped bronze pendants which are assumed to be some form of horse trapping. This assumption is reinforced by the fact that they also are sometimes found in pairs (Raftery 1994: 109-110). Their exact function, however, is unknown and they do not occur outside Ireland (Fig. 3). The great majority of horse bits, however, were found singly which is more likely to infer horse-riding rather than the use of wheeled vehicles.

It is unlikely that the great wooden plank road at Corlea, Co. Longford, was built for anything other than wheeled transport (Raftery 1994: 99). Constructed around 148 B.C., this huge construction runs some two miles across a bog. It is estimated that 200-300 large oak trees needed to be felled for its construction. The road was 3-4 m wide, and at its widest could have easily allowed two oncoming vehicles to pass each other. A track-way of this width would have been unnecessary for pedestrian or horse-riding use and can only imply the use of wheeled vehicles. Unfortunately, we cannot be sure if this is indicative of the use of horse or oxen.

The large number of horse bits suggests an expansion in horse keeping in Iron Age Ireland and the faunal evidence supports this with horse bones occurring more frequently on archaeological sites. At Dún Ailinne, Co. Kildare and Tara, Co. Meath, horse remains comprise 2.4% and 6.2% of the fragment totals respectively. In Britain too, horse bones are more common, with Grant (1984: 113) noting that they accounted for between 3% and 15% of the fragments encountered on Iron Age sites in the south of England. Two features characterise the horse bone assemblages found on English Iron Age sites; the great majority of the horse are adult and the incidence of butchery and breakage on horse bones is much lower than noted on the other large domesticates species (Maltby 1996: 23). The highest incidence of horse bones from the Irish Iron Age was at Tara, the legendary capital of Ireland (McCormick 2002: 106). This material dates roughly to the first century B.C. No articulated skeletons were present so once again it is probable that the bones, like the other faunal material, represented discarded food debris. Many of the bones are broken, deliberately shattered for the extraction of marrow. The conclusion that the horse was eaten would seem to be confirmed by the presence of knife cuts and roasting marks on a radius. Most of the horse bones at Tara were from mature animals and tooth wear on one of the second premolars indicates that it had been used for riding/traction (McCormick 2002: 107).

The ditch at Tara where these particular bones were found was located near a Neolithic passage-tomb known as the "Mound of the Hostages", a site likely to have been a place of royal inauguration (Warner 1988: 57). It is tempting to equate the horse bones with the inauguration rite which included the killing, butchery and consumption of horseflesh described by Geraldus Cambrensis at the end of the twelfth century AD. The description is curious, to say the least, and worth quoting in full (O'Meara 1982: 110):

There is in the northern and farther part of Ulster, namely the Kenelcunill, a certain people which is accustomed to appoint its king with a rite altogether outlandish and abominable. When the people in that land had been gathered together in one place, a white mare is brought forward into the middle of the assembly. He who is to be inaugurated, not as a chief, but as a beast, not as a king, but as an outlaw, has bestial intercourse with her before all, professing himself to be a beast also. The mare is then killed immediately, cut up in pieces, and boiled in water. A bath is prepared for the man afterwards by all his people, and all, he and they, eat of the meat of the mare which is brought to them. He quaffs and drinks of the broth in which he is bathed, not in any cup, or using his hand, but just dipping his mouth into it around him. When this unrighteous rite has been carried out, his kingship and dominion have been conferred.

Cambrensis' account of Ireland contains much material that is untrue as one of the aims of the book was to cast a poor light on the morals of the Irish in order to legitimise their reformation by the Anglo-Normans. Yet, there may still be truth in this description of the inauguration rite as the slaughter of horse forms part of the ritual of kingship in early Indo-European societies (Puhvel 1970). On occasion, such a ritual included a sexual element although in the Indian *aśvamedha* the encounter is between the queen and a stallion – "the stallion was smothered to death, whereupon the *mahiṣí* or chief queen symbolically cohabited with it under covers, while the entourage engaged in obscene banter" (*ibid.*: 161). The animal's suffocation would, no doubt, have facilitated this encounter as it would have occasioned

"reflex-conditioned tumescence and emission" (*ibid.*: 162). This element of the rite can be seen as a ritualistic method of ensuring fertility in a kingdom. The sacrificial horse of the *aśvamedha* was subsequently cut up and dispersed presumably to allow participants or spectators of the ritual to partake in horses beneficial consumption.

Horse burials are a feature of the Iron Age in many parts of Europe (*e.g.* Jerem 1998) and are generally regarded as ritual deposits. Wagons frequently accompany high status burials in central Europe (Pare 1992) while chariots are present in elite burials of the Arras culture of north-east England (Stead 1979). Occasionally horses were included with the Arras burial (*ibid.*: 8, 22) but such burials were also noted elsewhere in England during the Iron Age (Cunliffe 1974: 314). An unusual burial from Farta, near Loughrea, Co. Galway, may be part of the same tradition (Coffey 1905). The base of a barrow contained an urn and human cremation of Early Bronze Age date but the mound was deliberately heightened to accept a second burial consisting of an adult human female accompanied by a seven year old stallion along with some bones of a red deer. Unfortunately, there were no artifacts present that would help date the burial and unfortunately the skeletal material cannot presently be located. The metrical data available for the Iron Age is extremely limited but there is a pronounced increase in size compared with the Bronze Age material (Fig. 2).

EARLY MEDIEVAL PERIOD (*c.* AD 500-1170)

With the emergence of the early medieval period from AD 500 onwards our knowledge about the early horse, previously derived of archaeology alone, is augmented greatly by the documentary record. Much of the documentary evidence concerning the horse has been made available in the recent works of Fergus Kelly (1997; 2005). The zooarchaeological evidence is again almost exclusively derived from archaeological sites where horse are found in association with the discarded food refuse of other domesticates. Where adequate samples occur horse remains in most cases do not exceed 2% of the fragments totals (Table 3, in appendix). The three sites producing the highest incidences of horse remains are all secular habitation sites. Knowth was certainly a high status and probably a royal site. Dun Eoganachta is too likely to have been of high status. The crannog at Sroove, in contrast to most crannogs, was small in size, produced a limited range of finds and is therefore likely to have been of low status. The fact that the highest incidences of horse were found at Sroove would suggest that the poor suffered more from food shortages that the richer classes.

The bone assemblage from 8th century Moynagh crannog, Co. Meath can serve as a typical assemblage encountered on rural sites of the period. Horse comprised 1% of the fragments total and nearly all parts of the skeleton were represented. Most of the horse long-bones were broken for marrow extraction and chop and cut marks occurred occasionally. Most of the animals were mature or old as can be seen in the fusion data in Table 2. One premolar showed clear evidence of tooth wear caused by a cheek-bit. Moynagh crannog comprised an artificial island settlement site. There was no reason for the presence of horse bones unless horse was being deliberately brought onto the site for consumption. The bones cannot represent accidental "contamination" of the food refuse assemblage. One can only conclude that horse were occasionally eaten but again they were not bred specifically for their meat. Indeed, their presence probably reflects periods of acute food shortage.

Christian penetentials, those monastic rules that assign penances for various sins, made it clear that the church disapproved of the consumption of horse flesh, at least among clerics. The *Irish Canons* state that "the penance for eating horse-flesh, four years on bread and water" (Bieler 1975: 161). Despite this, horse bones have been found amongst the food refuse on most sites of the period including ecclesiastical sites such as Moyne, Co. Mayo (McCormick 1987: 67), Church Island and Illaunloughan,

Co. Kerry (Roche 1958: 13-14; Murray & McCormick 2005: 68) as well as from the Early Christian Irish foundation at Iona, off the west coast of Scotland (McCormick 1981: 15). The rule, however, does not seem to have been universal. In a secular 7th or 8th century law tract dealing with the maintenance of the sick, the practice of eating horse flesh is not wholly forbidden but noted as being unsuitable for invalids as it tended to "stir up sickness in the stomach" (Binchy 1938: 21). If the Irish situation was similar to continental Europe it is likely that hippophagy was acceptable until the eighth century when the prohibition was introduced by the church. In *circa* 732 Pope Gregory wrote to St Boniface, apostle to the Germans, stating that the eating of flesh of both wild and domesticated horse was "a filthy and abominable practice" and should be prohibited (Emerton 1940: 58). Perhaps the law on sick maintenance noted above reflects the continuation of a previous toleration of the practice from pre-Christian times.

Horses in early medieval Ireland were used for riding and light traction. Despite the extensive documentary evidence for this, there is little evidence for horse hardware in the archaeological record. The distinctive bronze bit pieces of the Iron Age seem to fall out of use at the beginning of the second millennium AD to be replaced by iron types which are only very occasionally encountered on archaeological sites (Hencken 1950: 108-109). If one was dependent on archaeological evidence alone one would greatly underestimate the role of horse in early medieval Ireland.

For the first time we have definite evidence for the horse being used for traction. The light, two wheeled chariot was drawn by horses (Greene 1972) but heavier traction, especially ploughing, was undertaken by oxen. There is a rare reference to a horse making up the fourth member of a ploughing team in an early life of Saint Ciaran but in that instance it is clearly regarded as a miracle (Macalister 1921: 20). Horses could only have been used for heavier traction after the introduction of the breast-strap harness which was rapidly replaced by the collar-harness. It is argued on philological grounds that the breast-strap harness appeared in Europe in about 600 AD (Langdon 1986: 9). The collar-harness was invented in China in the 5th century AD and reached western Europe *circa*. 800 AD (Piggott 1992: 137). The tale known as the "Wooing of Étaín", written in about 1000 AD, indicates that the collar-harness was known in Ireland at that time and was appreciated as being superior to the yoke (Bergin & Best 1928: 179). The story seems to imply, however, that the harness was used only for oxen and the earliest evidence for the use of the horse for ploughing is in post-Norman times.

One singular reference in early Irish law suggests that the horse was used for the lighter task of pulling the harrow. Kelly (1997: 479), however, believes that this may be a mistranslation of the term used in the law tract. Welsh law also implies that horses were used for harrowing (Jenkins 1997: 64-65, 68), but there is a possibility that the specific legal reference may be of post-Norman date. The evidence for the use of the horse in harrow work prior to the arrival of the Anglo-Normans is therefore inconclusive.

The early Irish sources make a clear distinction between horses used for riding and those used for working. Kelly (1997: 96) indicates that the riding of horses was the prerogative of the nobility and well-off free farmer class. The higher one's status the more horses one was expected to own. Thus, a typical lord would be expected to own one riding horse and four others for lesser tasks (Kelly 2005: 31). The law tracts indicate that horses were regarded as being of much greater value than milk cows (Kelly 2005: 32) despite the fact that this was a society where the possession of cows comprised the basis of one's wealth. Women rarely rode a horse but were instead transported in chariots. The law tracts make it clear that roads were maintained with chariots in mind. A route way which could boast the title "highway" was wide enough to allow two chariots to pass each other while a "road" could accommodate one chariot and two horsemen passing (Kelly 1997: 538). The upkeep of the roads, which entailed digging ditches on either side, the filling of pot-holes and the removal of bushes,

was the obligation of local farmers (Kelly 2005: 34). Horse were also used for sport, with both horse and chariot racing being mentioned to in the early texts (Kelly 1997: 99).

The work horse in the early sources is often referred to a *gerrán,* a term that gave rise to "garran" in later sources. Generally, horses carried loads on their back either in the form of bags that hung on both sides or were balanced on some form of pack-saddle *(srathar)* (Kelly 1997: 94). References to the actual work undertaken by these work horses are infrequent, but they seem to have been mostly tasks related to agricultural work. There are references, for instance, to pack-horses carrying corn and flour from the mill and also to their carrying loads of wheat, presumably to a mill (*ibid.*: 91). While elsewhere in Europe donkeys and mules may have been used for this purpose, this was not the case in Ireland. With the exception of a single twelfth century reference to the mules and donkeys of a papal legate being stolen during a visit to Ireland (Kelly 2005: 31), there is no evidence for the use of either in Ireland before early modern times (Mahaffey 1917). A cart *(carr)*, as distinguished from a chariot *(carpat)*, was also used at this time. References show that the cart was used for the transportation of rods, rushes, manure and corn. These were usually drawn by oxen, but one legal text refers to a cart horse while another reference refers to a light *carrus* used to transport milk and butter to and from a monastery drawn by a single horse (*ibid.*: 498). This reference is curious as it implies the use of a shaft cart rather than a pole-cart which necessitates two horses. Piggott (1992: 137) indicates that while the Romans experimented with shafts "their medieval adaptation from the tenth, and more certainly the twelfth, century is an example of re-invention". The Irish reference to the cart pulled by a single horse is contained in Latin lives of the Saints. Fergus Kelly (*pers. comm.*) is of the opinion that such sources are definitely later than the 10th and may be as late as the 12th century.

The documentary and iconographic evidence indicates that the early medieval Irish did not use a stirrup or saddle. The texts refer only to a horse cloth which was positioned under the rider (Kelly 1997: 98). Saddles seem to have been a Norse introduction as the Irish for saddle "sandal" is derived from old Norse (*ibid.*). Some wooden objects convincingly identified as saddle arches were found in Viking contexts in Dublin (Kavanagh 1988: 106-109). It seems that the Irish regarded saddles as "alien" objects. A native text describing the sack by the Irish of the Viking town of Limerick in AD 968 lists amongst the booty taken "their saddles beautiful and foreign" (Todd 1867: 79). The Vikings seem also to have been responsible for other horse-related innovations. The earliest Irish stirrup is from tenth century levels in Viking Dublin (Kavanagh 1988: 112-3). The prick-spur and the horse-shoe also make their first Irish appearance on early eleventh century levels in Viking Dublin (*ibid.*: 110). The horse-shoe appears simultaneously in Frankish and Byzantine documentary sources in the late ninth and early tenth century (Clarke 1995: 79). The horse-shoe also seems to make its first archaeological appearance in Britain coinciding with Viking settlement in England (*ibid.*: 94). Raepsaet (1997: 57) makes the observation that the introduction of the horse shoe may have been made necessary by the increased use of the horse for transport on hard road surfaces. It may well be that the development of towns as centres of trade by the Vikings may have led to improved road building in Ireland but this is a subject area about which very little is known. It seems likely that the Vikings were responsible for the introduction of this suite of technological advances in horsemanship. The use of the saddle and stirrup allowed mounted warriors to be used much more effectively in battle, allowing the rider to stand and turn in combat. The Irish, however, seem not to have adopted these innovations despite their obvious advantages (see below).

The early laws describe at length the desirable features of horses. The ideal horse for buying should be "large, healthy, young and docile" and be "neither too tall or too small, and should be broad chested and narrow legged" (Kelly 2005: 32). This comment on size is especially interesting because it indicates that there was no desire

to breed larger horses at this time. The relatively moderate size of the horse (see below) was judged adequate for the roles desired of it. The early sources refer to a variety of colours of horse. Kelly finds references to white, black, grey, dark grey, dun and orange (*ibid*.: 90). Combinations of colours were also known.

It is clear that horses were being imported into Ireland during the early medieval period. The laws mention the presence of British horses (*ibid*.: 90), the annals of Ulster in 1029 mention Welsh horses, while the Book of Rights mentions Scottish horses (Dillon 1962: 97). At the same time, Anglo-Saxon records indicate that horses were being imported from France into England (Hyland 1999: 4). The Anglo-Saxon Chronicle also indicates that Viking forces were "horsed" when they arrived in England. The fact that the Vikings made deep incursions into Ireland away from navigable rivers suggests strongly that they brought their horses with them.

A large quantity of metrical data is available from the Early Medieval period (Fig. 2). The range of size is much greater than the Iron Age with peak occurring in horse of 130-134 cm. It is interesting to note that all the horses of above 137 cm are from the known royal sites of Lagore and Knowth, both in County Meath. While the Vikings appear to be responsible for the advances in horse technology, there is no evidence that they increased the size of horses present. Indeed, Figure 2 shows that the horses from Viking Dublin did not attain the large size of horses noted on many rural sites. The average horse shoulder height in Viking Dublin is 129.6 cm compared with 130.7 cm in rural Ireland.

While one would have expected ritual associations with horse to have disappeared with the coming of Christianity, the rituals associated with royal inauguration discussed above clearly shows that this was not the case. There is no evidence, however, for the presence of horse burials in association with high status graves as has been demonstrated at Mound 17, Sutton Hoo in southern England (Carver 1998: 89-90). In that instance the horse was a stallion as opposed to the mare that featured in the Irish inauguration rite. Horse burial was, however, practiced in Ireland by the Vikings. This was a feature of Viking burials in Norway, Iceland and Scotland and Sikora (2004: 87-88) suggests that this is either because of its association with the god Freyr or with Odin, ruler of the afterlife, and his horse Sleipnir. The evidence for horse burial is rather restricted and most are from poorly recorded old excavations. In one instance, Athlumney, Co. Meath, the burial was accompanied by a horse skull and a cache of horse trappings (*ibid*.: 103), in another example from Co. Kildare a complete horse skeleton was present but the grave goods were not definitely Viking in character although of an early medieval date. At the other end of the spectrum the only equine presence in a definite Viking burial at Islandbridge, Co. Dublin comprised a single tooth. There are, however, Norwegian burials that contain only horse teeth (*ibid*.: 100). The presence of horse remains in the recently excavated burial site at Cloghmore, Co. Kerry is problematic (Connolly & Coyne 2005). This cave contained a large quantity of the disarticulated and scattered human remains of twenty five individuals, mostly of a Viking period date. Also found in the cave was a Viking silver hoard and several objects that have Viking parallels. A large quantity of animal bone, both domesticated and wild, was also found intermixed with the human material which the excavators interpreted for the most part as representing ritualistic activity associated with burial. Small quantities of horse were present. It is unclear, however, if these form part of the burial ritual.

LATER MEDIEVAL PERIOD (POST. *CIRCA* 1170)

In contrast to the Early Medieval period most of the zooarchaeological data is now derived from urban settlements and small quantities of horse bones are encountered on most urban sites. In most instances, horse comprise less than 1% of the mammal fragments total and are generally less frequent than are noted on Early Medieval sites (Table 3, in appendix). In the large assemblage

from Waterford, for instance, horse comprised up to 8% of the fragments total. There was clear evidence for both skinning and butchery and all the horse being either mature or old animals (McCormick 1987: 832.). In Dublin evidence for fusion of vertebrae and osteoarthritis in the lower hind limb implied the carrying of heavy loads or heavy traction (Baker & Brothwell 1980: 131). The occasional presence of horse shoes and other horse trappings from medieval urban sites provide evidence for the keeping of horses within towns (*e.g.* Johnston 1995: 78-79; Scully 1997: 175-178). The presence of a foetal/neo-natal horse femur in Galway suggests that horses were actually being bred within towns (Murray 2004: 385).

Horses became a basic necessity in urban centres as they were indispensable for transport and trade. As a result of this, horses became increasingly owned and maintained by persons who were not actively engaged in agriculture. Accounts for the Priory of Holy Trinity, Dublin for the years 1337-1347 record the different types of horses kept along with the expenses of maintaining horses (Mills 1891). They refer to "cart", "farm" and "plough" horses which can be regarded as work horses. Additionally they refer to "hackney" which can be regarded as general-use horses but primarily used for pulling light carriages. Also referred to are "palfrey" horses, i.e. saddle horses often associated with women. The more militaristic Pipe Roll of King John, 1212-1213, there are references to "hobbies" (Davis & Quinn 1941: 13), fighting horses for light troops as well as "war horses" for "men-at arms" (*ibid.*: 27) which must refer to horses for more heavily armoured troops.

It was noted earlier that horses were more valuable than cattle in the early law tracts of the 7th and 8th centuries. Kelly (1995: 32) notes of instances where horse were regarded as being valued from two milk cows to as high as fifteen milk cows, although the latter can be regarded as an exception, if not an exaggeration. Prices of horse and cattle provided in the 13th century accounts of the priory of Holy Trinity, Dublin (Mills 1891) suggest that the price differential between horses and cattle, except in the case of fine riding horses, has generally disappeared in Anglo-Norman times as horses became more common with the development of extensive networks of trade along and with the widespread use of horse in ploughing. It has already been noted that there is no evidence for the use of horse for ploughing in Ireland during the early medieval period. In England, plough teams comprised only of horse were in us by the middle of the twelfth century alongside with teams of oxen, as well as mixed teams of horses and oxen (Langdon 1986: 51). However, teams comprised exclusively of oxen remained popular well into the fifteenth century (*ibid.*: 111). The earliest evidence for the use of horse for ploughing in Ireland is in the late thirteenth century (Lucas 1973: 68). Mixed teams of oxen and horse seem to have been the norm during the fourteenth century and oxen seem only to have been completely superseded by horse for ploughing in Ireland in the fifteenth century (*ibid.*). The change from mixed to exclusively horse plough teams, however, should not be regarded as a matter of strict linear evolution. In Ireland, cows were occasionally used as part of a plough team when horses were in short supply as late as the twentieth century (Bell 2005: 42).

The technological advances of the saddle and stirrup introduced into Ireland during the Viking period, were regarded as the norm by the Anglo-Normans, but do not seem to have been taken up to any great extent by the native Irish. Their use by the Anglo-Normans is attested in the Accounts of the priory of Holy Trinity (*e.g.* Mills 1891: 23, 97). Geraldus Cambrensis makes it clear however that not only had the Irish eschewed saddles, stirrups and spurs but they also seem to have abandoned the use of rigid bit pieces. Geraldus Cambrensis notes of the Irish in about 1185 that "When they are riding, they do not use saddles or leggings [stirrups?] or spurs. They drive on, and guide their horses by means of a stick with a crook at its upper end, which they hold in their hand. They use reins to serve the purpose of both of a bridle and a bit" (O'Meara 1982: 101).

Cambrensis' assertion that the Irish did not use saddles is not universally true. The early twelfth

century Book of Rights notes that saddles accompanied horses granted as stipends from an over-king to an under-king (Flanagan 1996: 72). It may well be that saddles were only utilized as displays of status and their military potential, in association with the stirrup, was not realized; perhaps such military "improvements" were not deemed necessary. Flanagan (*ibid.*: 69) has been shown that the use of heavily armed knightly cavalry by the Anglo-Normans in Ireland has been over-estimated (*ibid.*: 69). Cavalry charges of this type were extremely rare and "forays, raids, skirmishes and burnings, and the capture of fortified positions were far more common than pitched battles" (*ibid.*). Perhaps the particular nature of war in Ireland did not warrant the universal adoption of the stirrup and saddle. Indeed, riding without a saddle must have had its advantages because the Anglo-Norman aristocracy in Ireland soon began to adopt the practice to such an extent that Edward III introduced legislation to prohibit the activity. The Statutes of Killenny, enacted in 1366, noted that "no Englishman who has to the value of one hundred shillings of land or tenements, or of rent by the year, ride otherwise than on a saddle in the English fashion" (Berry 1907: 435). As late as 1399, Irish kings chose not to use the saddle despite the inferences of the earlier Book of Rights (Fig. 4). When Art MacMurrough met the Duke of Gloucester in that year he was described in an account by French historian Jean Creton as follows: "he had a horse without housing or saddle which was so fine and good, that it had cost him, they said, four hundred cows […] in coming down he galloped so hard that in my opinion I never saw hare, deer, sheep or any other animal, I declare to you with certainty, with such speed, as it did" (Webb 1824: 40). A contemporary illustration of this encounter shows that MacMurrough was also without stirrup or spur (Fig. 4).

FIG. 4. – Encounter between Art MacMurrough, King of Leinster, and the Duke of Glocester in 1399 (British Library).

It seems likely that MacMurrough and accompanying soldiers were mounted infantry. Irish mounted infantry on fast, light horses were highly effective in medieval warfare and it may well be that the Irish never utilised cavalry to any great extent. Irish infantry mounted on small horses, "hobbies", were known to be extremely effective at harassing heavily armored knights to such an extent that these horses were being hired by the English King Edward I for his campaigns (Davis 1989: 26). The first reference to the use of these "hobbler" infantry was in 1296 when Edward imported 150 of them to help in his war against the Scots with larger numbers of them being imported into Britain for different campaigns during the succeeding decades (Lydon 1956). While the absence of saddles, stirrups and spurs might imply military disadvantage, the Irish evidence clearly shows that this was not the case. Indeed the light Irish mounted infantry on their relatively small hobbies played an important role in the demise of the use of heavily armored cavalry in medieval warfare (*ibid.*). By the end of the medieval period the Irish had adopted some, but not all, of the innovations that they had eschewed for so long. A contemporary illustration of a battle between the English and Irish in 1581 indicates that while the Irish by then had adopted the saddle and spur, they had yet to adopt the stirrup (McGrath 2005: 61-62).

The arrival of the Anglo-Normans must have greatly increased the numbers and range of horses being imported into Ireland. They were obsessive horse-breeders especially of war horses. The horses brought into Ireland were probably of mixed bloodstock and it may have been the Normans who introduced Arab strains into Ireland for the first time. The French and English aristocracy imported large quantities of horses from Spain many of which would have been seized in wars against the Moors (Hyland 1999: 14). Irish horses too were also in great demand. In the year 1171, it is recorded that 100 horses were sent in a single shipment from Ireland to England (Sweetman 1875: 5). Some horses went further afield. In 1330, Irish horses were being sent to royal studs in France, and during the latter half of the fifteenth century Irish horses were ending up in the studs of the Gonzagas of Mantua in Italy (Hyland 1998: 54).

The accepted belief is that the Anglo-Normans bred larger horses because of the use of heavily armored mounted troops. The zooarcheaological evidence is equivocal. The largest sample of horse material from the early centuries of the Anglo-Norman period is from urban Waterford (Fig. 2). A slight increase is recorded in the largest horses with horses of up to 147.2 cm being recorded compared with a maximum of 144.8 cm in Early Medieval Ireland. The average size of 12-13th century horses are also larger with a mean height of 134.8 cm compared with 130.7 cm in Early Medieval rural Ireland. A more pronounced increase in horse size, however, can be seen in horses of the 14th/15th centuries (Fig. 2). Horses of less than 122 cm have disappeared and horses as large as 153.6 cm are present while the average size is 137.4 cm. This increase in size can probably be attributed to the demand for large horses needed for ploughing. Horse slightly increased in the 16th century with horses of up to 156.7 cm being noted. The smallest was 133.2 cm and the average was 11.1 cm (Fig. 2).

CONCLUSION

This survey of the horse in Ireland shows that in many ways the development of the horse and its exploitation paralleled what was occurring in Britain and western Europe. The domesticated horse appeared at the beginning of the Bronze Age in Europe and major technological changes at the end of the first millennium AD provided a potential for the expansion in use of the horse, especially for traction. There are however, major gaps in our knowledge. We have little knowledge of the use of horse during the Bronze Age in Ireland but the same can be said of Britain. The Irish evidence for the Iron Age is limited and the development in the use of wheeled vehicles at this time is particularly unclear compared with elsewhere. In more recent times it is difficult to understand why the Irish refused to adopt the

technological improvements such as the saddle and stirrup. Ireland took much longer to embrace these developments than elsewhere but much of this may have been due to the unusual nature of warfare in Ireland at this time.

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APPENDIX

TABLE 3. – Frequency of horse bones from Irish archaeological sites where samples size is greater than 300 fragments.

Site	Sample Size	Horse %	Context
Bronze Age (McCormick, in press)			
Newgange	12 102	1,2	Beaker site: habitation layers, pits and gullies
Haughey's Fort	2 990	1,5	Hillfort: ditch fills
Mooghaun	4 183	0,3	Hillfort: ditch fills and habitation layers
Lough Gur	1 168	0,5	House site: pits and habitation layers
Ballyveelish	830	6,8	Enclosure - interior truncated: ditch fills
Iron Age (McCormick, in press)			
Navan Fort	2 642	0,8	Ceremonial centre/regional capital: habitation layers, gullies
Dun Ailinne	4 434	2,4	Ceremonial centre/regional capital: habitation layers, gullies
Tara	395	5,6	Ceremonial centre/regional capital: ditch fills
Early Medieval (McCormick & Murray, in press)			
Armagh: Cathedral Hill	343	0,6	Ecclesiastical site: ditch fills
Clonmacnoise	26 379	0.7-0.8	Ecclesiastical site: habitation layers, gullies
Clogher	3 878	0.1-1.6	Royal centre: Ringfort - enclosed settlement: ditch fills
Deerpark Farms	1 922	1,0	Ringfort - enclosed settlement: habitation layers
Dun Eoghanachta	1 172	3,2	Stone fort: habitation layers
Dublin Fishamble St. House plots	39 426	0,1	Urban - Viking settlement: habitation layers
Dublin Fishamble St.Banks/Wall	1 926	0,2	Urban - Viking settlement: habitation layers
Knowth	7 593	3.0 - 3.7	Royal centre? Ringfort and unenclosed settlement: ditch fills and habitation layers.
Illaunloughan	3 646	0.1 - 1.4	Ecclesiastical: coastal island site: habitation layers
Johnstown	2 956	0.7-1.1	Enclosures: ditch fills
Larrybane	471	1,5	Promontory fort: habitation layers
Lough Faughan	399	1,0	Crannog - artificial island: Habitation and dump layers in former lake
Marshes Upper	1 202	1,3	Ringfort - enclosed settlement: ditch fill
Moynagh	21 635	1,0	Crannog - artificial island: Habitation and dump layers in former lake
Moyne	340	0,3	Ecclesiastical site: ditch fills
Rathgureen	2 066	2,4	Ringfort: habitation layers
Sroove	2 219	5.8-13.3	Crannog - artificial island: Habitation and dump layers in former lake
Medieval			
Cork: Barrack St: 12th/14th century (McCarthy 1993)	1 723	0,9	Urban habitation and dump layers
Cork: Barrack St: 11th/12th (McCarthy 2003)	922	0,3	Urban habitation and dump layers
Cork: Christ Church: Mid 13th century (McCarthy 1997a)	1 730	0,0	Urban habitation layers, backyard dumps, pits and drains
Cork: French's Quay: 12th/14th century (McCarthy 1993)	1 496	0,6	Urban habitation and dump layers
Cork: Gratten St: 13th/14th century (McCarthy 2003)	1 881	0,1	Urban habitation and dump layers
Cork: Hanover St,: Late 12th/13th century (McCarty 2003)	462	0,2	Urban habitation and dump layers
Cork: North Gate: Late 13th/14th century (McCarty 1997b)	1 580	0,1	Urban habitation layers, backyard dumps, pits and drains
Cork: South Main St: 13th/Early 14th century (McCarthy 2003)	367	1,4	Urban habitation and dump layers
Cork: Philip's Lane: 13th/14th century (McCarthy 2003)	670	0,6	Urban habitation and dump layers
Cork: St Peters Ave: 13th/14th century (McCarthy 2003)	1 023	0,1	Urban habitation layers and pits
Cork: Tobin St: 13th Century (McCarthy 2003)	2 369	<0.1	Urban habitation and dump layers
Cork: Tuckey St.: Late 12th/13th century (McCarthy 2003)	1 558	0,1	Urban habitation layers and gullies
Cork: Washington St: 13th century (McCarthy 2003)	1 636	0,0	Urban habitation layers and ditch fills

TABLE 3. – Frequency of horse bones from Irish archaeological sites where samples size is greater than 300 fragments *(suite)*.

Site	Sample Size	Horse %	Context
Clough: 13th century (Jope 1954)	745	0,0	Rural motte and bailey, habitation layers
Dublin: Arran Quay: 14th century (McCormick 2004)	587	0,5	Urban dump deposits in river
Dublin: Patrick St, Site G: 12-14th century (McCormick & Murphy 1997)	597	0,3	Urban dump deposits in town ditch
Dublin: Patrick St, Site B: 13th century (McCormick & Murphy 1997)	533	0,6	Urban riverbank dump deposits
Dublin: Patrick St, Site C: 13th century (McCormick & Murphy 1997)	925	0,6	Urban dump deposits in river
Dublin: Patrick St. Site G: 14th/16th century (McCormick & Murphy 1997)	848	1,0	Urban dump deposits in town moate
Drogheda: Shop Street (McCormick 1984a)	732	0,4	Urban habitation layers
Galway: Courthouse Lane: Area 2 - High Medieval (Murray 2004)	2 086	1,5	Urban habitation layers
Galway: Courthouse Lane: Area 1 - Late Medieval (Murray 2004)	1 150	0,4	Urban habitation layers
Limerick, Charlotte's Quay (McCormick 1984b)	414	0,2	Urban riverbank and redeposited habitation material
Waterford: High St: Late 13th/Early 14th century (McCormick 1997)	1 941	0,1	Urban pit fill
Waterfod: Bakehouse Lane: Mid 12th century (McCormick 1997)	5 275	0,8	Urban dump deposits in town ditch
Waterford: Peters St. Plots 1-4: Early 12th century (McCormick 1997)	9 928	0,7	Urban habitation layers