Old Companions, Noble Steeds:

Why Dogs and Horses were Buried at an Early Medieval Settlement Along the Old Rhine

A Zooarchaeological analysis and literary review

Elfi Buhrs

Front picture:

http://dailypicksandflicks.com/2011/12/05/daily-picdump-326/dog-horse-and-little-girl-sitting-on-th-road-black-and-white-old-photo/

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A Zooarchaeological analysis and literary review

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MSc thesis Archaeology (ARCH 1044WY – 1)

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Palaeoecology

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Contents

1. WHY DOGS AND HORSES WERE BURIED AT OEGSTGEEST

Introduction and research strategy

Introduction

Excavations at the Early Medieval site of Oegstgeest, situated in the Dutch Rhine estuary, have yielded the burials of three dogs and three horses, some of which were located near human inhumation graves and others nearby a house structure. Studying these burials can lead to better insight into the roles dogs and horses fulfilled for the Early Medieval inhabitants. With animal husbandry as an important part of the settlement's subsistence strategy, the majority of the animal remains found at Oegstgeest consists of consumption waste of the 'economically important' species cattle, sheep/goat and pig. Dogs and horses on the other hand, are underrepresented in the bulk of consumption waste and consequently, in previous zooarchaeological studies.

The main goal of this study is to identify why dogs and horses were buried at the settlement of Oegstgeest and how their burials relate to the roles these animals fulfilled in the lives of the humans they lived among. The zooarchaeological data derived from the their remains will be combined with a critical analysis of previous interpretations of Early Medieval dog and horse burials.

Thesis structure

Chapter 2 comprises a descriptive introduction of the settlement of Oegstgeest. This will be followed by an overview of the methodology used for the zooarchaeological analysis and a detailed report of the data results (chapter 3). In order to place the burials in a local, archaeological contexts, this chapter includes a summary of the archaeological context of the dog and horse burials (chapter 3).

Chapter 4 discusses several indications for the every-day use and treatment of dogs and horses, as well as the sometimes ambiguous nature of the zooarchaeological data. This chapter will also contain a short elaboration about the pitfalls of incorporating of written sources to fill in the archaeological gaps.

To explore what cultural influence might have been involved in the burial of dogs and horses at Oegstgeest, chapter 5 will discuss Early Medieval burial patterns observed in northwestern Europe, with a special emphasis on previously established correlations between distribution patterns of dog and horse burials and different preferences among different Germanic tribes.

The final section of this chapter provides an overview of Early Medieval dog and horse burials that have been found in the Netherlands. This will be followed by an

analysis of the ritual aspects of dog and horse burials (chapter 6), with a main focus on identifying sacrificial killing.

After both the theoretical framework and zooarchaeological data have been established, the interpretations will be discussed (chapter 7) and presented in the final conclusion of this thesis (chapter 8).

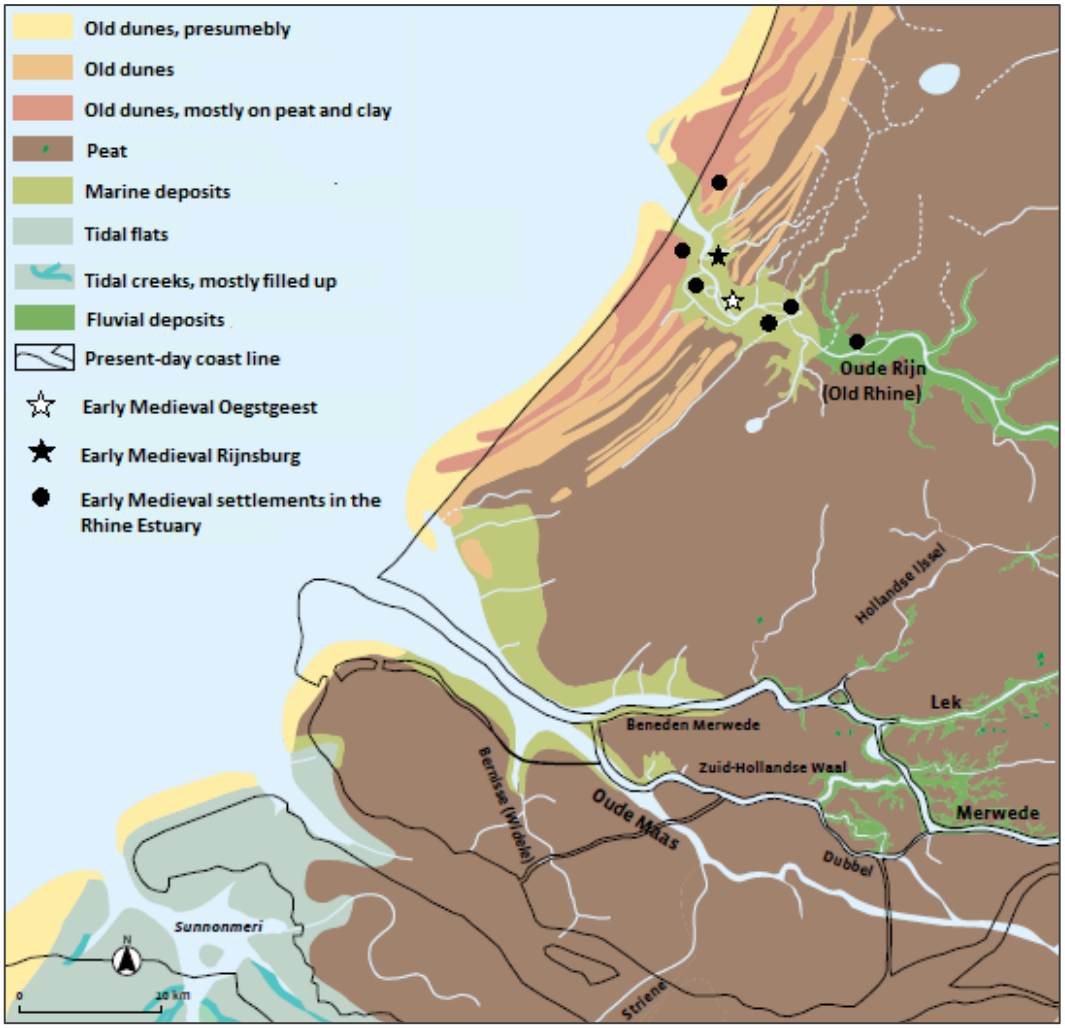

Figure 1: Paleogeographic map of the central and southern coastal area of The Netherlands around *c.* 750 AD (after Dijkstra 2011)

2. THE SETTLEMENT OF OEGSTGEEST

Settlement structure and regional position

Early Medieval Oegstgeest belonged to a cluster of settlements that were situated along the Old Rhine, a meandering river in the central part of the Dutch coastal region. Because the land along this part of the coast had silted up higher than the North Sea's storm tide level, the influence of sea on the landscape in this region than was less destructive than was the case in, for example, the southern coastal area of the Netherlands. Nevertheless, also in the Rhine estuary water was ever present and habitation was restricted to higher locations in the landscape (Bazelmans *et al.* 2004, 3-6). Accordingly, the settlement of Oegstgeest was situated on elevated sand barriers, as well as fluvial deposits of sand and clay. Adjacent to the settlement ran a thirty-meter wide tributary of the Old Rhine (Brijker 2011,19; Hemminga *et* al. 2008, 11).

Both exact dating method and typological analysis of the archaeological material found at the site of Oegstgeest, have pointed towards a brief occupation period between the mid-sixth to late seventh century. The abandonment of the settlement could possibly be correlated with a drying up of the adjacent river branch or a shift in its course (Dijkstra 2011, 136). So far, seven house plans have been excavated of which most have been identified as Early Medieval house types (Hemminga and Hamburg 2006, 22; Jezeer 2011, 25-7). One house structure and an outbuilding date from the tenth to eleventh century and probably represent a younger occupation phase (Dijkstra 2011b, 57).

The main mode of subsistence at the Early Medieval settlement was probably agrarian with a focus on animal husbandry. There are also signs that fishing took place as well as the local production of goods (Hemminga *et al.* 2008; Jezeer 2011). The remains of a solid wooden quay found along the river have provided indirect evidence that the Old Rhine played an important role in the economy of the settlement. Non-local goods like coins from England and the northern coastal area as well as wheel thrown pottery from the German Rhineland, indicate either direct or indirect intra-regional contacts and, by extension a level of participation in Early Medieval trade networks (Jezeer 2011, 118).

Both in the Roman period and the Early Middle Ages, the Old Rhine was of regional importance, as it was not only a part of the Roman *limes*, but also a main traffic artery (Dijkstra 2011). After the Roman forces had retreated from the Rhine estuary under the influence of the Frankish incursion in the third century, an archaeologically visible decrease in population occurred, with some continuation throughout the Migration Period (De Koning 2003, 60; Dijkstra 2011). During the Merovingian period (*c.* 5^{th} – 8^{th} AD),

the region became increasingly populated again and the Old Rhine maintained its function an important traffic route (Dijkstra 2011, 11; Van Es and Verwers 2010).

Although the archaeological record does not provide unambiguous information about the geographical origins of the Early Medieval inhabitants Oegstgeest, the find assemblage from both Oegstgeest and other sites in the Rhine estuary does indicate a continuum of cultural influences from different regions (Dijkstra 2011).

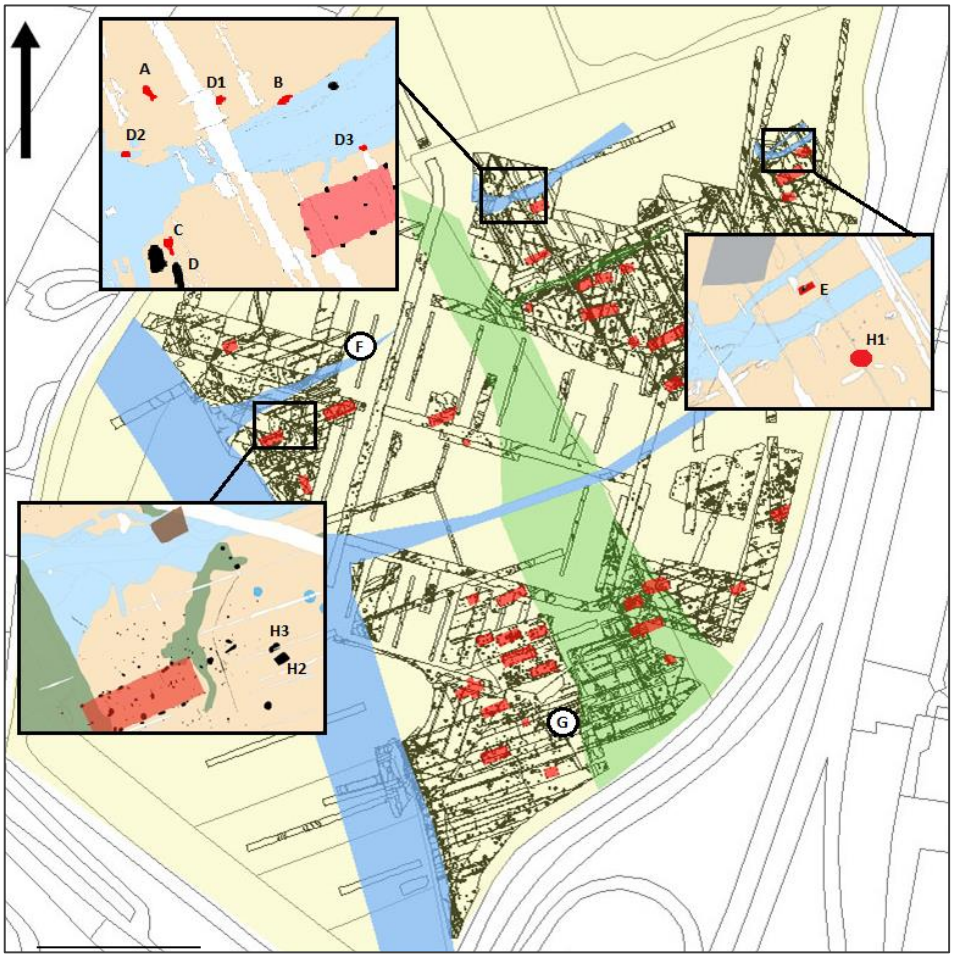

Figure 2: Excavation plan of Oestgeest Nieuw Rhijngeest – Zuid showing the locations of the horses (H1-3) and dogs (D1-3). Also: A and B: human inhumation graves (f), C: 'cross shaped' long bone deposit, D: long pit with human bone fragments in need of further analysis, E: human inhumation grave (m), F: human inhumation grave (child), , G: incomplete human skeleton (after an map drawn by Archol 2012).

3. THE DOG AND HORSE BURIALS FROM OEGSTGEEST

Zooarchaeological results and archaeological context

The zooarchaeological analysis of the dog and horse burials presented in this chapter, contains valuable information about circumstances under which these animals lived and died. In order to understand the broader archaeological context of the burials, the data results will be followed by an overview of human burial deposits found in the vicinity of the animal graves and the animal species represented in the bulk of settlement waste.

Figure 3: Dog 1, *in situ*. (photo by Archol 2005)

3.1. Material and methods

3.1.1. Selection and dating of the material

The zooarchaeological material selected for this study, comprises the remains of the dogs and horses that were buried fully, or almost fully articulated, at the Early Medieval site of Oegstgeest 'Nieuw Rhijngeest – Zuid'[1] and that were excavated during previous excavation campaigns. Dog and horse remains from other contexts, such as refuse pits and ditches, have not been incorporated in the analysis, but will shortly be discussed in the final section of this chapter. The dog burials were excavated during the campaigns of 2005, 2011 and 2012 and shall be referred to as, respectively, Dog 1, Dog 2 and Dog 3.

[1] name of the development plan of the site. In this study, only the municipal's name 'Oegstgeest' will be used.

The horses shall be referred to in the same fashion. Horse 1 was excavated in 2010 and both Horse 2 and Horse 3 in 2011.

Because the dog and horse graves are associated with a settlement that was inhabited during a relatively brief time period, their dates can be confined to the mid-sixth to late seventh century. Based on the seventh century grave gifts found in a grave adjacent to the the three dogs, it is possible that the dog burials have a similar age. This might also be the case for two of the horse burials, that were found in front of a house plan typical for the seventh century (personal communication Jasper de Bruin, Archol, 2013). Although it was initially thought that Dog 1 was late medieval of age because its grave also contained a fifteenth century pottery fragment (Hemminga *et al*. 2008, 27), the presence of this fragment is likely the result of contamination by a younger disturbance that overcut the grave.

Some of the material that initially had been documented as coming from the grave contexts has not been included in this study. For example, Horse 2 was found together with an insidious premolar of a sheep. Because the horse grave was disturbed by a drainage pipe (see fig. 16) and no other fragments of sheep have been found in this context, it will be regarded as contamination. From the grave of Dog 2 parts of a cow's cranium were excavated, but the broken-off lower limbs depicted in the field photograph of the dog (fig. 6) indicate that also in this case post depositional disturbance and contamination had taken place. Moreover, the cranium-fragments from the cow showed a different type of discoloration than the rest of the assemblage, and the excavating archaeologists did not notice any large mammal skull fragments in the grave (personal communication Drs. Epko.J. Bult and students, University of Leiden, 2013). Therefore, these remains will not be incorporated in the zooarchaeological analysis.

3.1.2. State of the material

The state of the skeletal remains at the time they were excavated varied among the six specimens, but most of the material was considerably fragmented by the time it was being analysed for this study. The degree of fragmentation can mostly, if not exclusively, be related to in situ preservation conditions, mechanical disturbances and post excavation treatment. There are no signs of pre-depositional causes for fragmentation, such as butchery activities.

The skeletal remains of Horse 1 were considerably disturbed during the removal of the overload by a power shovel. Most likely, this is also the cause for the absence of the horses skull (see fig. 15). Although no cranial parts have been identified during the

analysis, the field report mentions the presence of possible skull fragments above the upper vertebra. A drainage pipe overcutting the grave of Horse 2 (fig. 16) caused some bone elements to be moved out of anatomical context and the destruction of a large part of the skull. Nevertheless, the level of preservation was better than that of Horse 1. Horse 3 (fig. 14) was osteologically best preserved and not disturbed by an overcutting feature.

The remains of Dog 1 (fig. 3) were badly preserved and had become highly fragmented during the excavation process. Dog 2 was in a much better state but, as can be seen in figure 6, several parts of the leg bones were placed out of context, possibly during the excavation process, and could not be identified during the analysis. The remains of Dog 3 (fig. 7) were least fragmented, which is probably due to the fact that they were not washed in the field put in seal bags together with parts of the surrounding soil matrix. The bone material from this specimen was cleaned and laid to dry by the author directly followed by the zooarchaeological analysis.

3.1.3. Methodology

The bone assemblage was analysed at the zooarchaeological department of the Faculty of Archaeology at the University of Leiden, with the aid of the departments reference collection. Long bone and dental measurements were taken according to Von den Driesch (1979) and for the documentation of the data a standard laboratory protocol was followed (Lauwerier 1997).

To estimate the age of the horses, the molar-wear stages have been measured according to Levine (1982) and the degree of epiphyseal fusion in both the dogs and the horses has been compared to the fusion-stages according to Silver (1969). For dogs it is more difficult to establish an age based on dental wear. In this study the one method available has been used (Horard-Herbin 2000) in which the age is estimated based on the wear stage of the lower first molar. Because Horard-Herbins attempts to correlate the wear stages with exact ages were unsuccessful, only three broad age groups were formulated in this method, namely: ‘young’ (24-36 months), ‘intermediate’ (24-48 months) and two categories of ‘old’ (48-71 months and >71 months).

The withers heights of the horses have been estimated based on the greatest lengths of the limb bones and the correspondence of these measurements with the height categories developed by Vitt (1952). The withers heights of the dogs have been calculated according to Harcourt’s method (1974), in which also the greatest lengths of the long bones are used.

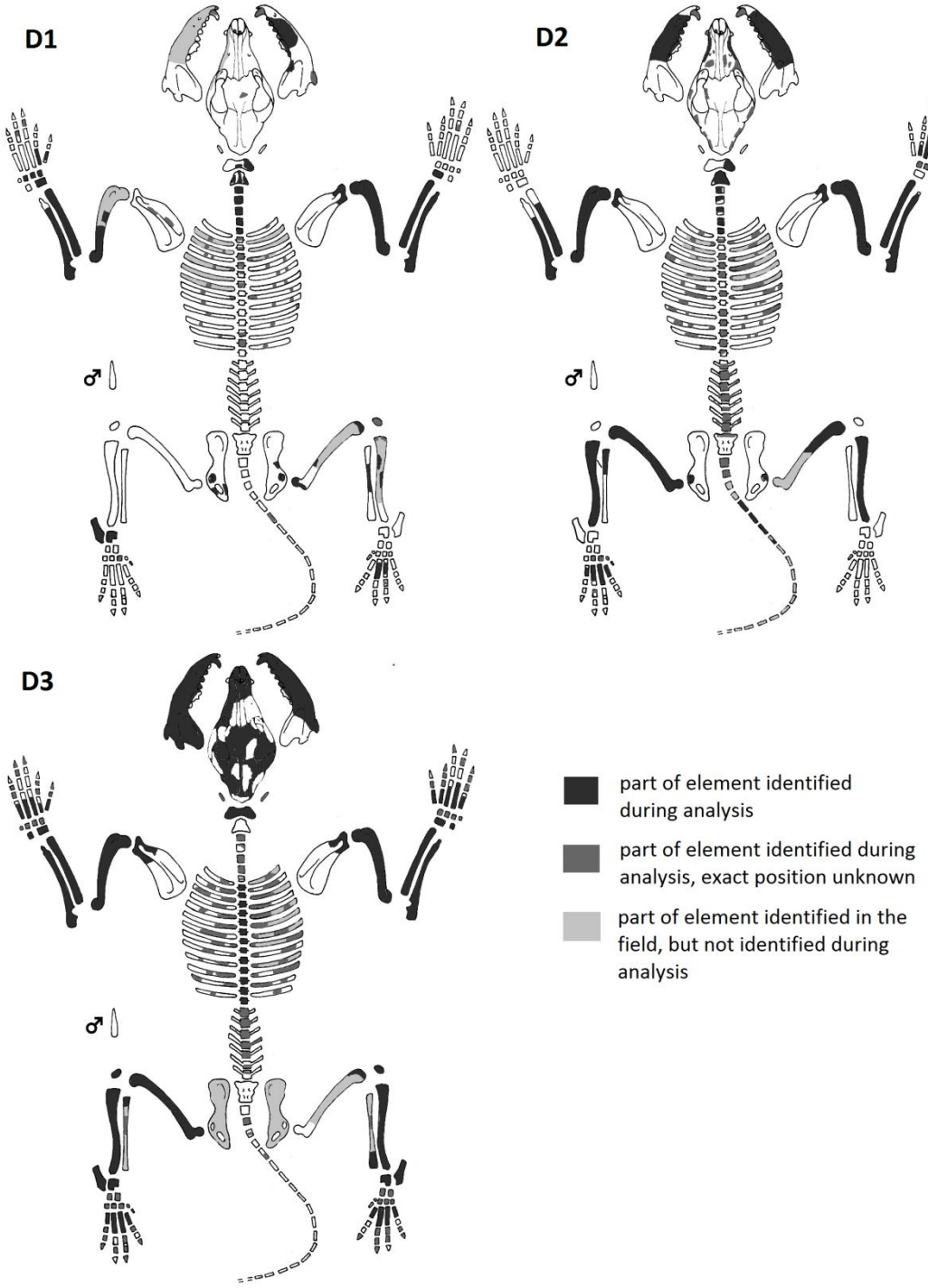

Figure 4: Representation of skeletal remains for Dog 1 (D1), Dog 2 (D2) and Dog 3 (D3).

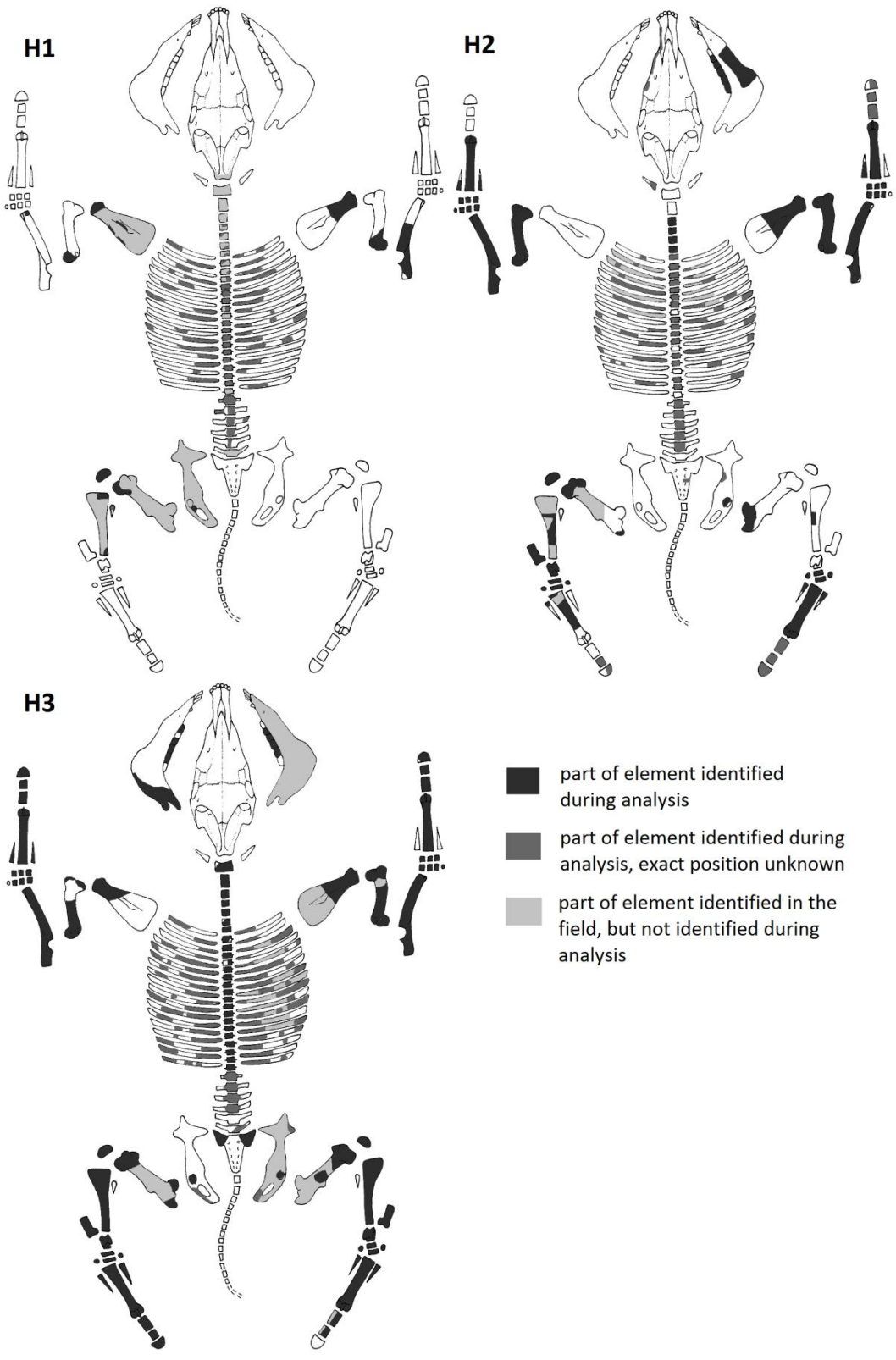

Figure 5: Representation of skeletal remains for Horse 1 (H2), Horse 2 (H2) and Horse 3 (H3).

3.2. Results

3.2.1. Burial orientation and anatomical position

All six graves contained one individual that was buried on its side. Dog 1 was buried on its right side in an east-west direction and with its head in the east. The legs were folded in an angle of roughly 45 degrees. Dogs 2 and 3 were both buried on their left side but in different directions: the former was placed west-east (head west) and the latter east-west (head east). Figure 6 shows the legs of Dog 2 were found in a 'curled up' position. Dog 3 was found with its hind legs stretched along its torso and its front legs slightly folded.

Horse 1 was buried on its right side and in a south-north direction, with its head in the south. Its hind legs were positioned stretched along the torso and its front legs were slightly folded. Horses 2 and 3 were buried facing each other in an northeast-southwest direction with their head towards the northeast. The hind legs of Horse 2 were only slightly folded and the front legs were found stretched along its torso. Also Horse 3 was found with the hind legs slightly folded, but the front legs of this animal were tightly curled up.

3.2.2. Representation of skeletal parts

While it appears that the animals were buried anatomically intact, and the absence of elements can be related to post depositional disturbances, the data needs to be reviewed in detail before extrapolating from the representation of body parts.

As a result of post excavation fragmentation, the number of identified skeletal remains differs from what has been recorded during the excavation campaigns. Therefore, the schematic drawings of the representation of skeletal remains (figs. 4 & 5), show not only the remains that have been identified in the laboratory, but also those that have been recorded in the field. In the tables presented in appendices (I & II) the total number of fragments and the minimum number of elements recorded in the laboratory are given. For the ribs, only the elements containing the articular part were considered as one element. A vertebrae was regarded an element when it includes the *corpus* and comprises more than a tenth of the original element.

Most body parts of the dogs seem to have been represented in the graves, including the craniums and parts of the tailbones. The absence of the left hind limb bones

Figure 6: Dog 2, *in situ* (photo by Archol 2011)

Figure 7: Dog 3, *in situ* (photo by Archol 2012).

and lumbar vertebrae in Dog 1 can probably be explained by post depositional disturbance or, as the dog was positioned on its right side, by mechanical removal of the upper soil layers during the excavation. That these parts were not removed prior to burial is indicated by the presence of a tail bone, the left calcaneus and left talus bone. Figure 4 shows that in the grave of Dog 2, all the limbs were present except for the bones from two of the feet. Judging from the field photograph (fig. 6), which shows that the dogs left front paw elevated above the right, these bones have probably been misplaced during removal of the overload. Nearly all elements of Dog 3 were recorded during the zooarchaeological analysis. However, also here some of the skeletal parts could not be identified due to post excavation disturbance (see fig. 4).

Figure 5 shows that the remains of Horse 1 were fragmented to such a degree that only one completely intact element was identified during the determination process, namely the left patella. In the second horse grave, almost all body parts of horse were represented. The maxilla and upper left phalanges were neither identified in the field nor during the zooarchaeological analysis. The mandible and pelvic bone were also not identified during the analysis, but were recorded in the field (see fig. 5). The horse from the third grave was represented by the largest number of elements and from the post-cranial body parts, only the fibula was not represented in the assemblage. Because in the mouth of Horse 3 a bridle bit was still present (see fig. 14), the entire skull of this animal was excavated *en block* for further research. At the time of writing, this skull was still being analysed and could therefore not be incorporated in the zooarchaeological study of this thesis.

3.2.3. Age

The long bones from all three dogs were completely fused when the animals died and the first molars were all worn to a degree that places the dogs within the category ‘old’ as defined by Horard-Herbin (2000). The wear surface of the molars was advanced to a degree that it joined up the protoconid, paraconid and metaconid (see figs. 1 – 3). Although today, this high level of dental wear is rarely seen in home kept domestic dogs, it fits the pattern of dental attrition in European dogs from a variety of ancient and historic time periods (Crockford 2000, 299).

There are however some issues that need to be mentioned when assigning the dogs to an age category based on dental wear. First of all, there is a considerable under representation of old dogs in Horard-Herbins molar-wear analysis and secondly, molar wear beyond the range of complete epiphyseal fusion were not correlated with an age

during her study. Finally, diet patterns could have accelerated the process of dental attrition. In a study of dental wear among dog populations from prehistoric Polynesia it appeared that there was a greater prevalence of advanced dental attrition in dogs that had largely followed a marine diet with high proportions of sand and grit. Dogs that had access to a substantial quantity and range of meat foods showed less tooth ware (Clark 1997). Because the level of molar wear roughly corresponds with the final wear stage illustrated by Horard-Herbin, it can for now be concluded that the dogs were at least older than 4 years of age and likely older than 6. In order to establish a more solid basis for an age estimate, further insight is needed into the average pace of dental wear among dogs at Oegstgeest and surrounding sites.

Based on the fusion stages of the humerus and tibia from Horse 1 (see appendices), this animal was quite young when it died. Both the proximal and distal end of the tibia was fused, giving an age indication older 3,5. However, the proximal end of the right humerus was still fusing, a process that finishes between the age of 3 to 3,5 years. Therefore the horse's age can be estimated within this range.

From the second horse, not only the fusion stages could be analysed, but also the crown height of the lower first molar and third premolar (see appendix, 4). However, whereas the dental attrition places the horses age roughly within the range of 4,5 to 6,5 years, the 'fusion age' is younger. Based on the fusion stages of the humerus, ulna, radius and femur, it appears that the animal died at an age of approximately 3,5 years. These differences could possibly be explained by a delayed ossification of the epiphyses. It is known that castration can delay the process of epiphyseal fusion in mammals (Davis 1987, 44) and studies on sheep have shown early neutering delays the fusion process with approximately a year (Davis 2000, 386). However, it seems likely that like the molars of the dogs, also the molars of the horses would have suffered accelerated attrition due to a high level of grains in the horse's diet.

Horse 3 was older than 3,5 years when it died. The epiphyses that are the last to ossify around this age, namely the distal radius and the proximal ulna, were completely fused. Although this matches the age derived from the dental-wear stages, there were some irregularities within the individual measurements[2] (see appendix, 4). When taking the average age derived from the upper and lower molars, it can be estimated that the horse was approximately 6,5 to 7 years old, with an error range of roughly 2 years on either side.

[2] Due to these irregularities, measurements were re-taken to rule out methodological errors.

Figure 8: Dog 1, close up of right mandible.

Figure 9: Dog 2, close up of left mandible

Figure 10: Dog 3, close up of right jaw.

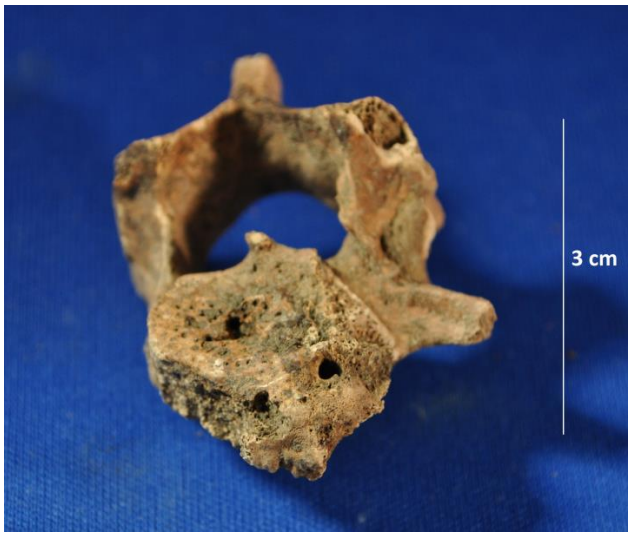

Figure 11: Dog 1, thoracic vertebra with signs of arthritis.

Figure 12: Dog 3, thoracic vertebra with signs of arthritis.

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Figure 13: Dog 3, left and right radius with healed fracture on distal end (left).

3.2.4. Shoulder heights

Like most buried dogs found in Early Medieval continental Europe, the dogs from Oegstgeest had shoulder heights that fall within the range of modern day 'large breeds'. Based on the greatest length of the humerus, radius and ulna Dog 1 was the largest specimen with a shoulder's height ranging between roughly 65 and 67 cm (table 1) [3]. The second dog was somewhat smaller based on the lengths of the humerus, radius, femur and tibia, and Dog 3 falls precisely in the middle according to the greatest length of the humerus, radius, ulna, femur and tibia (table 1). The equal proportions of the humerus and femur to the radius and tibia indicate that the dogs had the build of a 'normal' type, like a modern shepherd dog. In fast running greyhound dogs, the radius and tibia are usually longer than the humerus and femur (Prummel 1992, 175).

Because of the high level of fragmentation, the withers height of the Horse 1 could not be established. Measurements taken from Horse 2 yielded two different height categories: the third metacarpal and the radius fell within the upper range of 129 – 136 cm and the hind limbs fell in the mid-range range 136 – 144 cm (see appendix 3). Because the horse was not yet fully grown when it died, its adult height is estimated within the latter category. The shoulder height of the third horse also falls within the range of 1.36 – 1.44. These heights correspond with those measured from most Early Medieval horse burials in continental Europe and Anglo Saxon England (Cross 2011; Fern 2005; Prummel 1992).

Table 1: Estimated withers height

Individual	Estimated withers height (cm)*
Horse 2	128-136 / 136-144
Horse 3	136-144
Dog 1	64.6-66.6
Dog 2	57.6-60.9
Dog 3	62.6-65

*Dogs according to Harcourt (1974), horses according to Vitt (1952). See the appendices (12-3) for measurements

[3] See appendix 3 for the individual measurements.

3.2.5. Pathologies and abnormalities

The horse remains did not show any signs of pathologies, but the relative high level of dental ware for their ages estimated on the degree of epiphyseal fusion, could be related to a high level of grid in the animals' diet (Baker and Brothwell 1980, 47).

In contrast to the horses, all three dog skeletons contained signs of pathology. The most occurring phenomenon was the presence of bony spurs on the margins of the vertebral bodies at the intervertebral spaces. This form of osteophytosis is a symptom of spinal arthritis, which can be caused by multiple factors, including trauma, old age and inflammation of the intervertebral disks (Belanger and MacKinnon 2006, 42; Warren 2000, 110) In a study among extant dog breeds, Ljunggren *et al.* (1967) have shown that this condition is relatively common in older dogs and mostly older females (Ljunggren *et al.* 1967). Dog 1 showed osteophytosis on three vertebrae: the axis, a cervical vertebra and a thoracic vertebra of which the latter, depicted in figure 11, also showed small pits indicative of arthritis (Groot 2010, 93) on the articular surface of the vertebral body. In Dog 2 osteophytosis occurred on three lumbar vertebrae and Dog 3 showed signs of arthritis in nine thoracic, one lumbar and two unknown affected vertebrae (see fig 12).

Apart from deformation in the spinal region, Dog 2 suffered pathologies on the limb bones and in the jaw. The left tibia was fused with the larger part of the fibula, a deviation that was not present in the right limb and could represent an old injury. The smooth and regular surface of the bone indicated that the two elements grew together at an early stage of the dog's life. Another abnormality is the conical shape of the left lower p4 and bone recession of the associated alveolus (fig. 9). Although it is unclear what caused the conical shape of the tooth, the regressed bone indicates a form of oral pathology. For example, calculus, plaque or poor circulation could have resulted in the infection of soft tissue and the finally in the regression of the alveolar bone surrounding the teeth (Baker and Brothwell 1980, 151). In living animals, this ailment is accompanied by pain, problems with chewing and eventually weight loss (Baker and Brothwell 1980, 153-4).

Dog 3 suffered from a fracture in the left radius (fig. 14) that was properly healed by the time the animal died. Irregular callus had developed around distal part of the affected radius and the element seems to have remodelled the bone tissue in proper alignment or just slightly out of angle. If no human made splint was used, this type of healing could not occur after a severe compound fracture with part of the broken bone making contact with the external surface of the body (Baker and Brothwell 1980,85). However, if it concerned a simple, incomplete facture, healing without intervention could have been possible (see 4.1). The occurrence of bone outgrowth observed at the distal end

of the right radius (fig 14), could have been the result of overburdening when the left foreleg was temporarily immobilized.

3.2.6. Horse gear

The graves of Horse 2 and Horse 3 contained the metal remains of bridles, and possible other horse gear. On the mandible of Horse 2 a bronze nail was situated and in the cranial region an unrecognizable lump of oxidized iron was found. Figure 14 shows that the third horse was found still wearing it's bridle. On the rib cage a second lump of metal was found, which could represent the remains of saddle equipment or a stirrup. Although the results of the analysis preformed on the bridle from Horse 3 were not yet available during the time this thesis was written, preliminary findings at least indicate that it indeed concerns an Early Medieval bridle type (personal communication Jasper de Bruin, Archol 2013)

Figure 14: The articulated remains of Horse 2 *in situ*, showing the oxidized remains of a bridle on the madible (photo by Archol 2011).

Figure 15: Horse 1, *in situ* (photo by Archol 2010)

Figure 16: Horse 2, *in situ* (photo by Archol 2011)

3.3. Archaeological context

3.3.1. Location of the animal graves

All animal graves have been found in the northern part of the settlement and some directly along water streams (see fig. 2). Although on the excavation plan presented in figure 2 it appears to concern separate gullies, it is likely that they represent one and the same river branch that flowed from the estuary adjacent to the site. The three dogs were buried directly along the water and in close proximity of each other. Dogs 1 and 2 were found on the northern side of the stream and Dog 3 on the southern side, near a rectangular wooden structure. In the same gully the dogs were buried along, out of context remains of another dog were recently found that also probably represent a dog grave. Due to the time frame of this thesis, they have not been incorporated in the analysis. Horse 1 was buried in the north east corner of the excavated area and also directly along the water stream. Horse 2 and Horse 3 were buried next to each other and in front of a house structure (see fig. 2). Their location is somewhat further away from the water stream compared to the other animal graves and in closer proximity of the main river and habitation area of the settlement.

3.3.2. Human remains

Excavations at Oegstgeest have also yielded several human inhumation graves and deposits of disarticulated human remains (fig. 2). Not far away from Horse 2 and Horse 3, on the northern edge of the water stream, the remains of a young child have been found that was buried on its back. According to strontium isotope research that was conducted on the teeth, the child was of non-local origin (Van der Jagt *et al.* 2012, 141). Near Dog 1 and Dog 2, two women were been buried that were respectively 18 to 25 and 40 to 50 years old when they died. The graves also contained jewellery and a layer organic material that could represent a 'bed' of straw or flowers. Another grave has been found nearby Horse 1, containing an adult man who was also buried on his back but found without any grave goods. The skull of this man was not present at the time of excavation, which is possibly caused by post-depositional disturbances. The only articulated human remains found in the southern part of the settlement concerns the bottom half of a skeleton from an adult male. The upper half of the skeleton was destroyed by post-depositional disturbances. The man was probably not given a 'normal' burial, as he was

buried on his abdomen in a large pit that also contained settlement (Hemminga and Hamburg 2006, 34-35; Hoogland 2006, 110-111).

Also disarticulated human remains have been found near the animal graves. The most enigmatic deposit is an assemblage of human long bones that were placed in the shape of a five armed cross (fig. 17). An adjacent pit contained both turf and human remains including skull fragments. As the contents of this feature and the long bone deposit have as of yet not been thoroughly analysed and only recorded in the field, more details about these finds cannot be given.

Figure 17: The 'unusual' feature of human long bones found near the three dog graves (photo by Archol, also see fig. 2)

3.3.3. Zooarchaeological settlement waste

Excavations at Oegstgeest have yielded a vast amount of disarticulated and fragmented animals remains that also include the remains of dogs and horse. As of yet, roughly eight and a half thousand bone elements have been zooarchaeologically analysed[4] of which most have been found in ditches, wells and refuge pits that also contained other types of domestic refuge (Buhrs 2012; Cavallo 2006, 2008; Van der Jagt 2011; Nagels 2012). While it should be kept in mind that some of these remains might include bone fragments from disturbed animal burials, they have not been identified as such during zooarchaeological analyses. Accordingly, in this section the general term 'settlement waste' is used.

[4] Not all animal remains excavated from Oegstgeest have been analysed yet.

Domesticated mammals

More than a fifth of the assemblage comprises cattle (*Bos taurus*), followed by pig (*Sus domesticus*) and sheep/goat[5] (*Ovis ares* / *Carpa hircus*). With 4 per cent of the total zooarchaeological assemblage, a relative large amount of cat remains have been found as settlement waste compared to adjacent sites, including nearly complete skeletons. It is possible that they represent a feral population or that they were killed for their skins (Buhrs 2012) Horse and dog comprise respectively 1,1 per cent and 0,1 per cent of the total amount of zooarchaeological settlement waste, which is in accordance with most adjacent sites (Cavallo 2008, 373; Dijkstra 2011, 163; Sablerolles 1990, 6). Cut and chop marks have been found on the remains of cattle, sheep/goat, pig and horse, but not on dog and cat bones.

A total of 93 elements from horse have been found as settlement waste, which, as far as could be established, all came from adult animals (Cavallo 2006, 79; Cavallo 2008, 65; Van der Jagt 2011, 103). A small amount of elements contained human modification marks. Two, not further specified bone fragments, showed indications of osteoarthritis on the articulation surfaces (Cavallo 2008, 65-6). As of yet there is no straight forward answer for the small number of horses represented among the zooarchaeological assemblage. One explanation could be that they were not bred at the settlement but acquired through exchange (Maltby 1985, 61-2). Another explanations is that horse carcasses were generally disposed of in ways not easily visible in the archaeological record (Cross 2011, 195). At least from the tenth century onwards, there is evidence that horses were routinely processed, or 'knackered' for hides, meat and other by-products (see table 1) (Cross 2011, 196). While this included using horse remains for dog food (Thomas and Locock 2000), at Oegstgeest horse remains with canine gnawing marks are rare (Van der Jagt 2011, 193)

Only seven elements of dog have been identified (Nagels 2012, 32). Two of them, a metacarpus and a metatarsus are thought to belong the same 'young and small dog' (Cavallo 2008, 79). Two other elements belonged to individuals older than respectively eight months and two years (Van der Jagt 2011, 103-4). That several dogs freely roamed around the settlement is indicated by the presence of canine gnaw marks found on the remains of nearly all domestic mammal species that were present at the settlement, except for cat (Van der Jagt 2011, 104). While from a range of time periods and geographical areas dogs also appear in the archaeological record as a food or skin source (e.g. Bartosiewicz 1990; Harcourt 1974; Olsen 2000, 81; Hriscu *et al.* 2000; Thomas 2005; Roberts *et al.* 2008; Russel 2012, 288-91) in most parts of northwestern

[5] Sheep and goat are difficult to distinguish from each-other in the archaeological record. Therefore they are nearly always assigned to the same category, 'sheep/goat' in zooarchaeological analyses

Europe, including Oegstgeest, remains from butchered or skinned dogs are virtually absent from the archaeological record. They do occur however in the archaeological record of Viking Age Scandinavia (e.g. Roberts *et al.* 2008; Teegen 2005).

Apart from domesticated mammals, also wild species are represented in the zoological assemblage from Oegstgeest, be it with only small amount of elements. These include antlers of red dear (*Cervus elaphus*) that were shed or sawed off. The latter category indicates that the inhabitants of Oegstgeest not only seasonally collected antlers but also hunted deer. They could have used antler for the production of antler combs that have been found at the site (Nagels 2012, 31). Also the remains of polecat (*Putorius putorius*) and one element of fox (*Vulpes vulpes*) have been found. It is unclear, however, whether these animals died a natural death. They could have been killed for their fur or to keep them away from the livestock at the settlement (Nagels 2012, 31). Two element of small rodent have been identified (Nagels 2012, 32)

So far, 110 elements of birds (1,1%) have been zooarchaeologically analysed. Most of the avian assemblage comprised species that partly could have been kept in the settlement as poultry, such as goose (*Anser sp. / Branta sp.*), swan (*Cygnus olor / olor domesticus*), fowl (*Gallus gallus domesticus*) and duck (*Anas platyrhynchos/domesticus*) (Nagels 2012, 32-3). Species that were not kept at the settlement, could also easily have been caught in the immediate environment (Van der Jagt 2011, 105). Also fish is represented in the settlement waste from Oegstgeest, comprising both salt and sweet water taxa of which most could have been caught in the vicinity of the settlement (Nagels 2012, 31).

Table 2: Examples of animal exploitation, horse in particular (After Cross 2011, 196).

Element	Uses
Hide	leather, rawhide – clothing, storage, etc.
Flesh	food – human or animal (dog)
Sinew	cordage: thread, string, laces, etc.
Teeth	amulets/jewellery, gaming pieces
Bone	tools, amulets/jewellery , gaming pieces, ice-skate blades
Hoof	small items, rendering for glue
Hair	brushes , whisks, decorative plumes (helmets, standards, other), stuffing (furniture) , instrument strings/bows

4. ZOOARCHAEOLOGICAL INDICATIOND FOR EVERY-DAY PURPOSE

How they were used and treated

The fact that most of the dogs and horses presented in the previous chapter were buried nearby humans, could reflect the roles they fulfilled in the lives of the Early Medieval inhabitants of Oegstgeest. In order to extrapolate the nature of these roles from the zooarchaeological data, possible evidence for the 'functional' use and treatment of dogs and horses will be explored in this chapter.

Figure 18: A medieval hunting scene showing the use of horses and dogs during the hunting of a stag, published in the thirteenth century codex *Reiner Musterbuch*. (http://www.larsdatter.com)

4.1. A comment on using literary 'evidence'

Archaeological studies about the roles dogs and horses fulfilled in roman and Early Medieval societies, often incorporate a handful of ancient literary sources that are deemed relevant to the research topic the author is concerned with (e.g. Belanger and MacKinnnon 2006; Bertašius 2012; Fern 2012; Lauwerier and Robeerst 2001; O'Connor 1992; Olsen 2000; Prummel 2001). The ancient Greek geographer Strabo, for example, has been cited because he wrote that dogs were specifically bred for hunting by the Britons (O'Connor 1992, 110, 109). From the Roman senator Tacitus we learn that in his time horse meat was only eaten in cases of emergency by military troops (Lauwerier and Robeerst 2001, 282), and the Early Medieval writer Beda mentioned the value of the

‘equus optimus’ (excellent horse), donated to Bishop Aiden by King Oswine (*c.* 672-670), that was regally saddled and selected from a royal stud (Fern 2012, 165).

Specifically for the Early Medieval coastal area, the *Lex Frisionum*, or ‘Law of the Frisians’ has been mentioned as a source the use of dog and horses (e.g. Dijkstra 2011; Prummel 2001). Although the Early Medieval inhabitants of this region themselves have not left us any written accounts, the *Lex* present us with a collection of legal provisions that concerned the ‘Frisians’, which includes the fines for killing horses and specific types of dogs, namely a goshawk-dog, a small bracke (beagle-like), a wolf killing dock, a dog that defleshing dog, a watchdog of life-stock and “the dog that does nothing but only lies around in the yard and the village” (translated by Prummel 2001, 79, following Eckhardt and Eckhardt 1982, 46-7). The *Lex Frisionum* was presumably commissioned by the Frankish ruler Charlemagne for the inhabitants of ‘Frisia’ and contains laws that already could have prevailed in this region before the ninth century (Prummel 2001, 197).

The information presented here is just a fraction of the totality written accounts on the virtues and use of dogs and horses in ancient times. Not to mention the numerous late medieval paintings and drawings in which horses and dogs work together in the hunt, such as the one depicted in figure 18. Notwithstanding the historical value of these works, the problem presented here is that fractions of historical data are often used in ‘matter-of-fact’ fashion to enrich the archaeological evidence, without critically reviewing the sources. Besides the problem that ancient sources often concern privileged men who lived far away and in a different time from the object of archaeological interest, there is also the issue of the level of objectivity of ancient authors and the authenticity of the works they supposedly wrote. Unfortunately, both historians and archaeologists are often dealing with translated copies that were published long after the original sources were written. Most original works have been lost for centuries, including the *Lex Frisionum.*

Therefore, when reading that the Roman Tacitus encountered the practice of dog breeding among the Britons (in O’Connor 1992, 110), the question rises whose observations are presented to us. Are we citing the accounts of an ancient author or the colourful ‘adjustments’ of a translator from the late medieval / early modern period? Or maybe the ancient author himself had another goal than objectively reporting his observations. In her zealous study on the origin of toy-dogs, Blunt-Lytton (1911) could answer at least one of these questions for herself, as she was confronted with the “very annoying” but common practice among translators of ancient writings to add their own experience and opinions about dog breeds and embody them with the original text (Blunt-Lytton 1911, 16). While it probably took her some time to work through the large amount of translated copies of different works available to her, it is the question whether a similar

effort preceded the one or two ancient quotes incorporated in an archaeological publication.

Regardless of the probable value of an information source such as the *Lex Frisionum*,, it is here argued that analysis of historical documents and historical sources are separate studies of the past, with their own data, methods, objectives and conclusions. As Reece (1984): "The study of the past will lose if the two disciplines [archaeology and history] which could provide independent evidence, join in an interlocking form of circular argument, each making out a case by reference to the other" (Reece 1984, 113).

4.2. Dog of all trades

The dog is a real 'jack of all trades' that can fulfil a wide range of economic and social roles in human society. This section will not explore all functions that dogs can fulfil during their lives, but but only the ones deemed relevant for the dogs that were buried at the settlement of Oegstgeest.

Working dogs

Using dogs as household or settlement guards requires little training: One a dog adopts a human group, it is likely to defend it against human and animal outsiders (Russel 2012, 286) The relative large size of the majority of dogs buried in Early Medieval Europe (Prummel 1992), including the ones from Oegstgeest, could indicate that there was a preference for keeping large dogs that had the ability to fight off any sorts of danger, including wolves. That the large dogs known from the Early Medieval period become less common during later medieval times can, according to Prummel (1989) possibly be correlated with an increasing exploitation open pastures and, as a result, a decline in the number of large predatory animals such as wolves. Consequently, there was an increasing preference for cattle dogs among late medieval farmers, while large protection dogs became less useful (Prummel 1989, 87).

If dogs were used as hunting aids, they could have suffered fractures caused by defensive kicks from prey. However, their task could also have been a less dangerous one and therefore less visible in the archaeological record. For example: the following of the scent of game animals, flushing and/or pursuing prey, helping the hunter follow prey by barking, bringing killed animals to bay (Russel 2012, 283). In a study on European and Near Eastern faunal assemblages from the Neolithic, a positive correlation was established between the proportion of dogs and wild fauna, leading to the suggestion that these Neolithic dogs were used as hunting aids (Bartosiewicz 1990, 291 in Russel 2012,

283). From this perspective, hunting dogs could be recognized if the faunal assemblages of different sites are compared with each other and a similar correlation could be established.

Dogs that were used as draft- or pack animal could have developed pathologies similar what has been observed in the buried dogs from Oegstgeest. In a study on Archaic dog remains from southeast North America, the presence of axial skeleton fractures, vertebral osteoarthritis and marginal osteophytosis in the vertebral column suggested some populations have been used for traction and carrying loads (Warren 2000, 110). As was discussed in chapter 3, there are other factors that can cause these pathologies, for example ageing (Warren 2000, 113). In a study among present-day foxes (Harris 1977), several specimens with no signs of previous injury suffered from severe spinal arthritis and the associated osteophytes. The author therefore concluded that that physical trauma is only one of several complex and unknown factors which interact in the development of the condition (Harris 1977, 192).

Dogs might not have been the first choice as draft- or pack animals when larger species are available (Russel 2012, 218). Russel (2012) argues that because of their higher level on the food chain, dogs are also more expensive to feed compared to ungulates that are usually used for traction .

(Mal)treatment

Dogs may be more vulnerable to fractures than other animals because they live in closer proximity to humans (Groot 2008, 48). This has been exemplified by the fractured skeletal remains found at the Roman site of Tiel-Passewaaij, located in the central part of the Dutch river area. From all the animals represented in the assemblage of bones with fractures, dogs seem to have been most subjected to physical injuries in different parts of the body (Groot 2008). Such signs of abuse might specifically occur among feral dogs that lurked the edges of a settlement and were thrown rocks at or kicked when they came to close (Russel 2012, 294). A single fracture within one individual, however, is more difficult to interpret as it could merely represent an isolated defensive kick from a human, rather than abuse or the feral status of the dog.

Multiple fractures in different stages of healing within one individual appears to be the best indication for maltreatment. According to Teegen (2006), this is especially the case if fractures occur in the rib and vertebra (Teegen 2005, 34), a pattern he observed among dog remains from the Viking Age and medieval sites of Haithabu, Starigard and Schleswig (northern Germany). However, the archaeological record has also shown that dogs from both prehistoric, Roman and medieval time periods commonly suffered limb

and cranial fractures (Baker & Brothwell 1980, 94; Groot 2008; Morris 2008, 305; Russel 2012, 295; Thomas 2005, 101; Teegen 2005).

Fractures could also have happened accidentally and properly healed ones can then be a sign of human therapeutic intervention (Russel 2012, 397; Thomas 2005, 97) and by extension that a dog was regarded a valued companion and/or working animal. However, recognizing human therapeutic intervention in long bone fractures is not a clear-cut case. Van Neer and Udrescu (2005) describe how proper healing in bones can occur if they have an adjacent skeletal element that can work as a natural splint (Van Neer and Udrescu 2005, 32). In the zooarchaeological literature several of such cases have been cited, including a mid-shaft fracture of a cat radius that healed in good alignment with the aid of the adjacent intact ulna (Luff and Brothwell 1993, 112 in Van Neer and Udrescu 2005, 29).

4.3. The problem with healthy horses

Like dogs, also horses can be used for a variety of purposes, be the subject of maltreatment or be taken care of after an injury. 'Unfortunately', none of the fully articulated horse remains from Oegstgeest contained visible signs of pathology consistent with any form of use or maltreatment. However, although shoulder and hip injuries are characteristic for traction and lesions in the the thoracic and lumbar vertebra are mainly associated with riding (Levine *et al.* 2000, 125), the absence of such pathologies does not have to mean that a horse was not used for riding or as beast of burden. For example, the framed saddles used in Early Medieval Europe (Fern 2005, 57) have no contact with the thoracic vertebrae and distributes the rider's weight entirely on the horse's dorsal rib cage (Levine *et al* 2000, 131). The absence of vertebral pathology could therefore indicate that the horse wore a framed and well fitted saddle, or was maybe only used for light riding. Horizontal fissures through the caudal epiphyses of the thoracic vertebrae (see fig 19) in Early Iron Age horses, are thought to have been caused by the use of Scythian pad saddles or by riding bareback, in which the weight of the rider acted directly on the thoracic vertebrae (Levine *et al*. 2000).

The best indirect evidence that many of the elaborately buried horses from Early Medieval Europe were used for riding, is the riding gear many have been found with (Oexle 1984), which was also the case with two of the horse burials from Oegstgeest. Although Early Medieval horses may have been used to pull a cart, it is assumed that they were not used for ploughing as the invention that enables a horse to pull a plough, only became in use in the tenth century (Cross 2011, 191; Prummel 1991, 146; Sablerolles

1990). If a horse is found without its gear, enamel/dentine exposure on the anterior edge of the lower second premolar can be an indication that it wore a bit during its life (Bendrey 2007a; 2007b), and by extension, that it was used as a draft or riding animal. In the Netherlands this type of molar wear was recorded in a buried horse from the Early Medieval cemetery of Rhenen (Grimm 2011, 4). However a similar pattern could not be established in the two buried horses from Oegstgeest from which the dental remains could be analysed.

Figure 19: Example of a thoracic vertebra 14 with a horizontal fissure through the epiphysis. This type of pathology is associated with riding (Bendrey 2007b, 103).

5. DISTRIBUTION AND CHARACTERISTICS OF DOG AND HORSE BURIALS

Regional patterns and the issue with 'tribal' preferences

While both dog and horse graves are known from before the Early Middle Ages, it is only after the fall of the Western Roman Empire that they increasingly begin to appear in the Early Medieval archaeological record. This phenomenon continues throughout Merovingian period, but largely disappears after the Christianization of the region. As previous studies have demonstrated different patterns of dog and horse burials among different regions, this chapter explores how the burials from Oegstgeest fit within the these patterns and whether it is useful to relate the burials found at this site to a specific tribe. Another issue to elaborate on, is the that most Early Medieval dog and horse burials have been found in cemetery contexts, while burials in settlement contexts appear more rare. In order to give some comparative examples of dog and horse burials outside cemetery contexts, this chapter incorporates several Late Roman sites.

5.1. Settlement Deposits

The elaborate deposition of articulated dog and horse remains already occurred in northwestern Europe during the Roman period and even earlier (Groot 2008; 2009; 2012; Müller-Wille 1972, 226-29; Van Beurden 2007; Lauwerier and Robeerst 2001). However, other species are also found as complete burials in Roman times, including cattle, sheep and pig (Groot 2009, 56; Müller-Wille 1972, 226-29). At native Roman sites in the Netherlands dog and horse burials often occur within a settlement context, in features such as pits or ditched enclosures. (Groot 2008; 2009; 2012; Horváth 2012; Lauwerier and Robeerst 2001; Maltby 2012; Morris 2008, 69; Müller-Wille 1972, 226-29; Prummel 1992, 145). Several examples can be found in the Dutch river area, including the late Roman site of Tiel Passewaaij where two dogs were buried in a ditch surrounding a house. At the settlement of Druten, four pits containing complete and partial horse skeletons were found associated with a first century farmhouse. Two of the pits, of which one contained a complete skeleton, were found next to the entrance of a house (Groot 2009).

A similar pattern has been observed by Hamerow (2006), who, in her analysis of Late Roman and Early Medieval 'special' deposits, demonstrated that in the continental 'North Sea Zone', infants, horses and dogs were mainly buried underneath or adjacent to houses, beneath a hearth or adjacent to entrances, track-ways and other settlement

boundaries. For example, in the first to fifth century site of Feddersen Wierde, located along the northern coast of Germany, an isolated horse burial was positioned next to an enclosure fence, while three other horse burials and a horses skull were found next to major track ways leading into the settlement. One horse was buried in a timbre structure erected on a small mound near the main track-way that led to a *herrenhaus*; a farmstead that probably belonged to a chief (Hamerow 2006). Similar to Oegstgeest, another horse from this site was buried near the entrance of an assembly hall. Underneath the door post of this entrance a cow skull had been placed and underneath the threshold a dog was buried. Also three of the five dog burials from this site were found at the entrances to houses or directly under the threshold (Hamerow 2006, 23-24).

5.2. Cemetery contexts

5.2.1. Horse burials

The wide spread practice of burying horses was first concentrated east of the Rhine, mainly around the Upper Danube and in Central parts of Germany (Müller-Wille 1971, 149; Fern 2012, 167). During the sixth century, the number of horse graves increases and their geographical range expands to the west and all the way to the eastern coast of England. Although there are some exceptions, the custom of horse burial did not seem to have widely spread across the Rhine into the post-Roman, Frankish territories (Müller-Wille 1970). When in the seventh and eighth century horse burials cease to occur in most parts continental Europe and Anglo-Saxon England, they increasingly appear in northern parts of Germany and in the northern Netherlands (Oexle 1984; Fern 2012, 43). During the Ottonian period (10^{th} – 11^{th} c. AD) the wide spread practice of horse burial comes to a halt in many parts of North-West Europe. In contrast, their numbers increase exponentially in the Nordic countries during the Viking Age (8^{th} – 13^{th} c. AD).

The majority of the horse burials has been found on cemeteries, and mostly on the large 'row grave sites' that started to appear during the first centuries of the Middle Ages. Compared to sites in other regions, the inhabitants of the North Sea coast were relatively modest in the number of horses they buried, counting no more than five or six individuals on one cemetery (Prummel 1993). This stands in contrast with cemeteries located in eastern parts of Netherlands and in Germany, where sometimes more than twenty, or even thirty horses were buried (Müller-Wille 1972). In roughly the same region, and mainly in the central part of Germany, horses were often buried with their bridles and sometimes even their entire riding equipment and associated with rich human graves (Müller-Wille

1972; Oexle 1984) At the west German town of Beckum for example (fig. 22), several 'rich' human graves were found along with more than thirty horse burials, including several double horse burials and horses buried with riding gear (Müller-Wille 1972, 133). During the seventh century it became more common to bury horses in a separate pits and to place the bridles and harnesses with the associated deceased (Oexle 1984). Most of the 31 horses buried in Anglo Saxon England have been associated with the graves of adult humans that were buried with items such as swords and bronze bowls (Fern 2005, 46).

5.2.2. Dog burials

Like with the above discussed horse burials, in the Early Medieval period also an increasing number of dog graves start to appear on the same cemeteries where horses were buried, and often in the same graves as humans and/or horses (see fig. 21) Prummel (1992) catalogued over 86 fully articulated dog deposits found on 55 Early Medieval sites in continental Europe and Anglo-Saxon England from the fifth to eight century AD. A larger amount of dog burials were documented from the Nordic countries, but most of the 185 examples from this region can be assigned to the Viking period (Prummel 1992).

Judging from previously established distribution maps (Prummel 1992, 147-51), the distribution of dog graves roughly seems to follow a geographical shift towards the

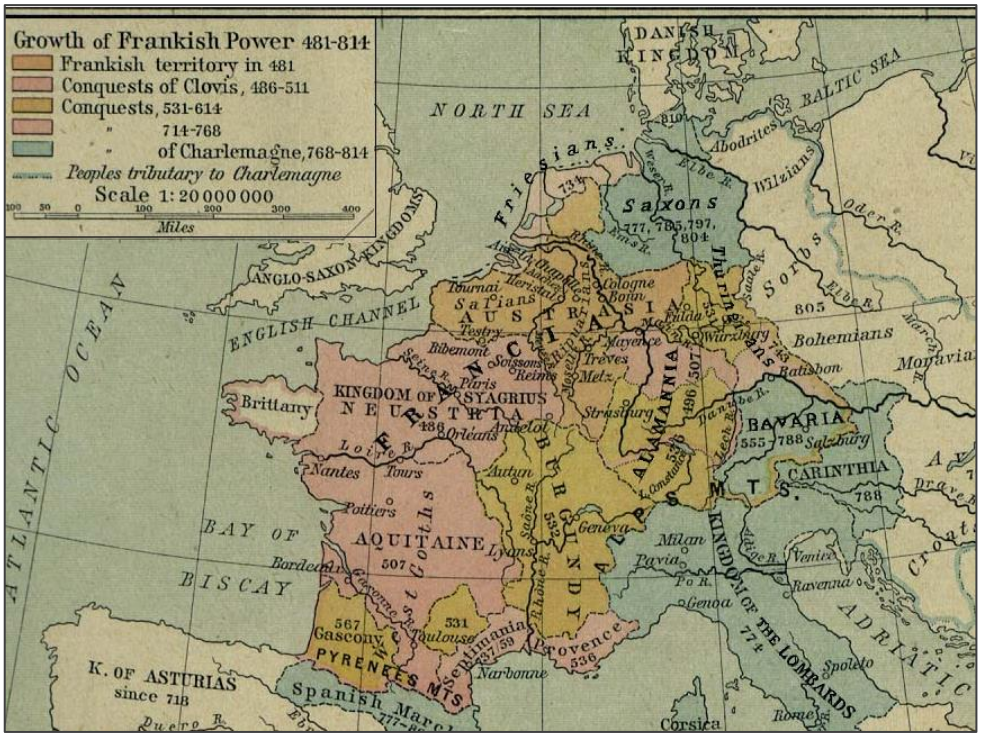

Figure 20: Map from a historical atlas by William R. Shepherd from 1926 (http://en.m.wikipedia.org/wiki/File:Growth_of_Frankish_Power,_481-814.jpg).

northwest. In the fifth century most dog burials are located in eastern Germany and further east, and in the seventh and eight centuries there is an increase of dog burials along the North Sea coast and a decrease elsewhere (Prummel 1992, 148). Due to the absence of grave goods in both human and animal burials, however, the Dutch coastal sites with dog graves have been assigned rather broad dates which also cover the early-Merovingian period. For example, the cemeteries of Rasquert en Hogebeintum, where together two, or possibly four dog graves have been found, were dated 'Merovingian/ Carolingian' (Prummel 1992, 174). The cemetery of Oosterbeintum, from which as much as six dog graves and one horse grave are known, has a date of 450 – 750 AD.

Graves in which both horses and dogs were buried have mainly been found in eastern parts of Germany and adjacent countries, but also occur in other regions, including North Sea coastal area. Figure 21 shows that mostly along the coast single dog burials have been found, while they are rare in other parts of northwestern Europe. Humans have been buried with dogs in all areas, with the Dutch coastal area as an exception (Prummel 1992; Müller-Wille 1972; Oexle 1984).

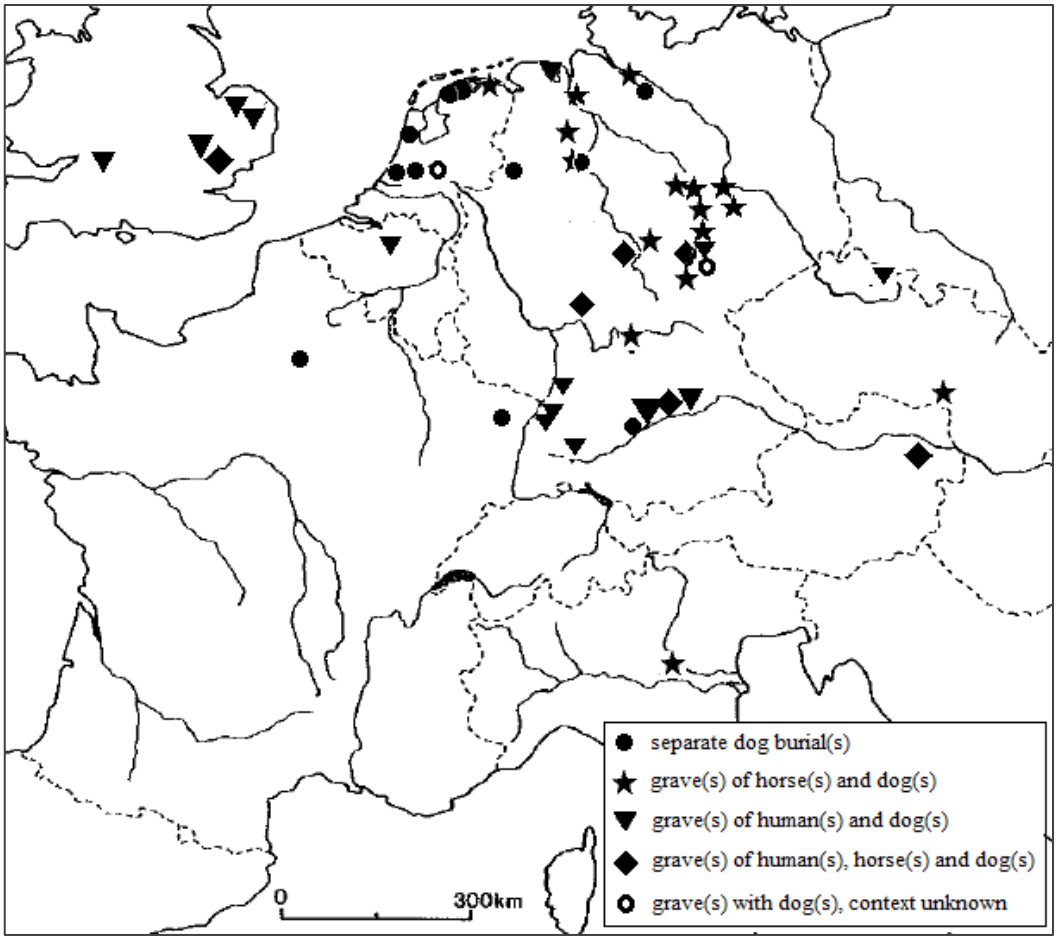

Figure 21: Early medieval inhumation burials of dogs found with horses and/or humans or separately from horses and humans (after Prummel 1992, 147-52)

5.2.3. 'Tribal' preferences

Most of our knowledge about the distribution of Early Medieval dog and horse burials, comes from burials found on cemetery contexts. In the 1970's, Müller-Wille combined existing distribution maps (e.g. Busch 1966; Rempel 1966) with a large amount of archaeological reports from so called row-grave sites, or *Reihengräbersitte* (e.g. Haßler 1868; Bauer, 1936; Hinz 1969; Behrens 1919) where Early Medieval horse burials[6] have been excavated. Based on Müller-Wille's work, Oexle (1984) mapped over 600 cemetery deposits of Early Medieval horse equipment and a decade later, Prummel (1992) combined documentations of Early Medieval dog burials collected by Müller-Wille and combined them with more recent data in her study of Early Medieval dog burials among different cultural regions (Prummel 1992). In these previous studies, differences in the Early Medieval distribution of dog and horse burials have been associated with well-defined cultural regions or even 'tribe-specific' preferences. (see fig 20). It has been stated, for example, that dog burials were Popular with the 'Frisians', 'Thuringians and

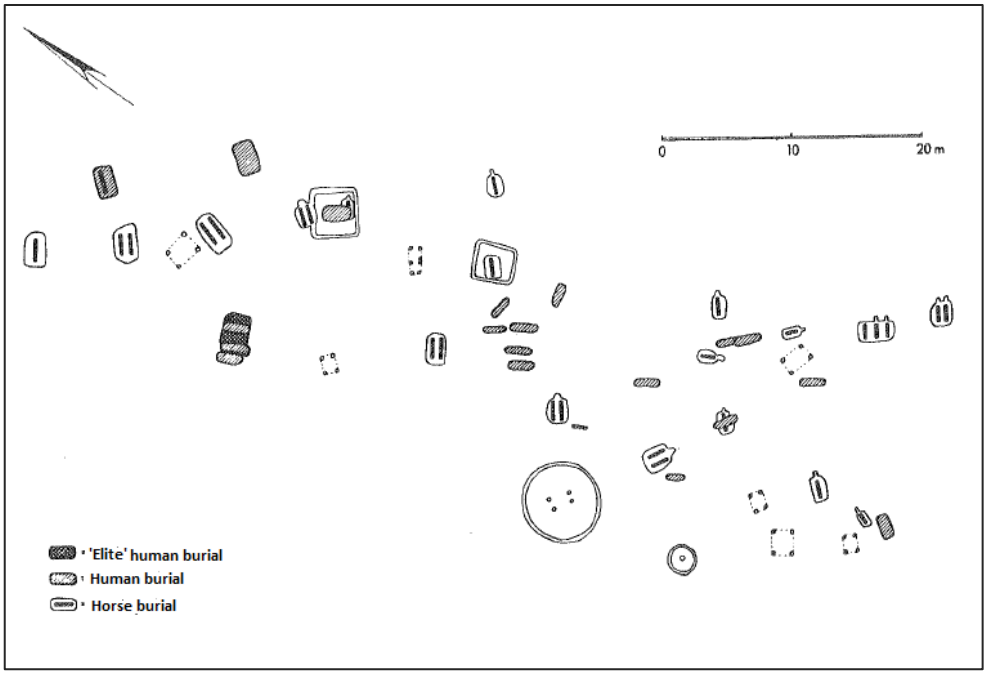

Figure 22: Cemetery of Beckum II, located in the western part of Germany (after Winkelmann 1962 in Müller-Wille 1972, 142).

[6] While most of Müller-Wille's and Oexle's catalogued burials represent complete skeletons, they also included deposits of dental remains, bone fragments, separate skulls, and remains of which the primary documentation does not clarify whether it concerned an articulated horse or just several skeletal elements

the ‘Langobards’, but less popular with the *Alemanni* (Prummel 1992, 152). Interestingly, apart from the distribution of dog and horse burials among presumed ‘cultural’ regions, solid grounds for the use these ‘tribal’ adjectives are rarely, if ever, provided. As recent articles continue to place dog and horse graves in specific cultural contexts (e.g. Bartosiewicz 2012; Fern 2005; 2012), it becomes relevant to ask on what grounds they were put there in the first place.

As it appears, most of the tribal connotations stem from the original studies and reports on row-grave sites that were excavated throughout the first three quarters of the 20th century, and which were used by Müller-Wille and others to establish large scale distribution patterns. Looking at Müller-Wille’s reference list, many of these studies were titled along the lines of: ‘*Ein alamannisches Reitergrab aus..’*, *Das fränkische Gräberfeld von...’*, *Germanische kriegengräber des…’*(e.g. Bauer, 1936; Hinz 1969; Behrens 1919, in Müller-Wille 1971, 239-35). Unfortunately, also these do not appear to provide a solid

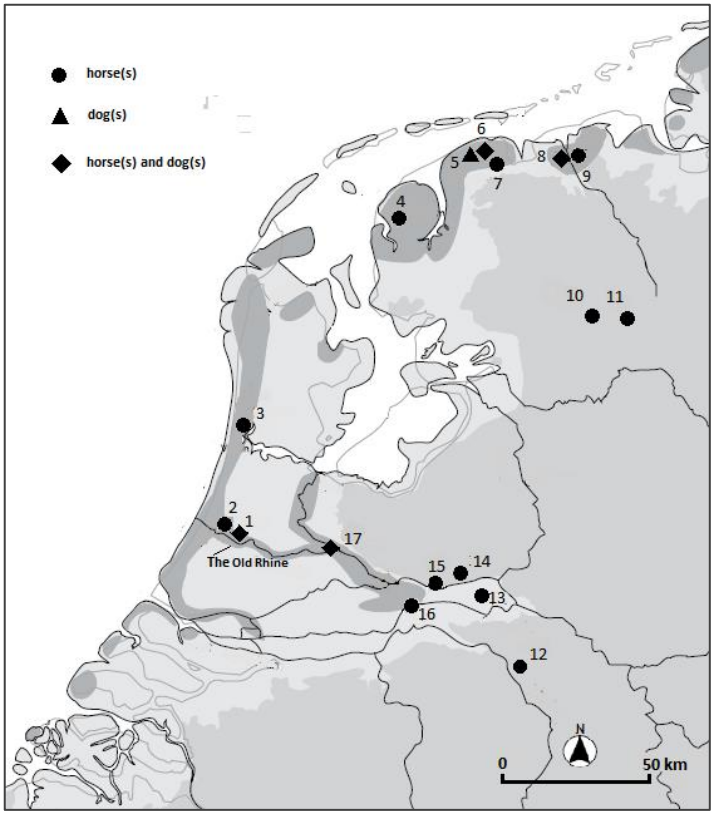

Figure 23: Early medieval sites in the Netherlands with dog and horse graves (the province of Limburg not included). The dark grey coloured regions represent coastal areas of habitation. 1: Oegstgeest; 2: Rijnsburg; 3: Dorregeest; 4: Zweins; 5: Hogebeintum; 6: Oosterbeintum; 7: Dokkum; 8: Hogebeintum; 9: Antum; 10: Looveen; 11: Zweeloo; 12: Gennep; 13: Elst; 14: Wageningen; 15: Rhenen; 16: Echteld; 17: Leidsche Rijn.

archaeological basis for connecting dog and horse burials with tribal preferences: in an assessment of the use of ethnic labels in these German publications of row grave sites, Frank (2000, 28) noticed that while more than half of them use these ethnic adjectives in in their titles, scientific support is seldom incorporated. These authors more likely followed the well-defined cultural regions described in ancient literature and depicted on out-dated cultural maps, such as the one added to this chapter (fig. 20). Today, however, the general consensus is that these regions are artificial and represent political ideals rather than groups with a shared feeling of belonging to the same 'cultural group' (Curta 2007; Gamble *et al.* 1996; Gillet 2002).

Due to the time-frame of this present study, previously established patterns of dog and horse graves among different tribal areas can here not be completely revaluated. Neither will the possible reasons be discussed behind the use of ethnic labels for some of the *Germanic* sites that have been excavated in early 20th century Germany, as this would be too much of an excursion from the main subject. The short analysis above has to suffice to at least rumble the foundations of tribal preferences for burying dogs and horses. However, regional difference among dog and horse burial patterns did exist, with different patterns along the continental North Sea coast compared to other regions.

5.3. The Netherlands: settlement and cemetery contexts

Along the North Sea coast, different patterns of dog and horse burials can be recognized from the more 'inland' burials, which are often found on cemeteries. When zooming in on the Netherlands, including the north-German coast, regional differences can be observed on a small scale: in the middle and eastern river area and in the province of Drenthe we find large cemeteries containing multiple horse burials, and in the 'Frisian' coastal area a smaller amount of horse burials and a relative large amount of dog burials (fig. 21).

East of the coastal region

More than a third of the total amount of Early Medieval horse graves known form the Netherlands, have been found on the mixed cemetery of Wijster-Looveen in the eastern province of Drenthe (7th – 9th c. AD). The cemetery counts thirty-six horse graves, which were arranged in rows and located separately from the human graves found at this cemetery. Five of the horses were buried with riding gear and at least two horses were found together in one grave (Müller-Wille 1970, 217-18; Prummel 1993, 54). A few

kilometres to the east, at Zweeloo, a cluster of human graves and horse graves has been found which were associated with a fifth century elite household. One of the people buried here is also referred to as 'The Princess of Zweeloo', because she was richly buried in the vicinity the six horse graves (Bommel – Van der Sluijs *et al*. 2007).

The cemetery of Rhenen, located a hundred kilometres upstream of Oegstgeest (see fig. 23), counted 14 horse graves and roughly 1100 human burials. Also at this cemetery, none of the horses could be associated with a human grave. One horse however, was buried with a sword, a knife and riding gear (Huiskes 2011, 59; Prummel 1993, 54). In the eastern river area, three or possibly six horses have been found at the cemetery of Wageningen and at the cemetery of Elst four horses and a possible dog were buried. The dog remains ware badly preserved and incomplete, but were found in in a feature resembling a human inhumation grave (Prummel 1993, 54-6)

Also more to the south, in the provinces of Gelderland and Limburg, a handful of horse graves have been identified, and like the ones mentioned above, only in cemetery contexts (Prummel 1993, 54).

The coastal region

So far, only one other animal burial has been found in the close vicinity of Oegstgeest. It concerns a horse buried at the mixed cemetery of Rijnsburg (fig. 1 & 23), which was in use between the sixth and seventh century. Also several rich weapon graves have been found here (Dijkstra 2011, 382). Unfortunately, the report of the horse only mentions that the grave had been disturbed and that several elements of the horse were missing (Briels and Schute 2006, 10).

Approximately fifty kilometres upstream from Oegstgeest, on the border of what could be described as the 'Frankish' and 'Frisian' territories (fig. 20), two separate horse graves and one dog grave have been excavated at the seventh to eight century settlement of Leidsche Rijn. According to the excavation report, both horses were buried without their heads, located in the vicinity of a farmyard and in the same area where several disarticulated human remains have been found. One of the horses (fig. 25) also missed an entire front leg as well as its tail, sacrum, and lumbar vertebrae and contained cut marks consistent with the removal of meat on a thoracic vertebrae. vertebra. Still, the carcass was placed in a similar position as the majority of horses buried in northwestern Europe: on its side and with folded legs. The same grave also contained a cow's vertebrae and molar, a sheep's/goat's long bone and a lumbar vertebrae of a mid-sized mammal and the only marine cockle that has been found at the site (Esser, 2009, 313-14).

In the Dutch province of *Noord-Holland*, the settlement of Dorregeest has yielded finds that indicate a hitherto uniquely continuous occupation phase from the Late Iron age

up through the Middle Ages (De Koning 2003, 55) (fig. 24). As nearly all animal and human burials have been radiocarbon dated, the following pattern could be established: Between the second and sixth centuries, there was a preference of burying horses, cattle and humans directly along the gully while during later periods, locations closer to the settlement were chosen. It also appears that cows were only buried in Roman times while most of the horses were buried in the Early Medieval period. On top of an eight century horse, another horse was buried in the ninth century, nearby four human graves from the seventh to eight centuries and an undated cattle grave. One undated horse was buried near the location of a ninth or tenth century churchyard (De Koning 2003, 73).

From the northern part of the 'Frisian' coastal area both dog and horse graves are known, of which the majority were buried on cemeteries. However, not in all cases the archaeological context has been clarified. For example, from the location of Zweins-Kinga-Tille we only know that "the skeletal remains of two men and two horses have been found" [pers. comm. J. Ypey and H. Halbertsma, cited by Müller-Wille (1972, 218), translated by the author]. From the burials with known contexts, most concern separate

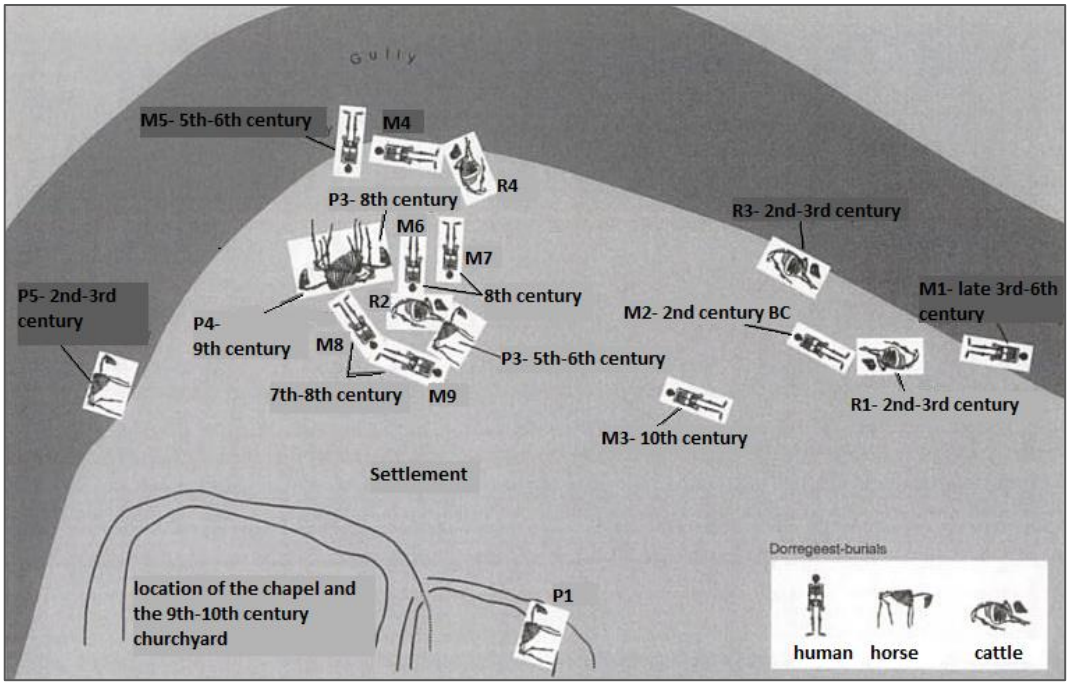

Figure 24: The human and animal burials of Dorregeest. The burials containing dates have been dated with ^{14}C (after De Koning 2003, 72)

graves without additional contents like bridles, stirrups or collars. This was also the case at the mixed cemetery of Oosterbeintum, where a horse and six dogs were buried. Horses buried with riding gear are known from two sites, namely Dokkum, where a horse was buried with its bridles and beside a human (Prummel 1993, 54), and from the cemetery of Antum, where a horse was buried with its stirrups, nearby a human 'warrior's grave'. The human was buried with weapons (Prummel 1993, Stein 1967, 380 in Prummel 1993, 84). The only grave in the Netherlands that contains two horses and a dog was also found in this region, at the seventh to ninth century cemetery of Ezinge-de Bouwerd (Müller-Wille 1972, 218).

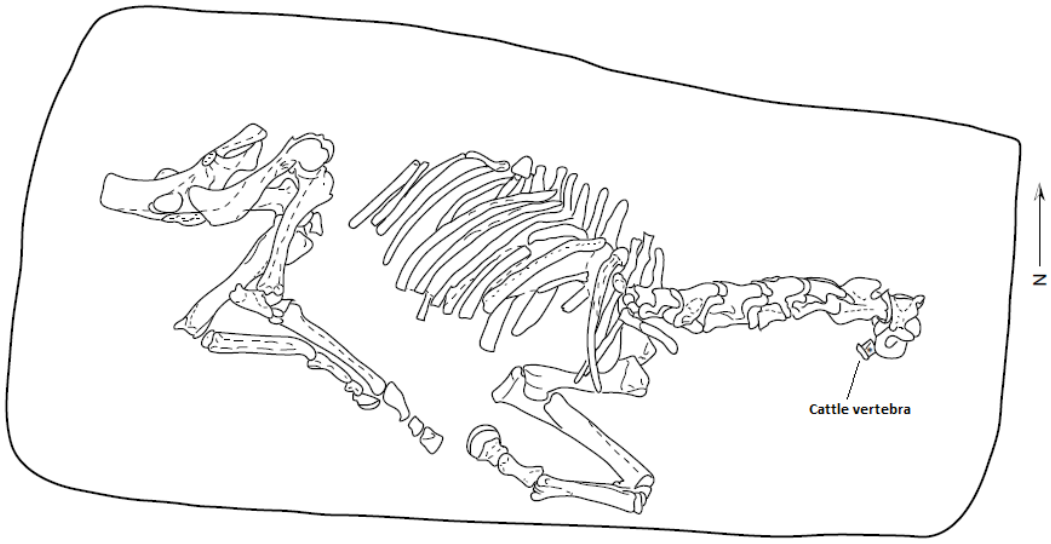

Figure 25: Field drawing of the horseburial with cutmarks from the Early Medieval settlement of Leidsche Rijn (after Esser 2009, 312).

5. PATTERNS OF RITUAL

Issues of debate and sacrificial killing

Although as archaeologists we endeavour to start our analyses as unbiased as possible, when a series of dog and horse burials have been found at an Early Medieval site, it is hard not to instantly associate them with 'ritual' sacrifice, or at least a ritual burial activity. However, what ritual actually entails is a subject of debate and in the past decades the use of the term has become somewhat controversial, especially in the field of zooarchaeology. This chapter shortly reviews the discussion around the use of 'ritual' in zooarchaeological research, followed an evaluation of signs for the 'ritual' properties of the dogs and horse graves from Oegstgeest.

5.1. A note on the 'ritual – controversy'

One point of critique concerning the term ritual, is that in zooarchaeological research it is often used as an explanation in its own right, while economical explanations for zooarchaeological material mostly encompass more detailed descriptions (Morris 2012). A related issue is the equation of ritual with non-functional action, which according to Brück (1999) is the single most important characteristic of both archaeological and anthropological approaches to ritual. The underlying thought of critiques toward such an application of ritual is that it represents our contemporary dualist mode of thinking, rather than the world view of the people we study (Brück 1999; Fogelin 2007; Morris 2012; Russel 2012). Based on both archaeological and ethnographic research, archaeologists and anthropologists have become increasingly aware that ritual is embedded in every-day activities, even more so in ancient times than today (Russel 2012; Morris 2012), and that dichotomies as ritual-secular or sacred-profane are not universal categories of human thought (Brück 1999). Accordingly, current definitions of 'ritual' roughly encompass anything that is repetitive and/or formularised and/or symbolic in nature and which may form part of personal, social and/or religious practices (Cross, 2011; Fogelin 2007; Morris 2012; Pluskowski 2012).

While some have argued that 'ritual' has become devoid of meaning and should be abandoned by archaeologists (Morris 2012; Brück 1999), Russel (2012) argues that ritual formed and shaped daily practices in past societies and should therefore be taken

seriously in zooarchaeological research. She names several characteristics of ritual: i) it is often intended to bolster status quo, but can also be used to challenge it; ii) the rule bound nature of ritual means that it is never free from power issues; iii) much of its value lies in its invocation of tradition, even if that tradition is constantly reinterpreted; iv) the intensification and elaboration of ritual could mark periods of social stress; v) even if it occurs discretely, in the archaeological record ritual can be recognized by the emphasis given on certain items (Russel 2012, 53-53). While 'emphasis' till sounds somewhat vague, the rule bound and repetitive nature of ritual might be recognizable in the archaeological record, since it should create recurring patterns in deposits (Groot 2009, 55)

In this light, it might indeed be possible to evaluate the ritual properties of the dog and horse burial from Oegstgeest, despite some archaeologists' scepticism regarding the subject. Do they fit recurring patterns observed in other regions, like discussed in chapter 5? Because one of the main patterns described in previous studies on Early Medieval dog and horse burials concerns the ritual killing of the animals (Müller-Wille; Oexle 1982; Prummel 1992; Fern 2012), the following section will explore whether such a trend can also be established at Oegstgeest.

5.2. Exploitation and Carcass disposal

With the risk of maintaining a schism between the ritual and mundane, practical explanations need to be considered before discussing the ritual and ceremonial properties of dog and horse burials.

The dogs and horses could have been buried with the sole intent to dispose of their corpses. If dogs and horses were not used for consumption, a dead carcass was of no use and had to be removed out of the settlement for hygienic purposes. This has been observed at Roman military sites where horse meat was not consumed and carcasses were dumped outside the site as much as possible (Lauwerier and Robeerst 2001, 282). However if horse carcasses were disposed of because there was a taboo on using horses for their primary products, one would expect more horse burials and no horse remains with cut marks among the settlement's waste.

Because dogs were generally not consumed, and no human modification marks have been found on disarticulated dog bones from Oegstgeest, disposing their bodies outside the settlement would make more sense from a hygienic point of view. The presence of dog remains within the settlement waste of Oegstgeest however, indicates

that that not all dogs were buried outside the settlement, indicating more significance than 'disposal'.

When considering these possibilities in light of the earlier described characteristics of ritual, the uniform and repetitive pattern of horse and dogs burials observed in Oegstgeest and other Early Medieval sites as described in chapter 5, suggest that other motives were at play than mere disposal.

5.3. Identifying of ritual killing

In several studies, arguments have been presented that dogs and horses found at Early Medieval sites were probably killed for ritualistic purposes, for example to accompany the dead, appease the gods, emphasize ancestral identity and as an expression of power and status (Cross 2011; Fern 2012; Müller-Wille 1972; Oexle 1984; Prummel 1992). One important indication that at least some dogs and horses in Early Medieval Europe were killed as a form of sacrifice, is the wide spread occurrence of several individuals in the same grave (fig. 21), of which an two examples are depicted in figure 27. Although there is always a chance that the animal(s) and/or human(s) buried in the same grave context were involved in the same fatal accident or simultaneously died from a plague, it seems statistically more likely that these animals did not die a natural death. In isolated animal burials as the ones from Oegstgeest on the other hand, it is more difficult to recognize ritual killing, especially if the zooarchaeological remains lack obvious signs of fatal injuries.

Fortunately, there is a useful approach for identifying 'ritual' killing, which focusses on the all taphonomic processes that have affected the osteological remains, from when they were part of living animals to when they have been recovered and analysed (Magnell 2012). The use and treatment of the dogs and horses during their lives and the choice of location of their burial have already been discussed in previous chapters. This leaves the selection of the animals and their cause of death.

Selection of the animals

On a species level, an Early Medieval preference can be observed for burying dogs and horses as opposed to burying other animals. Besides dogs and horses, also Early Medieval 'food animals' are sometimes found in funerary contexts, such as sheep/goat, cattle pig and fowl (Müller-Wille 1972; Prummel 2001). Because the remains of these animals are always found disarticulated in human and dog/horse graves, the former group is thought to represent food offerings, while horses and dogs are thought to have been

selected as grave gifts to accompany the deceased (Fern 2012, 168; Morris 2008; Morris 2012; Prummel 2001).

Besides on a species level, also the sex of dogs and horses have been mentioned a criteria for the selection of individuals to be sacrificed. According to Prummel (1992, 151), the choice for mostly male dogs and horses relates to the intent to mark the prestige, wealth and importance of the deceased, and to demonstrate the possession of means and skills to keep and train these animals. In the case of horse burials, a preference for males

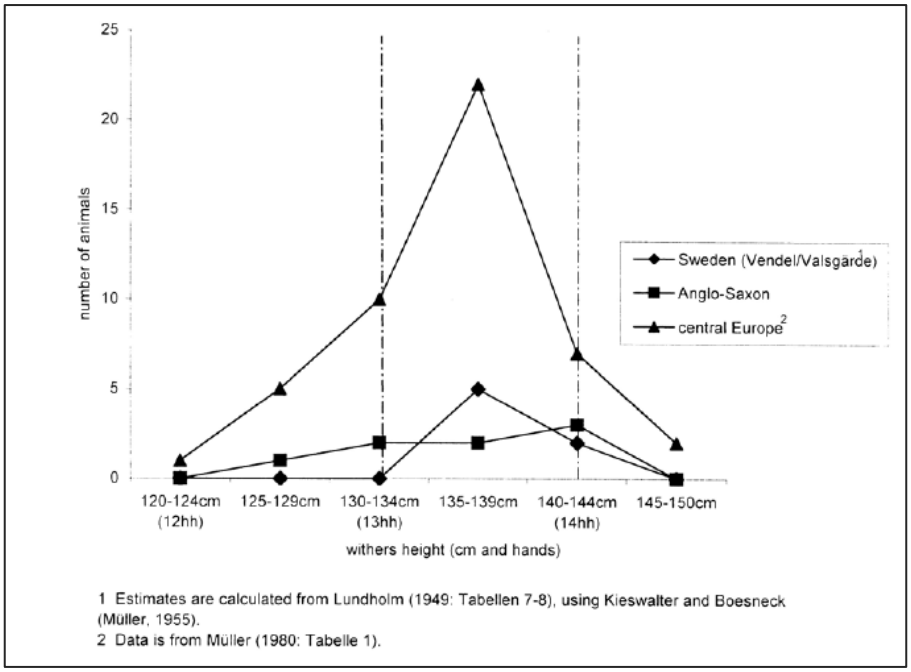

Figure 26: Wither's estimates for central and north European horses from funerary contexts in the Early Medieval period (Fern 2005, 66).

can be established in Early Medieval Europe, including the Netherlands. From the continental 126 continental buried horses that were osteologically analysed, roughly 95 could be identified as male (Oexle 1984, 146). The preference for male dogs however, seems less clear: only 18 continental dogs could be identified as male. That no bitches were reported, has probably to do with the sex indication that is used, namely the absence or presence (male) of the baculum. As most dog graves show some level of disturbance, only the presence of this element is a strong indication for the male sex, while its absence could also be caused by post-depositional disturbances. Also in the Netherlands, the preference for a specific sex is difficult to establish. About half of the roughly thirteen Early Medieval dog burials that have been found in this region could be determined as male. Due to the level of conservation, no dog could positively be determined as female. However, from at least one buried dog found at Oegstgeest, it can cautiously be stated that it concerns a female animal.

Also the size of the animals might play a part in selecting them for a ritual event. In recent years, archaeologists have come to consider burials as a form of 'active media', and the burial of horses as 'powerful mnemonic events' that ware used to consolidate contacts between members of society, create ancestral identity and proclaim elite status for ancestors and kin (Bertašius 2012; Fern 2005; Fern 2012; Williams 2005). According to Fern (2012), the physical proportions of horses chosen for sacrifice, was therefore a major concern in the practice of horse burial in Early Medieval Europe. In his analysis he argued that the physically most impressive individuals were often selected for Anglo-Saxon burials (Fern 2005, 179). This is supported by the differences in height between horses represented among Anglo-Saxon settlement waste and horses found in cemetery contexts that are thought to have been sacrificed. While the normal shoulder height of the first group is about 132 cm, the 'sacrificed horses were estimated between 137 and 144 cm (Fern 2005, 66) (fig. 26).

Also dogs and horses found at in Early Medieval burial contexts in the Netherlands were, as far as could be established relatively large. Buried dogs had a shoulder height ranging from 56 to 69 centimetres, with majority of the dogs, including the ones from Oegstgeest, falling within the upper half of this range Esser 2009; Prummel 1992). To illustrate, a male German shepherd normally has a withers height between 60 and 65 centimetres (Prummel 1989). Only a small percentage (*c.*15 %) of the total amount of horses found in the Netherlands has been zooarchaeological analysed. This includes the double horse grave (with dog) from Ezinge contained two males with a withers height of 146 to 147 (Prummel 1993, 54) and several horses from the Dutch river area who had a withers height ranging between 140 to 145 centimetres (Esser 2009, 313-14; Grimm 2011) cm. Although these heights are similar to that of a modern day small horse or pony, they are larger than the average heights recorded from continental cemeteries (fig. 24) and about the same height as the 'impressive individuals' from Ferns study. The buried horses from Oegstgeest would also have fallen in this category.

Cause of death

The cause of death of Early Medieval buried dogs has not been mentioned in the catalogues used in this study. The osteological data of buried horses however could in some cases provide direct evidence, with decapitation as the most obvious one (Müller-Wille 1971; Oexle 1984). From a number of horse remains, vertebral cuts were reported, indicating that the throat was slashed. A steed from Anglo Saxon England had been pole axed on the fore head (Fern 2012, 171). In most cases however, killing by slitting the carotid artery of by strangulation rarely leaves any traces on the bones (Magnell 2012, 197). A blow to the head might be retraceable when the skull of an animal has been well

preserved in the archaeological record, but due to the fragile nature of cranial bones, this is rarely the case. In some situations it is possible to use the anatomical position of a horse as a sign that they were sacrificed. Bertašius (2012) demonstrated that Early Medieval horse burials from Lithuania have been found in a 'forced' position, which might indicate that they were buried when still breathing, maybe after they had been weakened by physical exhaustion or poisoning. The bridle bits some of the horses were wearing, could have been used to force the animals into their graves (Bertašius 2012, 68).

Also when horses have been buried more 'comfortably', like the ones from Oegstgeest, their body position has been used as an argument for ritual sacrifice. Oexle (1984) states that the fact that most buried horses North-Western Europe have been found with their legs closely bent along their bodies can only be explained if the horses were killed in or next to their graves and buried before *rigor mortis* had set in (Oexle 1984, 150). However, this notion disagrees with observations in present day large mammals. Weigelt (1989) reports that *rigor mortis* usually sets in after ten hours, depending on the temperature, the animal's physical conditions and other factors. As the stiffening of the body slowly passes after an additional eight to ten hours (Weigelt, 1989, 4), a horse buried with folded legs does not necessarily have to be killed directly after its death.

A final indication for ritual killing presented in this section is the relatively young age of both horses and dogs in Early Medieval funerary contexts (Oexle 1984; Prummel 1991). Prummel reported (1992) that over 60 per cent of the Anglo-Saxon and continental

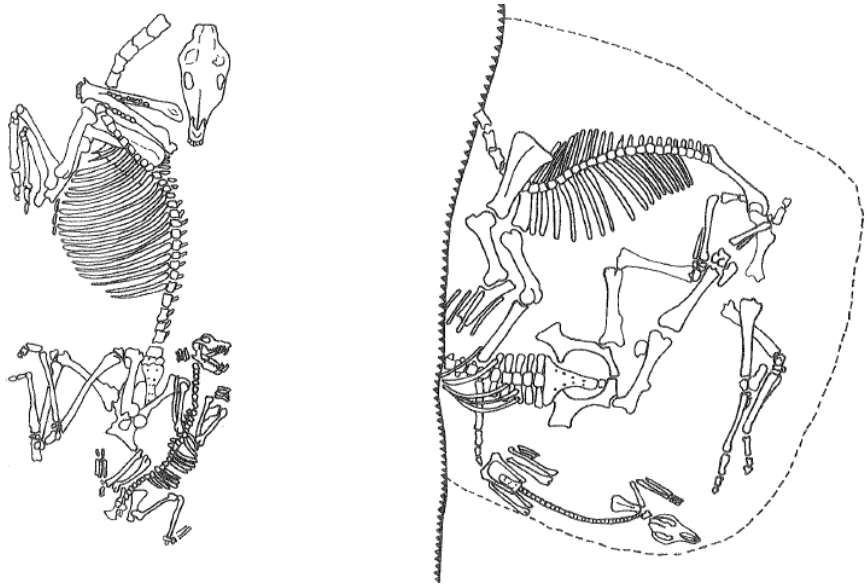

Figure 27: Burials with dogs and horses from the east German cemeteries of Schönebeck and Weißenfels (after Müller Wille 1972, 152).

dogs of which an age indication could be given, was younger than five when they died. A similar pattern has been observed among the buried horses as most of them died during their 'best riding years' between the ages of four to ten (Fern 2005, 43; Müller-Wille 1970; Oexle 1984, 144-145). Also most of the analysed horses found in the Netherlands, died when they were younger than eleven years of age (Esser, 2009, 313-14; Prummel 1993). However the dogs buried in Early Medieval 'Frisia', do not seem to fit this pattern. Although five dogs were quite young when they died, with ages ranging between one and four years old, seven other dogs were older, most of them exceeding the age of seven (Prummel 1992, 174).

5.4. Spiritual motives

The Early Medieval sacrificial killing and/or burial of complete animals can, to some extent, be linked with pre-Christian world views (Bartosiewicz 2012, 223; Witte 2006, 131). Ecclesiastical law forbade the burial animals on hallowed ground (Bartosiewicz 2012, 223) and when the wide spread practice of burying dogs and horses comes to a halt in most parts of Christianised Europe, the phenomenon intensifies in parts of *pagan* Scandinavia during the Viking Age (Müller-Wille 1970, 160-169; Prummel 1992). The Dutch Coastal area, including the Rhine estuary, is thought to have been conquered by the Frankish lord Peppin of Herstal between *c.* AD 688 and 695. By the end of the eight century, also the northern coastal region became incorporated in the Frankish kingdom. That this process of conquering the Frisian territory went hand in hand with the gradual Christianization of its inhabitants is partially indicated by the changes in inhumation practices, including the disappearance of dog and horse burials on cemeteries (Dijkstra 2011; Müller-Wille 1972; Prummel 1992; Prummel 2001).

Because of this association between animal burials and 'pagan' believes, studies on dog and horse burials often include mythical horse and dog figures from the epic poems, saga's and legends describing the beliefs that prevailed in Early Medieval Europe, to explain why these animals were viewed as 'special' and selected for burial rites (e.g. Cross 2012; Prummel 2001; Fern 2004; Fern 2012; De Grossi Mazzorin and Minniti 2002). Fern, for example, argues that the practice of horse burial was used for the creation of social ancestral identity and dominance, born out of the mythological war-leader figures *Hengist* and *Horsa*, 'the founding fathers of the Anglo-Saxon folk' (Fern 2012, 165). The otherworldly guarding qualities of dogs has also been inferred from mythological beings, like the supernatural guarding dogs Cerebrus (Roman/Greek) and

Garm (Norse). Correspondingly, in the archaeological record, articulated dog deposits are sometimes associated with their function as guardians for the associated deceased, which is thought to continue through death (Hamerow 2006, 23; Olsen 2000, 77).

Similar to the objections for the use of written sources presented in chapter 5, mythological archetypes are too often taken out of their spatial and temporal context (Pluskowski 2012, 4) For example, 'Beowulf' has been used to explain the Christian symbolic meaning of dogs and horses in continental Europe and Anglo-Saxon England (e.g. Cross 2011; Fern 2012; Prummel 2001), but was written down by and for Christian people, staged in Denmark and South Sweden, and *probably* described beliefs of the 5th and 6th centuries. Also the sometimes quoted Edda-verses, which supposedly describe Old Norse mythologies, were recorded in 13th century Iceland, by Christianised people (Prummel 2001).

That the Early Medieval inhabitants from Oegstgeest had a worldview involving mythical beings and spirit guides similar to the dogs and horses described in 'Beowulf', might just as well have been the case. However, in this study it is argued that the complex nature of believe systems and associated rituals lies beyond the reach of the zooarchaeological record and probably even beyond the reach of historical poems. By assigning the inhabitants of Oegstgeest with beliefs from out-of-context works of literature, valuable archaeological evidence might be forced in a narrow or false version of their actual believes.

7. DISCUSSION

After having analysed the zooarchaeological data and reviewed wide variety of possible interpretations, this chapter will discuss the main arguments for the final interpretation, as well as several limitations and suggestions for further research.

7.1. The dog burials

Based on the zooarchaeological data and literary review, it is here argued that the three dogs died of old age and were considered valued social animals and maybe even as members of the household. After they died, they were buried accordingly, near two members of the community and at a location that was considered special and used for different ritual purposes. This is supported by the observation that the burying dogs near settlement boundaries fits a long standing pattern that already occurred at Late Roman sites and is typical for the North Sea coastal area. The location of their burials combined with the following findings, provides a solid basis to support the above presented theory.

First of all, the three dogs buried at Oegstgeest lived at least long enough to develop spinal arthritis and advanced dental attrition. Although the ageing method used in this study cannot provide water tight results, it is likely that they died when they were older than six. Secondly, none of the dogs suffered the type of systematic abuse that has been recorded in other dogs from a wide range of time periods. Fractures in different stages of healing within one individual have not been recorded and the only fracture observed in Dog 3 could represent an accident or an isolated event of maltreatment. A third indication is the presence of disarticulated dog remains at the site, which shows that not all dogs were buried after they died. Provided that dogs were not used for primary consumption, this different treatment indicates that the buried dogs enjoyed a more favourable position within the settlement compared to the dogs that were disposed of in other ways. Two disarticulated skeletal remains from one young, small dog that have been found as settlement waste, might represent preference for large dogs. However, more data is needed to further explore the ‘special’ treatment of the three buried individuals.

Whether and in what way the dogs functioned as working animals, is impossible to extrapolate from the zooarchaeological material alone. The poultry and deer remains found among the settlement waste might indicate that hunting took place around the settlement, but this does not mean that the dogs assisted the hunters. At least the size of the dogs indicates that they would have made them adequate guards, at least if they these

individuals indeed had a natural tendency to protect their environment against wolves and other sorts of danger. However, further archaeological indications that the dogs from Oegstgeest fought of predators cannot be provided.

7.2. The horse burials

The zooarchaeological data has provided indirect evidence that unlike the dogs, the three horse were killed as an act of sacrifice. While the dogs could move in and about the household, defend their social group and were considered companions, horses were a means of transportation, consumption animal and associated with elite status and warfare.

This theory is supported by several observations, namely: the function of the horses when they lived, the age of the horses when the died, the economic potential of their carcasses and the regional pattern of horse sacrifice.

That at least two of the horses were used as a riding animals, is indicated by the remains of riding gear found in their graves. The absence of pathologies consistent with riding could be related to their young age and a result of the use of well fitted saddles. All three horses died in the prime of their lives and, as far as the fragmented material allows such a statement, showed no signs of illness or fatal injuries. It is not sure whether Horse 1 was buried entirely in-tact and Horse 2 could have been buried without it's left phalanges. Nevertheless, assuming that the disarticulated horse remains found among settlement waste indicates that there was no taboo on the processing of horse carcasses, then even burying nearly complete horses would seems illogical from an economic point of view. It would rather seem an act of sacrifice. This would not have been uncommon in the region, as at least in the northern coastal area several horses have been found with more obvious indications for their sacrificial deaths, for example the horse from Dokkum that was buried in a human grave.

The motive for horse sacrifice is difficult to establish, but the rich 'warrior' context in which horses are often found in Germany and in the North Sea coastal area, including Anglo Saxon England, indicates that keeping horses and riding them was associated with elite status and warfare. Killing a fine riding steed, bridled and well, must have been an even greater display of power and status than riding one.

7.3. Regional tradition

When questioning why horses and dogs were buried, 'tradition' could also be argued to have played a role. Burying dogs and horses in general was a wide-spread Early Medieval

practice that was known in all corners of northwestern Europe and had also reached the Rhine estuary. With the occurrence of individual burials of both horses and dogs on one settlement, the site of Oegstgeest represents a pattern that was specific for the North Sea coastal area. The location of two of the horses in front of a house, however, deviates from the usual pattern along the northern part of the Dutch coast, where the animals are mostly buried on cemeteries. Still, there are also sites in the coastal region that show more similarities with Oegstgeest in terms of burial locations, such as Leidsche Rijn, Dorregeest and Feddersen Wierde.

An interesting issue is the presence of only one horse burial at the cemetery of Rijnsburg and the absence of both dog and horse burials at the other adjacent sites in the Rhine estuary. One possible explanation is that the people from these other settlements did not share the same tradition as the people that buried dogs and horses at Oegstgeest. However, given the proximity of these settlements to each other and the presence of many water ways to facilitate interaction and cultural exchange, the burials from Oegstgeest could also represent the presence of a local elite with the means to keep riding horses and large guard dogs.

7.4. Further research

In the process of this study, several issues have come to light that deserve further research. First of all, the age estimations of the buried dogs are based on a case study in which older dogs were underrepresented and no correlations were made with epiphyseal fusion stages. In order to get a better idea of the average rate of dental wear among dogs that lived at Oegstgeest, a larger comparison group is needed that includes younger individuals with a known 'fusion-age'. Based on the data from these individuals a local ageing method can be developed, leading to more accurate age estimations.

In order learn more about the function and position of dogs at the settlement of Oegstgeest, more dog remains need to be identified from the usual settlement waste and, if possible, from elaborate graves. If indeed only socialized, valued dogs were buried and other dogs were considered less important or a nuisance, than dog remains found as settlement waste might contain signs of maltreatment. There could also be a difference in posture if mainly large wolf-fighting dogs acquired a 'special' place within the community and were buried. Also more data is needed from horse remains found as consumption waste. In order to establish if size was of importance in the selection of a horse for a sacrificial event, the horses found as settlement waste might be smaller. It

would also be informative to establish for what purposes the other, not-buried horses were used.

8. CONCLUSIONS

The goal of this thesis was to identify why dogs and horses were buried at the Early Medieval settlement of Oegstgeest and how their burials reflect the roles these animals fulfilled in the lives of the humans they lived among. Based on a combined approach of zooarchaeological data analysis and an extensive literary study, the following conclusions can be presented:

The dogs and horses analysed in this study were buried in elaborate graves, at important locations in the landscape because they played a significant role in the lives of the people they lived among. However, the dogs were buried for different reasons and under different circumstances than the horses and this reflects their different positions within the settlement.

The level of dental attrition and spinal arthritis observed in the three buried dogs shows that these animals were old when they died. Being large dogs with a normal build, they would have made proper livestock and settlement guards, protecting their environment from predatory animals and other sorts of danger. As they lacked signs of maltreatment, died at an old age and were buried near two humans, it is likely that these dogs had accepted at least some people as their social group and were themselves considered companions, protectors an maybe even members of the household. After the dogs died, they were treated accordingly, and buried near two members of the community. That not all dogs that lived at the settlement enjoyed the same 'social status' as the ones that were buried, is indicated by the disarticulated dog remains found among the bulk of settlement waste.

The horses literally died during their best riding years, two of them still wearing their riding gear. Like the dogs, they were buried at significant locations, but while the dogs lived long lives and probably died natural deaths, the horses were sacrificed to serve as a display of wealth and status. Not only the killing of a fine riding horse, but also the burial of an entire carcass must have been a sacrifice. That a carcass was of more value above ground, is at least indicated by the articulated horse remains with cop and cut marks found at among the consumption waste of the site.

Both the dog and horse burials, including their locations and characteristics, fit within a pattern typical for the North Sea coastal area, which is different from burial patterns observed in the east of the Netherlands and further inland. With only one horse burial found at an adjacent site, Oegstgeest appears to have occupied a unique position within the Rhine estuary in terms of horse sacrifice and the practice of burying dogs. This

could be related to different cultural influences, or the presence of a local ruler with the means to keep large dogs and train and kill valuable riding steeds.

ABSTRACT

Excavations at the Early Medieval site of Oegstgeest, located in the Dutch Rhine estuary, have yielded the burials of three horses and three dogs. In order to understand why these animals were buried and how their burials relate to the roles these animals fulfilled for the inhabitants of the settlement, a zooarchaeological study of their articulated remains has been combined with a critical analysis of existing literature and previous notions about the nature of Early Medieval dog and horse burials. It is argued that at the buried horses were first used as riding animals and then sacrificed to display wealth and status. The buried dogs on the other hand were considered social companions and buried accordingly after they died. Both the burying of dogs and sacrifice of horses fits a burial pattern specific for the North Sea coast, and could indicate the presence of a local elite at the settlement of Oegstgeest, with the means to keep large dogs and kill valuable riding steeds.

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APPENDICES

I: Number of fragments, minimum number of elements and weight per dog grave

Element	Dog grave 1 (RIN98, pit 61, feature 3)			Dog grave 2 (OBSP11, pit 94, feature 10)			Dog grave 3 (OBSP12, pit121, feature 14)		
	N frag	N elem	Weight (gram)	N frag	N elem	Weight (gram)	N frag	N elem	Weight (gram
Cranium	1	1	0,4	12	1	16,5	100	1	103,2
Hyoid							1	1	1
Mandible	5	2	42,9	6	2	61,4	7	2	95,6
Maxilla	3	1	11,9	4	4	17	6	2	17
Dental	9	9	5,5	5	5	9,7	11	11	3,7
Axis	4	1	12,4	1	1	10			
Atlas	2	1	3,2	1	1	2,5	6	1	23,82
Vertebrae	42	13	95,7	69	32	120,3	123	25	164,9
Sternum	5	5	4,7				6	6	5
Scapula	3	2	13,4	7	2	14	1	2	18,6
Humerus	9	2	107,1	9	2	69	6	2	100,2
Radius	6	2	53,8	8	2	26	10	2	49,6
Ulna	10	2	47,4	9	2	24	15	2	40
Metacarpals	3	2	4,4	5	4	6,4	13	10	16,3
Pelvis	5	2	40	2	2	13	5	1	23,9
Sacrum				1	1	3,4			
Femur	3	1	20,2	8	2	52	9	2	74,5
Patella	1	1	1,2				2	2	1,8
Tibia	4	1	10,9	7	2	54,3	3	2	84,6
Fibula	3	1	0,7				10	2	4,1
Astralagus	2	1	4,4				2	2	8,9
Calcaneus	1	1	7,7				2	2	9,2
Metatarsals	3	2	5,3	8	4	7,7	14	8	25,7
Carpals/Tarsals	7	7	6,9	6	6	5,1	22	22	17,4
Sesam bones	1	1	0,1				19	19	1,5
Phalanges	5	5	3,8	3	3	1,5	36	35	18,1
Costa	29	4	19,9	64	10	40	126	19	80,3
Total dog	**166**	**70**	**523,9**	**235**	**88**	**553,8**	**555**	**183**	**988,92**
Longbones			12			2			2,9
undidentified			87			34			84
Total			**622,9**			**589,8**			**1075,82**

2) Number of fragments, minimum number of elements and weight per horse grave

Element	Horse 1 (OLSP10, pit 60, feature 1)			Horse 2 (OBSP11, pit 74, feature 2)			Horse 3 (OBSP11, pit 87, feature 1)		
	N fragm.	N elem.	Weight (g)	N fragm.	N elem	Weight (g)	N fragm	N Elem.	Weight (g)
Cranium				10	1	64	6	1	34,8
Hyoid				1	1	1,1	2	1	14,2
Mandible				4	1	67,3	2	1	162,9
Maxilla									
Dental				5	5	223,6	13	13	654,5
Axis							4	1	90
Atlas							6	1	71,2
Vertebrae	97	27	801,1	113	26	901,9	104	31	1595
Sternum				4	4	58,8	11	11	269,6
Scapula	15	2	251,6	1	1	194,1	15	2	449,1
Humerus	20	2	411,7	14	2	694,5	14	2	614,9
Radius/ulna	6	2	278,4	6	2	903,9	5	2	783,7
Metacarpals				7	5	400,9	7	4	349,6
Pelvis	1	1	14,8	1	4	69,1	25	2	495,7
Sacrum				1	1	14,9	14	1	140
Femur	1	1	59,4	12	2	357,9	19	2	932
Patella	1	1	47,3	1	1	37	3	2	68
Tibia	2	1	49,3	11	2	404,6	1	1	864,5
Fibula	1	1	1,8						
Astralagus				1	1	65,4	2	2	139,8
Calcaneus				1	1	72,5	2	2	145,2
Metatarsals				11	5	372,6	8	6	481,7
Carpals/Tarsals	26	24	210,4	26	24	210,4	22	21	190,42
Sesam bones				5	5	21,9	9	9	40,1
Phalanges				8	8	258,8	12	12	659
Costa	281	20	689,1	122	12	364,9	351	32	1075,5
Total horse			**2814,9**	**365**	**114**	**5760,1**	**657**	**162**	**10321,42**
longbones			287,6						95,7
undidentified			506,4			620			900
Total	**451**	**82**	**3608,9**			**6380,1**			**11317,12**

3) Long bone measurements from the horses and dogs.

Individual	Element	Measurement	Value (mm)	Withers height (cm)
Horse 2	humerus	SD	34	
	humerus	SD	34	
	radius	GL	330	128-136
		BP	82	
		BD	72	
		SD	36	
		L1	305	
	radius	GL	325	128-136
		BP	83	
		BD	72	
		SD	37	
	mc3	GL	221	136-144
		BP	52	
		BD	47	
		SD	31	
	tibia	SD	37	
		BD	68	
	mt3	GL	266	136-144
		BP	46	
		BD	48	
		SD	28	
Horse 3	scapula	GLP	92	
		SLC	70	
		GLP	95	
		SLC	71	
	humerus	BD	82	
		SD	35	
	humerus	BD	81	
		SD	34	
	radius	GL	34	136-144
		BP	83	
		BD	73	
		SD	40	
	radius	GL	34	136-144
		BP	8,3	
		BD	75	
		SD	3,9	
	mc3	GL	23	136-144
		BP	52	
		BD	50	
		SD	3,4	
	mc3	GL	23	

		BP	52	
		BD	50	
		SD	35	
	femur	BD	39	
	tibia	GL	35	
		BP	95	
		BD	73	
		SD	42	
	tibia	GL	35	
		BP	95	
		BD	72	
		SD	41	
	mt3	GL	270	136-144
		BP	51	
		BD	48	
		SD	3,3	
	mt3	GL	270	136-144
		BD	48	
		SD	32	
Dog 1	humerus	BD	40	
	humerus	GL	202	66,6
		BP	49	
		BD	39	
		SD	162	
	radius	BP	22	
		SD	17	
	radius	GL	204	66.8
		BP	23	
		SD	16	
	ulna	SDO	28	
		DPA	31	
	ulna	GL	23	64.6
		SDO	27	
		DPA	3	
Dog 2	humerus	GL	179	58,7
		BP	45	
		BD	34	
	radius	BP	20	
	radius	GL	179	58,9
		BP	21	
		BD	34	
		SD	14	
	femur	GL	198	60,9
		BP	40	
		SD	14	
	tibia	GL	194	57,6

		BP	34	
		SD	13	
	tibia	GL	194	57,6
		SD	13	
		BD	24	
Dog 3	humerus	GL	194	63,9
		SD	16	
		BD	37	
	humerus	GL	193	63,5
		BP	46	
		BD	37	
		SD	16	
	radius	GL	193	62,6
		BP	21	
	ulna	GL	225	63,2
		SDO	25	
		DPA	28	
	femur	GL	211	65
		BP	44	
		SD	15	
	femur	BD	40	
	tibia	GL	212	63,5
		BP	38	
		BD	2,4	
		SD	1,4	

4) Dental wear and epiphyseal fusion stage in the horses, including estimated age.

Individual	Element	Fusion proximal	Fusion distal	Crown height (mm)	Estimated age in years
Horse 1	humerus	unfused			< 3 - 3,5
	humerus		fused		> 1,3 - 1,5
	humerus	slightly fused			< > 3 - 3,5
	radius	fused			> 3,5
	femur		fused		> 3 - 3,5
	tibia	fused	fused		> 3 - 3,5
Horse 2	humerus	unfused	fused		> 1,3 - 1,5; < 3 - 3,5 years
	radius	fused	fused		> 3,5
	ulna	unfused			< 3,5
	femur		fused		> 3 - 3,5
	femur	unfused			< 3 - 3,5
	m1 inf.			67,9	5,25 - 6,5
	p3 inf.			70,1	4,5 - 6,5
Horse 3	humerus	fused	fused		> 3 - 3,5
	radius	fused	fused		> 3,5
	femur	fused	fused		> 3 - 3,5
	tibia	fused	fused		> 3 - 3,5
	p2 inf.			44,5	5 - 7,5
	p3 inf.			61,7	6 – 7
	p4 inf.			73,8	4,5 - 6,5
	p4 inf.			73,2	4,5 - 6,5
	m1 inf.			58,5	6,5 – 8
	m1 inf.			63,1	5,25 - 6,5
	m2 inf.			64,9	6 - 7,5
	m2 inf.			63,8	6 - 7,5
	p2 sup.			44,2	7,5 - 9,5
	p3 sup.			58,3	7,5 – 9
	p4 sup.			67,4	6,5 - 7,75
	m1 sup.			58,4	7 - 8,5