

## Kristiina Mannermaa, Pirkko Ukkonen & Suvi Viranta PREHISTORY AND EARLY HISTORY OF DOGS IN FINLAND

### Abstract

The earliest dog finds in Finland are nearly as old as the evidence of human occupation in Finland, more than 10 000 years. Although scarce and mainly burnt and poorly preserved, dog bones are present in southern Finland throughout the Stone Age. In northern Finland, however, dogs are absent in palaeofauna. Dog bones are present at Iron Age sites, where they are found in both occupational contexts and burials. Dog bones from Iron Age burials are mainly burnt, but those from occupational sites are unburnt, as are those found at Historical Period sites. Early dogs probably aided in seal and elk hunt and were also used for pulling sleds, but occasionally also eaten and used in ritual activities. The size and shape of the early dogs resemble those of a Spitz, which lends support to the notion that the Finnish Spitz may have ancient origins.

Keywords: dog, Finland, Mesolithic, Neolithic, Bronze Age, Iron Age, Medieval, Finnish Spitz

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### INTRODUCTION

Over the last ten years, the history of the domestic dog (*Canis familiaris*) has been a hot topic in the world of archaeological and anthropological research (Crockford 2000; Germonpré et al. 2009; 2012; 2013; Napierala & Uerpmann 2010; Morey 2010; Losey et al. 2011; Ovodov et al. 2011; Crockford & Kuzmin 2012; Larson et al. 2012). The earliest archaeological evidence suggesting a close relationship between human and dog ancestors are from Belgium (the Goyet site, see Germonpré et al. 2009) and the Russian Altai (Razboinichya Cave, see Ovodov et al. 2011) and are dated to more than 30 000 BP. Several other slightly younger Palaeolithic dogs are also known from France, Germany, Russia and Israel (Sablin & Khlopachev 2002; Pionnier-Capitan et al. 2011). The early domestication of dog and the special relationship between dogs and humans, reflected in various kinds of archaeological sites from dif-

ferent time periods, make the dog a unique animal species in human cultural history.

In Finland, the history of the domestic dog has not been systematically studied earlier, but some regional reviews can be found in Finnish archaeological literature. Leskinen & Pesonen (2008) give a short review of the distribution of dogs at archaeological sites in Vantaa, southern Finland including the oldest radiocarbon dated dog in Finland, a dog bone from the Nissbacka site dated to c 9257–9021 calBP (8180±90 BP; Ua-33680; Leskinen & Pesonen 2008). Another two studies that should be mentioned are Tourunen (2008), who discusses the role of dogs in the Medieval–Early Modern town of Turku in southwestern Finland, and Salmi (2012), who presents dog bones found in Early Modern Tornio in northern Finland.

In this paper we present the spatial and temporal distribution of archaeological dog finds across Finland and discuss the data in order to shed light into the origin of Finnish dogs and their role during dif-



Fig. 1. Cultures and sites mentioned in the text. A: Kunda culture, B: Butovo culture, C: Veretye culture; 1: Mezhrich (Ukraine), 2: Mezin (Ukraine), 3: Eliseevichi I (Russia), 4: Popovo (Russia), 5: Yuzhniy Oleniy Ostrov (Russia), 6: Veretye I (Russia), 7: Kunda, Lammasmägi (Estonia), 8: Pulli (Estonia), 9: Zvejnieki (Latvia), 10: Skateholm (Sweden), 11: Vedbæk (Denmark), 12: Åland (Finland).

ferent periods and cultures in different parts of the country. We base our conclusions on the identified osteological materials from archaeological sites in Finland and its neighbouring regions, information on the morphology of ancient dogs in Finland and adjacent areas, as well as ethnographic data on the uses and roles of dogs in different cultures.

## BACKGROUND

### *The first settlers*

Finland was inhabited during the Mesolithic Stone Age (Table 1). The first inhabitants occupying the newly deglaciated land were hunter-gatherers, with the main game species being wild reindeer (*Rangifer tarandus*) in the north, seals (Phocidae) on the coast, as well as the Eurasian elk (*Alces alces*) and small game in the interior of the country.

The archaeological evidence and the location of the earliest sites c 11 000–10 000 calBP suggest that the first settlers came to Finland from three directions: east, south and southeast (Jussila & Matiskainen 2003; Takala 2004; Pesonen et al. 2014; in press). The first arrivals probably originated from the Kunda culture in the Baltic area,

the Veretye culture from the eastern part of Lake Onega, and the Butovo culture from the Volga and Oka regions in Russia (Takala 2004; Pesonen et al. in press) (Fig. 1). The earliest post-glacial people to settle in Finnish Lapland also came from the southeast (Rankama & Kankaanpää 2008; 2014).

In the areas where the first settlers of eastern Finland originated, dogs were already present during the Late Palaeolithic. Dog bones are regularly found at occupation sites of the Butovo and Veretye cultures in western Russia and the Kunda culture in the Baltic area (Lõugas 1996; Oshibkina 1997; Koltsov & Zhilin 1999). At the Veretye I site, dog bones account for 13 per cent of all identified bones (Oshibkina 1997: 120). Dog remains in an anatomical order were found associated with a human grave (but in a separate pit) at the Veretye culture cemetery of Popovo near Lake Lacha, east of Lake Onega (Oshibkina 1997; 2008). Several dog bones have been found at the Kunda culture sites of Pulli (c 11 000–10 000 calBP) and Lammasmägi (c 10 000–9000 calBP) in Estonia (Lepiksaar 1949; Lõugas 1996; 1997).

One Paleolithic site confirmed to have produced very old dog finds, Eliseevichi I in the Central Russian Plain (Fig. 1), is situated close to the prov-

enance area of the first settlers of Finland (Kulonen 2002). Eliseevichi I has been dated to c 20 000–15 000 calBP and has produced two canid skulls attributed to domestic dogs (Sablin & Khlopachev 2002). The Eliseevichi dogs were very large animals and Sablin & Klopachev (2002) hypothesize that they were hunting companions to people. In the same area, two other Palaeolithic sites, Mezin and Mezhrich, have also yielded a record of large dogs (Germonpré et al. 2009).

After the initial occupation phases, new people probably arrived in Finland later in prehistory, especially with the spread of the Comb Ware (c 7000–5000 calBP), Corded Ware (c 5000 calBP) and Textile Ware (c 3500 calBP) (Table 1; Carpelan 1999; Edgren 1999; Lavento 2001).

### *The roles of the domestic dog – evidence from northern Europe*

From early times to recent history, dogs have had different domestic and spiritual roles in human societies, as reflected in the ethnographic and archaeological record. The working roles of dogs are known from all over the world. Draft dogs have long been used in arctic areas (Morey 2010; Russell 2012: 288). Archaeological and ethnographic evidence indicates that dog sleds have also been used in Finland since early on. The earliest known prehistoric sled runner from Finland derives from the Late Mesolithic Period, but its morphology suggests a delicately constructed sled that was

pulled by men (Aario 1935; Itkonen 1939; Luho 1950: 24). A new type of sled runner (one with a longitudinal groove) appears in the Finnish archaeological record during the Comb Ware Period (Itkonen 1935; Luho 1950: 22–3). This type of sled runner is typically used in dog sleds, for example in Greenland, indicating that dogs pulled some Finnish prehistoric sleds. In historic times, dogs pulled sleds in Karelia, northwestern Russia (Itkonen 1984a [1948]: 410). A very small collar from Salla in northeastern Finland, probably worn by a sled dog, is stored in the collections of the Finnish National Museum in Helsinki (Fig. 2). It was acquired in 1937, but its age is not known.

Ethnographic evidence from historical times in Finland and its neighboring areas emphasizes the importance of dogs in hunting. In the early 16th century the Swedish historian Olaus Magnus (1490–1557) describes how dogs were used in hunting wild reindeers with bow and arrow (Olaus Magnus 2001 [1555]). The Finnish vicar Johannes Tornaes (c 1600/1610–1681) writes ‘...during summers the game was driven by foot, following them with a dog – dogs are so good and brave that they do not only smell the prey but also dare to attack’ [translated from Finnish by the authors] (Schefferus 1963 [1674]: 314). The Sami used dogs in hunting birds, the Eurasian red squirrel (*Sciurus vulgaris*) and even the brown bear (*Ursus arctos*). Dogs were an essential aid for reindeer herders (Itkonen 1984b [1948]: 172), gathering the herds, helping in moving the herd

Period	Date	Pottery type	Subsistence
7 Urban Medieval and Historical Period	AD 1500–present	Imported wares	Agriculture, hunting-fishing-gathering
6 Late Iron Age and Early Medieval Period	AD 300–1500	Iron Age Wares, Karelian Ware, Medieval Imported Wares	Agriculture, hunting-fishing-gathering
5 Early Metal Period	3750–1700 calBP	ST, IT (Vardøy), Lovozero, Sär 2 (Kjelmøy, Luukonsaari, Sirnihta, Anttila, Kainuu), Paimio, Morby	Hunting-fishing-gathering, agriculture
4 Late Neolithic	5100–3750 calBP	Pyheensilta, Pöljä, Jysmä, CorW, Kiukainen, Palayuba, etc.	Hunting-fishing-gathering, early agriculture
3 Middle Neolithic	6000–5100 calBP	CW 2, CW 3, Kierikki	Hunting-fishing-gathering (early agriculture)
2 Litorina Mesolithic and Early Neolithic	8800–6000 calBP	CW 1:1, CW 1:2, Jäkärälä, EAW, Sär 1	Hunting-fishing-gathering
1 Ancyclus Mesolithic	11200–8800 calBP	No pottery	Hunting-fishing-gathering

*Table 1. Chronological periods. Abbreviations: CW – Comb Ware, Jäkärälä – Jäkärälä Ware, EAW – Early Asbestos Ware, Sär 1 – Säräisniemi 1 Ware, Kierikki – Kierikki Ware, Pyheensilta – Pyheensilta Ware, Pöljä – Pöljä Ware, Jysmä – Jysmä Ware, CorW – Corded Ware, Kiukainen – Kiukainen Ware, Palayguba – Palayguba Ware, ST – Sarsa-Tomitsa Ware, Vardøy – Vardøy Ware, Lovozero – Lovozero Ware, Sär 2 – Säräisniemi 2 Ware, Kjelmøy – Kjelmøy Ware, Luukonsaari – Luukonsaari Ware, Sirnihta – Sirnihta Ware, Anttila – Anttila Ware, Paimio – Paimio Ware, Morby – Morby Ware.*



Fig. 2. A very small collar from Salla in northeastern Finland, probably worn by a sled dog. The height of the collar is 23 cm. Photo: the National Board of Antiquities, Finland.

Fig. 3. Seal dog 'Riku' from Suursaari Island in the Gulf of Finland. Photo: Sakari Pälsi 1932, courtesy of the National Board of Antiquities, Finland.

and separating individuals when needed. They also protect the animals against wolves (*Canis lupus*) and wolverines (*Gulo gulo*). In historical times, dogs were an important aid in sealing in the coastal areas of Finland, particularly in tracking seal pups from dens and breathing holes on the frozen surface of the sea. Special seal dog types (Fig. 3) were named according to the large islands of the Gulf of Finland (for example 'Suursaari seal dog' and 'Tytärsaari seal dog') (Pälsi 1924: 176–92; Hämäläinen 1929: 110).

The ideological roles of the dog are reflected in prehistoric burials. The Palaeolithic and Mesolithic inhabitants of Fennoscandia and Siberia buried their dead in the ground and in cemeteries. Around 8000–7000 calBP, some canids also began to receive mortuary treatments that closely resemble those of humans (e.g. Morey 2006; Losey et al. 2011). Burials of complete dogs, for example, from Skateholm in Sweden, Vedbæk in Denmark, and Cis-Baikal in Russia (Larsson 1989; 1990; Losey et al. 2011) bear evidence of the importance of dogs for foragers, as well as of the strong social bond between the two.

Using dogs in burial practices is not only a tradition limited to hunter-gatherers, but dogs are regularly found in Roman and later Iron Age burials in different parts of Europe, including Finland (e.g. Lehtosalo-Hilander 1982; Jennbert 2002; 2003; Wessman 2010). Animal burials or animal remains in human burials have had various meanings in different times. Dogs in graves may

have served, for example, as a guard or a carrier of the dead person during the journey to the Other World. Dogs may have been buried as companions, or even been offered or used in sacrifices and other burial practices. Burials with dogs are known from countries neighbouring Finland. For example, remains of dogs have been found together with humans in several of the ship burials at Salme (c AD 650–750) (Peets et al. 2013), and a dog was buried with its master in a cremation burial at Piila (c AD 1000) (Mägi et al. 1998). Both sites are located on the Island of Saaremaa in Estonia. The dog is the most common animal found in the cremation graves at North Spånga, Sweden (Sigvallius 1994). Eighteen of the 488 cremations have two dogs and two cremations have three dogs; the total number of dogs in the whole cemetery area is 232 (Sigvallius 1994: 67).

Ethnographically, dog sacrifices are known among many Uralic peoples, such as the Khanty, Nenets and Nganasans (Moszynska 1974: 90). The Khanty trusted their dogs because, like shamans, dogs can see invisible spirits (Napolskikh et al. 2006: 53–4).

### *Size and shape of early dogs*

In the areas neighboring Finland, sites belonging to the Mesolithic Kunda culture (c 11 000–9 000 calBP) have yielded bones of large dogs corresponding to the well-known large Danish Mesolithic dog types (Lepiksaar 1949; Lõugas

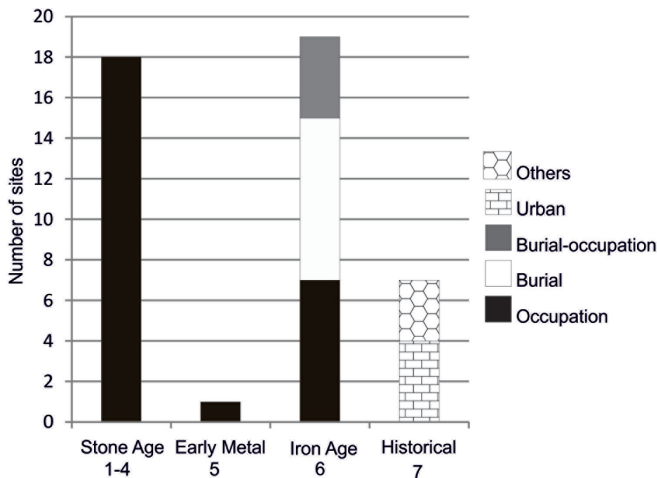


Fig. 4. Number of archaeological sites containing dog bones in Finland, and character of the sites. For periods, see Table 1. Column fills, see legend.

1997). The Danish dog material consists of three size categories: one corresponding to the size of the modern Greenland Sled dog, one the size of the Norwegian Elkhound, and one the size of a Lapphund (Aaris-Sørensen 1990; Richter & Noe-Nygaard 2003). In terms of size and proportions, these Danish dogs, as well as Swedish Mesolithic dogs, resemble the Spitz type. More robust dog types appeared in Sweden with the introduction of animal husbandry (Liljegren & Lagerås 1993).

Stone Age dogs come in different morphologies that may resemble dogs of modern breeds, but are in fact not directly related to most modern breeds (Parker et al. 2004). Genetic studies support the notion that only a few modern breeds can be considered ancient, and the Finnish Spitz is one of them (Larson et al. 2012). According to historical sources the Finnish Spitz originated in central Russia and spread to Finland with the current, Finno-Ugric people (Morris 2008). Because of the unique hunting skills of the Finnish Spitz, interbreeding with other types of dogs may have been intentionally avoided. The population was also rescued from a recent bottleneck, in the late 19th century, with minimum interbreeding with other dogs (Morris 2008). The Karelian Bear Dog is another Finnish breed with an apparent ancient origin (Morris 2008). A list of modern Finnish dog breeds is given in Appendix A.

## MATERIAL AND METHODS

The osteoarchaeological data was compiled from osteological reports (Finnish National Board of

Antiquities, Ålands Museum), books and other publications. In Finland, osteological analyses have been conducted of more than 1200 archaeological samples excavated from both prehistoric and historical sites. Altogether, dog bones have been identified in 70 excavation materials (samples) from 57 archaeological sites (Appendix B).

The estimated age of the finds is based on the archaeological dating of the sites. Since many of the sites have either been occupied for long periods or even several times, it's not possible to give any exact dates for the finds. The sites are divided into seven chronological periods based on their archaeological dating (Table 1). In Finnish archaeology, the Neolithic Period does not refer to farming but to the appearance of pottery. Agriculture was introduced in Finland and the Baltic area very slowly and mainly towards the end of the Neolithic (e.g. Carpelan 1999; Edgren 1999; Kriiska 2009; Alenius et al. 2013). All Stone Age samples derive from occupation sites, but those from Iron Age contexts are found both at occupation sites, cemeteries and occupation-cemetery-complexes (Fig. 4).

The preservation of bones is poor in the acid soil typical of most of Finland. Burning, however, improves their preservation considerably. Therefore, the bone material from the Finnish Stone Age consists almost exclusively of burnt bones. Unburnt bone from Stone Age contexts exists only on the Åland Islands, where the circumstances for bone preservation are more favourable. Since burnt bone material is highly fragmented, it is not possible to use proper osteometric methods in differentiating

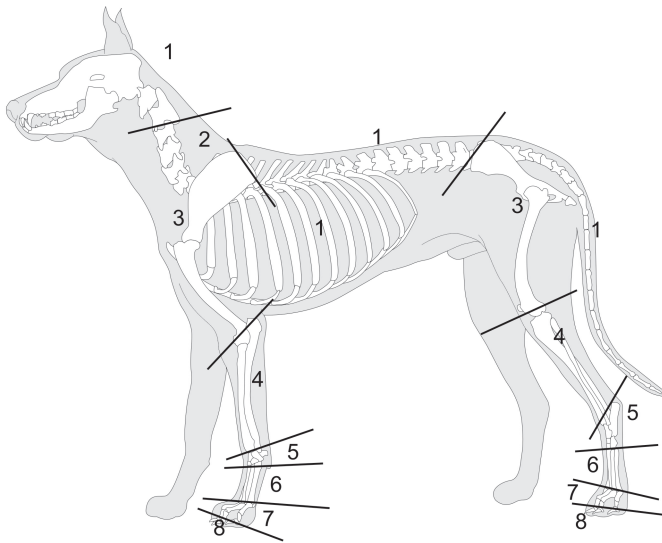


Fig. 5. Anatomical parts of a dog referred to in the text and figures. 1: head region (cranium, mandibula, dens, atlas, axis), 2: trunk (vertebra, costa, sternum), 3: proximal parts of the extremities (scapula, humerus, pelvis, sacrum, femur, patella), 4: distal parts of the extremities (radius, ulna, tibia, fibula), 5: wrist and ankle (carpalia, tarsalia), 6: metapodials (metacarpus, metatarsus), 7: proximal phalanges (phal. 1, phal. 2, os sesamoideus), 8: claws (phal. 3). Drawing: Michel Coutureau (Inrap), in collaboration with Vianney Forest – 1996, © 1996–2012 ArchéoZoo.org.

dog bones from those of grey wolf, red fox (*Vulpes vulpes*), or even the Arctic fox (*Vulpes lagopus*). Furthermore, teeth and skulls – which are the most reliable body parts in canid identification – rarely survive the heating process. Consequently, burnt bones identified as domestic dog included only adult specimens that were from individuals smaller than adult female grey wolves and larger than adult male foxes. Canid bone fragments identified only as Canidae, as dog/wolf or as dog/fox are excluded from this study.

For spatial statistical analysis we divided the country in three parts, West, East and North. Sites located west of 27°00'E and south of 66°00'N were classified as being from the West. This includes the coastal area and the Mesolithic and Neolithic archipelago. Sites east of 27°00'E, but again south of 66°00'N were classed as representing the East and all sites north of 66°00'N were considered as representing the North.

We also studied the prey species co-occurring with dogs in archaeological sites. The common game species included in the comparison were seals, Eurasian elk, red fox, and tetraonid birds. Because the Finnish Spitz is especially skilled at hunting squirrels we also included squirrels in the study.

The anatomical composition of individual samples was recorded in order to study possible differences between the above-mentioned chronological periods. Categories used are given in Fig. 5. For each sample, the treatment of the bones (burnt/

unburnt) was also registered. Notes on cut marks and tooth marks were observed on the osteological analysis reports.

## RESULTS

### *Distribution of sites containing dog bones*

The spatial and temporal distribution of the Finnish prehistoric domestic dog finds is shown in Fig. 6. The early dog finds (periods 1–2: Ancyclus Mesolithic, Litorina Mesolithic and Early Neolithic) are concentrated on the Finnish south coast and the inland, but younger Stone Age (periods 3–4: Middle and Late Neolithic) sites with dog bones are also found on the Åland Islands. During the Stone Age, dog finds are scarce (18 sites, 24 samples), compared for instance to the Eurasian elk (148 samples) or the Eurasian beaver (*Castor fiber*; 214 samples). The northernmost Stone Age site including dog bones is Ylikiminki Latokangas in Oulu. The easternmost site is Puumala Kärmelahti. From the Early Metal Period (period 5) there is only one site with dog bones. Some of the dog remains from sites described as 'prehistoric' or 'multiperiodic' may, however, also derive from this period.

Sites with dog bones dated to Late Iron Age and Early Medieval Period (period 6) are concentrated on Åland, southern Finland and the northwest coast. At these sites, domestic dog bones are found in about one third of the assemblages. Sites with urban Medieval and Historical Period (period 7)

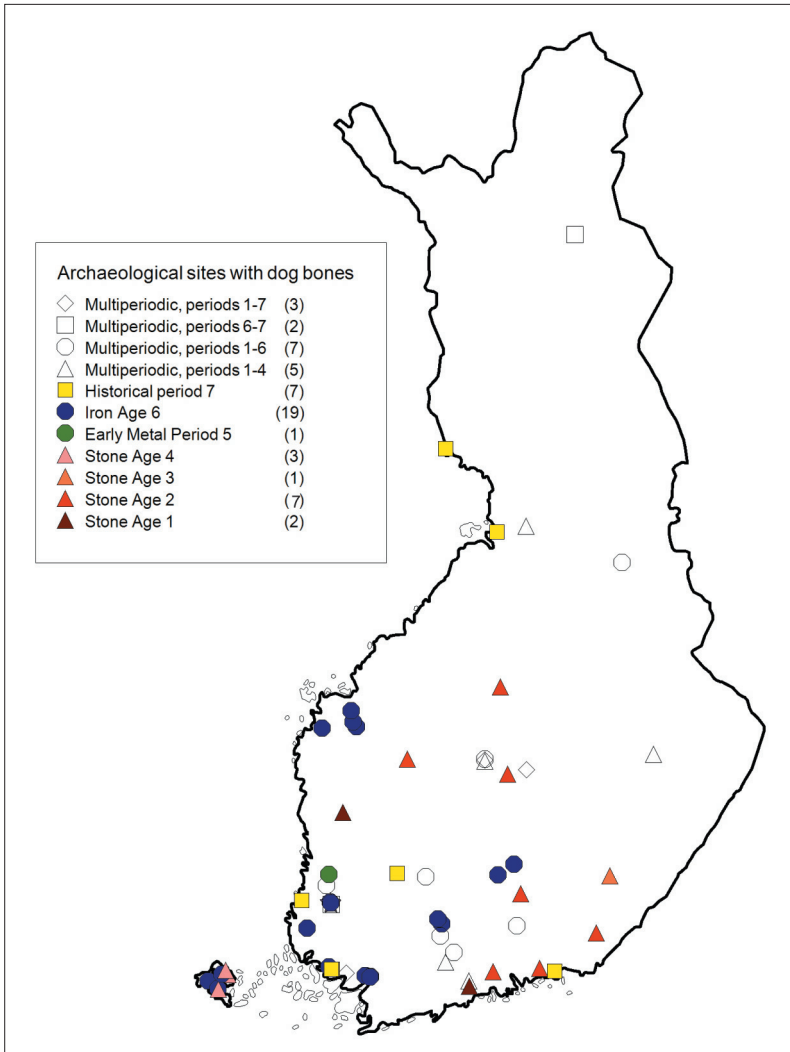


Fig. 6. Archaeological sites containing dog bones in Finland. For periods, see Table 1.

materials are found mainly in southern Finland, but dogs have also been recorded in historical contexts in the towns Oulu and Tornio in northern Finland. An interesting site that includes domestic dogs is the historical sacrificial site of Sodankylä Juikenttä about 120 km to the north of the Arctic Circle.

The most striking feature in the geographic distribution of Finnish domestic dog finds is their scarcity in the North during all time periods. There are no dog bones reliably dated to the Stone Age localities and only one multiperiod (Iron Age or younger) site with evidence for dogs. This also applies to canids in general. Domestic dog specimens are most commonly found in the West (Fig. 6), as 75% of Stone Age (including Mesolithic and Neolithic) and 95% of Iron Age localities

with dog remains are from West. The proportion of sites including dog bones of all sites is also higher in the West: during the Stone Age, 8% of sites in the West have dogs, in the East only 4%. During the Iron Age the proportions are 33% and 10%, respectively.

#### *Anatomical composition of the dog finds*

Most of the Stone Age samples have less than ten dog bone fragments, often only one or two. The size of the material doesn't allow any reliable quantitative comparisons between individual sites or between different time periods. Different parts of the skeleton seem to be present during the Stone Age, Iron Age and Historical Periods.

From the Early Metal Period only two fragments are reported. Proportions between different body parts are similar in both Stone Age and Iron Age materials, and even in Historical samples (Fig. 7). The relatively larger proportion of elements of the trunk in Historical materials is due to the high number of vertebrae and costae at one site, Aboa Vetus in Turku.

### Character of sites containing dog bones

All dog bones from Finnish Stone Age sites derive from occupational contexts (Fig. 4) and are burnt, except for those from Jettböle, Åland (Fig. 8), where unburnt dog bones have been found in a ritual context. Dog bones dating to the Iron Age have been found both in occupational contexts and burials. Those from Iron Age burials are nearly always burnt, whereas bones from Iron Age occupational sites are unburnt. Likewise, all dog bones from Historical Period sites are unburnt.

All the sites with dog bones also feature remains of game species. Seals are especially common and all Stone Age localities with domestic dogs yield also seals. During the Iron Age seals are less abundant, occurring in only 25% of the sites with dogs. Similarly, Eurasian elk is common (67% of the sites) during the Stone Age, but rare during

the Iron Age (only 19%). Birds are generally rare. Tetraonidae were most abundant in Historical time and they frequently co-occurred with dogs (in 57% of the sites).

Red fox and red squirrel remains are both rare in Stone Age sites including dog bones, but more common at Iron Age and Historical sites. During the Iron Age squirrels often occur together with dog fossils: 42% of sites with squirrels also produced remains of dogs.

## DISCUSSION

### Domestic dogs vs. local domestication

Wolves and people were widespread in Eurasia during the Late Pleistocene. They were often sympatric and competitors in the large carnivore guild (Stiner 2002). Both were nomadic group hunting predators of large herbivores. With the sedentary or semi-sedentary lifestyle of people, an alliance between wolves and humans began to develop leading eventually to domestication (Tchernov & Valla 1997; Ovodov et al. 2011). Domestication was probably not purposefully conducted or aimed for. According to a view shared by many researchers (see Zeuner 1963; Clutton-Brock 2012), the taming and early stages of domestication were a

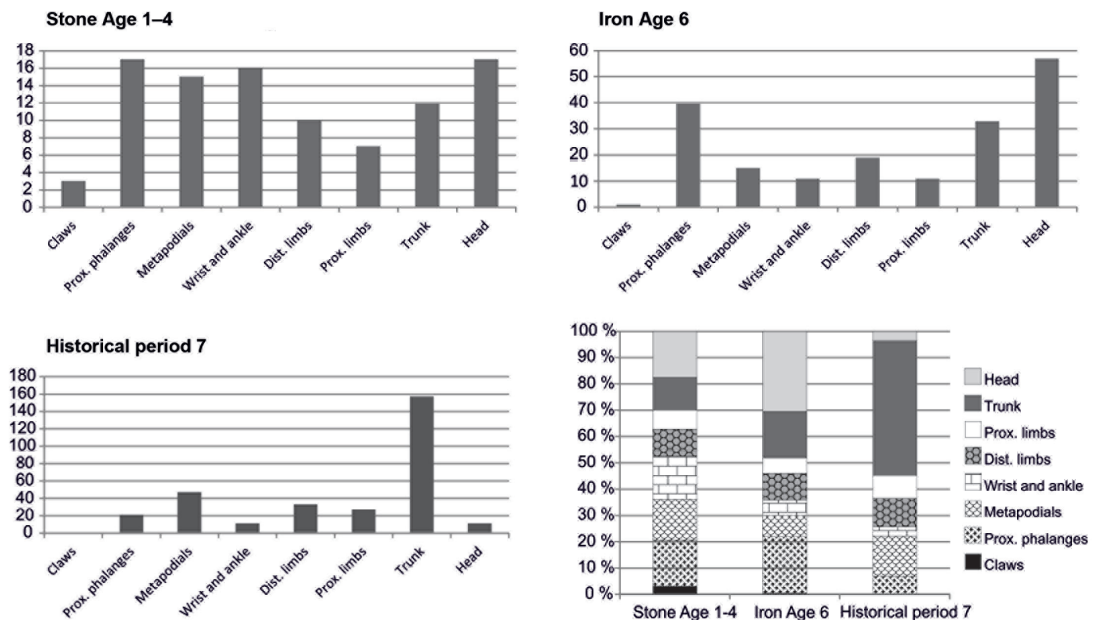


Fig. 7. Anatomical composition of dog bones found at archaeological sites in Finland during different periods. Vertical axis – NISP, for periods, see Table 1.



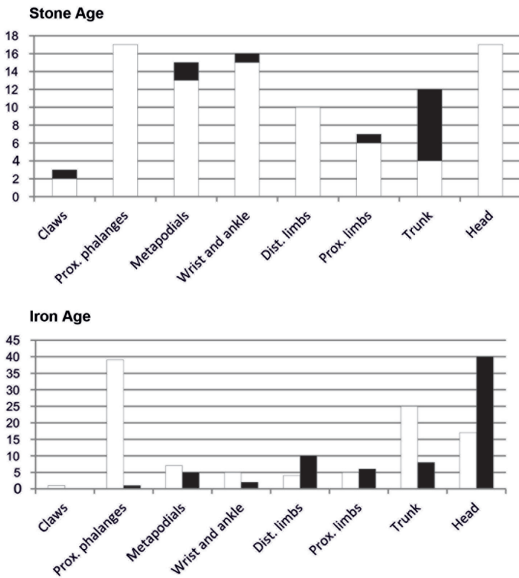


Fig. 8. Anatomical composition of burnt and unburnt dog bones found at archaeological sites in Finland, and character of the sites. Stone Age (periods 1–4); all sites are occupational sites. Iron Age (period 6); first column – burials, second column – occupational sites. White – burnt bone, black – unburnt bone. Vertical axis – NISP, for periods, see Table 1.

mutualistic situation, where humans were attracted by wolf cubs, which were occasionally tamed. On the other hand wolves, both tamed and probably bold, wild ones, became accustomed to human presence and utilized human resources (dumps) and formed sedentary inbreeding populations around human camps. A recent mitochondrial genomic study suggests a European origin to the domestic dog (Thalmann et al. 2013). It also supports the view that dog domestication took place in the Mesolithic and that the modern dog was preceded by discontinuous lines of proto-dogs.

The dog was domesticated well before Finland was initially occupied, and domestic dogs were evidently present in cultures which most likely represent the origin of the first settlement in Finland. Therefore, it is probable that the early inhabitants already had domesticated dogs and no local domestication took place here. In Sweden, for instance, Malmström et al. (2004) found no evidence of genetic contribution from local wolves in the mtDNA of Swedish archaeological finds of dog bones.

### Utilization of domestic dogs during different periods

Nearly all Finnish Stone Age (Mesolithic and Neolithic) dog bones come from occupation contexts and are found together with other species of refuse fauna, which could indicate that dogs were utilized

the same way as game species. However, we think that this kind of utilization of dogs was rare: dogs were eaten only on very special occasions, perhaps during rituals or famine. This could explain the scarcity of dog bones in Stone Age refuse materials. On other occasions, dogs were buried without cremation, and hence their bones have not survived. As stated above, the preservation of unburnt bone in the Finnish acidic soil is poor.

From the Early Metal Period/Bronze Age we have only one site with dog remains. Dog bones at Rieskaronmäki in Nakkila were found in building remains dating to the Bronze Age (Salo 1970: 43–8; Lahtiperä 1970: 208), together with bones of cattle (*Bos taurus*), sheep (*Ovis aries*), goat (*Capra hircus*), Eurasian beaver and mountain hare (*Lepus timidus*), and represent household refuse. Another site with dogs, Kiukainen Kaunismäki in Harjavalta (a cairn and settlement complex) has also been dated to Early Metal Period, but unfortunately the layers are mixed. Under the cairn was a round circle of stones, probably a floor pavement where Bronze Age and Stone Age type ceramics and animal bones, e.g. of dog and seal, were found (Salo 1970: 13–5). Alas, we cannot be sure whether these bones belong to the Early Metal Period layers or the Stone Age layers of the site (Lahtiperä 1970).

During the Iron Age, roughly half of the sites with dog bones are cemeteries or cemetery-occupational -complexes. The presence of dogs in cremation cemeteries indicates a special relationship between humans and dogs during the Iron Age.

Dogs were definitely present in medieval and later historical societies, although their bones are scarce in archaeological materials. The presence of dogs is often indicated by gnawing marks on the bones of other animals. Dogs have had access to human waste, or the remains of meals were given to dogs as part of waste management. The scarcity of dog bones in faunal assemblages suggests a different type of deposition of dog carcasses than with the other, consumed animals.

## *Size and shape of the prehistoric dogs*

Due to the scarcity and fragmentary nature of the Stone Age finds, adequate estimations of the size and type of these dogs are difficult. However, some descriptions of the dog type are available. The Mesolithic dog remains from Pihtipudas (eastern Finland) belonged to a small-sized dog (Herluf Winge in Ailio 1909). Forstén (1972) describes the Mesolithic dogs from Saarijärvi (central Finland) and Alavus (western Finland) as being small and the one from Kerava (southern Finland) a bit larger. Winge (1914) describes one of the dogs from the Neolithic site of Jettböle on Åland (excavated in 1905) as being middle sized according to measurements of the carnassial teeth (P4 18.7 mm; M1 21 mm). In our experience, the Stone Age elements fit well with the size of the modern Karelian Bear Dog we have used as reference.

Fortelius (1982) studied the dog material from Iron Age inhumation burials in Luistari, Eura (southwestern Finland). He concluded that there were probably two dog types in Eura since some of the skulls seem to be morphologically closer to Spitz than the Foxhound he used as a reference skeleton (Fortelius 1982). The dog bones found at the cremation cemetery on flat ground Rikalanmäki in Salo (Merovingian Period, c AD 550/600–800), on the other hand, are described as belonging to a small adult dog (Mäntylä-Asplund & Storå 2010: 62).

Tourunen (2008) discusses dog sizes and types in Medieval and post-Medieval Turku. The skeletons found represent various types of dogs. Based on the limb proportions, three types of dogs are evident: small and robust (short-legged), small and slender and large and slender (Tourunen 2008). Salmi (2012: 38) describes a dog from 17th–18th century Tornio being about the size of the modern Finnish Spitz or Finnish Lapphund.

## *Roles of the domestic dog*

Early dogs show different shapes and sizes and similarly different roles have been suggested for these early dogs in human societies. The most commonly cited role is that of a hunting companion. Bartosiewicz (1990) finds a positive correlation between the proportion of dogs and wild fauna in materials from Neolithic Europe, and takes this as evidence that hunting was an important function for Neolithic dogs. This is

probably true also in Finnish prehistory; dogs were important especially in elk hunt and sealing. This is indicated by the high prevalence of elk and seal at sites with dog bones. Good examples for sites belonging to sealing and fishing cultures are Jettböle on Åland and the Swedish site Ajvide on Gotland. A significant share of bones belongs to seal pups (Storå 2002), and dogs are traditionally valuable in tracking seal dens.

Dogs were not usually kept for consumption (but see Clutton-Brock 1994), but occasionally they have been used as food, at least during lean times (Pionnier-Capitan et al. 2011). Their fur may have been used for clothing, and the bed-warming role of living dogs has also been suggested (Manwell & Baker 1983).

Although no direct evidence exists of sled dogs anywhere in the world, dogs have most likely been used as draft animals from early times (Fiedel 2005). Some of the sled runners found from the Finnish Stone Age are suitable for a type of sled far too heavy to be pulled by humans only; most likely dogs were used with these sleds.

The refuse fauna at Finnish Iron Age sites with dogs is characterized by the Eurasian elk, and the squirrel. The modern Finnish Spitz has a unique way of hunting squirrels and birds, which may be an ancient trait. It is of interest that sites with squirrel bones often also feature those of dogs.

Burnt dog bones are typically found in settlements together with other animal bones (Ukkonen 1993), indicating that dogs were disposed and probably utilized, at least partly, in the same manner as game animals. At Jettböle, dog bones were found in ritual pits together with refuse fauna (Núñez 1995; Götherström et al. 2002). This gives strong evidence of an animal species that had several roles in prehistoric society and could be utilized in different ways within the same culture or site. Even though dogs were certainly not domesticated so as to function as a source of meat, there is some indication of dog meat consumption from many parts of northern Europe, for example Mesolithic Denmark (Jaanits et al. 1982: 93; Aaris-Sørensen 1990; Richter & Noe-Nygaard 2003). Dog meat may have been reserved for special occasions like famines or rituals, but is not likely to have been part of everyday meals. It has to be remembered that animals used in rituals may have also been eaten.

Dog fur has surely been used for making clothes and accessories, but in Finland the only archaeological evidence for this comes from the Historical

Period. Several dog bones from Medieval Turku show cut marks associated with both butchering and skinning (Tourunen 2008). However, no cut marks were found on the articulated skeletons. Almost all of the phalanges of these skeletons were missing, which might indicate that they were removed with the fur. It is also possible that these small bones have been missed during excavations (Tourunen 2008). Dog fur has been used in many other places as well, as indicated by skinning marks on bones from various archaeological sites (Russell 2012: 290). Ethnographic evidence informs us, for example, that dog skins were used to make the membranes of Khanty shaman drums (Napolskikh et al. 2006: 102).

Dogs may have been cherished and played with by prehistoric people, but they never had the role of a pet similar to that of dogs in the modern world. Throughout the Prehistoric Period, and in all parts of the world, the boundary between owned and other animals is unclear, and emotional bonds and economic use of animals can co-exist (Salmi 2012: 43). The concept of a pet is a relatively new phenomenon, the emergence of which is connected to the formation of upper classes in the 17th century (e.g. Serpell 1989; Serpell & Paul 1994; Thomas 2005; Russell 2012: 261–3). For example in present-day northern Finland the concept of pets, in its post-Enlightenment sense, cannot be applied to dogs as they also serve many economic functions (Salmi 2012). Prehistoric dog burials indicate that in those cases the animals were probably viewed as companions, and not eaten (Russell 2012: 263–6). The multiple roles of dogs during different periods of time illustrate the close and unique relationship between humans and dogs in Finland and other parts of the world.

### *Dog burials*

Osteological materials from graves in areas neighbouring Finland indicate that domestic dogs, like many animal species, were involved in the rituals and beliefs of prehistoric communities. Geographically the closest examples of Stone Age dog remains found in human graves come from the Mesolithic cemeteries of Skateholm in Sweden, Vedbæk in Denmark, Yuzhniy Oleniy Ostrov in northwestern Russia and the multiperiod site of Zvejnieki in northern Latvia (Gurina 1956; Larsson 1989; 1990; 2006; Zagorska & Lõugas 2000). No direct evidence exists of the use of domestic

dogs in Stone Age burial practices in Finland, but this cannot be taken to indicate that dogs did not have such a role, as even human bones are only very rarely preserved in Stone Age inhumation burials in Finland.

The only obvious case of dogs found in a Stone Age ritual context in Finland comes from the Middle Neolithic site of Jettböle on Åland, where dog remains were found in two different contexts: scattered amongst other refuse fauna at the site, and in a special area where the bones of two dogs were discovered in ritual pits together with the remains of at least seven human individuals (Götherström et al. 2002). The ritual character of the pits is indicated by cut marks in the bones, indicating the removal of meat from the carcasses of both humans and dogs (Núñez 1995). This suggests that, in addition to ordinary burials, dogs were associated with a broad and complex range of ritual practices. Similar examples of dogs in ritual contexts unrelated to burial can be cited from both Prehistoric and Historical Periods in various parts of northern Eurasia (Moszynska 1974; Ullén 1994; Olsen 2000).

Dog bones are found regularly in cremation cemeteries under flat ground, a type of burial particular to Finland (Fi. *polttokenttäkalmisto*), during the Merovingian Period, c AD 550/600–800. Examples in Finland include Rikalanmäki, Isorihemäki and Kirkkomäki in Salo, and Vainionmäki in Laitila. The dog bones found at Rikalanmäki in Salo probably represent a complete skeleton – at least, the major part of a single individual was recovered (Mäntylä-Asplund & Storå 2010: 62). Practically all of the cremation cemeteries under flat ground have yielded plenty of brown bear bones, but the finds consist almost exclusively of bear claws, indicating that the use of bear skins was part of burial practices (Mannermaa & Ukkonen 2011). Given that the bear claws are burnt, it is likely that the deceased was wrapped in (or laid on) a bear skin before cremation. By contrast, the dog bones found in these cemeteries usually derive from other parts than claws. Thus we may conclude that in Finnish Iron Age cremation burials, the meanings assigned to dogs differed from those of associated with brown bears.

Another example of an Iron Age dog find from Finland comes from the site of Majankangas in the municipality of Konnevesi, where burnt bones belonging to at least one human, one dog and one pine marten (*Martes martes*) – as well as



Fig. 9. A modern Finnish Spitz. Photo: Outi Heikkilä-Toni.

bones of pike (*Esox lucius*), pikeperch (*Sander lucioperca*) and an undetermined cyprinid fish – were found in an area of 3 square metres (Ukkonen 2003). All body parts of the dog (except for the claws) were recovered, indicating that a complete dog was cremated. The pine marten is represented by cranial bones and claws, and it is possible that they derive from a hide. Based on the typology of the artefacts found in the same context (bone arrowheads, a ring, a socketed axe, a spearhead, etc.), the site probably represents a single cremation burial from the Iron Age, c AD 200–550/600.

Dogs in Iron Age cremation burial contexts have been interpreted as companions who were perceived as following the dead to the Other world (Sten & Vretemark 1988: 149–51; Wessman 2010: 54). In addition to cremations, dogs sometimes featured also in Iron Age inhumation burials. The very special Viking Age burial ground of Luistari in Eura (Lehtosalo-Hilander 1982) produced at least 13 dogs that were buried together with the deceased, mainly men. In most cases, dogs were placed inside the chamber or some other grave-related structure, near to the feet of the deceased. Lehtosalo-Hilander (1982) characterizes these dogs as companions of the dead person. Dog bones have also been found in the Viking Age inhumation graves of Köyliönjärvi, where possibly even separate dog burials were encountered (Cleve 1978). However, the identification of the animal bones as representing a dog was uncertain.

The only site from Finnish Lapland featuring dog bones is that of Juikenttä in Sodankylä, a summer village occupied by the Sami from the Middle Ages to Early Modern times (AD 1050–1650). Based on the artefacts and other material finds, Carpelan (1992) interprets Juikenttä as a ceremo-

nial site, suggesting that the bones may have been deposited during a sacrifice or other ceremonial activity. However, it needs to be pointed out that the dog is not among the typical sacrificial animals at Sami offering sites (sieidi) (Mulk 2009; Äikäs et al. 2009), and dogs have not been commonly found in prehistoric or Historical Period Sami graves (Schanche 2000). Traditionally, Sami dog owners hanged the dogs that they could not use, and deposited the carcass in a cave or buried it in an underground pit (Itkonen 1984b [1948]: 180–1).

### Finnish Spitz – a Stone Age pioneer?

The prehistory of the domestic dog in Finland is closely connected to the early settlement phases of the region. The pioneer settlers first to occupy the area of present-day Finland were almost certainly accompanied by the domestic dog. If these settlers came from the sphere of the post-Swiderian cultures known as Kunda, Veretye and Butovo – as has been suggested (e.g. Takala 2004; Pesonen et al. in press) – it is reasonable to suggest that they brought domesticated dogs with them.

Recent DNA-based research on the population history of Fennoscandia indicates that the contemporary human population of Finland shows a close genetic affinity with the Neolithic hunter-gatherers of the region, suggesting that present-day Finns are related to the Neolithic occupants of the country, perhaps even its earliest settlers (Skoglund et al. 2012). This introduces an interesting idea, namely that very early dog genes may have survived in traditional Finnish dog types. The idea finds support in the study conducted by Larson et al. (2012), who, based on haplotypes, identified the Finnish Spitz (Fig. 9) as one of the ancient or basal breeds

of the domestic dog. As noted above, the unique hunting skills of this dog type may have been a reason for avoiding interbreeding with other types since early on.

We hypothesize that roots of the Finnish Spitz may extend well back to prehistory, even to the Stone Age. Size estimates of early domestic dogs in Finland confirm the existence of a Spitz-sized dog already during the Stone Age, even though more precise morphological comparisons cannot be made from the burnt, fragmented bones. A study of ancient DNA from prehistoric unburnt material could shed more light on our hypothesis.

## CONCLUSIONS

We argue that the domestic dog was introduced to Finland with the early settlers who occupied the country from the east and southeast. Dog bones are found from all periods of Finnish prehistory and history, although in small numbers. The distribution of archaeological sites with dog bones shows that the post mortem treatment of dogs in Finnish Lapland clearly differed from that practiced in the rest of the country, as dog remains have only been found at a single site from northern Finland, the 'ritual site' of Juikenttä dating to the Iron Age and Early Modern times.

In prehistoric Finland, dogs were used as working dogs, but obviously also occupied an important role in the spiritual realm. The presence of dog bones among normal refuse fauna indicates that dogs were also used as a meat resource, but mainly in exceptional circumstances, such as famine.

Since the Finnish Spitz is regarded as one of the few ancient dog breeds, we consider it possible that ancestors of the breed can be traced to Finnish prehistory, possibly all the way to the Stone Age.

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## Appendix A

### FINNISH DOMESTIC DOG BREEDS

The five extant domestic dog breeds in Finland are listed and briefly described below. In addition, there is a recent unofficial breed or type of an extinct dog, the Seal dog. Seal dogs were kept by sealers living on the coast and archipelago of the Gulf of Finland, and they were used to track seals on sea ice. Seal dogs varied in size and shape. They disappeared during World War II when the Finnish archipelago was evacuated.

#### *Finnish Spitz*

The Finnish Spitz is recognized as the National Dog of Finland. In the late 19th century a Finnish sportsman, Hugo Roos, became alarmed of the cross-breeding taking place in southern Finland and travelled to remote northern parts of the country to collect genuine Finnish Spitz for a foundation stock (Morris 2008). His thirty-year long effort of line breeding resulted in an apparent rescue of the ancient stock, as recent genetic studies indicate that the Finnish Spitz is the one of the few basal dog breeds in the world (Larson et al. 2012). It is a smallish, gold-hued or red dog with a peculiar hunting method. Upon locating a squirrel or bird in a tree, it starts a very fast barking called yodelling. By yodelling and by slowly waving its tail the Spitz mesmerizes the prey to stay in place while indicating the location to the hunter. The Spitz is used also for tracking elk and fur animals, and for retrieving water fowl. They are also useful guard dogs because of their tendency to bark.

Appropriate for the cold Nordic climate, the Finnish Spitz has a thick, double coat with a soft, dense under layer and a coarse, outer layer. It also has a curved tail. The body shape is square. The ideal wither height is 47 cm for dogs and 42 cm for bitches. As for the temperament, the Spitz are characterised as sensitive, cautious, independent and intellectual, but they are also faithful and protective of their family (American Kennel Club 2013; Kennelliitto 2013).

#### *Karelian Bear Dog*

The Finnish Karelian Bear Dog and Russo-European Laika formed a common breeding population until 1940, when the two were separated into two breeds (Morris 2008). During the 19th and 20th centuries Bear Dogs were allowed to breed with imported dogs. This was halted in 1936 and in 1946 the breed was formally accepted by FCI (Morris 2012).

The Karelian Bear Dog is a large and robust hunting dog that works close to the hunter. It is self-confident and courageous, with a well-developed fighting spirit. Once the prey is located, the dog makes a short fast chase and corners the prey keeping it at bay until the hunter makes the kill. The main quarry has traditionally been bears, but they are also used to hunt smaller prey. The dog has a square body, with a body only slightly longer than its

wither height. It has a double coat with a dense under layer. The colour of its coat is black, maybe shaded with white markings. The ideal wither height for dogs is 57 cm and bitches 52 cm (Kennelliitto 2013).

#### *Finnish Lapphund*

Lapphunds in Finland and Sweden share a common ancestry. For hundreds of years they have been used as reindeer herding dogs by the Sami. Lapphunds are generally thought to descend from the Siberian Samoyeds. In 1945 Lapphunds were recognized in Finland, when their breeding was separated from the Swedish Lapphund, and so became popular pets in southern parts of the country. The Finnish Lapphund is a medium-sized dog with a wither height of 49 cm for dogs and 44 cm for bitches. They have a long double coat with a long upper layer. Lapphunds show great variability in size, shape and colour as they represent a combination of many local ancient breeds of Lapland.

#### *Lapland Herder*

The Lapland Herder is a product of a recent attempt to produce an improved reindeer-herder. The Finnish Lapphund and many European sheepdogs were inter-bred to produce this breed (Morris 2008).

#### *Finnish Hound*

The Finnish Hound has existed since at least the 18th century and was produced by breeding local dogs with imported hounds including breeds from England, France, Germany, Switzerland and Russia. For some time, it was a variable hound, as interbreeding continued until in 1930s when the breed was fixed to its current form (Morris 2008). The Finnish hounds are used as scent hounds to trail foxes and hare. They bark as they are trailing. Finnish Hounds are strong, tall, dogs with a smooth coat.

## Appendix B.

Archaeological sites containing dog bones. NISP – number of identified fragments, KM – National Museum of Finland, ÅM – Ålands museum, TYA – University of Turku, archaeology, TMM – The Museum Centre of Turku, SatM – Satakunta Museum

Site	Coll.	Cat. no.	Period	NISP
Alavus Rantatöysä Rantalanvainio	KM	12583	Stone Age 2	3
Askola Nietoo Mattila Tallikäärö	KM	12934	Stone Age 2	4
Eura Luistari	KM	18000	Not Stone Age	70
Eura Yli-Nuoranne / Eläinlääkärin tontti	KM	18317:16	Iron Age 6	
Eura Käräjämäki-Osmanmäki	KM	6127:12	Iron Age 6	
Eura Pappilanmäki	KM	11063:686	Iron Age 6	
Hammarland Kattby "Holmströms tomt" (Ha 18.4)	ÅM	459e	Iron Age 6	9
Harjavalta Kiukainen Kaunismäki	KM	11506	Prehistoric	29
Hartola Uusi-Ruskeala c	KM	37985	Iron Age 6	3
Heinola Harakkalahti	KM	35895, 35183	Stone Age 2	5
Honkajoki Lauhala Hietaranta	KM	37114, 33137	Stone Age 1	3
Hyrnsalmi 016 Koppelonieniemi	KM	20634	Prehistoric	4
Hyvinkää Joentaka	KM	33456	Stone Age	2
Hämeenlinna Imatran Voima	KM	27205	Iron Age 6	3
Hämeenlinna Kirstula Riihimäki	KM	30304	Iron Age 6	1
Isokyrö Orismala Levänluhta	KM	21814:28	Iron Age 6	1
Isokyrö Pukkila	KM	7729	Iron Age 6	8
Janakkala Irjala	KM	11062	Prehistoric	3
Jomala Gården (Jo 22.4) (Prästgården)	ÅM	608, 617, 639, 629	Iron Age 6	20
Jomala Jettböle	KM	5907, 4630	Stone Age 4	29
Kaarina (Piikkiö) Moisio	TYA	644	Multiperiodic	3
Kangasala Sarsa Pohtiolampi ja Tiilitehdas	KM	32554, 32000	Prehistoric	8
Kerava Yli-Kerava Pisinmäki	KM	15432, 15832	Stone Age	4
Konnevesi Majakangas	KM	34052	Multiperiodic	43
Kotka Kymminlinna, Vanha Kymenkartano	KM	2003112	Historical 7	2
Laitila Vainionmäki	KM	34726	Iron Age 6	40
Luumäki Niitniemi 2	KM	34773	Stone Age 2	5
Maalahti Kopparbacken	KM	22847	Iron Age 6	1
Nakkila Rieskaronmäki	SatM	17102	Early Metal Period 5	2
Nastola Kilpisaari	KM	32180	Prehistoric	2
Nokia Nokian Kartano	KM	2004060, 2005044, 2004060, 2005044	Historical 7	3
Oulu (Ylikiminki) Latokangas	KM	25731, 23715	Stone Age	22
Oulu Byströmin tontti	KM	2005052, 2006058	Historical 7	12
Outokumpu Sätös	KM	30892	Stone Age	5
Pihtipudas Rönnny	KM	3938, 4146	Stone Age 2	1
Puumala Kärmelahti	KM	31376	Stone Age 3	3
Pyhtää Susikopinharju	KM	30881	Stone Age 2	2
Raisio Ihala Mullin eduspelto	TYA	619, 631, 642, 667	Iron Age 6	7
Rauma Kalatori	KM	2009037	Historical 7	1
Riihimäki Sinivuokkonieniemi	KM	30884	Prehistoric	1
Saarijärvi Rusavieto	KM	29406, 31616, 32195	Multiperiodic	15
Saarijärvi Tarvaala (Summassaari) Moilanen	KM	12234	Stone Age	5
Saarijärvi Voudinniemi 1/2	KM	28216	Prehistoric	4
Salo (Halikko) Isoriihenmäki / Muntola	KM	18837	Iron Age 6	28
Salo (Halikko) Kirkkomäki	KM	34020	Iron Age 6	26
Salo (Halikko) Rikalanmäki	TYA	105	Iron Age 6	8
Saltvik Kohagen (Sa 14.7)	ÅM	347	Iron Age 6	3
Saltvik Källsveden	KM	4789	Stone Age 4	2
Saltvik Åsgårda	ÅM	661, 662	Stone Age 4	1
Sodankylä 014 Juikenttä	SU	5606, 5625	Not Stone Age	9
Sysmä 21 Ihananiemi	KM	32291	Iron Age 6	29
Tornio Keskiatu	KM	2002081	Historical 7	9
Turku Aboa Vetus	KM	95032	Historical 7	277

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