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Nutrition and Stature: The Residents of the Island of Gotland, Sweden Killed in the Battle of Wisby, 1361

Michelle A. Miller
Western Michigan University

NUTRITION AND STATURE: THE RESIDENTS OF THE ISLAND OF GOTLAND, SWEDEN KILLED IN THE BATTLE OF WISBY, 1361

by

Michelle A. Miller

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Advisor: Allen Zagarell, Ph.D.

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NUTRITION AND STATURE: THE RESIDENTS OF THE ISLAND OF GOTLAND, SWEDEN KILLED IN THE BATTLE OF WISBY, 1361

Michelle A. Miller, M.A.

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This research examines stature in order to assess the socio-economic status of Gotland, an island (and municipality) off the coast of Sweden, before the 1360's. Gotland was known as a wealthy and autonomous peasant republic although it was loosely ruled by the Swedish Crown. In 1361, the Danish Army laid siege on the seaport city of Wisby to obtain its riches. Three days after the battle, the approximately 1800 dead Gotlanders were tossed haphazardly into five common graves. Archaeological excavations took place from 1905-1930 by Bendt Thordeman, among others. The human remains were analyzed in 1937. Osteological analysis in the early to mid 1900's was poor at best. The 1939 publication *Armour from the Battle of Wisby 1361* is the only published reference from these graves and includes a short chapter on the skeletal remains. My research re-examines the approximately 119 individuals from Common Grave three for stature using osteological measurements and formulae as well as for age at time of death and biological sex to get a better understanding of who fought. In doing so, I hope to confirm the fabled wealth of this island by assessing nutrition, health, socio-economic status, and stature.

This Thesis is dedicated to

Lauren Michelle Nelson

Research Assistant

Friend

Daughter

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Michelle A. Miller

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CHAPTER I

INTRODUCTION

Until recently, it was believed that skeletal remains offered little in the way of information on the life-ways of an individual or population. Now, through metric and non-metric observations (see Buikstra and Ubelaker 1994 and Bass 1987 for reviews) and in combination with cultural materials, we know the human skeleton can provide evidence of successful biological adaptations to cultural and physical environments. Such skeletal adaptations can tell us a great deal about the body's biological ability to cope and modify behavior amid stressors of everyday life even though the basic needs of the body (Martin et al. 1991) and general patterns of growth have not changed in recent evolutionary history (Larsen 1997). Martin et al. (1991) state:

> ...a nutritional deficiency that occurs during a critical phase of growth may affect several biological systems. Decreased activity, increased use of fat stores, and decreased skeletal growth are a few of the possible responses...the skeletal system is in constant communication and cooperation with other systems. (p. 13)

Disease or nutritional deficiency can override the body's ability to compensate for stressors. One often studied example of nutritional stress is the attainment of shorter adult stature due to insufficient nutritional sustenance during youth (Bogin, 1993). Bogin (1993) goes on to say that children in families with higher social-economic status have a higher intake of dietary protein and calories in general, "...it has been known that children of lower social-economic status are generally small and mature less rapidly than children of higher socio-economic status." (p.148) Tanner (1990) states: "...height can

indeed be used as a proxy for health…" (p. 163). Likewise, Maat (2005) states: "stature may be used as a parameter of population health and wealth." (p. 287). Stature studies in areas such as Guatemala by Bogin and MacVean (1978, 1981, and 1984) and developed nations such as North American, Western Europe and Japan by Mascile-Taylor and Boldsen (1985) show that higher social-economic status has a positive effect on stature.

To understand a population, individual skeleton analysis is a first and vital step to reconstructing the health, nutrition, and disease load. However, eventually the entire community must be evaluated. Skeletal analyses can focus on the stressed portion of a population but the healthy and relatively unstressed also need to be studied to gain an understanding and obtain a baseline of "normal" adaptation to culture and environment. Cultural adaptations can buffer the impact of stressors if the adaptations are adequate; this can depend on the stressors strength and duration (Larsen, 1997). For example, calcium and phosphorus are important chemicals to bone health and can be obtained in the diet. However, the skeletal system will be adversely affected if these elements are not obtainable (Martin, 1991).

With stature estimate, we can compare one individual to another or one population to another to make inferences regarding overall health and nutrition. Stature estimates can be determined through long bone measurement using comprehensive and standardized techniques (Raxter et al., 2006). For stature estimations, the femur is generally considered the most reliable long bone and is the most likely to survive burial due to its mass (Porter, 1995). Along with other biological health indicators found on human remains, anthropologists can construct hypotheses regarding health status and

quality of life for individuals and populations.

While ample research exists regarding medieval health and disease from the United Kingdom, France, and Spain, there is limited information for medieval Scandinavia. As noted by Martin et al. (1991) the need for research on many past populations is important because:

> ...it has only been through the archaeological record that anthropologists and historians have come to understand how changes over time in environment, political and economic structure, subsistence and diet, and settlement patterns can and do have profound effects on population structure and rates of morbidity and mortality. (p. 2)

They go on to say, "It can reveal some insights concerning the human condition and range of behavioral responses" (p. 2).

Unlike typical cemeteries where individuals were buried over hundreds or thousands of years, the Battle of Wisby collection housed at Statens Historiska Museum Stockholm, Sweden represents over 1800 individuals buried in mass graves at one point in time. A catastrophic assemblage sample such as this gives the anthropologist the opportunity to investigate the health of a population that, for the most part, was presumably healthy having died from battle injuries rather than disease and represents a single instance in time. Although the osteological paradox (Wood et al. 1992) of "did this population die in good health or bad" (Sullivan, 2005, p. 267; Larsen, 1997, p. 337-338) remains, it is reasonable to suggest these warriors were in relatively good health and not suffering from major health problems. These remains in particular could tell a great deal about Gotland in the years prior to the battle on July 27, 1361; in particular, they can reveal information about their quality of life via their stature, indicators of nutrition, medical practices,

diseases, dental care, and occupational stress to name just a few (Larsen, 1997). It is assumed that the socio-economic status can be illustrated via skeletal analysis of the victims of the Battle of Wisby and, indeed the peasants were better off economically than their contemporaries and thus had more resources available for food procurement. This research suggests that Gotland and the citizens of Wisby in particular were indeed a wealthy autonomous republic and because of this will show greater stature along with fewer disease and nutritionally related lesions.

CHAPTER II

LITRERATURE REVIEW

Background Research

Health and Nutrition: Skeletal Biology of Medieval Populations

Both genetic and environmental processes have an effect on the height which an individual can attain. Genetics is set at conception leaving the environment the only factor that can influence height in utero and after birth. There are many things in the environment that can affect height such as general health, hygiene and the availability of sustenance. Environmental stress relating to such factors can have a particularly hard effect on the children as they are still in the process of growing (Martin et al., 1991; Bogin, 1993).

The femur is the best long bone to use for stature determination due to bone density and mass and higher likelihood to survive burial; moreover, the femur length has a direct impact on stature. The measurement of stature from the femur and assessment of skeletal and dental lesions associated with poor nutrition such as cribra orbitalia on the roof of the eye orbits and dental lesion such as caries and enamel hypoplasia can aid in determining if an individual or population suffered nutritional stress.

The nutrition of a population directly affects the health of its members and subsequently the attainment of mean population adult stature. Therefore, the mean stature of a population is used often in the fields of economic history and economic development

(Steckel, 1995). Genetics play an important role in overall stature, being set by birth, but genetic information of an individual is not affected by the environment (Steckel, 1995; Lindgren, 1998; Dahlmann and Petersen, 1977). Steckel (1995) states: "Although genes are important determinants of individual height, studies of genetically similar and dissimilar populations under various environmental conditions suggest that differences in average height across most populations are largely attributable to environmental factors. (p. 1910)" Likewise, Lindgren (1998) states socio-economic conditions are influential in stature: "Height…is a proxy for socio-economic conditions at a specific time and changes in height over time thus reflect the changes of economic conditions in the society." (p. 319) During development, catch-up development can occur after any nutritional deficiency episode after the age of four years and compensated for fully but only if nutrition is improved sufficiently (Himes, 1991; Gracey, 1991; Dahlmann and Petersen, 1977; Bogan, 1993). Stature may be stunted with any undernourishment episode occurring before the age of four (Dahlmann and Petersen, 1977).

While nutrition is very important in growth, living conditions contribute as well. An abundance of information describes, in detail, the deplorable sanitary conditions of medieval towns (Sullivan, 2005). Unsanitary conditions raise the probability of disease significantly thus affects attainment of maximum adult stature. It is likely similar conditions existed at Wisby. According to Svensson (2001), Wisby did indeed have a stench but they also had an ingenious sewage system. Each home was constructed with a privy and rubbish chute combination that could be flushed. The system connected each home and emptied into the Almedalean Harbor. This system would have kept human

waste off the streets unlike other medieval cities and cut down on disease and its negative impact on height.

To establish medieval health, several case studies are examined here. McEwan et al., (2005) examined 327 juvenile skeletal remains dating from the 10^{th} to 16^{th} centuries from the cemetery at Wharram Percy, a deserted medieval village site in Yorkshire England. Juveniles occupied nearly half of the total 687 burials. Of theses, 34 juveniles ranging in age of four to 19 were studied. The peasant population most likely enjoyed a diet rich in fiber and calcium and low in fat plus an active, rural lifestyle. However, they were at the mercy of fluctuating harvest successes. Harvest failures would put stress on the most vulnerable residents, the children. Juvenile skeletal stress indicators found at Wharram Percy by McEwan et al. (2005) included cribra orbitalia (13 individuals) (Table 1) and Harris lines on five distal radii (only long bone studied.) The major finding in this study was the cortical thinning (thinning of bone from surface toward morrow cavity) of the radii suggesting negative environmental and illness influences. Mays (1999) states that it is well known starvation may cause cortical thinning. These 34 juveniles were estimated to be four years behind in linear growth; however, there is evidence of catch-up growth in the adult population at the same cemetery. Pointek and Kozlowski (2002) examined a total of 1686 skeletons from a medieval Grucsno, Poland population dating from 1100 to 1400 AD for evidence of cribra orbitalia. Of the total, 92 sub-adult (aged 0-15 years) skulls were studied. The authors indicate that 79 of the 92 children had various manifestations of cribra orbitalia (Table 1). The authors noted that other medieval cemeteries in Poland show a rate of 22 to 30 percent of cribra orbitalia in the adult

population.

Cribra Orbitalia is a lesion that can be formed by the body's demand for iron that is used by the body to carry oxygen inside the red blood cell for use throughout the body. This demand can cause an increase in the red blood cell producing bone morrow (flat bones) such as those found in the skull. This increased bone morrow production causes a "thickening" of the diplöe regions on the skull; most notably the parietal and occipital bones (porotic hyperostosis) and eye orbit roof (cribra orbitalia) (Larsen, 1997). These two etiologies are found mostly in children under the age of five years and are seen as healed or healing lesions in adults. However, if an individual or population is not acquiring enough iron from the foods they ingest it does not matter the number of red blood cells they have. The best way for an individual or population to acquire iron is from meat sources because the body more efficiently processes it than plant sources; indeed some plant sources inhibit iron absorption (Larsen, 1997).

Research performed by Sullivan (2005) on skeletal remains from Medieval York, England indicates that those in the lower social-economic status had an increased rate of cribra orbitalia. A sample of burials from Gilbertine Priory of St. Andrew, Fishergate dating from 1200-1538 AD was studied with economic status assigned by grave location. Sullivan (2005) shows that cribra orbitalia has distinct sex, age and economic status differences in distribution. Evidence of cribra orbitalia lesions was seen on 54 percent of females and 33 percent of males. All females between 20 and 30 years of age carry the lesion, likely due to menses and childbirth while males show no significant age relationship (Table 1). However, at this site, the lesions were less frequent as status

increased for both sexes. Sullivan (2005) states: "Inadequate diets, the filthiest of living conditions, the ingestion of unsafe foods, and lack of medical care collided in the lives of the lower classes to produce, among other things, an increased prevalence of anemia. (p. 265)". These conditions were likely prevalent throughout medieval Europe and Scandinavia.

Table 1.
Published incidences of cribra orbitalia

	n	Cribra Orbitalia	%	References
Wharram Percy	34	13	38	McEwan et al. (2005)
Grucsno, Poland				Pointek and Kozowski (2002
sub-adult	92	79	86	
Gilbertine Priory				Sullivan (2005)
female	35	19	54	
male	36	11	33	

Ethno-History of Gotland

Gotland, an island off the coast of Sweden (Figures 1 and 2), was known as a wealthy seaport island in the first half of the 14th century. It enjoyed full membership in the Hanseatic League with one of the league's main offices in town. (Svensson, 2001) Although it was ruled by the Swedish Crown and did pay a small tax, the island was virtually ignored and became an autonomous peasant republic (Thordeman, 1939). It was well known for its wealth and it was said "the pigs eat from silver troughs" (Thordeman, 1939, (p.8, 9, and 15); Andersson, 1956, (p. 69). The island community sits between Sweden and the Baltic States

making it an excellent location for seaports. "Trade was concentrated in Gotland at this period not in any one definite place, but was in the hands of the people all over the island, and voyages started from different points due to there being plenty of harbours along the coasts of the island" (Thordeman, 1939, p. 7). Because of this and the relaxed authority of the Swedish Crown, Gotland was indeed wealthy by standards of the day.

In 1361, Denmark attacked Gotland to attain some of its wealth (Thordeman 1939; Svensson, 2001). On July 25th, Danish troops landed in southern Gotland and marched two days to the northwest village of Wisby, Gotland's largest village and busiest seaport. Although Wisby had some warning of the impending attack, the village was ill prepared for the large well-armored Danish Army. The Gotlanders hastily formed an army consisting of any available male able, or in some cases unable, to fight. Men gathered from every town and farm within reach of Wisby in time for the village's defense. The battle was fought outside the fortified towered and turreted city walls of Wisby. At the end of the day, it was estimated 1800-2000 warriors laid dead, presumably mostly Gotlanders. The dead were not buried for three days and, because of the deterioration of the bodies, the burials were done hastily. Only weapons and other easily removable items were taken leaving precious armor, coins, chainmail, tackle, knives, keys, jewelry, and various other items remaining with the dead (Thordeman, 1939). The mass graves were first unearthed in 1905 when an arbor was built. The find was turned over to Dr. Oscar Vilhelm Wennersten, Gotlands archaeologist, who understood its significance and subsequently, the Swedish State took over the excavation. As was normal in the 1900's, the artifacts and not the skeletal material were seen as significant

(Larsen, 1997). Only the plethora of in-context archaeological finds saved the skeletal material from reburial; any excavation of Wisby skeletal material before 1928 was poorly treated: "…and where the positions of the bones were not noted, it was impossible to reassemble the various parts belonging to the same skeleton" (Thordeman, 1939, p. 149). However, during the years of excavation (1905-1937), skeletal material was saved from the three common graves and a small amount of analysis was performed in 1937 by osteologist Bo E. Inglemark (Thordeman 1939).

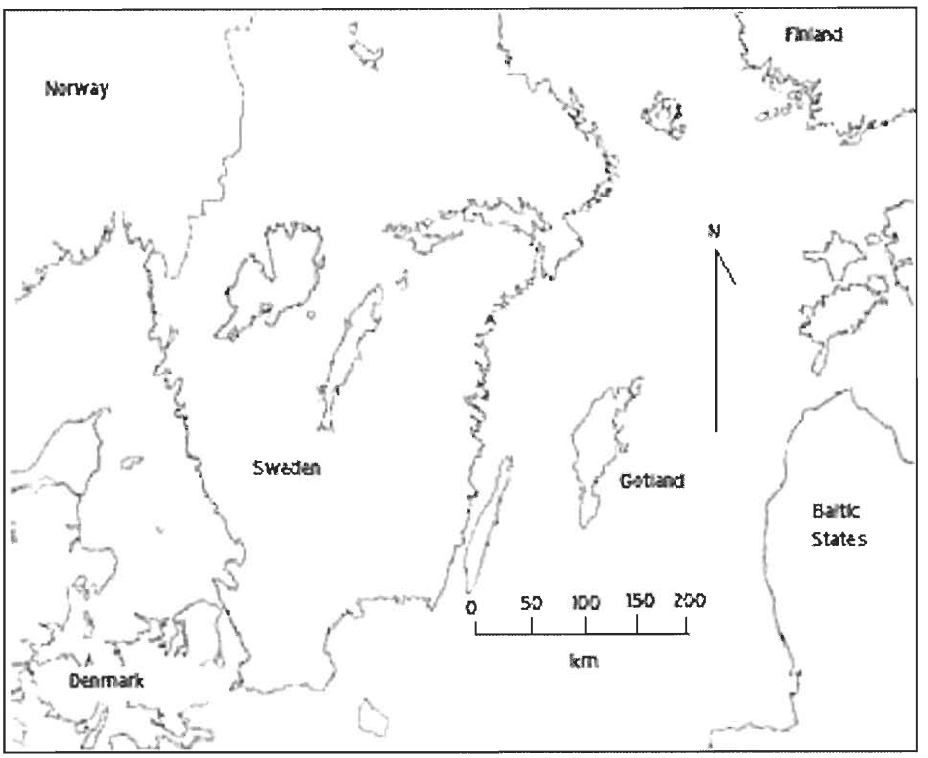


Figure 1. Southern Sweden and Baltic's.

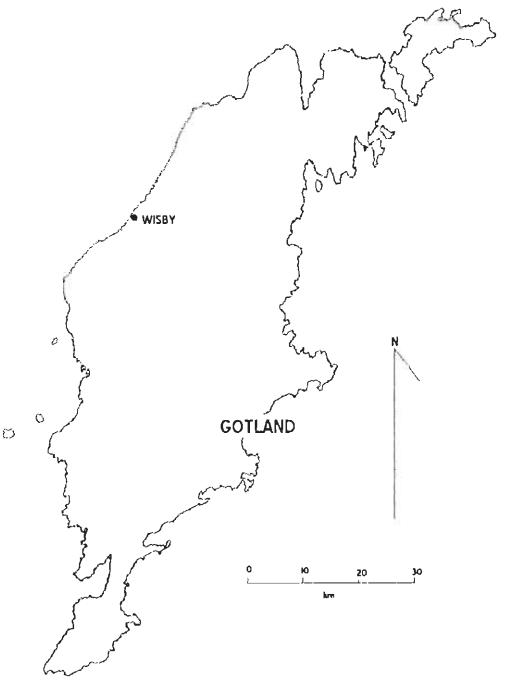


Figure 2. The Island of Gotland.

Socio-Economic Status of Gotland

Gotland was known as a wealthy island due to its ideal placement for seaport trade. Wisby was its largest seaport in 1361.

> Visby [Wisby] became the chief town of the island and at the beginning of the 13th century the town was the most important meeting place in the Baltic Sea for the extensive trading of goods between east and west. The lucrative enterprise created almost unbelievable opulence, enjoyed by the entire island. (Svensson, 2001, p. 9)

Svennson (2001) states that Visby's (also spelled Wisby) glory years were from the mid 12th to the early 14th centuries. The most likely trade professions of the village include: silversmiths, glassmakers, wheelwrights, runestone carvers (Nordström, 2002), mining

and ironwork, nonferrous metal work (coins), pottery and brick making, food and drink industries, cloth dyers (Pounds, 1989), stone masons (Andersson, 1956) and, most likely, fishmongers. Imports included gold, silver, and Russian furs (Andersson, 1956). Sugar and spices were just becoming available (Pounds 1989), through shipping routes. There were about 1000 individual farms on Gotland supplying barley, oats, wheat, rye, buckwheat and flax and hemp for rope (in demand for ships rigging) (Pounds, 1989). Livestock included cattle, pigs, and horses with donkeys and mules to plow the fields. Andersson (1956) states:

> The most famous town of Scandinavia in the Middle Ages was Wisby, on the island of Gotland, the numerous medieval houses which still stand, the magnificent church ruins, and the great city was with its gates and turrets give some idea of its vanished glory, which equaled that of any other medieval town in Northern Europe, and far exceeded that of the early Swedish towns of Birka, Sigtuna, and Stockholm. (p. 63)

This statement is supported by Thordeman (1939): "It is obvious that a peculiar and fine culture developed and flourished on this island under the protection of solid financial well-being" (p. 5). It is clear Gotland and particularly Wisby was a wealthy, self-sufficient island and had no real connection with the Swedish Crown. It had many items to export and imported many others, very easy to do on a seaport island. They had an autonomous government and the majority of individuals should have led a life void, for the most part, of nutritional starvation; partially due to the variation of imported goods. There is an overabundance of in context archaeological evidence to support the suggestion that Gotland had a high socioeconomic status in 1361. For example, city boasted 100 medieval churches that were destroyed in the attack and never rebuilt. Thordeman (1939) lists the items recovered. Very valuable armor as well as coins (one

leather pouch with 385 coins) minted in Sweden (405 coins), Denmark (126 coins), and Gotland (19 coins) were recovered. It should be noted that 33% of the coins found were Danish civil war coins that had no value outside of Denmark making the owner a probable Dane. Other finds include chainmail (coifs, shirts, and gauntlets), arm and leg guards, armored shoes, strap mounts, horseshoes, spurs, keys, padlocks, and a few pieces of jewelry including a silver ring. The large amount of armor present alone suggests that Gotlanders were wealthy since it would have been considered very expensive. Other proof of the wealth of Gotland comes in the form of the buried Dune Treasure (Thordeman 1939) recovered centuries later. It is believed that this treasure was buried in order to hide it from the invading pillagers but the owners perished before they could retrieve it or tell someone its location. Thordeman (1939) states, "These finds are of the utmost value in determining the cultural standards of the Gotlandic peasants before the year of misfortune, 1361." (p. 27) The coins found were minted in several medieval cities from England and France to the Baltic States as well as Gotland giving evidence of extensive trade. Also discovered in these hidden treasures was decorative art, a silver cup from Persia and a gold buckle with figure scenes in high relief that was made in Gotland.

Contemporary Populations with Wisby 1361

Cemetery Burials

Danish

Danish skeletal remains were excavated throughout the 1900's and the material spanned a time period from the Mesolithic through the Medieval Age (Lindqvist and Possnert 1999). Bennike (1985) states the stature of individuals varied greatly during these time periods but was starting to increase during the course of the Medieval Ages. The material excavated from the Medieval Period consisted of 251 males, 61 from Westerhus, Sweden, 52 from Viborg, Denmark and, 138 from Æbelholt, Denmark. Trotter and Gleser's (1952, 1958) male femoral stature method was used. Male mean stature of the Westerhaus, Sweden material is 174.0cm, the Viborg, Denmark material has a mean of 176.3cm while the Æbelholt, Denmark remains have a mean of 170.9cm (Table 2). The mean of these three statures is 172.6cm.

St. Andrew, Fishergate

The St. Andrew, Fishergate excavation took place in York Britain by the York Archaeological Trust and revealed over 400 human skeletons; 205 male skeletons from the years 1195 to the late 1500's were assessed. The femur and tibia were measured using the stature technique developed by Trotter and Gleser (1952, 1958). The mean stature for these

individuals was 171.0cm with a range of 155.0cm to 190.0cm (Stroud and Kemp, 1993) (Table 2).

Mass Burials

The Battleship *Mary Rose*

Stirland (2005) used the femur to assess the stature of individuals recovered from King Henry the VIII's ship, the *Mary Rose* sunk by the French Army in July of 1545. As Stirland states, this approach tends to be more accurate than using multiple long bones and eliminates the possibility of commingling of different individuals. Trotter and Gleser's(1952, 1958) stature formula was used. The mean stature for these individuals was 171.0cm with a range of 155.0cm to 190.0cm (Stroud and Kemp, 1993) (Table 2). The stature of the men from the *Mary Rose* fall in the range from the end of the 1900's of 170.0cm to 174.0cm.

Battle of Good Friday

According to Kjellström (2005), the Battle of Good Friday took place on April 6th, 1520 in Uppsala, Sweden and was the final battle in a decade's long conflict between Danish mercenaries and Swedish peasant farmers. Well over 4,000 men were estimated to have died. The Danish leader ordered that Swedish victims be left unburied in bogs for the animals. A 1971 excavation in the area yielded articulated skeletons but they

were not recovered. In 2001, a site just 10 meters from the 1971 site yielded remains that radiocarbon dated to the time of the battle with 95% accuracy. An excavation took place that same year under the assumption this was a Battle of Good Friday site. Two large burial pits were found in an excavation area of $8m^2$. Besides the skeletal remains, only a few artifacts were found. The lesions on the skeletons were consistent with medieval battle wounds. The Minimum Number of Individuals (MNI) of this site was 60 using the right proximal femur. Standard sexing techniques indicated nearly all males for the sample and standard ageing techniques give an age range of 14-44 years of age. Using the femur and the Trotter and Gleser's (1952, 1958) formulae, Kjellström (2005) calculated the statures of these 60 men between 165.2cm-185.6cm averaging 174.5cm (Table 2.).

Battle of Towton

The Battle of Towton took place in 1461 near the village of Towton, North Yorkshire, Britain. Fiorato (2000) estimated stature using Trotter and Gleser (1952, 1958) stature technique. The femur and tibia were both used for the measurements however, Fiorato (2000) feels there is a problem with the measurement when both femur and tibia are used but the femur measurement without the tibia was not significantly different. The results show a range of 158.5cm to 183.5cm with a mean of 171.6cm and a MNI of 37 using the right proximal tibia.

Battle of Wisby

Common Grave 1. According to Thordeman (1939), there were 5 mass Common Graves labeled 1-5 unearthed during the years 1905 to 1930. Common Grave 1, excavated in spring 1905, was a 5.5m wide and 7m long oval pit with a maximum depth of 1.5 to 2.0m. Very few archaeological elements were found in this Common Grave. What was found were 20 coifs and two to three shirts of chainmail, buckles (brass, iron, wood) numbering 86, eight arrow and spear heads, and one key.

The skeletal remains were estimated to be a 0.5m to 1.0m thick commingled mass and had an estimated MNI of 256 using the right femoral head. The stature of the individuals from this Common Grave averaged to 168.84cm using the formulae of Pearson (1898) which included only individuals deemed fit for battle (Table 2). Thordeman (1939, p.159) gave no age ranges except to the extent of using the terms "too young" 16%, "senile" 21% and "fit for military service" 53%. Thordeman considered 20 years of age and under "too young" and 35 years of age and over "too old". As stated earlier, the remains of this Common Grave were not excavated in any systematic fashion.

Common Grave 2. Common Grave 2 was excavated in the years 1912 and 1928-1930 (by Thordeman in 1928-1930) and was the largest at 12.0m long and 6.0m wide. This Common Grave was by far the richest in both human and archaeological remains. The maximum depth was estimated at 2.0m with the skeletal remains about 0.5m thick. Nearly all armor found was of both plate and lamellar types. More easily removable items such as weapons, headgear and, shields were not found. No remnant of cloth associated with

clothing was found but 473 buckles (brass, iron, wood) and bronze rivets were discovered. Two armored shoes, three spurs, three horseshoes, a few pieces of jewelry (one silver ring still on the finger), three beads, seven keys, and 118 coins were associated with the skeletal remains. All of the coins, totaling 418, were found in this Common Grave. They were in five separate finds of 385, 17, eight, seven, and one coin and were minted in several different locations including Gotland, Sweden and, Denmark. There were a few weapons found, probably hidden by clothing or lodged in bodies. These include three work knives and one hunting knife, 30 arrowheads and lance-heads and iron spikes and maces. Thordeman (1939) states that every fourth man fit for war (ages 21-34) had a coif. Usually robbers and looters would have relieved the dead of these valuables after a battle such as this.

> Plunderers of the dead have certainly carried on their profession on the battle-field, and many of the victims were probably stripped before being thrown into the pit…but there still remain armours as well as numerous parts, and herein lies the particular inducement for research in this marvelous find. (Thordeman, 1939, p. 52)

To find such valuables as coins, armor and chainmail is rare in mass battle graves.

The MNI was 71 using the left femoral head. The abbreviated age ranges used by Thordeman (1939, p. 159) are: "too young" 8%, "senile" 21%, "fit for military service" 53%. The average stature is 168.81cm, again using the formulae of Pearson (1898) (Table 2). This Common Grave was also commingled and no attempt to remove skeletons in any systematic fashion was undertaken, particularly in the earliest excavation. Thordeman (1939) did attempt some archaeological techniques in his 1928-1930 excavations but since no record was kept of the 1912 excavation he found this pointless: "For in this grave large portions had already been removed in 1912 and 1924 when their

positions were not noted and no complete reconstruction of the skeletons in the grave could therefore be effected". (p.71)

Common Grave 3. Common Grave 3, the current project, was excavated in the year 1928-1930 by Thordeman (1939), as was the second excavation of Common Grave 2 (1930). This is the only Common Grave where archaeological techniques were used to their fullest extent including photography and a division into large 5.0m squares with different denominations that were then divided into 0.5m squares.

Very few material finds were recovered from Common Grave 3 but what was recovered include 31 buckles and one horseshoe. There were no knives, arrow or spearheads, keys or coins recovered. A few chainmail coifs were found equipping every 10^{th} man of an age (21-34) to fight. On finding few material remains, Thordeman (1939) states:

> But what we had very soon to admit as a disappointment was the striking dearth of finds in the grave. The finds were limited to some coifs of mail, handsome enough in themselves, and some small iron lamellae and buckles. On the other hand, larger armour plates were altogether lacking, which was very regrettable, since the main purpose of the excavation-apart from giving an insight into the general structure of the common grave, (which was accomplished satisfactorily)-was to supply some guide as to the reconstruction of the armour by observations about the relative position of the plates in the soil. (p. 61)

Even though the smallest, Common Grave 3 had the most complex structure with four separate Burial Pits (Figure 3). Burial Pit I was uncovered 1.0 meter below ground and contained 20 commingled skeletons. Just below Burial I, Burial II and IV were found with a combined MNI of 98 and total area of 6x4m. The largest Burial Pit is II and encompasses about three square meters and about 2.3 meters in depth. Burial Pit IV is the smallest at 2.15 meters deep with some of the remains projecting up into Pit I. Burial

Pit III consisted of just one individual. The MNI equaled 119 using the right femoral head, 123 using the whole and right half of the mandible (37 right, 86 whole and, 19 left). The skeletons contained fewer battle wounds than Common Graves 1 and 2, which caused Thordeman a bit of anguish. He reasoned that perhaps the Danes executed these individuals in the days following the battle but he could not grasp why there were still apparent battle wounds to the legs "But this is impossible, for the civil population cannot possibly have been killed by cuts on their legs; besides, the coifs show that at least some were armed warriors" (Thordeman, 1939). He also reasoned that this grave may have been dug first and the bodies buried before decomposition began. There were also fewer cranial wounds in Common Grave 3 as compared to Common Graves 1 and 2. All this leads to my hypothesis that many of the individuals in Common Grave 3 were simply the wounded that died a few days after the battle. They would have been buried immediately after their death instead of three days later as in Common Graves 1 and 2. This would explain the lack of material finds, as they would have been removed before their wounds being treated or put to bed. In addition, an attempt may have been made to remove any arrow or lance heads. This would also explain the limited amount of wounds on bones since soft tissue wounds are more likely to cause mortality by infection than to kill immediately such as a cranial wound or bleeding out from a severed limb. This would also explain the burial groups. After one or more bodies were placed, they may have been covered with dirt until the next individual died and placed in the grave. The individuals in Common Graves 1 and 2 appear to have been buried after decomposition had begun thus it is likely no one had the inclination to remove valuable items. In

addition, more individuals were placed in Common Graves 1 and 2 at one time as most died on the battlefield. Thordeman (1939) also reasoned that Common Grave 3 may have been dug first and the bodies buried before decomposition began however, he contradicts himself when he writes of the "careful and reverential" (Thordeman,1939, p. 78) way in which the bodies were laid as compared to the "haste and carelessness" (Thordeman, 1939, p. 81) fashion of Common Graves 1 and 2. This suggests to me that, several days after the battle, the residents of Wisby were more relaxed and willing to take time and care to bury their dead.

Thordeman (1939, p. 159) states 37% were "too young"; 18% "senile" and 64% "fit for military service". Additionally, no "too young" or "senile" bones were used in the stature calculations for this Common Grave by Thordeman. Perhaps not all longs bones from these two groups would have been appropriate to include but certainly some were. The stature average is 167.84 ± 0.30 cm, using Pearson's (1898) formulae, as opposed to 168.92 ± 0.27 and 168.81 ± 0.19 for Common Graves 1 and 2 respectively (Table 2). Thordeman (1939) reasoned that this 1.0cm difference in height lends itself toward a "weaker human material" (p. 80), meaning less healthy individuals joining the fight. When the acceptable "too young" and "senile" bone measurements are added to the equation the statures may begin to come closer to Common Graves 1 and 2.

Common Graves 4 and 5. Common Grave 4 has not been published (Thordeman, 1939) and a suggested Common Grave 5 was destroyed in 1811 (Thordeman, 1939).

Table 2.
Published medieval stature

Site	*n*	Mean Male Stature (cm)	Range (cm)	Reference
St. Andrew, Fishergate	205	171.0	155.0-190.0	Stroud and Kemp (1993)
Mary Rose	179	171.0	159.0-180.0	Stirland (2005)
Good Friday	60	174.5	165.2-185.6	Kjellström (2005)
Towton	37	171.6	158.5-183.5	Fiorato (2000)
Danish:				
Westerhus	61	174.0	N/A	Bennike (1985)
Viborg	52	176.3	N/A	Bennike (1985)
Æbelholt	138	170.9	N/A	Bennike (1985)
Wisby:				
Common Grave I	256	168.8	N/A	Thordeman (1939)
Common Grave II	710	168.8	N/A	Thordeman (1939)
Common Grave III	119	167.8	N/A	Thordeman (1939)

Note: All measurements except Wisby using Trotter and Gleser (1952, 1958) formula. Wisby using Pearson (1892) formula. N/A : not available

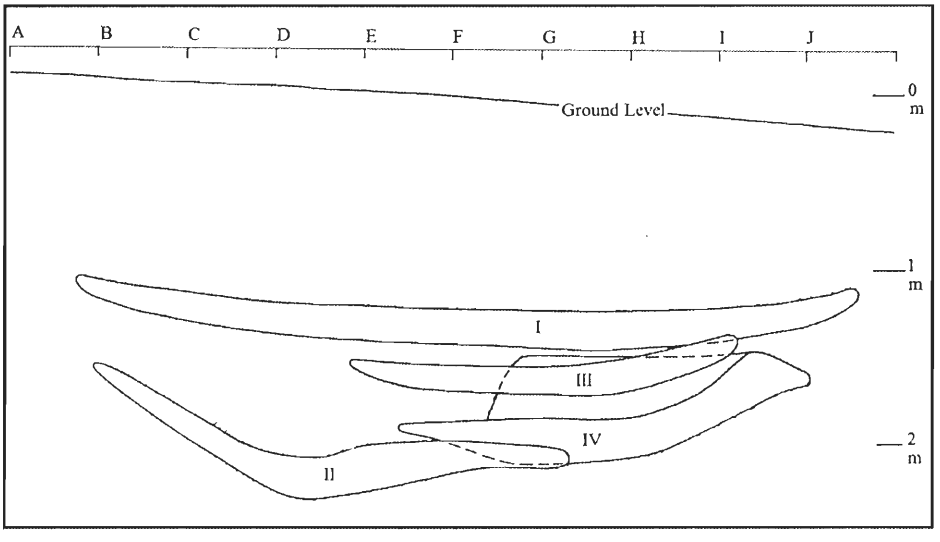


Figure 3. West Facing View of Common Grave 3 with Four Grave Pits.

CHAPTER III

MATERIALS AND METHODS

Introduction

Long bone length (most notably that of the femora) is used in bioarchaeology as well as other disciplines as a proxy for stature and in turn, stature has been used as an indication of socio-economic status (Bogan, 1993; Cardoso and Gomes, 2008; Steckel, 1995). This project investigates the stature of individuals from The Battle of Wisby Common Grave 3 using the femora and comparing the results with the contemporary populations of the Battleship *Mary Rose* (Stirland, 2005), Battle of Towton (Fiorato, et al., 2000), and Battle of Good Friday (Kjellström, 2005). Original measurements of the Battle of Wisby material were performed in 1937 by osteologist Bo E. Ingelmark and incorporated into *The Armour from the Battle of Wisby, 1361* by Thordeman (1939). The method for long bone measurement in 1937 was Pearson's 1898 formula (Thordeman 1939) while the study of contemporary groups such as The Battleship *Mary Rose* (Stirland, 2005), Battle of Towton (Fiorato et al., 2000) and, Battle of Good Friday (Kjellström, 2005) used Trotter and Gleser's (1952, 1958) formulae (Table 2 Chapter II) in their studies. To properly compare the Battle of Wisby material to these contemporary groups a second measurement, as suggested by Cardoso and Gomes (2008) , using the Trotter and Gleser's (1952, 1958) formula was needed as no raw data of long bone lengths, only the mean stature derived from those lengths, was included in *The Armour of*

the Battle of Wisby, 1361. This chapter details how the measurements were taken, which bones were utilized and what osteological techniques were employed. Also included are methods used to determine biological sex, biological age and, and to assess health indictors, followed by the hypotheses concerning these health indicators relative to the health status of the Battle of Wisby sample.

Materials

The first excavators of Common Grave 1 in 1905 and Common Grave 2 in 1912 removed the remains with little attempt to keep corresponding bones together. When Thordeman (1939) further excavated Common Grave 2 and opened Common Grave 3, he laid out the sites in one meter squares and further broke the one meter squares into 0.5 meter squares. He made some attempt to keep an individual together by labeling all skeletal element bags with the same square number even though the remains may have been positioned in other squares. It is suspected a small quantity of bags marked Common Grave 3 may be contained in Common Grave 1 or 2 boxes. The significance of such issue is unknown. That being said, I found most individual bones (including long bones, os coxae and, skulls) were separated and boxed according to bone type (i.e. femora in one box, tibiae in another). Occasionally there were two or more bones in one bag, not necessarily corresponding. The remains were labeled in two different ways depending on who excavated and when the excavations were performed. The first excavations (not by Thordeman) were labeled "3: 88" or simply "3" (my quotation

marks), for example, on a piece of paper stapled to the plastic bag. The excavations by Thordeman (1939) were labeled a little more clearly (for example "3: II Ee = Grave 3, Pit II, Square Ee." Also on the plastic bag was a weight in grams written in permanent marker. I have incorporated this labeling into my descriptions and devised a labeling system (i.e. WF-0250 (WF = Wisby Femur-0250)); the bones themselves were not labeled in any way. My labeling system, as well as any other system, is noted in Appendix A, for cross reference should an investigator wish to find a specific bone. Only my labeling system will be used in any tables, figures or, spreadsheets in this paper.

I was able to measure all available femora, tibiae (including medial malleolus) and, humeri in a good state of preservation with relatively little cortical or articular damage (Table 3). The bicondylar length was the only length measurement taken from all long bones available using an osteological board provided by The Statens Historiska Museum and all available crania, mandibles, and os coxae were assessed. However, only the femora for stature, os coxae for age and sex and skull for sex, and nutritional indicators from the teeth and skull were examined for this study. Appendix A contains a complete list of bones assessed and chapter V of this paper contains biological sex and biological age tables.

Methods

Stature

Stature determination based upon femoral lengths are considered the most accurate due to their size and likelihood to survive burial and because femora have a high correlation with stature (Cordoso and Gomes, 2008).

Bones broken or not in a good state of preservation were noted for Minimum Number of Individuals (MNI) (80 using the right femora and 71 using the left femora) only, unless a complete match of broken ends could be made. In partial remains, the femoral head was used for MNI to refrain from counting an individual more than once. For juvenile remains, the proximal end as well as intact long bones with unfused epiphyses were used for MNI only and not utilized for stature data.

Even though tibiae, humeri, radii, fibulae and, ulnae can be used for stature determination, only adult femora (with fused epiphyses) were used for stature data in this study as explained below. In addition, no juvenile femora were utilized as none were found acceptable. Of the 80 right femora used to establish MNI, only 53 were acceptable for stature determination (the rest being damaged or juveniles) and of the left femora, the MNI was 71 with 42 (Table 4) acceptable for stature measurement (the rest being damaged or juveniles). The bicondylar femoral length was recorded in centimeters using the osteometric board. Statistics for both the right (mean stature 172.17cm ± 0.93 cm) and left (mean stature 173.75± 1.01cm) femora are discussed in chapter IV. The

Trotter and Gleser's (1952, 1958) Caucasian male stature formula was used since it most closely matches the Battle of Wisby population who are presumed to be Caucasian.

Table 3.
Male data for Battle of Wisby long bones

Bone	MNI	Measured	Mean Stature
Femora			
left	71	43	173.75 cm
right	80	53	172.17 cm
Tibiae			
left	38	46	171.64 cm
right	54	41	172.13 cm
Humerii			
left	28	21	172.96 cm
right	33	26	176.14 cm

Note: All measurements using Trotter and Gleser's (1952, 1958) Caucasian formula.

Table 4.
MNI and number of femora acceptable for stature determination

Femora	MNI w/Juveniles	Acceptable for Stature Determination
Left	71	43
Right	80	53

Biological Sex

Although Thordeman (1939) was sure all members of Common Grave 3 remains were male and because the attributes used by Thordeman to assess biological sex were not published, biological sex determination was re-assessed in this study using the standard osteological techniques incorporating the crania and pelvis developed by Buikstra and Mielke (1985) and found in Buikstra and Ubelaker (1994) (Appendix A). Standard non-metric osteological techniques assessing the subpubic concavity (SPC), greater sciatic notch (SN), ventral arc (VA) and, medial aspect ridge (MAR) (Buikstra and Mielke 1985) of the subpubic region on the os coxa were used. It was found the best biological sex indicator to use for this population was the sciatic notch. The other three biological sex indicators are found on the pubic symphysis however, this portion of the pelvis is less likely to survive burial compared to the greater sciatic notch region therefore, were not used. Scoring of the Battle of Wisby attributes can be found in Table 5.

For the assessment of biological sex using the crania, I used the landmarks of nuchal crest (NC), mastoid process (MP), glabella (G) and mental eminence (ME), (Acsadi and Nemeskeri 1970). Biological sex determination data from the os coxae indicated one possible female with the remainder being male. The probable female was excluded from further data analysis by removing any data associated with it before the MNI was determined. MNI utilizing the right and left femora is 80 and 71 males respectively including juveniles, adolescents and adults (Table 5). Complete data lists can be found in Appendix A.

Table 5.
Battle of Wisby Common Grave 3 biological sex

Attribute	Female 1	Probable Female 2	Ambiguous 3	Probable Male 4	Male 5	Total	
Mastoid Process						Ambiguous /Probable Male/Male	Probable Female /Female
Right	2	1	10	14	1	25	3
Left	3	3	6	19	2	27	6
Mental Eminence	0	2	8	11	0	19	2
Sciatic Notch							
Adult Right	0	0	6	16	7	29	0
Adult Left	0	0	4	20	6	30	0
Juvenile Right	3	7	2	0	0	2	10
Juvenile Left	6	8	4	0	0	4	14

Age Determination

To determine age at death, the pubic symphysis scoring system of Todd (1921a, b), the auricular surface method of Lovejoy et al. (1985) and Meindl and Lovejoy (1989) and cranial sutures method of Meindl and Lovejoy (1985) were assessed and compared for best data for this population. Todd's pubic symphysis method provides a good aging surface because it is the most reliable but because the pubic symphysis is small and somewhat fragile it often does not survive burial. Meindl and Lovejoy's (1989) method assesses the attributes of the auricular surface which is the os coxae half of the os coxae/sacral articulation surface. This surface is more difficult to score than the pubic symphysis but is more likely to be

preserved because it is bulkier and less fragile. The cranial suture method of Meindl and Lovejoy (1985) is not as good of an aging estimator as the pubic symphysis or auricular surface due to its general age ranges (Masset, 1989). When assessing the skeleton for age at death, all three methods should be employed on an individual to estimate as close as possible the correct age at death. However, in the case of commingled remains, as in this paper, it is often impossible to assess an entire individual. For these reasons and because of the greater availability of the auricular surface versus the pubic symphysis or crania, I feel the auricular surface provided the best data hence, all age related data presented in text is from the auricular surface only.

Health Indicators

Additional adult and juvenile health indicators assessed included dental lesions (caries, abscesses and enamel hypoplasia) and cribra orbitalia. Obertová and Thurzo (2007) state there is a direct correlation between enamel hypoplasia and cribra orbitalia. Skeletal disease related lesions and healed/unhealed fractures were noted where appropriate in presence/absence only and documented in Appendix A.

Dental Disease

Dental disease, is caused, in part, by poor nutrition and is manifested in the form of caries, abscesses and attrition. Cavities form when the tooth enamel becomes eroded

and darkens. This can lead to abscesses and tooth loss (Larsen, 1997). Enamel hypoplastic lesions are horizontal lines formed when there is an arrest of enamel formation while the tooth is still forming; most likely due to stress, including nutritional (Larsen, 1997). I assessed loose and *in situ* teeth for dental lesions and enamel hypoplasia using a total count of 440 individual teeth. If the tooth was loose, I did not attempt to match it to a mandible or maxilla. No attempt was made to assess the quality of the lesions, noting presence/absence only.

Cribra Orbitalia

Cribra orbitalia is a lesion that forms in the diploë region (red blood forming marrow) of the orbit roof and is thought to form as the body's response to anemia. Anemia is the lack of iron (iron deficiency anemia) in the red blood cells or the lack of blood volume and can be caused by several diseases including nutritional deficiency and parasitic infection (Larsen, 1997). Walker (2009) discusses additional etiologies including genetic anemia, megaloblasic anemia, and scurvy. I assessed all available orbits (25 left and 22 right) for the presences/absence of cribra orbitalia. Porotic hyperostosis of the cranial vault can also be a manifestation of iron deficiency and related to cribra orbitalia (Larsen, 1997); none was found in this population.

Hypotheses

Femoral data collected from the Battle of Wisby remains and the contemporary populations of the Battleship *Mary Rose* (Stirland, 2005), Battle of Towton (Fiorato et al., 2000) and, Battle of Good Friday (Kjellström, 2005) were used to analyze the following hypotheses:

H1: The men of the Battle of Wisby were taller in stature than those of the Battleship *Mary Rose.*

Ha: The men of The Battle of Wisby were not taller in stature than those of the Battleship *Mary Rose.*

It is predicted that the men of the Battle of Wisby were taller in stature than the men of the Battleship *Mary Rose* suggesting greater socio-economic status.

H2: The men of the Battle of Wisby were taller in stature than those of the Battle of Towton.

Ha: The men of the Battle of Wisby were not taller in stature than those of the Battle of Towton.

It is predicted that the men of the Battle of Wisby were taller in stature than the men of the Battle of Good Friday suggesting greater socio-economic status.

H3: The men of the Battle of Wisby were taller in stature than those of the Battle of Good Friday.

Ha: The men of the Battle of Wisby were not taller in stature than those of the Battle of Good Friday.

It is predicted that the men of the Battle of Wisby were taller in stature than the men of the Battle of Good Friday suggesting greater socio-economic status.

CHAPTER IV

RESULTS

This chapter details the Battle of Wisby stature using both the left and right femora and the health indictors of cribra orbitalia and the dental lesions of caries, abscesses, attrition and, enamel hypoplasia. Then a comparison of those statistics to the contemporary groups of the Battleship *Mary Rose*, Battle of Towton and, Battle of Good Friday is undertaken.

The mean stature of the Battle of Wisby material is 173.75cm ± 1.01cm and 172.17cm ± 0.93cm for the left and right femora respectively (Table 6 and 7). Figure 3 shows the longest femoral pair while Figure 4 shows the shortest and longest femora. For the left femora, the contemporary group of the Battleship *Mary Rose* had a mean of 170.93cm ± 0.49cm, the Battle of Towton had a mean of 171.90cm ± 0.48cm and, the Battle of Good Friday cohorts had a mean of 174.50cm ± 0.93cm (Table 6). Statistically, compared with the comparison groups, the Battle of Wisby samples have a higher mean stature than the Battleship *Mary Rose* and Battle of Towton groups at the level of significance (p= 0.006 and 0.029 respectively), but was not found to be significantly taller than the Good Friday group (p=0.212). A Test of Significance statistical formula was used to determine if the Battle of Good Friday contemporaries were taller in stature than the Battle of Wisby cohorts. The p-value is 0.227 indicating that, statistically, the

Battle of Wisby and Battle of Good Friday cohorts were not significantly different (Appendix B).

For the right femora, the contemporary groups of the Battleship *Mary Rose* has a mean of 171.20 ± 0.52cm and the Battle of Good Friday has a mean of 173.99cm ± 0.41cm (Table 7). The right femora of the Battle of Towton cohorts were not measured (personal communication with Anthea Boylston).

The Z test statistical formula for the right femora comparing the Battle of Wisby with the Battleship *Mary Rose* has a p-value of 0.184 (α=0.05 for all statistical testing) and the Battle of Good Friday p-value is 0.038. Then HO is not rejected for the Battleship *Mary Rose* indicating a Test for Significance is needed. The p-value is 0.46 showing the battleship *Mary Rose* and battle of Wisby cohorts were not statistically different in stature.

Table 6.
Comparison groups stature using the left femora

Cohorts	Stature (cm)	*n*	SD (cm)	Authors
Battle of Wisby	173.75	43	6.62	
Battleship *Mary Rose*	170.90	82	4.50	Stirland (2005)
Battle of Towton	171.60	32	2.70	Fiorato (2000)
Battle of Good Friday	174.50	31	2.12	Kjellström (2004)

Table 7.

Comparison groups stature using the right femora

Cohorts	Stature (cm)	*n*	SD (cm)	Authors
Battle of Wisby	172.17	53	6.80	
Battleship Mary Rose	171.20	92	5.00	Stirland (2005)
Battle of Towton	N/A	N/A	N/A	Fiorato (2000)
Battle of Good Friday	173.99	27	2.11	Kjellström (2004)

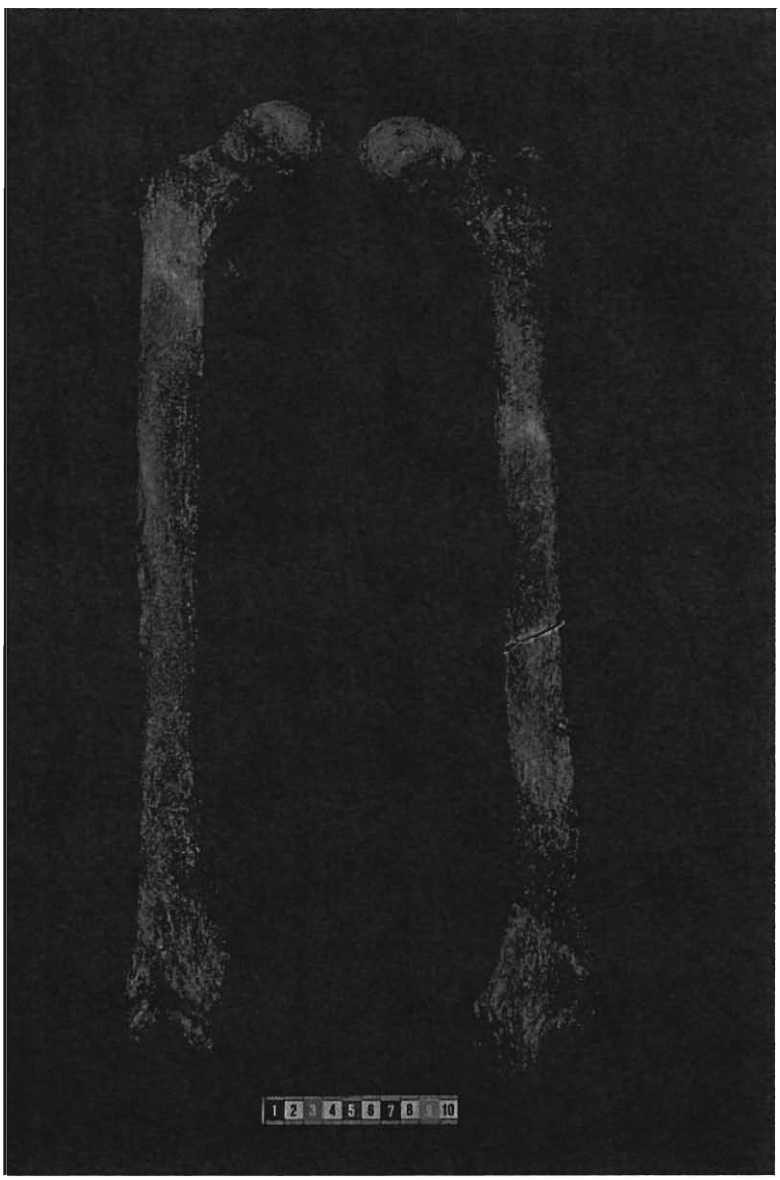


Figure 4. Longest Femoral Pair.

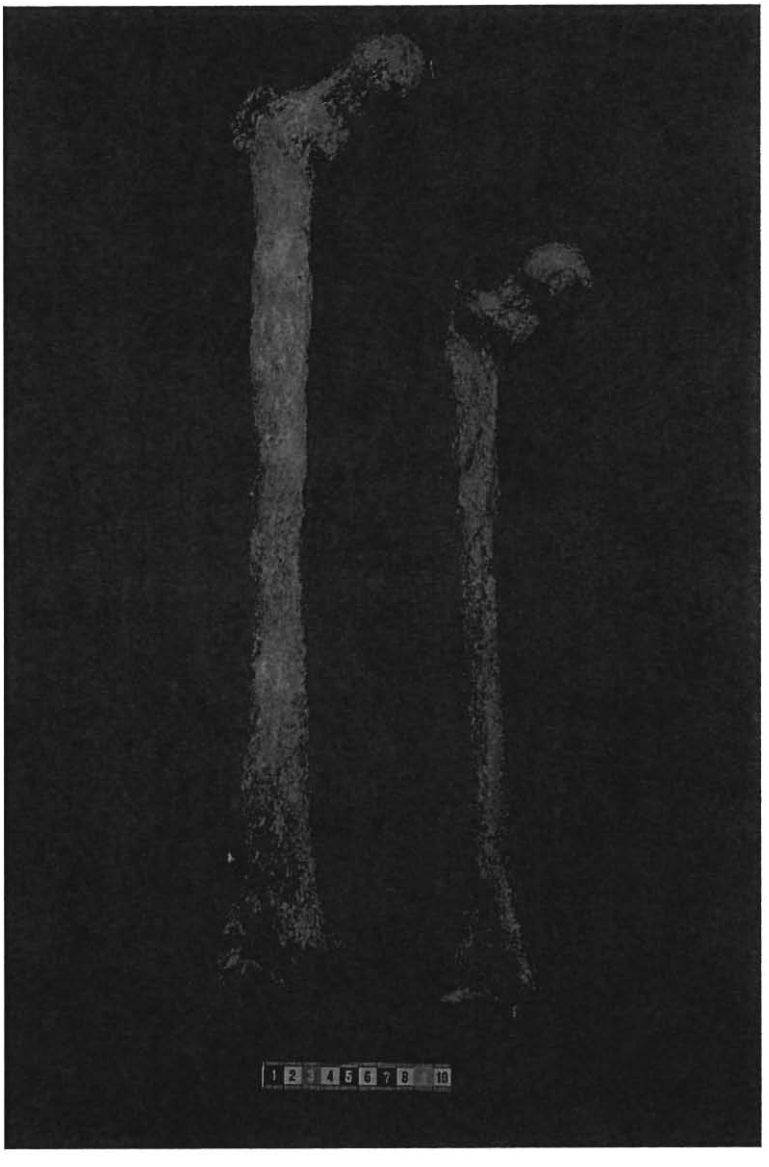


Figure 5. Longest and Shortest Femora.

Age at Death

To get a better idea of the age at time of death of those who fought in the Battle of Wisby, the auricular surface of the left and right os coxae was assessed. The phase system developed by Buikstra and Mielke (1985) was used (also see Buikstra and Ubelaker 1994). As one would expect for a surprise attack which left little time for organized preparations, a wide range of ages were involved with the defense of the seaport (Table 8).

The left os coxae shows an MNI (for a minimum number of individuals) of 50. Of those, 8% (4) were under 20 years of age, 20% (10 each) were in the ranges of 20-24 and 25-29 years of age, 14% (7) each were in the range of 30-34 and 35-39 years of age. Of the older individuals, 4% (2) were in the 40-44 age range, 6% (3) in the range of 45-49 and 12% (6) and 2% (1) were in the age ranges of 50-59 and 60+ respectively.

The right os coxae had an MNI of 47. There were 6 (12.8%) each in the age groups of <20, 25-29 and, 35-29. The remainder were: 7 (14.9%) 20-24 years, 8 (17%) 30-34 years, 1 (2%) each in the 40-44, 50-59 and, 60+ age ranges while 5 (10.6%) individuals fell into the 45-49 age range. (Table 8)

Table 8.
Battle of Wisby Common Grave 3 auricular surface age

Phase	0	1	2	3	4	5	6	7	8	Total
Age (yrs)	< 20	20-24	25-29	30-34	35-39	40-44	45-49	50-59	60 +	
Number (*n*)										
Left	4	10	10	7	7	2	3	6	1	50
Right	6	7	6	8	6	1	5	1	1	47

Biological Sex

Although Thordeman (1939) was sure all members in Common Grave 3 were male, sex determination was assessed utilizing the os coxae and skull.

Os Coxae

Since many of the os coxae were in pieces, only the sciatic notch data is included for biological sex determination and for MNI counts to refrain from counting an individual more than once. The MNI for the left os coxae is 48. Of these, 6 (12.5 %) score 1 (female (all juvenile)), 8 (16.7%) scored 2 (probable female (all Juvenile)), 8 (16.7%) (4 juvenile) were scored a 3 (ambiguous), 20 (41.7%) scored 4 (probable male) and, 6 (12.5%) scored a 5 (male). The right os coxa MNI is 41; 4 (9.8%) scored 1 (female (all Juveniles)), 6 (14.6%) scored 2 (probable female (all juveniles)), 8 (19.5%) scored as 3 (ambiguous), 16 (39%) scored 4 (probable male) and 7 (17.1%) scored 5 (male). Table 5 shows that a total of 24 (both left and right) os coxae scored a 1 (female) or 2 (probable female) however, all are juveniles. Ten os coxae assessed as adults scored a 3 (ambiguous) as well as a total of 6 os coxae assessed as juvenile. The MNI for Common Grave 3 is 48 using the left os coxae sciatic notch.

Skull

Because most of the crania were in pieces, separated and, stored separately from the associated mandibles, the crania and mandibles were assessed separately. The attributes assessed for the crania include the nuchal crest (NC), glabella (G) and, mastoid process (MP) (including temporal) and the mental eminence (ME) for the mandible. Of these attributes, the mastoid process (including temporal) of the crania is used for data only to refrain from counting an individual more than once. The only attribute for sex determination on the mandible is the mental eminence; the data are included in Table 5.

Health Indicators

Some lesions seen in adults such as cribra orbitalia of the eye orbit and dental disease including enamel hypoplasia, caries, abscesses, and attrition can imply nutritional deficiency. This provides an indication of health during that developmental phase that may have occurred during childhood (these same indicators can be found in children). These health indicators were analyzed and compared to the samples from The Battleship *Mary Rose* and the Battle of Towton. Kjellström (2005) did not publish health indicators for the Battle of Good Friday cohorts, thus there are no comparisons with this population (Table 5).

Skeletal Health Indicators

Cases of cribra orbitalia for the Battle of Wisby were 3 out of 29 (10.3%) eye orbits (both left and right). There is no data available for the Battleship *Mary Rose* population. The Battle of Towton had 9 (32.1%) of 28 individuals with cribra orbitalia (Fiorato, 2000).

Dental Health Indicators

Enamel Hypoplasia

For enamel hypoplasia, the Battle of Wisby cohorts had 2 (0.45%) cases out of 440 teeth while the Battleship *Mary Rose* men showed 320 cases out of 4576 (7%) teeth (Stirland, 2005) and the Battle of Towton cohorts showed 35 cases out of 698 (5%) teeth (Fiorato, 2000) (Table 9).

Dental Lesions

Dental lesions assessed and compared include caries, abscesses, ante mortem tooth loss and attrition for the Battle of Wisby, the Battleship *Mary Rose* and Battle of Towton. Again, the Battle of Good Friday did not have this information available.

Caries. For the Battle of Wisby, caries totaled 55 (12.5%) out of 440 teeth, the Battleship *Mary Rose* caries totaled 3798 out of 4576 teeth (83%) (Stirland, 2005) and, the Battle of Towton population had 62 (8.9%) caries out of 698 teeth (Fiorato, 2000) (Table 9).

Abscesses. The Battle of Wisby population (MNI 25 using the temporal) had 2 (8.0%) abscesses while of the 143 Battle of *Mary Rose* cohorts, 18 (13%) had at least one abscess each (Stirland, 2005). Fiorato (2000) states 43 individuals had abscesses for the Battle of Towton (Table 9).

Ante Mortem Tooth Loss. The Battle of Wisby ante mortem tooth loss was 36 teeth however 30 of those teeth came from just two individuals. For the Battleship *Mary Rose*, 52 (36%) of the men had at least one tooth lost ante mortem (Stirland, 2005). In the Battle of Towton population, 96% had at least one tooth lost ante mortem (Fiorato, 2000) (Table 9).

Table 9.
Health indicators
(caries, abscess', enamel hypoplasia, cribra orbitalia)

Cohorts	Teeth	MNI	Caries		Abscess		Ante Mortem Tooth Loss		Enamel		Cribria Orbitalia	
	n	*n*	*n*	%	*n*	%	*n*	%	*n*	%	*n*	%
Battle of Wisby	440	25^	19**	4.3**	2**	0.45	36~~	^^	2**	8.8**	2**	8.0**
Battleship *Mary Rose*[1]	4576	143	416	9	18	13	52	36**	320**	7.0**	N/A	N/A
Battle of Towton[2]	698	28~	62**	8.9**	12*	43*	36*	96*	35**	5.1**	9*	32.1*
Battle of Good Friday[3]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*Individuals; **Teeth; N/A Not Available; ~Skulls; ^ Temporal; ^^MNI=8; ~~One maxilla w/14, one mandible w/19; [1]Stirland (2005); [2]Fiorato (2000); [3]Kjellström (2004)

CHAPTER V

DISCUSSION

This paper used stature primarily, in conjunction with other health variables, to determine if a sample of individuals from 1361 Wisby Sweden was nutritionally better off than samples from contemporary populations. It appears that individuals associated with the Battle of Wisby Common Grave 3 population would have enjoyed better nutrition than their counterparts. Hence, they would be taller as hypothesized by Bogan (1993), Lindgren (1998) and Andersson (1956) among others. Concentration was placed on Common Grave 3 that contained a Minimum Number of Individuals (MNI) of 119 according to Thordeman (1939). Thordeman (1939) states that approximately 1800 warriors were buried July 27, 1361; a MNI recovered from all 3 Common Graves (1, 2 and, 3) was 1085 (Thordeman 1939). Nutritional indicators such as cribra orbitalia and enamel hypoplasia as well as biological sex and biological age were also assessed due to this material not being included in Thordeman (1939). The contemporary groups compared with the Battle of Wisby were The Battleship *Mary Rose*, Battle of Towton and, Battle of Good Friday. These groups were chosen because, like the Wisby material, they are same day burials and the historical time period is comparable.

Stature determination was made using the bicondylar femoral length for both the left and right (side data kept separate). The mean height using the Trotter and Gleser (1952, 1958) Caucasoid formula calculated to be 172.17 ±0.93cm and 173.75 ±1.01cm

for the right and left femora respectively. The stature results were dependent on side and comparison group. Using the left femora, the Battle of Wisby Common Grave 3 population statistically are taller than both the Battleship *Mary Rose* and The Battle of Towton allies and were statistically equal to The Battle of Good Friday comparison population. The right femora show that the Battle of Wisby population was statistically equal in stature to both the Battleship *Mary Rose* and the Battle of Good Friday cohorts. Right femoral stature was not published for the Battle of Towton (personal communication with Anthea Boylston). None of the comparison groups was taller in stature than the Battle of Wisby group. However, The Battle of Wisby was statistically taller that the Battleship *Mary Rose* and Battle of Towton utilizing the left femora but this does not indicate that the Battle of Wisby population was taller because they had increased proximity to food stuffs as sources cited in Chapter II of this paper suggests. This also leaves the hypotheses outlined in Chapter IV inconclusive. My hypotheses were that the Battle of Wisby population would be taller than the comparison groups. While none of the hypotheses were rejected, the acceptance was side dependent. For example, left femoral statistical data shows the Battle of Wisby cohorts were taller than the *Mary Rose* cohorts however the right femoral statistical data shows that the Battle of Wisby cohorts Stature equal to that of the *Mary Rose*.

The stature results are inconclusive when it comes to determining whether the Battle of Wisby population was nutritionally better off than the contemporary groups however, the health indicators do show better overall health for the Battle of Wisby cohorts. Table 9 (Chapter IV) shows that the Battleship *Mary Rose* and Battle of Towton

cohorts had greater incidence of dental caries, dental abscesses and, ante mortem tooth loss. Likewise, cribra orbitalia had a higher incidence with the Battle of Towton population than the Battle of Wisby population. Cribra orbitalia data was not published for the Battleship *Mary Rose* and no health indicators were published for the Battle of Good Friday.

The biological sex assessment shows an all male gravesite while the biological age assessment shows a wide variety of ages from juveniles less than 20 years of age to 60 plus years of age. This was not unexpected as the whole town along with citizens from nearby farms gathered to defend their way of life. It is a bit surprising to find several juveniles (likely closer to 15 years of age, possibly younger) but adds support to the suggestion that the whole town's male population did indeed join the battle. It would be interesting to see if the wide age variation continued in the other two Common Graves. The measureable femora of Common Grave 3 contained only 3.96% (43/1085) of the total number of removed remains from the three Common Graves. This low percent likely does not adequately represent the residents of Wisby or even the men killed in the battle. This would create a bias when it comes to stature. Unless Common Graves 1 and 2 are assessed as Common Grave 3 was, it will be hard to determine if there is a true bias or if the men of the Battle of Wisby were taller or equal in stature to the contemporary comparison groups. Thordeman (1939) states that the stature for Common Grave 1 and 2 were both 168.8cm but Common Grave 3 was a centimeter shorter at 167.8cm using Pearson's (1898) formula. With this extra centimeter of height, The Battle of Wisby cohorts may indeed be taller than the comparison groups showing that the social-

economic status of Gotland, and Wisby in particular, allowed the residents to attain a greater stature.

CHAPTER VI

CONCLUSION

The Battle of Wisby skeletal remains represent a unique burial in that its members, all victims of violence, were interred at the same point in time unlike cemeteries that can span hundreds of years. Also unique to this burial is the large quantity of material goods such as armor and chainmail, which may have helped in the preservation of the skeletal remains. The only published research material on this site is Bengt Thordeman's book *Armour from the Battle of Wisby, 1361* published in 1939. As the title implies, much of the work is dedicated to the material finds with only a short chapter on the skeletal remains.

Many areas of study (economics, anthropology, medicine) use stature statistics in research. The human body responds to the environment through adaptations, both positive and negative. Low socio-economic status and inaccessibility to nutritional sustenance can contribute to poor nutrition and disease adversely affecting adult stature. In contrast, availability of proper nutritional sustenance, among many other factors, can enable individuals and populations to their genetically greatest possible stature.

Osteological studies in the early 1900's were limited at best. New techniques and methodologies since that time have improved immensely the information we, as anthropologists, can garner from skeletal material. We know from other research and

historical documents that Gotland and Wisby in particular, was wealthy (Thordeman, 1939).

This paper investigated the possibility of providing evidence health, and by association wealth, among the people of Wisby by measuring the stature utilizing the femora from Common Grave 3 Battle of Wisby skeletal remains. Three contemporary groups, The Battleship *Mary Rose*, Battle of Towton and, Battle of Good Friday were compared with the Battle of Wisby Common Grave 3 by using stature. Unfortunately, the results are inconclusive. However, the health indicators did suggest the Battle of Wisby cohorts lived a healthier life style. Perhaps if the number of individuals studied were increased by assessing Common Graves 1 and 2, the stature of the Wisby population would be more conclusive and show statistically that this population was taller than the contemporary groups and thus enjoyed a healthier lifestyle.

There is any number of additional research projects that could be accomplished using The Battle of Wisby skeletal collection. Some of these possibilities include continuation of stature assessment with Common Graves 1 and 2 and further assessment of health indicators. Since each bone element was boxed separately from corresponding elements, it would be very helpful for any additional study of the individuals if they were reconstructed. This would be a daunting task with approximately 1800 individuals having been buried in the 3-5 mass graves. Currently, the only method of rearticulating bone is matching corresponding elements by color and shape, similar to piecing together a puzzle. Because of what I found with the Battle of Wisby skeletal material, I have started a long-term research project to find formulas to aid in this type of construction. I

am using the Hammon-Todd collection at Cleveland Museum of Natural History and have so far developed a formula for the femur head/acetabulum and auricular surface/sacral for both adult males and females. I have begun the next set of data using the sacrum and lumbar vertebrae 5. Both finished sets of data have produced workable formulas; I anticipate future data will give similar results. The formulas have not, however, been tested in the field. Between these formulas and the current matching techniques, rearticulating mass burial skeletal material should be much faster and more accurate.

July 27, 2011 marks the 650th anniversary of the Battle of Wisby. From August 7th through the 14th the town of Wisby Sweden on the island of Gotland will be hosting a reenactment of the battle and celebrating all the trappings of life in 1361.

APPENDIX A

Skeletal Remains

APPENDIX A

I. CRANIAL REMAINS

A. Crania

Pallet 426; Box 5102

Bag Weight: 1335g; Site Position: 3: unmarked

WC-0400
Rt mastoid process with auditory canal, RMP: 4

Pallet: 428; Box: 5130

Bag Weight: 28g; Site Position: 3: II Db 1

WC-0401
cranium; no face/temporal; badly damaged; orbit roof intact- no cribra orbitalia; sutures: 0-1

WC-0402
Lt temporal unattached at squamosal suture; LMP: 2

Pallet: 429; Box: 5138

Bag Weight: 572g; Site Position: 3: Gi 50

WC-0403
maxilla in half at suture; LP^1, LP^2, RM^1, LP^2, LP^1 in situ; RM^3 erupted; LM^3
bone missing; loose: maxilla molars x2, canine x2, incisor x1, no obvious enamel hypoplasia

WC-0404
Lt cranium frontal with orbit roof; no cribra orbitalia

WC-0405
Rt temporal; auditory canal; RMP: 3

Pallet: 429; Box: 5139

Bag Weight: 331g; Site Position: 3: II Db 9

WC-0406
cranium fragment; Lt orbit roof, no cribra orbitalia

WC-0407
Rt temporal; RMP: 3

Bag Weight: 481g; Site Position: 3: Hi 94

WC-0408
Lt temporal; LMP: 4

WC-0409
Rt temporal; RMP: 4

WC-0410
maxilla; RI^1, RC, RP^1, RM^1 (dead, abscessed?), RM^2, RM^3 in situ; LI^1, LI^2, LC, LP^1, LP^2 LM^1, LM^2 in situ; LM^3 missing; moderate to extreme wear; RM^2 and LM^2 carie?; no obvious enamel hypoplasia

Bag Weight: 331g; Site Position: 3: II Db 9

WC-0411
cranium; fragmented at sutures

WC-0412
Lt temporal; LMP: 4

Pallet: 430; Box: 5149

Bag Weight: 5149g; Site Position: III 24

WC- 0413
cranium, braincase intact; face in pieces; no mandible; LMP: 4; RMP: 4; maxilla intact but separated at suture and palate suture (missing palate); eye orbits intact: no cribra orbitalia; sutures: 1-2 RM^1, RM^2; LM^1 in situ; RP^1 and RP^2 in situ; all teeth worn to dentin; LM^1 abscessed; caries in other in situ molars; no obvious enamel hypoplasia

Pallet 430; Box: 5151

Bag Weight: 5155g; Site Position:

WC-0414
Rt temporal with mastoid process and auditory canal

Pallet: 430; Box: 5158

Bag Weight: 411g; Site Position: 3: II Fd: 4

WC-0415
cranium; fragmented at sutures, mild cribria orbitalia

WC-0416
Rt temporal RMP: 4

WC-0417
Lt temporal LPM: 4

WC-0418
Lt maxilla; LC, LP^1, LP^2, LM^1, LM^2, LM^3 in situ (erupted but missing); moderate wear; LM^2 with carie

WC-0419
Rt maxilla, separated at suture; RP^1, RP^2, RM^1, RM^2, RM^3 in situ; moderate wear; NC: 3

WC-0519
4 loose teeth with moderate wear

Pallet 431; Box: 5167

Bag Weight: 1851g; Site Position: 3: II Df

WC-0420
cranium cap; frontal and partial of both parietals; appears small; roof of eye orbits both fairly intact; no cribra orbitalia; coronal suture:1-2; sagittal appears obliterated or non-existent

WC-0421
Rt maxilla; RM^1, RM^2, RM^3, RP^1, RP^2 worn to dentin, RM^3 in situ; no caries or obvious enamel hypoplasia

WC-0422
9 loose teeth: 2 molar, 1 incisor, 1 canine, 1 pre-molar; no caries or obvious enamel hypoplasia

WC-0520
occipital only; NC: 4

Pallet 441; Box: 5286

Bag Weight: 262g; Site Position: 3: II Bb 7

WC-0423
cranium; no face or orbits; LMP: 2; RMP: 2; NC: 2; sutures score: 0

Bag Weight: 129g; Site Position: 3: Bb 7

WC-0424
face with maxilla; no skull; RM^1 exhibits extreme wear; G: 2; no cribra orbitalia; sutures loose; M^3's erupted

WC-0425
cranial cap- very small with Lt orbit roof; no cribra orbitalia; spike wound above Rt orbit

Bag Weight: 138g; Site Position: 3: Hj 70

WC-0426
cranial cap; Rt parietal separated at sagittal, coronal and squamosal suture; portion of right occipital held together at lambdoidal suture; NC: 5

Bag Weight: 384g; Site Position: 3: III 36

WC-0427
cranium; frontal with orbit roof; 2 parietal and most of occipital including foramen magnum, no maxilla, mandible or loose teeth; no cribra orbitalia; sutures: 1; no temporal; NC: 4; blade wound top of head across sagittal (not through) spike Lt parietal; 2nd blade wound top to left Rt parietal (not though); nick below and posterior to blade wounds Rt parietal

Bag Weight: 623g; Site Position: A2 F 32 MNI: 2

WC-0428
fragmented cranium-nearly complete; 1 frontal with Rt orbit roof; no cribra orbitalia

WC-0521
1 Rt temporal with auditory canal and RMP: 4

WC- 0522
Rt temporal with auditory canal and MP: 3, groove through

WC-0429
Lt maxilla with MI^1; M^3 erupted; canine absorbed?

WC-0430
Lt maxilla; 5 sockets-no teeth: Lt I^1, I^2, C, P^1, P^2; sutures: 2-3; 21 loose teeth; 4-5 molars with slight to moderate wear; 4 incisors with moderate wear; 2 canine with moderate wear; rest moderate wear; no caries

Bag Weight: 494g; Site Position: A2 F 37

WC-0431
skeletal fragments

WC-0432
Rt temporal portion with auditory canal and MP: 3; match to WC-0434?

WC-0433
Lt temporal portion with partial auditory canal and LMP: 2

WC-0434
Lt temporal portion with auditory canal and MP: 4; match to WC-0432?

Pallet: 443; Box: 5315

Bag Weight: 481g; Site Position: 3: III 30

WC-0435
cranium; intact; no mandible; NC: 3; G: 3; MP: 4; orbits intact- no cribra orbitalia; sutures: ?; Lt parietal and temple through wound; RM^3 absorbed; RM^2, RP^1,RP^2, LP^1, LP^2 in situ

Bag Weight: 16g; Site Position: 3: Jj 105

WC-0436
Rt maxilla; missing RI^1; rest of teeth show moderate wear; no caries
maxilla in same box-match?

Bag Weight: 482g; Site Position: 3: III 40

WC-0437
cranium; missing Lt side and orbit; NC: 4; RMP: 3; orbit- no cribra orbitalia; no maxilla; sutures: 2-3;

Bag Weight: 231g; Site Position: 3: II

WC-0438
Rt temporal RMP: 3; no orbits; apart at sutures: 0

Bag Weight: 391g; Site Position: 3: II 8

WC-0439
brain case; no maxilla or face; orbits intact: no cribra orbitalia; RMP: 4; LMP: 4; sutures: 0

Pallet: 443; Box; 5316

Bag Weight: 292g; Site Position: 3: I 7

WC-0440
cranium cap, no face/maxilla; Lt orbit roof: no cribra orbitalia; NC: 1; LMP: 1 (female); sutures: ?;contusion size of quarter above Rt orbit (forehead), peri-mortem

WC-0441
Rt auditory canal and RMP: 4

Bag Weight: 276g; Site Position: 3: II Bd 9

WC-0442
cranium parietal and occipital; no foramen magnum; NC: 3; sutures: 0-1; wound Lt lambdoidal (spike through); minor wound further medial but not to sagittal suture

Bag Weight: 332g; Site Position: 3: II Bf 1

WC-0443
cranium: no face/maxilla; 34.6mm x 69.4mm section of Lt parietal taken out by blade (battle); sutures: 3; LMP: 5; RMP: 4; G: 4; Lt orbit: no cribra orbitalia; NC: 3

Pallet: 444; Box: 5328

Bag Weight: 388g; Site Position: 3: III 39

WC-0444
cranium with maxilla; fragmented; detached at sutures; LMP: 3; RMP; 3; Lt eye orbit-no cribra orbitalia; maxilla two pieces at suture; M^3's erupted; moderate wear on in situ teeth; RP^1, RP^2, RM^1, RM^2, LP^2,LM^1,LM^2; no caries; RM^3 loose; 3 other loose teeth with moderate wear and no cavities

Bag Weight 340g; Site Position: 3: I 27

WC-0449
cranium cap; sutures: 0-1; Lt frontal- no orbit; RMP: 1; LMP: 1

WC-0450
Rt maxilla M^3's may be through gum line; RP^2; RM^1 and RM^2 may have caries

Bag Weight: 524g; Site Position: 3: unmarked

WC-0451
cranial cap fragments; NC: 4

Pallet: 446; Box: 5348

Bag Weight: 380g; Site Position: 3: I 14

WC-0453
cranium; intact; no face; orbits exhibit no cribra orbitalia; RMP: 4; LMP: 4; NC: 2; sutures: 0; wound at Rt squamosal and lambdoidal suture

Bag Weight: 509g; Site Position: 3: (90)

WC-0454
cranium with face and maxilla; no mandible; NC: 4; LMP: 4; RMP: 4; sutures: 0 G: 4; orbits exhibit no cribra orbitalia; RM^1, RP^2; LM^3, LM^1, LP^2 in situ; moderate wear; no caries

Bag Weight: 471g; Site Position: 3: (Låda 80)

WC-0448
cranium with face and maxilla; no mandible; RMP: 3; LMP: 4; G: 3; NC: 2; sutures:1-2; orbits: no cribra orbitalia; RM^2, RM^1, RP^1; LM^1 in situ; marked wear; no caries; M^3's erupted

Bag Weight: 625g; Site Position: 3: I 25

WC-0455
cranium; no mandible; NC: 4; G: 4; RMP: 5; LMP: 5; sutures; 3; no M^3's erupted, absorbed?; RM^2, RP^1, RP^2; LM^2, LP^2; LM^1 and RM^2 absorbed; orbits: no cribra orbitalia; squamosal suture not fused

Bag Weight: 436g; Site Position: 3: I 4

WC-0456
cranium with face and maxilla; no mandible; NC: 1; G: 4; RMP: 3; LMP: 3; sutures: 2-3; RM^3, RM^2; LM^2, LM^1, LP^2; no M^3's; slight to moderate wear; no caries; no cribra orbitalia

Pallet: 446; Box: 5350

Bag Weight: 323g; Site Position: 3: (87)

WC-0457
cranial fragments; occipital apart at sutures, includes foramen magnum; LMP: 4; frontal suture

WC-0522
cranial cap, no face; apart at sutures; orbits: no cribra orbitalia

Pallet: 447; Box: 5356

Bag Weight: 1772g; Site Position: 3: e unmarked

WC-0458
maxilla portion, probable Lt; with P1, loose canine and PM exhibit slight wear

Pallet: 447; Box: 5357

Bag Weight: 270g; Site Position: 3: II Bd 9

WC-0459
cranial fragments; maxilla apart at suture but whole; RM^3, RM^2, RM^1, RP^1, RC, I^2; LM^3, LM^2, LM^1, LP^1 in situ; moderate wear; no caries or enamel hypoplasia

WC-0523
frontal apart at sutures with orbit roofs; very mild cribra orbitalia in Lt orbit only

WC-0460
Lt auditory canal; LMP: 4

Bag Weight: 113g; Site Position: 3: II Ce 1

WC-0461
cranial fragments; maxilla apart at suture; RM^3, RM^2, RM^1, RP^2, RP^1, RC, RI^2; LM^3, LM^2, LM^1, LP^2, LP^1, LC, LI^2 in situ; moderate wear; no caries or obvious enamel hypoplasia

WC-0466
loose teeth (4) C, P^2, I

Pallet: 447; Box: 5358

Bag Weight: 720g; Site Position: 3: Hj 71

cranial fragments; MNI: 2

WC-0468
Lt temporal; LMP: 4

WC-0469
Lt temporal; LMP: 3

WC-0470
Rt temporal: RMP: 3

WC-0471
parietals together at sagittal suture

Bag Weight: 488g; Site Position: 3: II Cd 2

WC-0472
cranial fragments; appears nearly complete

WC-0526
Rt orbit, no cribra orbitalia

WC-0527
Lt temporal and portion of parietal and occipital; LMP: 3

WC-0528
maxilla; much of pallet missing; RM^2, RM^1, RP^2, RP^1; LM^3, LM^2, LM^1, LP^2 in situ; moderate wear; carie RM2; RM3 lost pre-mortem?; LP1 absorbed

Pallet: 447; Box: 5360

Bag Weight: 277g; Site Position: 3: Hi 30

WC-0476
Lt temporal LMP: 3

WC-0477
Rt temporal RMP: 3

WC-0524
I^1, moderate wear, no enamel hypoplasia

Bag Weight: 145g; Site Position: 3: Hi 30

WC-0478
frontal with orbits; roof exhibit no cribra orbitalia; entire maxilla; RP^1, RP^2, RM^1, RM^2; RM^3 not through gum line; LI^2, LC, LP^1, LM^1, LM^2 in situ; LM^3 not through gum line; slight wear; no enamel hypoplasia or caries

Bag Weight: 326g; Site Position: 3: Gi 50

WC-0479
cranial; cap loose at sutures; NC: 4

WC-0480
Lt temporal LMP: 4; loose at suture

Pallet: 447; Box: 5362

Bag Weight: 248g; Site Position: A3: Hi 82

WC-0481
cranial frontal with both orbit roofs; no cribria orbitalia

WC-0482
occipital fragment with NC: 3

WC-0483
Rt temporal with RMP: 4

WC-0484
2 lose incisors with moderate wear

Bag Weight: 901g; Site Position: 3: I3

WC-0485
loose teeth (6); marked wear; canines and incisors; no caries or obvious enamel hypoplasia

Pallet: 447; Box: 5364

Bag Weight: 206g; Site Position: 3: II Fd 3

WC-0525
Cranium fragment with maxilla and teeth; RP1, RP2, RM1, RM2, LP1, LP2, LM1 in situ; 2 loose canines and loose molar with slight to moderate wear; no dentin or caries; LMP: 2, RMP: 2

Pallet: 450; Box: 5396

Bag Weight: 321g; Site Position: 3: II Eb 3

WC-0486
maxilla apart at suture; LP^1, LP^2, LM^1, LM^2, LM^3 in situ; RP^2, RM^1, RM^2, RM^3 in situ; slight wear; no caries or enamel hypoplasia

WC-0487
Rt orbit roof exhibits no cribra orbitalia

WC-0488
Rt temporal; RMP: 4

WC-0489
Lt temporal; LMP: 4

Pallet: 450; Box: 5397

Bag Weight: 1903g; Site Position: 3: I a.b.c

WC-0490
Rt temporal; RMP: 3

WC-0491
Lt temporal; LMP: 0; separate at sutures

WC-0492
Lt temporal; LMP: 0; separate at sutures

WC-0493
5 loose teeth; 1 mandibular molar, 2 maxilla molars; slight wear

WC-0494
Lt maxilla with LM^3 erupting but not through bone

Pallet: 451; Box: 5401

Bag Weight: 2366g; Site Position: 3: unmarked

WC-0495
Rt maxilla; loose at suture; RP^2, RM^1, RM^2, RM^3 in situ; RM^3 fully erupted; slight wear; no caries; no obvious enamel hypoplasia

WC-0496
Lt temporal; LMP: 1

WC-0497
Lt maxilla; separated at suture; LP^2, LM^1, LM^2 in situ; LM^3 erupting not through bone

WC-0498
Lt maxilla; separate at suture; LP^1, LP^2, LM^1, LM^2, LM^3 (fully erupted)

WC-0499
15 loose teeth; large carie in mandibular molar; slight to moderate wear, no other caries or obvious enamel hypoplasia

Pallet: 464; Box: 5568

Bag Weight: 540g; Site Position: 3 unmarked

WC-0500
maxilla apart at suture; RP^1, RP^2, RM^1, RM^2 in situ; RM^3 erupting but not through bone; LP^1 bone missing; slight wear; no caries or obvious hypoplasia

WC-0501
Lt temporal; apart at sutures; LMP: 3

WC-0502
Rt temporal; apart at sutures; RMP: 1

WC-0503
6 loose teeth; maxilla molar, canine, PM, incisor, all slight wear

WC- 05
Maxilla; LM^2 in situ; LM^3 in situ but not through bone

Bag Weight: 243g; Site Position: 3: unmarked

WC-0504
cranial; no face; apart at sutures; orbit roofs show mild cribra orbitalia

Bag Weight: 204g; Site Position: 3: II Fd 3

WC-0505
cranial fragment apart at suture

Pallet: 465; Box: 5575

Bag Weight: 247g; Site Position: 3: ?

WC-0506
maxilla/nasal; Lt zygomatic arch; LM^3, LM^2, LM^1(carie), LP^2 in situ; RM^1 in situ (RM^2, RM^3 bone missing); moderate wear

WC-0507
maxilla/nasal; Lt zygomatic arch; RM^1 in situ; moderate to marked wear; caries x2?

WC-0508
maxilla/nasal; Rt zygomatic arch; RM^2, RM^1, LP^1 in situ; no M^3's; impacted canine or incisor; moderate wear; no caries

WC-0509
maxilla/ nasal/Rt zygomatic arch; $LP^1 \rightarrow LM^3$ bone missing; LP^2 in situ; LI^1 absorbed; LP^2 dead with abscess; LM^1, LM^2 sockets absorbing; LM^3 missing

WC-0510
maxilla; no other structures; LM and LPM bone missing; RM^1 and RM^2 in situ; moderate wear

WC-0511
maxilla/nasal; RP1, LP2 only sockets not absorbed; all other teeth lost pre-mortem and absorbed

Pallet: 466; Box: 5344, 5345, 5348, 5349, or 5350

WC-0512
Cranial fragments; most of cranial vault in 3 large pieces; coronal suture apart; broken again in middle of both parietals; roof of orbits intact: no cribra orbitalia; appears to be wound on right parietal above temple

WC-0513
Lt maxilla: LP^1, LP^2, LM^1 in situ; LM^3 appears to have erupted

WC-0514
2 loose maxilla molars both with small caries

Pallet: 466; Box: 5585

Bag Weight: 62g; Site Position: A: 3 F (I 17)

WC-0515
occipital and foramen magnum only; NC: 1

Bag Weight: 86g; Site Position: A: 3: Hi F: 30

WC-0516
occipital with foramen magnum only; NC: 1

Bag Weight: 97g; Site Position: A: 3: I F8

WC-0517
occipital without foramen magnum; NC: 4

WC-0518
cranial base with half foramen magnum; temporal MP: 4

RMP=right mastoid process; LMP=left mastoid process; Lt-left; Rt=right; NC=nuchal crest; G=glabella; WC= Wisby crania

B. Mandible

Pallet 426; Box 5102

Bag Weight: 1335g ; Site Position: 3: unmarked

WM-0550
mandible intact; 12 teeth in situ; LM_1, LM_2, LP_1, LP_2, LC, LI_2; RM_1, RP_1, RP_2, RI_1, RI_2, RM_2; all worn to dentin on all surfaces; 4 loose teeth; M_3's erupted; no caries or obvious enamel hypoplasia; ME: 2

Pallet: 428; Box: 5130

Bag Weight: 272g; Site Position: 3: II Cc 2

WM-0551
mandible complete; broken Rt of ME: 4; M_3's erupted ; slight wear to dentin on RM_1, LM_1, LM_2; P_2 thru M_3 in situ; 1 loose incisor, wear to dentin moderate

Pallet: 429; Box: 5138

Bag Weight: 572g; Site Position: 3: Gi 50

WM-0552
mandible; ME: 4; no M_3's; RM_1, LM_1, LM_2 in situ; LM_1 is dead; RM_1 and LM_2 contain caries

Pallet: 429; Box: 5139

Bag Weight: 331g; Site Position: 3: II Db 9

WM-0585
mandible; all teeth in situ; ME: 4; extreme wear; no cavities or obvious enamel hypoplasia

Bag Weight: unmarked; Site Position: unmarked separate ziplock bag

Mandibles; MNI: 4; each marked as III.

WM-0553
missing Lt notch, condyle and coronoid process; M_3's erupted; RM_2, RM_3, RP_1, RC, LM_3, LM_2 in situ; extreme wear; no caries

WM-0554
Rt gonial angle, body and mental foramen; absorption of RM_1 RM_2, possibly RM_3; RP_2 missing

WM-0555
Rt gonial angle, body and mental foramen and coronoid process; RM_1 missing; RM_3 erupted; moderate wear, no caries

WM-0556
Lt gonial angle, body, mental foramen and coronoid process; LP_2, LM_1, LM_2, LM_3 moderate to extreme wear
matching

WM-0557
mental eminence and Rt body; LC, RP_1, RP_2, RM_2 in situ; moderate wear

Pallet 430; Box: 5151

Bag Weight: 1537g; Site Position: 3:III

WM-0558
mandible in 5 pieces but entire; no M_3's?; LM_1, M_2, RM_2 in situ , canine; all other teeth lost post-mortem; wear on all; M_1 extremely worn or carious; right M_1 with possible large carie

WM- 0
9 loose teeth (molars, incisor, canine, pre-molars) all warn to dentin; no caries or enamel hypoplasia

Pallet 431; Box: 5167

Bag Weight: 1851g; Site Position: 3: II Df

WM-0559
Lt mandible; LM_1, LM_2, LM_3, LP_1, LP_2; worn to dentin; no caries or enamel hypoplasia; RM^3 retained, worn to dentin; no caries or obvious enamel hypoplasia

Pallet: 434; Box: 5198

Bag Weight: 45g; Site Position: 3: II Dd 21

WM-0560
mandible in 3 pieces; missing Lt gonial angle and mandibular notch, foramen and mylohydoid groove; ME; 4; M_3's erupted; RM_1, RM_2, LM_1, LM_2 in situ; no loose teeth, no caries, absorption or obvious enamel hypoplasia

Pallet: 443; Box: 5315

Bag Weight: 82g; Site Position: 3: Hj 93

WM-0561
mandible; ME: 4; M_3's erupted; missing RI_2 and RC; rest of teeth show moderate wear; RM_1 and LM_1 contain small carie

Bag Weight: 123g; Site Position: 3: I 25

WM-0562
mandible; ME: 4; RM_1, RM_2, LM_1, LM_2 in situ; no M_3's; moderate wear

Pallet: 444; Box: 5328

Bag Weight: 476g; Site Position: 3: I 29

WM-0563
mandible; intact; ME: 3; RM_2; RM_3; LM_2; LP_2 with slight wear; beginning of caries in both M_2's

Bag Weight: 71g; Site Position: 3: II Ab 3

WM-0586
mandible; complete; missing LI_1, RI_1, LI_2 ; no M_3's erupted; both M_2's severely worn to dentin; other teeth slightly worn (not to dentin); no cavities

Bag Weight 340g; Site Position: 3: I 27

WM-0564
mandible in two pieces but entire; RM_1, RM_2, LM_1;LM_2; L_C in situ;1 loose premolar; no caries; ME: 2; M_3's exist in mandible (still recessed in bone)

Bag Weight: 524g; Site Position: 3: unmarked

WM-0565
mandible; ME: 4; LM_3 only-no indication Rt erupting; LP_1, LP_2, LM_1, RC, RP_1, RM_1 in situ; moderate wear; no cavities

Pallet: 446; Box: 5348

Bag Weight: 88g; Site Position: 3: I 2

WM-0566
mandible; does not fit any of the associated 5 crania; ME: 4; RM_3, RM_2, RM_1 in situ; LM_3, LM_2, LM_1, LP_2, LP_1 in situ; moderate wear; no caries or obvious enamel hypoplasia

Pallet: 447; Box: 5354

Bag Weight: 84g; Site Position: 3: III 7

WM-0567
mandible in 3 pieces; ME: 3; M_3's erupted; LM_1, M_2 in situ; LP_1, LP_2, LM_1 in situ; moderate wear; few caries; 3 loose (1 canine, 2 incisors) with moderate wear and no caries

Pallet: 447; Box: 5356

Bag Weight: 1772g; Site Position: 3: e unmarked

mandible MNI:3

WM-0568
Rt mandible including ME: 3; RM_2 and RM_3 in situ; extreme wear; RM_3 exhibit carie

WM-0569
Rt mandible including ME: 3; no in situ teeth; RM_1 absorbed

WM-0570
Lt mandible including ME: 3; LP_2, LM_1, LM_2, LM_3 in situ; LM_3 slight wear; others exhibit extreme wear

WM-0571
Lt mandible; no in situ teeth

WM-0572
Lt mandible; LM_1, LM_2 in situ; no LM_3 erupted; slight wear

WM-0573
mandible in separate bag; whole; ME: 3; LM_1, LM_2 in situ; LM_3 and RM_3 through bone but not gum line; slight wear; 13 loose teeth; varying degrees of wear; carie in one molar

Pallet: 447; Box: 5360

Bag Weight: 277g; Site Position: 3: Hi 30

WM-0474
cranial fragment; mandible; apart at sutures

WM-0575
Rt mandible broken at ME; RP_1, RP_2, RM_1, RM_2 in situ; RM3 not through bone; no enamel hypoplasia or caries; slight wear; 1 maxilla incisor with moderate wear, no enamel hypoplasia

Bag Weight: 326g; Site Position: 3: Gi 50

WM-0576
mandible broken Lt of ME: 3; RC, RP_1, RP_2, RM_1, RM_2 RI_1 in situ; LI_1, LI_2, LP_1, LP_2, LM_1, LM_3 in situ; slight to moderate wear; no caries or enamel hypoplasia; both M_3's visible but not through bone

Pallet: 447; Box: 5362

Bag Weight: 248g; Site Position: A3: Hi 82

WM-0577
Rt mandible; broke just after ME: 4; RI_1, RP_1, RP_2, RM_1, RM_2, RM_3 in situ; slight to moderate wear; no caries or obvious enamel hypoplasia

Pallet: 447; Box: 5363

Bag Weight: 83g; Site Position: A3: Gi 52

WM-0578

mandible; broke Lt of ME but entire; ME: 3; RP_1, RM_1, RM_2, RM_3, LC, LP_1, LP_2, LM_1, LM_2, LM_3 in situ; slight to moderate wear on M_2's and M_3's; rest of teeth show marked wear; no caries or obvious enamel hypoplasia

Pallet: 450; Box: 5396

Bag Weight: 321g; Site Position: 3: II Eb 3

WM-0579
mandible; RI_2 RC, RP_1, RP_2, RM_1, RM_2, RM_3 in situ; LI_2, LC, LM_1, LM_2, LM_3 in situ; slight to moderate wear; no caries; slight enamel hypoplasia?

Pallet: 450; Box: 5397

Bag Weight: 1903g; Site Position: 3: I a.b.c

WM-0587
mandible; broke at ME: 3; entire: RM_1, RM_2, RM_3 LM_1, LM_2, LM_3 in situ; moderate wear; no caries

Pallet: 451; Box: 5401

Bag Weight: 2366g; Site Position: 3: unmarked

WM-0580
Lt mandibular body; LP_1, LM_2 in situ; LM_3 erupted; LM_2 exhibits carie

Pallet: 464; Box: 5568

Bag Weight: 540g; Site Position: 3 unmarked

WM-0581
Rt mandible; RM_2 in situ; room for RM_3 but not erupted; slight wear

WM-0582
Lt mandibular body, condyles, and coronoids; LM1, LM2 in situ; LM3 in situ but not through bone

Bag Weight: 36g; Site Position: 3: (I: B) or 13?

WM-0583
Lt mandible; LM_1, LM_2 in situ; LM_3 erupted but not present; 1 line of possible enamel hypoplasia

Pallet: 465; Box: 5575

Bag Weight: 247g; Site Position: 3: ?

WM-0588

	mandible; no teeth (lost pre-mortem); ME: 4; strange tooth numbering; 21 sockets with space (or absorption) at LC or LP_1; perhaps molars took up 2 sockets? would work number wise

ME=mental eminence; Rt=right; Lt=left

Appendix A--Continued

II. Post-Cranial

A. Femora

Pallet 426; Box 5102

Bag: 1335; Site Position: 3 unmarked

WF-0001
Rt femur; Head S/I: 48.0mm (doesn't fit associated os coxa) broken just bellow lesser trochanter

Bag Weight: 181; Site Position: 3: Gj 45

WF-0002
Rt femur; broke about mid-shaft; mid-shaft A/P: 29.1mm, A: 6.6mm, P: 10.5mm; Head S/I: 48.2mm

Bag Weight: 141.5g; Site Position: 3: Hk

WF-0003
Lt femur; broke below lesser trochanter; Head S/I: 48.6mm

Pallet: 428; Box: 5128

Bag Weight: 765g; Site Position: 3: unmarked

WF-0004
Lt femur (probable) missing trochanters, neck and head; mid-shaft A/P: 31.1mm

WF-0005
Rt femur (proximal) broken at mid-shaft; missing greater trochanter and condyles; mid-shaft
A/P: 29.2mm, P: 5.5mm, A: 5.3mm, Head S/I: 58.0

WF-0006
Lt femur (proximal); broken at mid-shaft; missing distal end; mid-shaft A/P: 28.2mm, A: 7.6mm,
P: 5.8mm, Head S/I: 59.5mm

Bag Weight: 190g; Site Position: 3: Gk 19

WF-0007
Rt femur (proximal); missing distal end at mid-shaft; mid-shaft A/P: 34.8, A: 6.4mm, P: 13.4mm; Head S/I: 48.4mm

Bag Weight: 361g; Site Position: 3: Hj 66

WF-0008
Lt femur length: 47.0cm; mid-shaft A/P: 29.5, A: 6.6mm, P: 9.4mm; Head S/I: 46.6mm; broken at mid-shaft; mild boney changes medially to lesser trochanter; missing distal condyle by blade

Bag Weight: 392g; Site Position: 3: Fc 5

WF-0009
Lt femur length: 46.3cm; mid-shaft A/P: 27.9mm, A: 6.1mm, P; 8.9mm; Head S/I: 51.9mm

Pallet: 429; Box: 5138

Bag Weight: 216g; Site Position: A3: II Ed 4

WF-0010
Rt femur; no head; lesser and greater trochanter in situ; mid-shaft A/P: 26.4mm

Pallet: 429; Box: 5139

Bag Weight: 344g; Site Position: 3: II Ef 1

WF-0011
Rt femur length: 35.4cm; broken above condyle but entire; mid-shaft A/P: 29.6mm; Head S/I: 48.7mm, A/P: 48.4mm

Pallet: 430; Box: 5114

Bag Weight: 305g; Site Position: 3: Df 3

WF-0012
Lt femur (proximal) missing condyles; mid-shaft A/P: 31.3mm; Head S/I: 50.0mm

Bag Weight: 296g; Site Position: 3: II Ce 12

WF-0013
Rt femur (proximal); mid-shaft A/P: 30.5mm; Head S/I: 49.0mm (match for bag 305 WF-0012?)

Pallet 430; Box: 5151

Bag Weight: 1537g; Site Position: 3:III

WF-0014
Lt femur length: 48.9cm; two pieces broken just below head but fit together nicely; Head S/I: 51.8mm (head fits left acetabulum above, WI-0224)

Pallet 430; Box 5154

Bag Weight: 542g; Site Position; 3: II Gc

WF-0015
Rt femur broken in two places; just below head and just above epicondyles; mid-shaft A/P: 30.3mm; Head S/I: 51.0mm
matching?
WF-0016
Lt femur broken in at least 2 places, head missing; mid-shaft A/P: 29.6mm; possible healed wound medial toward superior

Pallet: 434; Box: 5198

Bag Weight: 195g; Site Position: 3: II Dd 24

WF-0017
Lt femur; head missing most of greater trochanter; lesser trochanter in situ; Head S/I: 53.9mm

WF-0018
Lt femur (probable) head and neck; missing most of greater trochanter, no lesser trochanter; Head S/I: 48.2mm

Bag Weight: 274g; Site Position: 3: II Ed

WF-0019
Rt femur superior end; missing half of greater trochanter; mid-shaft A/P: 33.3mm, A: 3.5mm, P: 6.6mm, Head S/I: 47.8mm

Bag Weight: 321g; Site Position: 3: II Ed 6

WF-0020
Lt femur missing condyles; rest in two pieces; neck but no head; mid-shaft A/P: 24.3mm, A: 5.5mm, P: 8.3mm femur condyle probable Lt medial

WF-0021
Femur condyle probable Lt medial

Bag Weight: 155; Site Position: 3: II Dd 24

WF-0022
1 femur; shaft; unable to side; mid-shaft A/P: 34.2mm

Bag Weight 575; Site Position: 3: II Dd 25

WF-0023
femur head unable to measure; unable to side

WF-0024
Rt femur; distal end; no head

Pallet: 437; Box: 5244

Bag: 370g; Site Position: 3: I 26

WF-0025
Lt femur length: 46.8cm; mid-shaft A/P: 35.9mm; Head S/I: 52.9mm

Bag Weight: 140g; 3-

WF-0026
Lt femur broken approximately 11.4mm from lesser trochanter; mid-shaft A/P: 28.7mm, P: 12.1mm, A: 6.5mm

Pallet 438; Box 5248

Bag Weight: 363g; Site Position: 3 (155)

WF-0027
Lt femur length: 49.9cm; mid-shaft A/P: 31.0mm; Head S/I: 48.9mm

Bag Weight: 381g; Site Position: 3: II Ba 1

WF-0028
Lt femur length: 46.4mm; mid-shaft A/P: 31.9mm; Head S/I: 49.1mm

WF-0029
Lt femur length: 49.6cm; mid- shaft A/P: 30.8mm; Head S/I: 55.3mm; missing lateral condyle

Bag Weight: 359g; Site Position: 3: II Be 1

WF-0030
Lt femur length: 48.6cm; mid-shaft A/P: 31.3mm; Head S/I: 54.3mm

Bag Weight: 390g; Site Position: 3: III 46

WF-0031
Lt femur length: 48.6cm; mid-shaft A/P: 29.8mm; Head S/I: 55.2mm; 3 osteophytes on head

Bag Weight: 341g; Site Position: 3: I 23

WF-0032
Lt femur length: 43.4cm; mid-shaft A/P: 30.8mm; Head S/I: 50.1mm; osteophyte on head

Bag Weight: 454g; Site Position: 3: II Cc 2

WF-0033
Lt femur length: 46.8cm; mid-shaft A/P: 31.9mm; Head S/I: 54.7mm; head broken off, diameter and length may not be accurate

Bag Weight: 323g; Site Position: 3: Gi 18^2

WF-0034
Lt femur length: 44.5cm; mid-shaft A/P: 31.6mm; Head S/I: 49.1mm; appears bowed

Bag Weight: 382g; Site Position: 3: II Cb 13

WF-0035
Lt femur length: 47.3cm; mid-shaft A/P: 30.6mm; Head S/I: 49.4mm

Pallet: 438; Box: 5250

Bag Weight: 394g; Site Position: 3 (90)

WF-0036
Lt femur length: 46.9cm; mid-shaft A/P: 33.6mm; Head S/I: 39.1mm

Bag Weight: 333g; Site Position: 3 (60)

WF-0037
Lt femur length: 47.4cm; mid-shaft A/P: 27.4mm; Head S/I: 51.0mm

Bag Weight: 328g; Site Position: 3: I 13

WF-0038
Lt femur length: 45.4cm; mid-shaft A/P: 26.8mm; Head S/I: 49.3mm

Bag Weight: 223g; Site Position: 3: (80)

WF-0039
Lt femur length: 41.9cm; mid-shaft A/P: 23.4mm; Head S/I: 41.2mm

Pallet 438; Box: 5251

Bag Weight: 817g; Site Position: 3 (58)

WF-0040
Lt femur length: 51.0cm; mid-shaft A/P: 30.5mm; Head S/I: 52.9mm

WF-0041
Lt femur length: 47.3cm; mid-shaft A/P: 28.9mm; Head S/I: 47.5mm

Bag Weight: 342g; Site Position: 3 (38)

WF-0042
Lt femur length: 43.9cm; mid-shaft A/P: 27.2mm; Head S/I: 44.5mm

Bag Weight: 423g; Site Position: 3: I 46^2

WF-0043
Lt femur length: 49.3cm; mid-shaft A/P: 32.9mm; Head S/I: 52.7mm

Bag Weight: 850g; Site Position: 3 (72)

WF-0044
Lt femur length: 44.7cm; mid-shaft A/P: 31.5mm; Head S/I: 0; head is damaged, diameter can not be measured but length should be accurate

WF-0045
Lt femur length: 42.9cm; mid-shaft A/P: 22.8mm; Head S/I: 43.7mm

WF-0046
Lt femur length: 47.3cm; mid-shaft A/P: 27.9mm; Head S/I: 47.6mm

Pallet: 438; Box: 5252

Bag Weight: 367g; Site Position: 3: Db 1

WF-0047
Lt femur length: 45.9cm; mid-shaft A/P: 27.4mm; Head S/I: 51.2mm

Bag Weight: 388g; Site Position: 3: Gk 19

WF-0048
Lt femur length: 49.4cm; mid-shaft A/P: 34.5mm; Head S/I: 48.4mm

Bag Weight: 347g a; Site Position: 3:II Cc 10

WF-0049
Lt femur length: 46.0cm; mid-shaft A/P: 38.6mm; Head S/I: 49.3mm

Bag Weight: 347g b; Site Position: 3: II Ee 1

WF-0050
Lt femur length: 45.6cm; mid-shaft A/P: 36.0mm; Head S/I: 48.6mm

Pallet: 443; Box: 5315

Bag Weight: 563g; Site Position: 3: Ji 98

WF-0051
Lt femur length: 48.0cm; broke below mid-shaft but entire; Head S/I: 52.0mm, A/P: 51.9mm; mid-shaft A/P: 30.6mm, A: 6.5mm, P: 5.8mm

Pallet: 444; Box: 5319

Bag Weight: 154g; Site Position: 3: II Ed 5

WF-0052
Rt femur (proximal); broken mid-shaft; missing greater trochanter; Head S/I: 40.7mm; mid-shaft A/P: 40.7mm; match WF-0053 distal end; length: 45.4cm

Bag Weight: 177g; Site Position: 3: II Ed 5

WF-0053
Rt femur; broken mid-shaft; distal end

Bag Weight: 307g; Site Position: 3: II Ec 15

WF-0054
Rt femur length: 43.3cm; mid-shaft A/P: 21.9mm; Head S/I: 40.6, A/P: 38.9mm

Pallet: 444; Box: 5328

Bag Weight: 476g; Site Position: 3: I 29

WF-0055
Lt femur; distal; broken inferior to mid-shaft; mid-shaft A/P: 25.2mm, A: 4.7mm, P: 7.2mm

Bag Weight: 625g; Site Position: 3: unmarked

WF-0056
Lt femur; broken mid-shaft; mid-shaft A/P: 26.2mm, A: 5.0mm, P: 8.0mm; Head S/I: 46.0mm,
A/P: 46.3mm

WF-0057
Rt femur; broken mid-shaft; Head S/I: 45.8mm, A/P: 46.1mm

Bag Weight: 1236g; Site Position: 3: I 26

WF-0058
Rt femur length: 44.4cm; mid-shaft A/P: 27.7mm; Head S/I: 43.2mm, A/P: 42.6mm

WF-0059
Lt femur length: 44.2cm; mid-shaft A/P: 27.3mm; Head S/I: 42.8mm, A/P: 42.5mm

Pallet: 446; Box: 5341

Bag Weight: 161g; Site Position: 3: Hj 11

WF-0060
Rt femur; broken below lesser trochanter; Head S/I: 51.3mm, A/P: 50.3mm

Bag Weight: 1063g; Site Position: 3: II Bc 1

WF-0061
Rt femur length: 51.3cm; Head S/I: 52.1mm, A/P: 50.7mm; intact; moderate lipping at head; mid-shaft A/P: 31.0mm

WF-0062
Lt femur length: 51.2cm; broken mid-shaft but intact; Head S/I: 50.5mm, A/P: 50.1mm; moderate to server lipping; mid-shaft A/P: 29.0mm, A: 6.6mm, P: 7.2mm

Bag Weight: 3783g; Site Position: 3: unmarked

WF-0063
Lt femur; broken below lesser trochanter; Head S/I: 48.4mm; mid-shaft A/P: 47.0mm; minor lipping

WF-0064
Rt femur distal end
neither match to above femoral neck and head

WF-0065
Lt femur distal end

Pallet: 446; Box: 5342

Bag Weight: 361g; Site Position: 3: III 33

WF-0066
Lt femur length: 48.0cm; mid-shaft A/P: 30.2mm; Head S/I: 50.2mm, A/P: 47.5mm

Pallet: 446; Box: 5343

Bag Weight: 290g; Site Position: A3: II Cd F3

WF-0068
Rt femur; missing head, neck, and greater and lesser trochanter; mid-shaft A/P: 31.1mm

Pallet: 447; Box: 5354

Bag Weight: 345g; Site Position: 3 Gj 9

WF-0069
Lt femur length: 47.5cm; broken at mid-shaft A/P: 29.1mm, A: 5.6mm, P: 10.5mm; Head S/I: 48.4mm, A/P: 47.3mm

Bag Weight: 264g; Site Position: 3: III 23

WF-0070
Lt femur; broke at mid-shaft; condyles damaged; Head S/I: 47.6mm, A/P: 47.4mm; mid-shaft A/P: 25.6mm, A: 6.2mm, P: 7.7mm

Bag Weight: 253g; Site Position: 3: Gk 20

WF-0071
Lt femur; juvenile; head and greater and lesser trochanters unattached; condyle end missing; mid-shaft A/P: 28.7mm

Pallet: 447; Box: 5356

Bag Weight: 447g; Site Position: A3: Gj 49

WF-0072
Rt femur; broke at condyle; mid-shaft A/P: 28.8mm; head S/I: 52.9mm, A/P: 53.5mm

Bag Weight: 302g; Site Position: A3: Gi 50

WF-0073
Lt femur length: 51.1cm; broke mid-shaft but entire; mid-shaft A/P: 26.7mm; Head S/I: 0, A/P: 53.3mm; condyle not totally fused; head not totally fused

Bag Weight: 263g; Site Position: 3: II Ce 8

WF-0074
Lt femur; head missing; lesser and greater trochanter in situ; mid-shaft A/P: 25.5mm

Bag Weight: 311g; Site Position: A3: II Ed 1

WF-0076
Lt femur length: 45.8cm; broke below lesser trochanter, A/P: 28.2mm; Head S/I: 50.1, A/P: 49.3mm; osteophyte at fovea capitis

Pallet: 447; Box: 5360

Bag Weight: 553g; Site Position: 3: I g

WF-0077
Lt femur head; superior greater trochanter; Head S/I: 50.8mm, A/P: 49.9mm

Pallet: 447; Box: 5362

Bag Weight: 789g; Site Position: 3: I 3

WF-0078
Lt femur length: 46.7cm; broken mid-shaft A/P: 28.9mm, A: 8.0mm, P: 6.5; Head S/I: 47.7mm, A/P: 48.0mm

matching pair

WF-0079
Rt femur length: 46.2cm; broke mid-shaft A/P: 30.4mm, A: 6.1mm, P: 9.7mm; Head S/I: 49.5mm, A/P: 49.8mm

Bag Weight: 454g; Site Position: 3: III 48

WF-0080
Rt femur; head missing; mid-shaft A/P: 28.6mm

Pallet: 447; Box: 5363

Bag Weight: 282g; Site Position: 3: II Cc 2

WF-0081
Rt femur; broke mid-shaft A/P: 34.2mm, A: 5.8mm, P: 11.7mm; Head S/I: 54.2mm, A/P: 54.9mm

Bag Weight: 85g; Site Position: 3: II Cd 3

WF-0082
Rt femur head with superior greater trochanter; broke by blade?; Head S/I: 53.3mm, A/P: 0 (slight damage)

Bag Weight: 298g; Site Position: 3: II Dd 18

WF-0083
Rt femur; missing trochanters; Head S/I: 51.8mm, A/P: 51.7mm

Pallet: 447; Box: 5364

Bag Weight: 307g; Site Position: 3: II Ec 6

WF-0084
Lt femur; head and lesser and greater trochanter; Head S/I: 46.2mm, A/P: 45.7mm

Bag Weight: 431g; Site Position: 3: unmarked

WF-0085
Rt femur length: 49.0cm; mid-shaft A/P: 25.3mm; Head S/I: 46.3mm, A/P: 47.3mm; broke at condyles but measurable

Bag Weight: 834g; Site Position: 3: II Cb 8

WF-0086
Rt femur length: 47.3cm: broke mid-shaft A/P: 27.1mm, A: 3.8mm, P: 3.2mm; Head S/I: 47.3mm, A/P: 46.5mm

Pallet: 450; Box: 5396

Bag Weight: 338g; Site Position: 3: Fh 42

WF-0087
Lt femur length: 48.9cm; broke above condyle; mid-shaft A/P: 30.0mm; Head S/I: 50.6mm, A/P: 50.8mm

Pallet: 450; Box: 5397

Bag Weight: 1684g; Site Position: 3: I a.b.c

WF-0088
Rt femur length: 48.8cm; broke mid-shaft A/P: 30.5mm; Head S/I: 52.1mm, A/P: 51.3mm

Bag Weight: 1903g; Site Position: 3: I a.b.c

WF-0089
Lt femur; broke mid-shaft A/P: 25.1mm, A: 6.6mm, P: 9.8mm; Head S/I: 49.1mm, A/P: 49.4mm

Pallet: 451; Box: 5401

Bag Weight: 403g; Site Position: 3: II Cc 5

WF-0090
Rt femur; broken mid-shaft A/P: 28.8mm; Head S/I: 48.1mm, A/P: 47.2mm

Pallet: 458; Box: 5488

Bag Weight: 686g; Site Position: 3: Ji 72

WF-0091
Rt femur; juvenile; no condyle (age 15, Bass); mid-shaft A/P: 29.1mm

WF-0092
Lt femur; juvenile; no condyle (age 15, Bass); mid-shaft A/P: 28.5mm

Bag Weight: 200g; Site Position: 3: III 22

WF-0093
Rt femur; broke mid-shaft A/P: 26.8mm, A: 3.6mm, P: 5.4mm; blade wound just superior to mid-shaft break; Head S/I: 47.6mm, A/P: 47.4mm

Bag Weight: 297g; Site Position: 3: Gi 50

WF-0094
Lt femur; juvenile; head and greater trochanter in situ

Bag Weight: 243g; Site Position: 3: II Ab 1

WF-0095
Rt femur; juvenile; mid-shaft A/P: 28.4mm; (age 15, Bass); missing all epiphyses

Bag Weight: 127g; Site Position: 3: II Fd 2

WF-0096
Rt femur; juvenile; superior half; mid-shaft A/P: 26.8mm, A: 6.8mm, P: 8.7mm; (age 15, Bass)

Pallet: 458; Box: 5496

Bag Weight: 192g; Site Position: 3(39)

WF-0099
Rt femur; juvenile; lesser and greater trochanter attached; head not attached (missing); mid-shaft A/P: 26.8mm; broken above condyle

Bag Weight: 86g; Site Position: 3: Cd 8

WF-0100
Rt femur; juvenile; broken about mid-shaft A/P: 22.9, A: 6.6mm, P: 9.0mm; head, lesser and greater trochanter unattached and missing

Pallet: 462; Box: 5536

Bag Weight: 333g; Site Position: 3: I j 91

WF-0101
Lt femur length: 44.7cm; mid-shaft A/P: 27.3mm; Head S/I: 47.1mm

Bag Weight: 1447g; Site Position: 3: (72)

WF-0102
Rt femur length: 50.2cm; mid-shaft A/P: 33.0mm; Head S/I: 53.0mm; head damaged but measurement should be very close; greater trochanter missing, unable to determine if by sword, shovel or natural; outside portion of medial condyle missing

WF-0103
Rt femur length: 46.7cm; mid-shaft A/P: 31.7mm; Head S/I: 49.1mm

WF-0104
Rt femur length: 45.3cm; mid-shaft A/P: 31.9mm; Head S/I: 44.6mm

Bag Weight: 250g; Site Position: 3: Hj 67

WF-0105
Rt femur length: 43.3cm; mid-shaft A/P: 27.7mm; Head S/I: 48.0mm

Bag Weight: 338g; Site Position: 3: Fi 37

WF-0106
Rt femur length: 44.3cm; mid-shaft A/P: 29.8mm; Head S/I: 47.8mm; appears bowed

Bag Weight: 287g; Site Position: 3: II Bf 1^2

WF-0107
Rt femur length: 43.6cm; mid-shaft A/P: 33.3mm; Head S/I: 46.1mm

Bag Weight: 284g; Site Position: 3: II Fe 2

WF-0108
Rt femur length: 45.8cm; mid-shaft A/P: 28.6mm; Head S/I: 49.0mm

Bag Weight: 363g; Site Position: 3: II Fe 1

WF-0109
Rt femur length: 48.3cm; mid-shaft A/P: 29.1mm; Head S/I: 56.7mm; bony changes around head base

Bag Weight: 340g; Site Position: 3: II Bb 5

WF-0110
Rt femur length: 44.1cm; mid-shaft A/P: 27.8mm; Head S/I: 46.9mm

Bag Weight: 707g; Site Position: 3: (39)

WF-0111
Rt femur length: 42.9cm; mid-shaft A/P: 24.5mm; Head S/I: 45.2mm

WF-0112
Rt femur length: 50.7cm; mid-shaft A/P: 29.1mm; Head S/I: 54.3mm

Bag Weight: 245g; Site Position: 3: (I2)

WF-0113
Rt femur length: 44.6cm; mid-shaft A/P: 29.6mm; Head S/I: 44.2mm

Bag Weight: 371g; Site Position: 3: (III 24)

WF-0114
Rt femur length: 48.8cm; mid-shaft A/P: 30.2mm; Head S/I: 51.2mm

Bag Weight: 247g; Site Position: 3: II Dd 20

WF-0115
Rt femur length: 44.2cm; mid-shaft A/P: 25.3mm; Head S/I: 45.1mm; missing greater trochanter and medial condyle

Bag Weight: 269g; Site Position: 3: II Bb ^{2}

WF-0116
Rt femur length: 42.7cm; mid-shaft A/P: 27.3mm; Head S/I: 45.1mm

Bag Weight: 357g; Site Position: 3: Gj 57

WF-0117
Rt femur length: 45.9cm; mid-shaft A/P: 27.6mm; Head S/I: 51.8mm

Pallet 462; Box: 5538

Bag Weight: 303g; Site Position: 3: Ce 4

WF-0118
Rt femur length: 43.3cm; mid-shaft A/P: 27.3mm; Head S/I: 27.2mm; lipping at top rear of head

Bag Weight: 318g; Site Position: 3: Ec 6

WF-0119
Rt femur length: 41.9cm; mid-shaft A/P: 30.5mm; Head S/I: 46.2mm, A/P: 45.8mm

Bag Weight: 305g; Site Position: 3: Hh 48

WF-0120
Rt femur length: 45.0cm; mid-shaft A/P: 27.7mm; Head S/I: 44.2mm; spot on top of head appears burnt

Bag Weight: 291g; Site Position: 3: II De2

WF-0121
Rt femur length: 44.7cm; mid-shaft A/P: 32.5mm; Head S/I: 48.6mm; break approximately 148mm from medial condyle

Bag Weight: 347g; Site Position: 3: Ji 87

WF-0122
Rt femur length: 47.1cm; mid-shaft A/P: 30.2mm; Head S/I: 45.7mm

Bag Weight: 280g; Site Position: 3: Dh1

WF-0123
Rt femur length: 45.2cm; mid-shaft A/P: 28.3mm; Head S/I: 47.9mm

Pallet: 462; Box: 5539

Bag Weight: 296g; Site Position: 3: (I: 4)

WF-0124
Rt femur length: 44.2cm; mid-shaft A/P: 27.1mm; Head S/I: 49.5mm

Bag Weight: 366g; Site Position: 3: (87)

WF-0125
Rt femur length: 49.0cm; mid-shaft A/P: 30.6mm; Head S/I: 55.5mm; 4 lines on head and 1 on side look mechanical, postmortem?

Bag Weight: 2040g; Site Position: 3(88)

WF-0126
Rt femur length: 44.7cm; mid-shaft A/P: 28.7mm; Head S/I: 51.3mm

WF-0127
Rt femur length: 48.5cm; mid-shaft A/P: 30.2mm; Head S/I: 51.2mm

WF-0128
Rt femur length: 47.0cm; mid-shaft A/P: 29.6mm; Head S/I: 47.6mm

WF-0129
Rt femur length: 52.1cm; mid-shaft A/P: 31.2mm; Head S/I: 54.1mm; spike wound? above lateral condyle

WF-0130
Rt femur length: 46.8cm; mid-shaft A/P: 34.4mm; Head S/I: 32.2mm

Bag 603; Site Position: 3: (I26)

WF-0131
Rt femur length: 47.3cm; mid-shaft A/P: 33.4mm; Head S/I: 52.3mm

Bag Weight: 392g; Site Position: 3: (I46)

WF-0132
Rt femur length: 48.6cm; mid-shaft A/P: 33.4mm; Head S/I: 52.9mm

Bag Weight: 276g; Site Position: 3: II Ed 5

WF-0133
Lt femur (proximal) mid-shaft A/P: 24.6mm; Head S/I: 47.3mm

Bag Weight: 760g; Site Position: 3: (60)

WF-0134
Rt femur length: 47.9cm; mid-shaft A/P: 25.9mm; Head S/I: 51.1mm

WF-0135
Rt femur length: 46.0cm; mid-shaft A/P: 28.2mm; Head S/I: 50.8mm

Bag Weight: 319g; Site Position: 3: (72)

WF-0136
Rt femur length: 47.2cm; mid-shaft A/P: 27.1mm; Head S/I: 49.0mm

Bag 715; Site Position: 3: (I: 3)

WF-0137
Rt femur length: 45.7cm; mid-shaft A/P: 27.7mm; Head S/I: 49.3mm

Bag Weight: 312g; Site Position: 3: (41)

WF-0138
Rt femur length: 45.5cm; mid-shaft A/P: 31.9mm; Head S/I: 45.6mm; missing greater trochanter and side of medial condyle

Bag Weight: 316g; Site Position: 3 (I: 23)

WF-0139
Rt femur length: 43.4cm; mid-shaft A/P: 34.6mm; Head S/I: 48.2mm; osteophyte on lesser trochanter

Pallet: 462; Box: 5340

Bag Weight: 1531g; Site Position: 3: unmarked

WF-0140
Rt femur length: 49.2cm; mid-shaft A/P: 31.4mm; Head S/I: 46.9mm

WF-0141
Rt femur length: 42.7cm; mid-shaft A/P: 25.5mm; Head S/I: 41.5mm; evidence of epiphyseal at condyles and shaft

Bag Weight: 309g; Site Position: 3: (83)

WF-0142
Rt femur length: 44.7cm; mid-shaft A/P: 27.6mm; Head S/I: 47.5mm

Pallet: 464; Box: 5566

Bag Weight: 354g; Site Position: 3: II Cc 3

WF-0143
Rt femur length: 48.5cm; lateral condyle missing by blade-length may not be accurate; mid-shaft A/P: 30.0mm; Head S/I: 54.0mm, A/P: 50.7mm

Pallet: 464; Box: 5568

Bag Weight: 779g; Site Position: 3: unmarked

WF-0144
Rt femur; juvenile; age: 5-10 (Bass, 1987); length: 31.9mm; no epiphyses
match
WF-0145
Lt femur; juvenile; age: 5-10 (Bass, 1987)

Pallet: 466; Box: 5581

Bag Weight: 1507g; Site Position: 3: unmarked

WF-0146
Lt femur; juvenile; matching head and condyle length: 41.5cm (without head); mid-shaft A/P: 28.8mm
matching pair
WF-0147
Rt femur; juvenile; with head and condyle; length with head: 45.7cm, without head: 41.2mm; mid-shaft A/P: 28.7mm

Bag Weight: 5634g; Site Position: 3: I 9

WF-0148
Rt femur; juvenile; missing head, lesser, and greater trochanter length: 37.7cm; Age 10 (Bass)
matching pair

WF-0149
Lt femur; juvenile; missing head, lesser and greater trochanter length: 37.4cm; Age 10 (Bass)

Pallet: 466; Box: 5585

Bag Weight: 160g; Site Position: 3: F

WF-0150

Rt femur; juvenile; without head, lesser or greater trochanter; broke mid-shaft A/P: 26.3mm, A: 6.2mm, P: 5.9mm

Bag Weight: 244g; Site Position: A: 3: F 72

WF-0151
Lt femur; juvenile; without head, lesser or greater trochanter; blade cut across head and greater trochanter; length: 34.7cm; Age: 15 (Bass, 1987); no condyles

Bag Weight: 282g; Site Position: A: 3: II Fd F: 2

WF-0152
Lt femur; juvenile; without head, lesser and greater trochanter or condyle; mid-shaft A/P: 26.3mm; length: 44.2cm; Age: 15 (Bass, 1987)

Bag Weight: 323g; Site Position: A: 3: I (I24)

WF-0153
Rt femur; juvenile; head and greater trochanter attached, lesser trochanter unattached; condyle unattached but present; length with condyle: 44.4mm, without: 41.9mm

Bag Weight: 574g; Site Position: A: 3: F-

WF-0154
Lt femur length: 46.4cm; mid-shaft A/P: 29.3mm; Head S/I: 46.5mm, A/P: 45.6mm

Bag Weight: 410g; Site Position: A: 3 F (I7)

WF-0155
Rt femur; juvenile; no head, lesser and greater trochanter or condyle; length: 38.6cm; mid-shaft
A/P: 20.6mm

matching pair

WF-0156
Lt femur; juvenile; no head, lesser and greater trochanter or condyle; length: 38.4cm; mid-shaft A/P: 22.9mm

Pallet: 467; Box: 5596

Bag Weight: 64g; Site Position: 3: Hi[2]

WF-0157
Lt femur; juvenile; unattached head, lesser and greater trochanters; broke below lesser trochanter

Bag Weight: 202g; Site Position: 3: II Cd 9

WF-0158
Lt femur; juvenile; head, lesser and greater trochanter unattached; age: 10+ (Bass); length: 40.2cm

Pallet: 467; Box: 5603

Bag Weight: 623g; Site Position: 3: Hi 30

WF-0161
Lt femur; greater trochanter attached but unfused; head and condyles unattached; billowing present; mid-shaft A/P: 28.4mm

Bag Weight: 63g; 3: Hi 56

WF-0162
femur shaft (probable); epiphyses unattached; mid-shaft A/P: 23.0mm, A: 7.4mm, P: 4.1mm; may be a tibia

Pallet: 467; Box: 5604

Bag Weight: 171g; Site Position; 3: Cc –

WF-0163
Lt femur head epiphysis not sealed; billowing evident; greater trochanter missing; broken at mid-shaft; mid-shaft A/P: 27.2mm, A: 8.4mm, P: 6.1mm

Bag Weight: 92; Site Position: 3: (60)

WF-0164
Lt femur shaft; all epiphyses missing; evident billowing; very young; A/P: 16.8mm

Bag Weight: 35g; Site Position: 3: (7)

WF-0165
Lt femur head; all epiphyses missing; billowing evident, broken just below lesser trochanter epiphysis

Bag Weight: 307g; Site Position: 3: Hh 47

WF-0166
Lt femur length: 45.0cm; mid-shaft A/P: 25.5mm; Head S/I: 45.0mm, A/P: 44.7mm

Pallet: 467; Box: 5600

Bag Weight: 610g; Site Position: 3: I 26

WF-0167
Lt femur; condyle epiphysis unattached; head greater trochanter attached but unfused; mid-shaft A/P: 24.1mm; condyles present

Bag Weight: 850g; Site Position: 3: unmarked

Appendix A--Continued

WF-0168
Rt femur length: 40.5cm; mid-shaft A/P: 23.5mm; Head A/P: 44.5mm, S/I: 44.2mm, shows slight epiphysis signs, condyles do not

Rt-Right; Lt=Left; A=Anterior; P=Posterior; I=Inferior; S=Superior; WF-Wisby Femur

B. Tibia

Pallet: 428; Box: 5128

Bag Weight: 60g; Site Position: 3: Gi 50

WT-0700
Rt tibia; distal; broke at mid-shaft; mid-shaft A/P: 22.6mm, A: 4.7mm, P: 4.9mm

Pallet 431; Box: 5167

Bag Weight: 1851g; Site Position: 3: II Df

WT-0701
Lt tibia, distal; mid-shaft A/P: 11.8mm

Pallet: 434; Box: 5198

Bag Weight: 274g; Site Position: 3: II Ed 8

WT-0702
Lt tibia length: 33.4cm; mid-shaft A/P: 29.7mm

Bag Weight: 80g; Site Position: 3: II Ed 6

WT-0703
tibia mid-shaft; unable to side; mid-shaft A/P: 25.4mm

Bag Weight: 321g; Site Position: 3: II Ed 6

WT-0704
Lt tibia condyles

Pallet 438; Box 5248

Bag Weight: 223g; Site Position: 3: Gk 7

WT-0705
Lt tibia length: 40.0cm; mid-shaft A/P: 32.4mm

Pallet 440; Box: 5276

Bag Weight: 282g; Site Position: 3: (88)

WT-0706
Lt tibia length: 34.8cm; mid-shaft A/P: 27.6mm
probable match
WT-0707
Rt tibia length: 34.8cm; mid-shaft A/P: 27.0mm

Bag Weight: 340g; Site Position: 3: (I 23)

WT-0708
Lt tibia length: 33.5cm; mid-shaft A/P: 32.5mm
probable match
WT-0709
Rt tibia length: 33.7cm; mid-shaft A/P: 33.1mm

Bag Weight: 124g; Site Position: 3: (6^2)

WT-0710
Rt tibia length: 34.0cm; mid-shaft A/P: 26.2mm

Bag Weight: 209g; Site Position: 3(I^2)

WT-0711
Rt tibia length: 38.5cm; A/P: 29.1mm

Bag Weight: 341g; Site Position: 3(33)

WT-0712
Lt tibia length: 35.4cm; mid-shaft A/P: 29.1mm

WT-0713
Lt tibia length: 37.4cm; mid-shaft A/P: 29.7mm

Bag Weight: 209g; Site Position: 3: (87)

WT-0714
probable Rt tibia missing malleolus; mid-shaft A/P: 31.1mm

Bag: 112g; Site Position: 3: (72)

WT-0715
Rt tibia length: 33.0cm; mid-shaft A/P: 26.8mm; probable blade cuts (2) anterior just distal to condyles

Bag Weight: 388g; Site Position: 3: (I)

WT-0716
Rt tibia length: 35.5cm; mid-shaft A/P: 31.2mm

WT-0827
Lt tibia length: 39.2cm; mid-shaft A/P: 30.1mm

Bag Weight: 402g; Site Position: 3: (60)

WT-0717
Lt tibia length: 36.7cm; mid-shaft A/P: 30.9mm

WT-0718
Rt tibia length: 39.6cm; mid-shaft A/P: 31.0mm; missing lateral condyle-measurement maybe a few mm short

Bag Weight: 174g; Site Position: 3-

WT-0719
Rt tibia missing malleolus; mid-shaft A/P: 29.4mm

Pallet: 440; Box: 5277

Bag Weight: 236g; Site Position: 3: III Bc 1

WT-0720
Lt tibia length: 43.6cm; mid-shaft A/P: 30.6mm

Bag Weight: 164g; Site Position: 3: II Bf 2

WT-0721
Rt tibia length: 37.3cm; mid-shaft A/P: 26.2mm; possible wound about size of quarter superior just below condyles

Bag Weight: 209g; Site Position: 3: Ii 87

WT-0722
Rt tibia length: 39.7cm; mid-shaft A/P: 35.4mm; A: 11.5mm, P: 5.8mm,: broken proximal mid-shaft

Bag Weight 130g; Site Position: 3: (66)

WT-0723
Lt tibia length: 34.0cm; entire; mid-shaft A/P: 26.7mm

Bag Weight: 205g; Site Position: 3: II Cb 8

WT-0724
Rt tibia length: 39.0cm; mid-shaft A/P: 31.0mm; A: 11.5mm, P: 5.4mm

Bag Weight: 458g; Site Position: 3: III

WT-0725
Lt tibia length: 38.6cm; mid-shaft A/P: 31.8mm

WT-0726
Rt tibia length: 38.6cm; mid-shaft A/P: 31.9mm; osteophyte posterior just inferior of lateral condyle

Bag Weight: 189g; Site Position: 3: (38)

WT-0727
Lt. tibia length: 36.6cm; mid-shaft A/P: 29.0mm; missing medial condyle; minor damage distally

Bag Weight: 197g; Site Position: 3: II De 10

WT-0728
Rt tibia length: 35.6cm; mid-shaft A/P: 32.7mm

Bag Weight: 165g; Site Position: 3: II Eb 2

WT-0729
Rt tibia length: 33.6cm; mid-shaft A/P: 31.5mm

Bag Weight: 207g; Site Position: 3: (155)

WT-0730
Rt tibia length: 38.9cm; mid-shaft A/P: 33.0mm

Bag Weight: 161g; Site Position: 3: II Bb 2

WT-0731
Lt tibia length: 34.5cm; mid-shaft A/P: 28.2mm

Bag Weight: 174g; Site Position: 3: (O25)

WT-0732
Rt tibia length: 39.9cm; mid-shaft A/P: 29.4mm

Bag Weight: 160g; Site Position: 3: II Ed 8

WT-0733
Rt tibia length: 33.5cm; mid-shaft A/P: 30.7mm

Bag Weight: 167g; Site Position: 3: Hh 47

WT-0734
Lt tibia length: 36.0cm; mid-shaft A/P: 27.0mm

Bag Weight: 173g; Site Position: 3: Fi 41

WT-0735
Lt tibia length: 36.3cm; mid-shaft A/P: 30.1mm

Bag Weight: 220g; Site Position: 3: (45)

WT-0736
Lt tibia; malleolus missing pre-mortem; estimate length: 38.7cm (38.3cm w/o); mid-shaft A/P: 32.4mm; bony growth posterior just above distal end

Bag Weight: 215g; Site Position: 3: Gj 15

WT-0737
Rt tibia length: 40.3cm; mid-shaft A/P: 25.5mm

Bag Weight 256g; Site Position: 3 (D15)

WT-0738
Rt tibia length: 40.7cm; mid-shaft A/P: 32.5mm

Bag Weight: 221g; Site Position: 3: II Cb 13

WT-0739
Rt tibia length: 40.2cm; mid-shaft A/P: 29.3mm

Bag Weight: 158g; Site Position: 3: II Bf 1

WT-0740
Lt tibia length: 34.2cm; mid-shaft A/P: 30.0mm

Bag Weight: 195g; Site Position: 3: III

WT-0741
Rt tibia length: 37.9cm; mid-shaft A/P: 30.7mm

Bag Weight 200g; Site Position: 3: (101)

WT-0742
Rt tibia length: 37.7cm; mid-shaft A/P: 31.9mm

Bag Weight: 163g; Site Position: 3: (D11)

WT-0743
Rt tibia length: 0; malleolus missing; mid-shaft A/P: 30.5mm; damage anterior condyles

Bag Weight: 187g; Site Position: 3: I 18

WT-0744
Rt tibia length: 38.3cm; mid-shaft A/P: 36.4mm

Bag Weight: 201g; Site Position: 3 (D23)

WT-0745
Rt tibia length: 37.3cm; mid-shaft A/P: 29.4mm; damage anterior to condyles

Pallet: 444; Box: 5328

Bag Weight:1236; Site Position: 3: I 26

WT-0746
Rt tibia; inferior and superior epiphyses not attached; billowing evident; mid-shaft A/P: 26.7mm

Pallet: 446; Box: 5341

Bag Weight: 3783g; Site Position: 3: unmarked

WT-0750
Rt distal tibia

WT-0751
tibia; distal; unable to side

Bag Weight: 196 g; Site Position: Hj 10

WT-0746
Rt tibia; condyle missing

Bag Weight: 261g; Site Position: 3: Gj 9

WT-0747
Lt tibia length: 41.1cm

Bag Weight: 176g; Site Position: 3: Hj 26

WT-0748
Lt tibia length: 37.6; separated distally by blade; mid-shaft A/P: 25.4mm

Bag Weight: 3783g; Site Position: 3: unmarked

WT-0749
Rt tibia condyle

WT-0752
Lt tibia condyle not match

Pallet: 446; Box: 5343

Bag Weight: 197g; Site Position: 3: II Cb 11

WT-0754
Rt tibia length: 35.5cm; mid-shaft A/P: 27.2mm

Pallet: 446; Box: 5343

Bag Weight: 197g; Site Position: 3: II Cb 11

WT-0754
Rt tibia length: 35.5cm; mid-shaft A/P: 27.2mm

Bag Weight: 210g; Site Position: 3: V 25

WT-0755
Rt tibia length: 40.6cm; mid-shaft A/P: 31.7mm; missing lateral condyle but measurable

Bag Weight: 212g; Site Position: 3: II Bd 7

WT-0756
Lt tibia length: 39.5cm; mid-shaft A/P: 30.5mm; damage inferior and superior

Bag Weight: 207g; Site Position: 3: I 5

WT-0757
Rt tibia length: 36.2cm; mid-shaft A/P: 30.2mm

Bag Weight: 235g; Site Position: 3: I 6

WT-0758
Lt tibia length: 40.5cm; mid-shaft A/P: 32.8mm

Bag Weight: 163g; Site Position: 3: III 16

WT-0759
Rt tibia length: 36.8cm; mid-shaft A/P: 26.8mm

Bag Weight: 183g; Site Position: 3: II Fd 5I

WT-0760
Lt tibia length: 38.0cm; mid-shaft A/P: 32.0mm

Bag Weight: 213g; Site Position: 3: I 26

WT-0761
Lt tibia length: 38.9; mid-shaft A/P: 32.0mm

Bag Weight: 198g; Site Position: 3: II Be 1

WT-0762
Lt tibia missing malleolus; mid-shat A/P: 30.9mm

Bag Weight: 403g; Site Position: 3: II Cc 2
WT-0763
Rt tibia; missing malleolus; mid-shaft A/P: 30.9mm

Bag Weight: 124g; Site Position: 3: II Ce 13

WT-0764
Rt tibia length: 31.7cm; A/P: 21.7mm

Pallet: 446; Box: 5343

Bag Weight: 277; Site Position: 3: Gk 19

WT-0775
Rt tibia length: 39.7cm; mid-shaft A/P: 31.9mm, P: 6.5mm, A: 17.3mm

WT-0776
Rt tibia; broken above malleolus-unable to match accompanying shaft but same color (piece missing?)

Pallet: 447; Box: 5355

Bag Weight: 1277; Site Position: 3: unmarked

WT-0777
tibia (probable) shaft section with blade cut on anterior crest; mid-shaft A/P: 25.4mm, A: 13.8mm, P: 7.7mm

Pallet: 458; Box: 5488

Bag Weight: 686g; Site Position: 3: Ji 72

WT-0778
Lt tibia; juvenile; no condyle (age 10-15, Bass) mid-shaft A/P: 31.3mm

Bag Weight: 177g; Site Position: 3: II Db 4

WT-0779
Rt tibia length: 36.1mm; mid-shaft A/P: 27.9mm

Bag Weight: 380g; Site Position: 3: Hk 44

WT-0780
Lt tibia length: 39.7cm; mid-shaft A/P: 30.3mm; wound lateral superior

WT-0781
Rt tibia; missing medial condyle; mid-shaft A/P: 31.7mm

Bag Weight: 180g; Site Position: 3: II Db 1

WT-0783
Lt tibia length: 32.2cm; mid-shaft A/P: 25.3mm; 2 blade wounds medially

Bag Weight: 266g; Site Position: 3: II Ec 6

WT-0784
Rt tibia length: 32.9cm; mid-shaft A/P: 30.4mm

WT-0785
Lt tibia; mid-shaft break (by blade?); blade wound medial/superior; mid-shaft A/P: 28.3mm, A: 12.8mm, P: 6.5mm

Bag Weight: 178g; Site Position: 3: Bd (Ba?) 6

WT-0786
Rt tibia length: 39.0cm; mid-shaft A/P: 27.4mm; 2 superior/anterior blade wounds; epicondyle attached but not fused

Bag Weight: 170g; Site Position: 3: Gj 49

WT-0787
Rt tibia, proximal; epicondyle attached, not quite fused; mid-shaft A/P: 30.6mm

Bag Weight: 189g; Site Position: 3: Fi 36

WT-0788
Rt tibia; malleolus missing; mid-shaft A/P: 28.5mm

Bag Weight: 160g; Site Position: 3: II Ee1

WT-0789
Lt tibia; distal end missing; mid-shaft A/P: 26.9mm; minor blade wound posterior/superior

Bag Weight: 58g; Site Position: 3: III 50

WT-0790
Lt distal tibia; blade wound just superior to fibula auricular surface

Bag Weight: 244g; Site Position: 3: II Cc 2

WT-0791
Lt tibia length: 39.3cm; 3 minor blade cuts; mid-shaft A/P: 31.9mm

Bag Weight: 297g; Site Position: 3: Gi 50

WT-0792
Lt tibia length: 42.5cm; epicondyle attached but not fused

Bag Weight: 156g; Site Position: 3: II Bc 11

WT-0793
Lt tibia length: 35.8cm; mid-shaft A/P: 28.3mm, A: 5.5mm, P: 13.5mm; broken at mid-shaft by blade

Bag Weight: 141g; Site Position: 3: III 50

WT-0794
Lt tibia broke mid-shaft A/P: 22.5mm, A: 10.8mm, P: 6.5mm; 2 anterior blade wounds

Bag Weight: 145g; Site Position: 3: II Cc 10

WT-0795
Lt tibia, distal; mid-shaft A/P: 28.9mm; 3 lateral blade wounds

Bag Weight: 164g; Site Position: 3: II Ce 8

WT-0796
Lt tibia length; 35.5cm; mid-shaft A/P: 30.3mm; anterior blade wound

Pallet: 462; Box: 5536

Bag Weight: 1447g; Site Position: 3: (72)

WT-0797
Rt tibia length: 38.9cm; mid-shaft A/P: 32.9mm

WT-0798
Lt tibia length: 37.3cm; mid-shaft A/P: 30.0mm

Bag Weight: 150g; Site Position: 3: II Bb 2

WT-0799
Rt tibia length: 34.1cm; mid-shaft A/P: 30.1mm

Bag Weight: 182g; Site Position: 3: Gk 24

WT-0800
Rt tibia length: 39.8cm; mid-shaft A/P: 28.4mm

Pallet 462; Box: 5538

Bag Weight: 235g; Site Position: 3: Ij 98

WT-0801
Rt tibia length: 41.5cm; mid-shaft A/P: 33.3mm

Bag Weight: 186g; Site Position: 3: III

WT-0802
Lt tibia length: 38.3cm; mid-shaft A/P: 31.1mm

Pallet: 462; Box: 5539

Bag Weight: 2040g; Site Position: 3(88)

WT-0803
Rt tibia length: 33.6cm; mid-shaft A/P: 29.1mm

Bag Weight: 603g; Site Position: 3: (I26)

WT-0804
Rt tibia length: 38.6cm; mid-shaft A/P: 32.8mm

Bag Weight: 180g; Site Position: 3: II Ec 15

WT-0805
Rt tibia length: 37.2cm; mid-shaft A/P: 29.3mm

Bag Weight: 760g; Site Position: 3: (60)

WT-0806
Lt tibia length: 33.2cm; mid-shaft A/P: 25.2mm

Bag Weight: 715g; Site Position: 3: (I: 3)

WT-0807
Lt tibia length: 37.6cm; mid-shaft A/P: 29.4mm

WT-0808
Rt tibia length: 38.1cm; mid-shaft A/P: 29.8mm

Pallet: 464; Box: 5566

Bag Weight: 144g; Site Position: 3: II Ca 3

WT-0827
Lt tibia missing condyles by damage; distal epi attached but not sealed

Pallet: 462; Box: 5340

Bag Weight: 1531g; Site Position: unmarked

WT-0809
Rt tibia length: 34.7cm; mid-shaft A/P: 29.3mm

WT-0810
Rt tibia length: 40.0cm; mid-shaft A/P: 26.3mm

WT-0811
Rt tibia length: 39.0cm; mid-shaft A/P: 28.7mm

WT-0812
Lt tibia length: 39.2cm; mid-shaft A/P: 27.5mm

WT-0813
Lt tibia length: 35.0cm; mid-shaft A/P: 27.3mm

WT-0814
Rt medial condyle with portion of shaft; not matching others in bag

Pallet: 467; Box: 5603

Bag Weight: 623g; Site Position: 3: Hi 30

WT-0815
Rt tibia missing malleolus; epiphysis attached but not sealed; mid-shaft A/P: 34.5mm

Bag Weight: 168g; Site Position: 3: (I: 7)

WT-0816
1 tibia condyle; unattached

Bag Weight: 165g; Site Position: 3: (77)

WT-0817
tibia; juvenile; both epiphyses unattached

Pallet: 467; Box: 5600

Bag Weight: 610g; Site Position: 3: I 26

WT-0818
Lt tibia; both ends attached but unfused; mid-shaft A/P: 22.8mm

WT-0819
Rt tibia; distal attached but unfused; superior unattached

Bag Weight: 850g; Site Position: 3: unmarked

WT-0820
Lt tibia length: 32.9cm; mid-shaft A/P: 24.7mm

Pallet: 467; Box: 5604

Bag Weight: 207g; Site Position: 3: III 46

WT-0822
Lt tibia length: 41.0cm; mid-shaft A/P: 29.6mm

Bag Weight: 177g; Site Position: 3: II Gc 2

WT-0823
Rt tibia length: 37.7cm; mid-shaft A/P: 28.3mm

Bag Weight: 182g; Site Position: 3: Hi 65

WT-0824
Lt tibia length: 36.6; mid-shaft A/P: 28.0mm

Bag Weight: 174g; Site Position: 3: II Ec 11

WT-0825
Rt tibia; missing malleolus; mid-shaft A/P: 31.6mm

Bag Weight: 74g; Site Position: 3: Hh 45

WT-0826
Rt tibia, distal ; mid-shaft A/P: 30.8m, A: 12.5mm, P: 6.1mm

Rt-right; Lt=left; A=anterior; P=posterior; I=inferior; S=superior; WT-Wisby tibia

C. Humeri

Pallet 426; Box 5102

Bag Weight: 1335g; Site Position: 3: unmarked; 1 individual, multiple pieces

WH-0600
Lt humerus; distal; mid-shaft A/P: 21.5mm, P: 6.5mm, A: 7.5mm

Pallet: 428; Box: 5128

Bag Weight: 124g; 3: Df 1

WH-0602
Rt humerus in 5 pieces (nearly complete) length: 33.8cm; mid-shaft A/P: 24.9mm, A: 6.1mm, P: 2.4mm; Head S/I: 52.1mm

Bag Weight: 60g; Site Position: 3: Gi 50

WH-0603
Rt humerus missing head at mid-shaft; mid-shaft A/P: 22.5mm, A: 5.5mm, P: 4.7mm

Pallet: 428; Box: 5130

Bag Weight: 272g; Site Position: 3: II Cc 2

WH-0604
Rt humerus; missing head, neck and tubercles in situ; mid-shaft A/P: 24.5mm

Bag Weight: 352g; 3: Site Position: II Ce 17

WH-0605
Lt humerus; broken interior of mid-shaft; mid-shaft A/P: 20.9mm, A: 7.4mm, P: 6.3mm

Pallet 431; Box: 5167

Bag Weight: 1851g; Site Position: 3: II Df

WH-0606
Lt humerus; intact; distal bony changes (arthritic?); length: 35.5cm; head: 49.7mm; mid-shaft A/P: 21.3mm

WH-0607
Rt humerus; head missing at mid-shaft; mid-shaft A/P: 24.9mm; P: 7.0mm; A: 6.6mm

WH-0608
Rt humerus head: 49.6mm; broken just below head

WH-0610
Rt humerus; distal; broken 101.5mm from trochlea; matching mid-shaft (19.0mm; mid-shaft A/P: 21.4mm

Pallet: 434; Box: 5198

Bag Weight: 102g; Site Position: 3: II Ce 12

WH-0611
Rt humerus length: 33.0cm; mid-shaft A/P: 20.0mm; Head S/I: 45.5mm; condyle remove by weapon?

Bag Weight: 61g; Site Position: 3: II Ce 11

WH-0612
Rt humerus missing head; broke in 3 places; mid-shaft A/P: 20.7mm, A: 7.3mm, P: 5.5mm

Pallet 441; Box: 5286

Bag Weight: 494g; Site Position: A2 F 37

WH-0613
Rt humerus head and neck broke before radial nerve groove; Head S/I: 44.5mm

Pallet: 446; Box: 5341

Bag Weight: 191g; Site Position: 3: Gk 6

WH-0614
Rt humerus length: 34.8cm; broken mid-shaft but intact; mid-shaft A/P: 22.7mm, A: 6.9mm, P: 7.9mm; head S/I: 47.7mm, A/P: 44.4mm

Bag Weight: 142g; Site Position: 3: Gj 28

WH-0615
Rt humerus length: 36.0cm; broken mid-shaft but entire: mid-shaft A/P: 23.1mm, A: 6.5mm, P: 5.6mm; Head S/I: 50.2mm, A/P: 48.4mm

Bag Weight: 3783g; Site Position: 3: unmarked

WH-0616
Lt humerus length: 32.5mm, broken but entire; Head S/I: 43.5mm, A/P: 41.2mm; appears youthful; epiphyses fused; mid-shaft A/P: 18.6mm (female?)

WH-0617
Rt humerus missing epicondyles; Head S/I: 49.2mm, A/P: 47.4mm; mid-shaft A/P: 22.2mm

WH-0618
Lt humerus broken at shaft

WH-0619
juvenile humerus; mid-shaft break; head missing

Bag Weight: 127g; Site Position: 3; II Ca 4

WH-0677
Humerus, juvenile; head unattached but present length with head: 34.9cm, without head: 32.9; mid-shaft A/P: 22.6mm

Pallet: 446; Box: 5342

Bag Weight: 145g; Site Position: 3: Dd 19

WH-0620
Lt humerus length: 36.2cm; mid-shaft A/P: 24.4; Head S/I: 45.6mm, A/P: 43.9mm

Bag Weight: 103g; Site Position: 3: II Cb 12

WH-0621
Rt humerus, distal; mid-shaft A/P: 22.0mm

Bag Weight: 124g; Site Position: 3: II Ce 13

WH-0622
Rt humerus length: 31.7cm; mid-shaft A/P: 23.2mm; Head S/I: 43.9mm, A/P: 42.8mm

Bag Weight: 78g; Site Position: 3: II Cd 3

WH-0623
Lt humerus, proximal; broken; mid-shaft A/P: 27.0mm, A: 4.5mm, P: 2.5mm

Bag Weight: 93g; Site Position: 3: II De 14

WH-0624
Lt humerus; missing distal end; mid-shaft A/P: 20.1mm; Head S/I: 44.7mm, A/P: 41.7mm

Bag Weight: 94g; Site Position: 3: Dh 1

WH-0625
Lt humerus length: 31.5cm; mid-shaft A/P: 21.7mm; Head S/I: 44.4mm, A/P: 40.6mm

Bag Weight: 403g; Site Position: 3: II Cc 2

WH-0626
Rt humerus length: 34.9cm; mid-shaft A/P: 35.2mm; Head S/I: 50.5mm, A/P: 47.3mm

Bag Weight: 150g; Site Position: 3: II Ec 2

WH-0627
Rt humerus length: 38.6cm; mid-shaft A/P: 21.5mm; Head S/I: 48.5mm, A/P: 32.9mm

Bag Weight: 120g; Site Position: 3: Ji 77

WH-0628
Lt humerus length: 32.4cm; mid-shaft A/P: 20.9mm; Head S/I: 42.9mm, A/P: 41.9mm

WH-0678
humerus, juvenile; mid-shaft A/P: 20.7mm, A: 4.7mm, P: 4.4mm

WH- 0679
Rt humerus, distal; no head; broken mid-shaft

WH-0680
Rt humerus, distal; no head; broken mid-shaft

WH-0681
Rt humerus, distal; no head; broken mid-shaft

WH-0682
Rt humerus, distal; no head; broken mid-shaft

WH-0683
Rt humerus, distal; no head; broken mid-shaft

WH-0684
Rt humerus, distal; no head; broken mid-shaft

WH-0685
Rt humerus, distal; no head; broken mid-shaft

WH-0686
Rt humerus, distal; no head; broken mid-shaft

Pallet: 446; Box: 5342

Bag Weight: 120g; Site Position: 3: Ji 77

WH-0628
Lt humerus length: 32.6cm; mid-shaft A/P: 21.1mm; Head S/I: 42.9mm, A/P: 42.9mm

Bag Weight: 103g; Site Position: 3: II Cb 12

WH-0629
Rt humerus; missing head; mid-shaft A/P: 24.2mm

Bag Weight: 93g; Site Position: 3: II De 14

WH-0630
Rt humerus; no epicondyle; Head S/I: 43.9mm, A/P: 41.1mm; mid-shaft A/P: 18.4mm

Bag Weight: 94g; Site Position: 3: Dh 1

WH-0631
Lt humerus length: 31.5cm; mid-shaft A/P: 22.3mm

Bag Weight: 403g; Site Position: 3: II Cc 2

WH-0632
Rt humerus length: 31.8cm; mid-shaft A/P: 25.7mm; Head S/I: 47.2mm, A/P: 47.1mm

Bag Weight: 150g; Site Position: 3: II Ec 2

WH-0633
Rt humerus length: 33.3cm; mid-shaft A/P: 21.8mm; head S/I: 45.1mm, A/P: 42.7mm

Bag Weight: 145g; Site Position: 3: Dd 19

WH-0634
Lt humerus length: 36.2cm; mid-shaft A/P: 21.7mm; Head S/I: 45.1mm, A/P: 43.7mm

Bag Weight: 78g; Site Position: 3: II Cd 3

WH-0635
Lt humerus; no head; mid-shaft A/P: 25.3mm, A: 4.5mm, P: 2.9mm

Pallet: 446; Box: 5343

Bag Weight: 274g; Site Position: 3: II Bb 1

WH-0636
Rt humerus length: 34.7cm; mid-shaft A/P: 23.3mm; Head S/I: 51.9mm, A/P: 48.2mm

Bag Weight: 139g; Site Position: 3: Hk 5

WH-0637
Rt humerus length: 35.0cm; broken mid-shaft; Head A/P: 47.7mm, S/I: 52.7mm

Bag Weight: 159g; Site Position: 3: II Fc 1

WH-0638
Lt humerus length: 31.5cm; mid-shaft A/P: 19.7mm

Bag Weight: 253g; Site Position: 3: II Be 1

WH-0639
Rt humerus length: 37.9cm; Head S/I: 51.3mm, A/P: 50.5mm

Pallet: 446; Box: 5344

Bag Weight: 517 g; Site Position: A3: II Ed F8

WH-0640
Lt humerus length: 32.3cm; broken near head and distally but entire; Head S/I: 45.4mm, A/P: 42.3mm

Pallet: 447; Box: 5354

Bag Weight: 118g; Site Position: 3: III 14

WH-0641
Lt humerus length: 31.7cm; mid-shaft A/P: 19.8mm, A: 5.8mm, P: 5.7mm; Head S/I: 42.9mm, A/P: 42.8mm

Bag Weight: 137g; Site Position: 3: III 1

WH-0642
Lt humerus length: 33.1cm; mid-shaft A/P: 23.0mm; Head S/I: 45.4mm, A/P: 44.3mm; broke near head but entire

Pallet: 447; Box: 5355

Bag Weight: 1277; Site Position: 3: unmarked

WH-0643
Rt humerus, distal ; broken mid-shaft A/P: 21.8mm, P: 6.1mm, A: 6.5mm

WH-0644
Rt humerus head, unfused

Pallet: 447; Box: 5357

Bag Weight: 433g; Site Position: 3: I 4

WH-0645
Rt humerus missing epicondyles; mid-shaft A/P: 22.1mm; Head A/P: 47.4mm, S/I: 49.1mm

Pallet: 458; Box: 5488

Bag Weight: 68g; Site Position: 3: Gi 58

WH-0646
Lt humerus; broke mid-shaft A/P: 19.6mm, A: 5.5mm, P: 6.7mm; head attached, not fused

Pallet: 461; Box: 5526

Bag Weight: 277g; Site Position: 3: Hh 44

WH-0647
Lt humerus length: 31.8cm; mid-shaft A/P: 23.1mm; Head S/I: 45.8mm, A/P: 43.7mm

WH-0648
Rt humerus length: 35.4cm; mid-shaft A/P: 22.8mm; Head S/I: 44.8mm, A/P: 46.5mm

Bag Weight: 176g; Site Position: 3: II Cb 7

WH-0649
Lt humerus length: 33.9cm; mid-shaft A/P: 21.3mm; Head S/I: 47.1mm, A/P: 42.8mm

Bag Weight: 117g; Site Position: 3: II Ec 1

WH-0650
Rt humerus length: 32.0cm; mid-shaft A/P: 20.5mm; Head S/I: 47.8mm, A/P: 44.1mm

Bag Weight: 140g; Site Position: 3 (I 2)

WH-0651
Rt humerus length: 34.7cm; mid-shaft A/P: 20.2mm; Head S/I: 46.1mm, A/P: 43.3mm

Bag Weight: 135g; Site Position: 3 (38)

WH-0652
Rt humerus length: 36.1cm; mid-shaft A/P: 21.8mm; Head: too damaged

Bag Weight: 126g; Site Position: 3: II De 4
WH-0653
Rt humerus length: 32.6cm

Bag Weight: 312g; Site Position: 3: II Fe 1

WH-0654
Rt humerus length: 35.6cm; mid-shaft A/P: 21.6mm; Head S/I: 50.9mm, A/P: 47.1mm

Bag Weight: 143g; Site Position: 3: II Ca 6

WH-0655
Rt humerus length: 33.8cm; mid-shaft A/P: 22.0mm; Head S/I: 46.8mm, A/P: 44.3mm

Bag Weight: 114g; Site Position: 3: Hj 86

WH-0656
Rt humerus length: 32.4cm; mid-shaft A/P: 24.6mm; Head S/I: 48.1mm, A/P: 45.8mm

Bag Weight: 117g; Site Position: 3: Hj 100

WH-0657
Lt humerus length: 32.7cm; mid-shaft A/P: 21.6mm; Head S/I: 48.8mm, A/P: 43.9mm

Bag Weight: 140g; Site Position: 3: (III 24)

WH-0658
Lt humerus length: 33.4cm; mid-shaft A/P: 18.8mm; Head S/I: 47.2mm, A/P: 44.4mm

Bag Weight: 263g; Site Position: 3: Hj 11

WH-0659
Lt humerus length: 33.2cm; mid-shaft A/P: 21.5mm; Head S/I: 31.3mm, A/P: 45.8mm

WH-0660
Rt humerus length: 34.0cm; mid-shaft A/P: 24.1mm; Head S/I: 50.9mm, A/P: 44.2mm

Bag Weight: 132g; Site Position: 3: III 35

WH-0661
Rt humerus length: 31.8cm; mid-shaft A/P: 32.6mm; Head S/I: 45.7mm, A/P: 43.0mm

Bag Weight: 176g; Site Position: 3: (40)

WH-0662
Rt humerus length: 32.1cm; mid-shaft A/P: 26.1mm; Head S/I: 52.8mm, A/P: 47.6mm

Pallet: 467; Box: 5603

Bag Weight: 168g; Site Position: 3(I :17)

WH-0663
humerus heads; epiphysis unattached

WH-0676
humerus head; epiphysis unattached

WH-0664
Lt humerus; head epiphysis unattached; mid-shaft A/P: 18.8mm

WH-0665
Rt humerus, distal; mid-shaft A/P 18.3mm

Bag Weight: 126g; Site Position: 3: (F: 18)

WH-0666
Lt humerus; epiphysis head unattached; mid-shaft A/P: 23.2mm

Bag Weight: 62g; Site Position: 3: I 214?

WH-0667
Humerus, proximal; juvenile; head epiphysis unattached; unable to side; mid-shaft A/P: 18.1mm

Bag Weight: 185g; Site Position: 3: I 5

WH-0668
Rt humerus; head epiphysis unattached; mid-shaft A/P: 19.5mm; head is present

Bag Weight: 165g; Site Position: 3: 77

WH-0669
humerus; juvenile; broke mid-shaft; mid-shaft A/P: 16.3mm, A: 2.6mm, P: 2.5mm

Pallet: 467; Box: 5600

Bag Weight 87g; 3: I 22

WH-0670
Rt humerus; head epiphysis unattached; mid-shaft A/P: 15.7mm

WH-0671
Lt humerus; head epiphysis unattached; mid-shaft A/P: 17.1mm

Bag Weight: 850g; Site Position: 3: unmarked

WH-0672
Lt humerus; mid/shaft A/P: 21.7mm; head unable to measure due to damage

WH-0673
Lt humerus length: 28.6cm; Head S/I: 41.2mm, A/P: 41.4mm

WH-0674
Rt humerus length: 28.2cm; mid-shaft A/P: 20.6mm; Head S/I: 41.3mm, A/P: 0

Pallet: 467; Box: 5604

Bag Weight: 157g; Site Position: 3: unmarked

WH-0675
humerus; unable to side; distal and superior epiphysis missing; billowing evident

Rt-right; Lt=left; A=anterior; P=posterior; I=inferior; S=superior; WH=Wisby humerus

D. Os Coxae

Pallet 426; Box 5102

Bag Weight: 1335g; Site Position: 3: unmarked

WO-0200
Lt os coxa: missing pubis; SN: 5; Auricular Surface: coarse granulation, moderate lipping at apex, moderate lipping at inferior demiface, some lipping all around, moderate retroauricular area activity with moderate osteophytes, no billowing or striae, macroporosity; Phase: 6 (45-49)

WO-0201
Rt os coxa broken in two but entire; SN: 5; VA: 1; SPC: 2; MAR 1; Auricular Surface: lipping around entire, retroarticular area missing, lipping at apex, macroporosity, dense, no billowing or striae, topography not very rugged; Phase: 7 (50-59 years); Pubic Symphysis: Todd- 8; Acetabulum A/P: 4.9mm

matching to above

Pallet: 428; Box: 5128

Bag Weight: 324g; Site Position: 3: Hj 63

WO-0202
Lt os coxa; broke in 3 pieces; missing anterior acetabulum; SN: 3; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 2 (20-21), S/B- 1; Auricular Surface: fine grain; billowing, no lipping, slight apex activity, no retroarticular area activity; macroporosity; Phase: 1 (20-24)

WO-0203
Lt os coxa missing pubis; iliac and ischium crest attached but not fused; SN: 2; Acetabulum S/I: 53.9mm; Auricular Surface: finely grained, no apex activity, no retroarticular area activity, macroporosity, billowing; Phase: 1 (20-24) <20

Bag Weight: 517g; Site Position: 3: II Cc 2

WO-0204
Lt os coxa t missing pubis; Acetabulum: 60.8mm; SN: 4; Auricular Surface: slight activity at apex, billowing, slight lipping, small retroarticular area with no activity; Phase: 2 (25-29)

WI-0205
Rt os coxa missing pubis and various parts of acetabulum; SN; 4; Auricular Surface: some lipping at apex, course granulation, nodules, no retroarticular activity; Phase: 3 (30-34)

Pallet: 428; Box: 5130

Bag Weight: 28g; Site Position: 3: II Db 1

WO-0206
Lt pubis; Pubic Symphysis: Todd-9, S/B- 4; VA: 3; SPC: 0; MAR: 3

WO-0207
Rt pubis; Pubic Symphysis: Todd-9; S/B- 4; VA: 3; SPC; 3; MAR: 3; (age 45-49)

Pallet: 429; Box: 5138

Bag Weight: 197g; Site Position: 3: Gi 50

WO-0208
Lt; os coxa broken in half at acetabulum; center of acetabulum missing; Acetabulum S/I: 60.4mm, A/P: 56.2mm; iliac crest missing; ischium crest attached but not fused; SN: 1; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 1, B/S: 1; Auricular Surface: billowing, no apex or retroarticular area activity, no lipping, youthful; Phase: 1 (<20)

Bag Weight: 305g; Site Position: Gj 49

WO-0209
Lt os coxa missing pubis; broken middle of acetabulum; portion of blade missing; iliac and ischium crest unattached with much billowing; SN: 2; Auricular Surface: no retroarticular area or apex activity, billowing, very youthful, fine grain.; Phase: 1 (<20)
matching?

WO-0210
Rt; os coxa missing iliac and ischium crest; missing pubis at ischium suture site; in situ are: pubic symphysis, ischium crest, iliac blade, and most of acetabulum; Acetabulum S/I: 60.3mm, A/P: 0; SN: 1; Pubic Symphysis: Todd- 1, B/S: 1; Auricular Surface: no apex or retroarticular area activity, billowing, no lipping, fine grain, youthful; Phase: 1 (<20)

Bag Weight: 572g; Site Position: 3: Gi 50

WO-0211
Rt; os coxa broken at pubis but entire; Acetabulum S/I: 58.8mm, A/P: 57.6mm; SN: 1; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 1, S/B- 1; iliac and ischium crest missing; Auricular Surface: no retroarticular area or apex activity, no lipping, billowing, fine grain; Phase: 1 (<20); match to WI-0208 ?

Pallet: 429; Box: 5139

Bag Weight: 361g; Site Position: 3: Ec 24.25.28

WO-0212
Rt pubis, ischium, and partial acetabulum; VA: 3; SPC: 2; MAR: 2; Pubic Symphysis: Todd- 2, B/S: 2

Bag Weight: 305g; Site Position: 3: II Bb 5

WO-0213
Lt; os coxa pubis missing; Acetabulum S/I: 53.1mm, A/P: 49.8mm; SN: 5; Auricular Surface: slight to moderate retroarticular area and apex activity, some lipping, coarse grain, no billowing or striae, rugged topography; Phase: 4

WO-0214
Lt os coxa; intact; Acetabulum S/I: 52.0mm, A/P: 48.2mm; SN: 4; VA: 3; SPC: 3, MAR: 3; Pubic Symphysis: Todd- 4, B/S: 3; Auricular Surface: moderate apex and retroarticular area activity, no billowing, slight striae, slight lipping, coarse grain; Phase: 4

Bag Weight: 365g; Site Position: 3: III

WO-0215
Lt os coxa; missing pubis; SN: 1; Acetabulum S/I: 53.5mm, A/P: 52.2mm; Auricular Surface: moderate apex and retroarticular area activity, no billowing or striae, rugged topography and coarse grain; Phase: 4

Bag Weight: 255g; Site Position: 3: Gj (?) 57

WO-0216
Rt; os coxa missing pubis and iliac blade; Acetabulum S/I: 58.3mm, A/P: 0; SN: 4; Auricular Surface: no retroarticular area or apex activity, smooth fine grain, striae, minor lipping at inferior demiface near retroarticular area; Phase: 2

Bag Weight: 593g; Site Position: 3: II Bf 1

WI-0217
Rt os coxa missing pubis and anterior Acetabulum S/I: 52.1mm; SN: 4; missing posterior auricular surface and retroarticular area; Auricular Surface: coarse grain, marked lipping at apex, slight apex activity, no billowing, slight striae, topography fairly smooth; Phase: 4

WO-0218
Lt innominate; missing posterior portion of retroarticular area; Acetabulum S/I: 51.6mm, A/P: 49.2mm; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 5, B/S: 3; Auricular Surface: moderate retroarticular area activity, moderate apex activity, no billowing, minimal striae, fairly smooth topography, macroporosity, mising inferior demiface and interior retroarticular area, slight to moderate lipping; Phase: 4

Bag Weight: 355g; Site Position: 3: II Ec 1

WO-0219
Rt os coxa in 3 pieces (pubis, ilium, ischium); missing center and lateral portion of acetabulum; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd-3, B/S: 3; Auricular Surface: no apex activity, slight to moderate retroarticular area activity, some billowing, no lipping, inferior demiface missing, macroporosity, fine grain; Phase: 4

Pallet: 429; Box: 5146

Bag Weight: 94g; Site Position: 3: II Dc 5

WO-0220
Lt os coxa; Acetabulum S/I: 52.8mm; most of acetabulum intact; SN: 1; partial retroarticular area; Auricular Surface: slight retroarticular area activity, slight apex lipping, inferior demiface missing, billows, fine grain; Phase: 1

Pallet: 430; Box: 5149

Bag Weight: 412g; Site Position: 3: unmarked

WO-0221
Rt os coxa; missing portion of pubis, rest intact, appears young; SN: 3; SPC: 3; VA: 0, MAR: 3; Pubic Symphysis: Todd- 1-2, S/B- 1; Auricular Surface: no apex or retroarticular activity; Phase: 1; blade and ischium epiphyses still visible

WO-0222
Lt; os coxa missing blade, pubis and anterior acetabulum; Acetabulum A/P: 52.3mm; Auricular Surface: moderate retroarticular area activity, lipping at inferior demiface and toward retroarticular area, slight activity at apex, microporosity, no billowing, few striae, still granular; Phase: 5 (40-44 years)

WO-0223
Rt os coxa; part of blade, auricular surface, retroarticular area and sciatic notch in situ; SN: 3; Auricular Surface: slight retroarticular area activity, lipping at apex, lipping at inferior demiface, granular, microporosity and macroporosity, no billowing or striae, Phase 5 (40-44 years) match to above?

Pallet 430; Box: 5151

Bag Weight: 1537g; Site Position: 3:III

WO-0224
Lt os coxa intact; SN: 4; VA: 3; SPC: 3; MAR: 3; Acetabulum: 57.6mm; Auricular Surface: lipping at retroarticular area and inferior demiface; no billowing or striae, rugged, moderate retroarticular area activity; Phase: 7 (50-59); Pubic symphysis to degraded to assess

matching

WOI-0225
Rt os coxa; match to previous; blade missing; Acetabulum: 57.9mm; SN: 4; VA: 3; SPC: 3; MAR: 3; Auricular Surface: more defined than left and appears much younger, some billowing and striae, slight lipping at retroarticular area; Phase 2-3; Pubic Symphysis: S/B: 1; Todd: 2-3

Bag Weight: 152g; Site Position: unmarked

WO-0226
Lt os coxa; most of blade missing; very youthful; small portion of blade still attached; not totally fused; bottom epiphysis not totally fused; VA: 3; SPC: 3 MAR: 3; Auricular Surface: smooth, few billow, no apex activity, slight retroarticular area activity; Phase: 1; Pubic Symphysis: Todd- 1-2, S/B: 1; Acetabulum S/I: 53.0mm

Bag Weight: 170g; Site Position: 3: III

WO-0227
SIDE? os coxa, missing ischium and pubic symphysis; Acetabulum: 58.9mm; nearly intact (missing portion anterior); SN: 3; blade epiphysis not totally closed; Auricular Surface: no retroarticular activity, youthful; minimal lipping, smooth billows; Phase: 1 (20-24)

Bag Weight: 5155g; Site Position:

WO-0228
juvenile; portions of innominate unfused, ilium blade not fused nor acetabulum; 1 ischium; 1 pubis; 2 unfused heads (???);

Pallet 430, Box 5154

Bag Weight: 4035g; Site Position: 3: unmarked

WO-0229
Lt os coxa; missing most of retroarticular area; green stain at obturator foramen near pubis (copper?); Acetabulum: 55.8mm; SN: 4; MAR: 3; SPC: 3; Pubic Symphysis: Todd- 8, S/B- 4; Auricular Surface: dense, rough topography, microporosity, slight dorsal lipping, apex activity, inferior changes, no billowing or striae; Phase: 6 (45-49)

WO-0230
Rt os coxa missing most of retroarticular area; Acetabulum: 55.5mm; SN: 4; SPC: 3, VA: 3; MAR 3; Pubic Symphysis: Todd- 8; S/B- 5; Auricular Surface: dense, smooth, lipping at superior/inferior and apex, macroporosity; Phase: 7 (50-59)

Pallet: 430; Box: 5158

Bag Weight: 819g; Site Position: 3: I 17

WO-0231
Lt; os coxa SN: 3; VA: 3; SPC: 3; MAR: 2; entire; Pubis Symphysis: Todd- 2, B/S: 2; Auricular Surface: slight apex and retroarticular area activity, no lipping, fine grain, no billowing, some striae, microporosity; Phase 3

WO-0232
Rt os coxa; entire but broke through acetabulum and pubis/ischium; Acetabulum S/I: 49.5mm, A/P: 49.3mm; Pubic Symphysis: Todd- 4, B/S: 3; Articular Surface: slight retroarticular area and apex activity, dense, microporosity, losing gain, no transverse organization; Phase: 5

Pallet 431; Box: 5167

Bag Weight: 1851g; Site Position: 3: II Df

WO-0233
Lt os coxa ; pubis and ischium missing; SN: 4; Auricular Surface: Phase: 2 (25-29); Acetabulum S/I: 57.7mm

Bag Weight: 65g; Site Position: 3: Ed

WO-0234
Rt; os coxa partial blade; Auricular Surface: 5 (40-44); slight lipping at apex; missingr retroarticular area

Pallet: 434; Box: 5198

Bag Weight: 321g; Site Position: 3: II Ed 6

WO-0235
Rt os coxa represented by small piece

WO-0236
Lt os coxa represented by small piece

Bag Weight 575; Site Position: 3: II Dd 25

WO-0237
Rt os coxa ; partial acetabulum; SN: 2; partial blade; Auricular Surface: no lipping, iliac crest fused, billows, no activity at apex, half of retroarticular surface missing but minimal activity with what's there, grainy; Phase: 1 (20/24)

WO-0238
Rt os coxa; partial acetabulum; SN: 3; partial blade in 2 pieces; Auricular Surface: slight lipping, billowing, retroarticular area missing, slight apex activity; Phase: 2 (25-29); Pubic Symphysis: Todd- 3 (22-24), B/S- 2

Pallet: 443; Box: 5315

Bag Weight: 155g; Site Position: 3: Ji 87

WO-0239
Rt : os coxa VA: 3; SPC: 3; MAR: 3; SN: 4; Acetabulum S/I: 52.2mm, A/P: 50.8mm; Auricular Surface: moderate apex activity, moderate retroarticular area activity, striae, no billowing, dorsal lipping, no macroporosity, no microporosity; Phase: 4 (35-39); Pubic Symphysis: Todd- 6 (30-35), S/B- 3

Bag Weight: 276g; Site Position: 3: Hj 99

WO-0240
Lt os coxa; VA: 3; SPC: 2; MAR: 2; SN: 4; Acetabulum S/I: 57.3mm, A/P: 53.9; Auricular Surface: slight apex activity; slight retroarticular area activity; slight dorsal and medial lipping, fine grain; Phase: 3; Pubic Symphysis: Todd- 3, S/B: 2

Bag Weight: 135g; Site Position: 3: Hj 67

WO-0241
Rt os coxa; VA: 3; SPC: 3; MAR: 3; SN: 5; Acetabulum S/I: 54.9mm, A/P: 50.2mm; Auricular Surface: slight apex activity; dorsal missing; moderate retroarticular area

activity (most missing); coarse grain; some macroporosity and microporosity; Phase: 4; Pubic Symphysis: Todd- 8, S/B: 4

Bag Weight: 145g; Site Position: 3: Hj 92

WO-0242
Rt os coxa; VA: 0; SPC: 0; MA: 0; SN: 5; iliac blade epiphysis lipping; Auricular Surface: billowing, no lipping, no retroarticular area activity; slight apex activity, youthful; Phase: 1; pubis missing; ischium epiphysis attached but unfused; Acetabulum S/I: 56.2mm, A/P: 48.8mm

Bag Weight: 301 g; Site Position: 3: II Gc 2

WO-0243
Lt os coxa; SN: 2; missing pubis; Auricular Surface: billowing, slight retroarticular area and apex activity; Phase: 2; Acetabulum S/I: 56.0mm, A/P: 0

WO-0244
Rt os coxa; SN: 5; missing pubis; Auricular Surface: slight retroarticular and apex activity; moderate lipping medially (missing distally); some striae; Phase: 7 (50-59); Acetabulum S/I: 55.8mm; A/P: 52.3mm

Bag Weight: 1063g; Site Position: 3: II Bc 1

WO-0245
Rt os coxa entire; SN: 4; VA: 3; SPC: 3; MAR: 3; Auricular Surface: moderate retroarticular area activity, no apex activity, slight lipping medially and dorsally, no billowing, few striae; Phase: 8; Pubic Symphysis: Todd- 10, S/B: 6

Bag Weight: 3783g; Site Position: 3: unmarked

5 os coxa parts with no apparent matches

WO-0246
Lt os coxa intact; Acetabulum S/I: 56.6mm, A/P: 53.9mm (blade cut?); iliac crest missing with billowing; pubis mostly intact; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis damaged but can be aged; Todd: 10; S/B: 6; Auricular Surface: no billow or striae, slight lipping, slight apex activity, dense rough topography, macroporosity, marked retroarticular area activity; Phase: 8-10

WOI-0247
Lt os coxa missing blade, pubis, medial acetabulum; SN: 3; most of retroarticular area missing; Auricular Surface: moderate apex activity, dense rugged topography, moderate retroarticular area activity, inferior demiface missing, slight lipping; Phase: 7

WO-0248
Rt os coxa missing iliac blade; $^{1}/_{3}$ of acetabulum; retroarticular area entire but surface damaged; SN: 3; Auricular Surface: inferior demiface billowing, fine grain, no lipping, no retroarticular area activity, slight apex activity; Phase: 2

WO-0249
Lt os coxa; $^{2}/_{3}$ of acetabulum and retroarticular area missing; SN: 2; Auricular Surface: youthful, billowing, no apex activity; Phase: 1

WO-0250
Partial SN: 1; Auricular Surface: slight apex activity

WO-0251
Pubis with ¼ acetabulum only; VA: 3; SPC: 0, MA: 0; Pubic Symphysis: Todd-10, S/B: 6

Pallet: 443; Box: 5316

Bag Weight: 324 g; Site Position: 3: Fi 36

WO-0252
R os coxa; entire; Acetabulum S/I: 52.1mm, A/P: 54.9mm; SN: 5; VA: 3; SPC; 3; MAR: 3; Pubic Symphysis: Todd- 4, B/S: 2; Auricular Surface: slight retroarticular area and apex activity, coarsening grain, no lipping, few billows and striae; Phase: 3

WO-0253
Lt os coxa missing retroarticular area and portion of blade; SN:42; Acetabulum S/I: 52.7mm, A/P: 53.4mm; Pubis Symphysis: Todd- 7, B/S: 3; Auricular Surface: no apex activity, coarsening grain, striae, missing inferior demiface, macroporosity; Phase 4

Pallet: 444; Box: 5319

Bag Weight: 698g; Site Position: 3: II Ed 5

WO-0254
Lt os coxa missing pubis and medial blade; iliac blade attached but not fused; Acetabulum S/I: 53.9mm, A/P: 50.8mm; Auricular Surface: 0; SN: 1-2; acetabulum broken but measurable

WO-0255
Rt os coxa missing pubis and portion of Acetabulum S/I: 53.2mm, A/P: 0; iliac blade partially attached- unattached portion missing; SN: 2; ischium epiphysis attached by unfused; Auricular Surface: billows, some apex activity, fine grain, retroarticular area missing; Phase: 1

Pallet: 444; Box: 5328

Bag Weight: 476g; Site Position: 3: I 29

WO-0256
Rt; os coxa intact; SN; 5; VA: 3 SPC: 3; MAR: 3; Auricular Surface: loss of billowing; fine grain; slight lipping laterally; slight retroarticular activity; smooth topography; Phase: 4 (35-39 years of age); Pubic Symphysis: Todd- 2, B/S- 2

WO-0257
Lt os coxa; intact; SN: 4; VA: 3; SPC: 3; MAR: 3; Auricular Surface: grain slightly coarse, slight activity of apex and retroarticular area; few billow, no lipping; Phase: 2-3; Pubic Symphysis: Todd- 2, S/B: 2

Bag Weight: 524g; Site Position: 3: unmarked

WO-0258
Lt os coxa; partial blade; rest intact; SN: 3; VA: 3; SPC: 3; MAR: 3; Acetabulum S/I: 56.6mm, A/P: 58.3mm; Auricular Surface: general loss of billowing, no lipping, slight apex activity, slight to moderate retroarticular area activity; increase in granularity; Phase: 3-4; Pubic Symphysis: Todd- 3; B/S: 2; no lipping at P/S

Bag Weight: 1236g; Site Position: 3: I 26

WO-0259
Rt os coxa entire; SN: 4; VA: 3; SPC: 3; MAR: 2; Acetabulum A/P: 46.5mm, S/I: 49.6mm; Auricular Surface: moderate dorsal lipping, no apex activity, slight retroarticular area activity, no macroporosity or microporosity; generally youthful; Phase: 4; Pubic Symphysis: Todd- 8, B/S: 3

WO-0260
Lt os coxa entire; SN: 5; VA: 3; SPC: 3: MAR: 2; match to Rt above?; Auricular Surface: slight apex activity, slight superior lipping, slight to moderate retroarticular area activity, billows, coarser granularity, rather youthful; Phase: 4-5; Pubic Symphysis: Todd- 8; S/B- 4; matching sacrum

Pallet: 446; Box: 5634

Bag Weight: 1277g; Site Position: A3: unmarked

WO-0261
Rt os coxa; juvenile; pubis and ischium attached, unattached to blade; iliac and ischium crest missing

Pallet: 446; Box: 5343

Bag Weight: 168g; Site Position: 3: II Ft 1

WO-0262
Lt os coxa entire; SN: 4; VA: 3; SPC: 3; MAR: 3; Auricular Surface: moderate lipping, moderate activity at apex; moderate activity a retroarticular area, topography rugged; macroporosity; microporosity; Phase: 7; Pubic Symphysis: Todd- 10, S/B- 5

Bag Weight: 235g; Site Position: 3: II Ab 2

WO-0263
Lt os coxa; missing sub-pubic concavity; iliac blade epiphysis unattached and missing; SN: 3; VA: 3; MAR: 0; SPC: 0; ischium crest partially attached at posterior; Auricular Surface: billowing, no apex or retroarticular area activity, no lipping; Phase: 1; Pubic Symphysis: Todd- 1, S/B- 1; Acetabulum S/I: 55.1mm, A/P: 50.5mm

match

WO-0264
Rt os coxa; half of acetabulum missing; pubis missing; SN: 3; most of lilac blade is broken; small medial portion shows billowing, ischium crest missing epiphysis with billowing; Auricular Surface: no apex or retroarticular activity, no lipping, billows; Phase: 1

Pallet: 446; Box: 5345

Bag Weight: 1085g; Site Position: A: 3 unmarked

WO-0265
Lt os coxa; missing pubis, most of retroarticular area; SN: 4; Auricular Surface: no apex activity, slight retroarticular area activity, microporosity, no lipping, no billowing or striae; Phase: 3

WO-0266
Rt os coxa; missing pubis, half of retroarticular area, and part of acetabulum; Acetabulum S/I: 51.9mm; SN: 4; Auricular Surface: some damage, no apex or retroarticular area activity, no lipping, loss of billowing, slight striae; Phase: 3

Bag Weight: 132g; Site Position: A 3: II Ce 3

WO-0267
Lt os coxa; missing sub-pubic concavity; SN: 2; Acetabulum S/I: 52.0mm, A/P: 49.0mm; pubic symphysis dorsa margin missing; Pubic Symphysis: Todd- 3; B/S: 2; Auricular Surface: no retroarticular area activity, very slight apex activity, fine to coarse grain, slight retroarticular/inferior demiface lipping, no billowing, some striae; Phase: 3

Pallet: 446; Box: 5349

Bag Weight: 255g; Site Position: 3: II Dc 1

WO-0268
Rt os coxa; Auricular Surface: most of acetabulum and partial blade present; no retroarticular area; Auricular Surface: slight to moderate apex activity, striae, loss of coarse grain, rugged topography; Phase: 5

Pallet: 446; Box: 5350

Bag Weight: 1030g; Site Position: 3: Ji 72

WO-0269
Rt os coxa; juvenile; pubis at acetabulum still ossifying; iliac and ischium crest unattached; Acetabulum S/I: 58.6mm, A/P: 55.3mm; SN: 2; VA: 3; SPC: 0; MAR: 0; Pubic Symphysis: Todd- 1, B/S: 1; Auricular Surface: no apex or retroarticular area activity, fine grain, billowing; Phase: 1 <20

WO-0270
Lt os coxa; juvenile; broken at sutures? But entire; iliac and ischium blade missing; Acetabulum S/I: 59.5mm, A.P: 0 (unable to get clean fit); SN: 3; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd-1; B/S: 1; Auricular Surface: no retroarticular area activity, no apex activity, billowing, fine grain, no lipping; Phase: 1 <20

Pallet: 447; Box: 5354

Bag Weight: 416g; Site Position: 3: III 25

WO-0271
Rt os coxa; intact; SN: 4; VA: 3; SPC: 3; MAR: 3; Acetabulum S/I: 56.3mm, A/P: 42.9mm; bony changes superior and lateral; Auricular Surface: moderate apex activity, marked retroarticular activity, macroporosity, rugged topography, lipped inferior demiface, coarse granulation; Phase: 7; Pubic Symphysis: Todd- 9, B/S: 6

Bag Weight: 283g; Site Position: 3: unmarked

WO-0272
Lt pubis; ½ acetabulum; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 5, B/S: 3

WO-0273
Rt pubis; ½ acetabulum; VA: 3; SPC: 3; MAR: 2; Pubic Symphysis: Todd- 5, B/S: 3

Bag Weight: 170g; Site Position: 3: III 28

WO-0274
Lt os coxa; missing pubis; SN: 2; iliac crest attached but not fused; Auricular Surface: no apex activity, slight retroarticular area activity, fine granularity, some billowing, macroporosity; Phase: 1

Bag Weight: 281g; Site Position: 3: Gj 15

WO-0275
Rt os coxa; missing ischium and pubis; ilium broken; ½ acetabulum missing; Auricular Surface: no apex activity, slight retroarticular area activity, billowing, youthful; Phase: 1

WO-0276
Lt os coxa; missing pubis; SN:4; Auricular Surface: no apex activity, slight retroarticular area activity, inferior demiface broken; no lipping, decrease in billowing, fine grain; Phase: 2

Bag Weight: 255g; Site Position: 3: Hi 30

WO-0277
Lt os coxa; missing pubis; iliac and ischium crest unattached; very youthful; Acetabulum S/I: 56.2mm, A/P: 0; SN: 1; Auricular Surface: no retroarticular area or apex activity, surface damaged but billowing, no lipping; Phase 1 (<20)

WO-0278
Rt os coxa; missing iliac blade, pubis, and most of ischium (crest unattached); SN: 2; ½ Acetabulum S/I: 57.8mm; Auricular Surface: no apex or retroarticular area activity (most of retroarticular area missing), billows, fine grain, no inferior demiface, no lipping; Phase: 1 (<20)

Pallet: 447; Box: 5355

Bag Weight: 1277; Site Position: 3: unmarked

WO-0279
Rt os coxa; complete in two pieces; SN: 1; VA: 3; SPC: 3; MAR: 3; Acetabulum S/I: 55.1mm (fused); iliac crest unfused, missing; ischium crest attached but not totally fused; Pubic Symphysis:Todd- 1; S/B- 1; Auricular Surface: fine grained, no retroarticular activity, no lipping, billowing; Phase: 1

WO-0280
Lt os coxa; complete; SN: 1; VA: 3; SPC: 3 MA: 3; Acetabulum S/I: 57.2mm (fused); iliac crest unfused and missing; ischium crest attached but not totally fused; Pubic Symphysis: Todd- 1; S/B- 1; Auricular Surface: fine grained, no retroarticular activity, no lipping, slight apex activity; Phase: 1(<20)

Pallet: 447; Box: 5356

Bag Weight: 180g; Site Position: A3: II Ee

WO-0281
Lt os coxa; entire; Acetabulum S/I: 55.0mm, A/P: 53.6mm; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: face damaged; Auricular Surface: moderate retroarticular area and apex activity, no billowing or striae, slight coarse grain, moderate rugged topography; Phase: 7

Bag Weight: 501g; Site Position: 3: II Ce 4

WO-0282
Lt os coxa; missing pubis; SN: 4; Acetabulum S/I: 49.6mm, A/P: 49.2mm; Auricular Surface: no apex activity, slight retroarticular area activity, striae, slight billowing, no lipping, grain coarsening; Phase: 3

WO-0283
Rt os coxa; missing pubis; Acetabulum S/I: 49.7mm, A/P: 0; SN: 4; Auricular Surface: fine grain, no apex activity, slight retroarticular area activity, some billowing, youthful: Phase: 2

Bag Weight: 654g; Site Position: A 3: Gr (or R?)

WO-0284
Lt os coxa; entire; Acetabulum S/I: 53.4mm, A/P: 52.9mm; SN: 5; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 9, S/B: 5; Auricular Surface: marked lipping at superior demiface around and including apex, moderate retroarticular area activity, loss of

granulation, moderate rugged topography, inferior demiface missing, macroporosity; Phase: 7

Bag Weight: 1772g; Site Position: 3: e unmarked

WO-0285
Rt os coxa; broke at pubis but entire; small piece of medial acetabulum missing; Acetabulum S/I: 54.0mm, A/P: 54.8mm; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 7, B/S-4; Auricular Surface: moderate to marked apex activity, moderate retroarticular area activity, lipping at inferior demiface, microporosity, rugged topography, coarse grain. Phase: 5 (40-44)

Bag Weight: 258g; Site Position: A3: Hh 46

WO-0286
Rt os coxa; medial acetabulum missing; Acetabulum S/I: 54.6mm; SN: 5; most of blade missing; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 9 (45-49), B/S: 5

Pallet: 447; Box: 5358

Bag Weight: 619g; Site Position: 3: I 4

WO-0287
Lt os coxa; missing pubis; Acetabulum S/I: 54.1mm, A/P: 53.4mm; SN: 2; Auricular Surface: no apex or retroarticular area activity; slight billowing, youthful, fine grain; Phase: 2

WO-0288
Rt os coxa; missing pubis; Acetabulum S/I: 53.6mm, A/P: 49.9mm; SN: 2; Auricular Surface: no apex or retroarticular area activity, slight billowing, fine to coarse grain, youthful; Phase: 2

Pallet: 447; Box: 5360

Bag Weight: 553g; Site Position: 3: Ig

WO-0289
Lt os coxa; juvenile; blade and ischium separate at sutures

Bag Weight: 601g; Site Position: 3: Hi 30

WO-0290
Rt os coxa; partial blade and retroarticular area; SN: 4; Auricular Surface: moderate retroarticular area and apex activity, lipping on post margin and inferior demiface, coarse grain, macroporosity, striae; Phase: 5

WO-0291
Lt pubis; VA: 3; SPC: 3; MAR: 0; Pubic Symphysis: Todd- 1, B/S: 1; probably <20, marked billowing

Pallet: 447; Box: 5362

Bag Weight: UNK; Site Position: UNK

WO-0292
Rt pubis; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 2, S/B: 1; Acetabulum S/I: 54.1mm; Auricular Surface: moderate retroarticular area activity with superior osteophytes at blade; inferior demiface lipping, macroporosity, dense, lose of grain, smooth topography, apex missing; Phase: 5

Bag Weight: 901g; Site Position: 3: I3

WO-0293
Lt os coxa; superior pubis symphysis face damaged; SN: 3; VA: 3; SPC: 3; MAR: 2; Pubic Symphysis: Todd- 8, B/S: 3; Auricular Surface: moderate apex and retroarticular area activity, lipping at inferior demiface, dense, loss of grain, moderately rugged topography; Phase: 6

WO-0294
Rt os coxa; no retroauricular area or auricular surface; Acetabulum S/I: 55.2mm, A/P: 54.0mm; SN: 5; VA: 3; SPC: 2; MAR: 2; Pubic Symphysis: Todd-7, B/S: 4

Pallet: 447; Box: 5363

Bag Weight: 108g; Site Position: A3: Hh 47

WO-0295
Lt os coxa; portion of blade, acetabulum and ischium; not enough of Auricular Surface to assess; Acetabulum S/I: 50.0mm

Bag Weight: 218g; Site Position: A3: II Fe 2

WO-0296
Lt os coxa; entire; SN: 4; VA: 2; SPC: 2; MAR: 2; Pubic Symphysis: Todd- 8, B/S: 4; Articular Surface: moderate retroarticular area activity, moderate apex activity, losing coarse grain, rugged topography, macroporosity; Phase: 7

WO-0297
Rt os coxa; blade only; SN: 3; Auricular Surface: slight retroarticular area activity, moderate apex activity, rugged to losing grain; Phase: 6

Pallet: 447; Box: 5364

Bag Weight: 834g; Site Position:3: II Cb 8

WO-0298
Rt os coxa; missing small portion of pubis and acetabulum; Acetabulum S/I: 55.0mm, A/P: 0; SN: 2; VA: 3; SPC:0, MAR: 3; Auricular Surface: no apex activity; slight retroarticular area activity, fine grained, youthful, billowing, striae; Phase: ?; Pubic Symphysis: Todd- 2, B/S- 2

WO-0299
Lt os coxa; missing most of blade, pubis, and ischium; $^{2}/_{3}$ of acetabulum missing; SN: 3; ½ of retroarticular area missing; Auricular Surface: slight retroarticular area activity, no apex activity, no lipping, billowing, fine grain; Phase: 1

Bag Weight: 307g; Site Position: 3: II Ec 6

WO-0300
Rt pubis with $^{1}/_{5}$ of acetabulum; VA: 3; SPC: 0; MAR: 0; Pubic Symphysis: Todd- 3, B/S-2

WO-0301
ischium with $^{2}/_{5}$ of acetabulum

Bag Weight: 140g; Site Position: 3: II Cb 10

WO-0302
Rt pubic symphysis: Todd- 3, S/B: 2

Pallet: 450; Box: 5396

Bag Weight: 361g; Site Position: 3: Fi 37

WO-0303
Rt os coxa; missing pubis to small portion of acetabulum; Acetabulum S/I: 53.4mm, A/P: 0; SN: 4; Auricular Surface: slight retroarticular area and apex activity, macroporosity, coarse grain, inferior demiface missing, no billowing or striae, slightly rugged topology; Phase: 4

WO-0304
Lt os coxa; entire; SN: 4; Acetabulum S/I: 53.1mm, A/P: 47.7mm; VA: 3; SPC: 2, MAR: 2; Auricular Surface: moderate retroarticular activity, no apex activity, macroporosity, some superior lipping, no billowing or striae, coarse grain; Phase: 5

Pallet: 450; Box: 5397

Bag Weight: 1684g; Site Position: 3: I a.b.c

WO-0305
Lt os coxa; entire; Acetabulum S/I: 53.4mm, A/P: 51.5mm; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd-3, B/S: 2; Auricular Surface: slight retroarticular area activity, slight apex activity, fine grain, dorsal billowing, dorsal lipping; Phase: 2-3 (25-29; 30-34)

WO-0306
Lt os coxa; missing pubis and retroarticular area; SN: 1; Acetabulum S/I: 55.2mm, A/P: 54.4mm; Auricular Surface: no apex activity; retroarticular area: 0, billowing, fine grain; Phase: 1 (20-24)

WO-0307
Lt os coxa; missing pubis; broken through acetabulum but entire; Acetabulum S/I: 58.8mm, A/P: 61.1mm; SN: 2; Auricular Surface: no apex or retroarticular area activity, fine grain, billowing, youthful; Phase: 2

WO-0308
Rt os coxa; missing retro auricular area, pubis, ischium and inferior demiface; SN: 3; auricular Surface: slight apex activity, slightly coarse grain, slight billowing and striae; Phase: 3; osteophytes on blade near superior demiface.

WO-0309
Rt os coxa; no pubis or ischium; Acetabulum: 0; SN: 2; Auricular Surface: no apex or retroarticular area activity, fine grain, billowing, no striae, youthful; Phase: 1

Bag Weight: 1903g; Site Position: 3: I a.b.c

WO-0310
Lt os coxa; missing pubis, ischium, lateral blade, half of acetabulum and inferior demiface; Auricular Surface: slight apex activity, slight to moderate retroarticular area activity, coarse grain, microporosity; Phase: 4

WO-0311
Lt pubis and ischium including small portion of acetabulum; VA: 3; SPC: 3; MAR: 2; Pubic Symphysis: Todd-8, B/S: 5

WO-0312
Rt os coxa; missing anterior portion of acetabulum; Acetabulum S/I: 51.8mm, A/P: 0; SN: 4; VA: 3; SPC: 3; MAR: 3; Pubis Symphysis: Todd- 2, B/S- 2; Auricular Surface: slight apex and retroarticular area activity, coarsening grain, billowing remnants, microporosity; Phase: 3 (30-34)

WO-0313
Lt os coxa; missing pubis, retroarticular area, inferior/superior demiface and, blade; SN: 2; Auricular Surface: youthful, no apex activity, billowing, coarsening grain; Phase: 2

WO-0314
Lt os coxa; blade to ischium present with most of acetabulum S/I: 56.9mm, A/P: 0; no other markers usable

WO-0315
Lt pubis; VA: 3; SPC: 2; MAR: 2; Pubic Symphysis: Todd- 2, B/S: 2

WO-0316
Lt juvenile iliac and pubis; separated at suture as is missing ischium

WO-0317
Rt pubis; VA: 3; SPC: 3; MAR: 3; Pubic Symphysis: Todd- 2; B/S: 2

WO-0318
Rt os coxa; missing ischium, pubis, most of blade and acetabulum; retroarticular area missing as is inferior demiface; Auricular Surface: slight apex activity, fine grain, some billowing; Phase; 3

Pallet: 451; Box: 5401

Bag Weight: 166g; Site Position: 3: II Dc 1

WO-0319
Lt os coxa; missing pubis and lateral acetabulum; Acetabulum S/I: 56.7mm; SN: 5; Auricular Surface: slight retroarticular area activity, slight apex activity, no lipping, fine grain, no billowing, moderate striae, youthful; Phase: 3 (30-34)

Bag Weight: 2009g; Site Position: 3: unmarked

WO-0320
Rt os coxa; missing part of blade and retroarticular area, pubis and ischium; Auricular Surface: lipping at medial boarder, macroporosity, topography rugged, moderate apex activity, coarse grain; Phase: 7 (50-59)

Bag Weight: 2366g; Site Position: 3: unmarked

WO-0321
Rt pubis: Todd- 3, B/S: 2

Pallet: 458; Box: 5488

Bag Weight: 81g; Site Position: 3: Bb 2

WO-0322
Lt os coxa; iliac blade, auricular surface and $^{1}/_{3}$ acetabulum in situ; blade with through wound; small, iliac crest fused; Auricular Surface: youthful, no apex or retroarticular area activity, no lipping, billowing; Phase: 1

Pallet: 458; Box: 5496

Bag Weight: 134g; Site Position: 3 (I 29)

WO-0323
Rt os coxa; missing pubis and ischium; Acetabulum A/I: 54.6mm, A/P: 0; SN: 3; Auricular Surface: moderate retroarticular area activity, no apex activity, no billowing, some striae, coarse granulation, topography fairly flat, microporosity, minor lipping at retroarticular area/ inferior demiface; Phase: 4

Bag Weight: 113g; Site Position: 3: II Ec 24(25)

WO-0324
Lt os coxa; missing pubis and ischium; SN: 4; Auricular Surface: no retroarticular area or apex activity, fine grain, no billowing, slight striae, inferior demiface missing; Phase: 2

Pallet: 464; Box: 5568

Bag Weight: 779g; Site Position: 3: unmarked

WO-0325
Rt iliac; juvenile

WO-0326
Lt iliac; juvenile

WO-0327
Rt ischium; juvenile

WO-0328
Lt pubis, ischium attached; anterior not at acetabulum; juvenile

Bag Weight: 540g; Site Position: 3: unmarked

WO-0331
Rt Pubis; juvenile; apart at sutures

Pallet: 466; Box: 5581

Bag Weight: 1507g; Site Position: 3: unmarked

WO-0329
Rt iliac blade; juvenile; pubis and ischium unattached

WO-0330
Lt iliac blade; juvenile; pubis and ischium unattached

Rt-right; Lt=left; VA=ventral arc; SPC=subpubic concavity; MAR=medial aspect ridge; S/B=Suchey/Brooks; SN= sciatic notch WO= Wisby os coxa

APPENDIX B

Statistics

APPENDIX B

Z TEST LEFT FEMORA

Battle of Wisby Left Femora	Battleship *Mary Rose* Left Femora
$n = 43$	$n=82$
$X_2 = 173.75$cm	$X_1 = 170.90$cm
SD = 6.62cm	SD = 4.50cm

Using the left femora, is there any statistical evidence that the men of the Battle of Wisby were taller in stature than the men of the Battleship *Mary Rose*?

HO: Mary Rose ≥ Wisby HA: Mary Rose < Wisby

$$Z = \frac{(x^1 - x^2) - 0}{\sqrt{SD_1^2/n^1 + SD_2^2/n^2}} = \frac{(170.9\text{cm} - 173.75\text{cm}) - 0}{\sqrt{4.5^{2\,/}\,82 + 6.62^{2\,/}\,43}} = \frac{-2.85}{1.13} = -2.52$$

Z value of -2.52 = Area of 0.994

1- 0.994 = 0.006 (p-value) p-value (0.006) < α (0.05) Reject HO

There is statistical evidence that the men of the Battle of Wisby were taller in stature than the men of the Battleship *Mary Rose.*

Appendix B—Continued

Z TEST LEFT FEMORA

Battle of Wisby Left Femora
$n = 43$
$X_2 = 173.75$cm
SD = 6.62cm

Battle of Towton Left Femora
$n = 29$
$X_1 = 171.60$ m
SD = 2.70cm

Using the left femora, is there any statistical evidence that the men of the Battle of Wisby were taller in stature than those of the Battle of Towton?

HO: Towton ≥ Wisby

HA: Towton < Wisby

$$Z = \frac{(X^1 - X^2) - 0}{\sqrt{SD_1^2/n^1 + SD_2^2/n^2}} = \frac{(171.60 - 173.75) - 0}{\sqrt{2.70^2/29 + 6.62^2/43}} = \frac{-2.15}{1.13} = -1.90$$

Z value of -1.90 = Area of 0.971

1- 0.971 = 0.029 (p-value)

p-value (0.029) < α (0.05)

Reject HO

There is statistical evidence that the men of the Battle of Wisby were taller in stature than the men of the Battle of Towton.

Z TEST LEFT FEMORA

Battle of Wisby Left Femora	Battle of Good Friday Left Femora
$n = 43$	$n=31$
$X_2 = 173.75$cm	$X_1=174.5$cm
SD = 6.62cm	SD=2.12cm

Using the left femora, is there any statistical evidence that the men of the Battle of Wisby were taller in stature than those of the Battle of Good Friday?

HO: Good Friday ≥ Wisby HA: Good Friday < Wisby

$$Z = \frac{(X^1 - X^2) - 0}{\sqrt{SD_1^2/n^1 + SD_2^2/n^2}} = \frac{(174.5-173.75)-0}{\sqrt{2.12^2/31 + 6.62^2/43}} = \frac{0.75}{1.08} = 0.69$$

Z value of 0.69 = Area of 0.788

1-0.788=0.212 (p-value) p-value (0.212) > α (0.05) Do Not Reject HO

Using the left femora, there is no statistical evidence that the men of the Battle of Wisby were taller than Battle of Good Friday.

TEST OF SIGNIFICANCE LEFT FEMORA

Battle of Wisby Left Femora	Battle of Good Friday Left Femora
$n = 43$	$n = 31$
X (observed) = 172.17cm	μ (expected) = 174.5cm
SD = 6.8cm	SD = 2.12cm

Using the Left Femora, is there any statistical evidence of a significant difference between the Battle of Wisby stature and Battle of Good Friday stature?

HO: $X = \mu$ HA: $X \neq \mu$

$$Z = \frac{X-\mu}{SD/\sqrt{n}} = \frac{173.75 - 174.5}{6.8/\sqrt{43}} = \frac{-0.75}{1.00} = -0.75$$

Z value of 0.75 = Area of 0.773

1-0.773 = 0.227 (p-value) p-value (0.227) > α (0.05) Do Not Reject HO

Using the left femora, there is no evidence of a statistical difference between Battle of Wisby stature and Battle of Good Friday stature.

Z TEST RIGHT FEMORA

Battle of Wisby Right Femora	Battleship *Mary Rose* Right Femora
$n = 53$	$n=92$
$X_2 = 172.17$cm	$X_1 = 171.20$cm
SD = 6.8cm	SD = 5.0cm

Using the right femora, is there any statistical evidence that the men of the Battle of Wisby were taller in stature than those of the Battleship *Mary Rose*?

HO: Mary Rose ≥ Wisby HA: Mary Rose < Wisby

$$Z = \frac{(x^1 - x^2) - 0}{\sqrt{SD_1^2/n^1 + SD_2^2/n^2}} = \frac{(171.20 - 172.17) - 0}{\sqrt{5.0^2/92 + 6.8^2/53}} = \frac{-0.97}{1.07} = -0.91$$

Z value of -0.91 = Area of 0.816

1- 0.816 = 0.184 (p-value) p-value (0.184) > α (0.05) Do Not Reject HO

Using the right femora, there is no statistical evidence that the men of the Battle of Wisby were taller than the men from the Battleship *Mary Rose*.

TEST OF SIGNIFICANCE RIGHT FEMORA

Using the right femora, is there any statistical evidence of a significant difference between the Battle of Wisby stature and the Battleship *Mary Rose* stature?

Battle of Wisby	Battleship *Mary Rose*
$n = 53$	$n = 92$
X (observed) = 172.17cm	μ (expected) = 171.20cm
SD = 6.8cm	SD = 5.0cm

HO: $X = \mu$ HA: $X \neq \mu$

$$Z = \frac{X-\mu}{SD/\sqrt{n}} = \frac{172.17 - 171.20}{6.8/\sqrt{53}} = \frac{0.97}{0.93} = 0.104$$

Z value of 0.104 = Area of 0.540

1-0.540=0.46 (p-value) p-value (0.46) > α (0.05) Do Not Reject HO

Using right femora, there is no evidence of a statistical difference between the Battle of Wisby stature and the Battleship *Mary Rose* stature.

Appendix B—Continued

Z TEST RIGHT FEMORA

Battle of Wisby Right Femora	Battle of Towton Right Femora
$n = 53$	n= Not Available
$X_2 = 172.17$cm	X_1 = Not Available
SD = 6.8cm	SD = Not Available

Using the right femora, is there any statistical evidence that the men of the Battle of Wisby were taller in stature than those of the Battle of Towton?

HO: Towton ≥ Wisby

HA: Towton < Wisby

There is no statistical data published for the right femora from the Battle of Towton (personal communication with Anthea Boylston).

Appendix B—Continued

Z TEST RIGHT FEMORA

Battle of Wisby Right Femora	Battle of Good Friday Right Femora
$n = 53$	$n=27$
$X_2 = 172.17$cm	$X_1 = 173.99$cm
SD = 6.8cm	SD = 2.11 cm

Using the right femora, is there any statistical evidence that the men of the Battle of Wisby were taller in stature than those of the Battle of Good Friday?

HO: Good Friday ≥ Wisby HA: Good Friday < Wisby

$$Z = \frac{(X_1 - X_2) - 0}{\sqrt{SD_1^2/n_1} + \sqrt{SD_2^2/n_2}} = \frac{(173.99 - 172.17) - 0}{\sqrt{2.11^{2/}27 + 6.8^{2/}53}} = \frac{1.82}{1.02} = 1.78$$

Z value of 1.78 = Area of0.962

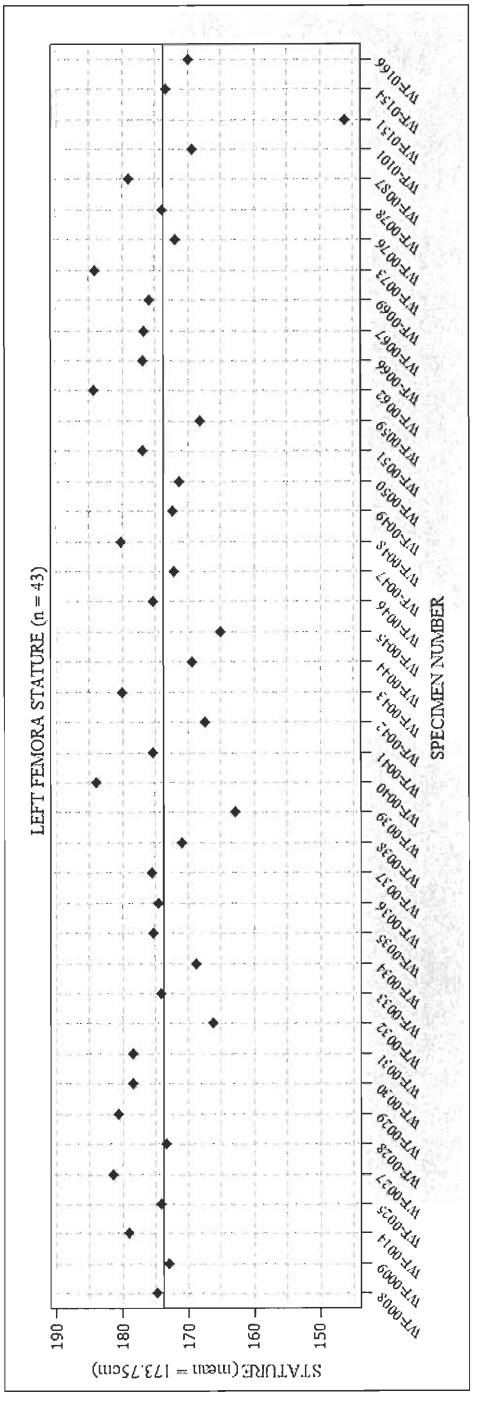
1- 0.962 = 0.038 (p-value) p-value (0.038) < α (0.05) Reject HO

Using the right femora, there is no statistical evidence that the men of the Battle of Wisby were taller than the men from the Battle of Good Friday.

APPENDIX C

Graphs

APPENDIX C


LEFT FEMORA STATURE (n = 43)
STATURE (mean = 173.75cm)
190
180
170
160
150
SPECIMEN NUMBER
WF-0008
WF-0009
WF-0014
WF-0025
WF-0027
WF-0028
WF-0029
WF-0030
WF-0031
WF-0032
WF-0033
WF-0034
WF-0035
WF-0036
WF-0037
WF-0038
WF-0039
WF-0040
WF-0041
WF-0042
WF-0043
WF-0044
WF-0045
WF-0046
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WF-0051
WF-0059
WF-0063
WF-0066
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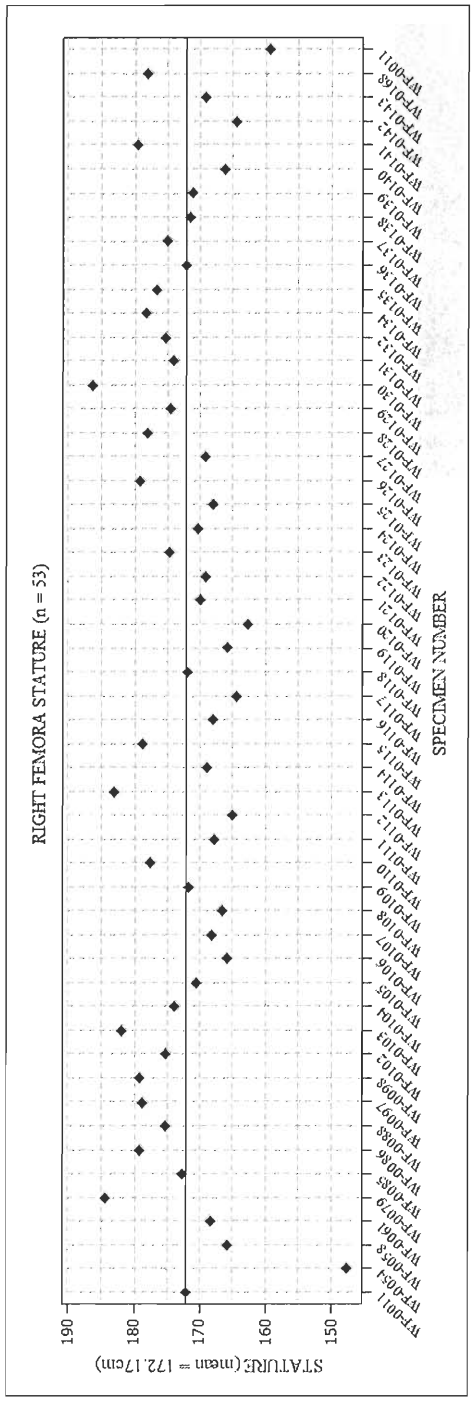
RIGHT FEMORA STATURE (n = 53)
STATURE: (mean = 172.17cm)
190
180
170
160
150
SPECIMEN NUMBER

APPENDIX D

Spreadsheets

APPENDIX D

Wisby Left Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0003	ADL	L	N/A	N/A	3:Hk	N/A
WF-0004	ADL	L	N/A	N/A	3:-	N/A
WF-0006	ADL	L	N/A	N/A	3:-	N/A
WF-0008	ADL	L	47.0	174.57	3:Hj 66	N/A
WF-0009	ADL	L	46.3	172.95	3:FC 5	N/A
WF-0012	ADL	L	N/A	N/A	3:Df 3	N/A
WF-0014	ADL	L	48.9	178.98	3:III	N/A
WF-0016	ADL	L	N/A	N/A	3:II Gg	N/A
WF-0018	ADL	L	N/A	N/A	3:II Dd 24	N/A
WF-0020	ADL	L	N/A	N/A	3:II Dd 24	N/A
WF-0021	ADL	L	N/A	N/A	3:II Ed 6	N/A
WF-0022	ADL	L	N/A	N/A	3:II Dd 24	N/A
WF-0023	UNK	UNK	N/A	N/A	3:II Dd 25	N/A
WF-0025	ADL	L	46.8	174.12	3:I 26	N/A
WF-0026	ADL	L	N/A	N/A	3-	N/A
WF-0027	ADL	L	49.9	181.30	3: (115)	N/A
WF-0029	ADL	L	49.6	180.60	3:II Ba 1	N/A
WF-0028	ADL	L	46.4	173.18	3:Hk 18	N/A
WF-0030	ADL	L	48.6	178.82	3:II Be 1	N/A

Appendix D--Continued

Wisby Left Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0031	ADL	L	48.6	178.28	3:III 46	N/A
WF-0032	ADL	L	43.4	166.22	3:I 23	N/A
WF-0033	ADL	L	46.8	174.11	3:II Cc 2	N/A
WF-0034	ADL	L	44.5	167.77	3:Gi 18	N/A
WF-0035	ADL	L	47.3	175.27	3:II Cb 13	N/A
WF-0036	ADL	L	46.9	174.34	3: (90)	N/A
WF-0037	ADL	L	47.4	175.50	3: (60)	N/A
WF-0043	ADL	L	49.3	179.91	3:I 46	N/A
WF-0044	ADL	L	44.7	169.23	3: (72)	N/A
WF-0045	ADL	L	42.9	165.06	3: (72)	N/A
WF-0046	ADL	L	47.3	175.27	3: (72)	N/A
WF-0047	ADL	L	45.9	172.09	3:Dd 1	N/A
WF-0048	ADL	L	49.4	180.14	3:Gk 19	WF-0007
WF-0049	ADL	L	46.0	172.25	3:II Cc 10	N/A
WF-0050	ADL	L	45.6	171.32	3: II Ee 1	N/A
WF-0051	ADL	L	48.0	176.89	3: Ji 98	N/A
WF-0055	ADL	L	N/A	N/A	3:I 29	N/A
WF-0056	ADL	L	N/A	N/A	3:-	N/A

Appendix D--Continued

Wisby Left Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0059	ADL	L	44.2	168.07	3:-	WF-0058
WF-0062	ADL	L	51.2	187.31	3:II Bc 1	N/A
WF-0063	ADL	L	N/A	N/A	3:-	N/A
WF-0065	ADL	L	N/A	N/A	3:-	N/A
WF-0066	ADL	L	48.0	176.89	3: III 33	N/A
WF-0067	ADL	L	47.9	176.66	3: III 33	N/A
WF-0069	ADL	L	47.5	175.73	3: Gj 9	WF-0002?
WF-0070	ADL	L	N/A	N/A	3: III 23	N/A
WF-0071	JVN	L	N/A	N/A	3: Gk 20	N/A
WF-0073	ADL	L	51.1	184.09	A3: Gi 50	WF-0072?
WF-0074	ADL	L	N/A	N/A	3: II Ce 8	N/A
WF-0076	ADL	L	45.8	171.79	A3: II Ed 1	N/A
WF-0077	ADL	L	N/A	N/A	3: I g	N/A
WF-0078	ADL	L	46.7	173.87	3: I 3	WF-0079
WF-0084	ADL	L	N/A	N/A	3: II Ec 6	N/A
WF-0087	ADL	L	48.9	178.78	3: Fh 42	N/A
WF-0089	ADL	L	N/A	N/A	3: I a.b.a.	N/A

Appendix D--Continued

Wisby Left Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0146	ADL	L	N/A	N/A	3:-	N/A
WF-0149	JVN	L	N/A	N/A	3: I 9	WF-0148
WF-0151	ADL	L	34.7	146.03	A3: F 72	N/A
WF-0152	JVN	L	N/A	N/A	A3: II Fd	N/A
WF-0163	JVN	L	N/A	N/A	3: Cc	N/A
WF-0164	JVN	L	N/A	N/A	3: Cc	N/A
WF-0165	JVN	L	N/A	N/A	3: Hh 47	N/A
WF-0166	ADL	L	45.0	169.93	3: Hh 47	N/A
WF-0167	JVN	L	N/A	N/A	3: I 26	N/A
WF-0001	ADL	R	N/A	N/A	3:-	N/A
WF-0002	ADL	R	N/A	N/A	3: Gj 45	N/A
WF-0007	ADL	R	N/A	N/A	3: Gk 19	N/A
WF-0010	ADL	R	N/A	N/A	A3: II Ed 4	N/A
WF-0011	ADL	R	35.4	147.68	3: II Ef 1	N/A
WF-0013	ADL	R	N/A	N/A	3: II Ce 12	N/A
WF-0015	ADL	R	N/A	N/A	3: II Gc	N/A
WF-0019	ADL	R	N/A	N/A	3: II Ed	N/A
WF-0024	ADL	R	N/A	N/A	3: II Dd 25	N/A
WF-0052	ADL	R	N/A	N/A	3: II Ed 5	N/A

Appendix D--Continued

Wisby Right Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0053	ADL	R	N/A	N/A	3: II Ed 5	N/A
WF-0054	ADL	R	43.3	165.99	3: II Ec 15	N/A
WF-0057	ADL	R	N/A	N/A	3:-	N/A
WF-0058	ADL	R	44.4	168.54	3:-	N/A
WF-0060	ADL	R	N/A	N/A	3: Hj 11	N/A
WF-0061	ADL	R	51.3	184.55	3: II Bc 1	N/A
WF-0064	ADL	R	N/A	N/A	3:-	N/A
WF-0068	ADL	R	N/A	N/A	A3: Cd F3	N/A
WF-0072	ADL	R	N/A	N/A	A3: Gj 49	N/A
WF-0079	ADL	R	46.2	142.71	3: I 3	N/A
WF-0080	ADL	R	N/A	N/A	3:III 48	N/A
WF-0081	ADL	R	N/A	N/A	3:II Cc 2	N/A
WF-0082	ADL	R	N/A	N/A	3:II Cd 3	N/A
WF-0083	ADL	R	N/A	N/A	3: II Dd 18	N/A
WF-0085	ADL	R	49.0	179.21	3:-	N/A
WF-0086	ADL	R	47.3	175.27	3: II Cb 8	N/A
WF-0088	ADL	R	48.8	178.75	3:I a.b.c.	N/A
WF-0090	ADL	R	N/A	N/A	3:II Cc 5	N/A

Appendix D--Continued

Wisby Right Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0091	JVN	R	N/A	N/A	3: Ji 72	N/A
WF-0093	ADL	R	N/A	N/A	3:III 22	N/A
WF-0095	JVN	R	N/A	N/A	3:II Ab 1	N/A
WF-0096	JVN	R	N/A	N/A	3:II Fd 2	N/A
WF-0097	ADL	R	49.0	179.21	3:-	N/A
WF-0098	ADL	R	47.3	175.27	3:-	N/A
WF-0099	JVN	R	N/A	N/A	3 (39)	N/A
WF-0100	JVN	R	N/A	N/A	3: Cd 8	N/A
WF-0102	ADL	R	50.0	181.99	3: (72)	N/A
WF-0103	ADL	R	46.7	173.87	3: (72)	N/A
WF-0104	ADL	R	45.3	170.63	3: (72)	N/A
WF-0105	ADL	R	43.3	165.99	3: Gj 67	N/A
WF-0106	ADL	R	44.3	168.31	3: Fi 37	N/A
WF-0107	ADL	R	43.6	166.68	3:II Bf 1	N/A
WF-0108	ADL	R	45.8	171.79	3:II Fe 2	N/A
WF-0109	ADL	R	48.3	177.59	3:II Fe 1	N/A
WF-0110	ADL	R	44.1	167.84	3:II Bb 5	N/A
WF-0111	ADL	R	42.9	165.06	3: (39)	N/A
WF-0112	ADL	R	50.7	183.15	3: (39)	N/A

Appendix D--Continued

Wisby Right Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0113	ADL	R	44.6	169.00	3: (12)	N/A
WF-0114	ADL	R	48.8	178.75	3: III (24)	N/A
WF-0115	ADL	R	44.2	168.07	3: II Dd 20	N/A
WF-0116	ADL	R	42.7	164.59	3:II Bb	N/A
WF-0117	ADL	R	45.9	172.02	3: Gj 57	N/A
WF-0118	ADL	R	43.3	165.99	3: Ce 4	N/A
WF-0119	ADL	R	41.9	162.74	3: Ec 6	N/A
WF-0121	ADL	R	44.7	169.23	3: II De 2	N/A
WF-0122	ADL	R	47.1	174.80	3: Ji 87	N/A
WF-0123	ADL	R	45.2	170.39	3: Dh 1	N/A
WF-0124	ADL	R	44.2	168.07	3: (I:4)	N/A
WF-0125	ADL	R	49.0	179.21	3: (87)	N/A
WF-0126	ADL	R	44.7	169.23	3: (88)	N/A
WF-0127	ADL	R	48.5	178.05	3: (88)	N/A
WF-0128	ADL	R	47.0	174.57	3: (88)	N/A
WF-0129	ADL	R	52.1	186.40	3: (88)	N/A
WF-0130	ADL	R	46.8	174.11	3: (88)	N/A
WF-0131	ADL	R	47.3	175.27	3: (I 26)	N/A
WF-0132	ADL	R	48.6	178.28	3: (I 46)	N/A

Appendix D--Continued

Wisby Right Femora

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WF-0135	ADL	R	46.0	172.25	3: (60)	N/A
WF-0136	ADL	R	47.2	175.03	3: (72)	N/A
WF-0137	ADL	R	45.7	171.55	3: (I:3)	N/A
WF-0138	ADL	R	45.5	171.09	3: (41)	N/A
WF-0139	ADL	R	43.4	166.22	3: (I:23)	N/A
WF-0140	ADL	R	49.2	179.67	3:-	N/A
WF-0141	ADL	R	42.7	164.59	3:-	N/A
WF-0142	ADL	R	44.7	169.23	3: (83)	N/A
WF-0143	ADL	R	48.5	178.05	3: II Cc 3	N/A
WF-0144	JVN	R	N/A	N/A	3:-	N/A
WF-0147	JVN	R	N/A	N/A	3:-	N/A
WF-0148	JVN	R	N/A	N/A	3: I 9	N/A
WF-0150	JVN	R	N/A	N/A	3: F	N/A
WF-0153	JVN	R	N/A	N/A	A3: I (I24)	N/A
WF-0155	JVN	R	N/A	N/A	A: 3F (I 7)	N/A
WF-0162	ADL	R	N/A	N/A	3: Hi 30	N/A
WF-168	ADL	R	40.5	159.49	3:-	N/A

WF=Wisby Femur; ADL=Adult; JVN=Juvenile; N/A=Not Available; R-Right; UNK=Unknown; UMK=Unmarked

Appendix D--Continued

Wisby Left Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0702	ADL	L	33.4	162.76	3:II Ed 8	N/A
WT-0703	ADL	UNK	N/A	N/A	3:II Ed 6	N/A
WT-0704	ADL	L	N/A	N/A	3:II Ed 6	N/A
WT-0705	ADL	L	40.0	178.73	3: Gk 7	N/A
WT-0706	ADL	L	34.8	166.15	3: (88)	N/A
WT-0708	ADL	L	33.5	163.00	3: (I 23)	N/A
WT-0712	ADL	L	35.4	167.60	3: (33)	N/A
WT-0713	ADL	L	37.4	172.44	3: (33)	N/A
WT-0717	ADL	L	39.2	176.79	3: (I)	N/A
WT-0718	ADL	L	36.7	170.74	3 (60)	N/A
WT-0723	ADL	L	34.0	164.21	3: (66)	N/A
WT-0725	ADL	L	38.6	175.34	3:III	N/A
WT-0727	ADL	L	36.6	170.50	3: (38)	N/A
WT-0731	ADL	L	34.5	165.42	3:II Bb 2	N/A
WT-0734	ADL	L	36.0	169.05	3: Hh 47	N/A
WT-0735	ADL	L	36.3	169.78	3: Fi 41	N/A
WT-0736	ADL	L	38.7	175.58	3: (45)	N/A
WT-0740	ADL	L	34.2	164.69	3:II Bf 1	N/A
WT-0748	ADL	L	41.1	181.39	3: Gj 9	N/A

Appendix D--Continued

Wisby Left Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0749	ADL	L	37.6	172.92	3: Hj 26	N/A
WT-0751	ADL	UNK	N/A	N/A	3:-	N/A
WT-0753	JVN	L	N/A	N/A	3:-	N/A
WT-0756	ADL	L	39.5	177.52	3:II Bd 7	N/A
WT-0758	ADL	L	40.5	179.94	3:I 6	N/A
WT-0760	ASL	L	38.0	173.89	3:II Fd 5	N/A
WT-0761	ADL	L	38.9	176.07	3: (I 26)	N/A
WT-0762	ADL	L	N/A	N/A	3:II Be 1	N/A
WT-0765	ADL	UNK	N/A	N/A	3:-	N/A
WT-0767	ADL	L	39.7	178.00	3: Hk 44	N/A
WT-0769	ADL	L	32.2	159.85	3:II Db 1	N/A
WT-0771	ADL	L	N/A	N/A	3:II Ec 6	N/A
WT-0775	ADL	L	N/A	N/A	3:II Ee 1	N/A
WT-0776	ADL	L	N/A	N/A	3:III 50	N/A
WT-0777	ADL	L	39.9	178.49	3:II Cc 2	N/A
WT-0778	JVN	L	42.5	184.78	3: Gi 50	N/A
WT-0779	ADL	L	35.8	168.57	3:II Bc 11	N/A
WT-0780	ADL	L	N/A	N/A	3:III 50	N/A
WT-0781	ADL	L	N/A	N/A	3:II Cc 10	N/A

Appendix D--Continued

Wisby Right Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0782	ADL	L	35.5	167.84	3:II Ce 8	N/A
WT-0784	ADL	L	37.3	172.20	3: (72)	N/A
WT-0788	ADL	L	38.3	174.62	3: Ij 98	N/A
WT-0792	ADL	L	33.2	162.27	3: (60)	N/A
WT-0793	ADL	L	37.6	172.92	3: (I:3)	N/A
WT-0798	ADL	L	39.2	176.79	3:-	N/A
WT-0799	ADL	L	35.0	166.63	3:-	N/A
WT-0800	JVN	L	N/A	N/A	3:II Cc 3	N/A
WT-0801	JVN	L	N/A	N/A	3: I 26)	N/A
WT-0803	ADL	L	32.9	161.55	3 (88)	N/A
WT-0804	JVN	UNK	N/A	N/A	3: (I7)	N/A
WT-0806	ADL	L	41.0	181.15	3:III 46	N/A
WT-0808	ADL	L	36.6	170.50	3: Hi 65	N/A
WT-0703	ADL	UNK	N/A	N/A	3:II Ed 6	N/A
WT-0706	ADL	L	34.8	166.15	3: (88)	WT-0707

WT=Wisby Tibia; ADL=Adult; JVN=Juvenile; N/A= Not Available; L=Left; UNK=Unknown

Appendix D--Continued

Wisby Right Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0700	ADL	R	N/A	N/A	3: Gi 50	N/A
WT-0707	ADL	R	34.8	166.15	3: (88)	N/A
WT-0709	ADL	R	33.7	163.48	3: (I 23)	N/A
WT-0710	ADL	R	34.0	164.21	3: (6)	N/A
WT-0711	ADL	R	38.5	175.1	3: (I)	N/A
WT-0714	ADL	R	N/A	N/A	3: (87)	N/A
WT-0715	ADL	R	33.0	161.79	3: (72)	N/A
WT-0716	ADL	R	35.5	167.84	3: (I)	N/A
WT-0719	ADL	R	39.6	177.76	3: (60)	N/A
WT-0720	ADL	R	N/A	N/A	3:-	N/A
WT-0721	ADL	R	37.3	172.20	3:II Bf 2	N/A
WT-0722	ADL	R	39.7	178.00	3: Ii 87	N/A
WT-0724	ADL	R	39.0	176.31	3:II Cb 8	N/A
WT-0726	ADL	R	38.6	175.34	3:III	N/A
WT-0728	ADL	R	35.6	168.09	3:II De 10	N/A
WT-0729	ADL	R	33.6	163.24	3:II Eb 2	N/A
WT-0730	ADL	R	38.9	176.07	3: (155)	N/A
WT-0732	ADL	R	39.9	178.49	3: (O 25)	N/A
WT-0733	ADL	R	33.5	163.0	3:II Ed 8	N/A

Appendix D--Continued

Wisby Right Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0737	ADL	R	40.3	179.46	3: Gj 15	N/A
WT-0738	ADL	R	40.7	180.42	3: (D 15)	N/A
WT-0739	ADL	R	40.2	179.21	3:II Cb 13	N/A
WT-0741	ADL	R	37.9	173.65	3:III	N/A
WT-0742	ADL	R	37.7	173.16	3: (101)	N/A
WT-0743	ADL	R	N/A	N/A	3: (D 11)	N/A
WT-0744	ADL	R	38.3	174.62	3:I 18	N/A
WT-0745	ADL	R	37.3	172.20	3: (D 23)	N/A
WT-0746	JVN	R	N/A	N/A	3:I 26	N/A
WT-0747	ADL	R	N/A	N/A	3: Hj 10	N/A
WT-0750	ADL	R	N/A	N/A	3:-	N/A
WT-0751	ADL	UNK	N/A	N/A	3:-	N/A
WT-0752	JVN	R	N/A	N/A	3:-	N/A
WT-0754	ADL	R	35.3	167.36	3:II Cb 11	N/A
WT-0755	ADL	R	40.6	180.18	3:V 25	N/A
WT-0757	ADL	R	36.2	169.53	3:I 5	N/A
WT-0759	ADL	R	36.9	170.99	3:III 16	N/A
WT-0763	ADL	R	N/A	N/A	3:III Cc 2	N/A
WT-0764	ADL	R	N/A	N/A	3: Gk 19	N/A

Appendix D--Continued

Wisby Right Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0766	ADL	R	36.1	169.29	3:II Db 4	N/A
WT-0768	ADL	R	N/A	N/A	3: Hk 44	N/A
WT-0770	ADL	R	32.9	161.55	3:II Ec 6	N/A
WT-0772	JVN	R	39.0	176.31	3:Bd 6	N/A
WT-0773	JVN	R	N/A	N/A	3: Gj 49	N/A
WT-0774	ADL	R	N/A	N/A	3: Fi 36	N/A
WT-0783	ADL	R	38.9	176.07	3: (72)	N/A
WT-0785	ADL	R	34.1	164.45	3:II Bb 2	N/A
WT-0786	ADL	R	39.8	178.25	3: Gk 24	N/A
WT-0787	ADL	R	41.5	182.36	3: Ij 98	N/A
WT-0789	ADL	R	33.6	163.24	3: (88)	N/A
WT-0790	ADL	R	38.6	175.34	3: (I 26)	N/A
WT-0791	ADL	R	37.2	171.95	3:II Ec 15	N/A
WT-0794	ADL	R	38.1	174.13	3: (I:3)	N/A
WT-0795	ADL	R	34.7	165.90	3:-	N/A
WT-0796	ADL	R	40.0	178.73	3:-	N/A
WT-0797	ADL	R	39.0	176.31	3:-	N/A
WT-0802	JVN	R	N/A	N/A	3: (I 26)	N/A
WT-0804	JVN	UNK	N/A	N/A	3: (I:7)	N/A

Appendix D--Continued

Wisby Right Tibiae

Specimen Number	Age	Side	Length (cm)	Stature (cm)	Site Position	Match To
WT-0805	JVN	R	N/A	N/A	3: Hi 30	N/A
WT-0807	ADL	R	37.7	173.16	3:III Gc 2	N/A
WT-0809	ADL	R	N/A	N/A	3:II Ec 11	N/A
WT-0810	ADL	R	N/A	N/A	3: Hh 45	N/A

WT=Wisby Tibia; ADL=Adult; JVN=Juvenile; N/A=Not Available; R-Right; UNK=Unknown

Appendix D--Continued

Wisby Left Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0200	L	6	5	3:-	N/A
WO-0202	L	1	3	3: Hj 63	N/A
WO-0203	L	1	2	3: Hj 63	N/A
WO-0204	L	2	2	3:Cc 2	WO-0205
WO-0206	L	N/A	N/A	3:II Dd	WO-0207
WO-0208	L	0	1	3: Gi 50	N/A
WO-0209	L	0	2	Gj 49	WO-0210
WO-0213	L	4	1	3:II Bb 5	N/A
WO-0214	L	4	2	3:II Bb 5	N/A
WO-0215	L	4	1	3:III	N/A
WO-0218	L	4	2	3:II Bf 1	WO-0217
WO-0220	L	0	1	3:II Dc 5	N/A
WO-0222	L	5	N/A	3:-	N/A
WO-0224	L	7	4	3:III	N/A
WO-0226	L	0	N/A	UMK	N/A
WO-0228	UNK	0	N/A	UMK	N/A
WO-0231	L	3	3	3:I 17	N/A
WO-0233	L	N/A	4	3:II Df	N/A
WO-0236	L	N/A	N/A	3:II Ed 6	N/A

Appendix D--Continued

Wisby Left Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0240	L	3	2	3: Hj 99	N/A
WO-0243	L	2	2	3:III Gc	N/A
WO-0246	L	8	3	3:-	N/A
WO-0247	3	7	3	3:-	N/A
WO-0249	L	1	2	3:-	N/A
WO-0251	UNK	N/A	N/A	3:-	N/A
WO-0253	L	4	2	3: Fi 36	WO-0252
WO-0254	L	N/A	N/A	3:II Ed 5	WO-0255
WO-0257	L	2-3	2	3: I 29	N/A
WO-0258	L	3-4	3	3:-	N/A
WO-0260	L	4-5	N/A	3:I 26	N/A
WO-0262	L	7	2	3:II Ft	N/A
WO-0263	L	1	3	3:II Ab 2	N/A
WO-0265	L	3	2	A3:-	WO-0266
WO-0267	L	3	2	A3:II Ce 3	N/A
WO-0270	L	0	3	3: Ji 72	WO-0269
WO-0272	L	UNK	N/A	3:-	N/A
WO-0274	L	1	2	3:III 28	N/A
WO-0276	L	2	2	3: Gj 15	WO-0275

Appendix D--Continued

Wisby Left Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0277	L	0	1	3: Hi 30	WO-0278
WO-0280	L	0	5	3:-	WO-0279
WO-0281	L	7	2	A3:II Ee	N/A
WO-0282	L	3	2	3:II Ce 4	WO-0283
WO-0284	L	7	1	A3: Gr	N/A
WO-0287	L	2	2	3: I 4	N/A
WO-0289	L	N/A	N/A	3: I g	N/A
WO-0291	L	0	N/A	3: Hi 30	N/A
WO-0293	L	6	3	3: I 3	N/A
WO-0295	L	N/A	N/A	A3: Hh 47	N/A
WO-0296	L	7	2	A3:II Fe 2	WO-0297
WO-0299	L	1	3	3: II Cb 8	N/A
WO-0301	UNK	N/A	N/A	3: II Ec 6	N/A
WO-0304	L	5	2	3: Fi 37	WO-0303
WO-0305	L	2-3	2	3: I a.b.c.	N/A
WO-0306	L	1	1	3: I a.b.c.	N/A
WO-0307	L	2	2	3: II Ec 6	N/A
WO-0310	L	4	N/A	3: a.b.c.	N/A
WO-0311	L	N/A	N/A	3: a.b.c.	N/A

Appendix D--Continued

Wisby Left Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0313	L	2	2	3: a.b.c	N/A
WO-0314	L	N/A	N/A	3: a.b.c.	N/A
WO-0315	L	N/A	N/A	3: a.b.c.	N/A
WO-0316	L	N/A	N/A	3: a.b.c.	N/A
WO-0319	L	3	1	3:II Dc 1	N/A
WO-0322	L	1	2	3:II Ec 24	N/A
WO-0326	L	N/A	N/A	3:-	N/A
WO-0328	L	N/A	N/A	3:-	N/A
WO-0330	L	N/A	N/A	3:-	N/A

WO=Wisby Os Coxa; N/A= Not Available; L=Left; UNK=Unknown;
Auricular Surface Age: 0=<20; 1= 20-24; 2=25-29; 3=30-34; 4=35-39; 5=40-44; 6=45-49; 7=50-59; 8=60+

Appendix D--Continued

Wisby Right Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0201	R	7	1	3:-	N/A
WO-0207	R	N/A	N/A	3:III Dd 1	WO-0206
WO-0210	R	0	1	Gj 49	WO-0209
WO-0211	R	0	1	Gi 50	N/A
WO-0212	R	N/A	N/A	Ec 24.25.28	N/A
WO-0216	R	2	2	3: Gj 57	N/A
WO-0217	R	4	2	3:II Bf 1	N/A
WO-0219	R	4	2	3:II Ec 1	N/A
WO-0221	R	1	3	3:-	N/A
WO-0223	R	5	3	3:-	N/A
WO-0225	R	3	4	3:III	N/A
WO-0227	R	1	3	3:III	N/A
WO-0228	R	1	N/A	3:??	N/A
WO-0230	R	7	2	3:-	N/A
WO-0232	R	5	N/A	3:I 17	N/A
WO-0234	R	5	N/A	3: Ed	N/A
WO-0235	R	N/A	N/A	3:II Ed 6	N/A
WO-0237	R	1	2	3:II Dd 25	N/A

Appendix D--Continued

Wisby Right Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0238	R	2	3	3:II Dd 25	N/A
WO-0239	R	4	2	3: Ji 87	N/A
WO-0241	R	4	1	3: Hj 67	N/A
WO-0242	R	1	1	3: Hj 92	N/A
WO-0244	R	7	1	3:II Gc 2	N/A
WO-0245	R	8	2	3:II Bc 1	N/A
WO-0248	R	2	3	3:-	N/A
WO0250	R	N/A	1	3:-	N/A
WO-0251	R	N/A	N/A	3:-	N/A
WO-0252	R	3	1	3: Fi 36	WO-0253
WO-0255	R	1	2	3:II Ed 5	WO-0254
WO-0256	R	4	1	N/A	N/A
WO-0259	R	4	2	3:I 26	N/A
WO-0261	R	N/A	N/A	A3:-	N/A
WO-0264	R	1	3	3:II Ab 2	WO-0263
WO-0266	R	3	4	A3:-	WO-0265
WO-0268	R	5	N/A	3:II Dc 1	N/A
WO-0269	R	1	2	3: Ji 72	WO-0270
WO-0271	R	7	2	3:III 25	N/A

Appendix D--Continued

Wisby Right Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0273	R	N/A	N/A	3:-	N/A
WO-0275	R	1	N/A	3: Gj 15	N/A
WO-0278	R	1	2	3: Hi 30	WO-0277
WO-0279	R	1	5	3:-	WO-0280
WO-0283	R	2	2	3:II Ce 4	WO-0282
WO-0285	R	5	2	3:e-	N/A
WO-0286	R	N/A	1	A3: Hh 46	N/A
WO-0288	R	2	N/A	3:I 4	WO-0287
WO-0290	R	5	2	3: Hi 30	N/A
WO-0292	R	5	N/A	N/A	N/A
WO-0294	R	0	1	3:I 3	N/A
WO-0297	R	6	3	A3:II Fe 2	WO-0296
WO-0298	R	1	2	3: II Cb 8	N/A
WO-0300	R	N/A	N/A	3:II Ec 6	N/A
WO-0301	UNK	N/A	N/A	3:II Ec 6	N/A
WO-0302	R	N/A	N/A	3:II Cb 10	N/A
WO-0303	R	4	2	3: Fi 37	WO-0304
WO-0308	R	3	3	3: a.b.c.	N/A
WO-0309	R	1	2	3: a.b.c.	N/A

Appendix D--Continued

Wisby Right Os Coxae

Specimen Number	Side	Auricular Surface Age	Sciatic Notch	Site Position	Match To
WO-0312	R	3	2	3: a.b.c.	N/A
WO-0317	R	N/A	3	3: a.b.c.	N/A
WO-0318	R	3	N/A	3: a.b.c.	N/A
WO-0320	R	7	N/A	3:-	N/A
WO 0321	R	N/A	N/A	3:-	N/A
WO-0323	R	4	3	3: (I 29)	N/A
WO-0325	R	N/A	N/A	3:-	N/A
WO-0327	R	N/A	N/A	3:-	N/A
WO-0329	R	N/A	N/A	3:-	N/A

WO=Wisby Os Coxa; N/A= Not Available; R=Right; UNK=Unknown;
Auricular Surface Age: 0=<20; 1= 20-24; 2=25-29; 3=30-34; 4=35-39; 5=40-44; 6=45-49; 7=50-59; 8=60+

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0400	R	mastoid process/ aud. canal	N/A	4	N/A	N/A	N/A	N/A	N/A	3: unmarked	N/A
WC-0401	0	cranium/ no face	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: II Db I	N/A
WC-0402	L	temporal	2	N/A	N/A	N/A	N/A	N/A	N/A	3: II Db I	N/A
WC-0404	L	frontal w/orbit roof	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: Gi 50	N/A
WC-0405	R	temporal/ aud. canal	N/A	3	N/A	N/A	N/A	N/A	N/A	3: Gi 50	N/A
WC-0406	L	orbit roof	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: Db 9	N/A
WC-0407	R	temporal	N/A	3	N/A	N/A	N/A	N/A	N/A	3: Db 9	N/A
WC-0408	L	temporal	4	N/A	N/A	N/A	N/A	N/A	N/A	3: Hi 94	N/A
WC-0409	R	temporal	N/A	4	N/A	N/A	N/A	N/A	N/A	3: Hi 94	N/A
WC-0410	0	maxilla	N/A	N/A	13	N/A	NO	NO	N/A	3: Hi 94	N/A
WC-0411	0	cranium	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: II Db 9	N/A
WC-0412	L	temporal	4	N/A	N/A	N/A	N/A	N/A	N/A	3: II Db 9	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0413	0	cranium	4	4	5		3	NO	NO	3: III	N/A
WC-0414	R	temporal	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: UNK	N/A
WC-0415	0	cranium fragment at suture	N/A	N/A	N/A	N/A	N/A	N/A	mild	3: II Fd 4	N/A
WC-0416	R	temporal	N/A	4	N/A	N/A	N/A	N/A	N/A	3: II Fd 4	WC-0417
WC-0417	L	temporal	4	N/A		N/A	1	N/A	N/A	3: II Fd 4	WC-0416
WC-0419	R	maxilla	N/A	N/A	5	N/A	NO	N/A		3: II Fd 4	N/A
WC-0420	0	skull cap w/orbits	N/A	N/A	N/A	N/A		N/A	NO	3: II Df	N/A
WC-0421	R	maxilla	N/A	N/A	5	N/A	NO	NO	N/A	3: II Df	N/A
WC-0422	0	teeth	N/A	N/A	N/A	9	NO	N/A	N/A	3: II Df	N/A
WC-0423	0	cranium	2	2	N/A	N/A		N/A	N/A	3: II Bd 7	N/A
WC-0424	0	face w/maxilla	N/A	N/A	16	N/A	NO	N/A	NO	3: Bd 7	N/A
WC-0425	0	skull cap w/lt. orbit roof	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: Bd 7	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0426	R	skull cap	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: Hi 70	N/A
WC-0427	0	frontal L&R parietal, most of occipital; w/aud. canal	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: III 36	N/A
WC-0428	R	cranium fragment w orbit roof	N/A	N/A	N/A	N/A	N/A	N/A	NO	A2 F32	N/A
WC-0430	L	maxilla w/ 5 sockets	N/A	N/A	N/A	21	NO	NO	N/A	A2 F 32	N/A
WC-0431	0	fragments only	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A2 F 37	N/A
WC-0432	R	temporal w/aud. canal	N/A	3	N/A	N/A	N/A	N/A	N/A	A2 F 37	WC-0434?
WC-0433	L	temporal w/ aud. canal	2	N/A	N/A	N/A	N/A	N/A	N/A	A2 F 37	N/A
WC-0434	L	temporal w/aud. canal	4	N/A	N/A	N/A	N/A	N/A	N/A	A2 F 37	WC-0432?
WC-0435	0	cranium	N/A	N/A	5	N/A	NO	NO	NO	3: III 30	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0436	R	maxilla	N/A	N/A	15	N/A	NO	NO	N/A	3: Ji 105	N/A
WC-0437	R	cranium w/aud. canal	N/A	3	N/A	N/A	N/A	N/A	NO	3: III 40	WC-0437
WC-0438	R	temporal	N/A	3	N/A	N/A	N/A	N/A	N/A	3: III 40	N/A
WC-0439	0	brain case w/ lt. orbit roof	4	N/A	N/A	N/A	N/A	N/A	NO	3: II 8	N/A
WC-0440	1	skull cap w/orbit roof	1 (juvenile?)	N/A	N/A	N/A	N/A	N/A	NO	3: I 7	N/A
WC-0442	0	parietal and occipital	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: II Bd 9	N/A
WC-0443	L	cranium, no face/maxilla/ orbit roof	5	4	N/A	N/A	N/A	N/A	NO	3: II Bf 1	N/A
WC-0444	0	cranium w/maxilla	3	3	7	NO	NO	NO	NO	3: III 39	N/A
WC-0448	0	cranium w/ face/maxilla	4	3	4	N/A	NO	NO	NO	3; (Låda 80)	N/A
WC-0449	0	cranium cap	1 (juvenile?)	1	N/A	N/A	N/A	N/A	N/A	3: I 27	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0450	R	maxilla	N/A	N/A	16	N/A	3	NO	N/A	3: I 27	N/A
WC-0451	0	skull cap fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: unmarked	N/A
WC-0453	0	cranium w orbits, no face	4	4	N/A	N/A	N/A	N/A	NO	3: I 14	N/A
WC-0455	0	cranium	5	5	N/A	N/A	N/A	N/A	NO	3: 25	N/A
WC-0456	0	cranium w/maxilla	3	3	N/A	NO	NO	NO	NO	3: I 4	N/A
WC-0457	0	cranium fragments	4	N/A	N/A	N/A	N/A	N/A	N/A	3: (87)	N/A
WC-0458	L	maxilla	N/A	N/A	1	1	NO	NO	N/A	3: e unmarked	N/A
WC-0459	0	cranium fragments	N/A	N/A	10	N/A	NO	NO	N/A	3: II Bd	N/A
WC-0460	L	aud. canal	4	N/A	14	N/A	NO	NO	N/A	3: II Bd 9	N/A
WC-0461	0	cranium fragments	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: II Ce 1	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0466	0	teeth	N/A	N/A	N/A	4	NO	NO	N/A	3: II Ce 1	N/A
WC-0468	L	temporal	4	N/A	N/A	N/A	N/A	N/A	N/A	3: Hj 71	N/A
WC-0469	L	temporal	3	N/A	N/A	N/A	N/A	N/A	N/A	3: Hj 71	N/A
WC-0470	R	temporal	N/A	3	N/A	N/A	N/A	N/A	N/A	3:Hj 71	N/A
WC-0471	0	parietals attached at sagittal suture	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: Hj 71	N/A
WC-0476	L	temporal	3	N/A	N/A	N/A	N/A	N/A	N/A	3: Hi 30	N/A
WC-0477	R	temporal	N/A	3	N/A	N/A	N/A	N/A	N/A	3: Hi 30	N/A
WC-0478	0	frontal w/ orbits, maxilla	N/A	N/A	10	N/A	N/A	NO	NO	3: Hi 30	N/A
WC-0479	0	cranial cap	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: Gi 50	N/A
WC-0480	L	temporal	4	N/A	N/A	N/A	N/A	N/A	N/A	3: Gi 50	N/A
WC-0481	0	frontal w/orbits,	N/A	N/A	N/A	N/A	N/A	N/A	NO	A3: Hi 82	N/A
WC-0482	0	occipital	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A3: Hi 82	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0483	R	temporal	N/A	4	N/A	N/A	N/A	N/A	N/A	A3: Hi 82	N/A
WC-0484	0	teeth	N/A	N/A	N/A	2	NO	NO	NO	A3: Hi 82	N/A
WC-0485	0	teeth	N/A	N/A	N/A	6	NO	NO	N/A	3: I 3	N/A
WC-0486	0	maxilla	N/A	N/A	9	N/A	NO	NO	N/A	3: II Eb 3	N/A
WC-0487	R	orbit roof	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: II Eb 3	N/A
WC-0488	R	temporal	N/A	4	N/A	N/A	N/A	N/A	N/A	3: II Eb 3	N/A
WC-0489	L	temporal	4	N/A	N/A	N/A	N/A	N/A	N/A	3: II Eb 3	N/A
WC-0490	R	temporal	N/A	3	N/A	N/A	N/A	N/A	N/A	3: I a.b.c.	N/A
WC-0491	L	temporal	0 (juvenile?)	N/A	N/A	N/A	N/A	N/A	N/A	3: I a.b.c.	N/A
WC-0492	L	temporal	0 (juvenile?)	N/A	N/A	N/A	N/A	N/A	N/A	3: I a.b.c.	N/A
WC-0493	0	teeth	N/A	N/A	N/A	5	N/A	N/A	N/A	3: I a.b.c	N/A
WC-0494	L	maxilla	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: I a.b.c	N/A
WC-0495	R	maxilla	N/A	N/A	4	N/A	NO	NO	N/A	3: I a.b.c	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0496	L	temporal	1	N/A	N/A	N/A	N/A	N/A	N/A	3: I a.b.c	N/A
WC-0497	L	maxilla	N/A	N/A	3	N/A	NO	NO	N/A	3: I a.b.c	N/A
WC-0499	0	teeth	N/A	N/A	N/A	15	1	NO	N/A	3: I a.b.c	N/A
WC-0500	0	maxilla	N/A	N/A	4	N/A	NO	NO	N/A	3: unmarked	N/A
WC-0501	L	temporal	3	N/A	N/A	N/A	N/A	N/A	N/A	3: unmarked	N/A
WC-0502	R	temporal	N/A	1	N/A	N/A	N/A	N/A	N/A	3: unmarked	N/A
WC-0503	0	teeth	N/A	N/A	N/A	6	NO	NO	N/A	3: unmarked	N/A
WC-0504	0	cranium w/orbits	N/A	N/A	N/A	N/A	N/A	N/A	mild	3: unmarked	N/A
WC-0505	0	cranium fragment	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: unmarked	N/A
WC-0506	L	maxilla/nasal, zygomatic arch	N/A	N/A	5	N/A	LM[1]	NO	N/A	3:	N/A
WC-0507	L	maxilla/nasal zygomatic arch	N/A	N/A	1	N/A	2?	N/A	N/A	3:	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0509	R	maxilla/nasal, zygomatic arch	N/A	N/A	1	N/A	N/A	N/A	N/A	3:	N/A
WC-0510	0	maxilla	N/A	N/A	2	N/A	NO	NO	N/A	3:	N/A
WC-0511	0	maxilla, most sockets absorbed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3:	N/A
WC-0512	0	cranium fragments, orbit roof	N/A	N/A	N/A	N/A	N/A	N/A	NO	UNK	N/A
WC-0513	L	maxilla	N/A	N/A	3	N/A	N/A	N/A	N/A	UNK	N/A
WC-0514	0	teeth	N/A	N/A	N/A	2	2	NO	N/A	UNK	N/A
WC-0515	0	occipital w/foramen magnum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A: 3 F (I 17)	N/A
WC-0516	0	Occipital w/foramen magnum	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A: 3 F (I 17)	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0518	0	cranium base w/foramen magnum; temporal	N/A	4	N/A	N/A	N/A	N/A	N/A	A: 3 F (I 17)	N/A
WC-0519	0	teeth	N/A	N/A	N/A	4	NO	NO	N/A	3: II Fd 4	N/A
WC-0520	0	occipital	N/A	N/A	N/A	N/A	N/A	N/A	N/A	3: II Df	N/A
WC-0521	R	temporal w/aud. canal	N/A	4	N/A	N/A	N/A	N/A		A2 F 32	N/A
WC-0522	0	cranium cap w/ orbits	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: (87)	N/A
WC-0523	0	frontal w/orbits	N/A	N/A	N/A	N/A	N/A	N/A	mild left only	3: II Bd 9	N/A
WC-0524	0	teeth	N/A	N/A	N/A	1	NO	NO	N/A	3: Hi 30	N/A
WC-0525	0	cranium fragment, maxilla, teeth	2	2	7	3	NO	NO	N/A	3: II F d 3	N/A
WC-0526	R	orbit	N/A	N/A	N/A	N/A	N/A	N/A	NO	3: II Cd 2	N/A

Appendix D--Continued

Wisby Crania

Specimen Number	Side	Bone(s)	Mastoid Process (L)	Mastoid Process (R)	In Situ Teeth	Loose Teeth	Caries	Enamel Hypoplasia	Cribra Orbitalia	Site Position	Match To
WC-0527	L	temporal, portion of parietal and occipital	3	N/A	N/A	N/A	N/A	N/A	N/A	3: II Cd 2	N/A
WC-0528	0	maxilla	N/A	N/A	8	N/A	RM^2	NO	N/A	3: II Cd 2	N/A

WC=Wisby Crania; R=Right; L=Left, 0=No Side; N/A=Not Applicable

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