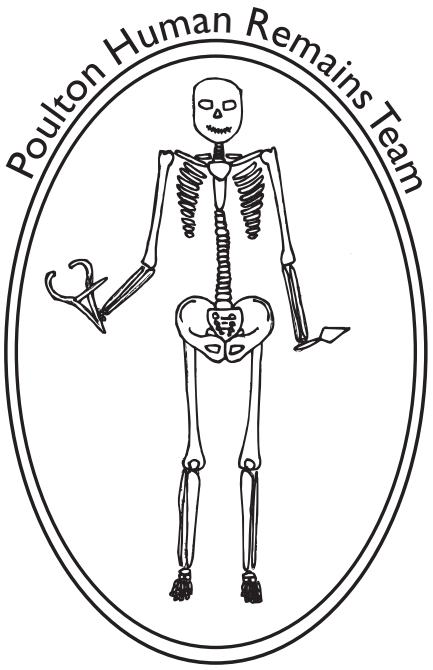
THE POULTON RESEARCH PROJECT



Analysis of Human Skeletal Material from the Poulton Research Project: 1995–2013

by

Carla L. Burrell and Raymond J. Carpenter

February 2014

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1. Introduction

Poulton is a multi-period site in western Cheshire which has been the subject of an archaeological research programme since 1995: see [Emery et al, 1996], [Emery, 2000] and [Poulton Research Project, 2009]. A major focus of investigation has been the remains of a medieval chapel and the surrounding graveyard, which has been found to contain hundreds of burials.

Analyses of the human skeletal material excavated up to the end of 2002, 2008 and 2012 have been previously published in [Carpenter and Crane, 2003], [Carpenter and Crane 2010] and [Burrell and Carpenter, 2013]. As a result of the ongoing research and training excavations at Poulton, more material has become available for analysis. This report covers all previous material and is intended to stand on its own as an analysis of all the material available to the end of 2013.

Between the start of the Poulton Research Project in 1995 and the end of 2013, 697 human skeletons[1] have been excavated, together with considerable quantities of disarticulated bone. A breakdown by year of excavation is shown in Table 1.

Year	Number of Skeletons Excavated
1995	2
1996	1
1997	16
1998	11
1999	2
2000	11
2001	19
2002	25
2003	6
2004	65
2005	49
2006	27
2007	45
2008	81
2009	56
2010	57
2011	79
2012	75
2013	70

Table 1 – Breakdown of skeletons excavated by year

It is important to note that this set of skeletons, although significant in number, may still not be a fully representative sample. The selection of which skeletons to excavate has been driven primarily by the requirements of the overall research programme. Consequently, not all parts of the Poulton Chapel site have been fully excavated.

Some of the earlier skeletal material has been subjected to detailed analysis by osteoarchaeologists outside the Project, and the results published as listed below:

- Skeleton 1 from 1995: [Quinney, 1996].
- All the material from the 1996 and 1997 excavation seasons, including 17 skeletons (see note above), as reported by [Owens, 1998].
- Skeleton 53 from 1998: [Roberts, 1998].

Relevant data from these reports has been incorporated into the analysis presented in this paper.

Some of the earlier skeletal material was unfortunately sent for re-burial at Mount St. Bernard's Monastery, Staffordshire, without being subject to any recording or analysis and is no longer accessible. Thus population size reported here will vary according to the area of interest. Of the 697 total skeletons, 660 have an accurate location recorded; 661 have sufficient material to be aged as an adult or sub-adult; 676 have had a post-excavation analysis. Nineteen have been previously examined (see above) leaving 657 skeletons available for analysis. Of these, 48 were excavated prior to 2003 and reported in [Carpenter and Crane, 2003]; 272 were excavated between 2003 and 2009 and reported in [Carpenter and Crane, 2010]; 267 were excavated between 2010 and 2012 and reported in [Burrell and Carpenter, 2013]; 70 are reported here for the first time.

No attempt has been made to estimate the overall Minimum Number of Individuals (MNI) represented by the currently excavated material. We suspect that the true number of individuals is significantly higher than the 697 identified skeletons, based on the large volumes of disarticulated bone.

Despite the large amount of material, we have performed a detailed analysis of each skeleton. In Section 3 of this report, we report on age at death, sex, and stature; in Section 4, on pathologies, non-metric traits and taphonomy.

Other research conducted on the Poulton skeletons has been carried out by the Project's academic collaborators in the School of Natural Sciences and Psychology at Liverpool John Moores University and in the School of Archaeology, Classics and Egyptology at the University of Liverpool.

1 A 'skeleton' is either (a) a recognisable, articulated inhumation, or (b) a skull together with other associated bones (if any). Each skeleton has been assigned a consecutive number, which is used in this report where it is necessary to identify individual skeletons, as well as a context number.

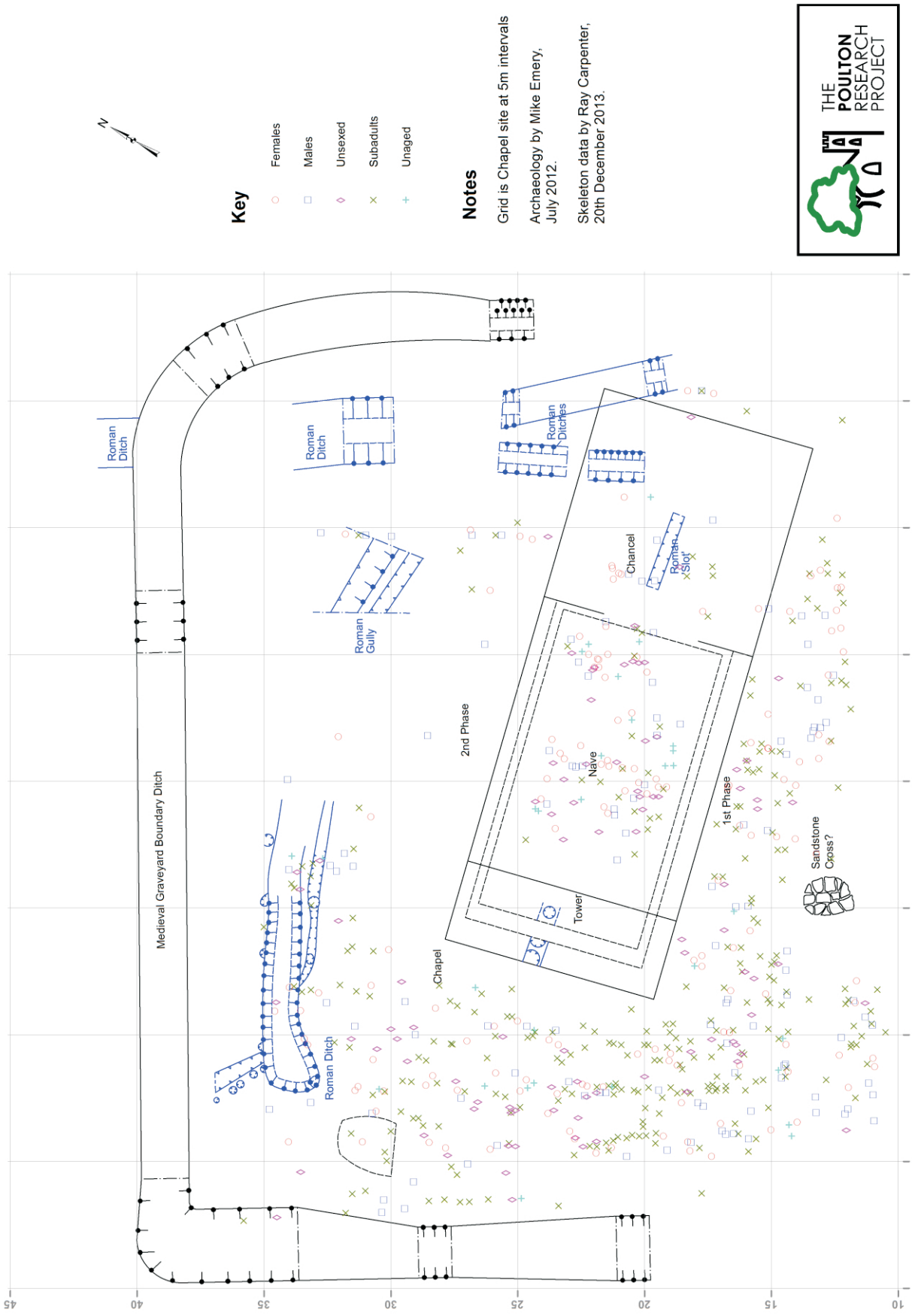


Figure 1 – Location of burials

2. Cemetery Analysis

2.1 Location of Burials

Figure 1 shows the locations of all the excavated burials whose position has been recorded relative to the two phases of the chapel itself and to the site grid. As already noted above, the concentrations of graves are not necessarily significant, and the apparently empty spaces on the plan generally indicate areas which have not yet been excavated.

The density of burials within the chapel walls and to the north of the graveyard is lower than that in the west and south. The lower density may indicate an exclusive area reserved for higher-status burials, which would imply that these burials post-dated the construction of the chapel.

There are some indications of burial organisation. Most of the subadult burials are clustered to the south-west of the graveyard. Within those burials, there are indications that there was a structure or pattern to them. Many appear to lie on north/south or east/west lines. There is also an indication of a line of burials in the north-east of the graveyard; specifically north of the chapel on the 125m northing. Further investigation will be undertaken to clarify this.

It is also noticeable that most inter-burial alignments are orthogonal to the medieval boundary ditch rather than the chapel itself. There is currently no explanation for this.

2.2 Orientation of Burials

The burials have generally been aligned with the main axis of the chapel, in an approximately east-west direction with the head to the west. This is, of course, what would be expected in a Christian burial ground, and is further evidence that the excavated burials date from the Christian era. The alignments varied by as much as 30 degrees from the axis of the second phase chapel, although it should be noted that the latter is not precisely aligned either with the first phase chapel or with a true east-west line.

Exceptionally, three burials (Skeletons 142, 286 and 571) were reversed, with their heads to the east. There appear to be no other unusual features of these burials. All are located outside the chapel walls. SK142 was a subadult aged 13 and 17 years, SK286 an adult of unknown sex aged 40 and 49 years and SK571 an adult female also aged 40 and 49 years. This anomaly has been reported at other medieval sites: [Daniell, 1998: 149] lists several possible explanations, including simple carelessness, difficulties in identifying the orientation of a body wrapped in a shroud, head-to-toe packing of multiple burials in a restricted space, and the deliberate ill-treatment of executed criminals. Unfortunately there is no evidence to support or rebut any of these hypotheses for the Poulton examples.

One other possibility for the reversed adult burial is that it is of a priest, who would thus be expected to rise up facing his flock on the day of Resurrection. However, [Daniell, 1998: 149] states that this is a post-medieval custom, and that medieval burials assumed to be those of priests[2] faced the same way as everyone else. When taken with the location of one of the burials SK286 on the very edge of the graveyard, the age of SK142 and the sex of SK571, it seems highly improbable that these were priests' burials.

2.3 Attitude of Burials

The great majority of the undisturbed bodies were in the extended supine position: one burial had flexed legs, and another was resting on its left side. The position of the upper limbs varied, from straight alongside the body, to hands resting on the pelvic area, and to arms crossed over the chest: these are typical attitudes for medieval burials [Daniell, 1998: 118]. An unpublished report [McLeod, 2012] investigated the spatial relevance of differing arm positions but nothing conclusive was found. There were two example of asymeteric arm positions. There are indications both suffered fatal trauma but further research and investiagtion is ongoing .

2.4 Preservation of Bone and Skeletal Completeness

Where burials are undisturbed, bone preservation is generally good, even for fragile children. Unfortunately, approximately half of the burials have been disturbed to at least some extent, for the following reasons:

- Many of the burials are very close to the modern ground surface (as little as 40cm) and have been damaged from ploughing and erosion.
- During the period that the graveyard was in use, new graves were dug that intersected previous burials, particularly to the south and west of the chapel.
- Further damage was caused to the site in the late 19th and early 20th centuries by amateur excavations that were more akin to treasure hunting than to archaeology.

As a consequence, many of the bones are fragmentary and poorly preserved.

The approximate completeness of the burials is summarised in Table 2.

	>75%	50-75%	25-50%	<25%
N	234	117	106	239
%	33.6%	16.8%	15.2%	34.3%

Table 2 - Analysis of burials by completeness

2 Because they contained a chalice and/or a paten.

2.5 Burial Practices and Finds

Four contemporary, multiple burials have been excavated. All of them are subadults, often apparently 'holding hands'. It is tempting to speculate that these represent the burials of siblings, but only DNA testing is likely to confirm or deny this. To date, work to extract and amplify human DNA from Poulton specimens has been unsuccessful.

Several of the burials contained assemblies of stones, predominately around the skull, known as pillow stones. These are found in burials dating from the tenth to twelfth and exceptionally, thirteenth centuries, although their purpose is not clear [Daniell, 1998: 160].

Evidence for coffins is minimal as the Poulton soil does not favour the preservation of wood, but some 38 graves contained heavily corroded iron objects that may be nails or other coffin fitments. Numerous pins have been found in and around some of the skeletons, indicating the use of shroud burials. These would probably have been more common in a poor rural community [Daniell, 1998: 44;156].

There has been very little evidence of personal items being buried with the bodies, which is typical of Christian burials. A belt buckle was found with one skeleton and a copper alloy 'petal mount', probably part of a clothing decoration, with another [Emery, 2000: 56]. These suggest high-status burials, since only the wealthiest were buried clothed [Daniell, 1988: 43-44]. A small metal knife blade was found with a subadult aged 4 to 5 years. Two skeletons have been excavated containing arrow heads in the chest cavity.

About 10% of the grave fills contained pottery fragments from the Roman, Saxon and medieval periods: it seems unlikely that these are all contemporaneous with the burials. Many of the grave fills contained significant quantities of charcoal and building materials including stone, plaster, mortar, glass, lead cames, slate, and roof and floor tiles. Some of the iron objects mentioned above might also be related to the structure of the building rather than to coffins. Most of this material is difficult to date, but it includes both Roman and medieval tiles. Some might be interpreted as deliberate inclusions, based on parallels from other medieval cemeteries: for example, Roman stones and tiles have been reported in London and York [Daniell, 1998: 105-106], and charcoal was commonly added to burials from the ninth to twelfth centuries [Daniell, 1998: 158-160]. However, this seems unlikely to explain all the additional material found in the Poulton grave fills.

The presence of this material in so many graves poses further questions about the relative dating of the burials and the various buildings on the site, including the structure(s) which must have existed in the Roman period but whose location and type are currently unclear. It appears that many of the burials took place after the demolition of at least one substantial building which scattered material across most of the graveyard. We hope that, in the future, radiocarbon dating of the skeletons can help resolve some of these issues.

2.6 Radiocarbon Dates

SK53 had been previously radiocarbon dated in 1998 as part of the BBC television programme, 'Meet the Ancestors'. The data was difficult to interpret with date ranges of 1531–1537, 1635–1670 and 1780–1799. Only the first date range (1531–1537) seemed to fit with the documented history of the chapel [Emery et al, 1996] although it was the least likely. Late in 2012, two skeletons were radiocarbon dated , SK53 (again) and SK535. This time, and for both skeletons, the determination was made using tooth roots. The results were an improvement on the earlier ones. SK53 still had multiple date ranges, 1470–1520 and 1560–1630. SK535 had a much clearer date range of 1280–1320 which fits neatly with the chronology of the associated finds.

3. Demographic and Metrical Analysis

3.1 Sex

The sex of adult skeletons was estimated using the attributes listed in Table 3. All data in this table are from [Buikstra and Ubelaker, 1994] except the sub-pubic angle [Mays, 2010: 41], and ventral arc [Sutherland and Suchey, 1991: 502.] As many of these attributes as possible were assessed for each skeleton, depending on the available bones and their state of preservation. For each attribute, a score of 1 (most female) to 5 (most male) was assigned using the diagrams and charts in the appropriate reference. An overall assessment was then made, taking into account the greater reliability of some attributes [Brothwell, 1981: 62] and not simply averaging the scores. This resulted in an overall assessment of female, probable female, ambiguous, probable male or male. Where there was insufficient material to make any sex estimation, this is recorded as indeterminate.

Normally, no attempt was made to estimate the sex of

Pelvis	Greater Sciatic Notch
	Sub-Pubic Angle
	Preauricular Sulcus
	Ventral Arc
	Subpubic Concavity
	Ischiopubic Ramus Ridge
Skull	Nuchal Crest
	Mastoid Process
	Supra-Orbital Margin
	Glabella

Table 3 – Techniques for assessing sex

subadults; any individual whose age at death was assessed at 17 or lower was regarded as a subadult. There were a few individuals whose sex appeared to be well-defined even though their age was less than 18, but these were disregarded in this part of the analysis.

The summarised results of the sex estimation for each of the skeletons are given in Table 4, incorporating the results of earlier analyses by external osteoarchaeologists (see Section 1)

Estimated Sex	N
Female	85
Probable Female	70
Ambiguous	41
Indeterminate	56
Probable Male	60
Male	67

Table 4 – Results of sex estimation for adult burials

Of those skeletons which could be sexed, there are 155 (55%) females (including probables) and 127 (45%) males (including probables). Using the recommended chi-squared test [English Heritage, 2004], this difference between the sexes is significant at the 2.8% level[3]. This is an unexpected result for a medieval rural parish cemetery which, if anything, might be expected to exhibit a bias towards male burials, e.g. [Daniell, 1998: 126] and [Mays, 2010: 86]. Further investigation is continuing, but possible explanations at this stage include:

- A surplus of male burials in parts of the graveyard which have not yet been excavated, leading to an overall balance. If true, however, this would pose further questions about sexual bias in the distribution of burials.
- The 'standard' sexually dimorphic traits used to determine sex (Table 3) might not be appropriate for the Poulton population.
- Observer bias.
- Genuine imbalances in the population, for example, due to migration of male adults away from Poulton.

3.2 Age at Death

Table 5 shows the range of techniques used to establish an age at death for each of the skeletons examined at Poulton, depending on the stage of development of the individual.

As many as possible of these attributes were assessed for each skeleton, depending on the available bones and their state of preservation, leading to an overall determination of minimum and maximum age at death.

Adults were then assigned to the following broad banded age categories [McKinley and Roberts, 1993]:

Young Adult: 18-25 years
Mature Adult: 26-45 years
Older Adult: >45 years

Subadults, who can be aged with greater precision, were assigned to the following categories:

<3 years
3-5 years
6-8 years
9-11 years
12-14 years
15-17 years

Finally, the results from previous analyses by external osteoarchaeologists (see Section 1) were incorporated to create a data set for all excavated skeletons.

Figure 2 shows the distribution of age at death for both adults and subadults irrespective of sex, while Figure 3 shows the data for adults only, subdivided by sex.

The rate of child mortality is remarkably high by the standards of the 21st century[4]: out of all the burials for which an age could be determined, 26% are for children under 9 years and 43% for subadults as a whole. Even if we include the burials which can be classified only as subadults or adults without a more precise age (in which there is a

Subadults	Development of the deciduous and permanent dentition [Buikstra & Ubelaker, 1994]. Fusion of the epiphyses [Mays, 2010: 58]. Diaphyseal length of the long bones [Scheuer and Black, 2000: 289;299;308;394;416;426].
Adults	Dental wear [Brothwell, 1981: 72]. Pubic symphysis degeneration [Brooks and Suchey, 1990] . Auricular surface degeneration [Lovejoy *et al*, 1985].

Table 5 – Techniques for assessing age at death

3 Although [Carpenter and Crane, 2003] reported a preponderance of males (57%), this was based on a much smaller sample of 47 sexed skeletons and was not statistically significant at the 5% level.

4 In England and Wales in 2008, 0.8% of deaths occurred at ages under 9 years, 1.0% at ages under 18 and only 4.4% at ages under 45 [Office for National Statistics, 2009: Tables 4a and 4b].

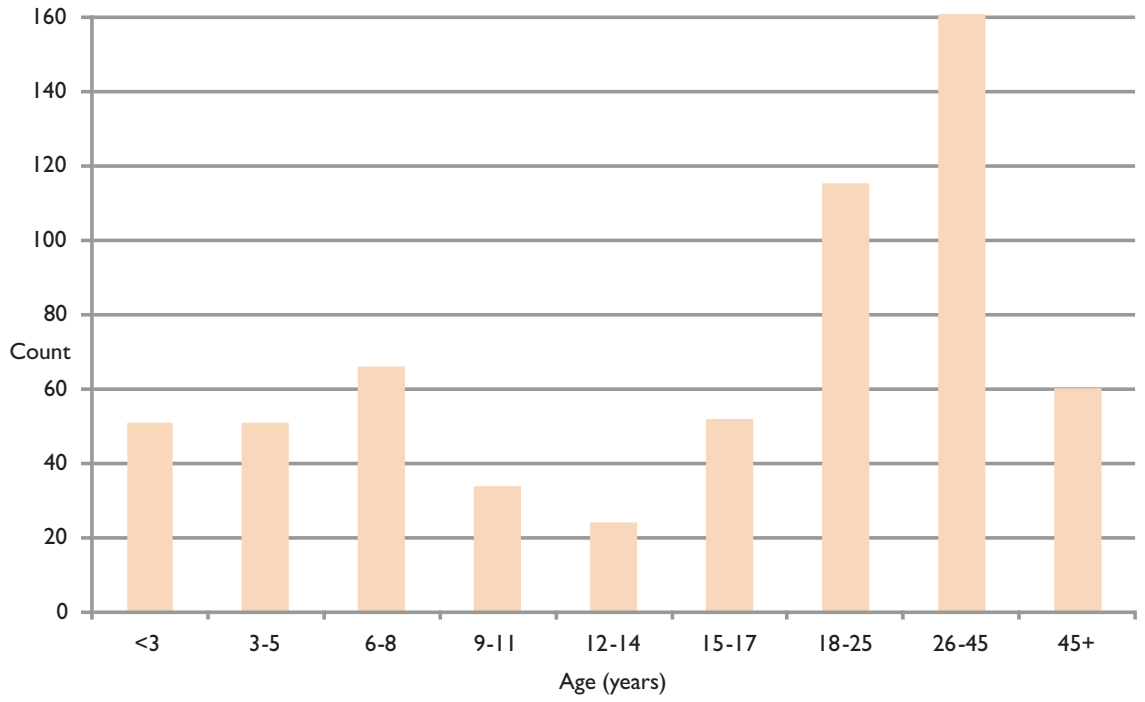


Figure 2 – Age at death for adults and subadults irrespective of sex

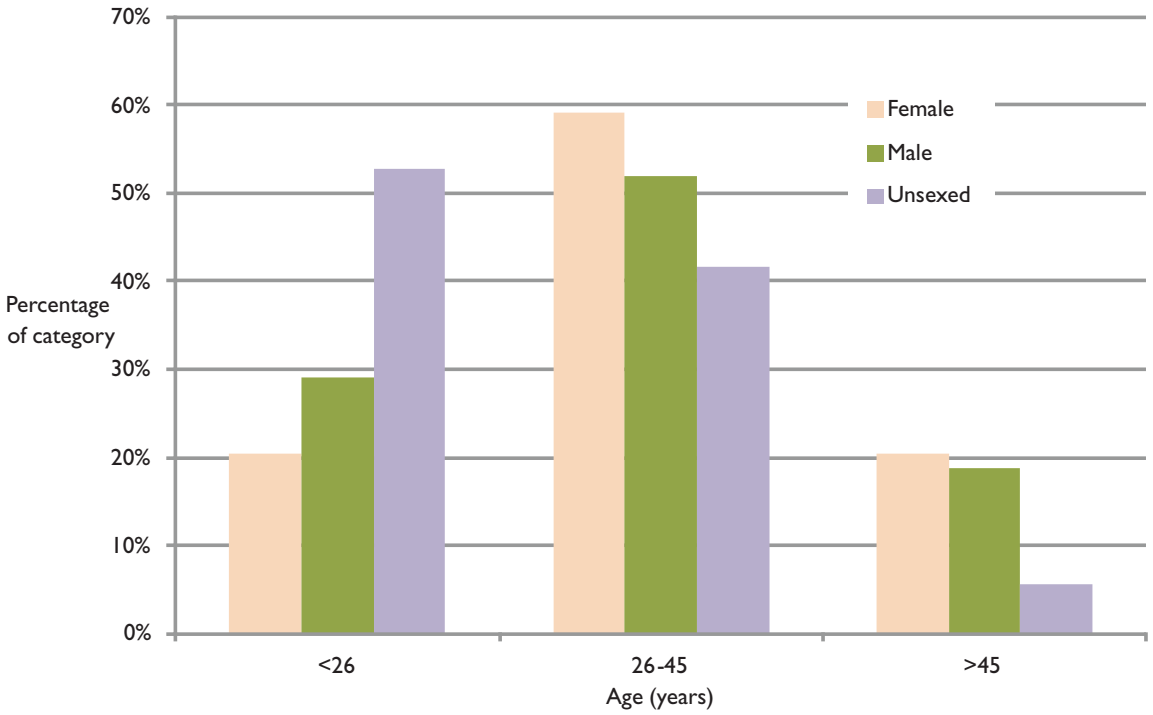


Figure 3 – Age at death for adults by sex

much greater number of adults), the proportion of subadults is 42%. The true proportion may be even higher, since the remains of younger subadults may be overlooked during excavation, and are more prone to taphonomic damage than adult remains [Mays, 2010: 23]. However, this may not be a significant factor at Poulton since the pro-

portion of subadults compares favourably with medieval cemetery excavations in general [Daniell, 1998: 124-125].

Only a comparatively small number of individuals (both male and female) appear to have survived past 45 years: they make up 9.3% of all the burials for which an age could be determined, and 16.3% of all adults with an assigned age. The proportion could be even higher if, as suggested by [Molleson and Cox, 1993], the techniques used underestimate adult age at death by up to 20-30 years. These results for Poulton do not compare well with the medieval population of Wharram Percy, where 40% of the adults lived to 50+ years [Mays, 2010: 84].

3.3 Stature

For adult skeletons, stature was estimated by measuring the lengths of the long bones (femur, tibia, fibula, humerus, radius and ulna) with an osteometric board to the nearest millimetre, and applying the 'American White' regression formulae of Trotter and Gleser [Brickley and McKinley, 2004: 33]. Bones with post-mortem fractures can be re-assembled and measured, provided the breaks are clean, subject to a maximum of three fractures [Collis, 2004]

The set of regression formulae used depends on the sex of the individual. For each skeleton, the stature was calculated using as many as possible of the regression formulae, depending on the available bones. The various estimates were compared to check that there were no gross errors (e.g. a mistake in taking the measurement). The final value of the estimated stature was taken from the equation with the lowest standard error.

Although stature calculations had already been performed on some of the earliest material (see Section 1), statures were re-calculated for all these skeletons using the same principles as outlined above. The stature calculations reported in [Carpenter and Crane, 2003] had also been performed on a slightly different basis, and these too were re-calculated. This ensured that all the stature estimates were directly comparable.

Stature could be calculated for 199 of the adult skeletons where complete long bones were available and the sex could be determined. No attempt was made to determine the stature of subadults.

Figure 4 shows the height distribution subdivided by sex and grouped into 5cm bands. The stature data is summarised in Table 7.

Sex	Mean	Range	S.D.	N
Male	1.70m / 5' 7"	1.53 – 1.84m	0.06m	91
Female	1.60m / 5' 3"	1.46 – 1.74m	0.06m	108

Table 7 – Summary of adult stature

Both male and female average heights are typical for the medieval period [Boylston and Weston, 2001; Roberts and Manchester, 1995: 27; Daniell, 1998: 134].

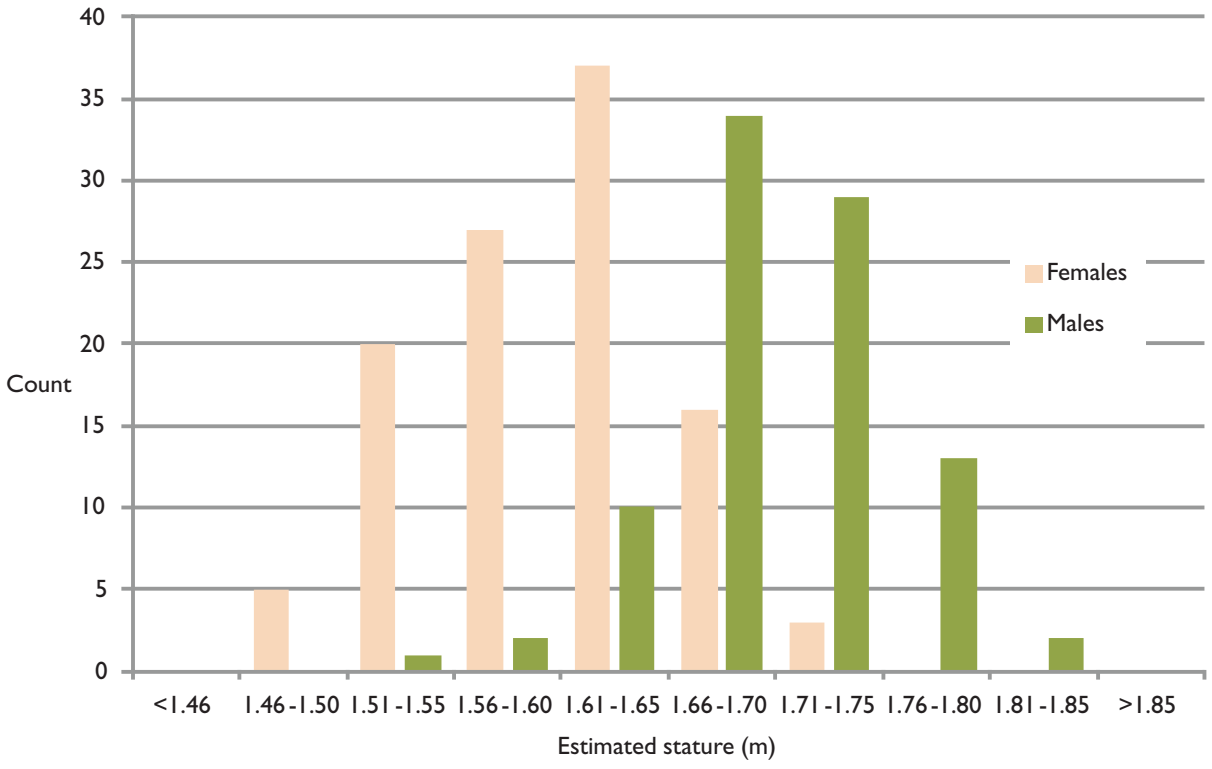


Figure 4 – Adult height

3.4 'Missing' Demographics

Two demographic 'classes' have not been observed: female deaths during pregnancy and immediate post-injury death.

Between 2006 and 2008, 261 women in the UK died directly or indirectly related to pregnancy [CMACE 2011]; a mortality rate of 11.39 per 100,000 maternities. On that data, and assuming every female excavated had been pregnant, we would have expected 0.016 deaths during maternity. The mortality rate would have to be 100 times higher or we need to excavate 14,100 female burials to expect to find a such a burial; the absence is not statistically significant.

We have skeletons with healed and healing fractures. Some, like fractured clavicles, are unlikely to have been life-threatening; others, such a fracture of the tibia and fibula, could have been. Many of the healed fractures appear to have received some form of medical treatment; the alignment of the healed bones is too good to be accidental. Who gave this treatment is currently unclear and does not appear to be status related. However, to date we have yet to excavate a skeleton with an unhealed fracture. Did such injuries not occur or were the deaths from them buried elsewhere? Further investigation is required.

3.5 Further Demographic and Metrical Analysis

Further detailed demographic analysis has not been undertaken by the Poulton Project itself. At the time of writing, a Doctor of Philosophy project covering that area is in progress at Liverpool John Moores University.

Further metrical analysis of itself is not planned at stage. However, work to improve the outcome of the current metrical techniques is being considered. For example, work to reduce the number of 'ambiguous' or 'indeterminate' skeletons is being discussed. Whether this will be improving the discrimination of existing techniques or deploying new ones is to be determined.

4. Taphonomy, Pathology and Non-Metric Traits

Any anomaly in the skeletal bone is worthy of investigation. Such anomalies are usually categorised as:

- Taphonomy, that is, post-mortem damage.
- Pathology, that is, malfunctioning living processes.
- Non-metric Traits, that is, variation in the morphology of the bones.

4.1 Taphonomy

Most of the skeletons excavated at Poulton exhibit some form of, often mild, taphonomy. Frequently this is post-mortem bone damage or fracture from the burial process, such skulls crushed from the weight of soil above. Intact crania are a rarity at Poulton. Other forms of 'natural' taphonomy such as root damage or 'artificial' damage by agriculture (e.g. plough damage) are not uncommon. However, it has been noticed that the state of bone preservation varies across the graveyard. This does not seem to relate to how long the burial has been in the ground but rather its location in the graveyard. There is a proposal that the state of bone preservation depends on the soil chemistry. This chemistry may be natural or the result of human activity. An unpublished, pilot study has been undertaken by [Aggrey, 2013] that suggests further investigation would be worthwhile.

4.2 Pathologies

Although a thorough analysis has not been undertaken of the diversity or frequency of pathologies at Poulton, a wide variety of pathologies have been identified but have yet to be quantified within our database. For the moment, here is a list of positively identified pathologies:

- Agenesis of the atlas,
- Bifid Rib,
- Calcified costal and thyroid cartilage,
- Cribia Orbitalia,
- Compression fractures of the thoracic vertebrae,
- Dental abscesses, caries and calculus,
- Dental enamel hypoplasia,
- Diffuse ideopathic skeletal hyperostosis (DISH),
- Femoral anteversion,
- Fused cervical vertebrae,
- Harris Lines,
- Healed fractures (Various locations),
- Lumbarisation,
- Osteoarthritis (Various locations),
- Osetomae (Various locations),
- Osteomylitis,
- Periodontal disease,
- Periostitis,
- Pseudoarthrosis,
- Rickets,
- Sacralisation,
- Schmorl's nodes,
- Scoliosis,
- Spina bifita occulta,
- Spondylolysis of 5th lumbar vertebra,
- Tubercolosis.

4.3 Non-Metric Traits

Nonmetric traits are anomalies found within the range of normal anatomy in the human skeleton. They can include additional sutures, facets, bony processes or foramina that occur in a minority of skeletons and may be genetic or occupational. For example, a small hole in the olecranon fossa of the distal humerus, known as a septal aperture [Finnegan, 1978] is asymptomatic and generally believed

to be of genetic origin. On the other hand, squatting facets of the tibia are regarded as occupational. Both types of nonmetric traits are worthy of detailed study, but those assumed to be of genetic origin may provide a low-cost and non-destructive way of determining familiar relationships in an archaeological context.

The most cited work in this field is by [Berry and Berry 1967] who identified 30 nonmetric traits of the skull. Their study produced good results as far as distinguishing between the major ancestral groups and suggested that the use of nonmetric traits in the reflection of genetic differences could be used. This statement sparked further research by [Derish *et al.*, 1988] who studied nonmetric traits for geographic origin and evolutionary trends across and within various population groups. The assumption is that all traits will discriminate among populations making it easier to distinguish between different population groups. Further work by [Finnegan 1978], describes in detail the traits frequently seen in the postcranial skeleton but, the research is not as extensive as those produced on the skull. Saunders and Rainey (2008) show that the degree of relatedness suggests that population groups who share attributes are more closely related than groups expressing many differences. Therefore, the application of nonmetric skeletal analysis can be used to determine relatedness within a single population in a given archaeological context [Lane and Sublett, 1972] as well as between population groups.

The acceptance of analysing nonmetric traits within the human skeleton has enabled anthropologists to recreate biological relationships between population groups [Tyrell, 2000]. This process is low cost; the scoring is straight forward and is effective for use on fragmentary remains.

This work is currently in process by one of the authors for a Doctor of Philosophy (PhD). The research will examine the presence and frequency of nonmetric traits to identify possible familiar relationships. Some traits being recorded and analysed include:

- Accessory facets (various locations),
- Deciduous retention,
- Extra cusps on dentition (various),
- Humeral foramen,
- Occipital bun,
- Osteoma (various),
- Peg teeth,
- Retention of the metopic suture,
- Sternal foramen,
- Squatting facets,
- Supra-orbital notches,
- Supra-orbital foramen,
- Supernumerary dentition (various),
- Supernumerary vertebrae (various),
- Third trochanter,
- Variations of articulating facets (various locations),
- Wormian Bones (various locations).

Preliminary results are proving to be quite interesting. Osteomata appears to be a uniquely female trait whereas supernumerary vertebrae is largely a male trait. Other traits such as squatting facets are present on over a third of the population. A detailed report of the preliminary findings will be released in the near future.

5. Conclusions

A total of 697 human skeletons have been excavated at the Poulton chapel site between 1995 and the end of 2013, together with large quantities of disarticulated bone. They are all believed to date from the medieval period, although precise dates have only been determined for two examples.

Many of the burials have been considerably disturbed, often by other burials, making analysis and interpretation more complex. All of the undisturbed burials are aligned approximately east-west, generally in an extended supine position: all but three have their head to the west.

There is some evidence for shroud burials, and many of the grave fills contained significant quantities of building material from Roman and medieval periods which is not easy to explain. There is very little evidence of personal items being buried with the bodies.

Basic osteological data was already available ([Owens, 1998], [Quinney, 1996] [Roberts, 1998]), [Carpenter & Crane 2010] and [Burrell and Carpenter, 2013] or was generated by the present authors, for 697 skeletons. Sex, age at death and stature were assessed for all those skeletons for which the necessary material was available. A summary of the skeleton population is shown in Figure 5.

All results should be treated with some caution because of potential sampling errors. However, key points include:

- Amongst the adults there is a predominance of females which is statistically significant but as yet unexplained.
- 43% of deaths were subadults.
- 9% of those whose age could be determined lived more than 45 years.
- Average adult stature was 1.70m for males and 1.60m for females.

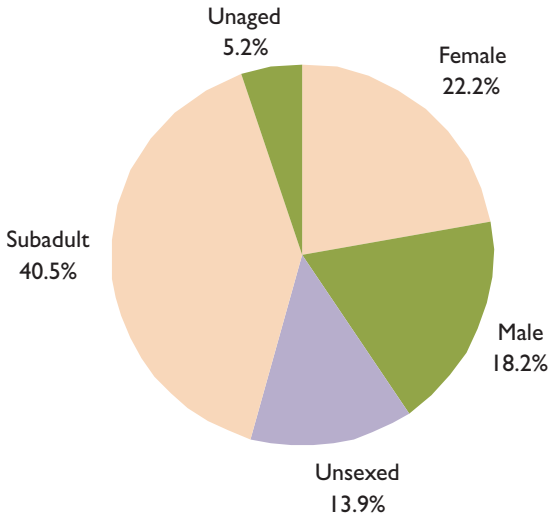


Figure 5 - Summary of excavated skeletons

6. Further Research

Work is currently in progress by post-graduate students at Liverpool John Moores University:

- Improving age at death estimations for subadults through dental seriation, followed by a comparison to other age at death methods.
- Improving sex estimation ageing through seriation, a comparison of metrics and other sex methods.

There are opportunities for further research in several areas:

- Further carefully selected samples of skeletons should be ^{14}C dated in order to relate the burial sequences to the historical record.
- The underlying causes of the imbalance between male and female burials (Section 3.1) should be investigated.
- Continued efforts should be made to extract and amplify DNA from selected skeletons, in order to address questions such as the familial relationship between individuals in multiple burials.
- Analysis should be carried out to determine alternative sexual metrics for the Poulton population (e.g. using femoral head diameter, sacral index or talus sizing), and hence to attempt the sex determination of otherwise unsexed skeletons.
- A full pathology study should be undertaken.
- An overall aim to produce a tailored set of standards and metrics for the Poulton population.

7. Publications

There are other publications that contain analayses of the Poulton assemblage. Unfortunately, most of these are not in the public domain. However, an increasing number are. The list below contains those to the date of writing.

Burrell, C. L., Turner, C. A. L., Carpenter, R. J. and Ohman, J. C. (2013)	*Biological age estimation of subadult human skeletal remains: Comparison of dental development with humeri, femora and the pars basilaris*. Presented at the 15th BABAO Conference, York.
Burrell, C. L., Turner, C. A. L., Carpenter, R. J. and Ohman, J. C. (2013)	*Biological age estimation of infant and juvenile human skeletal remains: A comparison of dental development with diaphyseal lengths of the humeri and femora*. Presented at the Liverpool John Moores University, Faculty of Science Research Seminar and Poster Presentation Day.
Turner, C. A. L., Burrell, C. L., Carpenter, R. J. and Ohman, J. C. (2013).	*Biological age estimation of infant and juvenile human skeletal remains: A comparison of dental development with the Pars basilaris of the occipital bone*. Presented at the Liverpool John Moores University, Faculty of Science Research Seminar and Poster Presentation Day.
Turner, C. A. L., (2014)	*Biological age estimation of infant and juvenile human skeletal remains: A comparison of dental development with the pars basilaris of the occipital bone*. Society of Medieval Archaeology Postgraduate Colloquium. University of Aberdeen. Oral Presentation.
Burrell, C.L., Canavan, S. M., Carpenter, R.J. and Ohman, J.C. (2014)	*Fracture analysis on a medieval population from Poulton, Cheshire*. To be presented at the International Medieval Congress, Leeds, July 2014.

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Appendices

Appendix 1. Results of Basic Skeletal Analysis

The results for all excavated skeletons are summarised in Table 8.

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
1	108	Adult	F	30	40	Years	1.50	Quinney, 1996
10	149	Adult	M	25	25	Years	1.71	Owens, 1998
13	167	Adult	?M	38	38	Years	1.76	Owens, 1998
14	168	Subadult	Indet.	2.5	8.5	Years	Indet.	Owens, 1998
15	169	Subadult	Indet.	Indet.	17	Years	Indet.	Owens, 1998
16	170	Subadult	Indet.	7.5	12	Years	Indet.	Owens, 1998
17	171	Adult	?M	47	47	Years	1.65	Owens, 1998
19	166	Adult	F	54	54	Years	1.52	Owens, 1998
20	172	Subadult	Indet.	7.5	17	Years	Indet.	Owens, 1998
23	194	Adult	M	35	35	Years	1.64	Owens, 1998
24	400	Adult	M	48	48	Years	1.70	Owens, 1998
25	403	Subadult	Indet.	9.5	15.5	Years	Indet.	Owens, 1998
29	412	Adult	M	40	40	Years	1.66	Owens, 1998
30	415	Adult	M	25	25	Years	Indet.	Owens, 1998
32	417	Adult	?M	26	26	Years	1.73	Owens, 1998
37	440	Subadult	Indet.	8	8	Years	Indet.	Owens, 1998
38	441	Adult	?M	55	Indet.	Years	Indet.	Owens, 1998
39	442	Subadult	Indet.	3.5	4	Years	Indet.	Owens, 1998
41	455	Adult	F	30	34	Years	1.52	Carpenter & Crane, 2003
45	470	Adult	F	25	Indet.	Years	1.63	Carpenter & Crane, 2003
46	479	Adult	M	45	Indet.	Years	1.72	Carpenter & Crane, 2003
47	485	Subadult	Ambig.	12	16	Years	Indet.	Carpenter & Crane, 2003

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
48	499	Adult	M	30	40	Years	1.66	Carpenter & Crane, 2003
49	504	Subadult	Indet.	6	16	Months	Indet.	Carpenter & Crane, 2003
50	513	Adult	M	45	Indet.	Years	1.75	Carpenter & Crane, 2003
53	529	Adult	M	40	60	Years	1.80	Roberts, 1998
54	534	Adult	Ambig.	25	35	Years	Indet.	Carpenter & Crane, 2003
66	647	Subadult	Indet.	8	16	Months	Indet.	Carpenter & Crane, 2003
67	648	Adult	?F	30	40	Years	1.61	Carpenter & Crane, 2003
81	706	Adult	?M	20	Indet.	Years	1.69	Carpenter & Crane, 2003
82	707	Adult	?M	30	40	Years	1.78	Carpenter & Crane, 2003
83	708	Adult	Indet.	20	30	Years	Indet.	Carpenter & Crane, 2003
84	709	Adult	?M	35	45	Years	1.69	Carpenter & Crane, 2003
85	718	Adult	?M	18	Indet.	Years	1.70	Carpenter & Crane, 2003
86	727	Adult	F	21	Indet.	Years	1.64	Carpenter & Crane, 2003
87	732	Subadult	Indet.	8	16	Months	Indet.	Carpenter & Crane, 2003
88	745	Subadult	Indet.	3	9	Months	Indet.	Carpenter & Crane, 2003
89	747	Subadult	Indet.	2	6	Years	Indet.	Carpenter & Crane, 2003
90	760	Adult	F	25	35	Years	1.64	Carpenter & Crane, 2003
91	763	Adult	?M	25	25	Years	1.79	Carpenter & Crane, 2003
92	764	Indet.	Indet.	Indet.	Indet.	Years	Indet.	Carpenter & Crane, 2003
93	765	Adult	F	21	Indet.	Years	1.58	Carpenter & Crane, 2003
94	774	Adult	?M	19	Indet.	Years	Indet.	Carpenter & Crane, 2003
95	805	Adult	?F	30	40	Years	1.53	Carpenter & Crane, 2003
96	808	Adult	F	35	45	Years	1.62	Carpenter & Crane, 2003
97	811	Adult	?F	35	45	Years	1.58	Carpenter & Crane, 2003
98	814	Subadult	Indet.	Indet.	16	Years	Indet.	Carpenter & Crane, 2003
100	818	Adult	F	18	Indet.	Years	Indet.	Carpenter & Crane, 2003
102	822	Adult	?F	15	21	Years	1.62	Carpenter & Crane, 2003

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
103	859	Adult	?F	30	40	Years	1.56	Carpenter & Crane, 2003
104	861	Subadult	Indet.	4.5	8.5	Years	Indet.	Burrell & Carpenter, 2013
105	862	Subadult	Indet.	6	12	Months	Indet.	Carpenter & Crane, 2003
106	847	Subadult	Indet.	Indet.	16	Years	Indet.	Carpenter & Crane, 2003
107	860	Subadult	Indet.	7	10	Years	Indet.	Carpenter & Crane, 2003
108	871	Adult	F	21	Indet.	Years	1.62	Carpenter & Crane, 2003
109	872	Adult	?M	35	45	Years	Indet.	Carpenter & Crane, 2003
110	873	Adult	?F	35	45	Years	1.62	Carpenter & Crane, 2003
112	878	Adult	F	30	40	Years	1.56	Carpenter & Crane, 2003
113	928	Adult	F	50	59	Years	1.59	Burrell & Carpenter, 2013
114	901	Adult	?F	35	45	Years	Indet.	Carpenter & Crane, 2003
115	902	Subadult	?F	16	18	Years	Indet.	Carpenter & Crane, 2003
116	920	Adult	F	25	35	Years	1.52	Carpenter & Crane, 2003
119	929	Adult	M	25	35	Years	1.68	Burrell & Carpenter, 2013
120	930	Adult	?M	18	Indet.	Years	1.69	Carpenter & Crane, 2003
121	933	Adult	?M	18	Indet.	Years	Indet.	Carpenter & Crane, 2003
122	934	Adult	?M	18	Indet.	Years	Indet.	Carpenter & Crane, 2003
123	935	Adult	M	18	Indet.	Years	Indet.	Carpenter & Crane, 2003
124	936	Subadult	Indet.	1.5	5	Years	Indet.	Carpenter & Crane, 2003
125	939	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2003
126	942	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2003
127	948	Subadult	Indet.	Indet.	16	Years	Indet.	Carpenter & Crane, 2010
128	945	Subadult	Indet.	Indet.	16	Years	Indet.	Carpenter & Crane, 2010
129	958	Subadult	Indet.	9	10	Years	Indet.	Carpenter & Crane, 2010
130	961	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
131	964	Adult	Ambig.	40	44	Years	Indet.	Carpenter & Crane, 2010
132	967	Adult	F	35	45	Years	1.64	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
133	970	Adult	F	30	40	Years	1.58	Carpenter & Crane, 2010
134	977	Adult	Indet.	18	25	Years	Indet.	Carpenter & Crane, 2010
138	1108	Subadult	Ambig.	15	17	Years	Indet.	Carpenter & Crane, 2010
139	1105	Subadult	Indet.	3	6	Years	Indet.	Carpenter & Crane, 2010
140	1106	Adult	M	25	35	Years	1.69	Carpenter & Crane, 2010
142	1108	Subadult	Indet.	13	17	Years	Indet.	Carpenter & Crane, 2010
143	1109	Subadult	Indet.	12	18	Years	Indet.	Carpenter & Crane, 2010
144	1110	Subadult	Indet.	5	8	Years	Indet.	Carpenter & Crane, 2010
145	1111	Subadult	Indet.	5	6	Years	Indet.	Carpenter & Crane, 2010
146	1112	Subadult	Indet.	3	4	Years	Indet.	Carpenter & Crane, 2010
147	1113	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
148	1114	Subadult	Indet.	7	11	Years	Indet.	Carpenter & Crane, 2010
149	1115	Subadult	Indet.	16	32	Months	Indet.	Carpenter & Crane, 2010
150	1116	Subadult	Indet.	6	8	Years	Indet.	Carpenter & Crane, 2010
151	1117	Subadult	Indet.	6	8	Years	Indet.	Carpenter & Crane, 2010
152	1118	Subadult	Indet.	14	17	Years	Indet.	Carpenter & Crane, 2010
153	1187	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
154	1188	Subadult	Indet.	12	16	Years	Indet.	Carpenter & Crane, 2010
155	1119	Adult	?F	35	45	Years	1.72	Carpenter & Crane, 2010
156	1120	Adult	M	30	40	Years	1.70	Carpenter & Crane, 2010
157	1121	Subadult	Indet.	4	5	Years	Indet.	Carpenter & Crane, 2010
158	1122	Adult	Indet.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
159	1123	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
160	1124	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010
161	1125	Adult	?F	25	35	Years	1.64	Carpenter & Crane, 2010
162	1126	Subadult	Indet.	6	8	Years	Indet.	Carpenter & Crane, 2010
163	1127	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
164	1128	Subadult	Indet.	8	8	Years	Indet.	Carpenter & Crane, 2010
165	1129	Adult	?F	21	23	Years	1.54	Carpenter & Crane, 2010
166	1130	Adult	F	45	Indet.	Years	1.63	Carpenter & Crane, 2010
167	1131	Subadult	Indet.	0	1	Years	Indet.	Carpenter & Crane, 2010
168	1132	Subadult	Indet.	2	4	Years	Indet.	Carpenter & Crane, 2010
169	1133	Adult	?F	35	45	Years	1.68	Carpenter & Crane, 2010
170	1189	Adult	?M	25	35	Years	Indet.	Carpenter & Crane, 2010
171	1190	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
172	1134	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
173	1135	Adult	F	25	35	Years	1.62	Carpenter & Crane, 2010
174	1191	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
175	1136	Subadult	Indet.	7	11	Years	Indet.	Carpenter & Crane, 2010
176	1137	Adult	Ambig.	35	45	Years	Indet.	Carpenter & Crane, 2010
177	1138	Adult	F	18	Indet.	Years	1.46	Carpenter & Crane, 2010
178	1139	Subadult	Indet.	15	18	Years	Indet.	Carpenter & Crane, 2010
179	1140	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
180	1141	Adult	?F	25	45	Years	1.57	Carpenter & Crane, 2010
181	1142	Subadult	Indet.	7	11	Years	Indet.	Carpenter & Crane, 2010
182	1143	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010
183	1144	Subadult	Indet.	4	6	Years	Indet.	Carpenter & Crane, 2010
184	1145	Subadult	Indet.	7	9	Years	Indet.	Carpenter & Crane, 2010
185	1146	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
186	1177	Adult	?F	35	45	Years	1.57	Carpenter & Crane, 2010
187	1192	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
188	1193	Adult	?F	25	25	Years	Indet.	Carpenter & Crane, 2010
189	1194	Adult	?F	35	45	Years	Indet.	Carpenter & Crane, 2010
192	1147	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
193	1171	Adult	?F	18	21	Years	1.61	Carpenter & Crane, 2010
194	1148	Subadult	Ambig.	14	18	Years	Indet.	Carpenter & Crane, 2010
195	1174	Subadult	Indet.	7	11	Years	Indet.	Carpenter & Crane, 2010
196	1102	Adult	F	45	Indet.	Years	1.62	Carpenter & Crane, 2010
197	1173	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
198	1156	Subadult	Indet.	8	12	Years	Indet.	Carpenter & Crane, 2010
200	1163	Adult	?F	25	35	Years	1.71	Carpenter & Crane, 2010
201	1197	Subadult	Indet.	Indet.	16	Years	Indet.	Carpenter & Crane, 2010
202	1331	Adult	F	18	Indet.	Years	1.68	Carpenter & Crane, 2010
203	1179	Adult	?F	25	35	Years	1.68	Carpenter & Crane, 2010
204	1180	Adult	?M	25	35	Years	1.75	Carpenter & Crane, 2010
205	1198	Adult	Ambig.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
206	1199	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
207	1205	Adult	M	25	Indet.	Years	1.72	Carpenter & Crane, 2010
209	1206	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
210	1209	Subadult	Indet.	6.5	8	Years	Indet.	Carpenter & Crane, 2010
212	1212	Adult	?M	30	40	Years	1.62	Carpenter & Crane, 2010
213	1216	Subadult	Indet.	5	9	Years	Indet.	Carpenter & Crane, 2010
214	1217	Subadult	Indet.	1	2	Years	Indet.	Carpenter & Crane, 2010
215	1221	Adult	M	45	Indet.	Years	1.77	Carpenter & Crane, 2010
216	1226	Subadult	Indet.	8	10	Years	Indet.	Carpenter & Crane, 2010
217	1228	Subadult	Indet.	15	18	Years	Indet.	Carpenter & Crane, 2010
218	1230	Subadult	Indet.	8	12	Years	Indet.	Carpenter & Crane, 2010
219	1234	Adult	?M	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
220	1235	Subadult	Indet.	15	19	Years	Indet.	Carpenter & Crane, 2010
221	1243	Subadult	Indet.	1	2	Years	Indet.	Carpenter & Crane, 2010
222	1248	Adult	F	45	Indet.	Years	1.68	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
223	1251	Adult	Indet.	21	Indet.	Years	Indet.	Carpenter & Crane, 2010
224	1253	Subadult	Indet.	9	15	Years	Indet.	Carpenter & Crane, 2010
225	1255	Adult	?M	18	Indet.	Years	1.70	Carpenter & Crane, 2010
226	1261	Adult	F	45	Indet.	Years	1.53	Carpenter & Crane, 2010
227	1263	Adult	Ambig.	30	40	Years	Indet.	Carpenter & Crane, 2010
228	1265	Adult	Ambig.	35	45	Years	Indet.	Carpenter & Crane, 2010
229	1271	Subadult	Indet.	7	8	Years	Indet.	Carpenter & Crane, 2010
230	1273	Adult	?F	25	35	Years	1.69	Carpenter & Crane, 2010
231	1275	Subadult	Indet.	5	9	Years	Indet.	Carpenter & Crane, 2010
232	1277	Indet.	Indet.	Indet.	Indet.	Years	Indet.	Carpenter & Crane, 2010
233	1281	Subadult	Indet.	6	9	Months	Indet.	Carpenter & Crane, 2010
234	1283	Subadult	Indet.	15	16	Years	Indet.	Carpenter & Crane, 2010
235	1289	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010
236	1290	Subadult	Indet.	8	16	Months	Indet.	Carpenter & Crane, 2010
237	1293	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
238	1295	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
239	1299	Adult	Indet.	25	35	Years	Indet.	Carpenter & Crane, 2010
240	1301	Subadult	Indet.	4.5	8.5	Years	Indet.	Carpenter & Crane, 2010
241	1302	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010
242	1303	Indet.	Indet.	15	Indet.	Years	Indet.	Carpenter & Crane, 2010
243	1308	Adult	Indet.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
244	1309	Adult	F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
245	1313	Subadult	Indet.	8.5	13.5	Years	Indet.	Carpenter & Crane, 2010
246	1319	Adult	Indet.	35	45	Years	Indet.	Carpenter & Crane, 2010
247	1321	Subadult	Indet.	7	11	Years	Indet.	Carpenter & Crane, 2010
248	1325	Subadult	Indet.	12	15	Years	Indet.	Carpenter & Crane, 2010
249	1328	Adult	?F	45	Indet.	Years	1.53	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
250	1330	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
251	1335	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
252	1340	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
253	1345	Subadult	Indet.	7	11	Years	Indet.	Carpenter & Crane, 2010
254	1346	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010
255	1354	Subadult	Indet.	6	10	Years	Indet.	Carpenter & Crane, 2010
256	1358	Adult	?F	18	Indet.	Years	1.59	Carpenter & Crane, 2010
257	1360	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010
258	1362	Subadult	Indet.	2	4	Years	Indet.	Carpenter & Crane, 2010
259	1364	Adult	?F	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
260	1367	Adult	M	25	25	Years	1.67	Carpenter & Crane, 2010
261	1370	Subadult	Indet.	7	8	Years	Indet.	Carpenter & Crane, 2010
262	1375	Adult	?F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
263	1377	Adult	Ambig.	35	45	Years	Indet.	Carpenter & Crane, 2010
264	1379	Subadult	Indet.	3	3	Years	Indet.	Carpenter & Crane, 2010
265	1389	Adult	Ambig.	21	25	Years	Indet.	Carpenter & Crane, 2010
266	1391	Adult	?F	25	35	Years	Indet.	Carpenter & Crane, 2010
267	1393	Subadult	?F	12	15	Years	Indet.	Carpenter & Crane, 2010
268	1394	Adult	?F	45	Indet.	Years	1.53	Carpenter & Crane, 2010
269	1397	Adult	?F	25	35	Years	1.57	Carpenter & Crane, 2010
270	1411	Adult	M	18	Indet.	Years	1.72	Carpenter & Crane, 2010
271	1422	Adult	M	35	45	Years	1.70	Carpenter & Crane, 2010
274	1429	Adult	?F	25	45	Years	1.57	Carpenter & Crane, 2010
275	1431	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
277	1439	Adult	?F	25	35	Years	1.74	Carpenter & Crane, 2010
278	1441	Subadult	F	15	19	Years	1.51	Carpenter & Crane, 2010
279	1443	Subadult	Indet.	8	16	Months	Indet.	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
280	1450	Adult	?M	25	35	Years	1.66	Carpenter & Crane, 2010
281	1456	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
282	1460	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010
283	1468	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010
284	1471	Indet.	Indet.	14	Indet.	Years	Indet.	Carpenter & Crane, 2010
285	1473	Indet.	Indet.	13	Indet.	Years	Indet.	Carpenter & Crane, 2010
286	1485	Adult	Ambig.	40	49	Years	Indet.	Carpenter & Crane, 2010
287	1487	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
288	1490	Adult	?M	35	45	Years	1.68	Carpenter & Crane, 2010
289	1492	Subadult	Indet.	3	9	Months	Indet.	Carpenter & Crane, 2010
290	1494	Subadult	Indet.	0	0	Years	Indet.	Carpenter & Crane, 2010
291	1499	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
292	1503	Adult	M	45	Indet.	Years	1.78	Carpenter & Crane, 2010
293	1506	Adult	?F	30	40	Years	1.63	Carpenter & Crane, 2010
294	1508	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010
295	1511	Adult	Ambig.	18	25	Years	Indet.	Carpenter & Crane, 2010
296	1515	Adult	F	35	45	Years	1.57	Carpenter & Crane, 2010
297	1517	Adult	?F	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
298	1523	Adult	?M	35	45	Years	1.70	Carpenter & Crane, 2010
299	1525	Subadult	Indet.	8	8	Years	Indet.	Carpenter & Crane, 2010
300	1531	Subadult	Indet.	4	5	Years	Indet.	Carpenter & Crane, 2010
301	1534	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
302	1537	Subadult	Indet.	12	16	Years	Indet.	Carpenter & Crane, 2010
303	1541	Adult	Ambig.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
304	1543	Adult	?F	25	35	Years	Indet.	Carpenter & Crane, 2010
305	1545	Adult	?M	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
306	1547	Adult	F	35	45	Years	1.58	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
307	1549	Subadult	Indet.	9	11	Years	Indet.	Carpenter & Crane, 2010
308	1566	Subadult	Indet.	13	17	Years	Indet.	Carpenter & Crane, 2010
309	1569	Adult	F	30	40	Years	Indet.	Carpenter & Crane, 2010
310	1570	Adult	?M	45	Indet.	Years	1.75	Carpenter & Crane, 2010
311	1572	Adult	Ambig.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
312	1576	Adult	?F	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
313	1578	Adult	?F	45	Indet.	Years	1.65	Carpenter & Crane, 2010
314	1582	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
315	1584	Adult	Indet.	25	35	Years	Indet.	Carpenter & Crane, 2010
316	1587	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
317	1592	Subadult	Indet.	2	5	Years	Indet.	Carpenter & Crane, 2010
318	1595	Adult	?M	35	45	Years	1.68	Carpenter & Crane, 2010
319	1606	Adult	?F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
320	1608	Subadult	Indet.	12	17	Years	Indet.	Carpenter & Crane, 2010
321	1615	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
322	1616	Subadult	Indet.	12	18	Years	Indet.	Carpenter & Crane, 2010
323	1618	Adult	?M	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
324	1621	Adult	?F	45	Indet.	Years	1.58	Carpenter & Crane, 2010
325	1623	Adult	?F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
326	1626	Subadult	Indet.	2	3	Years	Indet.	Carpenter & Crane, 2010
327	1628	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010
328	1637	Adult	Ambig.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
329	1642	Subadult	Indet.	12	16	Years	Indet.	Carpenter & Crane, 2010
330	1644	Adult	F	35	45	Years	Indet.	Carpenter & Crane, 2010
331	1646	Adult	F	45	Indet.	Years	1.58	Carpenter & Crane, 2010
332	1651	Subadult	Indet.	7.5	12.5	Years	Indet.	Carpenter & Crane, 2010
334	1654	Adult	Indet.	21	Indet.	Years	Indet.	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
335	1660	Subadult	Indet.	14	16	Years	Indet.	Carpenter & Crane, 2010
336	1662	Adult	?M	45	Indet.	Years	1.69	Carpenter & Crane, 2010
337	1669	Adult	F	35	45	Years	1.57	Carpenter & Crane, 2010
338	1673	Adult	?F	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
339	1676	Adult	?M	18	Indet.	Years	1.73	Carpenter & Crane, 2010
340	1684	Adult	F	35	45	Years	1.68	Carpenter & Crane, 2010
341	1687	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
342	1693	Adult	?M	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
343	1694	Adult	Ambig.	35	45	Years	Indet.	Carpenter & Crane, 2010
344	1696	Adult	?F	30	40	Years	1.53	Carpenter & Crane, 2010
345	1699	Subadult	Indet.	16	32	Months	Indet.	Carpenter & Crane, 2010
346	1701	Adult	M	30	40	Years	1.65	Carpenter & Crane, 2010
347	1703	Adult	Ambig.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
348	1705	Adult	Ambig.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
349	1711	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
350	1712	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
351	1713	Subadult	Indet.	2	4	Years	Indet.	Carpenter & Crane, 2010
352	1716	Adult	?M	18	25	Years	Indet.	Carpenter & Crane, 2010
353	1719	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
354	1721	Adult	?M	45	Indet.	Years	1.73	Carpenter & Crane, 2010
355	1723	Adult	?F	40	Indet.	Years	Indet.	Carpenter & Crane, 2010
356	1725	Adult	Ambig.	50	59	Years	Indet.	Carpenter & Crane, 2010
357	1727	Adult	Indet.	40	Indet.	Years	Indet.	Carpenter & Crane, 2010
358	1729	Adult	F	45	Indet.	Years	1.56	Carpenter & Crane, 2010
359	1732	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
360	1734	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
361	1739	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
362	1741	Subadult	Indet.	6	10	Years	Indet.	Carpenter & Crane, 2010
363	1743	Subadult	Indet.	4	8	Years	Indet.	Carpenter & Crane, 2010
364	1745	Subadult	Indet.	5	9	Years	Indet.	Carpenter & Crane, 2010
365	1747	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
366	1748	Adult	Ambig.	18	19	Years	Indet.	Carpenter & Crane, 2010
367	1751	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
368	1753	Adult	Indet.	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
369	1757	Adult	F	30	40	Years	Indet.	Carpenter & Crane, 2010
370	1759	Subadult	Indet.	6	10	Years	Indet.	Carpenter & Crane, 2010
371	1761	Adult	?F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
372	1781	Adult	M	45	Indet.	Years	1.71	Carpenter & Crane, 2010
373	1785	Subadult	Indet.	6	10	Years	Indet.	Carpenter & Crane, 2010
374	1788	Subadult	Indet.	15	17	Years	Indet.	Carpenter & Crane, 2010
375	1790	Adult	?F	45	Indet.	Years	1.67	Carpenter & Crane, 2010
376	1792	Adult	?F	35	45	Years	Indet.	Carpenter & Crane, 2010
377	1794	Adult	Indet.	25	35	Years	Indet.	Carpenter & Crane, 2010
378	1799	Indet.	Indet.	Indet.	Indet.	Years	Indet.	Carpenter & Crane, 2010
379	1801	Adult	?M	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
380	1803	Adult	F	35	45	Years	1.49	Carpenter & Crane, 2010
381	1808	Adult	Ambig.	35	45	Years	Indet.	Carpenter & Crane, 2010
382	1810	Adult	?F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
383	1811	Adult	F	45	Indet.	Years	Indet.	Carpenter & Crane, 2010
384	1813	Adult	?F	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
385	1814	Adult	F	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
386	1815	Adult	?M	45	49	Years	1.71	Carpenter & Crane, 2010
387	1817	Indet.	Indet.	13	Indet.	Years	Indet.	Carpenter & Crane, 2010
388	1819	Subadult	Indet.	3.5	7.5	Years	Indet.	Carpenter & Crane, 2010

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
389	1821	Subadult	Indet.	Indet.	15	Years	Indet.	Carpenter & Crane, 2010
390	1823	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
391	1824	Adult	F	25	35	Years	Indet.	Carpenter & Crane, 2010
392	1829	Adult	F	35	45	Years	1.59	Carpenter & Crane, 2010
393	1830	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
394	1834	Subadult	Indet.	7	8	Years	Indet.	Carpenter & Crane, 2010
395	1836	Adult	F	40	50	Years	1.55	Carpenter & Crane, 2010
396	1841	Adult	F	50	59	Years	Indet.	Burrell & Carpenter, 2013
397	1843	Adult	?F	35	45	Years	Indet.	Carpenter & Crane, 2010
398	1845	Subadult	Indet.	4	4	Years	Indet.	Carpenter & Crane, 2010
399	1848	Subadult	Indet.	3	5	Years	Indet.	Carpenter & Crane, 2010
400	1850	Subadult	Indet.	5	6	Years	Indet.	Carpenter & Crane, 2010
401	1855	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
402	1857	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
403	1859	Adult	F	50	59	Years	1.62	Carpenter & Crane, 2010
404	1862	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
405	1865	Indet.	Indet.	14	Indet.	Years	Indet.	Burrell & Carpenter, 2013
406	1869	Adult	Ambig.	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
407	1871	Subadult	Indet.	6	10	Years	Indet.	Carpenter & Crane, 2010
408	1873	Adult	?M	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
409	1874	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
410	1876	Subadult	Indet.	Indet.	17	Years	Indet.	Carpenter & Crane, 2010
411	1878	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
412	1884	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
413	1885	Subadult	Indet.	5	6	Years	Indet.	Carpenter & Crane, 2010
414	1888	Subadult	Indet.	12	18	Years	Indet.	Carpenter & Crane, 2010
415	1890	Subadult	Indet.	12	16	Years	Indet.	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
416	1892	Adult	?M	45	59	Years	1.69	Burrell & Carpenter, 2013
417	1894	Adult	Indet.	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
418	1896	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
419	1901	Adult	Ambig.	35	45	Years	Indet.	Burrell & Carpenter, 2013
420	1906	Adult	Ambig.	40	49	Years	Indet.	Burrell & Carpenter, 2013
421	1910	Indet.	Indet.	13	Indet.	Years	Indet.	Burrell & Carpenter, 2013
422	1912	Adult	?F	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013
423	1913	Adult	?M	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
424	1915	Adult	?M	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
425	1918	Adult	Ambig.	40	44	Years	Indet.	Burrell & Carpenter, 2013
426	1921	Adult	?F	45	49	Years	Indet.	Burrell & Carpenter, 2013
427	1924	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
428	1926	Adult	F	45	49	Years	1.64	Burrell & Carpenter, 2013
429	1928	Subadult	Indet.	1	2	Years	Indet.	Burrell & Carpenter, 2013
430	1931	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
431	1934	Subadult	Indet.	0	1	Years	Indet.	Burrell & Carpenter, 2013
432	1937	Adult	Indet.	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
433	1938	Indet.	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
434	1939	Indet.	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
435	1941	Adult	Indet.	50	59	Years	Indet.	Burrell & Carpenter, 2013
436	1943	Adult	?F	50	59	Years	1.63	Burrell & Carpenter, 2013
437	1945	Subadult	Indet.	7	11	Years	Indet.	Burrell & Carpenter, 2013
438	1947	Adult	Ambig.	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
439	1951	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
440	1953	Subadult	Indet.	4	8	Years	Indet.	Burrell & Carpenter, 2013
441	1955	Subadult	Indet.	3.5	6.5	Years	Indet.	Burrell & Carpenter, 2013
442	1957	Adult	?F	50	59	Years	1.63	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
443	1959	Adult	?M	35	45	Years	Indet.	Burrell & Carpenter, 2013
444	1961	Subadult	Indet.	15	16	Years	Indet.	Burrell & Carpenter, 2013
445	1962	Adult	Indet.	18	Indet.	Years	Indet.	Carpenter & Crane, 2010
446	1964	Subadult	Indet.	8	10	Years	Indet.	Burrell & Carpenter, 2013
447	1965	Adult	?F	30	40	Years	Indet.	Burrell & Carpenter, 2013
448	1974	Adult	Indet.	25	25	Years	Indet.	Burrell & Carpenter, 2013
449	1976	Adult	?F	50	59	Years	1.69	Burrell & Carpenter, 2013
450	1980	Adult	Ambig.	45	49	Years	Indet.	Burrell & Carpenter, 2013
451	1981	Subadult	Indet.	7.5	12.5	Years	Indet.	Burrell & Carpenter, 2013
452	1983	Subadult	Indet.	0	6	Months	Indet.	Burrell & Carpenter, 2013
453	1986	Indet.	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
454	1990	Subadult	Indet.	7	12	Years	Indet.	Burrell & Carpenter, 2013
455	1997	Subadult	Indet.	Indet.	16	Years	Indet.	Burrell & Carpenter, 2013
456	2000	Subadult	Indet.	12	16	Years	Indet.	Burrell & Carpenter, 2013
457	2003	Adult	F	45	49	Years	1.68	Burrell & Carpenter, 2013
458	2005	Adult	F	30	40	Years	1.56	Burrell & Carpenter, 2013
459	2012	Subadult	Indet.	9	15	Years	Indet.	Burrell & Carpenter, 2013
460	2014	Adult	?M	50	59	Years	1.72	Burrell & Carpenter, 2013
461	2016	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
462	2017	Subadult	Indet.	10	16	Years	Indet.	Burrell & Carpenter, 2013
463	2023	Adult	M	50	59	Years	1.67	Burrell & Carpenter, 2013
464	2026	Subadult	Indet.	7	17	Years	Indet.	Burrell & Carpenter, 2013
465	2028	Subadult	Indet.	1	1	Years	Indet.	Burrell & Carpenter, 2013
466	2030	Subadult	Indet.	3	18	Years	Indet.	Burrell & Carpenter, 2013
467	2031	Adult	?F	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
468	2038	Subadult	Indet.	7	9	Years	Indet.	Burrell & Carpenter, 2013
469	2044	Adult	?M	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
470	2046	Adult	F	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013
471	2047	Subadult	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
472	2049	Subadult	Indet.	3	5	Years	Indet.	Burrell & Carpenter, 2013
473	2052	Adult	?F	25	Indet.	Years	1.58	Burrell & Carpenter, 2013
474	2054	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
475	2056	Subadult	Indet.	1	2	Years	Indet.	Burrell & Carpenter, 2013
476	2059	Adult	F	18	25	Years	Indet.	Burrell & Carpenter, 2013
477	2062	Subadult	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
478	2066	Subadult	Indet.	7	16	Years	Indet.	Burrell & Carpenter, 2013
479	2071	Adult	?M	21	24	Years	1.64	Burrell & Carpenter, 2013
480	2073	Adult	?F	35	45	Years	Indet.	Burrell & Carpenter, 2013
481	2075	Adult	?F	40	49	Years	1.61	Burrell & Carpenter, 2013
482	2077	Adult	?F	60	Indet.	Years	1.57	Burrell & Carpenter, 2013
483	2079	Adult	Ambig.	50	59	Years	Indet.	Burrell & Carpenter, 2013
484	2081	Adult	M	35	45	Years	1.72	Burrell & Carpenter, 2013
485	2086	Adult	F	35	39	Years	1.58	Burrell & Carpenter, 2013
486	2088	Subadult	Indet.	4	5	Years	Indet.	Burrell & Carpenter, 2013
487	2091	Adult	Ambig.	40	50	Years	Indet.	Burrell & Carpenter, 2013
488	2095	Subadult	Indet.	13	17	Years	Indet.	Burrell & Carpenter, 2013
489	2101	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
490	2103	Adult	F	50	65	Years	1.57	Burrell & Carpenter, 2013
491	2107	Subadult	Indet.	11	12	Years	Indet.	Burrell & Carpenter, 2013
492	2109	Adult	?F	45	Indet.	Years	1.68	Burrell & Carpenter, 2013
493	2114	Adult	?F	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
494	2119	Subadult	Indet.	3	6	Months	Indet.	Burrell & Carpenter, 2013
495	2120	Adult	Ambig.	35	45	Years	Indet.	Burrell & Carpenter, 2013
496	2121	Adult	M	45	60	Years	1.75	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
497	2125	Adult	M	50	59	Years	1.84	Burrell & Carpenter, 2013
498	2126	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
499	2127	Adult	F	50	59	Years	Indet.	Burrell & Carpenter, 2013
500	2129	Subadult	Indet.	3	5	Years	Indet.	Burrell & Carpenter, 2013
501	2131	Subadult	Indet.	7	8.5	Years	Indet.	Burrell & Carpenter, 2013
502	2134	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
503	2136	Adult	Indet.	25	Indet.	Years	Indet.	Burrell & Carpenter, 2013
504	2140	Subadult	Indet.	3	9	Months	Indet.	Burrell & Carpenter, 2013
505	2141	Adult	?M	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
333.1	1652	Subadult	Indet.	4.5	8.5	Years	Indet.	Burrell & Carpenter, 2013
506	2144	Adult	F	35	39	Years	1.55	Burrell & Carpenter, 2013
507	2146	Adult	M	30	45	Years	1.62	Burrell & Carpenter, 2013
508	2150	Adult	M	45	49	Years	1.66	Burrell & Carpenter, 2013
509	2153	Subadult	Indet.	8.5	13.5	Years	Indet.	Burrell & Carpenter, 2013
510	2156	Adult	M	50	57	Years	1.80	Burrell & Carpenter, 2013
511	2158	Indet.	Indet.	14	Indet.	Years	Indet.	Burrell & Carpenter, 2013
512	2160	Subadult	Indet.	1	2	Years	Indet.	Burrell & Carpenter, 2013
513	2167	Adult	F	45	59	Years	1.65	Burrell & Carpenter, 2013
514	2173	Subadult	Indet.	4.5	8.5	Years	Indet.	Burrell & Carpenter, 2013
515	2179	Adult	M	40	50	Years	1.68	Burrell & Carpenter, 2013
516	2182	Subadult	Indet.	14	19	Years	Indet.	Burrell & Carpenter, 2013
517	2185	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
518	2186	Subadult	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
519	2189	Adult	F	35	40	Years	1.56	Burrell & Carpenter, 2013
520	2198	Subadult	Indet.	7.5	12.5	Years	indet.	Burrell & Carpenter, 2013
521	2200	Adult	F	21	Indet.	Years	1.59	Burrell & Carpenter, 2013
522	2202	Adult	M	50	59	Years	1.71	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
523	2204	Adult	?F	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
524	2206	Subadult	?M	17	18	Years	1.60	Burrell & Carpenter, 2013
525	2208	Subadult	Indet.	4	5	Years	Indet.	Burrell & Carpenter, 2013
526	2218	Adult	F	45	49	Years	1.56	Burrell & Carpenter, 2013
527	2220	Subadult	Indet.	2	3	Years	Indet.	Burrell & Carpenter, 2013
528	2222	Subadult	Indet.	16	32	Months	Indet.	Burrell & Carpenter, 2013
529	2224	Subadult	Indet.	5	8	Years	Indet.	Burrell & Carpenter, 2013
530	2226	Subadult	Indet.	6	12	Years	Indet.	Burrell & Carpenter, 2013
531	2228	Adult	M	45	49	Years	1.72	Burrell & Carpenter, 2013
532	2230	Adult	Ambig.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
533	2232	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
534	2234	Subadult	Indet.	2	3	Years	Indet.	Burrell & Carpenter, 2013
535	2236	Adult	M	40	44	Years	1.70	Burrell & Carpenter, 2013
536	2238	Adult	F	40	44	Years	1.52	Burrell & Carpenter, 2013
537	2240	Adult	M	35	39	Years	1.56	Burrell & Carpenter, 2013
538	2242	Adult	M	30	34	Years	1.67	Burrell & Carpenter, 2013
539	2244	Adult	M	30	34	Years	1.71	Burrell & Carpenter, 2013
540	2246	Subadult	Indet.	6	12	Months	Indet.	Burrell & Carpenter, 2013
541	2248	Subadult	Indet.	3	4	Years	Indet.	Burrell & Carpenter, 2013
542	2250	Subadult	Indet.	5	9	Years	Indet.	Burrell & Carpenter, 2013
543	2252	Adult	Indet.	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
544	2254	Subadult	indet.	7	8	Years	Indet.	Burrell & Carpenter, 2013
545	2257	Adult	F	35	45	Years	Indet.	Burrell & Carpenter, 2013
546	2259	Adult	F	18	23	Years	1.63	Burrell & Carpenter, 2013
547	2261	Subadult	Indet.	3	6	Months	Indet.	Burrell & Carpenter, 2013
548	2264	Adult	F	45	59	Years	1.63	Burrell & Carpenter, 2013
549	2271	Subadult	Indet.	3	5	Years	Indet.	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
550	2282	Subadult	Indet.	36	40	IUW	Indet.	Burrell & Carpenter, 2013
551	2285	Subadult	Indet.	12	18	Years	Indet.	Burrell & Carpenter, 2013
552	2290	Adult	?F	20	Indet.	Years	Indet.	Burrell & Carpenter, 2013
553	2294	Adult	M	40	44	Years	1.67	Burrell & Carpenter, 2013
554	2296	Subadult	Indet.	5	9	Years	Indet.	Burrell & Carpenter, 2013
555	2298	Adult	Ambig.	25	35	Years	Indet.	Burrell & Carpenter, 2013
556	2300	Subadult	Indet.	12	16	Years	Indet.	Burrell & Carpenter, 2013
557	2302	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
558	2306	Adult	M	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
559	2310	Adult	M	27	66	Years	1.59	Burrell & Carpenter, 2013
560	2312	Adult	Ambig.	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
561	2316	Subadult	Indet.	5	9	Years	Indet.	Burrell & Carpenter, 2013
562	2318	Adult	?F	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
563	2321	Adult	?M	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
564	2323	Adult	M	40	44	Years	1.74	Burrell & Carpenter, 2013
565	2325	Subadult	Indet.	6	8	Years	Indet.	Burrell & Carpenter, 2013
566	2342	Adult	?F	50	59	Years	1.69	Burrell & Carpenter, 2013
567	2354	Subadult	Indet.	12	16	Years	Indet.	Burrell & Carpenter, 2013
568	2358	Subadult	Indet.	5	8	Years	Indet.	Burrell & Carpenter, 2013
569	2361	Adult	?F	45	83	Years	1.65	Burrell & Carpenter, 2013
570	2363	Adult	?F	45	Indet.	Years	1.55	Burrell & Carpenter, 2013
571	2364	Adult	F	40	49	Years	1.65	Burrell & Carpenter, 2013
572	2372	Adult	?M	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
573	2376	Adult	Indet.	50	59	Years	Indet.	Burrell & Carpenter, 2013
574	2378	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
575	2380	Subadult	Indet.	3	9	Months	Indet.	Burrell & Carpenter, 2013
576	2381	Adult	F	50	59	Years	1.53	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
577	2385	Subadult	Indet.	5	7	Years	Indet.	Burrell & Carpenter, 2013
578	2388	Adult	M	25	39	Years	1.70	Burrell & Carpenter, 2013
580	2395	Adult	F	50	59	Years	1.61	Burrell & Carpenter, 2013
581	2397	Subadult	Indet.	13	16	Years	Indet.	Burrell & Carpenter, 2013
582	2400	Subadult	Indet.	9	14	Years	Indet.	Burrell & Carpenter, 2013
583	2403	Subadult	Indet.	7	8	Years	Indet.	Burrell & Carpenter, 2013
584	2407	Subadult	Indet.	9	12	Years	Indet.	Burrell & Carpenter, 2013
585	2409	Adult	M	40	44	Years	1.73	Burrell & Carpenter, 2013
586	2413	Adult	M	50	59	Years	1.69	Burrell & Carpenter, 2013
587	2418	Adult	F	50	59	Years	1.63	Burrell & Carpenter, 2013
588	2424	Subadult	Indet.	6	12	Years	Indet.	Burrell & Carpenter, 2013
589	2426	Adult	M	30	34	Years	1.74	Burrell & Carpenter, 2013
590	2437	Adult	F	Indet.	Indet.	Years	Indet.	Burrell & Carpenter, 2013
591	2441	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
592	2443	Adult	M	35	Indet.	Years	Indet.	Burrell & Carpenter, 2013
593	2445	Subadult	Indet.	9.5	14.5	Years	Indet.	Burrell & Carpenter, 2013
594	2448	Subadult	Indet.	13	18	Years	Indet.	Burrell & Carpenter, 2013
595	2451	Subadult	Indet.	16	32	Months	Indet.	Burrell & Carpenter, 2013
596	2453	Adult	F	35	44	Years	1.62	Burrell & Carpenter, 2013
597	2455	Adult	M	25	35	Years	Indet.	Burrell & Carpenter, 2013
598	2457	Adult	?M	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013
599	2459	Adult	F	50	59	Years	1.63	Burrell & Carpenter, 2013
600	2460	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
601	2463	Adult	?F	25	29	Years	1.67	Burrell & Carpenter, 2013
602	2465	Subadult	Indet.	3.5	6.5	Years	Indet.	Burrell & Carpenter, 2013
603	2467	Adult	?M	45	49	Years	1.74	Burrell & Carpenter, 2013
604	2469	Subadult	Indet.	4	8	Years	Indet.	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
605	2471	Adult	F	50	59	Years	1.64	Burrell & Carpenter, 2013
606	2473	Subadult	Indet.	12	18	Years	Indet.	Burrell & Carpenter, 2013
607	2475	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
608	2477	Adult	?M	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013
609	2481	Adult	F	50	60	Years	1.67	Burrell & Carpenter, 2013
610	2486	Subadult	Indet.	9.5	14.5	Years	Indet.	Burrell & Carpenter, 2013
611	2490	Adult	?F	20	30	Years	1.66	Burrell & Carpenter, 2013
612	2492	Adult	?M	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013
613	2494	Indet.	Indet.	Indet.	Indet.	#N/A	Indet.	Burrell & Carpenter, 2013
614	2496	Subadult	Indet.	4	8	Years	Indet.	Burrell & Carpenter, 2013
615	2498	Adult	F	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013
616	2500	Adult	M	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
617	2502	Adult	M	22	24	Years	1.71	Burrell & Carpenter, 2014
620	2511	Adult	M	35	45	Years	1.66	Burrell & Carpenter, 2013
621	2513	Adult	M	40	50	Years	1.70	Burrell & Carpenter, 2013
622	2515	Adult	F	30	34	Years	1.61	Burrell & Carpenter, 2013
623	2521	Adult	M	35	39	Years	1.81	Burrell & Carpenter, 2013
624	2523	Adult	?F	25	29	Years	1.55	Burrell & Carpenter, 2013
625	2526	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
626	2532	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
627	2534	Adult	M	45	49	Years	1.80	Burrell & Carpenter, 2013
628	2536	Adult	M	20	24	Years	1.73	Burrell & Carpenter, 2013
629	2452	Subadult	Indet.	5	6	Years	Indet.	Burrell & Carpenter, 2013
630	2544	Adult	?M	30	34	Years	1.61	Burrell & Carpenter, 2013
631	2547	Subadult	Indet.	7	8	Years	Indet.	Burrell & Carpenter, 2013
632	2549	Adult	F	26	Indet.	Years	Indet.	Burrell & Carpenter, 2013
633	2551	Adult	Ambig.	21	Indet.	Years	Indet.	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
634	2556	Adult	?M	35	45	Years	Indet.	Burrell & Carpenter, 2013
635	2557	Subadult	Indet.	2	3	Years	Indet.	Burrell & Carpenter, 2013
636	2559	Subadult	Indet.	6	10	Years	Indet.	Burrell & Carpenter, 2013
637	2563	Adult	F	25	30	Years	1.54	Burrell & Carpenter, 2013
638	2565	Subadult	Indet.	Indet.	12	Years	Indet.	Burrell & Carpenter, 2013
639	2567	Adult	?M	45	Indet.	Years	1.72	Burrell & Carpenter, 2013
640	2571	Subadult	Indet.	12	18	Years	Indet.	Burrell & Carpenter, 2013
641	2574	Adult	M	18	Indet.	Years	1.76	Burrell & Carpenter, 2013
642	2578	Subadult	Indet.	4	8	Years	Indet.	Burrell & Carpenter, 2013
643	2581	Adult	?M	25	35	Years	Indet.	Burrell & Carpenter, 2013
644	2583	Subadult	Indet.	1	2	Years	Indet.	Burrell & Carpenter, 2013
645	2588	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
646	2593	Subadult	Indet.	5	9	Years	Indet.	Burrell & Carpenter, 2013
647	2595	Subadult	Indet.	3	5	Months	Indet.	Burrell & Carpenter, 2013
648	2598	Adult	F	50	59	Years	1.63	Burrell & Carpenter, 2013
649	2601	Adult	M	45	86	Years	1.67	Burrell & Carpenter, 2013
650	2603	Subadult	Indet.	13	17	Years	Indet.	Burrell & Carpenter, 2013
651	2609	Adult	Indet.	45	Indet.	Years	Indet.	Burrell & Carpenter, 2013
652	2611	Subadult	Indet.	10	12	Years	Indet.	Burrell & Carpenter, 2013
653	2616	Subadult	Indet.	2	4	Years	Indet.	Burrell & Carpenter, 2013
654	2618	Adult	M	20	24	Years	1.63	Burrell & Carpenter, 2013
655	2620	Subadult	Indet.	12	18	Months	Indet.	Burrell & Carpenter, 2013
656	2622	Subadult	Indet.	5	9	Years	Indet.	Burrell & Carpenter, 2013
657	2624	Adult	?F	18	Indet.	Years	Indet.	Burrell & Carpenter, 2014
658	2629	Adult	M	50	59	Years	1.69	Burrell & Carpenter, 2013
659	2631	Subadult	Indet.	12	24	Months	Indet.	Burrell & Carpenter, 2013
660	2633	Subadult	Indet.	6	8	Years	Indet.	Burrell & Carpenter, 2013

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
661	2635	Adult	F	25	29	Years	1.68	Burrell & Carpenter, 2013
662	2638	Subadult	Indet.	Indet.	Indet.	#N/A	Indet.	Burrell & Carpenter, 2013
663	2640	Adult	Indet.	18	25	Years	Indet.	Burrell & Carpenter, 2013
664	2642	Adult	Indet.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2013
665	2644	Subadult	Indet.	2	3	Years	Indet.	Burrell & Carpenter, 2013
666	2646	Subadult	Indet.	7	8	Years	Indet.	Burrell & Carpenter, 2013
667	2648	Subadult	Indet.	20	42	Months	Indet.	Burrell & Carpenter, 2013
668	2649	Subadult	Indet.	36	36	IUW	Indet.	Burrell & Carpenter, 2013
669	2656	Subadult	Indet.	12	18	Months	Indet.	Burrell & Carpenter, 2013
670	2660	Subadult	Indet.	7	16	Years	Indet.	Burrell & Carpenter, 2014
671	2664	Subadult	Indet.	12	18	Years	Indet.	Burrell & Carpenter, 2013
672	2666	Subadult	Indet.	9	15	Years	Indet.	Burrell & Carpenter, 2013
673	2670	Subadult	Indet.	5	6	Years	Indet.	Burrell & Carpenter, 2013
674	2672	Subadult	Indet.	8	9	Years	Indet.	Burrell & Carpenter, 2013
675	2676	Adult	F	35	38	Years	1.63	Burrell & Carpenter, 2014
676	2679	Subadult	Indet.	3	6	Months	Indet.	Burrell & Carpenter, 2013
677	2681	Subadult	Indet.	0	1	Years	Indet.	Burrell & Carpenter, 2013
678	2686	Adult	F	40	44	Years	1.69	Burrell & Carpenter, 2013
679	2688	Adult	F	25	29	Years	1.55	Burrell & Carpenter, 2013
680	2690	Subadult	Indet.	7	8	Years	Indet.	Burrell & Carpenter, 2013
681	2692	Adult	F	20	24	Years	1.55	Burrell & Carpenter, 2013
683	2701	Adult	?M	25	35	Years	Indet.	Burrell & Carpenter, 2014
684	2705	Adult	M	55	Indet.	Years	Indet.	Burrell & Carpenter, 2014
685	2714	Adult	F	25	34	Years	1.50	Burrell & Carpenter, 2014
686	2716	Adult	Ambig.	35	45	Years	Indet.	Burrell & Carpenter, 2014
687	2718	Subadult	Indet.	7	12	Years	Indet.	Burrell & Carpenter, 2014
688	2720	Adult	M	30	34	Years	1.75	Burrell & Carpenter, 2014

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
689	2724	Subadult	Indet.	0	0	Years	Indet.	Burrell & Carpenter, 2014
691	2732	Adult	?M	20	29	Years	1.67	Burrell & Carpenter, 2014
692	2734	Subadult	Indet.	13	18	Years	Indet.	Burrell & Carpenter, 2014
693	2736	Subadult	Indet.	7	10	Years	Indet.	Burrell & Carpenter, 2014
694	2738	Subadult	Indet.	4.5	8.5	Years	Indet.	Burrell & Carpenter, 2014
695	2740	Adult	M	30	34	Years	1.73	Burrell & Carpenter, 2014
696	2742	Adult	?M	45	55	Years	1.62	Burrell & Carpenter, 2014
697	2747	Adult	?M	60	86	Years	1.53	Burrell & Carpenter, 2014
698	2754	Adult	M	40	44	Years	1.72	Burrell & Carpenter, 2014
699	2755	Adult	Ambig.	18	25	Years	Indet.	Burrell & Carpenter, 2014
700	2758	Adult	M	35	39	Years	1.70	Burrell & Carpenter, 2014
701	2760	Adult	F	18	25	Years	Indet.	Burrell & Carpenter, 2014
702	2764	Adult	M	30	34	Years	1.78	Burrell & Carpenter, 2014
703	2768	Subadult	Indet.	7	8	Years	Indet.	Burrell & Carpenter, 2014
704	2772	Subadult	Indet.	6	8	Years	Indet.	Burrell & Carpenter, 2014
705	2774	Adult	?M	20	23	Years	1.77	Burrell & Carpenter, 2014
706	2778	Subadult	Indet.	12	14	Years	Indet.	Burrell & Carpenter, 2014
707	2783	Subadult	Indet.	4	8	Years	Indet.	Burrell & Carpenter, 2014
708	2785	Subadult	Indet.	6	12	Years	Indet.	Burrell & Carpenter, 2014
709	2787	Subadult	Indet.	13	17	Years	Indet.	Burrell & Carpenter, 2014
710	2789	Subadult	?M	16	17	Years	Indet.	Burrell & Carpenter, 2014
711	2792	Adult	M	40	44	Years	1.78	Burrell & Carpenter, 2014
712	2794	Adult	?F	40	44	Years	1.61	Burrell & Carpenter, 2014
713	2796	Indet.	Indet.	#N/A	#N/A	#N/A	Indet.	Burrell & Carpenter, 2014
714	2799	Subadult	Indet.	38	38	IUW	Indet.	Burrell & Carpenter, 2014
715	2804	Adult	F	40	44	Years	1.60	Burrell & Carpenter, 2014
716	2806	Subadult	Indet.	13	17	Years	Indet.	Burrell & Carpenter, 2014

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
717	2808	Subadult	Indet.	5	6	Years	Indet.	Burrell & Carpenter, 2014
718	2810	Subadult	Indet.	7	8	Years	Indet.	Burrell & Carpenter, 2014
719	2813	Adult	M	45	Indet.	Years	Indet.	Burrell & Carpenter, 2014
720	2815	Subadult	Indet.	15	17	Years	Indet.	Burrell & Carpenter, 2014
721	2818	Adult	F	44	49	Years	1.61	Burrell & Carpenter, 2014
722	2820	Adult	F	25	35	Years	1.48	Burrell & Carpenter, 2014
723	2822	Subadult	Indet.	0	5	Months	Indet.	Burrell & Carpenter, 2014
724	2828	Subadult	Indet.	9.5	14.5	Years	Indet.	Burrell & Carpenter, 2014
725	2830	Adult	?M	45	48	Years	1.63	Burrell & Carpenter, 2014
726	2834	Subadult	Indet.	4	8	Years	Indet.	Burrell & Carpenter, 2014
727	2839	Subadult	Indet.	3	4	Years	Indet.	Burrell & Carpenter, 2014
728	2841	Indet.	Indet.	#N/A	#N/A	#N/A	Indet.	Burrell & Carpenter, 2014
729	2843	Subadult	Indet.	2	2	Years	Indet.	Burrell & Carpenter, 2014
730	2845	Subadult	Indet.	1	1	Years	Indet.	Burrell & Carpenter, 2014
732	2851	Subadult	Indet.	3	3	Months	Indet.	Burrell & Carpenter, 2014
733	2855	Adult	?F	50	59	Years	Indet.	Burrell & Carpenter, 2014
735	2858	Subadult	Indet.	16	17	Years	Indet.	Burrell & Carpenter, 2014
736	2863	Subadult	?M	16	19	Years	Indet.	Burrell & Carpenter, 2014
737	2866	Adult	?M	35	35	Years	1.68	Burrell & Carpenter, 2014
738	2869	Adult	F	50	59	Years	1.57	Burrell & Carpenter, 2014
739	2872	Adult	M	21	23	Years	1.80	Burrell & Carpenter, 2014
740	2875	Adult	M	33	45	Years	Indet.	Burrell & Carpenter, 2014
741	2880	Subadult	Indet.	0	1.5	Months	Indet.	Burrell & Carpenter, 2014
743	2886	Subadult	Indet.	6	12	Years	Indet.	Burrell & Carpenter, 2014
744	2889	Adult	M	35	39	Years	1.66	Burrell & Carpenter, 2014
745	2891	Adult	Ambig.	18	Indet.	Years	Indet.	Burrell & Carpenter, 2014
746	2893	Subadult	Indet.	8	10	Years	Indet.	Burrell & Carpenter, 2014

Skeleton		Adult/		Age			Stature	
Number	Context	Subadult	Sex	Min	Max	Units	(m)	Source
748	2901	Adult	F	45	49	Years	1.52	Burrell & Carpenter, 2014
749	2904	Adult	?M	18	Indet.	Years	Indet.	Burrell & Carpenter, 2014
752	2912	Adult	F	45	49	Years	1.54	Burrell & Carpenter, 2014
753	2915	Subadult	Indet.	7	12	Years	Indet.	Burrell & Carpenter, 2014
755	2923	Adult	F	45	49	Years	1.63	Burrell & Carpenter, 2014
757	2931	Adult	Indet.	20	Indet.	Years	Indet.	Burrell & Carpenter, 2014

Table 8 – Results of Basic Skeletal Analysis

Notes:

a. "Indet." means Indeterminate; "Ambig." means Ambiguous; "IUW" means in-utero weeks.

b. Where the source us shown as 'Burrell & Carpenter, 2014', the data are published here for the first time.

c. Where the source is shown as 'Burrell & Carpenter, 2013', the data were orginally published in that paper.

d. Where the source is shown as 'Carpenter & Crane, 2010', the data were orginally published in that paper.

e. Where the source is shown as 'Carpenter & Crane, 2003', the data were originally published in that paper, but the height data has been recalculated as explained in Section 3.3.

f. Where the source is shown as 'Owens, 1998', 'Quinney, 1996' or 'Roberts, 1998', sex and age data was taken from that source, but the height data was recalculated by the authors as explained in Section 3.3.

g. The range of skeleton numbers is greater than the total number of skeletons excavated (Section 1), because some skeletons which have been assigned numbers have not yet been excavated, and also because, in the early days of the project, skeleton numbers were assigned to some concentrations of bones which were later interpreted as 'charnel pits' or groups of elements from disturbed burials [Owens, 1998: 10]