



**Human bones from the South Tombs Cemetery
The 2013 study season**

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Examination and analysis of the skeletal material recovered during the previous excavation seasons (November–December 2012 and March–April 2013) began on 19 May and ended on 10 June 2012. The bioarchaeology project participants were Jerry Rose (University of Arkansas); Gretchen Dabbs (Southern Illinois University, Carbondale); Kristin Krueger (Loyola University, Chicago) and a team of 12 student researchers: Kelly Blevins, Bonnie Clark, Megan Cleary, Heidi Davis, Kaitlin East, Linda Golden, Emma Kirby, Lindsey Kitchell, Claire Liersch, Jessica McGinn, William Schaffer and David Weaver.

In total, 70 individuals and 13 isolated skulls were analysed. Additionally, 22 crania with attached hair were given basic analyses (age, sex, and dental observations) when possible while not disturbing the hairstyles, which are reserved for future study. The procedure followed was the same as that described in last year’s report (Rose and Dabbs 2012). Additionally, a team of four trained local workers was employed this season to clean the skeletal material that could not be analysed. This was a necessary step because, if left uncleaned for long periods, sand will cement to the bone surface and obscure subtle features that indicate disease and injury. In total, 157 skeletal units (individual or isolated skull) were dry-brushed clean.

The demographic results are as follows: 37 individuals (53%) were younger than 15 years and sex could not be estimated; 19 (27%) were adult females; 12 (17%) were adult males; and two adults could not be sexed (3%). Thirteen isolated skulls were also analysed: six subadults (46%) and seven adults (54%). Of the adult skulls, four were female (57%) and the remaining three were indeterminate. No definitively male isolated skulls were examined this season. One priority was to document fully the totality of the subadult sample, and much effort was directed toward those individuals. Thus, the demographic distribution this year is somewhat skewed by the sampling technique. However, high juvenile mortality has always been a hallmark of the cemetery, and this year is no exception. The age distribution of the analysed sample is as follows: 0–2.9 years = 20%; 3–6.9 years = 7%; 7–14.9 years = 26%; 15–24 years = 16%; 25–35 years = 13%; 36–50 years = 14%; and over 50 years = 3%. Future analysis of the remaining individuals will demonstrate whether the observed trend of over-representation of subadults continues. Using only sexed individuals, there were many more females (61%) than males (39%).

Table 1. Number of Individuals analyzed from the South Tombs Cemetery. (Individuals assessed only as ‘adult’ or ‘subadult’ omitted)

	infant (0-2.9 yr)	early child (3-6.9 yr)	late child (7-14.9 yr)	adolescent (15-24 yr)	25-35 yr	36-50 yr	50+ yr	total
2005-12	49	28	43	58	50	54	6	288
2013	14	5	18	11	9	10	2	69
total	63	33	61	69	59	64	8	357

Table 1 shows the distribution of skeletons from this and previous seasons whose age at death could be determined. This year, the highest mortality is found in late childhood (8–14.9 years), which is unusual. The common demographic pattern is for the highest mortality rate to be observed in the youngest age group (birth–2.9 yrs). Then mortality normally drops off to nearly zero for several years, until adulthood. When we add the 2013 data to the totality of the cemetery skeletal data, the normal pattern is more closely observed, although subadult mortality is still very high (Figure 2).

Healed fractures and metabolic problems continue to be common. *Cribra orbitalia* was observed in 29% of the eye orbits of all individuals examined this year indicating past metabolic problems, and 15% of individuals had signs of bacterial infection. Those individuals older than 15 years also showed frequent healed fractures: of the head (12%), vertebrae (38%), limbs (31%) and ribs (34%). With the exception of rib trauma, which



Figure 1. Megan Cleary from Southern Illinois University examines a skull from the South Tombs Cemetery.

decreased slightly, the frequencies of trauma observed in 2013 are higher than previously observed at the cemetery. Three of the adult males (25% of all 2013 males) displayed healed piercing wounds to the scapula. This increases the number of adult males displaying these non-lethal wounds to eleven individuals.

As with previous seasons, traumatic injury was identified in all classes of individuals. This year, the first instance of definitive perimortem trauma was observed. A 13.5 year old subadult exhibited a depressed fracture (3.3 cm sq) of the temple region on the right side of the head. The wound had radiating fractures extending from it and maintained bony hinging, both of which are characteristic of injuries that transpired during life. No evidence of healing or other bony response was observed, suggesting the injury occurred a short time before death, perhaps even as the causative event.

All the data collected through 2012 provides an average male stature (n=55) of 161.44 cm, while the average female stature (n=70) is 151.39 cm. The 12 adult males analysed this year with complete long bones available for stature estimation have an average height of 160.02 cm and the 19 adult females had an average height of 153.67 cm. The most recently excavated males are slightly shorter than males excavated in previous seasons, but the females are slightly taller. On the whole, Amarna adults continue to be the shortest reported for ancient Egypt (see Zakrewski 2003 for comparison). When these results are added to the analysis of all the previous skeletons, they support the conclusions already reached. The three emergent themes are a higher than expected subadult mortality rate between 7 and 20 years of age; high rates of bony fracture indicating both accidental and intentional traumatic injury; and low adult stature as an indicator of poor childhood health and nutrition.

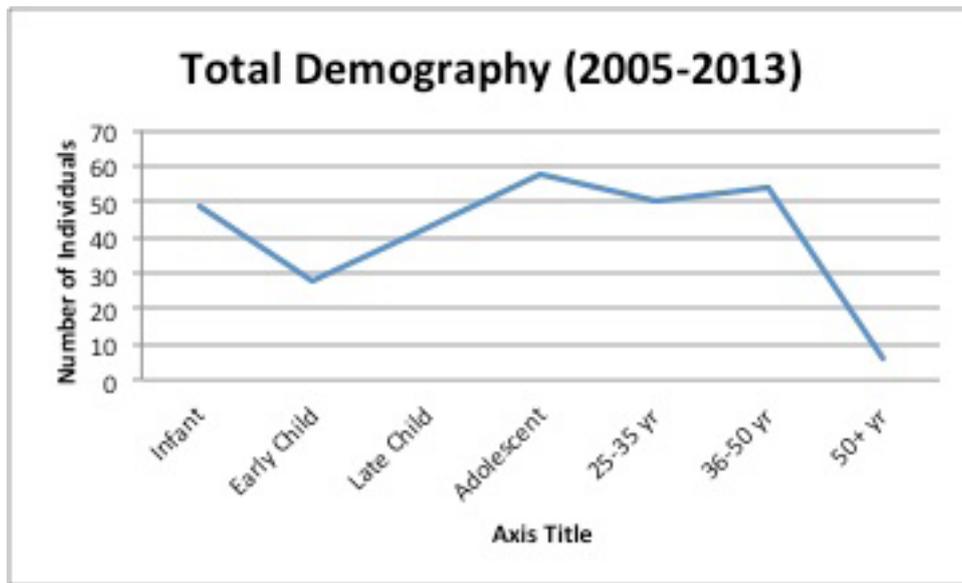


Figure 2. Total demography of the South Tombs Cemetery sample to date.

References

- Rose, J. and G. R. Dabbs, 2012. 'Human bones from the South Tombs Cemetery.' In B. Kemp, 'Tell el-Amarna, 2011-12', *Journal of Egyptian Archaeology* 98, 7-9.
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