FORENSIC ANTHROPOLOGY REPORT: CIL 2013-180-I-01

JPAC CENTRAL IDENTIFICATION LABORATORY

20 March 2014

DESCRIPTION OF REMAINS

The remains designated CIL 2013-180-I-01 consist of a partial human skeleton (Figures 1 and 2). Extant elements include portions of the cranium; maxillae; mandible; first and second cervical vertebrae; right scapula, humerus, ulna, and innominate; left and right femora, tibiae, and fibulae; and multiple bones of the feet. Additionally, 11.5 g of residual osseous material and sediment as well as 24 teeth are also present (see Forensic Odontology Report: CIL 2013-180-I-01). The right tibia was sampled for mitochondrial DNA analysis. The overall condition of the remains is poor, with elements exhibiting marked postmortem damage. All elements were cleaned with wood picks and a soft-bristle brush to facilitate analysis.

MINIMUM NUMBER OF INDIVIDUALS

One. Observations of skeletal elements present indicate that the remains represent one individual. This is manifest in consistency of element size, development, and general taphonomic condition. Further, there is no duplication of skeletal elements.

SEX

Male. A metric analysis using *FORDISC 3* (Jantz and Ousley 2005) indicates that the remains are of a size consistent with adult males. Specifically, size is most similar to Black and White males (posterior probability of 0.721 and 0.172, respectively) when five postcranial measurements are compared to Black and White males and females.

AGE

17-22 years. All observable long bone epiphyses exhibit complete union. According to the data presented by McKern and Stewart (1957), it is most probable that the individual in question was 17 years or older based upon epiphyseal fusion, although a lower age limit of 16 years cannot be definitively ruled out (Scheuer and Black 2000).

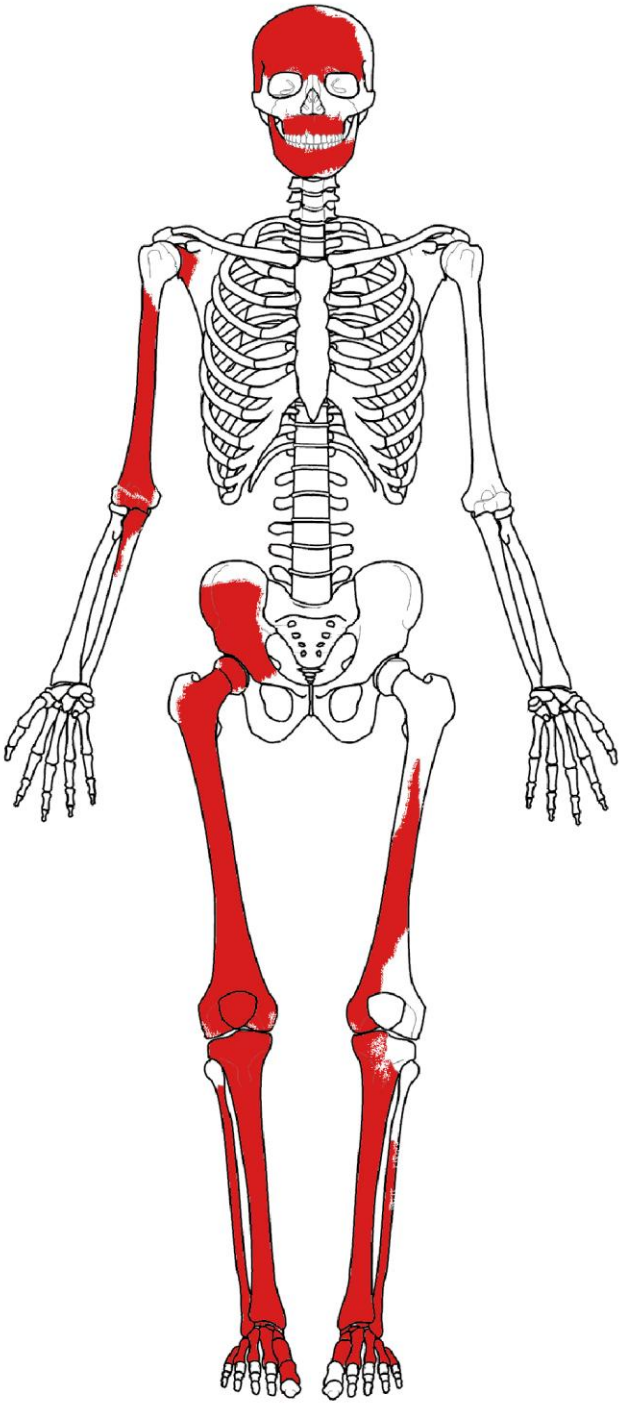


Figure 1. CIL 2013-180-I-01, elements in red are present. Unsided elements and dentition are not depicted.

Figure 2. CIL 2013-180-I-01, skeletal layout. Scale in dm.

The right mandibular molar (#32) was assessed for degree of tooth mineralization. The root walls are funnel-shaped and equal in length to the crown, with open apices. Following Mincer *et al*. (1993), this corresponds to Stage "F", indicating an age range of 13.2 and 21.8 years.

Given all available indicators of age, these remains likely belonged to an individual between 17 and 22 years of age at death.

ANCESTRY

Indeterminate. Dental morphological characteristics were used to estimate the ancestry of the remains. Following Edgar (2013), a discriminant function equation was used to differentiate between European American/African American and Hispanic American group affiliation. Using two non-metric dental traits (UM1MC 1; UM1HC 0), the equation indicates that the remains are most similar to the European American/African American group; however, caution is warranted given the relatively low correct classification rate of the equation (66.7%). Five non-metric dental traits (LM1DW 1; LM1TC 0; LM2C5 0; LM3C5 1; LM1C7 0) were then used to further differentiate between European American and African American group affiliation (Edgar 2005). One three-trait comparison has a Bayesian probability greater than 85% indicating European American affiliation. Conversely, one single-trait comparison has a Bayesian probability greater than 85% indicating African American affiliation.

A metric analysis was also conducted on the remains using *FORDISC 3* (Jantz and Ousley 2005). Results indicate the remains are most similar to Black males (posterior and typicality probabilities of 0.716 and 0.956, respectively), when seven postcranial variables are compared to White and Black males.

In sum, although it is most likely that the remains are of European or African ancestry, a final assessment of indeterminate is provided given the limited amount of information available.

STATURE

68.8 $\pm$ 3.6 (65.2 to 72.4) inches. The stature estimate was derived from the approximate maximum length of the right femur (480 mm) and the maximum condylo-malleolar length of the right tibia (402 mm). The estimate was calculated using the formula provided by the Trotter MStats database for male individuals of Black or White group affiliation in *FORDISC 3* (Jantz and Ousley 2005), using a 99% prediction interval (a 99% rather than a 95% prediction interval was used due to the presence of marked postmortem damage).

TRAUMA

No injuries consistent with perimortem trauma were observed.

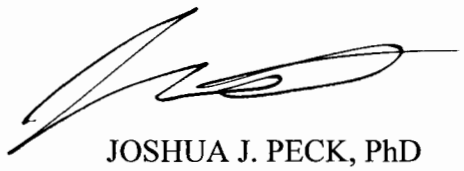
OBSERVATIONS

The majority of skeletal elements were initially encased within a moist soil matrix, with numerous interweaving roots and small rock inclusions, the majority of which were removed prior to analysis. In addition, the remains are stained dark brown and exhibit numerous rootlets that adhere to and penetrate the cortical and trabecular surfaces of the bone. Together, this suggests burial or contact with sediment for a prolonged period.

The remains exhibit marked cortical exfoliation and postmortem breakage. Many of the fracture margins are also frayed and pliable, which is consistent with exposure to a wet or damp postmortem environment.

CONCLUSIONS

The remains designated CIL 2013-180-I-01 are consistent with a male individual of indeterminate ancestry, between 17 and 22 years of age. This individual likely had a living stature of 68.8 $\pm$ 3.6 (65.2 to 72.4) inches. Additionally, the presence of dark brown staining as well as adhering soil and rootlets indicates burial or contact with sediment for an indeterminate period.



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