

**[Supplementary material]**

**“Their corpses will reach the base of heaven”: a third-millennium BC war memorial in northern Mesopotamia?**

Anne Porter<sup>1,\*</sup>, Thomas McClellan<sup>2</sup>, Susanne Wilhelm<sup>3</sup>, Jill Weber<sup>4</sup>, Brittany Enriquez<sup>5</sup>, Alexandra Baldwin<sup>5</sup>, Jean Colley<sup>5</sup>, Meagan Jahrles<sup>5</sup>, Bridget Lanois<sup>5</sup>, Vladislav Malinov<sup>5</sup>, Sumedh Ragavan<sup>5</sup>, Alexandra Robins<sup>5</sup> & Zarhuna Safi<sup>5</sup>

<sup>1</sup> Department of Near and Middle Eastern Civilizations, University of Toronto, Canada

<sup>2</sup> Euphrates Salvage Project, Bucksport, ME, USA

<sup>3</sup> Independent Researcher

<sup>4</sup> The University Museum of Archaeology and Anthropology, Philadelphia, USA

<sup>5</sup> University of Toronto undergraduate seminar NMC471 ‘Death on the Euphrates’

\* Author for correspondence: ✉ [anne.porter@utoronto.ca](mailto:anne.porter@utoronto.ca)

**Table S1. Human skeletal remains from White Monument B and the following Intermediate Phase.**

Deposit	No. of identified fragments*	Bones represented**	MNI	Sex***	Age****	Bone completeness	Remarks
Tumulus 1	102 (85%)	Partial cranium, temporal, occipital, frontal, sphenoid, mandible, clavicle (B), scapula (L+?), humerus (B), ulna (B), metacarpal IV (L) + V (L), sacrum, femur (B), tibia (R), fibula (?), metatarsal III (L) + V (L), cervical& thoracic vertebrae, ribs (L+?), indeterminate long bones	5	Male (1); Female? (1)	Adult (3); older adult (1); sub-adult <12 years (1)	From complete (metacarpal V) to <25% present (vertebrae, ribs)	Cervical vertebra with marked osteophytical lipping; partial cranium: antemortem tooth loss with alveoli completely resorbed; heavy dental wear; irregular bone growth in left sinus maxillaris; MNI 5: Four adult left femora; sub-adult mandible and long bone fragment
Tumulus 2	25 (100%)	Indeterminate calvarium, occipital, clavicle (R), humerus (R?), ulna (B), metacarpal (?), femur (?), ribs (L+?)	2†	-	Adult (1); neonate (1); (+adult/sub-adult?)	From ~60% (left ulna) to <20% present (humerus)	MNI 3?: corpus fragment of clavicle much more gracile than other adult bones
Tumulus 3	70 (90%)	Indeterminate calvarium, parietal (B), mandible, scapula (B), humerus (L), radius (B), metacarpal II (R) distal carpal phalanx, ilium (R+?), femur (R+?), tibia (R), fibula (?), calcaneus (R), metatarsal IV (R) + V (L), indeterminate metatarsal (?), indeterminate vertebrae, thoracic & lumbar vertebrae, ribs (L+?)	3	Adult male? (1)	Adult (2); sub-adult (1)	From complete (scapulae, calcaneus, femur) to <20% present (vertebrae, ribs)	One fragment of left parietal with perimortem trauma caused by a pointed object
Tumulus 4	34 (100%)	Indeterminate calvarium, partial cranium, humerus (L+?), radius (L), metacarpal IV (L), proximal carpal phalanx, ilium (L), femur (B), talus (R), ribs (L), indeterminate long bones	3	Adult male (1)	Adult (2); sub-adult (1)	From complete (radius, metacarpal, left femur) to <25% present (ribs, indeterminate long bones)	MNI 3: Two adult right femora, sub-adult calvarium

## Intermediate Phase

Deposit/Quadrant	No. of identified fragments*	Bones represented**	MNI	Sex***	Age****	Bone completeness	Remarks
D10/SW 36	7 (100%)	Cranium, mandible, humerus (L), fibula (R), femur (L)	2	Female; male?	Adult (1); ~23–30 (1) (female)	From almost complete (cranium) to <30% present (femur)	Humerus bone surface partly destroyed by small roots
D11/SW 37	26 (60%)	Mandible (L), temporal (R), atlas, axis, lumbar vertebrae, humerus (L), radius (R), ulna?, carpal phalanx (?), tibia (B), fibula (?), rib (L)	3	–	Adult (2); juvenile ~18–30 months (1)	From complete (tibia, R) to <10% present (lumbar vertebrae)	Fifteen fragments (fibula, ulna?, humerus, unidentified) show erosion/weathering (Behrensmeyer stages 3–4); MNI 3: two adult tibiae

\* In parentheses is the approximate percentage of identified fragments in relation to total number of fragments in deposit. Unidentified fragments were not counted consistently in the field.

\*\* (R) right, (L) left, (B) both, (?) unsided. Indeterminate long bone fragments are included here, although no identification other than ‘upper/lower extremity’ can be attempted.

\*\*\* Sex estimation according to Buikstra and Ubelaker (1994). As both sex and age were based on fragmentary remains and/or isolated traits, an estimation is only given in cases with a >75% confidence rate.

\*\*\*\* Age estimation according to Buikstra and Ubelaker (1994); Baker *et al.* (2005); Schaefer *et al.* (2009); Cardoso and Severino (2010).

† Differences in bone morphology among the fragments (e.g. gracile vs. robust) indicate the possibility of additional individuals.

**Table S2. Human skeletal remains from White Monument A.**

Deposit	Quadrant	No. of identified fragments*	Bones represented**	MNI	Sex***	Age****	Bone completeness	Remarks
D9	SW 14	8 (100%)	Clavicle (L), humerus (B), ilium (R), tibia?, fibula (?)	1	Male	Adult	From almost complete (humerii) to <50mm fragments (tibia?)	
D12	SW 16/26	7 (60%)	Frontal, clavicle (L), humerus (R), ulna (R), metatarsal (L), femur (?)	3	—	Adult (1); sub-adult (1); juvenile <6 (1)	From complete (clavicle) to <25% present (femur)	
D13	SW 15	17 (75%)	Parietal (L?), radius?, proximal phalanx I (?), femur (?), tibia (L), tarsal (?) ribs (L+?)	2	—	Adult (1); sub-adult (1)	From 70% (tibia) to <40mm fragments (femur, tarsal)	Sub-adult parietal fragment displays porotic hyperostosis
D14	SW 15	9 (100%)	Scapula (?), tibia (L+?), metacarpal/metatarsal (?)	1	—	Adult	From <50% (metatarsal/metacarpal) to <10% present (scapula)	
D15	SW 22/23	6 (100%)	Clavicle (L), femur (?)	1	—	Adult	From <25% (clavicula) to <10% present (femur)	
D16	SW 11	1 (100%)	Metacarpal II (L)	1	—	Adult	~60% present	
D17	SW 31	5 (100%)	Metacarpal II (R), metacarpal III (R), proximal carpal phalanx (?), indeterminate long bone	1	—	Adult	From complete (carpal phalanx) to <5cm fragments (long bone)	
D19	SW 34	3 (100%)	Clavicle (L), radius (R), metatarsal II (L)	2	—	Adult (1); sub-adult (1)	All ~60% present	
D20	SW 12	11 (100%)	Radius?, femur (R), smaller long bones	1	—	—	All <10% present	

D21	SW 22	14 (100%)	Radius (R), indeterminate vertebrae, rib (R), femur (?), indeterminate large long bones	1	–	<15–18 years	From 50% (radius) to <10% (vertebrae)	Several but not all of the indeterminate long bone fragments show weathering/erosion as in D11
D22	SE 03/02	24 (100%)	Parietal (?), occipital, indeterminate calvarium, femur (?), ribs (?), indeterminate long bone	2	–	Adult (1); neonate? (1)	All <10% present	
D2	NW 41	11 (65%)	Temporal (L), lumbar vertebra, ilium (?), ulna (B), femur (R), tibia (R), rib (L)	2 <sup>†</sup>	–	Adult (2?); <~20 (1)	From almost complete (ulnae) to <50mm fragments (ilium)	MNI 3?: Ulnae very probably not from same individual
D3	NW 41	6 (50%)	Occipital, femur (B), tibia (R), fibula (R?)	2	–	Adult (1); sub-adult (1)	From 50% or less present of long bones to <50mm fragments (occipital)	Fibula (adult) with signs of osteomyelitis
D4	NW 31	7 (100%)	Clavicle?, scapula (L), femur (R?), metatarsal I (L), metatarsal (?), rib (?), indeterminate large long bone	2	–	Adult (1); <~17 (1)	From complete (metatarsal I) to <40mm fragments (clavicle?)	
D6	NW 31	13 (100%)	Thoracic vertebra, 2 lumbar vertebrae, clavicle (L), humerus (L), radius (R), metacarpal II (L), femur (R), ribs (B?), pelvis (ilium, ischium) (R), indeterminate long bone	2 <sup>†</sup>	–	Adult (2?); sub-adult (1)	From complete (lumbar vertebra) to <40mm fragments (indeterminate long bone)	Femur with mild periostitis proximal-lateral; lumbar vertebra with slight osteophytical lipping anterior-inferior; Tuber ischiadicum with heavy exostoses; MNI 3?: Adult humerus and clavicle much more gracile than other adult bones
D7	NW 32	5 (100%)	Scapula (L), radius (B), metacarpal II (L), fibula?	2	–	Adult	From nearly complete (radii) to 25% present (scapula)	MNI 2: Left + right radius from different individuals
D8	NW 32	4 (100%)	Femur (L), tibia (R), fibula (L), rib XI or XII (L)	1	–	Adult	From 50% (tibia) to < 25% present (femur)	
D18	NW 21	8 (100%)	Lumbar vertebra, humerus (L), ulna?, femur (L)	2	–	Adult	From 60% (femur) to <10% present (humerus?)	MNI 2: two left femora

\* In parentheses is the approximate percentage of identified fragments in relation to total number of fragments in deposit. Unidentified fragments were not counted consistently in the field.

\*\* (R) right, (L) left, (B) both, (?) unsided. Indeterminate long bone fragments are included here, although no identification other than 'upper/lower extremity' can be attempted.

\*\*\* Sex estimation according to Buikstra and Ubelaker (1994). As both sex and age were based on fragmentary remains and/or isolated traits, an estimation is only given in cases with a >75% confidence rate.

\*\*\*\* Age estimation according to Buikstra and Ubelaker (1994); Baker *et al.* (2005); Schaefer *et al.* (2009); Cardoso and Severino (2010).

† Differences in bone morphology among the fragments (e.g. gracile vs robust) indicate the possibility of additional individuals.

## References

- BAKER, B., T. DUPRAS & M. TOCHERI. 2005. *The osteology of infants and children* (Texas A&M University Anthropology Series 12). College Station: Texas A&M University Press.
- BUIKSTRA, J. & D. UBELAKER. 1994. *Standards for data collection from human skeletal remains* (Arkansas Archaeological Survey Research Series 44). Fayetteville: Arkansas Archaeological Survey.
- CARDOSO, H. & R. SEVERINO. 2010. The chronology of epiphyseal union in the hand and foot from dry bone observations. *International Journal of Osteoarchaeology* 20: 7373–746.  
<https://doi.org/10.1002/oa.1097>
- SCHAEFER, M., S. BLACK & L. SCHEUER. 2009. *Juvenile osteology: a laboratory and field manual*. San Diego (CA): Academic.