Doboş A., Soficaru A. & Trinkaus E. - *The Prehistory and Paleontology of the Peştera Muierii, Romania.*
Liège, ERAUL 124, 2010, p. 101-106.

Chapter 8

THE HOLOCENE HUMAN SKELETON FROM THE GALERIA PRINCIPALĂ

The excavations in the Galeria Principală of the Peştera Muierii yielded a number of human bones from the later Holocene deposits, of which an associated partial skeleton is the most noteworthy, and is designated Muierii 5. This associated partial skeleton is curated in the Institutul de Antropologie "Fr. J. Rainer," Bucharest and retains principally postcranial elements. A description of it is provided here, since it is one of a modest number of Bronze Age burials from the region.

There are additional isolated Holocene human remains known from the Peştera Muierii. These remains are mixed in with the Holocene and Late Pleistocene faunal remains primarily from the Galeria Principală in the collections of the Muzeul Olteniei. They are all Holocene in age based on their preservation, but their detailed provenances within the site are not known. They are therefore not considered in detail here.

Context of the Muierii 5 Partial Skeleton

According to Daicoviciu *et al.* (1953:202–203), the partial skeleton was found in the Galeria Principală in niche S in a sedimentary level which extended between 0.9 and 3.0 m below datum, and consisted of black clay mixed with limestone blocks. The burial was between 2.85 and 2.95 m below datum, in a circumscribed area but not in anatomical position (fig. 84). The small area containing the bones suggests that it may have originally been in a flexed position. It is catalogued as: "B.F. 1952, G.P. C1 Coţofeni."

The skeleton was covered by four rock slabs, associated with ceramics, and overlain by La Tène ceramics. On the basis of the associated ceramics, the skeleton was assigned to the Coţofeni culture, which is a regional variant of the early Bronze Age (3,500 – 2,900 B.C.) and has a geographical range covering Oltenia, Transylvania, Banat, Crişana, west Muntenia, northwestern Bulgaria and northeastern Serbia (Roman 1976; Oanţă–Mărghitu 2006:86–87, 108). However, the indication that there were La Tène ceramics overlying the skeleton either means that it is more recent (Iron Age) or that the La Tène ceramics are from a later occupation of the cave.

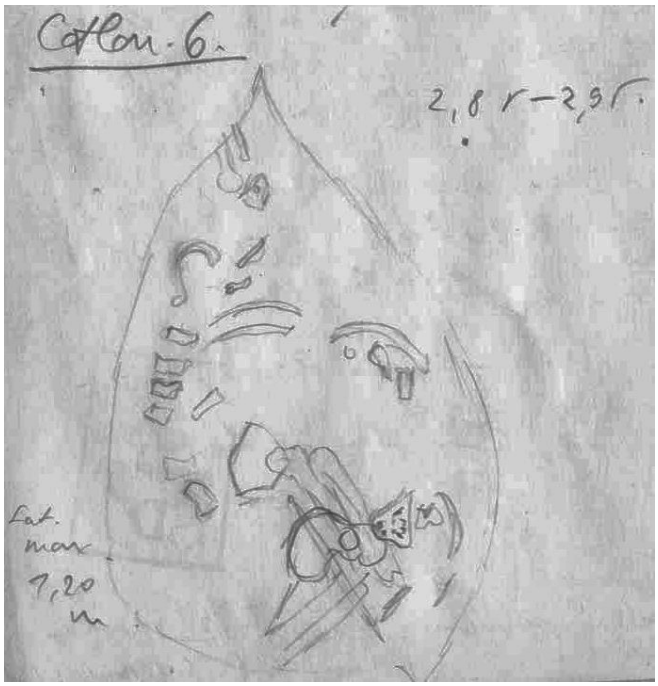

Figure 84 - Excavation sketch of the Muierii 5 partial skeleton *in situ*. Reproduced from Nicolăescu–Plopşor (1952).

In the Danube area, of the 22 funerary discoveries known for the early Bronze Age Coţofeni culture, fourteen are isolated single burials, six are groups of graves, and two are represented by necropolises (Chicideanu–Şandor 2006:85). The Muierii 5 skeleton represents an additional single burial, buts its original position is not known.

The right os coxae exhibits bone gnawing by rodents in the region of the anterior superior iliac spine (*cf.*, Haglund 1997:406-407). This suggests that either the skeleton was on the surface of the cave for some period prior to burial, or more likely, that burrowing rodents in the cave's deposits gnawed on the skeletal remains some time after burial. Since rodents will consume skeletal remains long after the individual's death for minerals, this could have happened a substantial time after burial.

Discovery date	Human bones	Archaeological context	Animal bones	Inventory	Description	Nicolăescu–Plopşor's notes
05.08.1952	Left os coxae, lumbar vertebra, vertebral fragments	C1, –2.85 m	–	Ceramics	"*On the surface, there are human bones; Two skeletons*"	Page 25b, lines 16 – 22.
06.08.1952	Left mandible with 4 teeth; one maxillary tooth; some metacarpals	C1, –3.00 m	*Ovis aries, Canis lupus*	–	–	Page 26b, lines 1 – 16
06.08.1952	Scapula, humerus, radius, ulna	C1, –2.85 to –2.95 m	–	–	*"Certainly a Bronze Age Sheppard"*	Page 32, lines 1 – 5

Table 45 - The Holocene human remains discovered in the Galeria Principală of the Peştera Muierii, as determined from the field notes of C.S. Nicolăescu–Plopşor (Nicolăescu–Plopşor 1952). The translations are ours.

Preservation of the Muierii 5 Partial Skeleton

The bones of Muierii 5 recorded during excavation are listed in table 45. Of these bones listed, the shoulder, arm, hand and pelvic remains plus the maxillary tooth are preserved, as are a number of vertebrae. There are more vertebral and costal remains currently known, both ossa coxae are present, and there is a partial fibula, a talus missing the head, and a metatarsal diaphysis. There is currently no evidence of the mentioned mandible with four teeth.

Cephalic Remains

The cephalic remains consist solely of the right maxillary second premolar (P^4) (fig. 85). There is no evidence of the cranium or of the mandible.

The Axial Skeleton

The axial skeleton retains a number of vertebrae, including the C2 to C4, the C7, the T1, the T5 to T8, and the L1 (fig. 86). In addition, there are two vertebral bodies which probably derive from T2 to T4, five fragments of lumbar bodies, two partial lumbar transverse processes, and two fragments of lumbar articular facets. The sacrum is also present.

More specifically, the axis (C2) lacks the left pedicle, the left superior and inferior facets, the laminae and the spinous process. The C3 is missing the body. The C4 is complete except for the left articular facets. The C7 is missing its foramina transversaria. The first thoracic vertebra (T1) is complete, but the T5 lacks its right transverse process. The T6 is present but is missing half of the body and the right transverse process; the T7 has half of the spinous process broken off. The next caudal vertebra (the T8) is complete except for the transverse processes. Only the body is preserved for the L1, and the other lumbar pieces are too fragmentary to assign to vertebrae. The sacrum is largely present, but the left ala and the anterior surface of first sacral vertebra are missing.

A number of partial rib pieces are also preserved. There are three fragments from the left side, and one of them retains the sternal end. Among them are the right third and fourth ribs without their sternal ends, plus half of the fifth rib. There are another five fragments from the right side, one of which has the sternal end, plus two fragments of ribs of unknown side.

The Upper Limb Remains

Shoulder girdle preserves the right scapula and a small portion of the left one. There is no evidence of the clavicles. The right scapula has half of the broken coracoid process, the acromion, the superior border with the superior angle, the inferior medial border, the axillary border and the scapular spine. The inferior angle is missing. From the left scapula only a fragment of the inferior angle and the supraspinous fossa area are preserved.

The long bones of the upper limb are very incomplete. For the humeri, there is only a fragment of the proximal right humerus, which preserves half of the head, the greater and lesser tubercles, the surgical neck, and a piece of the proximal diaphysis. The left radius is present but is missing the distal third. The left ulna is more complete but lacks the distal epiphysis.

The hand bones are more complete. Among the carpals there is a left capitate. For the metacarpals, both right and left second and third metacarpals are represented. The left fourth and fifth metacarpals are present, as is the distal half of the right fifth metacarpal. The proximal phalanges are represented by the left first one, the right second one, both third proximal phalanges although the right one lacks its proximal epiphysis, and both fourth proximal phalanges with the right one again lacking the proximal epiphysis. There are two middle phalanges retained, a third right one and a fifth left one.

The Lower Limb Remains

The lower limb remains are less complete than the upper limbs, consisting of major portions of the ossa coxae, a partial fibula, part of a talus and a partial fifth metatarsal.

The left os coxae lacks the pubic symphysis and both of the pubic rami. The right one retains the ischium, the acetabulum, the anterior superior iliac spine, the anterior gluteal line, and the anterior inferior iliac spine. There is the proximal half of the left fibular diaphysis, plus the left talus without its head and a diaphysis of a fifth metatarsal.

The Isolated Holocene Remains from the Peştera Muierii

In the boxes with quartz and flint tools and Pleistocene faunal remains in the Muzeul Olteniei, we located several human

Figure 85 - Mesial view of the Muierii 5 right maxillary P^4. Scale bar is 10 mm.

bones without any information regarding their proveniences. Their color, the preservation of bone, and the absence of fossilization indicate that they are Holocene in age. They consist of a complete left hip-bone (female, adult), a seventh cervical vertebra (sex unknown, adult), a right calcaneus (sex unknown, adult), and a left femur and a fibula lacking their epiphyses of a young child. The last two bones are marked "B. F. 52, C.P. ST." Given the clear presence of a metaphyseal bicondylar angle on the femur, the last two bones should represent a child at least 3-4 years old (Tardieu & Trinkaus 1994).

Muierii 5 Age and Sex Determination

There are a few age-at-death indicators for the Muierii 5 skeleton, beyond the universally fused epiphyses indicating a mature status. The isolated upper P^4 has partial obliteration of the cusp pattern with small dentin patches [Molnar (1971) stage 3 or Smith (1984) stage 4], indicating moderate wear for Bronze Age individual. The one preserved sternal end of a rib exhibits stage 3 of the Loth and Işcan (1989) aging system, which suggests an age-at-death of 20 to 24 years. On the ventral sacrum (fig. 90), the S1-S2 and S3-S4 ventral bodies are completely fused, there is a slight separation between S2 and S3, and there is a clear separation between S4 and S5. These bodies are normally fully fused by the early third decade (~24 years for S2-S3 and ~23 years for S4-S5), at least in males (McKern & Stewart 1957), reinforcing young adult age-at-death indicated by the distal rib and the premolar wear.

The annular rings of the vertebral bodies are also quite distinct from the centra, albeit fused on (fig. 86), also indicating a relatively young age-at-death. And the iliac crest and ischial tuberosity epiphyses, although fused, still have their lines of fusion readily apparent along portions of the iliac crest and the ischiopubic ramus.

The general size and gracility of the long bones suggests that the individual is female. This designation is corroborated by the open morphology of the left greater sciatic notch (fig. 90) and the shape of the composite arch (*cf.*, Brůžek 2002).

Muierii 5 Body Size Estimation

None of the long bones is sufficiently preserved for stature estimation. However, even though the standard errors of estimation (SE_{est}s) are larger, it is possible to estimate stature directly from metacarpal lengths (Musgrave and Harneja 1978; Meadows & Jantz 1992) or via estimated femoral length (Wilbur 1988). The resultant values are in table 46 and provide mean values from ~155 to ~163 cm, but with the SE_{est}s of the formulae the values are statistically indistinguishable. Given the proximity, biologically and geographically, of the Muierii Coţofeni skeleton to recent Europeans, only formulae from European (or European-derived) samples are used.

The mean acetabular diameter of 52.0 mm provides a mean femoral head diameter estimate of 43.0 mm (Ruff 2010), which in turn provides mean body mass estimates ranging from 56.4 kg to 62.3 kg, depending on the formula employed (Ruff *et al.* 1997).

Paleopathology of Muierii 5

There is a minimal amount of degenerative joint disease on the glenoid cavity, the humeral head, and the proximal radius and ulna. If the rib sternal end, sacrum, dental wear, epiphyseal fusion lines and annular rings are accurate in indicating an age in the early to mid third decade of life, then these changes should reflect activity induced degeneration. The bones that they occur on are bilateral, so the changes are likely to reflect bimanual activities.

	MC Length (mm)	Stature: European (cm)[1]	Stature: Euroamerican (cm)[2]	Femur Length from MC Length (mm)[3]	Stature from Femur Length (cm)[4]
MC2 rt	64.4	161.6	163.7	429.7	155.4
MC3 rt	63.2	161.3	164.3	431.6	155.8
MC3 lt	62.8	164.0	164.3	430.2	155.5
MC4 lt	53.0	156.7	159.9		
MC5 lt	50.2	159.9	162.2		
Average		160.7	162.9		155.6

[1] British sample using the adjusted female formulae of Musgrave & Harneja (1978). The standard errors of the estimates range from 4.7 to 8.1 cm.
[2] Terry Collection Euroamericans using the female formulae of Meadows & Jantz (1992). The standard errors of the estimates range from 5.2 to 5.5 cm.
[3] Femur length from metacarpal length following Wilbur (1998:188).
[4] Stature from femur length using Pearson's formula (Rösing 1988).

Table 46 - Stature estimates for the Muierii 5 Bronze Age skeleton based on metacarpal (MC) articular lengths.

Morphological Observations on the Muierii 5 Remains

Methods

The morphometric comparisons employ measurements from the Martin system (Bräuer 1988) and the individual measurements are designated by M-## in the text and the tables.

The Premolar

The single preserved tooth, a maxillary second premolar (P^4), is morphologically unexceptional (fig. 85). Its buccolingual crown diameter (M-81(1)) of 7.2 mm is relatively small for a recent European, since Twiesselmann & Brabant (1967) and Kieser (1990) provide a range of means of 8.5 to 9.9 mm for 13 samples. Since their standard deviations are 0.5–0.6 mm, it is within the ranges of variation of many of the comparative samples, but nonetheless rather small for a recent European.

The Vertebrae

There is little of note on the vertebrae (fig. 86). The cervical spinous processes show little or no bifidity.

The Upper Limb Remains

The right scapula (tabl. 47; fig. 87) preserves the glenoid fossa, the axillary border and part of the coracoid process. The glenoid fossa exhibits an extension of the surface (*cf.*, Saunders 1978:65). The axillary border presents a distinct ventral sulcus pattern (Eickstedt 1925), with a smooth ventral sulcus, a relatively flat dorsal margin, and then a distinct sulcus lateral of the teres minor surface onto the infraspinatus surface. This is the most frequent pattern among Holocene Europeans [and modern humans generally (Trinkaus 2008a)]. The scapula has a moderately low axilloglenoid angle of 132°. Among recent humans, Vallois (1928-46) provided a range of 15 means from 129° to 140°, not including four pygmoid individuals, with an individual range of 124° to 153°.

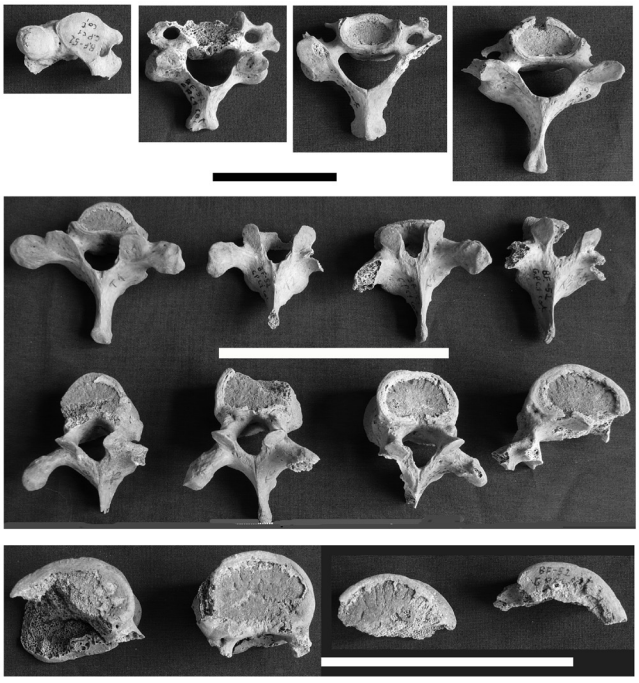

Figure 86 - Cranial views of the Muierii 5 vertebrae. Top: cervical vertebrae; scale bar is 5 cm. Middle: Thoracic vertebrae; scale bar is 10 cm. Bottom: Lumbar vertebral bodies; scale bar is 10 cm.

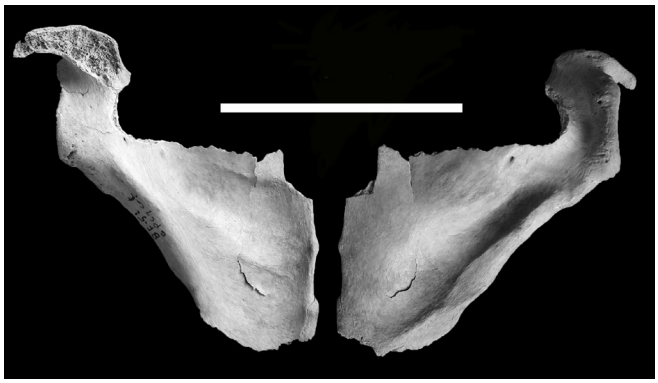

Figure 87 - Dorsal (right) and ventral (left) views of the Muierii 5 right scapula. Scale bar is 10 cm.

Figure 88 - Views of the Muierii 5 arm bones. From left to right: proximal right humerus in anterior view; left radius in posterior and medial views; left ulna in anterior view. Scale bar equals 10 cm.

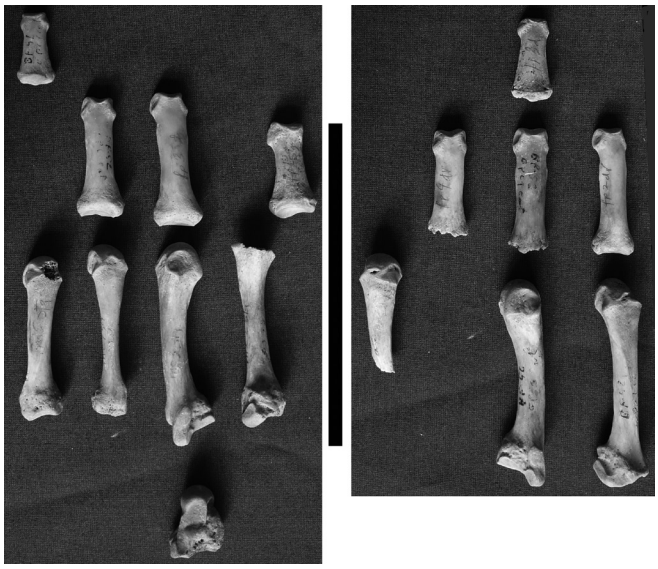

Figure 89 - Views of the left (left) and right (right) Muierii 5 hand bones. Scale bar is 10 cm.

The arm bones (tabl. 47; fig. 88) are notable for their smoothness and minimal rugosity for the various muscle markings. The ulnar coronoid process is relatively prominent. The radial tuberosity is anteriorly rotated, such that the interosseus crest line traverses its posterior portion. This is the most common arrangement among recent humans (Trinkaus & Churchill 1988; Churchill 1994). The hand bones (tabl. 48; fig. 89) are similarly notable for their smoothness. Even the origins for the dorsal interosseus muscles on the metacarpals are difficult to discern. The metacarpal 3 has a prominent styloid process, the projection of which is normally related to metacarpal length (Trinkaus *et al*., 2010); given the small size of Muierii 5, this reinforces its prominence. This large styloid process is joined by oblique orientations of the metacarpal 2 – capitate facets (*cf*., Niewoehner *et al*. 1997).

Since both right and left third metacarpals are present, handedness was assessed by computing the polar moment of area for each midshaft from its diameters (tabl. 48) modeling it as a solid ellipse (O'Neill & Ruff 2004). The resultant polar moments of

Scapula	
Glenoid fossa height (M-12)	33.3
Glenoid fossa breadth (M-13)	25.3
Depth of glenoid fossa (M-14)	4.0
Glenoid Index (M-13:M-12)	75.9
Depth index of glenoid fossa (M-14:M-12)	12.0
Humerus	
Transverse head diameter (M-9)	41.5
Radius	
Sagittal head diameter (M-5(1))	21.2
Transverse head diameter (M-4(1))	20.5
Head circumference (M-5-3))	67.0
Sagittal neck diameter (M-5(2))	13.0
Transverse neck diameter (M-4(2))	12.3
Neck circumference (M-5(4))	42.0
Minimum sagittal shaft diameter (M-5)	10.2
Maximum transverse shaft diameter (M-4)	13.6
Sagittal mid-shaft diameter (M-5a)	11.6
Transverse mid-shaft diameter (M-4a)	13.2
Mid-shaft circumference (M-5(5))	36.0
Diaphysis section index (M-5:M-4)	75.0
Neck-head circumference index (M-5(4):M-5(3))	62.7
Ulna	
Least circumference (M-3)	28.0
Height of olecranon (M-5)	5.9
Dorsoventral shaft diameter (M-11)	11.6
Transverse shaft diameter (M-12)	13.9
Diaphysis section index (M-11:M-12)	83.6

Table 47 - Measurements in millimeters of the shoulder and arm remains from Muierii 5.

Capitate	
Maximum length (M-1)	23.2
Maximum breath (M-2)	16.8
Maximum height (M-3)	17.3
Length – breath index (M-2:M-1)	72.3
Length – height index (M-3:M-1)	74.8
Height – breath index (M-2:M-3)	96.7
Metacarpals	
Length of metacarpal 2 right (M-2)	64.4
MC2 anteroposterior diameter of midshaft	7.9
MC2 mediolateral diameter of midshaft	6.7
Length of metacarpal 3 right (M-2)	63.2
MC3 anteroposterior diameter of midshaft	8.2
MC3 mediolateral diameter of midshaft	7.0
Length of metacarpal 3 left (M-2)	62.8
MC3 anteroposterior diameter of midshaft	8.1
MC3 mediolateral diameter of midshaft	6.9
Length of metacarpal 4 left (M-2)	53.0
MC4 anteroposterior diameter of midshaft	6.7
MC4 mediolateral diameter of midshaft	5.4
Length of metacarpal 5 left (M-2)	50.2
MC5 anteroposterior diameter of midshaft	5.9
MC5 mediolateral diameter of midshaft	7.3
Phalanges	
Length of proximal phalanx 1 left (M-3)	30.2
Length of proximal phalanx 2 right (M-3)	40.5
Length of proximal phalanx 3 left (M-3)	42.7
Length of proximal phalanx 4 left (M-3)	37.8
Length of intermediate phalanx 3 right (M-4)	27.7
Length of intermediate phalanx 5 left (M-4)	23.3

Table 48 - Measurements of the Muierii 5 hand bones, in millimeters.

Os coxae	
Coxal height (M-1)	240.0
Maximum breath of acetabulum right (M-22)	52.6
Maximum breath of acetabulum left (M-22)	51.4
Fibula	
Maximum diameter of mid-shaft (M-2)	16.4
Minimum diameter of mid-shaft (M-3)	9.8
Circumference of the mid-shaft (M-4)	45.0
Minimum circumference (M-4a)	34.0
Diaphysis section index (M-3:M-2)	60.0
Talus	
Maximum breadth of the talus (M-2)	31.3
Breadth of the trochlea (M-5)	26.3
Breadth of the posterior calcaneal facet (M-13)	20.1
Talus – trochlear breath index (M-5:M-2)	84.1

Table 49 - Morphometric dimensions of the Muierii 5 lower limb remains, in millimeters.

area are 327.5 and 310.6 mm^4. Computing the percent directional asymmetry (%DA) value of Steele and Mays (1995) and Auerbach and Ruff (2006) [((right – left) / ((right + left) / 2)) x 100], they produce an asymmetry of 5.3%. Being positive, this indicates right side dominance, but the degree of asymmetry, or right-side differential loading, is modest.

The Lower Limb Remains

There is little of note on the few and incomplete lower limb remains (fig. 90 and 91; tabl. 49). There is some irregularity of the spinous processes of the sacrum, and the sacral canal deviates to the right by the S5. The sacral hiatus is limited primarily to the S5 with minor involvement of the caudal S4, the most common pattern among recent humans (Trotter & Lanier 1945; Shinohara 1999; Sekiguchi *et al.* 2004). The pelvic surfaces and the fibular diaphysis are smooth. The anterior iliac spines are smooth, and the obturator sulci do not impinge on the ischial tuberosities. The talus has little projection of the lateral malleolar facet, and a slight anterior extension of the trochlea laterally (*cf.*, Barnett 1954; Trinkaus 1975).

Summary

The Muierii 5 partial skeleton therefore derives from a young adult female, who is notable primarily for the gracility of the muscle markings on the limb bones and activity related upper limb osteoarthritis. It adds to the modest sample of early Bronze Age skeletal remains from the region.

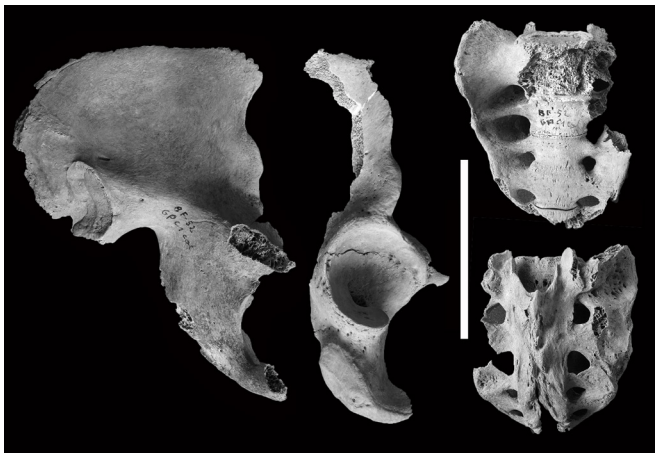

Figure 90 - The pelvic remains of Muierii 5. Left: internal view of the left os coxae. Middle: lateral view of the right os coxae. Right: ventral (above) and dorsal (below) views of the sacrum. Scale bar is 10 cm.

Figure 91 - The lower limb remains of Muierii 5. Left: anterior view of the proximal fibular diaphysis. Above right: dorsal view of the left talus. Below right: dorsal view of the fifth metatarsal. Scale bar is 10 cm.