

**THE BARMA GRANDE 1 FEMUR FRAGMENT HOUSED  
IN THE PEABODY MUSEUM (HARVARD)**

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The Barma Grande 1 femur fragment housed in the Peabody Museum (Harvard) is attributed to the 1884 discoveries of L. Jullien. Recently, a few more pieces from this excavation have been discovered in the collections (Bisson, pers. comm.) and Graziosi (1942) has described the remaining material located in the Musée Municipal in Menton, France. The specimen is 173mm. long and represents the proximal aspect of the left femur broken from just below the lesser trochanter to a point above the midshaft. The intact bone surface is reddish-brown in color. The staining is darkest on the anterior face, but all original surfaces have a reddish cast. Both ends of the bone fragment bear evidence of recent breakage, judged by the presence of chipped, spalled faces and the exposure of unstained, white bone surfaces. There appear to have been two separate episodes of post-mortem damage, indicated by differential staining of the damaged surfaces. In a few places, a couple of chipped/spalled surfaces are stained reddish-brown, but the most distinctive breaks have exposed large white (unstained) bone surfaces. These occur only on the proximal and distal ends of the fragment. There are a few dents and scratches on the bone's surface, but none of these suggest any indication of ancient burial treatment. Rather, all modifications which occur on the bone appear to be of fairly recent origin. Some undoubtedly relate to excavation "trauma", but the extensive damage at the proximal and distal surfaces presumably relates to the intentional destruction which occurred when the skeleton was uncovered in 1884.

Because of the incompleteness of the specimen, and especially the fact that only a short portion of the diaphysis remains, there is a limited amount of relevant morphological and metric information which can be observed. However, compared to the other material from the Balzi Rossi caves the specimen preserves some distinctive features, especially the degree of muscularity. This is most apparent in the extremely well-developed linea aspera, which is typical of the other male femurs from the cave complex (such as the Barma Grande 2 and 6). In Barma Grande 1 the linea aspera has a strongly developed superior aspect where the pectineus, gluteus maximus, and adductor muscles merge to form a prominent posterior projection just below the (missing) lesser trochanter. Inferiorly, the lateral and medial faces of the linea aspera protrude strongly from the diaphysis and their most posterior margins take on a scalloped appearance (Figure 1). Besides its posterior projection and overall rugosity, the linea aspera is broad in the medial-lateral direction, reaching a maximum of 13,7mm just superior to the distal-most break. Throughout its expression on the fragment, the linea aspera is represented by a broad projecting

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plane. It never becomes a crest with a sharp posterior line as is common in recent femurs. The marked expression of the linea aspera clearly indicates that the adductor insertions were very strongly developed in this individual. While not related to muscularity, the impressions of the first and second perforating branches of the deep femoral artery are well marked, leaving deep grooves on the posterior medial surface. The groove for the second perforating artery actually leaves a well developed groove in the medial aspect of the linea aspera (figure 1).

The fragment does not quite extend to the midshaft position, so dimensions at a point somewhat above midshaft are given in Table 1 and compared to midshaft dimensions for Early Upper Paleolithic males. For Barma Grande 1 the anterior-posterior (a-p), medial-lateral (m-l), and circumference dimensions taken somewhat above the midshaft position slightly exceed the comparative male sample means. Given that the anterior-posterior dimension generally reaches its maximum at or below midshaft, the actual anterior-posterior measurement at midshaft must have been somewhat larger. This would mean that the pilasteric index of 116,8 is an underestimate. Although it is difficult to be certain, it seems likely that the true dimensions at the midshaft for Barma Grande 1 would approach those for Barma Grande 6 (a-p 39,8mm; m-l 32.1mm; pilasteric index 124). If so, it would be near the top of the range for these dimensions and in the pilasteric index for the early Upper Paleolithic male sample.

In the subtrochanteric region, the anterior-posterior, medial-lateral, and circumferential measures of Barma Grande 1 exceed the male Early Upper Paleolithic means, again indicating the overall robusticity of the specimen. The subtrochanteric region is especially flattened and is marked by a well-developed proximo-lateral flange (Kidder, Smith and Jantz, 1992). This feature is not unique to the Balzi Rossi individuals, but is a regional feature, typical of all European Pleistocene hominid femurs (Frayer, 1993; Kidder, Smith and Jantz, 1992). Due to damage in the superior-lateral aspect of the subtrochanteric region, it is not possible to determine if a third trochanter was present, but it is likely since the gluteal ridge and hypotrochanteric fossa are well marked.

Finally, the cortical walls appear to be thick, although no comparative data are presented for the Early Upper Paleolithic. At the most distal break above the midshaft position, the medial and lateral femur walls are 8mm and 9mm thick, respectively. Together these represent about 57% of the total medial-lateral femur breadth. In the anterior-posterior direction, the anterior wall thickness is about 7mm and the posterior (including the linea aspera) about 11mm thick. The thickness of the two cortical walls represents just slightly more than 50% of the total anterior-posterior dimension. Compared to modern European and Amerind material in the collections of the University of Kansas, the cortical walls near the midshaft position are remarkably thicker in Barma Grande 1.

In summary, morphological and metric details of the femur fragment representing the Barma Grande 1 specimen suggest a robust individual based on muscular attachments and the thick cortical dimensions.

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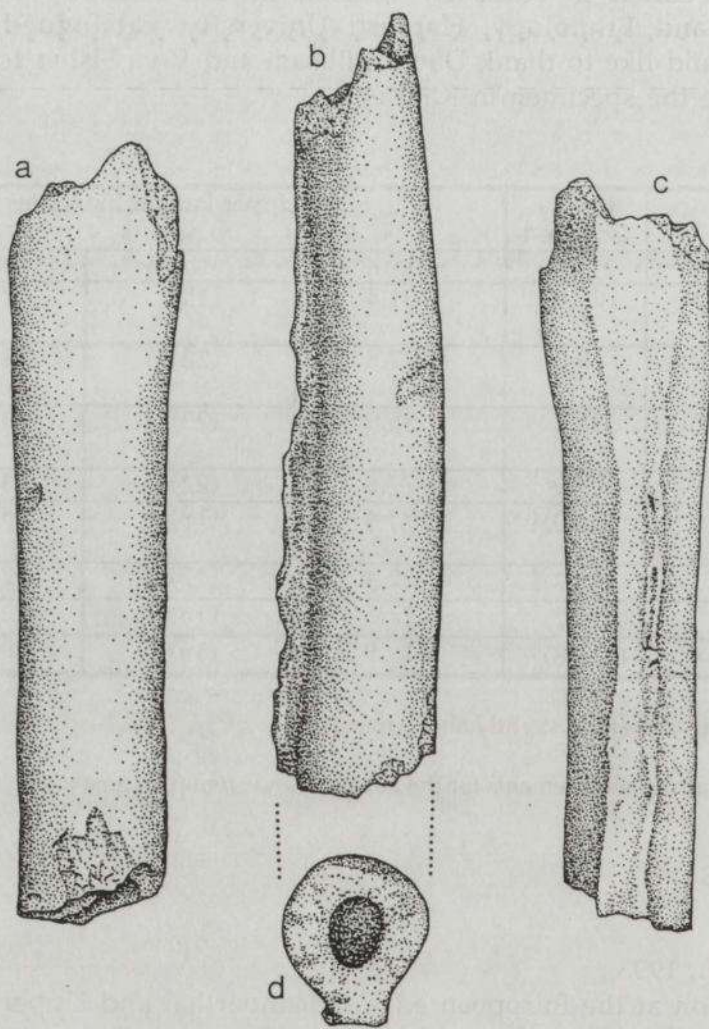
	Barma Grande 1	Early Upper Paleolithic Males		
		Mean	(n)	range
Subtrochanteric circumference	105,0	101,4	(15)	87.0-115.0
Subtrochanteric a-p	29.3	27,8	(22)	23.0-32.4
Subtrochanteric m-1	38.6	35.9	(22)	29.0-42.8
Meric index	75.9	77.6	(22)	63.2-93.8
Midshaft circumference	(104.0) <sup>1</sup>	93.4	(19)	78.0-115.0
Midshaft a-p	(34,7) <sup>1</sup>	32.4	(17)	27.0-39.8
Midshaft m-1	(29,7) <sup>1</sup>	27.5	(16)	22.0-32.1
Pilasteric index	(116.8) <sup>1</sup>	116.9	(16)	99.0-131.0

<sup>1</sup> determined from a position slightly above midshaft.

Table 1 : Comparative measurements for the Barma Grande femur fragment

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Views of Borma Grande 1 femur, a-anterior; b-lateral, c-posterior, d-cross-section.