

SHORT NOTE – NOTA BREVE

THE HORN-CORE OF *HEMIBOS GALERIANUS* FROM PONTE MILVIO, ROME (ITALY)BIENVENIDO MARTINEZ-NAVARRO^{1,*} & MARIA RITA PALOMBO²*Received: October 23, 2006; accepted: August 22, 2007*

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Abstract. Anatomical reinterpretation of a horn-core from the Ponte Milvio site, previously ascribed to *Bubalus murrensis*, suggests that it belongs to the species *Hemibos galerianus*, originally described from the type locality of the Galerian Land Mammal Age (LMA). This is the second record in the Italian Pleistocene of this rare Bovini species, derived from the genus *Hemibos* of Indian origin.

Riassunto. Viene descritto un nucleo osseo mancante della parte basale rinvenuto nei depositi alluvionali un tempo affioranti a Ponte Milvio (Roma) e già attribuito a *Bubalus murrensis*. Morfologia e dimensioni consentono un'attribuzione ad *Hemibos galerianus*, specie fino ad ora identificata solo in Italia nei depositi del Pleistocene medio inferiore della Formazione di Ponte Galeria.

Introduction

Hemibos galerianus is, as its name implies, a Galerian form, known from the type locality of the middle Galerian Land Mammal Age (LMA), just younger than the Early-Middle Pleistocene boundary (Marra et al. 1998) (PG2, Milli 1997). Until now, this species has not been documented from any other locality in Europe. Recently, Cassoli & Segre (2005) published a large Bovini horn-core from the Ceselli Collection, housed at the Monastery of Santa Scolastica in Subiaco (near Rome). The specimen, coming from alluvial gravels cropping out at Ponte Milvio (Rome), was first referred to *Bos bubalus* by Ceselli (1866, 1872). Later, Portis

(1896, p. 411) suggested that the horn-core, with its triangular cross-section, was similar to the extant water buffalo *Bubalus bubalis* of the Roman region (“bufalo attuale della Campagna Romana”).

Cassoli & Segre (2005) re-described the specimen – which is broken at the base but mostly complete and of high preservation quality – as a right horncore of *Bubalus murrensis* (Berckhemer, 1927), a species known from the late Middle and Late Pleistocene of Central and Northern Europe (Koenigswald 1991; Kolfschoten 2000; Schreiber & Munk 2002; Schreiber 2004) and also recorded from the late Middle Pleistocene of “Campagna Romana” (Palombo unpubl. data, Palombo 2004). However, a re-analysis of the Ponte Milvio specimen, suggests that the attribution to *Bubalus* is incorrect and that the horn-core belongs to another species of Bovini, *Hemibos galerianus* (Martínez-Navarro & Palombo 2004). This species, erected for an unnumbered cranium of a large Bovini found at the quarry Cava di Breccia in a sandy level of the Ponte Galeria Formation near Roma (*sensu* Conato et al. 1980, TST deposit of the PG2 sequence, Milli 1997; Milli & Palombo 2005) now housed in the deposits of the Soprintendenza Archeologica di Roma, was originally ascribed to the genus *Bos* (Petronio & Sardella 1998). Indeed, Petronio & Sardella (1998), comparing the Cava di Breccia specimen with the more common Eurasian Pleistocene genera of the tribe Bovini, *Bubalus* (*Bubalus murrensis*), *Bison* (*Bison schoetensacki* and *Bison priscus*), and *Bos*

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(*Bos primigenius*, *Bos acutifrons* and *Bos namadicus*), concluded that it was a new primitive species of the genus *Bos*: *B. galerianus*. The genus *Bos* represents an evolved form of Bovini, well known in middle and late Pleistocene Eurasian assemblages by the species *Bos primigenius*. However, the anatomy at the base of the horn-cores of the Cava di Breccia specimen suggests that it is a member of the Indian origin genus *Hemibos*, the probable ancestor of the water buffalo *Bubalus*, as described in Martínez-Navarro & Palombo (2004), where the species was redescribed and assigned to *Hemibos galerianus*.

Hemibos is recorded in the Late Pliocene and Early Pleistocene deposits of the Indian subcontinent (Upper Siwaliks, Pinjor Formation, *H. acuticornis*, *H. triquetricornis*, *H. antelopinus*) (Pilgrim 1939; Nanda 1979), and in the Lower Pleistocene deposits of Gadera, Israel (named *H. palaestinus*) (Pilgrim 1941). *Hemibos* is characterized by elongated and not prominent frontals, horn-cores with no neck at the base, and an angle between the horn-cores between 85° and 110° although

this character is variable. The orientation of the horn-cores varies among species, but in *H. triquetricornis* and to some degree in *H. acuticornis*, it is similar to *H. galerianus*, directed backward, outward and a little upward. According to Martínez-Navarro & Palombo (2004) the European species: “*Hemibos galerianus* is larger than the other four known species of the genus (*H. acuticornis*, *H. triquetricornis*, *H. antelopinus*, and *H. palaestinus*). The frontal bones are elongated and the horn-cores are positioned posteriorly, just above the occipital crest. The horn-core section is subtriangular with a pronounced posterior keel, and marked anterior and ventral keels. The bases of the horncores diverge an angle of approximately 110° and are less posteriorly inclined than in *H. acuticornis* and *H. triquetricornis*. The temporal line is reduced and the nuchal line is very well marked, with an ovoidal profile. The whole occipital area is anteriorly shifted, located under the intercornual surface. The foramen magnum has a quadrangular profile, and the condyles have a horizontally oriented upper surface”.



Fig. 1 - Horn-core specimen from Ponte Milvio: a) dorsal view; b) posterior view; c) ventral view; and d) anterior view. Scale bar = 15 cm.

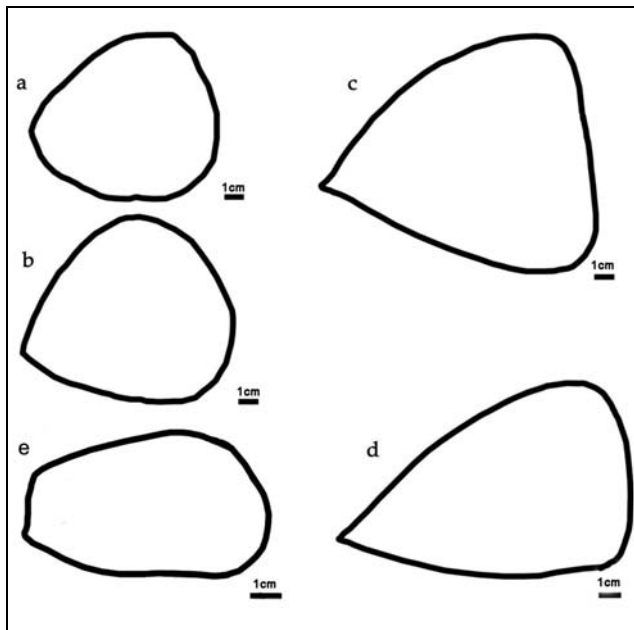


Fig. 2 - Horn-core sections of different specimens of the genus *Hemibos*: a) BMNH 40886, *Hemibos triqueticornis*; b) BMNH 39560, *Hemibos acuticornis*; c) type specimen of *Hemibos galerianus*; d) Ponte Milvio specimen and e) MPUR/V s.n., *Bubalus bubalis* (BMNH: British Museum Natural History; MPUR: Palaeontological Museum, University of Rome “La Sapienza”).

Description of the specimen from Ponte Milvio

The Ponte Milvio specimen, a mostly complete horn-core, is triangular in cross-section from the base to the apex (Tab. 1; Fig. 1, 2). It flares outward, forward and little upward. The anterior face is slightly curved, with a keel on the base at the connection with the ventral face. The dorsal and ventral faces are flat and a marked keel runs between them in the posterior area of the horn-core.

The specimen described by Cassoli & Segre (1994) as right horn-core of *Bubalus murrensis* is actually a left horn-core of *Hemibos galerianus*, and matches the anat-

TPL	531
EPA	615
IPA	490
APD at the base	>112.2
DVD at the base	86.3
APD at 15 cm from the base	115.6
DVD at 15 cm from the base	75.1
APD at 30 cm from the base	89.8
DVD at 30 cm from the base	61.7

Tab. 1 - Measurements of the Ponte Milvio specimen. Abbreviations: TPL: total preserved length; EPA: external preserved arch; IPA: Internal preserved arch; APD: antero-posterior diameter; DVD: dorso-ventral diameter. Measures in mm.

omy, cross-section and size of the type specimen of this species described from Ponte Galeria (Petronio & Sardella 1998; Martínez-Navarro & Palombo 2004).

There is no possible comparison with *Bubalus murrensis* because the horn-cores of this buffalo have a different orientation and different cross-section (Schreiber & Munk 2002: 740, fig.2, or Koenigswald 1991: 78, fig. 6).

Chronology

The “Ponte Molle” (today Ponte Milvio) fauna in the Tiber alluvial deposits cropping out inside Rome at “Ponte Molle” and Tor di Quinto area have been known since the second half of the 19th Century (Ponzi 1862, 1878; Portis 1893, 1900, 1907, 1917).

According to Ponzi (1862) just one fossiliferous gravel layer yielded fossil specimens, whereas subfossil bones were retrieved from Holocene sands. On the other hand, Portis (1893), analyzing the same area in the Cava d’Alessandri section, described seven conglomeratic layers alternating with sandy deposits, with only the lowermost ones being fossiliferous. Since the beginning of the 20th Century, the area was intensely urbanized, thus when Ambrosetti & Bonadonna (1967) correlated the “Ponte Molle” deposits yielding vertebrate bones with the Ponte Galeria Formation (*sensu* Conato et al. 1980), it was only based on the occurrence of some Galerian taxa, such as *Cervus elaphus acoronatus*. Later, Capasso-Barbato et al. (1998), reviewing the specimens held in the Paleontological Museum of Rome “La Sapienza” University, suggested the occurrence of four different faunal assemblages, ranging in age from the early Middle Pleistocene to the Holocene. Di Stefano et al. (1998) recognised two faunal assemblages, ascribing them to Isernia (Ponte Molle 1) and Vitinia (Ponte Molle 2) faunal units (*sensu* Gliozzi et al. 1997, but see Palombo 2005).

At the moment, the only record of *H. galerianus*, from a stratigraphically well-defined deposit was found just above the lower to middle Pleistocene transition in the Ponte Galeria area. The absence of any other record of this species in younger or older deposits of Europe, together with the occurrence of Galerian species in the Ponte Milvio gravels, suggests that Ceselli’s horn-core has to be close in age to that from Ponte Galeria (middle Galerian LMA, *sensu* Gliozzi et al. 1997).

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