

ON THE OCCURRENCE OF HIPPOPOTAMUS AT S. REGOLO, LOWER VALDARNO (PISA, ITALY)

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ABSTRACT - *On the occurrence of Hippopotamus at S. Regolo, Lower Valdarno (Pisa, Italy)* - Il Quaternario, 7(1), 1994, 69-72 - *Hippopotamus* is reported for the first time from the Lower Valdarno. Its occurrence is testified by a right tibia from S. Regolo. Unfortunately, the bone lacks an exact stratigraphic record. The characters and proportions of the fossil make it tentatively referable to *H. tiberinus* MAZZA. It is therefore possible that the bone comes from late Early or early Middle Pleistocene sediments which patchily outcrop in the area.

RIASSUNTO - *Presenza di Hippopotamus a S. Regolo, Bassa Valdarno (Pisa, Italia)* - Il Quaternario, 7(1), 1994, 69-72 - *Hippopotamus* è segnalato per la prima volta nel Valdarno inferiore. La sua presenza è testimoniata da una tibia destra proveniente da S. Regolo. Sfortunatamente non è nota l'esatta provenienza stratigrafica del reperto che, per caratteri e proporzioni, è tentativamente riferibile a *H. tiberinus* MAZZA. E' perciò possibile che l'osso provenga da sedimenti del tardo Pleistocene inferiore o del primo Pleistocene medio che affiorano in lembi nell'area.

Key-words: *Hippopotamus*, Pleistocene, Lower Valdarno, Italy

Parole chiave: *Hippopotamus*, Pleistocene, Valdarno inferiore, Italia

1. INTRODUCTION

Currently available evidence attests that the genus *Hippopotamus* first occurred in Western European continental areas during the Early Pleistocene following three ways of immigration, a western one through the Iberian peninsula, a central one through Italy and an eastern one through the Balcan peninsula (Kahlke, 1990). *H. antiquus* DESMAREST was the first representative of the genus in Europe. The oldest known specimens come from the Upper Valdarno. They have always been found in Late Villafranchian faunal contexts (Tasso Faunal Unit) and are therefore Early Pleistocene in age. The species persisted at least until the early Mid-Pleistocene, as attested by the finds from Mosbach-2 (*sensu* Koenigswald & Tobien, 1987). During its existence, *H. antiquus* apparently gave rise to another species, *H. tiberinus* MAZZA, a smaller-sized, presumably more aquatic representative, which survived to the very beginning of the Late Pleistocene. The two species thus seem to have coexisted in time, but probably not in space, for a certain while, more precisely during the interval corresponding to the Late Villafranchian/Galerian transtion and the earliest Galerian (Mazza, 1991; in press). Hippopotamuses apparently disappeared from Central and Northern Europe during the Holsteinian interglacial and Saalian glaciation. On the contrary, in Italy they seem to persist longer and are probably absent only during the Saalian (Mazza, in press). They re-immigrated at the beginning of the Late Pleistocene, during which they are represented by *H. amphibius*, which made its first appearance in Western Europe, and again by *H. tiberinus*. Hippopotamus remains had never been reported from the Early Villafranchian. During a study visit to the col-

lections of the Department of Archeology of Pisa a right tibia of hippopotamus was identified, erroneously attributed to "*Rhinoceros*" *etruscus*, found at S. Regolo, Lower Valdarno. Unfortunately, there is no detailed stratigraphic record of the specimen.

2. DESCRIPTION OF THE SPECIMEN

The tibia, n. 2539 of the collections of the Department of Archeology of Pisa University, is well preserved and well fossilized. It appears fractured in the diaphysis and was partly restored with plaster.

The bone is sturdy, more than the *H. antiquus* tibiae from the Upper Valdarno. The proximal epiphysis is dilated, both latero-medially and dorso-plantarly. The

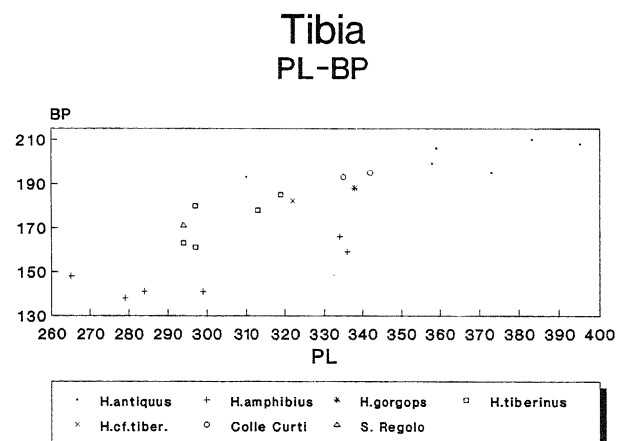


Fig. 1 - Physiological length (PL) versus proximal breadth (BP).
Lunghezza fisiologica (PL) contro larghezza prossimale (BP).

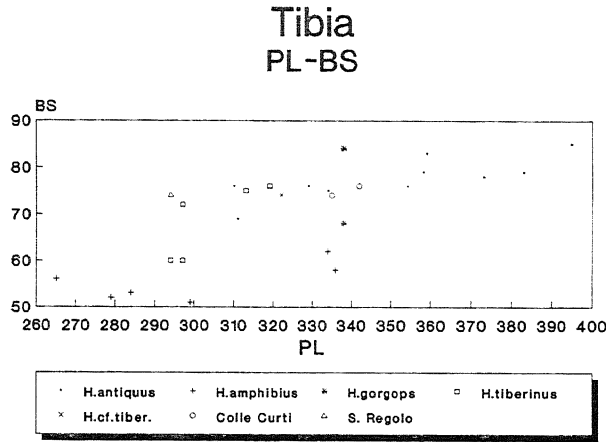


Fig. 2 - Physiological length (PL) versus breadth of the shaft (BS).
Lunghezza fisiologica (PL) contro larghezza della diafisi (BS).

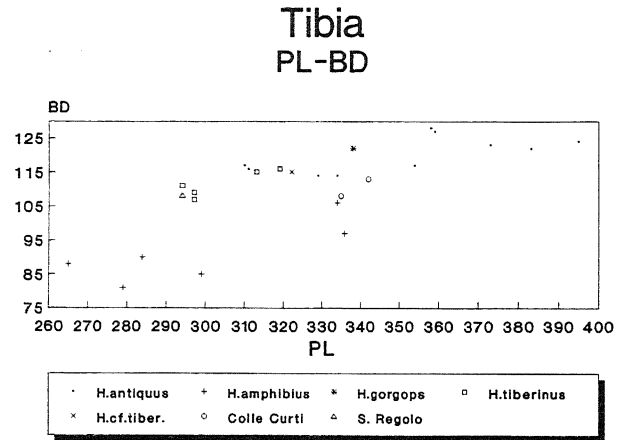


Fig. 3 - Physiological length (PL) versus distal breadth (BD).
Lunghezza fisiologica (PL) contro larghezza distale (BD).

diaphysis is massive in dorsal and plantar view, while it appears somewhat more slender in lateral and medial view. The distal articular grooves are not oblique, which rules out any possible attribution to *Hexaprotodon*.

The dimensions of the bone are the following (in mm):

- greatest length: 353;
- physiologic length: 294;
- proximal breadth: 171;
- proximal depth: 139;
- breadth of the diaphysis: 74;
- depth of the diaphysis: 55;

- distal breadth: 108;
- distal depth: 71 (?).

The massive aspect of the bone and its proportions are suggestive of *H. tiberinus*; as a matter of fact the specimen falls among the *H. tiberinus* plots on several scatter diagrams included here (Figs. 1-3). This is also the case if it is plotted on a principal component analysis diagram, but the analysis might be biased by the relatively small dimensions of the sample (Fig. 4).

The *S. Regolo* tibia is therefore tentatively referred to *Hippopotamus* sp. (cf. *H. tiberinus*).

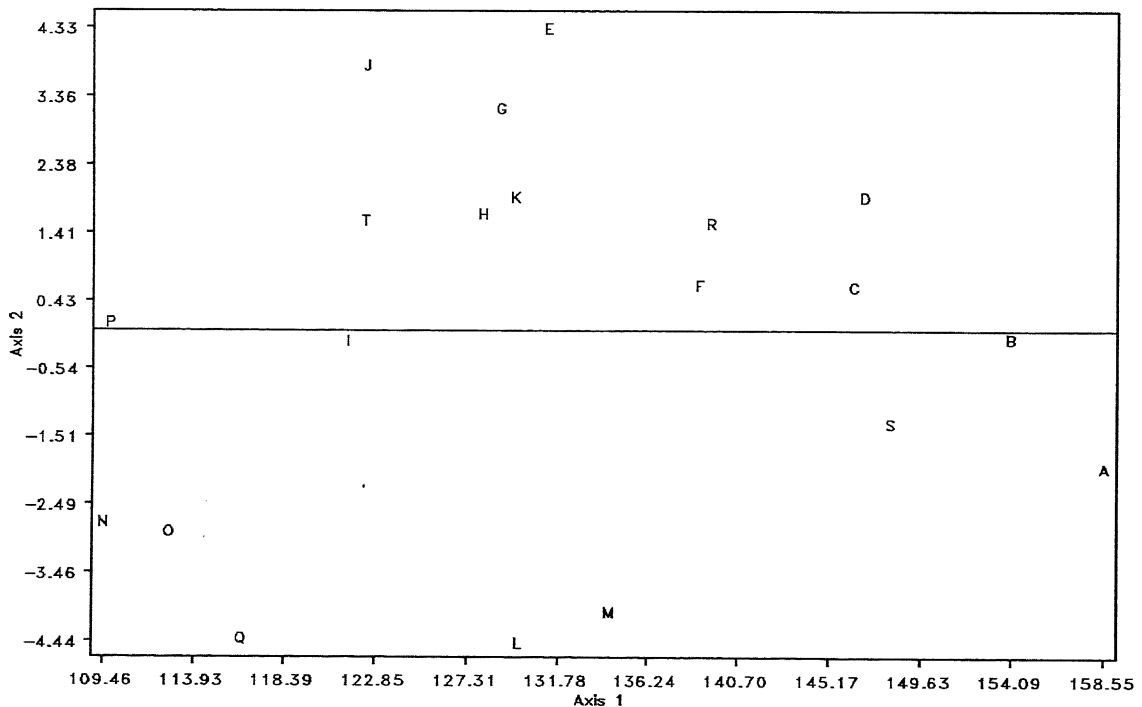


Fig. 4 - Principal component analysis of the *S. Regolo* tibia (T).
Analisi delle componenti principali della tibia di *S. Regolo* (T).



Fig. 5 - (1) *Hippopotamus* sp. (cf. *H. tiberinus*) tibia from S. Regolo: dorsal view; (2) *Hippopotamus* sp. (cf. *H. tiberinus*) tibia from S. Regolo: plantar view; (3) *Hippopotamus* sp. (cf. *H. tiberinus*) tibia from S. Regolo: lateral view; (4) *Hippopotamus* sp. (cf. *H. tiberinus*) tibia from S. Regolo: medial view; (5) *Hippopotamus* sp. (cf. *H. tiberinus*) tibia from S. Regolo: proximal view.
 (1) S. Regolo: Tibia di *Hippopotamus* sp. (cf. *H. tiberinus*): vista dorsale; (2) vista plantare; (3) vista laterale; (4) vistamediale; (5) vista prossimale.

3. CLOSING REMARKS

S. Regolo is one of the many Lower Valdarno localities, together with Montopoli, San Miniato, Montelupo, Capannoli, etc., renowned for having contributed considerably rich collections of Late Pliocene continental vertebrates, biochronologically referred to the Triversa and Montopoli Faunal Units of Early Villafranchian age. Besides these classical finds, bones referable to more recent faunal contexts are occasionally found, sometimes as erratics. Although lacking a clear stratigraphical provenance, these elements shed light onto the geo-

graphical distribution of the Pleistocene faunas of Italy. According to Marroni *et al.* (1990), Early Pleistocene sediments, such as *Arctica*-bearing sands and clays, clays of brackish environment and "Nugola Vecchia" sands, outcrop extensively in the S. Regolo area. The S. Regolo tibia confirms the existence of Pleistocene deposits in the area. However, the tentative attribution to *H. tiberinus*, which is typically found in Late Villafranchian/Galerian faunal contexts of Italy, suggests the presence of late Early - early Middle Pleistocene sediments.

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