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THE EARLY TO MIDDLE PLEISTOCENE ITALIAN BOVIDAE: BIOCHRONOLOGY AND PALAEOECOLOGY

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ABSTRACT: Palombo M.R., Masini F. & Rozzi R. *The Early to Middle Pleistocene Italian Bovidae: biochronology and palaeoecology.* (IT ISSN 0394-3356, 2011)
Bovids are common elements in the Italian local faunal assemblages (LFAs), but their diversity and ecological role varied in LFAs as well as in faunal units (FUs) throughout the Early and Middle Pleistocene. Representatives of Bovini tribe are continuously present, albeit with different lineages, while "Caprini" are sporadically recorded by several genera, and Antilopini are the less represented.

RIASSUNTO: Palombo M.R., Masini F. & Rozzi R. I Bovidi italiani del Pleistocene inferiore e medio: biocronologia e paleoecologia. (IT ISSN 0394-3356, 2011)
Durante il Quaternario, i bovidi sono elementi comuni delle faune locali (LFAs) italiane, ma la loro diversità e i loro ruoli ecologici variano specialmente nel corso del Pleistocene inferiore e medio. I Bovini sono presenti in tutto l'intervallo di tempo considerato, sebbene con diversi generi e linee evolutive, mentre il record dei "Caprini" è discontinuo e gli Antilopini sono la tribù meno rappresentata.

Key words: Bovidae, Early Pleistocene, Middle Pleistocene, Italy

Parole chiave: Bovidae, Pleistocene inferiore, Pleistocene medio, Italia

1. INTRODUCTION

During the Quaternary, in Italy, as in Eurasia, bovids are common elements in local faunal assemblages (LFAs), though the richness of the Italian Bovidae is less than in most European regions. Their dispersion and commonness vary over time and across the peninsula due to a multiple set of factors, including discontinuity in the fossil record, ecological and taphonomical biases. A few European genera of different tribes, such as *Saiga, Ammotragus, Caprovis, Soergelia* and *Ovibos*, are missing (PALOMBO, 2009) as well as some species which seem to have been either endemic in the North Eastern Mediterranean *(Euthyceros thessalicus*, *Antilope* (= *Parastrepsiceros*) *koufosi*) or present even in the Black Sea area (*Pontoceros ambiguus*) (KOSTOPOULOS, 2006; CRÉGUT-BONNOURE, 2007). Conversely, two species either endemic (e.g. *Hemibos galerianus*) or rarely reported in Europe (e.g. *Bubalus murrensis*) are recorded in central Italy.

2. THE FOSSIL RECORD

Bovini

During most of the Early Pleistocene, the representatives of the tribe are the large, but quite slender *Leptobos* present during the early to late Villafranchian with two sub-genera, *Leptobos* (*Leptobos*) and *Leptobos* (*Smertiobos*), whose species provide an important part of the fossil documentation of this genus in Europe (MASINI, 1989; DUVERNOIS, 1990; GENTILI & MASINI, 2005). The soundest documentation comes from the historical collections from the Upper Valdarno, Montopoli (Lower Valdarno), Olivola (Aulla basin), Triversa (San Paolo and Dusino), and from recent excavations in Upper Valdarno, Pietrafitta (Tavernelle basin), the Chiana valley, and the Tiberino basin (see GENTILI & MASINI, 2005). *Leptobos* was replaced during the latest Villafranchian (Pirro FU) by the rather stout *Bison* (*Eobison*) *degiulii*, while the heavy and even larger *Bison schoetensacki* is recorded in the Galerian LFAs. At the beginning of the Middle Pleistocene the large species *Hemibos galerianus,* derived from an Indian genus, is only reported from the middle Galerian LFAs of the Roman basin. The auroch, *Bos primigenius,* appeared a bit later in LFAs of the Isernia FU and became more and more abundant during the late Middle and Late Pleistocene. The late Middle Pleistocene Bovini guild is characterized by the occurrence of the water buffalo *Bubalus murrensis,* and perhaps also by the spread of the steppe bison, *Bison priscus.*

Antilopini

Only two representatives of this tribe are reported in the Italian fossil record. The larger one, *Gazella borbonica*, the single species of *Gazella* occurring in Southern Europe since the Ruscinian (KOSTOPOULOS, 2006), appeared in the Italian peninsula at the beginning of the Early Pleisocene and is recorded in the middle Villafranchian, mainly in central Italian LFAs. The anticlockwise spiral horned *Gazellospira torticornis*, a parkland dweller,

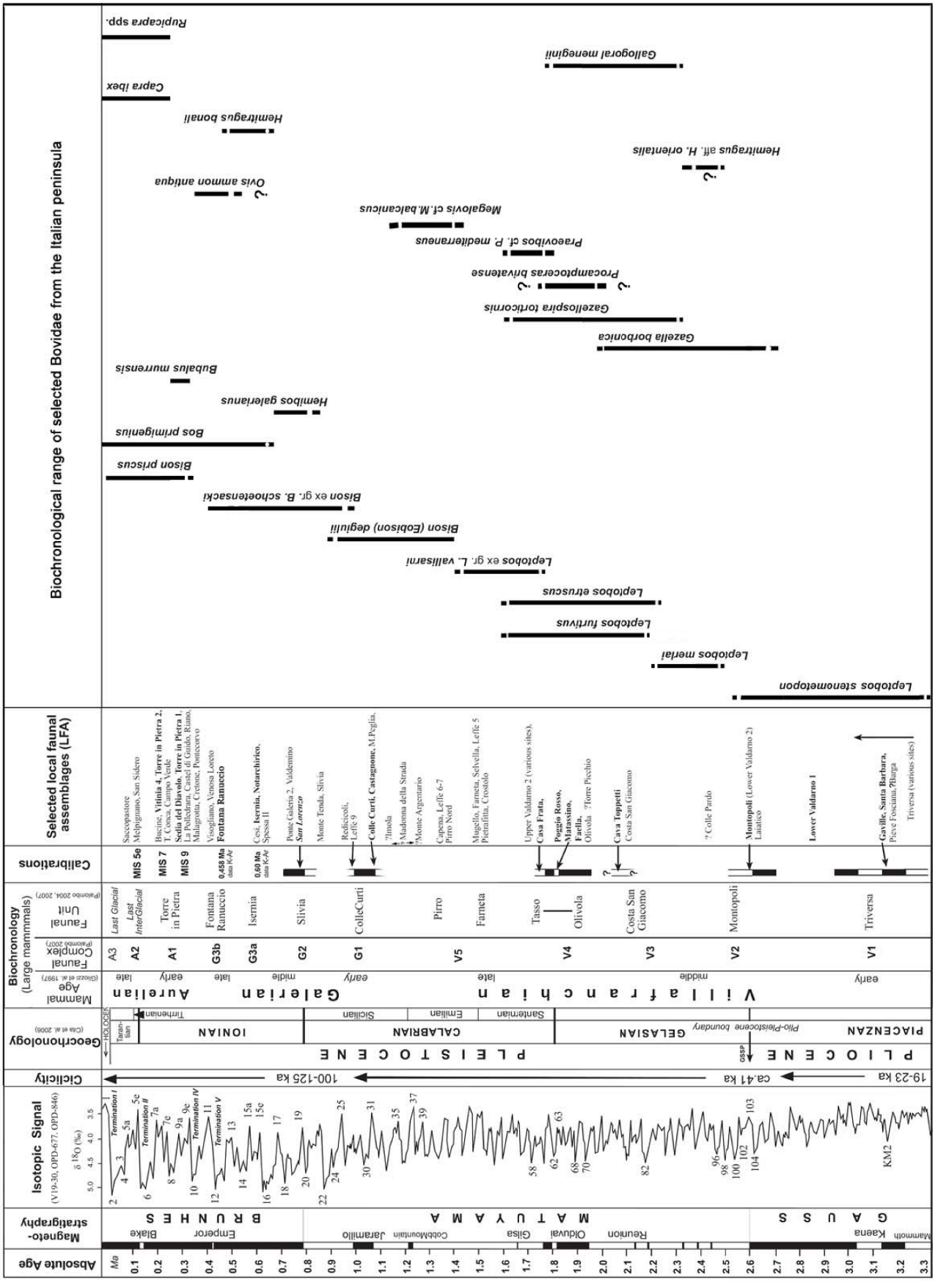

Table 1 – Integrated chronological scheme for the Late Pliocene to Late Pleistocene Bovidae of the Italian peninsula.
Schema cronologico integrato e distribuzione del record dei Bovidi italiani dal tardo Pliocene al Pleistocene superiore.

appeared later in the Gelasian, but survived most of the early late Villafranchian (Olivola, Tasso FU).

"Caprini"

A representative of the enlarged Caprini *sensu lato* tribe (see ROPIQUET & HASSANIN, 2005; BIBI *et al.*, 2009 for a discussion), *Hemitragus* cf. *H. orientalis,* is first dubiously reported at the beginning of the Early Pleistocene in the Collepardo LFA (Montopoli FU) but the specimens have never been described. During the following middle Villafranchian, the goral *Gallogoral meneghinii* appeared, while *Procamptoceras brivatense,* phenetically close to the living *Rupicapra* (MASINI & LOVARI, 1988), occurred later. The occurrence of the ancient muskox *Praeovibos* sp. (lately referred to as *Preaeovibos* cf. *P. mediterraneus* by CRÉGUT-BONNOURE, 2005; 2007) is reported from the Tasso FU by DE GIULI & MASINI (1983). The remains of a large "Caprini" found in the Pirro LFA (DE GIULI *et al.*, 1986) have recently been assigned by CRÉGUT & DIMITRIJEVIĆ (2006) to *Megalovis balcanicus.* During the early Middle Pleistocene, the fossil record of "Caprini" consists of only scanty remains. A few teeth of *Hemitragus bonali* were found at Isernia La Pineta (SALA, 1996), while *Ovis ammon antiqua* was present during the late Galerian, not only in the north-eastern corner of the Italian peninsula (Visogliano Shelter, ABBAZZI *et al.*, 2000), but also in central Italy, likely in the PG4 deposits of the Ponte Galeria/Magliana area (cfr. ROZZI *et al.* in press). Chamois (*Rupicapra*) and ibex (*Capra ibex*) possibly were already spread during the latest Middle Pleistocene across the Italian peninsula as documented by the Paglicci LFA (cfr. PALOMBO, 2009 and references therein).

3. REMARKS

Throughout the Early and Middle Pleistocene, the diversity and ecological role of Italian bovids were changing in LFAs as well as in faunal units (FUs). During the Gelasian and the Early Calabrian (from Montopoli to Tasso FU), species of the genus *Leptobos*, sometimes found in association with small bovids mainly Antilopini and Caprini, were definitely the most frequent (GENTILI & MASINI, 2005) (Tab. 1). This time span shows the highest bovid diversity peaking at the time of the Olivola FU. Almost all ecological categories are represented, though the percentage of large bovids increases throughout the early late Villafranchian. During the following Early Pleistocene (Farneta, Pirro and Collecurti FUs), diversity dramatically decreased. A number of middle and early late Villafranchian taxa disappeared, while representatives of the genus *Bison* replaced *Leptobos,* and among middle sized bovids, only *Megalovis* is thus far recorded in the Pirro Nord LFA (Tab. 1). During the Middle Pleistocene, the diversity of bovids progressively increased due to the appearance of both large and very large Bovini (*Hemibos galerianus*, *Bos primigenius* and then *Bubalus murrensis*) and Caprini, as well. Among the latter, *Hemitragus bonali* and *Ovis ammon antiqua* are reported from a few early Middle Pleistocene sites, whereas *Capra ibex* and *Rupicapra,* which appeared at the end of the Middle Pleistocene, are very frequent throughout the Late Pleistocene.

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