

THE EARLY TO EARLY MIDDLE PLEISTOCENE STENONOID HORSES FROM ITALY

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ABSTRACT: Alberdi, M.T., Palombo M.R., *The Early to early Middle Pleistocene stenonoid horses from Italy*. (IT ISSN 0394-3356, 2011)

At least five stenonoid horses have been recorded in the Early to early Middle Pleistocene Italian faunal assemblages: *Equus livenzovensis*, *Equus stenorionis*, *Equus stehlini*, *Equus altidens* and large sized equids generally referred to as the so-called "*Equus ex gr. E. bressanus - E. suessenbornensis*". *Equus altidens* and *Equus suessenbornensis* are a rather long surviving species, ranging in age from the latest Villafranchian (Pirro FU) to the late Galerian, and are sometimes found together in the same local faunal assemblage. This study mainly focuses on these two species.

RIASSUNTO: Alberdi, M.T., Palombo M.R., Gli equidi stenonoide del Pleistocene inferiore e medio inferiore dell'Italia. (IT ISSN 0394-3356, 2011)

Almeno cinque specie di equidi stenonoidi sono presenti in Italia durante il Pleistocene inferiore e medio inferiore: *Equus livenzovensis*, *Equus stenorionis*, *Equus stehlini*, *Equus altidens* ed equidi di grande taglia generalmente riferiti al cosiddetto gruppo di "*E. bressanus - E. suessenbornensis*". *Equus altidens* e *Equus suessenbornensis* sono sicuramente presenti in Italia, almeno dal tardo Villafranchiano fino al Galeriano superiore, spesso associate nello stesso giacimento. Questo studio è principalmente centrato sull'esame critico di queste due specie.

Key words: *Equus altidens*, *Equus suessenbornensis*, Pleistocene, Italy

Parole chiave: *Equus altidens*, *Equus suessenbornensis*, Pleistocene, Italia

1. INTRODUCTION

Fossil representatives of the genus *Equus* are recorded from several Italian localities, dating from the Early to early Middle Pleistocene. Various species and subspecies are reported in the literature (see e.g. AZZAROLI, 1965, 1979, 1990, 1999; DE GIULI, 1972; ALBERDI et al., 1988; CALOI & PALOMBO, 1990; CALOI, 1995, 1997; FORSTEN, 1999; and references in those papers), but their taxonomy, phylogenetical relationships and chronological distribution are still a matter of debate. At least five stenonoid horses have been recorded: *Equus livenzovensis*, *Equus stenorionis*, *Equus stehlini*, *Equus altidens* and large sized equids generally referred to as the so-called "*Equus ex gr. E. bressanus - E. suessenbornensis*".

Equus livenzovensis was a large horse whose scanty remains were found in deposits dated to the beginning of the Pleistocene (Middle Villafranchian, Montopoli FU). *Equus stenorionis* first reported a short time later (Costa San Giacomo FU) is the most common equid in the early late Villafranchian local faunal assemblages (LFAs) (Olivola, Tasso FU), while the actual chronological range of the small stenonoid horse *Equus stehlini* is uncertain, due to the controversial identification of some

specimens already ascribed to *E. stenorionis* and/or *E. altidens* (cf. ALBERDI et al. 1998; FOSTERN 1999). Advanced stenonoid equids, by some authors ascribed to *Equus altidens* are reported in LFAs of Farneta FU (e.g. horses from Selvella, Tuscany = *E. cf. stenorionis* in DE GIULI 1987; = *E. stenorionis* ssp., in CALOI & PALOMBO, 1990; *Equus altidens* in CALOI, 1995).

Equus altidens and *Equus suessenbornensis* were rather long surviving species, sometimes found together in the same LFA. Their remains have been found in Italy in LFAs ranging in age from the latest Villafranchian (Pirro FU, ALBERDI & PALOMBO, in press) to the late Galerian. A horse possibly close to *E. suessenbornensis* is also reported from an early Aurelian LFA by CAPASSO BARBATO & GLIOZZI, (1995).

This study mainly focuses on these two species.

Equus altidens REICHENAU, 1915

E. altidens is a slender horse, more so than in the other stenonoid species, including the most related species *E. senegensis* (ALBERDI et al. 1998). The protocone shows a variable shape, flattened or indented lingually, occasionally lacking a heel, while the distal part is more protruding than in *E. stenorionis*. Scholars are divided about the origin and

the phylogenetic relationship of *E. altidens* because of differing opinions about the actual taxonomical and phylogenetical value of some features typically shown by this species. Most authors consider it a “stenonoid” horse, close to or originated from the *Equus stenonis* lineage (cf. ALBERDI *et al.* 1998). Others believe *E. altidens* to have been a new Early Pleistocene settler coming from Africa (= *Equus numidicus*, GUERRERO-ALBA & PALMQVIST 1997), or to be part of a “non-stenonian” widely dispersed group, which includes Early to Middle Pleistocene slender horses, sharing some features such as short protocone, long metaconide, a not very deep lingual groove, and developed stylides (EISENMANN 2004). The main morphological traits, especially those shown by teeth, support the hypothesis that *E. altidens* could be part of a stenonoid lineage related to *E. stenonis*. The subspecies *E. a. granatensis* has been regarded by some authors as an advanced subspecies of *E. stenonis*, but a revision of stenonoid horses performed by ALBERDI *et al.* (1998) demonstrated that “*E. stenonis grantensis*”, “*E. grantensis*” and specimens regarded as intermediate (*Equus granatensis-altidens*) can be confidently ascribed to *E. altidens*.

***Equus suessenbornensis* WÜST, 1900**

E. suessenbornensis is a large and robust horse, but smaller than *E. major* (= *E. bressanus*). The teeth are morphologically close to *E. altidens* but the enamel of upper cheek teeth show a more complicated pattern. Moreover, the teeth of *E. suessenbornensis* share some morphological traits with the teeth of caballine horse (e.g. a long protocone with concave lingual borders, and larger mesostyles and grooves on the premolars at least somewhere along the crown). On the molars, the styles are simple or faintly grooved. The lower cheek teeth show cingular structures as protostylids. The preflexid and postflexid are slightly folded.

The phylogenetical relationship of this species have been a matter of debate. Some authors consider *E. suessenbornensis* a descendant of *E. major* (GROSSOUVRE & STEHLIN 1912; FORSTEN 1999). Others consider it an archaic caballoid or a true horse (GROMOVA 1949). MUSIL (1969, 1992) rejected any affinity between *E. suessenbornensis* and *E. stenonis*, while NOBIS (1971). SAMSON (1975) and AZZAROLI (1984) considered it close to or direct descendant of the latter. Actually, *E. suessenbornensis* might be regarded as intermediate or convergent to the stenonoid horses (cf. ALBERDI *et al.* 1998). Some features of *E. suessenbornensis* look like caballoid equids (GROMOVA & DUBROVO 1975) and some among the most advanced variants of the species show dental characteristics too

derived for a stenonoid horse. In point of fact, the species belongs to the phyletic lineage of *E. major*-*E. suessenbornensis* and likely originated from the *E. livenzovens* clade, and could be regarded as a ‘stenonoid horse’.

In Italy, *E. suessenbornensis* is mainly known from early Middle Pleistocene LFAs, albeit scanty remains have been reported from few early Galerian (late Early Pleistocene) LFAs. The time of the first appearance of the species in Europe is uncertain. In Italy, some cheek teeth, whose morphology and dimensions are close to those of *E. suessenbornensis*, were found in the 17th century near Bucine (Val di Chiana, Tuscany). As discussed by AZZAROLI (1984), their stratigraphical position is unclear, but the hypothesis that they might have been retrieved from sediments of early Pleistocene age, widely outcropping in the area, cannot ruled out. If this is so, *E. suessenbornensis* might be part of the species recorded in the Farneta faunal unit (late Villafranchian). The presence in the late Early Pleistocene of *Equus suessenbornensis* is confirmed by findings in the Pirro Nord karst network (ALBERDI & PALOMBO, in press).

2. REMARKS

Equus altidens and *Equus suessenbornensis* were a rather long surviving species, recorded in Italy from the latest Villafranchian to the Galerian, sometimes found together in the same LFA. The two equids probably differentiated in ecology and the notable differences in size likely prevented any interspecies competition. For instance, *E. altidens*, and *E. suessenbornensis* were both present in LFAs dating to the Early Pleistocene (e.g. in Italy in the Pirro Nord LFA, Alberdi & Palombo, in press; in Spain in the Fuente Nueva-3, Barranco León-5 and Huéscar-1 LFAs, ALBERDI, 2010) as well as to the early Middle Pleistocene (e.g. in Italy in the LFAs of Ponte Galeria, ALBERDI & PALOMBO, in press, and Venosa Loreto, ALBERDI *et al.*, 1988, as well as in some LFAs in the surroundings of Verona, CALOI & PALOMBO 1991; in Spain in the Cúl-lar de Baza-1 LFA, ALBERDI, 2010). In Italy, as in Spain, *E. altidens* is definitely more abundant than *E. suessenbornensis*, while in Central Europe (e.g. Süssenborn, Germany) both species are equally represented. The relative abundance of these species varies according to the environmental characteristics, especially the vegetation cover and productivity, of the localities in which they were found. Available data suggest that, consistently with their ecological requirements, *E. altidens*, might have differentiated even in a rather restricted geographic region, whilst *E. suessenbornensis*, did not undergo any important local differentiation.

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