

ON *EQUUS HYDRUNTINUS* FROM GROTTA POLESINI (ROME, LATIUM, CENTRAL ITALY) AND GROTTA PAGLICCI (FOGGIA, APULIA, SOUTHERN ITALY) (*)

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RIASSUNTO - Considerazioni su *Equus hydruntinus* di Grotta Polesini (Roma, Lazio, Italia centrale) e Grotta Paglicci (Foggia, Puglia, Italia meridionale) (con note sulla tassonomia e paleogeografia dell'asino europeo delle steppe) - Il Quaternario Italian Journal of Quaternary Sciences, 9(2), 1996, 731-736 - Grotta Polesini e Grotta Paglicci sono localizzate nell'Italia peninsulare. La prima sul versante tirrenico (nelle vicinanze di Roma, Lazio, Italia centrale), la seconda su quello adriatico (Promontorio del Gargano, Foggia, Puglia, Italia meridionale). L'analisi dei resti di *E. hydruntinus* rinvenuti nei livelli paleolitici di Grotta Polesini e Grotta Paglicci, hanno mostrato una stretta affinità fra i due campioni. Comunque, gli esemplari di Grotta Paglicci sono più grandi di quelli di Grotta Polesini. Inoltre, le percentuali dei terzi molari superiori con ipoglifto isolato e con la post-fossetta aperta, sono differenti fra i due campioni. La percentuale di terzi molari superiori con post-fossetta aperta di Grotta Polesini, è simile all'attuale *E. hemionus*. Mentre a Grotta Paglicci i resti di *E. caballus* sono più abbondanti di quelli di *E. hydruntinus*, a Grotta Polesini è l'asino delle steppe che domina sul cavallo. Questo conferma i caratteri più temperato-mediterranei di *E. hydruntinus* rispetto a *E. caballus*. Infatti, specialmente durante il Würm, il versante adriatico è stato interessato dal clima freddo dei Balcani. La mancanza di resti craniali rende poco chiara la sistematica di *E. hydruntinus*. La distribuzione cronologica e geografica, sembra provare un'evoluzione locale europea dell'idruntino a partire da un ceppo ancestrale di equidi della prima parte del Pleistocene medio imparentati con *E. stenorhinus*.

ABSTRACT - On *Equus hydruntinus* from Grotta Polesini (Rome, Latium, Central Italy) and Grotta Paglicci (Foggia, Apulia, Southern Italy) (with notes on the taxonomy and palaeogeography of the European Steppe Ass) - Il Quaternario Italian Journal of Quaternary Sciences, 9(2), 1996, 731-736 - Grotta Polesini and Grotta Paglicci are located in the Italian Peninsula, the former on the Tyrrhenian side (near Rome, Latium, Central Italy), the latter on the Adriatic side in the Gargano Promontory (Foggia, Apulia, Southern Italy). The analysis of the remains of *E. hydruntinus* recovered from the Paleolithic levels of Grotta Polesini and Grotta Paglicci show close affinities between the two samples. However, the specimens from Grotta Paglicci are larger-sized if compared to those from Grotta Polesini. Furthermore, the two samples show different percentages of upper third molars with isolated hypoglyph and open post-fossette. The percentage of upper third molars with open post-fossette from Grotta Polesini is similar to that of the extant *E. hemionus*. *E. caballus* remains are more abundant than those of *E. hydruntinus* at Grotta Paglicci, whereas the Steppe Ass dominates over the horse at Grotta Polesini. This confirms the more temperate-Mediterranean character of *E. hydruntinus* with respect to *E. caballus*. In fact, especially during the Würm episode, the Adriatic side was affected by the cold climatic conditions prevailing in the Balkans. The *E. hydruntinus* systematics is uncertain because no significant skull remains are known. The chronological and geographical distributions seem to indicate a local European evolution of the Steppe Ass from a Middle Pleistocene equid stock strictly related with the Villafranchian *E. stenorhinus*.

Key words: *Equus hydruntinus*, Middle - Late Pleistocene, Holocene, Grotta Polesini, Grotta Paglicci, Italy, Europe
Parole chiave: *Equus hydruntinus*, Pleistocene medio e superiore, Olocene, Grotta Polesini, Grotta Paglicci, Italia, Europa

1. INTRODUCTION

Grotta Polesini and Grotta Paglicci are two caves of the Italian Peninsula, the first located near Tivoli in the foothills of the Tiburtini Mountains (in the neighborhood of Rome, Central Italy) on the Tyrrhenian sea side, the other in the Gargano Promontory on the Adriatic sea side (in the vicinity of Foggia in Apulia, Southern Italy), respectively (Fig. 1). The two caves yielded a rich amount of stone implements and bones.

The Paleolithic deposits of Grotta Paglicci range from 34,300 to 11,440 years B.P. (Palma di Cesnola & Bietti, 1983; Palma di Cesnola, 1988), whereas the deposits of Grotta Polesini (Rome) can be referred to the last part of the Late Glacial, from the end of Bølling (ca. 12,500

years B.P.) to Dryas III (ca. 10,500 years B.P.) (Radmilli, 1974; Bietti *et al.*, 1983).

2. MATERIAL AND METHODS

The *E. hydruntinus* remains are identified by teeth and postcranial elements. The postcranial bones are heavily fractured by human activity. Therefore, the study has been mostly focused on the morphometry of the cheek teeth. For the measurements and nomenclature, the schemes proposed by Eisenmann *et al.* (1988) have been used. In both localities, the specimens from levels with similar climatic and environmental conditions are grouped. The following symbols are used for the ratio

(*) With notes on the taxonomy and palaeogeography of the European Steppe Ass.



Fig. 1 - Geography of the Paleolithic sites described in this paper.
Geografia dei siti paleolitici descritti nel presente lavoro.

diagrams: Pol. = Grotta Polesini; Pag. = Grotta Paglicci;
n = number of specimens (minimum\maximum).

E. stenorhis from the Upper Valdarno was chosen as reference species.

3. OBSERVATIONS

In Grotta Paglicci, *E. caballus* is always dominant with respect to *E. hydruntinus*, with the exception of level 18b (Laugerie interstadium) that is characterized by similar percentages and of levels from 6c to 2 where *E. hydruntinus* is the best represented equid.

The steppe ass dominates over horse at Grotta Polesini. This confirms the more temperate-Mediterranean character of *E. hydruntinus* as compared to *E. caballus*. As a matter of fact, during the last part of the Late Pleistocene, the Adriatic side of the Italian Peninsula was particularly subjected to the cold-air fronts of Balkan provenance (Masseti *et al.*, 1995).

The dimensional analysis carried out to distinguish the specimens from different climatic-environmental periods, does not show marked differences in the skeleton. However, the limb bones (*i.e.* metapodial bones, astragali and phalanges) from Grotta Paglicci are larger than those from Grotta Polesini.

In both localities, premolars seem to be the most variable with respect to size. From the morphological



Fig. 2 - Right upper third molars: 1) specimen with isolated hypoglyph; 2) specimen with open post-fossette.

Terzi molari superiori destri: 1) esemplare con ipogliffo isolato; 2) esemplare con postfossetta aperta.

point of view, attention was mostly focused on M3, because it shows the most evident variations.

The sample from Grotta Paglicci is fairly poor in M3 content (13 specimens), but in a single M3 from level 2 the post-fossette is open posteriorly.

The relatively M3-rich sample from Grotta Polesini (31 specimens) yielded a similar percentage of teeth, with isolated hypoglyph from levels 11-9 (13,3%) attributable to the Dryas II, and from levels 8-2 (12,5%) referable to the Allerød.

A higher amount of specimens with open post-fossette (43,75%) was found in the levels ascribed to the Allerød, whereas those from the Dryas II levels reach only 20%. Some specimens from both levels show an imperfectly closed post-fossette.

In some present-day specimens of *Equus*, the isolated hypoglyph reaches the maximum percentage in *E. africanus* (64%), which never shows the open posteriorly post-fossette. This characteristic is more frequent in *E. hemionus* than in other species of *Equus* (Eisenmann, 1986). *E. hydruntinus* from Grotta Polesini shows percentages of teeth with open posteriorly post-fossette comparable with those of the present-day *E. hemionus*.

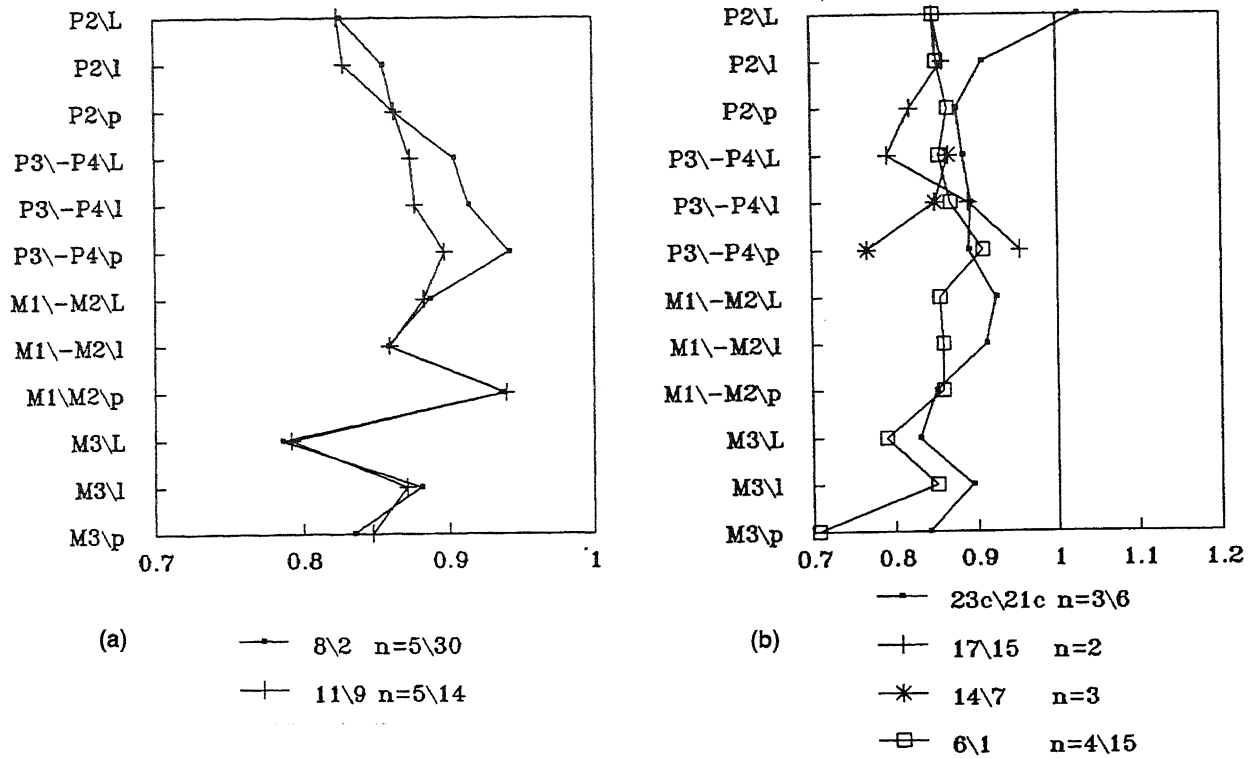
4. CLOSING REMARKS

The *E. hydruntinus* systematics is uncertain. No skulls are known, and the characters of the teeth and postcranial skeleton are inadequate for systematic purposes. In its size and slender proportion, *E. hydruntinus* resembles the extant ass and hemione. Nevertheless, *E. hydruntinus* differs from *E. africanus* and *E. hemionus* in dental structures, particularly in the deep ectoflexid of the lower molars and in the "stenonid" double knot.

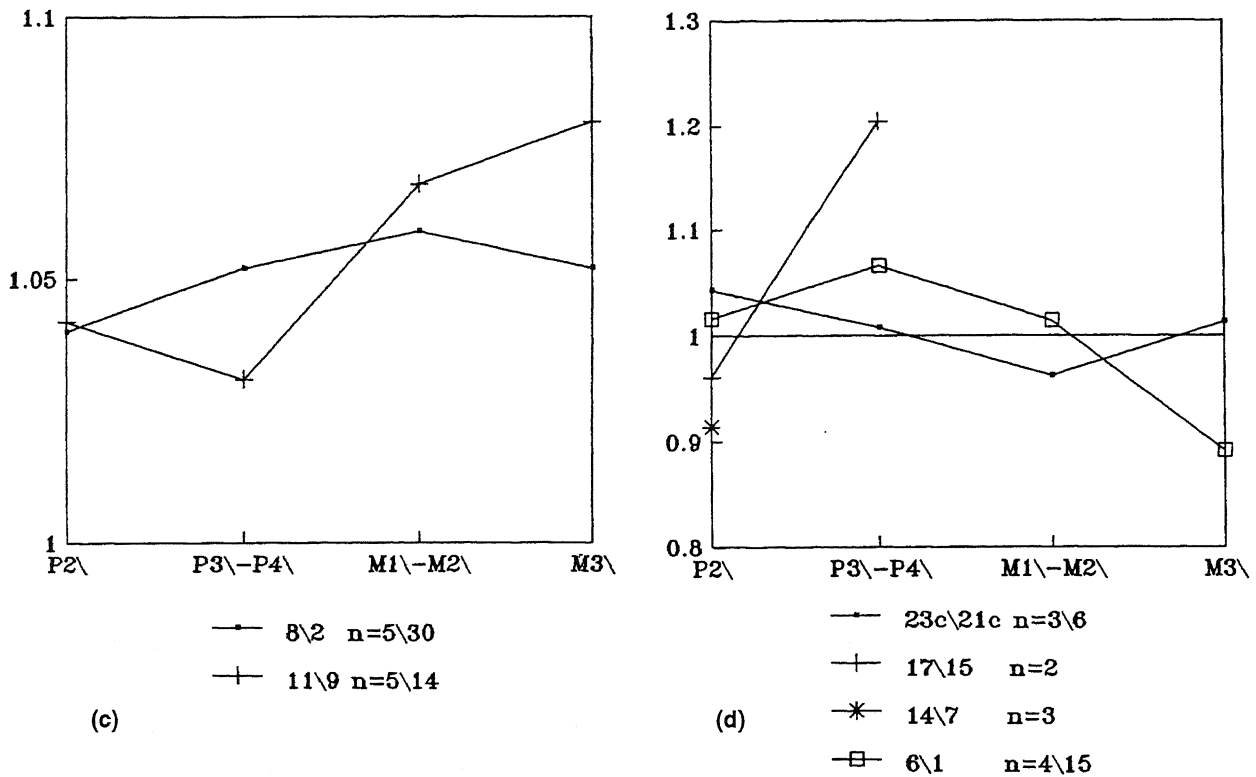
Also the structure of the distal end of the metatarsal bones is similar to that of *E. stenorhis*. According to Forsten (1986), *E. hydruntinus* is more similar to stenonid and zebroid horses than to the fossil and extant asses and hemiones. In some fossiliferous sites, the European wild ass is the only representative of *Equus*. In others, it is usually associated with a "caballoid" horse, but never with other asses (Forsten, 1990).

The Wild ass appears in Europe during the last part of the Middle Pleistocene, and probably derived from a *Equus stenorhis*-like stock (Forsten, 1986).

The specimens from the Mindel-Riss Interglacial deposits of Lunel-Viel (France), described for the first time as *E. hydruntinus* (Bonifay, 1973) and then as *E. hydruntinus minor* (Bonifay, 1991), show elongated pro-



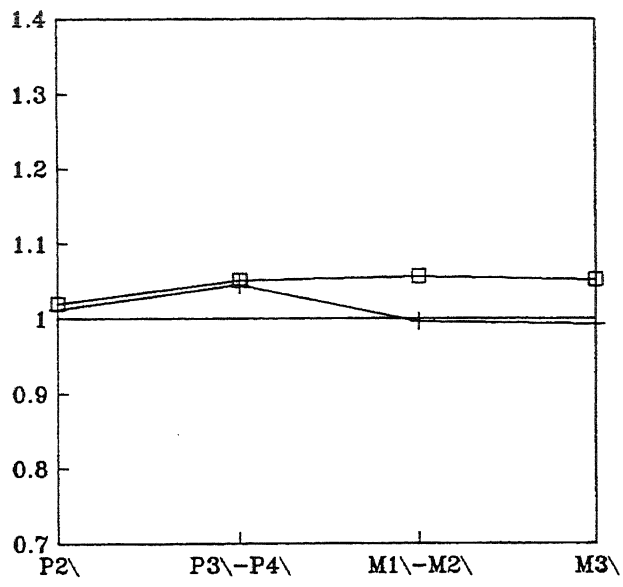
E. stenorhis (Upper Valdarno) n = 12\30



E. stenorhis (Upper Valdarno) n = 12\30

Fig. 3 - *Equus hydruntinus*, Grotta Polesini. The ratio-diagrams show the variations of some skeletal elements between the different levels. (a) and (b): Upper cheek teeth. (c) and (d): Protocone index.

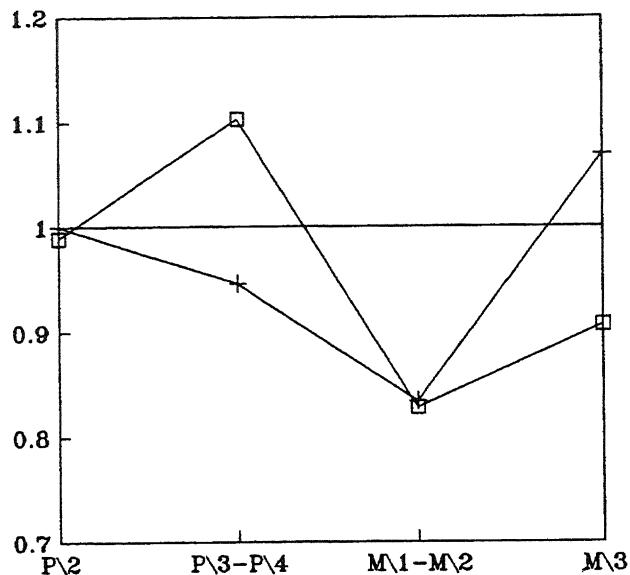
Equus hydruntinus, Grotta Polesini. I diagrammi mostrano le variazioni di alcuni elementi scheletrici fra i diversi livelli. (a) e (b): Denti della mascella superiore; (c) e (d): indice del protocono.



+ Pag n=10\22
 -□ Pol n=20\57

E. stenorhis (Upper Valdarno) n = 12\30

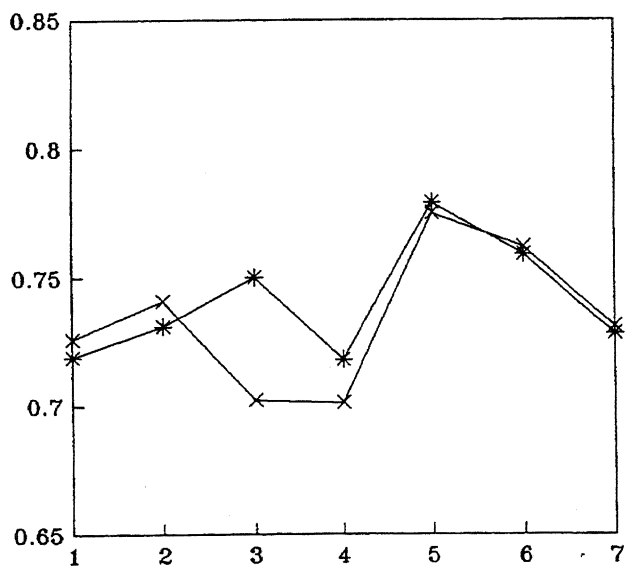
(a)



+ Pag n=7\19
 -□ Pol n=19\38

E. stenorhis (Upper Valdarno) n = 9\21

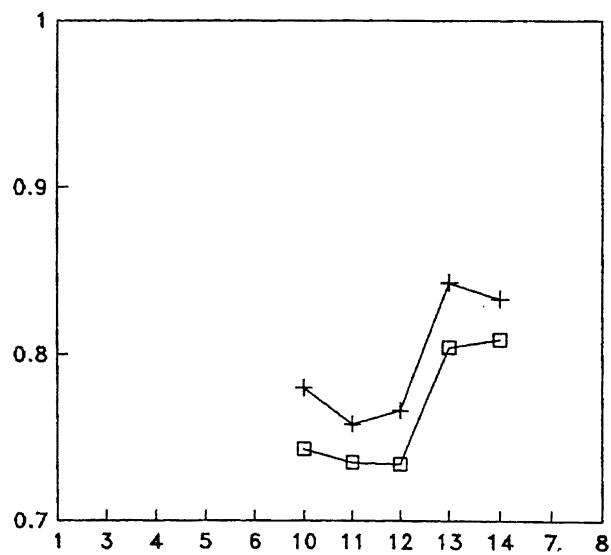
(b)



* Pag n=5\7
 -x Pol n=10

E. stenorhis (Upper Valdarno) n = 4\5

(c)



+ Pag n=6\7
 -□ Pol n=5

E. stenorhis (Upper Valdarno) n = 13\20

(d)

Fig. 4 - *Equus hydruntinus*. Compared ratio-diagrams between Grotta Paglicci and Grotta Polesini. (a): Protocone index. (b): Post-flexide index. (c): Astragalus. (d): Metatarsus.

Equus hydruntinus. Confronto fra diagrammi di Grotta Paglicci e Grotta Polesini. (a): Indice del protocono. (b): Indice del postflesside. (c) Astragalo. (d) Metatarso.

tocone in the upper cheek teeth and massive limb bones. These characters distinguish *E. hydruntinus minor* from the typical *E. hydruntinus*, which shows short protocone and slender limb bones. In my opinion, the systematics of the equid from Lunel-Viel is still unresolved.

The Steppe Ass became frequent in the Late Pleistocene, especially during the Würm glaciation and disappeared in the Holocene without descendency. *E. hydruntinus* finds are frequent in Europe and in the Mediterranean area. The specimen from Kazakhstan (Hisarova, 1963) is the easternmost representative of the species. The findings from some North African Late Pleistocene archaeological sites, from North American Rancholabrean localities and from some Late Pleistocene deposits of China, which were ascribed to the steppe ass, are doubtful (the North African remains are similar to those of the true ass; cfr. Churcher, 1972).

For these reasons, I believe that *E. hydruntinus* is a result of a local European evolution.

E. hydruntinus appears in Italy during the last part of the Riss glaciation, as indicated by the scanty remains (fragmentary metacarpal bones and isolated upper and lower cheek teeth) from the Paleolithic site of Campo Verde (Latium, Central Italy) (Mazza *et al.*, 1992). This taxon is well represented in the prehistoric sites of the Late Pleistocene and mainly in the Adriatic side of the Italian Peninsula. In Northeastern Italy, *E. hydruntinus* is not common and is documented for the first time in the levels corresponding approximately to the Dryas II pollen zone (Riparo Tagliente) (Masseti *et al.*, 1995). The geographic distribution of *E. hydruntinus* seems to have been drastically reduced during the Holocene. The European wild ass apparently survived in Basilicata (S Italy) (findings from Rendina) and in Sicily at least up to the Neolithic (Bökönyi, 1974; Wilkens, 1989; Rustioni, in press).

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