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A Preliminary Report on the Microvertebrates of Notarchirico, Venosa

ABSTRACT

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The fluvio-lacustrine deposit of Notarchirico (Venosa, Southern Italy), which contains many layers rich in anthropic remains dating to the Lower Paleolithic, was sampled for continental microvertebrate fossils. A small cache of rodent remains containing abundant *Microtus* gr. *arvalis-agrestis,* in addition to *Apodemus* sp., *Pliomys episcopalis, Microtus nivalis, Microtus (Terricola)* sp., and *Arvicola terrestris,* was found in horizon E1.
Though the assemblage is scanty, it suggests that the climate during the period of deposition of the horizon was significantly cooler and more humid than that found presently in the area, resembling that of the mountains directly below the Alpine meadow zone. The polymorphic characteristics of the *Microtus* gr. *arvalis-agrestis* population, and, more importantly, the presence of *Pliomys episcopalis,* suggests that the faunal assemblage predates the upper part of the Middle Pleistocene.

Parole chiave: Roditori, Pleistocene Medio, Venosa, Basilicata, Italia.

Key words: Rodents, Middle Pleistocene, Venosa, Basilicata, Italy.

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Introduction

The Venosa Basin (Basilicata, Southern Italy) has long been famous for the remains of a prehistoric habitation found in the locality of Loreto (De Lorenzo, 1898, 1901; De Lorenzo & D'Erasmo, 1927; D'Erasmo, 1932; Rellini, 1929, 1932, 1933). The site was systematically excavated from 1956 to 1961 by A. C. Blanc and G. Chiappella, of the Istituto Italiano di Paleontologia Umana, and from 1974 to 1976 by L. Barral and S. Simone of the Musée d'Anthropologie Prehistorique du Monaco. The excavations produced Tayazian and Acheulean artifacts (Segre, 1978; Simone, 1980), and a rich faunal assemblage (Bonifay, 1977; Caoli & Palombo, 1980).

More recently, further research under taken by the Soprintendenza Speciale al Museo Nazionale Preistorico Etnografico "L. Pigorini" of Rome, in collaboration with the Istituto Italiano di Paleontologia Umana, has resulted in the discovery of a second site that faces the first, on the Loreto-Notarchirico Hill. The newly discovered site, which consists of several lacustrine and fluvio-lacustrine beds that contain many archaeologically rich horizons, has been under excavation since 1980.

Given the richness of the anthropic surfaces and the didactic value of the fluvio-lacustrine sequence, a permanent museum is being built on site by the Soprintendenza Speciale, in collaboration with the Soprintendenza Archeologica per la Basilicata.

The large number of anthropic horizons containing artifacts and faunal remains makes this one of the richest and most important Lower Paleolithic sites in Europe (Belli *et alii,* 1989; Piperno, 1987, 1989; Piperno *et alii,* 1990; Piperno & Segre, 1982; Segre *et alii,* 1982; Segre & Piperno, 1985).

The sediments of the Notarchirico site were examined for microvertebrate remains. The deposit is part of a lacustrine and fluvio-lacustrine succession rich in pyroclastics and almost completely lacking coarse sands and fine gravels, the sediments that generally contain, because their grain size is similar to that of the fossils, small but significant quantities of microvertebrates. The horizons chosen for sampling, that between B and C, E1, and that below F, were therefore selected on the basis of grain size.

All the horizons proved fossiliferous, but only E1 contains a quantity of remains sufficient to allow some conclusions to be drawn.

Description of the remains

The horizon between B and C produced a fragment of an upper molar attributable to *Arvicola* sp., a third upper molar from a Microtinae, and the second phalange of a bird.

The horizon below F produced two Microtinae molars, one of which can be attributed to the genus *Microtus*.

Only horizon E1, which contains abundant pyroclastic sediments, produced a quantity of remains sufficient to allow some paleoecological and chronological conclusions to be drawn.

A palate fragment from *Apodemus* sp. containing an M/1 was found, as were two mandibular fragments from Insectivores and a mascellar fragment from a Lacertid.

Eight teeth, including a first lower molar (Fig. 4 N.7) from *Pliomys episcopalis,* were found. The latter tooth, with barely pronounced roots and an only slightly hypsodontic appearance, belonged to an adult individual. Its re-entrant angles are cement free; its salient angles are sharp, of the *"Microtus"* type, and have, on their cheekward sides, lost their enamel towards the tips. The tooth is 2.4 mm long.

Microtus gr. *arvalis-agrestis* is the Rodent best represented, with many teeth including 11 right and 8 left M/1 (Fig. 4, N. 1-6). The remains indicate the animals making up the population were polymorphic, of variable dimensions, and that the anterior caps of their M/1 were almost always quite pinched. Some of the anterior caps

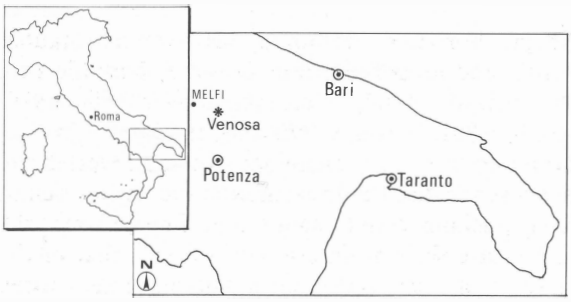
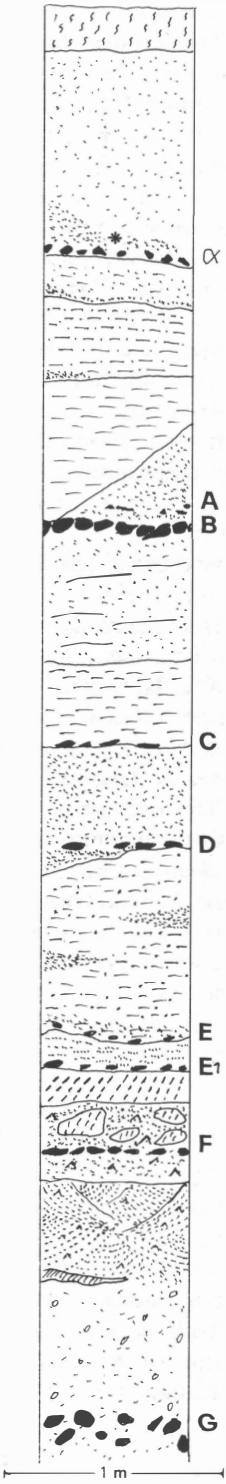


Fig. 1 - Location of the site.
- Ubicazione del giacimento.

Fig. 2 - Simplified stratigraphic column showing the Alfa-G series of Acheulean levels from Notarchirico (Venosa, Basilicata), found within nearly 7 m of fluvio-lacustrine sediments. The asterisk shows where a human femoral shaft was found a few cms above soil Alfa in 1985.

- Colonna stratigrafica semplificata della serie dei livelli acheuleani Alfa-G di Notarchirico (Venosa, Basilicata), compresi in sedimenti fluvio-lacustri dello spessore complessivo di circa 7 m. L'asterisco indica la posizione del femore umano rinvenuto nel 1985 pochi cm al di sopra del suolo Alfa.

NOTARCHIRICO



are particularly asymmetric; that shown in Fig. 4 N. 3 is distinctive in that it becomes more complex, forming a suggestion of a fifth exterior reentrant angle. The fourth triangles of teeth 2 and 3 have re-entrant folds on their back sides. The fourth and fifth triangles of teeth 3 and 4 partially merge on the occlusal side, while on the root side the triangles are quite distinct. All the teeth have well developed enamel, and the re-entrant angles are filled with cement.

Microtus nivalis (Fig. 4, N. 8) is represented by one poorly preserved left M/1, the apices of whose internal triangles are chipped. The anterior cap of the anteroconid complex is completely pinched, presenting the characteristic rounded arrowhead shape, but has a distinct internal re-entrant angle.

Microtus (Terricola) sp. (CHALINE *et alii,* 1988) is represented by two right and two left M/1 (Fig. 4, N. 9, 10). The two specimens shown are from a young individual and an adult; the pitymyoid rhomb is asymmetrical in both because the fourth triangle becomes squarish.

Arvicola terrestris is represented by some medium sized teeth whose re-entrant angles are filled with cement, and whose enamel is differentiated like that of the modern animal.

Paleoecological and chronological inferences

The micromammal assemblage found is too scanty to offer precise pictures of either the population living in the area, or of the environmental conditions around Notarchirico during the deposition of horizon E1. However, some inferences can be made. Even if the remains found only partially reflect the true population of the region, the assemblage indicates that *Microtus* gr. *arvalis-agrestis* predominated over *M. (Terricola),* in the presence of *Microtus nivalis* and *Apodemus.* This is an assemblage of animals that, today, with the exception of *Pliomys episcopalis,* would live in mountain woodlands and alpine meadows, therefore under microthermal conditions that are significantly cooler and less dry than those found at present at Notarchirico.

The finding of one specimen attributable to *Microtus nivalis,* an animal that now lives above the tree line in Italy, combined with the absence or scarcity of animals who live in temperate or Mediterranean regions (with the possible exception of *M. (Terricola),* seems to confirm this hypothesis.

Without going into overly hypothetical climatic reconstructions, the specimens found in horizon E1 at Notarchirico indicate the cold, non-temperate climate of a glacial phase.

A palinological analysis that is presently being carried out appears to confirm this reconstruction. The pollen spectrum produced by a sample from horizon F, which is stratigraphically and, probably, chronologically close to horizon E1, shows that the plant cover was dominated by *Pinus silvestris* and grasses (CATTANI, personal communication).

An examination of the geographic position occupied by Notarchirico does not contrast with these conclusions. Notarchirico is far from the sea, in a hilly region close to mountains, and undergoes limited but measurable variations in temperature on both a daily and seasonal basis. Its present climate is clearly

mediterranean, and, according to R. Tomaselli (1970), falls in the broad leafed deciduous forest "submountain zone" with *Quercus* ssp., *Castanea sativa,* and *Fraxinus ornus;* it almost falls within the "mountain zone", which contains *Fagus sylvatica* and *Pinus laricio.*

Some conclusions can also be reached about the age of the horizon.

The presence of *Arvicola terrestris* indicates the deposit's age is later than the early Middle Pleistocene. The polymorphic character of the *Microtus* population, with individuals of variable size and with some primitive characteristics also suggests this, as it is probable that the polymorphic population preceded the well defined populations with more homogeneous characteristics that appeared during the second part of the next to last glacial stage, and characterize both the micromammal faunas of the last glacial stage and the present.

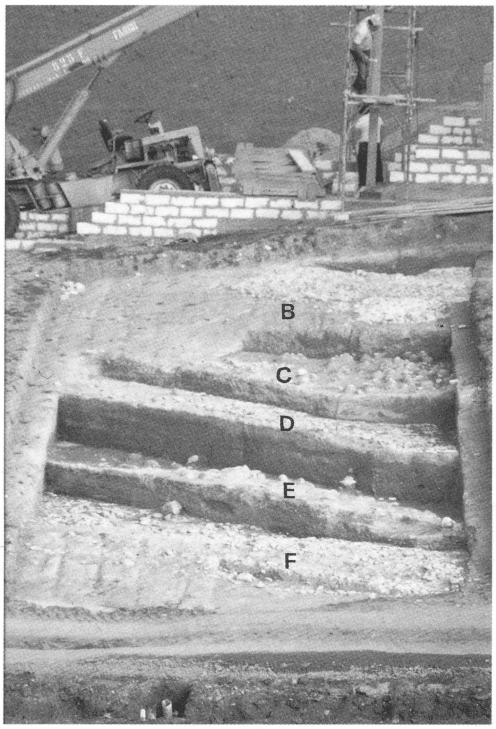


Fig. 3 - General view of some of the Acheuleean levels from Notarchirico (photo M. Piperno, "L. Pigorini" Museum).
- Veduta generale di alcuni dei livelli acheuleani di Notarchirico (foto M. Piperno, Museo "L. Pigorini").

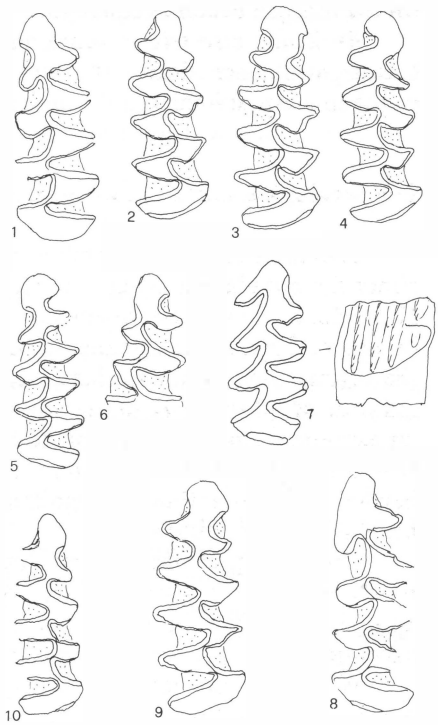


Fig. 4 - Notarchirico (Venosa, Basilicata), layer E1: first lower molars of *Microtus* gr. *arvalis-agrestis* 1,2,3,4,5,6; *Pliomys episcopalis* 7; *Microtus nivalis* 8; *Microtus (Terricola)* sp. 9, 10 (x 10).
- Notarchirico (Venosa, Basilicata), strato E1: primi molari inferiori di *Microtus* gr. *arvalis-agrestis* 1,2,3,4,5,6; *Pliomys episcopalis* 7; *Microtus nivalis* 8; *Microtus (Terricola)* sp. 9, 10 (x 10).

Pliomys episcopalis, because its last occurrence falls before the Upper Middle Pleistocene, is another chronologically significant Rodent.

The microfauna from Notarchirico therefore dates to the Middle Pleistocene, and, more specifically, to the time following the initial part of the period, but prior to its later part.

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The English text has been revisid by Mr. K. Phillips.

RIASSUNTO

Nel giacimento fluvio-lacustre di Notarchirico (Venosa, Italia del Sud), ricco di livelli antropici del Paleolitico inferiore, è stata fatta una campionatura per raccogliere microvertebrati continentali. La ricerca ha permesso di reperire nello strato El un piccolo lotto di roditori a *Microtus* gr. *arvalis-agrestis* abbondante e con *Apodemus* sp., *Pliomys episcopalis, Microtus nivalis, Microtus (Terricola)* sp. e *Arvicola terrestris.*

La pur scarsa associazione suggerisce di ipotizzare per lo strato considerato un clima decisamente più fresco e meno arido dell'attuale, simile a quello della fascia montana al limite con la prateria alpina. I caratteri polimorfici della popolazione di *Microtus* gr. *arvalis-agrestis* e in modo particolare la presenza di *Pliomys episcopalis* suggerirebbero l'inserimento della fauna in un momento precedente la parte superiore del Pleistocene medio.

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