

Abruzzo (Italy): the Plio-Pleistocene proboscidean-bearing sites

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SUMMARY: This work represents the preliminary updated revision of the Plio-Pleistocene proboscidean-bearing sites of Abruzzo. Findings to date amount to 25, including mentions in the literature and new reports. From the stratigraphical point of view the outcropping sequences in these sites altogether embrace a lapse of time spanning from the middle of the Early Pleistocene to the end of the Middle Pleistocene, and consist of lacustrine, fan delta and alluvial plain facies. The sites are located in both the Apennine chain and in the area between the mountains and the present-day Adriatic coastline. The species found are: *Mammuthus (A.) meridionalis*; *Mammuthus (A.) meridionalis vestinus*; *Mammuthus (M.) trogontherii*; *Elephas (P.) antiquus*.

1. INTRODUCTION

Since the second part of the 19th century many remains of proboscideans have been discovered in Abruzzo. They had been identified on the basis of the paleontological knowledge of the time or the geological age of the bearing sediments. The excavation by Maccagno and co-workers in 1954, when an almost complete specimen of *Mammuthus (A.) meridionalis vestinus* was recovered in the Santarelli quarry near Scoppito (L'Aquila), raised great public interest. A plentiful of reports of remains found thereafter increased the attention and care of local population to the paleontological and prehistoric archaeological matters. Nonetheless, only some of these large mammal remains are now kept in various museums. In fact, the specimens described in the earliest reports are now lost to record and the only witness of their existence consists in the descriptions of the sites of discovery and in reports of uncertain accuracy by those who examined the remains.

In the occasion of the 1st international

Congress "La Terra degli Elefanti" we present the preliminary results of a revision under way of all known data on the sites in Abruzzo which provided proboscidean remains, and also the first reports on the new findings of the last 20 years. The need for such a revision was felt to improve our knowledge of the territory and to predispose a more effective protection of the remains and of the most important and best preserved fossil-bearing outcrops and type sequences. An analysis of the existing files and field surveys were carried out in the frame with other geological studies of the Quaternary performed in key areas of the region (Fig. 1).

2. DISCUSSION OF THE DATA

The elephant remains discovered from L'Aquila basin and from the Aterno valley both within the Apennine chain, were contained in lacustrine sediments of the Early Pleistocene second cycle outcropping in the area of Madonna della Strada near Scoppito (*Mammuthus (A.) meridionalis vestinus*)

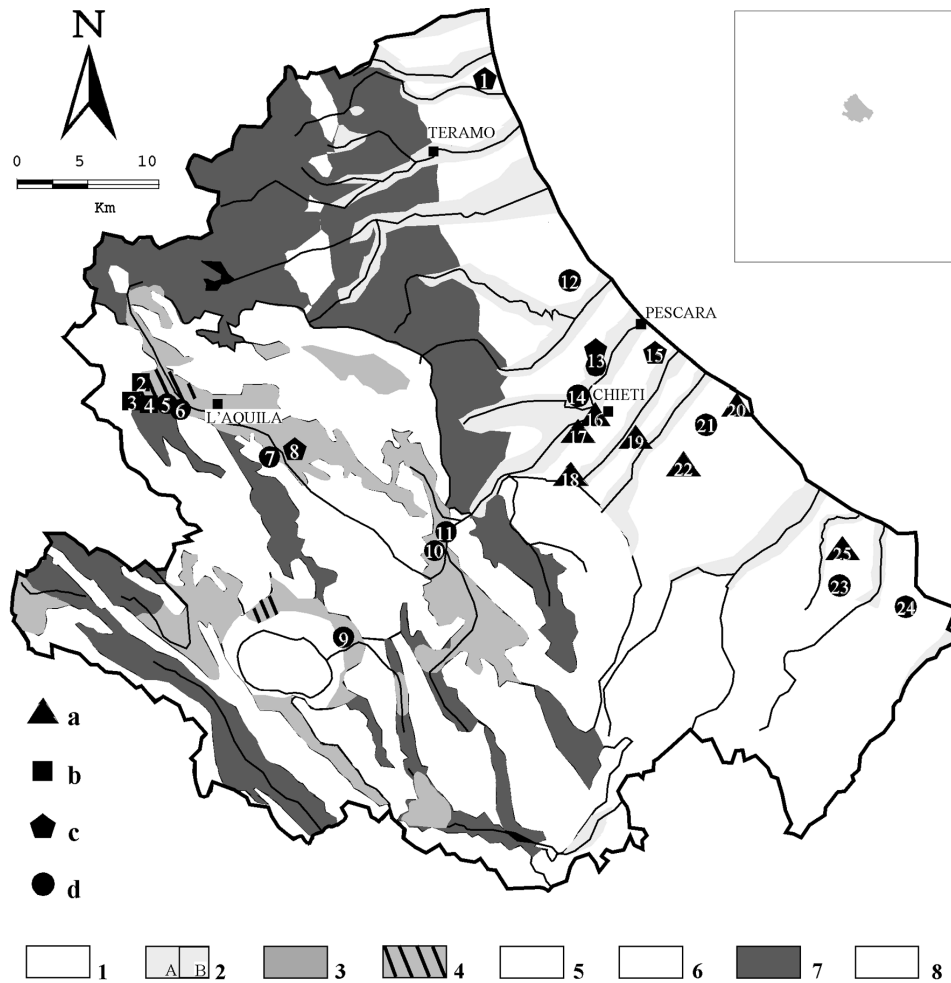


Fig.1 - Proboscidean-bearing sites:

a= *Mammuthus (A.) meridionalis*; b= *Mammuthus (A.) meridionalis vestinus*; c= *Mammuthus (M.) trogontherii*; d= *Elephas (P.) antiquus*; 1 - Tortoreto - Colle Badetta (TE); 2 - Scoppito - Madonna della Strada (AQ); 3 - Colle Mancino (AQ); 4 - Rocca S.Stefano (AQ); 5 - Pagliara di Sassa (AQ); 6 - Pagliara di Sassa (AQ); 7 - S.Eusanio Forconese (AQ); 8 - S.Demetrio dei Vestini (AQ); 9 - Pescina (AQ); 10 - Pratola Peligna (AQ); 11 - Popoli (PE); 12 - Città Sant' Angelo (PE) 13 - Villanova (PE); 14 - Cepagatti - Fiume Nora (PE); 15 - Francavilla al mare - Colline Villanesi (CH); 16 - Chieti -Località Civitella (CH); 17 - Chieti - località Brecciarola (CH); 18 - Serramonacesca - Castel Menardo (PE); 19 - Villamagna - Pian di Mare(CH); 20 - Ortona - Punta Ferruccio (CH); 21 - Tollo - Colle Secco (CH); 22 - Giuliano Teatino - Contrada "Tratturo" (CH); 23 - Scerni - località Torrione (CH); 24 - Vasto - Contrada della Lebba (CH); 25 - Villalfonsina (CH).

Geological scheme:

1-Deposits of lacustrine and fluvial environment of Fucino basin (Upper Pleistocene-Holocene); 2A-Deposits of fluvial environment; 2B-Coalescent deposits of flood plains environment and fan delta (Middle/Upper Pleistocene-Holocene); 3-Deposits of lacustrine and fluvial environment (Early/Upper Pleistocene-Holocene); 4-Deposits of lacustrine and fluvial environment (Upper Pliocene-Early Pleistocene); 5-Deposits of shore and fan delta environment and hemipelagic sediments (Middle Pliocene-Early Pleistocene); 6- "Molise Allochthonous": carbonatic and siliciclastic (turbidites) sequence (Upper Cretaceous-Upper Miocene); 7-Foredeep siliciclastic (turbidites) sequence (Middle Miocene-Early Pliocene); 8-Platform and basin sequence (Upper Triassic-Upper Miocene).

(Maccagno 1958), and near Rocca Santo Stefano and Colle Mancino (*Mammuthus (A.) meridionalis vestinus*) (Maccagno 1965). Still others were found in Middle Pleistocene (late Galerian of the mammalian biochronologic scale of Italy) sandstones and clays of the same alluvial delta fan, in two separate sites near Pagliare di Sassa (*Elephas (P.) antiquus*) (Maini 1952; Agostini *et al.* 1999; Palombo *et al.* 2001); other more were recovered in the Fossa-S. Demetrio valley again in the L'Aquila area, in gravels with sands and clay in the Middle/Upper Pleistocene terraced alluvial deposits of the "Formazione di San Marco" (Bertini & Bosi 1998) near S. Eusanio Forconese, (*Elephas (P.) antiquus*) (Maini 1952) and near San Demetrio dei Vestini on the left bank of the River Aterno (*Mammuthus (A.) meridionalis* after D'Erasmus (1931), perhaps actually *Mammuthus (M.) trogontherii*). Near Pratola Peligna, in the Sulmona basin, an elephant skull was found in marshy clays with lenses of gravel and sands dating from the end of the Mid-Pleistocene (*Elephas (P.) antiquus*), (Soprintendenza Archeologica dell'Abruzzo, unpublished data = S.A.A.) while some isolated teeth have been discovered in the same alluvial unit near Popoli (Soprintendenza Archeologica dell'Abruzzo, unpublished data = S.A.A.).

In the Fucino basin elephant remains (*Elephas (P.) antiquus*) (S.A.A.) were found during exploitation in a now disused quarry, near Pescina, in the Mid-Pleistocene alluvial beds.

The geological contexts of the elephant-bearing sites at the foot of the Abruzzo Apennines, on the slopes towards the Adriatic, are more complex. They can be divided into four types, as follows:

1. Fan deltas and lagoon facies, marking the end of the marine sequences, occur within the local early Mid-Pleistocene interval. These facies outcrop in the site of Civitella in Chieti (*Mammuthus (A.) meridionalis*), dating from the end of the Early Pleistocene (D'Erasmus 1931); in Giuliano Teatino (*Mammuthus (A.) meridionalis*) (Leuci & Scorziello 1993), dating from the latest part of the Early

Pleistocene-Middle Pleistocene?; in the Mid-Pleistocene Colle Badetta site in Tortoreto (*Mammuthus (M.) trogontherii*) (S.A.A.); in the Middle Pleistocene locality of Pian di Mare near Villamagna (*Mammuthus (A.) meridionalis*) (S.A.A.); in Middle Pleistocene gravels uncovered during works for the railway tunnel at Punta Ferruccio, near Ortona (*Mammuthus (A.) meridionalis*) (D'Erasmus, 1931); and in the Early Pleistocene Villalfonsina area (*Mammuthus (A.) meridionalis*) (S.A.A.).

2. Alluvial gravels overlying the above mentioned fan delta conglomerates, separated from these by an erosional surface and by a paleosol preserved only in the lowest beds. This facies is present in the early Middle Pleistocene Colline Villanesi area at Francavilla al Mare (*Mammuthus (A.) meridionalis* after D'Erasmus (1931), perhaps actually *Mammuthus (M.) trogontherii*), in the Torrione area at Scerni (*Elephas (P.) antiquus*) (S.A.A.) and in the Colle Secco area at Tollo (*Elephas (P.) antiquus*) (S.A.A.) both dated to the Mid-Pleistocene, and in the upper Middle Pleistocene in Città Sant'Angelo site (*Elephas (P.) antiquus*) (S.A.A.).

3. In terraced alluvial deposits at the valley bottoms; over isolated sixty teeth have been recovered from the Middle Pleistocene terraced alluvial gravels in the River Pescara near Villanova (*Elephas (P.) antiquus* and *Mammuthus (M.) trogontherii*) (S.A.A.) and other findings come from the late Middle Pleistocene terraced alluvial units in Brecciarola, near Chieti (*Elephas (P.) antiquus*) (Radmilli 1977) and in the river Nora bed near Cepagatti (*Elephas (P.) antiquus*) (S.A.A.).

4. Talus fans at the foot of the mountain range; terraced coalescent deposits of alluvial plain making transition to delta fans. These talus fans consist of slightly elaborated breccias passing laterally to alluvial plain sands and clays dated to the Early Pleistocene, outcropping in Castelmenardo near Serramonacesca on the eastern slopes of the Majella mountain (*Mammuthus (A.) meridionalis*) (D'Erasmus 1931); alluvial plain gravels and sands passing to fan delta deposits dated to the late Middle Pleistocene yielded various other findings in

the areas of Contrada della Lebba and Punta della Lotta near Vasto (*Elephas (P.) antiquus*) (S.A.A.).

3. CONCLUSIONS

The sites known to date and reported here amount to a total of 25, spread both inside the chain of the Apennines and between the foot of the mountains and the present-day Adriatic coastline.

There are examples of *Mammuthus (A.) meridionalis* including both typical and advanced representatives among which the only findings that can be surely ascribed to *Mammuthus (A.) meridionalis vestinus* are those discovered in the surroundings of Madonna della Strada. Sometimes *Mammuthus (M.) trogontherii* and *Elephas antiquus* co-occur. The latter characterizes many alluvial deposits outcropping in the valley bottoms. Interestingly, the sites with prehistoric elephant remains are not only numerous but embrace a wide stratigraphic range and are related to different paleogeographic and environmental contexts. The proboscidean specimens represented at times solely by tusks or teeth, are sometimes accompanied to remains of other mammals and invertebrates. Some sites can therefore be supposed to correlate with the mammalian ages of the Plio-Pleistocene of Italy. No elephant remains have ever been found associated with prehistoric implements. Nevertheless a number of Palaeolithic sites have recently been discovered not far from elephant-bearing localities and in beds stratigraphically equivalent. For this reason a geologic and stratigraphical consistency of both cannot be thoroughly ruled out.

4. ACKNOWLEDGEMENTS

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