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FIRST OCCURRENCE OF THE GENUS *TALPA* (*MAMMALIA, INSECTIVORA*) IN MAREMMA (SOUTHERN TUSCANY, CENTRAL ITALY)

PRIMI DATI RELATIVI AL GENERE TALPA (MAMMALIA, INSECTIVORA) *IN MAREMMA (TOSCANA)*

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Abstract. *As far as it is known, the genus* Talpa *has historically shown in western-central Italy a distribution characterised by a stripe-like gap, approximately centred between 42° and 43° N latitude. During a theriological survey carried out from 1992 to 1996 in southern Tuscany (Grosseto Province), some direct and indirect data on the presence of the genus Talpa (Linnaeus, 1758) have been collected. The first data on these findings, together with some hypotheses on the chorology and status of these populations, are here reported.*

Riassunto. *I dati storici e bibliografici relativi al genere* Talpa *in Italia centro-occidentale hanno da sempre evidenziato l'esistenza di una soluzione di continuità nella distribuzione geografica di questo taxon, corrispondente approssimativamente alla fascia compresa tra il 42° ed il 43° parallelo. Al termine di una ricerca teriologica condotta in Provincia di Grosseto tra il 1992 ed il 1996 sono stati rilevati per la prima volta segni oggettivi diretti ed indiretti attestanti la presenza di questo taxon. Il contributo fornito di seguito riporta alcuni dati preliminari sulla specie individuata, assieme ad ipotesi su status e corologia delle popolazioni rilevate.*

INTRODUCTION

The genus *Talpa* shows a wide distribution, ranging from the Iberian Peninsula to the Japanese Archipelago (CORBET & HILL 1991). Many scientific papers, covering all the aspects of its biology, have been produced in the last forty years, particularly in Europe, where this taxon is often very common and widely distributed. The systematics of the Italian populations have been investigated by CAPOLONGO & PANASCÌ 1976, 1978; CORTI et al. 1984; FILIPPUCCI et al. 1987; CAPANNA 1981. Some of these papers have also pointed out the distribution of the taxon in Italy. Nevertheless, the systematics of the whole family *Talpidae* is still under revision and object of scientific investigations (e.g. LOY et al. 1993). The specific status and the geographical interspecific relationships between some European populations also need more investigations in some geographical areas. In central Italy, for example, the three species *T. europaea*, *T. romana* and *T. caeca* show different ranges whose exact borderlines are still poorly defined and understood, both in terms of geographical limits and rates of overlapping between neighbouring populations.

A partial explanation could be found in the lack of information on the presence and characterisation of isolated and marginal populations and on their reciprocal phyletic relationships. The chorology of the three species living in Italy is peculiar: *Talpa europaea*, the European mole, is present in northern and central Italy, as far as is known, till roughly 43° N latitude; *T. caeca*, the Mediterranean mole, has a similar distribution, apparently more "consolidated" on the Adriatic coast (fig. 1); the

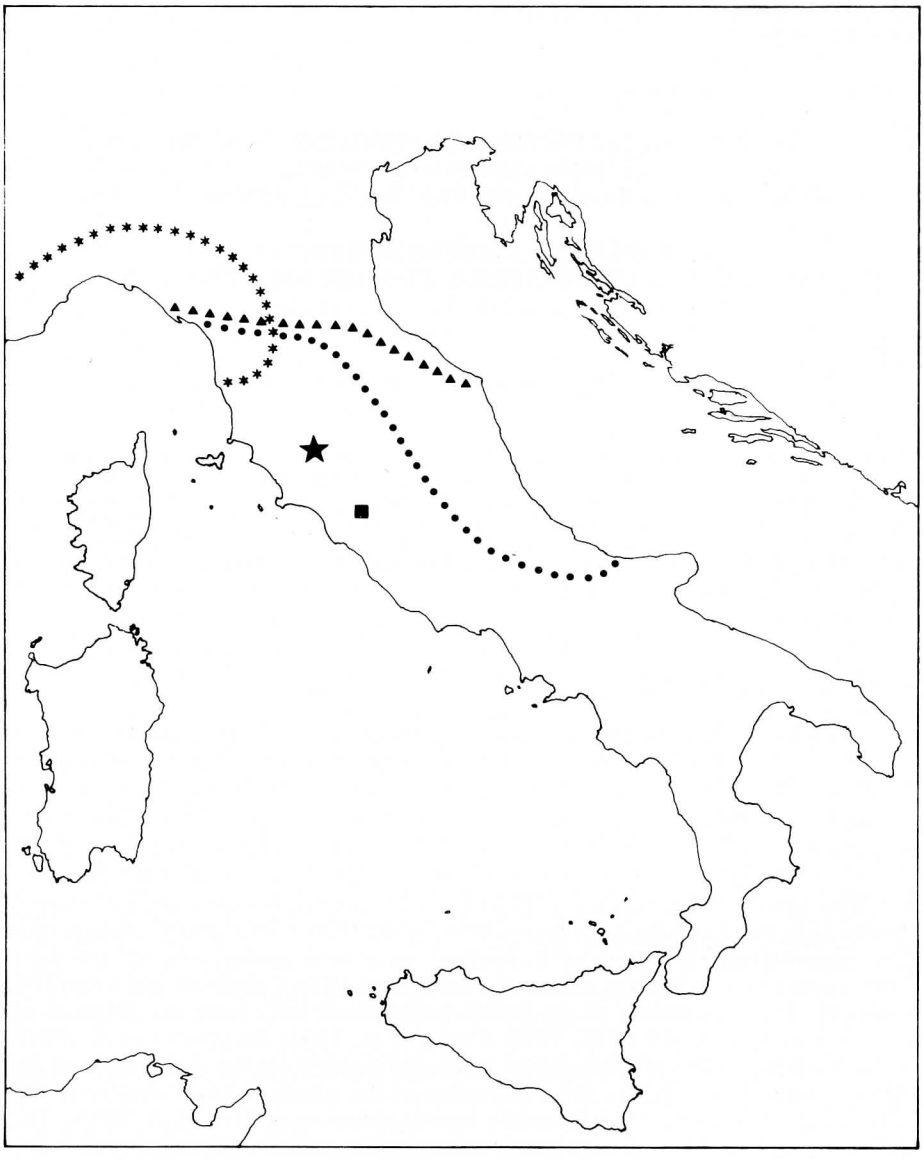

Fig. 1. Geographical limits of *Talpa caeca* distribution in Italy (from CONTOLI 1986, modified). Triangles: Corbet & Ovenden 1980; asterisks: Niethammer 1962; circles: Van den Brink 1969; square: Contoli 1986; star: new findings.

Fig. 1. Limiti distributivi di Talpa caeca *in Italia (da CONTOLI 1986, modificato). Triangoli: Corbet & Ovenden 1980; asterischi: Niethammer 1962; cerchi: Van den Brink 1969; quadrato: Contoli 1986; stella: nuovi ritrovamenti.*

third species, *T. romana* (Roman mole, living only in Italy and the Balkans) is widespread in southern Italy and northward to central Italy, till roughly 42° N latitude. According to the bibliographical data, a virtual gap, whose exact borderlines remain still difficult to define, seems therefore to be present in western-central Italy, where no records of moles have ever been reported. In the sake of defining the ideal limits between the populations belonging to the three species, many authors have drawn different distribution maps, sometimes quite divergent from one another (see CONTOLI 1986 for a review).

STUDY AREA

The Grosseto Province, lying on the central west coast of Italy, occupies the southernmost part of Tuscany. It coincides almost completely with the western (and wider) portion of the stripe-like gap in the distribution of *Talpa* sp. The geographical landscape shows a climatic, altitudinal and vegetational gradient from the coastal zones (covered with a typical xerophilous vegetation) to the high-hilly zones and the coniferous woodland of the higher mountain (Amiata Mt., 1738 m above the sea level). The woodland covers, in total, more than 32% of the entire territory, with few solutions of continuity from the coastal to the inland areas. While most of the coastal territory is characterised by a shallow, alluvial soil, some hilly zones between the coast and the inland show a shallow, stony ground. The high-hilly and mountainous territory of the inland presents areas with soft soils and old, undisturbed pastures.

MATERIALS AND METHODS

The presence and geographical distribution of the taxon were assessed during a survey aimed at the definition of a local Atlas on Mammals distribution (SFORZI & RAGNI 1997). The research made use of a well-experimented procedure, developed in three phases: bibliographical and historical investigation, direct inquiry and field monitoring by naturalistic method (RAGNI et al. 1988). During the field research, both direct and indirect objective data were collected and recorded. The study area has been subdivided into 60 distinct 10 Km UTM grid squares. Local Regional maps 1:10.000 were used to organise the field research and to define the geographical distribution of the collected samples.

RESULTS

In total 4 specimens, 1 historical record and some typical burrow systems were collected. The localities of ascertained presence of the Genus *Talpa* cover 3 UTM grid squares. The "positive" UTM units are concentrated on the west-southern side of the Amiata mountain and the surrounding territory, in the extreme inland of the study area (fig.2). This region could be described as a mountain ecotone, characterised by a rural, eterogeneous environment at the edge of the woodland (mainly chestnut tree, *Castanea sativa*). Pastures, cultivated fields, farmhouse yards, vegetable gardens and chestnut tree cultivation are the most common types of managed habitats. The principal climatic features are an altitude ranging from 700 to 800 m a.s.l., an average rainfall of about 1470 mm/y and a yearly average temperature around 12 °C.

Among the specimen collected, "B" was found dead after heavy rain on the bank of a mountain ditch and the others were captured by a farmer on a cultivated field. All of them were rather small in size (tab.1).

Tab. 1. Main body measurement of the four specimens collected

SPECIMEN	A	B	C	D
DATE OF FINDING	11/09/85	16/10/93	05/01/94	01/02/94
SEX	male	male	male	male
HIND FOOT LENGTH	12.5 mm	13.6 mm	14.8 mm	14.7 mm
TAIL LENGTH	25 mm	24.9 mm	21 mm	24.6 mm
TOTAL LENGTH	126 mm	125 mm	108.7 mm	148 mm
WEIGHT	unknown	55.5 g	50 g	54 g

Following CAPOLONGO & PANASCÌ (1976), one of the simplest indexes that could be used to separate the different populations is the AP/CB index (palate width/condylobasal length). The comparison between the data recorded for the examined specimens with the results of other 538 specimens coming from various regions of Italy (CAPOLONGO & PANASCÌ 1978) reveal that the specimens are well assimilable to the *Talpa caeca* group from the Apennine. The application of the other indexes proposed by the same authors are in agreement with the first results. The relatively small body dimensions of the examined specimens, a condylo-basal length minor to 33 mm, the relative short width of the rostrum and the maximum diameter of the M1 around 3 mm (TOSCHI 1959; CONTOLI 1986) corroborate the attribution of the specimens to *Talpa caeca*. The systematic identification of the specimens has been finally confirmed by direct comparison with some skulls belonging to all the three Italian species.

CLOSING REMARKS

The presence of *Talpa caeca* in Maremma is a new, important acquisition. As far as it is known, no evidence of this taxon has ever been recorded within the study area. According to the results of the survey, a rather small population size and a wide geographical isolation from the other mole populations is predictable. The only bibliographical data available on the same species outside the Province come from Arciano (Viterbo, Latium), around 70 km in a straight line far from the Amiata mountain (CONTOLI 1986), while records of *Talpa romana* come from Asciano, Siena (Sammuri, pers. comm.; CONTOLI 1986) and Izzalini, Perugia (CONTOLI 1986). The absence of any other information on the presence of the genus *Talpa* in the surrondings give an even higher biogeographical significance to the studied specimens and to the population which they belong to.

The only historical data gathered during the survey is the result of a direct inquiry and refers to a personal observation conducted in 1965 around Monticello Amiata (Anselmi, com. pers.). Given the general nature of the record (even if morphologically easily recognisable) and the impossibility to check it for the species, it could just be used to assess the presence of the genus *Talpa* in the study area.

The bibliographical investigation gave a single record, referred to the presence of *T. romana* in the coastal area between Castiglione della Pescaia and Grosseto. It was pointed out by UTTENDÖRFER (1952) and, interestingly, has never been proved by successive observations. The unsuitable nature of the soil and the negative results coming from the field survey (that was particularly intensive in this area) suggest that this data be considered with prudence.

The limit of distribution of *Talpa caeca* in central Italy has been updated and moved west-southward, according to the finding reported by CONTOLI (1986) for Argiano (Viterbo, Latium). The habitat characteristics of the specimens collected suggest the existence of a positive selection for the inland mountainous areas with soft soil and traditional agriculture.

The relevance of the new findings is hereby confirmed from an ecological and biogeographical point of view. The amount of data is however scarce as yet to pro-

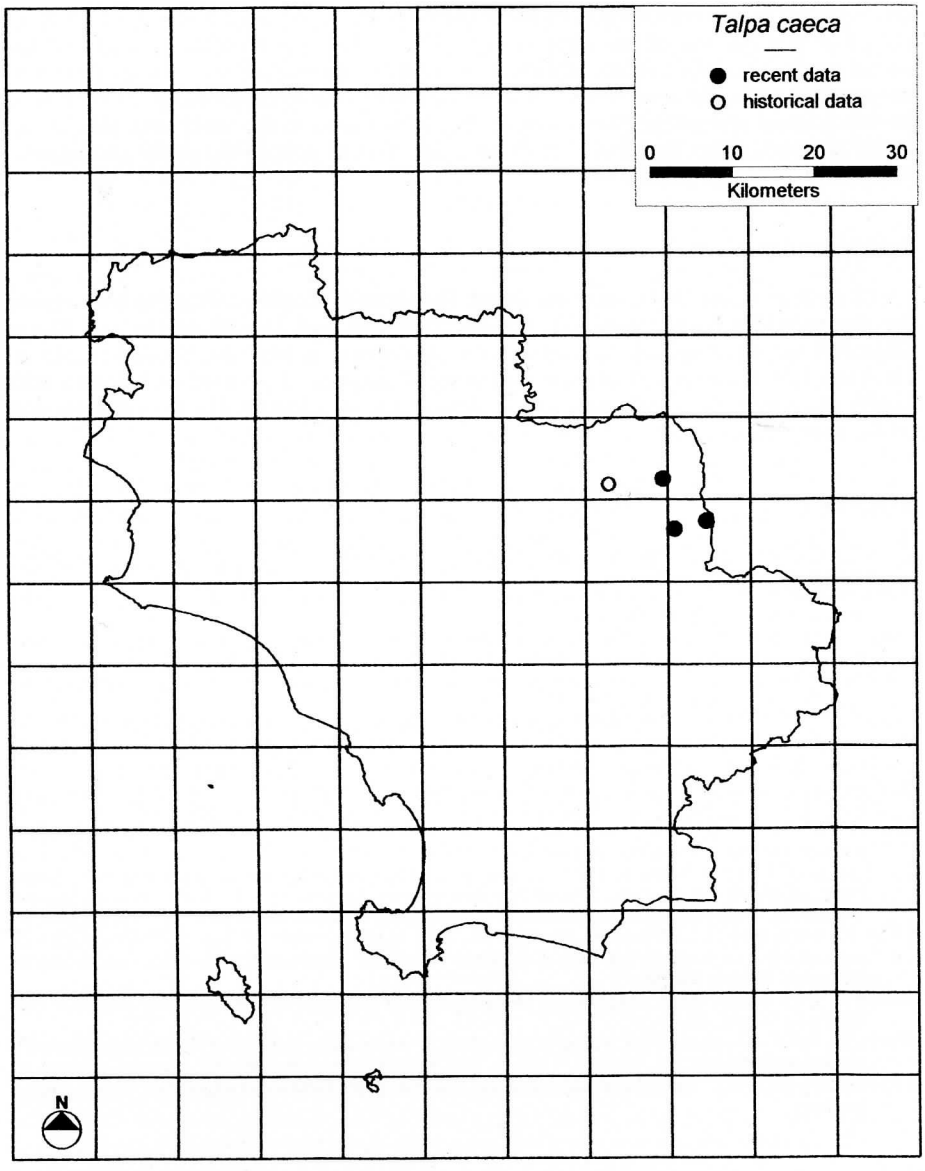

Fig. 2. Geographical distribution of *Talpa caeca* in Grosseto Province (from SFORZI & RAGNI 1997, modified).
Fig. 2. Distribuzione geografica di Talpa caeca *in Provincia di Grosseto (da SFORZI & RAGNI 1997, modificato).*

duce a hypothesis on the origin of these populations, living apparently isolated from the other populations of the same taxon. The extensive aim of the project and the broad study area didn't allow further, more detailed investigations, that are bound to be undertaken in the near future. A more accurate characterisation of taxonomical, morphological and geographical aspects of *Talpa caeca* in the study area will be actually defined, under the ethical principles that should govern the study and conservation of isolated populations.

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