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The shrew (*Crocidura* sp.) of Gozo, a probable survivor of the Pleistocene fauna of Mediterranean Islands

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The Pleistocene fauna of Mediterranean islands comprises several endemic mammals all of which are now extinct. The only known exception is *Crocidura zimmermanni*, the endemic shrew of Crete (REUMER 1986). Many of the species became extinct only after the arrival of man during the Neolithic period. Man, either accidentally or consciously, introduced most of the presently occurring mammals, such as hedgehogs, mice, rats, ungulates, and so forth (summarized by VIGNE and ALCOVER 1985). According to these authors, *Suncus etruscus* and two species of the genus *Crocidura*, *C. suaveolens* and *C. russula*, which presently occur on several of the Mediterranean Islands, have also been introduced by man. This interpretation was confirmed for some islands by POITEVIN et al. (1986) and VOGEL et al. (1986).

The shrews of Sicily, however, could not be confidently referred to one or the other species and, until recently, have been variously assigned to *C. caudata*, *C. sicula*, *C. suaveolens*, *C. leucodon*, or *C. russula* by various authors (MILLER 1901; VESMANIS 1976, among others). The recent discovery of a particular karyotype with $2n = 36$ chromosomes has now demonstrated that the Sicilian shrew is a separate species (VOGEL 1988), related to *C. canariensis* (MADDALENA 1990), a species endemic to the Canary Islands and which has a similar karyotype (HUTTERER et al. 1987).

Once the species was recognized, the question arose as to its origin. Was it introduced by man as many other mammals, or was it a relic of the local Pleistocene fauna? KOTSAKIS (1986) has described a Pleistocene species of *Crocidura* from Spinagallo cave in Sicily, together with remains of the dwarf elephant *Palaeoloxodon* and the giant dormouse *Leithia*.

KOTSAKIS (1986) has also referred material from the Pleistocene of Malta (reported by MALEC and STORCH 1970) to his new species from Sicily, which he named *Crocidura esui*. Both islands share a more or less common Pleistocene vertebrate fauna. If the extant shrew was a descendant of the Pleistocene species, then one would expect the same species to occur also in the Maltese archipelago. Shrews from the Upper Pleistocene and Holocene of the Ghar Dalam cave, Malta, were reported as *C. cf. russula* by MALEC and STORCH (1970). The species is now extinct on Malta, but on the Island of Gozo, 5 km northwest of Malta, specimens were recently found and referred either to *C. russula* or to *C. suaveolens* (SULTANA 1971; SCHEMBRI and SCHEMBRI 1979; SCHEMBRI and CACHIA ZAMMIT 1979; VESMANIS and VESMANIS 1982). These identifications would imply that the Pleistocene species became extinct and has now been replaced by a continental species, as proposed by KOTSAKIS (1986) for Sicily. To solve the problem, we obtained alive shrews from Gozo and studied their karyotype.

We collected three specimens of *Crocidura* sp. on Gozo in March 1989. The colour of these animals, especially in the juvenile pelage, is characterised by a dark back and a bright belly which are separated by a clear line of demarcation. However, in older animals this



Fig. 1. Adult male *Crocidura sicula* from Gozo

line is not as sharp (Fig. 1). The chromosomal analysis revealed a karyotype of $2n = 36$ (Fig. 2), which agrees with the one previously reported from Sicily (VOGEL 1988), and which differs from both *C. russula* and *C. suaveolens*.

These results confirm our assumption that the extant shrews of Sicily and Gozo occurred there before the arrival of man and therefore provide strong evidence that they have survived since the Pleistocene. As a consequence, it was possible to restudy the morphology of the Sicilian and Maltese populations (VOGEL et al. 1989) and to conclude that *C. caudata* is a synonym of *C. sicula*, and that the shrews of the Egadi Island also belong to this species which we call *C. sicula*.

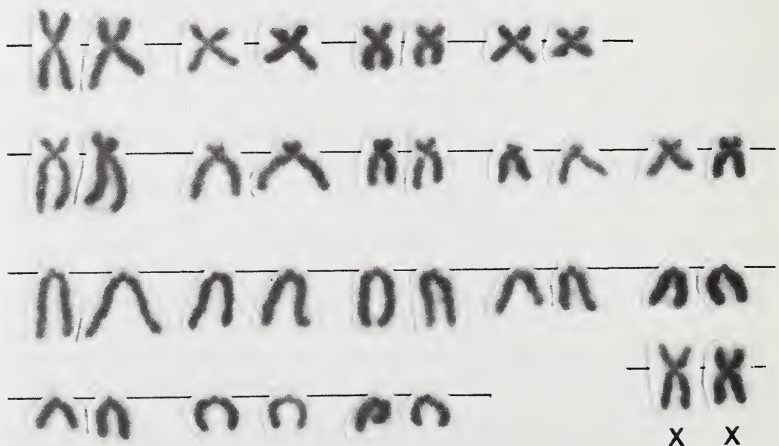


Fig. 2. Karyotype of *Crocidura sicula* from Gozo (female IZEA 3525)

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