

About the presence of the snow vole, *Chionomys nivalis* (Martins, 1842) (Mammalia Rodentia Cricetidae), in Calabria, Southern Italy: data review and critical considerations

Armando Nappi^{1*} & Gaetano Aloise²

¹Museo civico di Storia naturale, via Cortivacci 2, 23017 Morbegno, Sondrio, Italy; e-mail: armando.nappi@alice.it

²Museo di Storia Naturale della Calabria e Orto Botanico. Università della Calabria, Via P. Bucci s.n., 87036 Rende, Cosenza, Italy; e-mail: gaetano.aloise@unical.it

*Corresponding author

ABSTRACT

The presence of *Chionomys nivalis* (Martins, 1842) (Mammalia Rodentia Cricetidae) in Calabria, the southern tip of the Italian peninsula, is reported in different literature sources, but the only Calabrian specimen, from Lago Cecita, Cosenza district, is preserved into Museo Zoologico “La Specola”, Firenze. A recent examination of this specimen, moreover, has shown that it is an *Arvicola amphibius* (Linnaeus, 1758) juvenile. The distribution of *C. nivalis* along the Apennines, requires adequate insights and critical reviews.

KEY WORDS

Apennines; Calabria; *Chionomys nivalis*; distribution.

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INTRODUCTION

The snow vole *Chionomys nivalis* (Martins, 1842) (Rodentia Cricetidae), is a species widespread from south-western Europe through south-eastern Europe to the W Caucasus, east to Turkey, Israel, Lebanon, W Syria, W and N Iran and S Turkmenistan (Musser & Carleton, 2005). In Italy it is present continuously along the Alps, while the distribution area of the Apennines is more fragmented (Amori, 2008). Moreover, on the latter portion, some bibliographic data, such as few Abruzzo mountains as well as the Matese Massif, between Molise and Campania, should be confirmed by more recent research (Nappi et al., 2007). Further south, always along the Apennines, the question about the snow vole presence in the Calabria region, in the southern tip of the Italian peninsula, subject of this note, is of particular interest. The presence of the species in this region, in fact, was considered uncertain and debated for nearly half a century.

From the literature search, the first value found is contained in a generic work on mammals, where snow vole is reported in Italy “*sulle Alpi e sull’ Appennino, sino alla Calabria*” (“on the Alps and on the Apennines, until Calabria”), without further details (Scortecci, 1953). However, this species is absent in other publications concerning Calabrian mammals (Costa, 1839, 1845, 1847, for a correct dating of the issues of “Fauna del Regno di Napoli” written by O. G. Costa, see D’Erasmus, 1949; Moschella, 1900; Lucifero, 1909; Pasa, 1955) and Toschi (1965), expresses some doubts about its presence in the region.

Afterwards, in a study about some birds of prey from Sila Grande, Cosenza, is reported the discovery of the predation remains near a nest of buzzard *Buteo buteo* Linnaeus, 1758, 25.V.1971, consisting of “*cranio frammentario, denti e peli di Microtino, quasi certamente Microtus nivalis*” (fragmentary skull, teeth and hair of Microtine, almost certainly *Microtus nivalis*), now synonymous with *Chionomys*

nivalis (Dessì Fulgheri et al., 1972). This material is now lost and is no longer verifiable (P. Mirabelli, pers. com.).

Afterwards, the presence of the species in the region, based on a museal specimen, is reported by Amori et al. (1986). According to Amori (1993), “these sporadic records could be confirmed by further and more specific research” and in an other review, Amori (1999) indicate the species distribution, in Italy, from the Alps until the central Apennines. More recently, the presence of the snow vole in Calabria, is reported in a mammals volume of “Fauna d’Italia” series (Amori, 2008) and in the section of this species of the IUCN Red List (Kryštufek & Amori, 2008).

MATERIAL AND METHODS

In this paper, all literature data, that it was possible to find, were considered. In addition, the only Calabrian specimen, known by writers, was analysed. This consist in a liquid preserved body, with relative skull, into Museo Zoologico “La Specola”, Firenze, n. MZUF-7448 (Cosenza, Lago Cecita, 18.VIII.1970, Piero Mannucci legit; head-body: 89 mm, tail: 57 mm; ear: 10 mm; hind foot: 22 mm).

Of this specimen, skull and teeth morphologies were analyzed. Third upper molar and first lower molar, in particular, were compared with the molar morphotypes, identified by Nadachowski (1991), just in the genus *Chionomys* Miller, 1908.

RESULTS

A recent analysis of the specimen above mentioned, has shown that the tooth morphology (Fig. 1) is that typical of water vole *Arvicola amphibius*, (Linnaeus, 1758) as well as the skull morphology, relatable to a young specimen of this species (Figs. 2, 3). As confirmed, moreover, by comparison with skulls of juvenile specimens of water vole (Museo Civico di Storia Naturale di Milano, nn. 1855, 1863, 1869, 1875, 4134; Museo di Storia Naturale, Università della Calabria: nn. SG35, SG147, AS164; Coll. Teriologica G. Aloise: n 615).

DISCUSSION

It seems that the snow vole has colonized the southern areas of the Italian peninsula already during

very ancient times, perhaps the early middle Pleistocene. This is suggested by a finding at the site of Notarchirico, within Venosa Basin, Potenza district, characterized by the presence of archaic elements such as *Sorex* cfr. *runtonensis* Hinton 1911, *Pliomys episcopalis* Bartolomei, 1970 and *Arvicola cantianus* (Koenigswald 1973) (Sala, 1999). It is also useful to remember, in this context, the fact that among the small mammals, in Italy, Calabria is the southern distribution limit of different species (see Amori et al., 2008) some of which, of mountain environment, with disjoint areal as *Driomys nitedula* Pallas, 1778 (Capizzi & Filippucci, 2008), or fragmented areal as *Talpa caeca* Savi, 1822 (Aloise & Cagnin, 2003) and *Neomys fodiens* Pennant, 1771 (Aloise et al., 2005). *T. caeca* and *N. fodiens*, previously considered distributed along the central and northern Italy, but absent in the southern regions, were found only recently. Taking into account these assumptions, the presence of the snow vole, in Calabria, cannot be excluded, even for the lack of research in potentially suitable areas, such as, for example, Pollino Massif and Orsomarso Mountains.

Based on the results of the present work, and in the absence of some objective evidence, snow vole must be currently considered to be absent from this region. On the other hand, until now, all research related to small mammal fauna, have not yielded positive results regarding the presence of the species in Calabria (Lehmann, 1961, 1964, 1973, 1977; Aloise et al., 1985; Cagnin et al., 1986; Aloise & Cagnin, 1987) and on the basis of more than 3.000 specimens of small mammals, collected over the entire territory of Calabria during 1983-2013 (Coll. Teriologica of the Museo di Storia Naturale of the Università della Calabria and Coll. Teriologica G. Aloise), snow vole has never been found. With regard to Lago Cecita area, although it was also the subject of several investigations that have provided more than 300 specimens from traps and 84 specimens from raptors pellets, *C. nivalis* has never been found. It should also be noted that in this area there are no environments suitable for the snow vole.

Moreover, the presence of water vole, just around Lago Cecita, is supported by a liquid preserved specimen (n. SG147, Cosenza district, Spezzano Sila, Valle Capra, 18.VII.1991) and by a 6 specimen from raptor pellets into Collezione Teriologica of the Museo di Storia Naturale, Università della Calabria, by a stuffed skin (n. 4020,

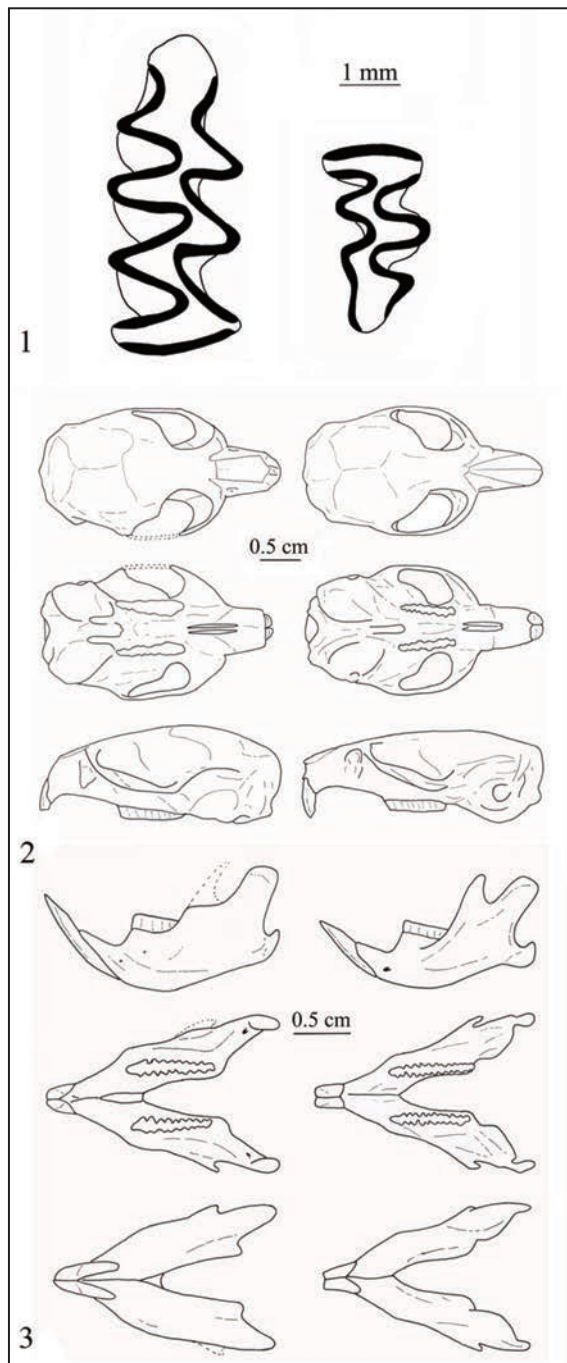


Fig. 1. Right first lower molar (left) and right third upper molar (right) of the specimen MZUF-7448 determined in this paper as *Arvicola amphibius* (see Fig. 2 for details). Figure 2, 3. Skulls (Fig. 2) and jaws (Fig. 3) in different view of juvenile of *Arvicola amphibius* (left) (Calabria, Cosenza, Lago Cecita, 18.VIII.1970, P. Mannucci leg., Museo Zoologico "La Specola", Firenze, n. MZUF-7448) and *Chionomys nivalis* (right) (Emilia Romagna, Modena, Monte Cimone, 19.IX.1990, C. Bertarelli leg., Museo Civico di Ecologia e Storia Naturale, Marano sul Panaro, n. 296).

14.VII.1963) into Museo Civico di Storia Naturale di Milano and by some observations (F. Pellegrino, 2012, pers. com.). The distribution of the snow vole, in central-southern Italy, certainly requires adequate deepenings but data about water vole, a very decreasing species in Italy, recently no longer found in different historical localities, are equally interesting (Cagnin, 2008).

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