

**First record of the Common vole *Microtus arvalis*
(Pallas, 1778) for Portugal**

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The Common vole is a not threatened species, endemic for Europe and until now distributed from the northwest of Spain to Central Russia, having a few isolates in several Atlantic small islands (Moreno and Balbontín 1998, Zima 1999).

According to Zima (1999) the species is common across its main range and inhabits preferentially open cultivated agricultural land, grazed pastures and short meadows.

Recently, the analysis of 958 pellets of the Barn owl (*Tyto alba* Scop.) from 91 different sites over the most north-eastern part of Portugal has revealed in one of these sites, located approximately 7 km from the Spanish border (Póvoa, Miranda do Douro), the presence of *Microtus arvalis asturianus*. This confirms previous suspicions of the occurrence of the species in this country, based on the known range of the Common vole in Spain (Fig. 1).

The specimens identified were found in fresh pellets collected during the owl's nesting period (May-June 2001). Taylor (1994) claimed that, during this period, 89.5% of birds have an activity radius of less than 1 km around nest site and Cramp (1985) referred to values below 1.5 km for the same parameter and period. We may therefore assume that the specimens were captured within Portuguese territory.

Species identification was based on Miller (1912), Yalden (1977), Corbet (1978), Madureira (1983), Moreno and Balbontín (1998) and on the comparative study of preserved specimens from the National Museum of Natural History (Bocage Museum, Lisbon), originated from Germany, France and Belgium. Only specimens sharing simultaneously the following criteria were assigned to *M. arvalis*: 1) M^1 with four inner ridges very well formed; 2) M^2 with a rectangular end and without extra loop on inner side; 3) upper diastema length bigger than nasal length; 4) mandible foramen placed on an interior and vertical position; and 5) M_3 with three outer ridges.

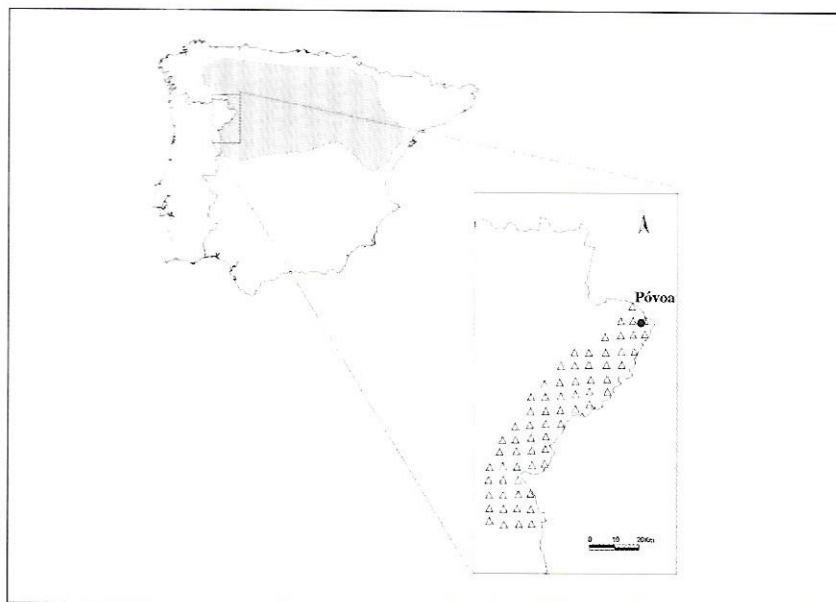


Fig. 1. – Occurrence of *M. arvalis asturianus* in Portugal: Póvoa, Miranda do Douro (new data, black circle); open triangles: sampled area in Portugal (this study); grey area: known range of the subspecies in Spain.

As a result, among the 4025 preys of the Barn owl recorded, of which more than half were rodents, only four were assigned to the Common vole, suggesting that the relative abundance of the species in the study area is very low. Cranial measurements of these specimens are given below (Table 1). The remaining rodent preys were identified as follows: *Microtus lusitanicus* (Lusitanian pine vole) – 1305 specimens; *Microtus cabreræ* (Cabrera vole) – 34 specimens; *Microtus agrestis* (Field vole) – 21 specimens; *Arvicola sapidus* (Southwestern Water vole) – one specimen; *Eliomys quercinus* (Garden dormouse) – four specimens; *Apodemus sylvaticus* (Wood mouse) – 366 specimens; *Mus spretus* (Algerian mouse) – 549 specimens; *Mus domesticus* (House mouse) – 13 specimens; and *Rattus* sp. (Brown rat or Black rat) – one specimen.

Also worth to be emphasised is the occurrence of *M. cabreræ* farther north than so far recorded (e.g. Mathias 1999), leading to the displacement of the northern limits of the range of this species in Portugal and to the definition of a larger area of sympatry between *M. agrestis* and *M. cabreræ*. Moreover, the co-occurrence of *M. arvalis* with three other *Microtus* species (*M. lusitanicus*, *M. cabreræ* and *M. agrestis*) probably accounts for its reduced abundance. In fact, Moreno and Balbontín (1998) referred that when *M. arvalis* and *M. cabreræ* co-occur, the Cabrera vole displaces the former what may lead to comparatively much lower densities of the Common vole. Furthermore, in areas of sympatry between *M. agrestis* and *M. arvalis asturianus* this latter occupies the most thermophile habitats and the Field vole the most humid. However, in arid habitats population densities of the Common vole are known to decrease, apparently due to the inadequacy of the soil for the excavation of subterranean tunnels (e.g. Moreno and Balbontín 1998).

TABLE 1. - Cranial measurements (mean and range, in mm) of *M. arvalis asturianus* in Portugal, in comparison with specimens from Spain.

	Zygomatic width	Interorbital width	Maxillary Tooth-row length	Upper diastema length	Mandibular Tooth-row length	Mandible length	References
Portugal <i>M.a.asturianus</i>	14.82 (14.10-15.31) N=3	3.11 (2.88-3.34) N=2	6.25 (5.93-6.53) N=4	8.05 (7.94-8.15) N=2	5.93 (5.74-6.15) N=4	14.61 (13.81-15.47) N=4	This study (Póvoa, Miranda do Douro)
Spain <i>M.asturianus</i>	14.7 (14.2-15.2) N=2	3.2 - N=1	6.5 (6.4-6.6) N=2	7.80 - N=1	6.30 (6.2-6.4) N=2	16.80 (16.6-17.0) N=2	Miller, 1912 (Leon; Segovia)
Spain <i>M.a.asturianus</i>	15.65 (14.7-17.2) N=37	3.45 (2.9-3.9) N=128	6.55 (5.7-7.4) N=130	7.60 (6.6-8.7) N=127	6.35 (6.0-7.2) N=107	16.55 (15.10-18.20) N=107	Rey, 1973 (Sierras Demanda and Albarracín)
Spain spp <i>asturianus</i> + <i>meridianus</i>	- (12.0-15.9)	- -	- (5.0-7.0)	- (6.0-8.5)	- (5.0-6.5)	- (13.0-16.9)	Castells & Mayo, 1993 (whole Spain)

The new data here presented not only increase the known range of *M. arvalis* in Europe but also calls our attention to the singular zoogeographic character of the study area where four *Microtus* species co-occur. It is also interesting to note that several threatened mammals to Portugal have been assigned to the same area, such as *Mustela putorius* (polecat), *Martes martes* (pine marten) and *Canis lupus* (wolf) (e.g. Mathias 1999).

Field studies involving live trapping are now being planned aiming at a more precise delimitation of the range of *M. arvalis* in Portugal and at the identification of the occupied habitats and limiting factors accounting for its occurrence.

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