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First record of *Pipistrellus pygmaeus* (Leach, 1825) (Mammalia Chiroptera) in Sicily (Southern Italy)

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ABSTRACTWe report the capture through mist-nets of two adult females *Pipistrellus pygmaeus* (Leach,
1825) (Mammalia Chiroptera), along the course of Simeto river, in Adrano (Catania, Sicily,
Italy). Their presence has been reported for the first time in Sicily, increasing the number of
bat species present in the region to twenty three.

KEY WORDS Chiroptera; *Pipistrellus pygmaeus*; Sicily; Simeto river.

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INTRODUCTION

In Sicily we know only two species of *Pipistrellus* Kaup, 1829 genus (Mammalia Chiroptera): *P. pipistrellus* (Schreber, 1774) and *P. kuhlii* (Kuhl, 1817), both widely distributed all over the Italian territory.

Recently, the *P. pygmaeus* (Leach, 1825) was genetically separated from *P. pipistrellus* (Barratt et al., 1997), and they are considered two cryptic species (Russo & Jones, 2000), therefore its distribution in Italy, particularly, is little known and incomplete. Up to now the presence of *P. pygmaeus* was reported in Valle d'Aosta (Debernardi & Patriarca, 2008), Lombardy (Martinoli & Spada, 2008), Tuscany (Agnelli et al., 2005), Umbria (Spilinga et al., 2013), Lazio and Campania (Russo & Jones, 2000), Abruzzo (Russo et al., 2011) and Sardinia (Veith et al., 2011).

Thus, until now Sicily was one of the Italian regions where the presence of *P. pygmaeus* had not been verified. In this publication we report the presence of *P. pygmeus* in Sicily, that was captured twice with mist-nets along the Simeto river.

MATERIALS AND METHODS

The area of Sicily where the research was conducted is situated at 216 m a.s.l., along the Simeto river, the second most long Sicilian river, under the Acquedotto Biscari bridge (Adrano, Catania) (Fig. 1). This location is characterized by clay outcrops and a tamarisk vegetation along the river. Nearby there are citrus crops, vegetables and uncultivated areas.

The captures were made using two 6-meter long mist nets (19 mm mesh and 5 pockets each) one on top of the other for a total height of 4 meters. They were positioned on the river, a few inches above the water surface supported by telescopic poles. The nets were positioned half an hour before sunset and removed 3 hours after it. The biometric measurements of animals were performed with a calliper (0.1 mm accuracy) and with a pesola (0.5 g accuracy). The recordings of bats sounds were made with a Pettersson D 240 Bat-detector, in Time expansion mode, assisted by a Zoom H2 recorder. The computer processing were carried out with the Pettersson Batsound software. All specimens were promptly released at the end of operations. All activities were carried out with the authorization of the Sicilian Regional Assessorate for Agricultural and Food Resources (1742-01/06/2012) and of the Ministry for the Environment and Territorial and Sea Protection (0009358-07/06/2012).



Figure 1. The pointer indicates the location of capture of *Pipistrellus pygmaeus* in Sicily.



Figure 2. The specimen of *Pipistrellus pygmaeus* captured on July 10 2013. Note the light-colored fur.

RESULTS

During the research conducted in the areas surrounding Mount Etna on the 10th of July and the 8th of September 2013, two capture sessions were carried out using mist nets along the River Simeto, and two *P. pygmaeus* specimens were caught. They were both adult females, one of them was a lactating, whose biometric data are reported in Table 1.

Date	Sex	Forearm length	Weigth
July 10 2013	Female lactating	29.0 mm	5.0 g
September 8 2013	Female	30.9 mm	4.9 g

Table 1. Measures of Pipistrellus pygmaeus.

The animals were identified on the basis of the following morphological characteristics: the presence of a ridge between the nostrils, the cells between the veinings of the wings typical of the species, as indicated by Dietz & Helversen (2004). The color of the fur is of a lighter brown compared to the P. pipistrellus, almost blond as already observed for specimens of Sardinia (personal observation) and as shown in the images of Dietz et al. (2007) (Fig. 2). The animals were released immediately after examination. The validity of the species was also confirmed by the recording of the sounds emitted by the two bats released from the hand in open space. Only the final part of the recorded sequences were analysed, to avoid influence by the hand release. Three calls from each bat were measured from power spectra, given the following values of Frequency of Maximum Energy (FMaxE): 56.5 ± 0.2 kHz for the first bat and 56.6 \pm 0.7 kHz for the second bat.

Sounds of other specimens of *P. pygmaeus* with typical feeding buzz were also recorded, showing foraging activity in this locality (Fig. 3).

DISCUSSION AND CONCLUSIONS

In Sicily, Agnelli et al. (2008) report a list of 20 species of bats, some of which still have to be



Figure 3. Spectrogram of a capture sequence of a Pipistrellus pygmaeus with final feeding buzz.

confirmed. More recently *Hypsugo* cfr. *darwinii* (Tomes, 1859) (Veith et al., 2011) and *Myotis bechsteinii* (Kuhl, 1817) (Di Salvo et al., 2012) were added and the presence of *Barbastella barbastellus* (Schreber, 1774) was also confirmed (Mucedda et al., 2012).

Di Salvo et al. (2009) only hypothesized the presence of *P. pygmaeus* in Sicily, by bioacoustic recordings that didn't allow to distinguish the species from *Miniopterus schreibersii* with certainty.

The capture of P. pygmaeus allows us to add a new species to the bat fauna of Sicily and brings the number of confirmed species of bats living in the island to 23: Rhinolophus ferrumequinum (Schreber, 1774), R. hipposideros (Bechstein, 1800), R. mehelyi Matschie, 1901, R. euryale Blasius, 1853, Myotis bechsteinii (Kuhl, 1817), M. blythii (Tomes, 1857), M. capaccinii (Bonaparte, 1837), M. daubentonii (Kuhl, 1817), M. emarginatus (Geoffroy, 1806), M. myotis (Borkhausen, 1797), M. mystacinus (Kuhl, 1817), M. nattereri (Kuhl, 1817), Pipistrellus pipistrellus (Schreber, 1774), P. kuhlii (Kuhl, 1817), P. pygmaeus (Leach, 1825), Hypsugo savii (Bonaparte, 1837), H. cfr. darwinii (Tomes, 1859), Eptesicus serotinus (Schreber, 1774), Barbastella barbastellus (Schreber, 1774), Nyctalus lasiopterus (Kuhl, 1817), Plecotus austriacus (Fischer, 1829), Miniopterus schreibersii (Kuhl, 1817), Tadarida teniotis (Rafinesque, 1814).

The finding also allows us to ensure its reproduction on the island and to expand the range of the species in Italy, of which it is the southern limit. Future research should aim at identifying roosts, to define the distribution of *P. pygmaeus* in Sicily and establish the conservation measures that have to be taken.

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