First record of *Basilia mediterranea* Hůrka, 1970 from Italy
(Diptera: Nycteribiidae)

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Abstract. The presence of *Basilia mediterranea* Hůrka, 1970, species with Western Mediterranean distribution, is reported for the first time from Italy. Two specimens, a male and a female, were collected from two bats belonging to the species *Pipistrellus pipistrellus* Schreber, 1774 captured with mist nets during a research on bats of Montecristo and Capraia islands (Tuscan Archipelago National Park, Central Italy).


Key words. Diptera, Nycteribiidae, *Basilia mediterranea*, *Pipistrellus pipistrellus*, Chiroptera, Italy, Tuscan Archipelago National Park.

Introduction

Nycteribiidae are highly specialized parasitic flies. Their biology and morphology are the result of the adaptation to the ectoparasitic life on bats. Adaptation to ectoparasitic habit is extreme: wings are completely absent, legs and claws are very strongly developed, eyes reduced or absent, and the body is flattened, especially the thorax, which is antero-dorsally grooved to receive the extraordinary, backwardly flexed head. The head is folded back at rest, so that its dorsal surface rests on the mesonotum. Head can be rotated forward through 180° for feeding. Female ovaries produce one egg at time that descends into the uterus for developing after fertilization. The larva feeds and grows within the female uterus, where it is nourished by the secretion of the “milk gland”. The female leaves the bat just before larviposition and usually deposits the larva on a vertical surface of the bat roost. The larva transforms into the pupal stage from which emerges after 20-40 days (THEODOR, 1975; LANZA, 1999; VANIN & VERNIER, 2009). As in Streblidae, adults are blood-suckers, free-living in the bats’ fur. Also, as in that family, females give birth to fully developed larvae, but these are glued to the wall of the bat roost where they pupate. Emergence of the adult is triggered by warmth of - or contact with - a bat in the proximity of the pupa (MORSE et al., 2013). Most species seem to be host-specific. The family has more than 250 species, the majority with a tropical distribution (PETERSON & WENZEL, 1987). Nine species, belonging to 4 genera are reported from Italy (PAPE et al., 1995; SZENTIVÁNYI et al., 2016). The knowledge of the species of this family for the Italian territory has to be considered incomplete (LANZA, 1999).
In this note, the finding of two specimens of *Basilia mediterranea* Hürka, 1970, new species for the Italian fauna, is reported. The record is the result of a two-year research on bats of the Tuscan Archipelago (Montecristo and Capraia Islands) (Fig. 1) carried out in order to evaluate the species on each island and their conservation status (Dondini et al., 2016).

Montecristo Island is a granite, mountainous island of 10.39 km², located 65 km far from the Italian mainland, and 60 km from Corsica (France), with a maximum altitude of 645 m a.s.l. (Monte della Fortezza). The island, managed by the “Comando Unità Tutela Forestale, Ambientale e Agroalimentare dell’Arma dei Carabinieri” (C.U.T.F.A.A.), is a Natural Reserve since 1970 and fully included in the Tuscan Archipelago National Park.

Capraia Island has a volcanic origin and is 19.72 km². The Island is located 54 km far from the Italian mainland and about 26 km from Corsica (France) and the highest mountain, Monte Castello reaches 477 m a.s.l. The two islands are characterized by typical Mediterranean vegetation (Fig. 2).

**Material and methods**

The samples were collected from two bats (*Pipistrellus pipistrellus* Schreber, 1774) sampled from the islands of Montecristo and Capraia. Bats, captured using a mist net, were measured, identified, inspected for ectoparasites and then released. All parasites were removed. Bat flies were carefully collected with tweezers and stored in single 1.5 ml Eppendorf in a 75% ethanol solution. The two samples are stored in the collection of Dr. Stefano Vanin at Department of Biological Sciences, School of Applied Sciences, University of Huddersfield (UK).

**Results**

Two specimens, a male and a female of *Basilia mediterranea* Hürka, 1970 were collected from two individuals of *Pipistrellus pipistrellus* Schreber, 1774. Collection data are here reported.

**Tuscany.** Montecristo Island (Nature Reserve of Montecristo), Livorno province: near Cala Maestra, [5 m a.s.l., 42°20'03" N 10°17'41" E, WGS84], 17.V.2016, leg. Dondini G., Vergari Si. and Vergari Se., 1 ♂, collected on a female of *Pipistrellus pipistrellus* Schreber, 1774 captured with mist-nets (Fig. 3a).
Capraia Island, Livorno province: near Vado del Porto [28 m a.s.l., 43°02'42" N 09°50'02" E, WGS84], 17.VI.2016, leg. Dondini G., Vergari Si. and Vergari Se., 1 ♀, collected on a female of *Pipistrellus pipistrellus* Schreber, 1774 captured with mist-nets (Fig. 3b).

**Discussion**

*Basilia mediterranea* was almost exclusively collected on specimens of *Pipistrellus pipistrellus* and only occasionally on other bat genera (e.g.: *Hypsugo savii* Bonaparte, 1837) (LANZA, 1999). The species has Western Mediterranean distribution. It has never been reported for Italy despite a finding in the close island of Corsica (LANZA, 1999). However, *Basilia italicca*, is the only species of *Basilia* found up to now in Italy (SZENTIVÁNYI et al., 2016).

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**Fig. 2.** Capraia Island characterized by typical Mediterranean vegetation.

**Fig. 3.** *Basilia mediterranea* Hůrka, 1970. A: male (Montecristo Island); B: female (Capraia Island).
Basilia mediterranea differs from congeneric B. italic a Theodor, 1954, in the length of the tibiae (four to four and a half times longer than wide in B. mediterranea, three to three and half times longer than wide in B. italic a), the shape of the first and second tergite in females (in B. mediterranea tergite 1 has two posterior processes and tergal plate 2 is heart-shaped), as well as in the shape of genitalia in males (clasper with pigmented apical part and one long seta on the basal external part in B. mediterranea) (Theodor, 1975; Hůrka, 1970). Basilia mediterranea has also been reported from France and Spain, collected on P. pipistrellus and H. savii (Beaucournu & Noblet, 1985, 1994; Hůrka, 1970). It is worth mentioning the finding of B. mediterranea on H. savii, that is considered as an ecological contamination (Beaucournu & Noblet, 1994).

This discovery increases the knowledge of these elusive bat ectoparasites and about the Italian biodiversity, in particular that of the Tuscan Archipelago.

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References


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