

## ***Milichiella lacteipennis*: new record for Lampedusa Island (Italy)**

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### **Abstract**

The authors report the first record of *Milichiella lacteipennis* (Loew) (Diptera Milichiidae) in Lampedusa Island (Italy), and give information on its distribution and biology.

**Key words:** Apocynaceae, insect pollinators.

### **Introduction**

In the course of field investigations carried out during a research project on the pollination ecology of two fly-pollinated Apocynaceae in Lampedusa Island, numerous species of Diptera have been identified as pollinators. Among the pollinators, seven species of Diptera new for Lampedusa have been found (Pisciotta *et al.*, 2008). During further field work several specimens of *Milichiella lacteipennis* (Loew) (Diptera Milichiidae) were captured. In the present note we report the detection of this species in Lampedusa Island, as the first record for Italy. Lampedusa Island (Italy) (35°31'46"N and 35°29'35"N - 12°30'54"E and 12°37'55"E) lies in the Mediterranean Sea and is 20.2 Km<sup>2</sup> - 11 Km long (East-West) with a maximum broadness of 3.5 Km. It is an emergence of the African Continental platform and is 195 Km from the Sicilian coast and 120 Km from Tunisia (Agnesi and Federico, 1995).

### **Materials and methods**

Fieldwork was carried out from April 2006 to November 2008. Most of the observations were diurnal, with limited nocturnal surveillance. Since the main scope of the work was to investigate the pollination ecology of the two species of Apocynaceae co-occurring in Lampedusa (*Periploca laevigata* subsp. *angustifolia* (Labill.) Markgraf and *Caralluma europaea* (Guss.) N.E.Br.), captures were carried out following two techniques: (1) stalking near plants visually searching for arrival of probable pollinators, (2) random captures in the sampling area. Captures were done with an entomological net and specimens were kept separately in plastic test-tube with cork shaving imbued with ethyl acetate until they could be dry prepared for identification. The island was visited monthly to observe insect behaviour and to collect specimens for identification. Specimens have been deposited at the Entomological Collection of the Dipartimento di Coltivazione e Difesa delle Specie Legnose "G. Scaramuzzi", University of Pisa and at the Dipartimento di Scienze Botaniche, University of Palermo.



**Figure 1.** *M. lacteipennis* (length: 2.4 mm) with pollinaria of *C. europaea* attached to its mouthparts. (In colour at [www.bulletinofinsectology.org](http://www.bulletinofinsectology.org))

### **Results and discussion**

In November 2008, while monitoring insect activity around *C. europaea* plants, several specimens of *M. lacteipennis* were observed. The flies were actively visiting the flowers with the typical behaviour of pollinators visiting stapeliads flowers as reported by Meve and Liede (1994). Thirty specimens of *M. lacteipennis* were captured, and among them twenty four specimens had pollinaria of *C. europaea* attached to their mouthparts (figure 1).

*M. lacteipennis*, described by Loew (1866) as *Lobioptera lacteipennis* from Cuba.

Specimens examined: Italy. Lampedusa Island, loc. Isola dei Conigli, 7-8.XI.2008, 30 females, Silvestro Pisciotta legit.

The genus *Milichiella* Giglio-Tos 1895 is characterized by an anepisternum (mesopleuron) bare and notched posterior margin of eye. In the Palaearctic Region there are 5 described species (Papp, 1984; Carles-Tolrà, 2001). *M. lacteipennis* is characterized by halteres yellowish white, palpus black, mesonotum with only the 2<sup>nd</sup> pair of posteriorly-located dorsocentral setae strong.

Thorax and the elongate 5<sup>th</sup> tergite black shining, wing hyaline (figure 1) with veins R<sub>4+5</sub> and M<sub>1</sub> strongly convergent apically. This species resembles *Milichiella iberica* Carles-Tolrà (2001) but in *M. lacteipennis* all the legs (including all tarsi) are black and the mesonotum is shiny black, not slightly microtomentose.

The species is widespread in the Nearctic, Neotropical, Afrotropical and Oriental Regions (Papp, 1984), but in the Palaearctic Region is previously known only from the Canary and Madeira Islands (Becker, 1907, 1908a, 1908b; Frey, 1936), Cape Verde Islands (Dawah and Abdullah, 2007), Morocco (Brake, 2000), Tunisia (Deeming *in litteris*: Sidi Boul Ali, olive grove, 9.V.1995, 1 female, now in the collection of National Museum and Galleries of Wales, Cardiff), Egypt (Steyskal and El-Bialy, 1967), Israel (Brake, 2000), Saudi Arabia (Dawah and Abdullah, 2007), Oman (Deeming, 1998), Afghanistan (Papp, 1979) and Japan (Iwasa, 1999).

This species has been reported on the African continent from Nigeria (Sabrosky, 1980) to Kenya and Zambia (Dawah and Abdullah, 2007), from Seychelles to Madagascar and Reunion (Dawah and Abdullah, 2007) and from Ascension Island and St. Helena, (Dawah and Abdullah, 2007).

The species is widespread throughout the New World from Massachusetts (Johnson, 1925) to California (Malloch, 1913), Alabama (Landau and Gaylor, 1987) and Florida (Johnson, 1913) in the north, and from Venezuela (Galan and Herrera, 2006) to Brazil (Malloch, 1913), Peru (Becker, 1907) and Chile (Malloch, 1934) in the south.

The species has been reported from the Oriental and Australian Regions including: Taiwan (Malloch, 1914), New Guinea and Java (Becker, 1907) and from Australia (Malloch, 1931) and the Chesterfield Islands (Cohic, 1959). It has also been reported from several oceanic islands such as the Hawaiian Islands (Hardy and Delfinado, 1980), Fiji (Bezzi, 1928) and Easter Islands (Campos and Peña, 1973).

Adults of Milichiidae visit flowers, carrion and dung, with some species being commensalists of predatory insects and spiders (Papp, 1984; Brake, 2000; Oosterbroek, 2006). Larvae are saprophagous in organic matter in a variety of niches, including: wet media such as rotting fish, soil, rotting wood, snails, dead insects and pupae, decaying vegetable matter and many types of dung and dry media such as grain and bird nest detritus or ant nests, wood detritus and dry guano (Ferrar, 1987). Raspi (Leto Barone *et al.*, 2002) found many puparia of Milichiidae [probably of *Leptomitopa latipes* (Meigen)] in the sarcophagus of Federico II in Palermo.

Bezzi (1928) reported *M. lacteipennis* reared from heaps of stable manure and rotting cow-pea seeds in Fiji. Bohart and Gressitt (1958) reared this species from dung of various animals (cow, horse, chicken, guinea pig) and from decaying aquatic vegetation. The biology of *Milichiella* is consistent with our report of *M. lacteipennis* visiting flowers and acting as a pollinator of *C. europaea*, whose flowers are sapromyophilic (pollinated by carrion flies). The visual attractants and floral scent composition are important in the attraction of pollinators in sapromyophilous systems, where the odour re-

sembles an oviposition site or a food source for carrion feeders in the orders Coleoptera and Diptera (Dobson, 2006; Jürgens *et al.*, 2006).

It is interesting to note that we found *M. lacteipennis* only in November 2008, despite capturing over 1500 specimens of Diptera in Lampedusa Island starting in April 2006. This species should be an old presence in Lampedusa Island for its proximity to Africa, but apparently *M. lacteipennis* was never reported in Lampedusa (Venturi, 1960; Pisciotto *et al.*, 2008), Linosa or Pantelleria Islands (Raspi, 1995) in the past years.

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