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First record of *Leia arsona* Hutson, 1978 (Diptera Mycetophilidae) a new alien species for Italy

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ABSTRACT *Leia arsona* Hutson, 1978 is a species of Diptera Mycetophilidae, not common in Europe. This species is widespread around the tropical Atlantic Ocean and Mediterranean Sea with records from the Cape Verde Islands, Madeira, Azores, Algeria, Tunisia, England, Switzerland, Malta and Israel. In Italy it is the first report as species, in Sicily it is the first report as genus and species.

KEY WORDS Alien species; Sicily; Reserve Lake Preola and Gorghi Tondi; Fungus gnats.

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INTRODUCTION

Among the 22 indicators supporting the global target to reduce biodiversity loss, one specifically monitors trends in invasive alien species (IAS). The influence of invasive alien species on European ecosystems and native biota represents a major challenge in biodiversity conservation and sustainable ecosystem management. The critical role of biodiversity in maintaining ecosystem services and functions essential for life on Earth is widely recognized at the global level (Drake, 2009).

Terrestrial invertebrates constitute one of the most abundant groups of non-native organisms established in Europe. To date, 1,296 terrestrial invertebrate species from non-European regions have become established, along with an additional 221 cryptogenic species of widespread but uncertain origin.

Arthropods, primarily insects, are the predominant group, accounting for approximately 94% of all alien terrestrial invertebrates. The majority of Hymenoptera (38%), Lepidoptera (35%), and Hemiptera (33%) species originate from Asia, whereas most Diptera (30%) have been introduced from North America (Drake, 2009).

Among the Diptera, *Leia* Meigen, 1818 is a genus of the family Mycetophilidae found in most parts of the world. *Leia arsona* Hutson, 1978, in particular, is one of very few species of this group known to be spread widely through trade, but its true origin is uncertain. Morphologically, this species has a dark marking on the wings over theradial-medial crossvein, one behind the posterior fork, a preapical wing band and, in addition, it shows a dark knob to the halteres.

MATERIAL AND METHODS

The specimens, 87 specimens, have been collected by A. Ditta in 2025 from March to May, in

the Integral Nature Reserve "Lago Preola e Gorghi Tondi" near Mazara del Vallo (Sicily, Italy).

All specimens were collected on the inside surface of the glass of one of the windows of a house.

The specimens were also validated by Richard Toft and Peter Chandler. Thirty-two specimens are housed in P. Chandler's private collection (Melksham, Wiltshire, England), while fifty-five in A. Ditta's private collection (Mazara del Vallo, Italy).

RESULTS AND DISCUSSION

Hutson's (1978) description occurred as a result of a large infestation of "*an undescribed African species*" in 53 tons of rotting root ginger (*Zingiber officinale* Roscoe) in a London warehouse. The ginger had been imported from Brazil but when he checked the collections at the British Museum he found specimens of this species from South Africa, Kenya, and the island of St Helena in the mid-Atlantic. Hutson therefore suggested *L. arsona* was probably an African species belonging to a primarily South American species group.

Since Hutson's original description (Hutson, 1978), *L. arsona* has been reported in large numbers infesting rotting *Gerbera* (Asteraceae) roots in nurseries in Holland (Burger et al., 1984). Chandler & Ribeiro (1995) established the synonymy of *L. arsona* with *L. fasciata* Storå, 1936, which was previously considered endemic in the Canary Islands, and reported it to be widespread around the tropical Atlantic and Mediterranean, with records from the Cape Verde Islands, Madeira, Azores (Chandler & Ribeiro, 1985), Algeria, Marocco (El Mouden et al., 2024), Tunisia (Väisänen, 1984), Malta (Chandler & Gatt, 2000), Switzerland (Merz et al., 1998), Britain (Hutson, 1978; Halstead, 2004), Israel (Chandler, 1984). Also reported the capture of a female from Jersey, one of the Channel Islands (Chandler & Ribeiro, 1985). Also introduced in New Zealand (Toft & Chandler, 2004).

In the Mediterranean and Atlantic islands, *L. arsona* is anthropophilous and often associated with cultivated areas (Chandler, 1994). The biology of *L. arsona* is poorly understood.

Globalization and climate change will continue to drive species range shifts in complex ways, potentially leading to faster invasions by certain species, including pests (Robinet & Roques, 2010;

Figures 1, 2. Two specimens of *Leia arsona* from Natural Reserve "Lago Preola e Gorghi Tondi", Mazara del Vallo (Sicily, Italy).

Pyšek et al., 2020; Fortuna et al., 2022). Invertebrates are less well documented than vertebrates, yet they represent a significant portion of alien species (Pyšek et al., 2020). Moreover, insects in particular cause complex damage to local communities (Fortuna et al., 2022) and are more likely to establish populations far from their natural ranges under changing climatic conditions (Robinet & Roques, 2010).

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