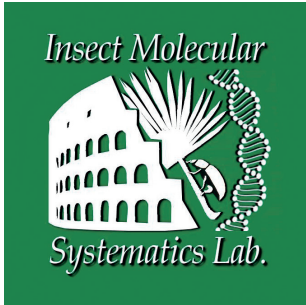




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First record of *Tettigonia viridissima* Linnaeus, 1758 (Orthoptera: Tettigoniidae) as host of the ormiine *Therobia leonidei* Mesnil, 1964 (Diptera: Tachinidae)Maurizio MEI¹, Gianluca NARDI², Pierfilippo CERRETTI^{1,*}¹Department of Biology and Biotechnology “Charles Darwin”, Sapienza University of Rome, Piazzale A. Moro 5, I-00185 Rome, Italy - maurizio.mei@uniroma1.it; pierfilippo.cerretti@uniroma1.it²Centro Nazionale Carabinieri Biodiversità “Bosco Fontana”, Strada Mantova 29, I-46045 Marmirolo (MN), Italy - l_nardi@hotmail.com

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AbstractThe first record of the bush-cricket *Tettigonia viridissima* Linnaeus, 1758 (Orthoptera: Tettigoniidae) as host of the tachinid *Therobia leonidei* Mesnil, 1964 (Diptera: Tachinidae) is reported, and the unusual case of the parasitization of a female host is briefly discussed.**Key words:** Italy, new host record, Ormiini, Palaearctic Region, parasitoid.

During an entomological survey carried out on June 6th, 2020, at the Nature Reserve Bosco della Fontana (N 45°12.030' E 10°44.085', 25 m), a relict oak forest in the Po Plain (Mason et al. 2002), one of us (GN) collected two adult females of the bush-cricket *Tettigonia viridissima* Linnaeus, 1758 (Orthoptera: Tettigoniidae) and kept them in a glass cage. The specimens were checked every morning and fed with various phytophagous insects. On June 24th, a female was found dead with a dark brown puparium lying close by (Fig. 1). The exoskeleton of the katydid was intact except for a dark spot on the wrinkled pleural membrane of abdominal segment 3, which likely represented the exit hole of the dipteran larva. On the morning of July 1st, a fully sclerotized adult male of the tachinid *Therobia leonidei* Mesnil, 1964 was found in the cage (Fig. 2). The tachinid and bush-cricket were already recorded for the Reserve by Stireman et al. (2012) and Fontana (2002), respectively.

Tettigonia viridissima is widespread throughout the Palaearctic Region (Massa et al. 2012), where it likely represents a species complex (Grzywacz et al. 2017). In Italy, *T. viridissima* is common in both grassy areas and forests. The male sings from afternoon through the night (Fontana et al. 2002).

Therobia leonidei belongs to the Ormiini, a widespread tribe of weird-looking ensiferan parasitoids, belonging to the hyperdiverse fly family Tachinidae. There are 72 ormiine species classified in 7 genera, worldwide (O'Hara et al. 2020). *Therobia* Brauer, 1862 is the second most species

rich genus with 19 species distributed in the Afrotropical, Australasian, Oriental and Palaearctic regions, although *Therobia leonidei* is the only West-Palaearctic species. Adult ormiines are medium-sized flies characterized by a number of highly derived features, such as: reduced ocelli, vestigial or greatly reduced mouthparts and a conspicuously inflated prosternum between the bases of the fore legs, which is particularly developed in females and serves as a phonotactic organ enabling females to locate their singing orthopteran hosts (Lehman 2003). Ormiines lay ready-to-hatch membranous eggs on or near a potential host. Their first instar is an active planidium that is able to creep some distance to reach a host if necessary. These flies usually parasitize male bush-cricket because males are the ones that are calling but calling females of some species can also be attacked. Bush-cricket nymphs are seldom parasitized by ormiines unless they are very close to calling males (Lehman 2003). Interestingly, females of *T. viridissima* do not call in response to males, so our specimen was likely near a male when she got parasitized.

Therobia leonidei is the only Palaearctic ormiine for which hosts are known (Tschorsnig 2017). It is a relatively common species in the plain forests around the Mediterranean Basin where it has been reared from various species of Tettigoniidae belonging to various genera, including: *Ephippiger* Berthold, 1827, *Eupholidoptera* Maran, 1953, *Neocallicrania* Pfau, 1996, *Parapholidoptera* Maran, 1953, *Pholidoptera* Wesmael, 1838, *Platypleis* Fieber, 1852, and *Poecilimon* Fischer, 1854 (Tschornig



Fig. 1 – The puparium of *Therobia leonidei* Mesnil, 1964, near the dead host, an adult female of *Tettigonia viridissima* Linnaeus, 1758.



Fig. 2 – *Therobia leonidei* Mesnil, 1964, adult male.

2017). In Italy, *Therobia leonidei* has been recorded from the regions of Lombardy, Umbria, Lazio, Sardinia (Cerretti 2001, 2010; Stireman et al. 2012) and Sicily (https://www.naturamediterraneo.com/forum/topic.asp?TOPIC_ID=156940). The host record reported here is the first for *Therobia leonidei* in Italy (Cerretti & Tschorsnig 2010) and the first report of this species parasitizing the bush-cricket *Tettigonia viridissima*.

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