SAPIENZA
UNIVERSITÀ EDITRICE

E-ISSN 2284-4880
ISSN 0429-288X

Fragmenta entomologica, 57 (2): 293–296 (2025)

Short scientific note
Submitted: September 29th, 2025 – *Accepted*: October 20th, 2025 – *Published*: October 31st, 2025
Doi: 10.13133/2284-4880/1878

Flower visitor insects of *Myrtus communis* L., 1753 in the Culuccia Peninsula (NE Sardinia, Italy) (Hexapoda)

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Abstract
Myrtle (*Myrtus communis* L., 1753), the only species of Myrtaceae native to Europe, is a key Mediterranean scrub species valued for its aromatic and medicinal properties. During field research on the Culuccia Peninsula (NE Sardinia) in 2024, a series of observations and data were collected on insects visiting flowering plants. Since very little is known about the pollinators and visitors of flowers of *Myrtus communis*, we here provide a fist account of the insect recorded during the research. A total of 117 visitor insects were collected, mainly Coleoptera (84%), followed by Diptera (7%), Hymenoptera (7%), Hemiptera (1%) and Thysanoptera (1%). The most common families are Oedemeridae (29%), Cerambycidae (14%) and Scraptiidae (13%). *Oedemera flavipes* (Fabricius, 1792) is the most frequent species observed visiting myrtle flowers (19%). Our results show a diverse insect community dominated by Coleoptera, unlike previous studies reporting only Hymenoptera and Diptera, highlighting the need for further research across regions to understand the insect assemblages associated with this plant species.

Keywords: Coleoptera, flowers, Hexapoda, Mediterranean Maquis, pollinators.

Introduction

Myrtle (*Myrtus communis* L., 1753) is the only Myrtaceae species native to Europe, growing wild in the warm and temperate regions of the Mediterranean basin and the Middle East (Powo 2024). This species is a significant component of the Mediterranean scrub and is well known for its medicinal and aromatic properties (Mulas et al. 1999; Yildirim et al. 2013). Myrtle flowers, characterized by having a star-like shape, provided of five petals, five sepals and a mass of tufted stamens, and white in colour, rely on insects for their pollination (González-Varo et al. 2009; Özkan & Güray 2009). Despite the key role of pollinators and visiting insects in granting myrtle reproduction, very little is known about these groups (González-Varo et al. 2009; Herrera 1988). Understanding the diversity of insect visitors is crucial to determine the range of species a plant relies on for reproduction, which is critical for its conservation (e.g., Gómez et al. 2007).

During research on the pollinating insects of the Culuccia Peninsula (Sardinia, Italy) (see Annessi et al. 2025a,b,c), data were also collected on the insect visitors of the myrtle' flowers occurring in the area. These data, although preliminary, are presented below.

Materials and Methods

The study was carried out on the Culuccia Peninsula (Santa Teresa di Gallura, Sassari province), located in north-eastern Sardinia on the edge of the Maddalena Archipelago, at elevations ranging from 0-93 m above sea level (Fig. 1). The peninsula, covering about 300 hectares, is dominated by Mediterranean maquis, with *Juniperus turbinata* Guss. (Cupressaceae), *Pistacia lentiscus* L. (Anacardiaceae), *Olea europaea* L. var. *sylvestris* (Mill.), *Phillyrea angustifolia* L. (Oleaceae), and *Myrtus communis* L. (Annessi et al. 2025a).

Insects were directly collected from the flowers and preserved in 70% alcohol during the first week of June 2023, coinciding with the peak bloom period. Sampling was carried out across the peninsula on different flowering shrubs at different times of the day, under optimal conditions with light wind, no rain, and dry vegetation. Most of the collected specimens were prepared and stored dry in entomological boxes for morphological identification and are preserved at the "Museum of Zoology and Comparative Anatomy" Department of Science, Roma Tre University (Rome, Italy).

Results

A total of 117 specimens (belonging to likely 34 species) of visitor insects were collected from the myrtle flowers, mainly Coleoptera (84%), followed by Diptera (7%), Hymenoptera (7%), Hemiptera (1%) and Thysanoptera (1%). The most common families are Oedemeridae (29%), Cerambycidae (14%) and Scraptiidae (13%). *Oedemera flavipes* (Fabricius, 1792) is the most frequent species observed visiting myrtle flowers (19%, Table 1).

Table 1 – List of taxa (and relative abundance %) of the visitor insects from *Myrtus communis* flowers on the Culuccia Peninsula (Sardinia, Italy).

Order	Family	Species
Coleoptera (84%)	**Buprestidae (1%)**	*Anthaxia umbellatarum* **(Fabricius, 1787) (1%)**
	Chrysomelidae Bruchinae (5%)	*Bruchidius seminarius* **(Linnaeus, 1767) (5%)**
	Cantharidae (2%)	*Rhagonycha* **sp. cfr.** *chlorotica* **(Gené, 1839) (2%)**
	Cerambycidae (14%)	*Stenopterus ater* **(Linnaeus, 1767) (8%)**
		Stictoleptura cordigera **(Fuessly, 1775) (5%)**
		Niphona picticornis **Mulsant, 1839 (1%)**
	Dasytidae (9%)	*Danacea milleri* **Schilsky, 1897 (5%)**
		Dasytes croceipes **Kiesenwetter, 1866 (2%)**
		Dasytes nigroaeneus **Küster, 1850 (1%)**
		Dasytes coerulescens **Küster, 1852 (1%)**
	Mordellidae (2%)	*Mordellistena* **sp. in the** *micrans* **group (1%)**
		Mordellochroa pulchella **(Mulsant & Rey, 1859) (1%)**
	Nitidulidae (7%)	*Fabogethes nigrescens* **(Stephens, 1830) (7%)**
	Oedemeridae (29%)	*Oedemera barbara* **(Fabricius, 1792) (10%)**
		Oedemera flavipes **(Fabricius, 1792) (19%)**
	Scarabaeideae (2%)	*Oxythyrea funesta* **(Poda von Neuhaus, 1761) (2%)**
	Scraptiidae (13%)	*Anaspis pulicaria* **A. Costa, 1854 (12%)**
		Anaspis **sp. 1 (1%)**
Diptera (7%)	**Syrphidae (4%)**	*Eumerus* **sp. 1 (1%)**
		Paragus **sp. 1 (1%)**
		Melanostoma mellinum **(Linnaeus, 1758) (1%)**
		Sphaerophoria scripta **(Linnaeus, 1758) (1%)**
	Anthomyiidae (1%) **Empididae (1%)** **Mycethophilidae (1%)**	
Hemiptera (1%)		
Hymenoptera Apoidea (6%)	**Apidae (3%)**	*Bombus terrestris sassaricus* **Tournier, 1890 (1%)**
		Amegilla quadrifasciata **(de Villers, 1789) (1%)**
		Apis mellifera **Linneaus 1758 (1%)**
	Halictidae (2%)	*Lasioglossum albocinctum* **(Lucas, 1849) (1%)**
		Lasioglossum transitorium planulum **(Pérez, 1903) (1%)**
	Colletidae (1%)	*Hylaeus teaeniolatus* **Förster, 1871 (1%)**
Hymenoptera Vespoidea (1%)	**Formicidae (1%)**	*Crematogaster scutellaris* **(Olivier, 1792) (1%)**
Thysanoptera (1%)		

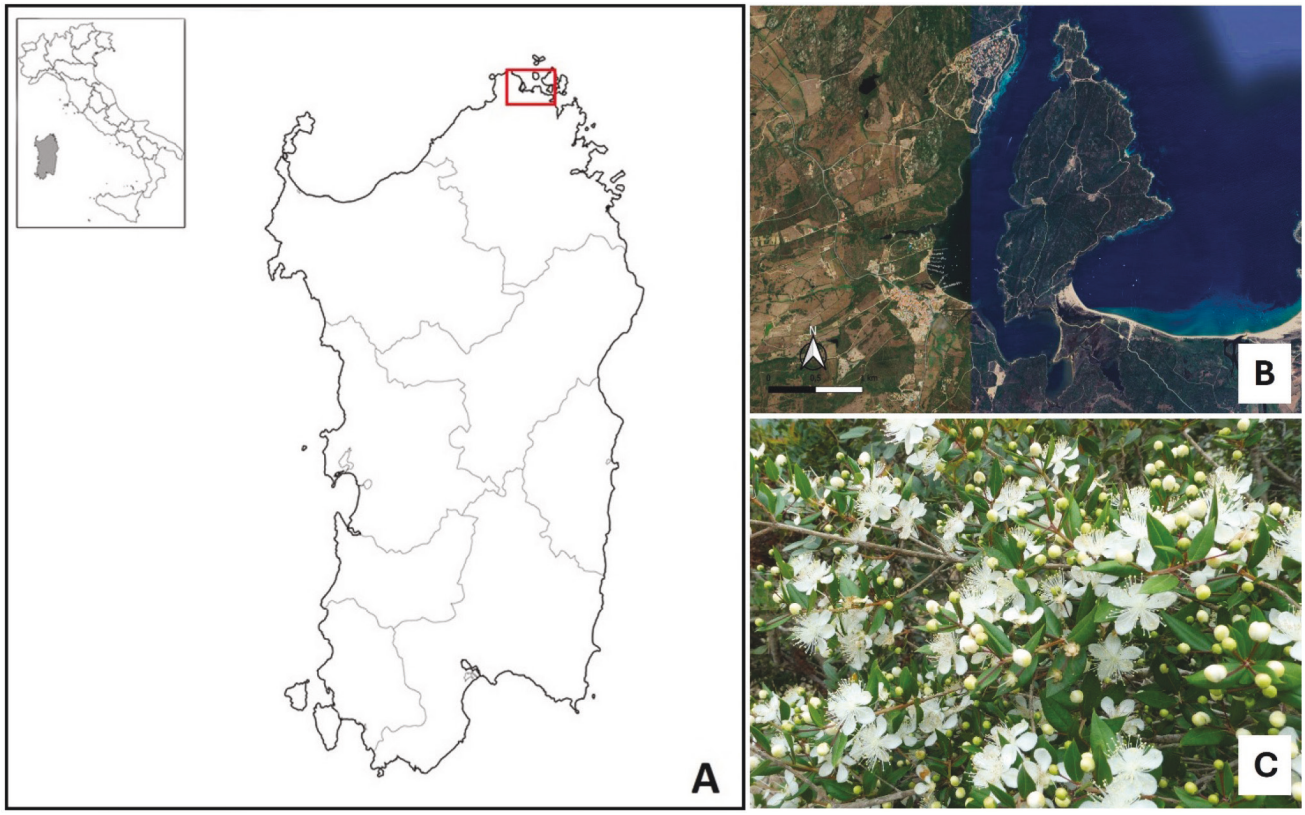

Fig. 1 – Position of the study area in Sardinia and in Italy (**A**). Satellite image of the Culuccia Peninsula (**B**), base map: orthophoto © 2024 Google. Flowers of myrtle *Myrtus communis* L. (**C**).

Discussion

The myrtle flowers were visited by a diverse community of insects, mainly Coleoptera (Table 1), which contrasts with the results of the broader ecological study by González-Varo et al. (2009), where only Hymenoptera and Diptera were reported as floral visitors. Although we only recorded visits (or presences) on the flowers, we do not exclude the importance of beetles in the pollination of myrtle within the study area. Bees (both wild bees and honeybees) are the main visitors of *Myrtus communis* flowers in Spain (González-Varo et al. 2009; Herrera 1988), although we observed a low abundance of these insects in Sardinia (6%, Table 1). These differences could be attributed to various environmental, anthropogenic, and geographic factors that influence the composition of insect communities in the two regions, despite both being in the Mediterranean. Indeed, our study area is characterized by an environmental context that has been little altered by man over the past hundred years, whereas González-Varo et al. (2009) examined the assemblage of insect visitors in natural and semi-natural forest patches within a matrix of intensive agriculture. However, it should be noted that our survey is based on limited data rather than an extensive study of myrtle visitors across large areas, which makes it difficult to draw general conclusions.

Finally, the absence of lepidopteran visitors (almost exclusively liquid feeders) both in Spain (González-Varo et al. 2009; Herrera 1988) and in our study area would agree with the hypothesis that myrtle flowers do not produce nectar, as reported by Ciccarelli et al. (2008). The present work enriches the scarce knowledge on the insect visitors of flowers of *Myrtus communis* in a well-preserved environmental context, suggesting the need for further studies in different regions to better understand the insect communities associated with this important plant species.

Acknowledgements – Our sincere thanks to Stella Lin Hung, Marco Boglione, Sabrina Rossi and the staff of the BIRU S.R.L. Agricola for the support provided in hosting and logistics, as well as the economic support granted through the agreement established in 2022 between the Department of Science (Roma Tre University) and the "Osservatorio Naturalistico dell'Isola di Culuccia". We are deeply grateful to several specialists for their essential support in the identification of different taxa: Enrico Ruzzier for Buprestidae, Mordellidae, Nitidulidae, Oedemeridae, Scarabeidae and Scraptiidae, Marcello Franco Zampetti for Chrysomelidae Bruchinae, Gabriele Franzini and Gianfranco Liberti for Dasytidae and Cantharidae, Stefano Cantone for Formicidae, and Daniele Sommaggio and Daniele Avesani for Diptera. This study was supported by the University Roma Tre, Department of Science (grants of Departments of Excellence—L.

232/2016—art.1, commi 314–337 awarded to Dept. of Science—University Roma Tre—Rome—Italy for 2018–2022, and grants 2023–2027). ADG acknowledges the support of NBFC to University of Roma Tre, Department of Science. Funder: Project funded under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.4 - Call for tender No. 3138 of 16 December 2021, rectified by Decree n.3175 of 18 December 2021 of Italian Ministry of University and Research funded by the European Union – NextGenerationEU; Award Number: Project code CN_00000033, Concession Decree No. 1034 of 17 June 2022 adopted by the Italian Ministry of University and Research, CUP F83C22000730006, Project title "National Biodiversity Future Center - NBFC".

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