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Alien mantids in Tuscany

(Mantodea)

Abstract

The first records of the alien species *Hierodula tenuidentata* Saussure, 1869 for Tuscany are provided through a specimen collected near Pistoia and another one observed in Florence. Another alien mantis is here quoted for Tuscany, namely *H. patellifera* Serville, 1839. For this species the record near Pistoia is the first with precise locality for the region.

Key words: *Hierodula patellifera*, *Hierodula tenuidentata*, new records

Riassunto

[*Mantidi aliene in Toscana*]

Viene segnalata per la prima volta in Toscana la specie aliena *Hierodula tenuidentata* Saussure, 1869 tramite un esemplare raccolto presso Pistoia e un altro osservato a Firenze. Anche un'altra specie di mantide aliena è riportata per la Toscana: si tratta di *H. patellifera* Serville, 1839, di cui il dato proveniente dai dintorni di Pistoia è il primo con località precisa per la regione.

Introduction

Mantids belonging to the genus *Hierodula* Burmeister, 1838 (Mantidae, Mantinae, Paramantini) have recently been reported for Italy (CIANFERONI *et al.*, 2018; BATTISTON *et al.*, 2018, 2020a).

Specifically, *Hierodula tenuidentata* Saussure, 1869 (*H. transcaucasica* Brunner von Wattenwyl, 1878 is considered a synonym of it) is a species occurring from South-East, South and Central Asia to Europe (cf. EHRMANN & BORER, 2015), which recently expanded across Balkans (KULIJER *et al.*, 2022). It is present in Italy at least from 2016 (BATTISTON *et al.*, 2018, 2019; cf. CIANFERONI *et al.*, 2018) where it was very likely introduced by man (BATTISTON *et al.*, 2019, 2020a). In this country it occurs mainly in Northern Italy (BATTISTON *et al.*, 2018; DI PIETRO & BATTISTON, 2021).

Hierodula patellifera Serville 1839 is a species native to South and South-East Asia, occurring also in some Pacific islands (EHRMANN & BORER, 2015). It was recorded in Northern Italy on a few individuals collected in 2018 (BATTISTON *et al.*, 2019). Then it spread in the Po Valley, and it was recorded also in northern

Tuscany (BATTISTON *et al.*, 2020a). A population in Southern France also exists (MOULIN, 2020).

Further observations of *Hierodula* spp. for Central and Southern Italy are available from the platform “iNaturalist”, a system for sharing biodiversity records (www.inaturalist.org), but they are almost all based on immature specimens, oothecae or in any case individuals whose discriminating characters are not clearly visible for reliable identification at species level and are not considered here.

Material and methods

One of the specimens (Pistoia, 24.X.2021) was photographed (but not collected) and uploaded on the platform “iNaturalist” (www.inaturalist.org); while for the specimen from Florence (29.VII.2023), not collected, we have been provided with photos. The images made it possible to reliably identify the species according to the discriminating features (BATTISTON *et al.*, 2019).

The other specimen from Pistoia (1.XII.2022) was collected and preserved in the private collection of EP. It was photographed with an Asus ZE620KL camera (Sony Exmor sensor IMX363) on a stereomicroscope BMS 140 and post-processed with Adobe Photoshop CS3 Extended 10.0 version.

For each site, the following information is given: country, region, locality, collecting site, geographical coordinates (decimal degrees; *datum* WGS84), elevation, date, collector/photographer, number of specimens, sex and life cycle stage, type of storage/source. The uncertainty of data (in metres) was indicated according to the point-radius method (WIECZOREK *et al.*, 2004).

Results

Both species of the genus *Hierodula* recorded so far from Italy were found between Pistoia and Florence (Tuscany, Italy).

Hierodula patellifera Serville, 1839

Material examined: ITALY, Tuscany, Pistoia, Chiesina Montalese, 43.93425° N 10.967363° E (uncertainty = 8 m), 62 m a.s.l., 24.X.2021, 1 adult female (crushed on the street), photos by Emanuele Paggetti (www.inaturalist.org, observation ID 99188007).

Hierodula tenuidentata Saussure, 1869

Material examined: ITALY, Tuscany, Pistoia, Bottegone, 43.89416° N 10.96083° E (uncertainty = 5 m), 43 m a.s.l., 1.XII.2022, 1 adult female, Emanuele Paggetti legit (E. Paggetti collection, Pontenuovo, Pistoia); Florence, Parco delle Cascine, Piazzale delle Cascine, 43.78127° N 11.21809° E (uncertainty = 50 m), 43 m a.s.l., 29.VII.2023, 1 adult, Fabio Terzani obs., photos by Anna Zanotti.



Fig. 1 - a, b) Adult specimen of *Hierodula tenuidentata* Saussure, 1869 from Florence (photos by A. Zanotti). c) Adult female of *H. tenuidentata* from Bottegone, Pistoia (photo by F. Cianferoni). d) Adult female of *H. patellifera* Serville, 1839 from Chiesina Montalese, Pistoia (photo by E. Paggetti).

Discussion

This contribution provides the first records of *H. tenuidentata* Saussure, 1869 for Tuscany.

The first record with precise locality for Tuscany is given also for *H. patellifera*. Previous records were known only from a map included in BATTISTON *et al.* (2020), where two points appear in north-western Tuscany (further west than the record given here). Coordinates of these Tuscan records are not included in the supplementary material associated to the mentioned publication.

The origin of these two new specimens is very difficult not only to reconstruct, but also to hypothesize. In the case of *H. tenuidentata*, a direct spreading from the well-established populations in the Po Valley (BATTISTON *et al.*, 2020) cannot

be ruled out, even if it can be also facilitated by human activities and passive transport (see BATTISTON *et al.*, 2018, 2019; CIANFERONI *et al.*, 2018).

The same can be assumed for *H. patellifera*, although in this case release/escape from pet shops or breeding (BATTISTON *et al.*, 2020) certainly might have played a key role.

Therefore, currently at least two alien mantis species occur in Tuscany. A third species of Paramantini, i.e. *Sphodromantis viridis* (Forskål, 1775), is known so far only for the Italian islands of Sardinia and Sicily where is considered allochthonous, but it has not been recorded yet for continental Italy. However, it is known also from the island of Corsica (facing Tuscany, especially its islands), and from continental France, Spain, and Balearic Islands. Its presence in Europe has been limited in historical times to southern Spain, Africa, and Middle East. In fact, from east it also reached Greece (BATTISTON *et al.*, 2017, 2020b). It is therefore probable that it will soon be found also in mainland Italy and maybe on some island of the Tuscan archipelago.

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