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Edessa graziae Fernandes & Silva, 2021 in Spain, first record of the Neotropical subfamily Edessinae established in the Old World (Hemiptera, Pentatomidae)David Fernández Huerta¹, Roland Lupoli^{2,4} & José Antônio Marin Fernandes³

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Abstract: The Neotropical species *Edessa graziae* Fernandes & Silva, 2021 (Hemiptera, Pentatomidae) was found for the first time in Spain in 2023 and 2024. This species was able to overwinter on its host-plant *Dolichandra unguis-cati* (L.) L.G. Lohmann (Bignoniaceae). So far, this is the only species of the subfamily Edessinae found and established in the Old World. Photos of living adult specimens and a nymph are presented for the first time.

Key words: Heteroptera, Pentatomidae, *Edessa graziae*, *Dolichandra unguis-cati*, Bignoniaceae, nymph, new record, Palaearctic, Valencia, Spain.

Resumen: *Edessa graziae* Fernandes & Silva, 2021 en España, primer registro de la subfamilia neotropical Edessinae establecida en el Viejo Mundo (Hemiptera, Pentatomidae). Se ha detectado la especie neotropical *Edessa graziae* Fernandes & Silva, 2021 (Hemiptera, Pentatomidae) por primera vez en España en 2023 y 2024. Esta especie ha podido invernar en su planta huésped *Dolichandra unguis-cati* (L.) L.G. Lohmann (Bignoniaceae). Hasta ahora es la única especie de la subfamilia Edessinae encontrada y establecida en el Viejo Mundo. Se presentan por primera vez fotos de adultos vivos y de una ninfa.

Palabras clave: Heteroptera, Pentatomidae, *Edessa graziae*, *Dolichandra unguis-cati*, Bignoniaceae, ninfa, nueva cita Paleártico, Valencia, España.

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Introduction

The subfamily Edessinae (Hemiptera, Pentatomidae) is exclusively Neotropical. It is the second largest subfamily within the family Pentatomidae or true bugs with around 450 described species. It includes 17 genera, and the genus *Edessa* Fabricius, 1803 is the most numerous with about 300 described species and divided into 10 species groups and, thus, the subject of numerous papers, descriptions and revisions (Mendonça et al., 2023).

The *Edessa ovina* group is characterized by the membranous wings narrowing distally instead of being rounded, like in the other *Edessa* species. This group consists of four species including *Edessa*

graziae Fernandes & Silva, 2021 which was recently described based on 37 specimens collected in Southern Brazil (Minas Gerais, Santa Catarina and Rio Grande do Sul) and Argentina (Catamarca, Córdoba, Entre Ríos) as a species mostly dark green and which can be distinguished from the other *Edessa* species by many small yellow marks on its dorsal variegated surface, humeral angles poorly developed with shiny black rounded apices, antennae pale yellow, and scutellum pointed at its apex, and with a size between 11.9 and 14.7 mm and abdominal width between 7.6 and 9.6 mm (Fernandes & Silva, 2021).

Material

Here we mention for the first time the presence of *E. graziae* in the Palaearctic region, in Spain. The first author observed and photographed 17 specimens of this species in Náquera (north of Valencia, Spain) and posted photos of specimens on iNaturalist:

- 1 nymph (fourth instar) on a wall (Fig. 1), Náquera [39.6549 Lat.; -0.4259 Long.], 6.VIII.2023 (photo: D. Fernández Huerta) (<https://www.inaturalist.org/observations/176985280>).
- 1 adult found on a wall (Fig. 2), Náquera [39.6469 Lat.; -0.4293 Long.], 30.IX.2023 (photo: D. Fernández Huerta) (<https://www.inaturalist.org/observations/185578631>).
- 1 adult found on a wall, Náquera [39.6549 Lat.; -0.4258 Long.], 2.IV.2024 (photo: D. Fernández Huerta).
- 3 adults found on woody parts of the branches of *Dolichandra unguis-cati* (L.) L.G. Lohmann (Bignoniaceae) (Fig. 3), Náquera [39.6551 Lat.; -0.4258 Long.], 2.IV.2024 (photo: D. Fernández Huerta) (<https://www.inaturalist.org/observations/205141705>).
- 11 adults found on woody parts of the branches of *D. unguis-cati*, Náquera [39.6549 Lat.; -0.4259 Long.], 13.IV.2024 (photo: D. Fernández Huerta).

Comments

There are other broadly green Pentatomidae that resemble *E. graziae* in the Palaearctic region, Africa, Asia and Australia, but *E. graziae* is easily distinguished from them because its antennae are uniformly pale yellow (while they are two-colored for example in *Nezara* Amyot & Serville, 1843 or *Palomena* Mulsant & Rey, 1866), it does not have a white spot on the scutellum (as for example in genera *Chlorochroa* Stål, 1872 and *Brachynema* Mulsant & Rey, 1865), by its broad shape, its size, by its humeral angles with rounded shiny black apices, and the end of its scutellum which is pointed (Fig. 2). Furthermore, none of these Pentatomidae has many small yellow marks on the dorsal variegated surface. On the other hand, we observe the metasternal process on the ventral side of *E. graziae*, which is only found in the Edessinae. The nymph found in Náquera is also different from all known nymphs of the Palaearctic region (Lupoli & Dusoulier, 2015) and close to other Edessinae nymphs. Fig. 1 is the first photo presenting a nymph of *E. graziae*.

Fernandes & Silva (2021) mentioned that *Edessa ovina* Dallas, 1851 was collected from *D. unguis-cati* in Trinidad and Tobago (Saint-Augustine) in 1943, and observed *E. graziae* on *Pyrostegia venusta* (Ker Gawl.) Miers (Bignoniaceae) on several occasions in southern Brazil in Porto Alegre (Morro do Osso) between 1998 and 2001. The nymphs of *E. graziae* were observed on slender branches and adults on woody parts of the branches, both never observed feeding on fruits or seeds. They are active during the southern hemisphere summer (January-March) and spend the rest of the year in the litter.

It is interesting to note that two species of the *E. ovina* group, i.e. *E. ovina* and *E. graziae*, were observed on Bignoniaceae forming lianas, i.e. *D. unguis-cati* and *P. venusta*. It is therefore possible that this group of species feeds specifically on Bignoniaceae lianas.

E. graziae was found on *D. unguis-cati* in Spain and appears to have adapted to the cycle of this host plant by being active during the northern hemisphere summer from April to October (Fig. 3) and, presumably spending the rest of the year overwintering in the litter.

D. unguis-cati is a plant native to the dry forests of South America and the Caribbean. It is an invasive plant which has been introduced in South Africa, tropical Asia, Australia, New Zealand and in Europe in the thermo-mediterranean region, therefore both in the northern and southern hemispheres (Rafter *et al.*, 2008). In the northern hemisphere, its flowering takes place in April-May and in the southern hemisphere from September to November. It has therefore managed to establish itself in all subtropical and Mediterranean regions. In Europe, it is mainly found along the Mediterranean coasts because it cannot tolerate temperatures below 1°C in the winter. It is a perennial climbing liana, that reaches a length of 15 m. It is used in gardens to hide fences. It produces yellow trumpet-shaped flowers with five fused petals, during the wet season. Its seeds are found in flat, elongated pods 25 to 95 cm long.

D. unguis-cati is an invasive plant that competes with other native plants mainly in Australia and South Africa. *Carvalhotingis visenda* (Drake & Hambleton, 1934), a Tingidae (Hemiptera, Heteroptera) from Brazil and Argentina, dependent on this plant, was released in Australia in 2007 for the biological control of this invasive plant (Dhileepan *et al.*, 2010).

Conclusions

E. graziae is observed for the first time on the Palearctic Region and in the Old World. It seems to be established in Spain, where it is able to overwinter and develop. It seems to be dependent on *D. unguis-cati*, a South American plant introduced to Spain and *P. venusta* in Southern Brazil, two lianas belonging to the family Bignoniaceae. It is possible that the introduction of *E. graziae* in Spain took place earlier than 2023 and has not been observed before, despite the relative large size of this species, if it is strictly monophagous on *D. unguis-cati* in Spain and passes the winter in the litter. It will be appropriate to search *E. graziae* on these two introduced Bignoniaceae in Spain, *D. unguis-cati* and *P. venusta*, in order to know if its distribution is widespread, and possibly on other Bignoniaceae lianas also introduced in Spain such as *Podranea ricasoliana* Sprague, *Tecoma stans* (L.) Juss. Ex. Kuntz or *Tecomaria capensis* (Thunb.) Lindl.

E. graziae could be a new candidate for biological control against *D. unguis-cati*, as it was previously unknown on this plant. In this case, it would be appropriate to verify its specificity for this plant and to demonstrate that *E. graziae* has a sufficient impact to control its expansion.

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Fig. 1.- Fourth instar nymph of *Edessa graziae* observed in Náquera (north of Valencia, Spain), 6.VIII.2023 (photo: D. Fernández Huerta).

Fig. 2.- Adult of *Edessa graziae* observed in Náquera (north of Valencia, Spain), 30.IX.2023 (photo: D. Fernández Huerta).

Fig. 3.- Three adults of *Edessa graziae* observed on woody parts of the branches of *Dolichandra unguis-cati* in Náquera (north of Valencia, Spain), 2.IV.2024 (photo: D. Fernández Huerta).