Zootaxa 3887 (5): 529–554
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3887.5.2
http://zoobank.org/urn:lsid:zoobank.org:pub:B5822055-F3BA-4F57-85BF-223C0C65B123

A revision of the genus *Solter* Navás, 1912 for Maghreb and West Africa with descriptions of five new species (Neuroptera, Myrmeleontidae)

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Abstract

The *Solter* species of the Maghrebian and sub-Saharan West African Regions are revised. Nine species are recorded, *S. bouyeri* **nov. sp**., *S. dogon* **nov. sp**., *S. francoisi* **nov. sp**., *S. leopardalis* **nov. sp**., *S. liber* Navás, *S. lucretii* **nov. sp**., *S. naevipennis* Navás, S. *neglectus* Navás **stat. rev.** and *S. rothschildi* Navás. A lectotype is designated for the last species. A tenth species, *S. ardens* (Navás), is classified as *incertae sedis*. *Solter virgilii* Navás is removed from the species present in the area covered by this study. The larva of *S. leopardalis* is described. All species are illustrated including habitus, morphological characters and male genitalia. An identification key is provided.

Key words: biodiversity, antlions, Myrmecaelurini

Introduction

The genus *Solter* was described by Navás (1912) for the single species *Solter liber* from Portugal. Two genera, *Nelus* Navás, 1929 and *Sartous* Navás, 1914, were subsequently relegated to junior synonymy by Hölzel (1969) and Stange (2004) respectively. Prior to the present publication, 28 species of *Solter* were known from the northern hemisphere and one from South Africa (Mansell, 2013; Stange, 2004). Middle East, which harbours 23 species, appears to be the major diversification area of the genus.

Knowledge of the genus *Solter* is based essentially on the works of Navás who described the genus and eight species from North Africa, Portugal, Cyprus and Somalia and Hölzel who described 18 species mainly from the Middle East, but also from Sudan, Afghanistan and Pakistan. The latter author provided relevant works on the antlion fauna he studied, including terminalia and male genitalia drawings (Hölzel, 1968, 1972, 1980, 1982, 1988). Finally, it is worth mentioning that Walker (1853) described two species, one from India and one without collect locality data.

Solter species live in arid or semi-arid environments with the exception of *S. liber* which type locality, in Portugal, is situated in more humid area. But the veracity of the collection data is questioned by Monserrat & Acevedo (2013) and the collect localities in south-eastern Spain are located in dry areas (Badano *et al*. (2014).

Adults are nocturnal and are attracted to light. The larvae of only two species , *S. liber* and *S. ledereri* Navás, 1912, have been described by Badano *et al.* (2014) and Satar *et al.* (2014) respectively. They have been found in protected areas such as under rock overhangs. They are ambush predators not building pitfall traps.

This publication deals with the *Solter* species recorded from the Maghrebian and West African Regions. Three countries of whole North Africa are not considered here, Chad with no species recorded, Egypt which African part of the territory harbours two species (*S. liber* and *S. rothschildi* Navás, 1913) and Sudan which harbours three species (*S. dubiosus* Hölzel, 1980, *S. propheticus* Hölzel, 1980, *S. virgilii* Navás, 1931) studied by Hölzel (1980).

Material and methods

The following collections were examined (The acronyms are based on Evenhuis, 2014):

Accepted by B. Price: 29 Oct. 2014; published: 27 Nov. 2014

additional material housed in different collections, the presence of only the first four of them is confirmed with the classification of *S. ardens* as *incertae sedis*, and *S. neglectus*, synonymized with *S. liber*, is reinstated as valid species. In addition to that, five new species are described from the Maghrebian and West African regions. Taking into account this information and considering the three additional species known from Sudan, 13 species are currently known from the whole North African region excluding the Egyptian region of the Sinai peninsula. Among them four are also recorded from the Middle East: the three species found in Sudan and *S. liber* which has an extensive geographical range. Despite the incomplete knowledge of the distribution of the species, the faunas of Maghreb and West Africa appear to be well characterized, sharing only one species with western Asia.

The reinstatement of *S. neglectus* as a valid species reveals that, as far as is known, no species is present on both sides of the Sahara desert.

Generally speaking, *Solter* species have large wings with, in forewings, a row of variably distinguishable suffused spots along the anterior branch of CuA. But, two species, *S. leopardalis* **nov. sp.** and *S. san* Mansell, 2013, do not fit with this pattern. Both have narrow wings with unspotted membrane. However, other morphological characters, in particular the shape of male genitalia, suggest that they are not closely related.

This study confirms the importance of the shape of the last segment of labial palp as well as the length of the tibial spurs as discriminating morphological characters. As already shown by Hölzel, it confirms also the importance of male genitalia, and to a lesser extent of the shape of the apical margin of sternite 7 in females, to characterize the species. But, even if the shape of the spermatheca is quite variable within the same species, the study shows also that this feature can be used to distinguish some species. In all the species examined the shape of the hypandrium internum, with opening topped by a variably developed tapered process, ("rhinoceros like") seems to be characteristic of the genus. However, its inter-specific variability is not sufficient to be used to identify the species.

Acknowledgements

This research received support from the SYNTHESYS project http://www.synthesys.info, financed by the European Community Research Infrastructure Action under FP6 and FP7 "Structuring the European Research Area" Programmes. I am grateful to the following persons of the institutions visited in the framework of this project: J. Constant (ISNB), E. De Coninck (RMCA), R. de Vries (RMNH), D. Goodger (BMNH), W. Hogenes (ZMAN), N.P. Kristensen (ZMUC), M. Ohl (ZMHB), M. París (MNCN), S. Randolf (NHMW). I am thankful to J. Bouyer (CIRAD) for collecting specimens and to D. Burckhardt (NHMB, Basel), J. Legrand and A. Mantilleri (MNHN), V. Monserrat (Facultad de Biología, Universidad Complutense, Madrid), R. Poggi and M. Tavano (MSNG), and B. Price (BMNH) and A. Taeger (SDEI) for providing me with specimens from the collections in their care. I express my gratitude to Mrs G. Levêque, Director of the Emirates Center for Wildlife Propagation (ECWP) of Missour (Morocco), for the facilities provided during my stay at the Center, to A. François (ECWP, Missour) for the organisation of the field collections in Morocco and his kind collaboration, to M. Mansell (National Insect Collection, Pretoria) for the language reviewing and to the reviewers for their relevant and constructive comments.

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