NATURA SOMOGYIENSIS 44.

Válogatott tanulmányok XXVII.

Miscellanea XXVII.

Kaposvár, 2024

A megjelent kötetek pdf-ben is elérhetők:
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ISSN 2560-1040
ISSN 1587-1908 (Print)
ISSN 2062-9990 (Online)

Kiadja - *Published by:*
Rippl-Rónai Múzeum - *Rippl-Rónai Museum*
Felelős kiadó - *Responsible publisher*:
Dr. Ábrahám Levente múzeumigazgató - *director*
Nyomdai munkák - *Printed by*:
Pethő & Társa Nyomdaipari Kft. Kaposvár

Tartalom - *Contents*

Natura Somogyiensis 44: 5-14. Kaposvár, 2024 https://doi.org/10.24394/NatSom.2024.44.5

Submitted: 25.05, 2024; Accepted: 26.05, 2024 ; Published: 16.09, 2024. www.smmi.hu/termtud/ns/ns.htm

A new Austromalayan *Hidakacoris* Tomokuni, 1998 species (Heteroptera: Rhyparochromidae: Drymini)

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Schmidt, P. & Kondorosy, E.: *A new Austromalayan Hidakacoris Tomokuni, 1998 species (Heteroptera, Rhyparochromidae, Drymini). - Natura Somogyiensis 44: 5-14.*

Abstract: The second species of the genus, *Hidakacoris meridionalis* **sp. nov**. is described from Southeastern Asia and New Guinea with discussing the place of the genus in the tribe Drymini.

Keywords: taxonomy, Lygaeoidea, Indonesia, New Guinea

Introduction

Drymini is a diverse and morphologically heterogenous tribe of Rhyparochromidae, the largest family of Lygaeoidea. It currently consists of 313 species belonging to 58 genera. Three of these genera are subdivided into two subgenera (Dellapé & Henry 2024, Kondorosy unpublished data). With this, it is the third largest tribe in the family from the 15 known tribes. The high number of the genera shows that the tribe Drymini is very diverse with many small groups (only Myodochini contains more genera): 20 of the genera are monotypic, further 23 contain less than 5 species, and only in 8 genera have more than 10 valid species. The majority of the species were described in the second half of the 20th century. This progress was made possible because of the work of several taxonomists, especially of G. G. E. Scudder (35 new species) and J. A. Slater and his coworkers (31 species). With the departure of both excellent researchers, the work did not stop and in the 21st century, 45 new species were described, mostly from the Oriental and the Austro-Pacific regions, many of them (18) from Indonesian islands (including Malaysia with Malaya, Brunei, and Papua New Guinea). Previously, before the year 2000, similarly 18 species were known from the islands (and Malaya) (Fig. 7).

During our study of the New Guinean Rhyparochromidae, we first listed the already known species of the region with description of several new species of the genus *Malipatilius* Kondorosy, 2013 (Kondorosy et al. 2024). We found other Drymini

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

specimens which similarly do not belong to any known species but meet the generic diagnosis of *Hidakacoris* Tomokuni, 1998. The description of the species follows here.

Material and methods

We used an Olympus SZ-11 stereo microscope for studying the specimens, measurements were taken with a calibrated ocular micrometer attached to it. The dimensions were taken always in dorsal view of the measured part, therefore, on the head and pronotum not in the same plane as on the posterior parts of the body.

Photographs of the specimens were taken partly with a Canon EOS 6D M2 digital camera attached with Canon 100 mm EOS EF f/2.8 objective and Canon EF12 II extension tube, using Adobe Photoshop 7.0 software in the Rippl-Rónai Museum, Kaposvár.

Localities were illustrated with SimpleMappr (Shorthouse 2010) using the following layers: "country" "lakes (blue)", "rivers" "ocean (blue)" and "relief (alternate)" (Fig. 8).

The data on the labels are cited verbatim; every row on the labels are separated with a slash "/", and every label with a double slash "//". Corrected names and other remarks are given in square brackets "[ ]"; "hw" means handwriting.

The studied material originated from the following collections:
BMNH – The Natural History Museum, London, United Kingdom;
EKKH – Előd Kondorosy collection, Keszthely, Hungary;
HNHM – Magyar Természettudományi Múzeum, Budapest, Hungary;
MNCN – Museo Nacional de Ciencias Naturales, Madrid, Spain;
NHMW – Naturhistorisches Museum, Wien, Austria;
NSMT – National Science Museum (Natural History), Tokyo, Japan;
RMNH – Naturalis Biodiversity Centre, Leiden, The Netherlands;
ZSMC – Zoologische Staatssammlung, München, Germany.

The morphological terminology follows KMENT et al. (2016), TSAI et al. (2011) and TSAI & RÉDEI (2017), concerning metathoracic scent efferent system KMENT & VILIMOVÁ (2010).

Results and discussion

Taxonomy

superfamily **Lygaeoidea**
family **Rhyparochromidae**
subfamily **Rhyparochrominae**
tribe **Drymini**

Hidakacoris Tomokuni, 1998

Hidakacoris: Tomokuni 1998: 231–233 original description of new genus, type species by original designation: *Dieuches tsutsuii* Hidaka, 1963 redescribed (1998: 233), PÉRICART (2001: 128) catalogued.

Tomokuni (1998) gave a detailed description of the genus based on the single known species. It is not necessary to repeat these features, therefore, we write here about the few missed or modified characters (which should be expanded because of the additional species) only. Similarly, the discussion of the systematic position of *Hidakacoris* is also correct, but he compared the new genus with *Paradieuches* Distant, 1883 only.

Corrections to the original description: pronotal collar – compared with most of the other genera of Drymini – well defined; external row of punctures of corium limiting exocorium curving inwards, therefore, exocorium 2-3 times wider here than near base.

Relation to other Drymini genera: the most characteristic features of *Hidakacoris* are the shortened inner row of punctures of the clavus; the hardly arched posterior margin of the pronotum with two posterolateral elongation above the base of the clavus; the concave lateral margin of the pronotum only slightly widening at the transversal furrow and only slightly narrowing anteriad; and the special form of the "Y-shaped" elevation of the scutellum, anterior arms nearing each other near base, therefore forming an incomplete circle.

Tomokuni (1998) correctly stated that it is similar to *Paradieuches*, but some other Drymini genera are also rather similar. All of these genera, distributed in the Oriental region, are rather slender, middle-sized (5-7 mm), they have two rows of tiny teeth on the profemur with only 1 large tooth, a relatively well visible punctate pronotal collar, a lamellate lateral margin on the pronotum, the latter having a largely impunctate anterior lobe, and a Y-shaped elevation of the scutellum. These features fit to only a few genera as *Paradieuches*, *Uzza* Distant, 1909, more or less to *Faelicianus* Distant, 1901 and also with reservation to *Eremocoris* Fieber, 1860 and *Scolopostethus* Fieber, 1860. Among these genera (and among the others as well) *Hidakacoris* is the only one which has only two full rows of punctures on the clavus and a shortened row along the scutellum reaching less than halfway forward. This feature is characteristic from 58 genera of Drymini only to *Ischnocoris* Fieber, 1860, *Malipatilius* Kondorosy, 2013 and *Trichodrymus* Lindberg, 1927 which are very dissimilar to *Hidakacoris*.

Eremocoris and *Scolopostethus* are only superficially similar as shows the inconspicuous pronotal collar and the shape of the inconspicuous Y-elevation (orientated to basal angles of the scutellum where a pair of fine oblique keels present); the posterior pronotal margin is evenly concave in whole width. *Faelicianus* also does not closely related, the straight posterior and lateral margins of the pronotum are well visible differences, the Y-shaped elevation of the scutellum is inconspicuous in anterior part. The most similar, perhaps most closely related genera are *Paradieuches* and *Uzza*. The lateral margin of the pronotum strongly narrowing forward in both genera; in *Uzza* the posterior margin is strongly, almost evenly arched, while in *Paradieuches* it is similar to *Hidakacoris*; furthermore, *Uzza* has an emergent impunctate midline in the posterior lobe of the pronotum, while it is absent in the other two genera. Concerning the features mentioned by Tomokuni (1998), the really important difference is the strongly (but because of the same coloration not conspicuously) punctate anterior lobe of pronotum, while the opaque dorsum and the coloration are not genus-level differences, not mentioning that the dorsum of *Hidakacoris* is mostly also not shining.

Hidakacoris meridionalis, sp. nov.
(Figs. 1-6)

Type material. Holotype. IRIAN JAYA / Jayawijaya-Prov. / leg: A. Riedel, 1992 / Diuremna, [=Dirwemna] / 1900-2100m / 9.-11. IX (m#, ZSMC).

Paratypes. PHILIPPINES: Dolores / Mazarredo [hw] (m#, MNCN). MALAYSIA: MALAYSIA W., KELANTAN / Road between Kampong Raja / and Gua Musang, 1400–1700m. / (Ladang Pandrak), 1–28. iv. 2006 / 4°63'N 101°45'E – 4°88'N / 101°95'E, Cechovsky Petr lgt. (m#, NHMW); Sabah / Jesselton [=Kota Kinabalu] / 16. x. 1968 / P. J. L. Roche // RMNH INS. / 1483172 (f#, RMNH). INDONESIA: Museum Leiden / N SUMATRA: Bivouac Two / Mt. Bandahara / 3°44'N – 97°43'E. / 5–10. VII. 1972 / J. Krikken, no 24 / ca 1430 m // RMNH1483171 (m#, RMNH); same data // RMNH1483170 (f#, RMNH). NEW GUINEA: Same data as the holotype (f#, ZSMC); 17.-19. IX. 1991. / Irian Jaya, Wamena / Jayawijaya Prov. / Pronggoli, 2100-2400m / leg. A.Riedel (m#, ZSMC); Indonesia, Papua / Barat, Birdshead / Penins. Snow Mts. / Baliem Resort / S04°03.578' E139°01.747' / 1947 m, at light / 23-28.05.2014. / leg: R.Horváth (f#, HNHM); Indonesia, W. Papua, Arfak Mts./1190 m, Duebei env. / 20 km S of Warmere/Manokwari Distr./21.01. – 08.02. 2008./ leg. St. Jakl (f#, EKKH). PAPUA NEW GUINEA: Stn. No. 51 / New Guinea / Madang Dist. / Finisterre Mts. / Budemu . 4000 ft. / 15-24. X. 1964. / M.E. Bacchus. / B. M. 1965 – 120. (m#, BMNH); Papua New Guinea / Morobe-Province / leg. A Riedel, 1992 / Wau, Kuper-Range / Biaru-Camp, 1700-2000m, 10.X. (f#, ZSMC); New-Guinea (NE) / Wau, Mt. Kaindi / 1800 m / 2. IX.1968. / NG-W-R. 16. / leg. Dr. J. Loksa [hw] (m#, HNHM).

Description.

Colour: Head, anterior lobe of pronotum and most of scutellum fuscous (Fig. 1). Eyes dark reddish-brown. Labium, legs yellowish to light brown, femora (especially profemora) usually darker with slightly impressed tiny dark brown spots dorsally. Antennae yellow to brown: scape and pedicel usually unicolorous, apical half of flagelli darker than basal half. Posterior lobe of pronotum lighter brown, than anterior lobe in hue. Pronotum with bright, creamy lateral margin, also from below sharply contrasting at anterior half, but getting darker and fading posteriorly. Clavus, transverse middle section of corium, apical part of scutellum brown. Basal one-third of corium, inconspicuous spots at claval commissure, lateral spot at two-third of corium and the very apex of corium creamy. Rest of corium brown with variable tones. Most of membrane dark brown, base at apex of corium and basal one-third of vein Cu white. Thoracic sternites fuscous, abdominal sternites, metepimeron and collar of prosternum brown. Punctures dark brown on entire surface, best visible on the creamy sections of corium.

Integument: Body mostly dull, with strong rather sparse punctures and extremely short fine decumbent pubescence; head shiny and very densely and finely punctate except dull semicircular spot on vertex including ocelli being punctate similarly to other parts of body. Anterior lobe of pronotum mostly impunctate except collar and lateral parts along margin. Scutellum mostly finely and sparsely punctate, laterally in posterior two-third with very dense and strong punctures. Clavus with two dense and strong rows of punctures, along scutellum with traces of a third row (only with some punctures in posterior half). Corium with two rows of punctures along vein Cu, a third mostly arched row bordering vein R+M outwards connected near apical margin with row of Cu; after branching M inwards from vein R a short row present as well; between R+M veins rather densely punctate, on other parts only a few punctures, mostly in posterior half near exocorium. Antenna and legs with dense short decumbent pubescence; profemur sparsely with fine long setae on anterior surface and with two rows of dense short teeth; anteroventral row beginning with a straight long tooth submedially and consisting of 4-8 short teeth in apical half while posteroventral row of 11-15 tiny teeth extending to apical two-third (Fig. 3); stiff setae of tibiae relatively weak, most developed on mesotibia, fully

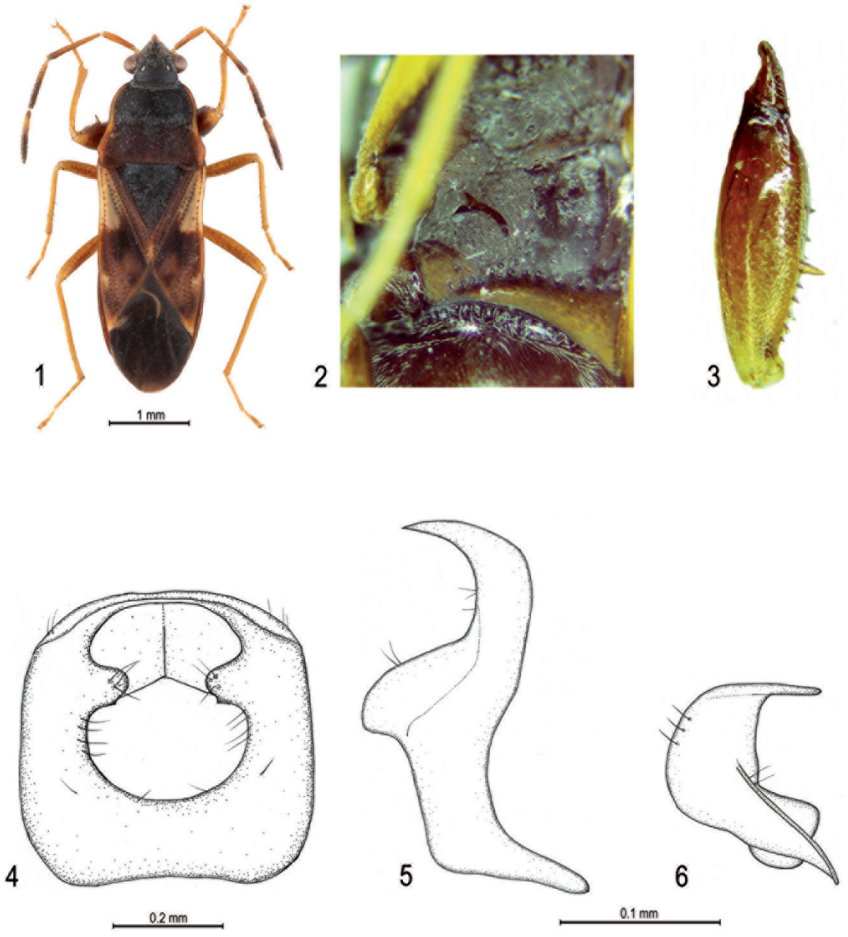

Fig. 1: *Hidakacoris meridionalis* sp. nov. habitus in dorsal view; Fig. 2: External scent efferent system; Fig. 3: Profemur; Fig. 4-6: Male genitalia of *H. meridionalis* sp. nov.: 4: pygophore, 5: paramere in ventral view, 6: paramere in apical view

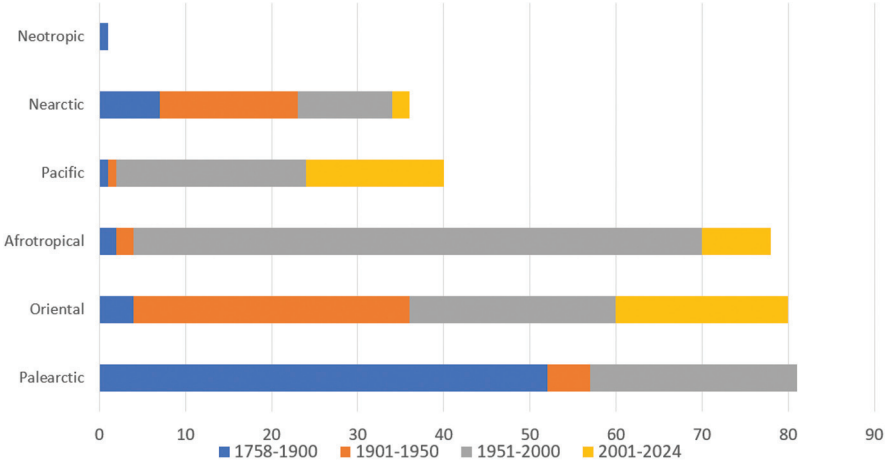

Fig. 7: The history of the descriptions of Drymini species classified by biogeographic realms

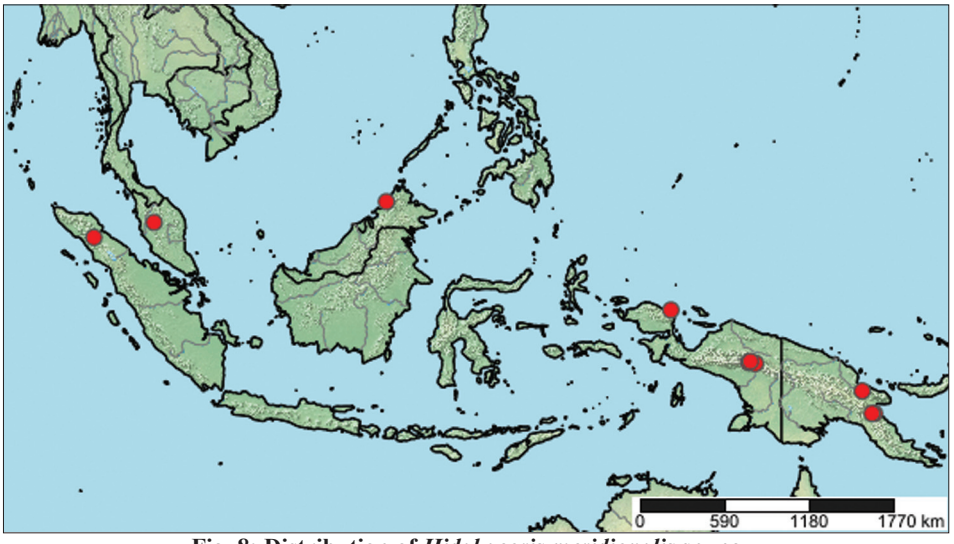

Fig. 8: Distribution of *Hidakacoris meridionalis* sp. nov.

absent on protibia. Abdomen shiny with very dense short decumbent pubescence and very dense fine punctures, almost touching each other.

Structure: Bucculae long, reaching about middle of eyes, gradually narrowing posteriad, in posterior half barely emergent. Antenniferous tubercles short, less than one-third as long as eye. All antennomeres subcylindrical, only barely thickening, distiflagellum slightly fusiform. Ocelli situated farther from each other than 2.5 times their distance from eyes. Pronotum campanulate, concave at transverse impression. Lateral margin carinate, carina almost evenly broad, slightly broader than base of pedicel, posteriad thickened ventrally and laterally, so, margin anteriad of humeral angles situated dorsally but shortened, not reaching humeral angles. Posterior margin along scutellum straight, laterally with elliptic depressed lobe covering base of clavus. Disc of anterior lobe of

pronotum bulging in lateral view, transverse impression deep, connected with shallow posteriad disappearing median furrow; transversal furrow laterad of median impression with narrow, hardly impressed part. Scutellum elongate, emergent, trifuncate median carina mostly blunt except more keel-like posterior one-fourth part. Lateral margin of hemelytra slightly S-form, narrowest at half-length of clavus. Peritreme of external scent efferent system short, very slightly S-formed, directed toward posterolateral edge of metepimeron, but ending well before half length toward it. Evaporatorium reaching laterally about half of metepisternum, also posteriorly leaving a relatively large area uncovered; on mesepimeron covering supracoxal lobe, laterally strongly narrowing, along metathoracic spiracle mostly linearly narrow (Fig. 2). Legs moderately incrassate, profemur about two times as thick as other femora and four times as thick as metatibia. Metatarsus long, tarsomere I elongate, 1.6-1.8 times as long as tarsomeres II-III together (without claws).

Suture between sternites II-III, III-IV and VI-VII vertical, between IV-V and V-VI dorsally orientated anteriad in both sexes, suture between sternites IV and V strongly curving anteriad and ending in trichobothrial furrow as typical in Rhyparochrominae, while suture between sternites V and VI reaching lateral margin of abdomen.

Male genitalia: Pygophore subquadrate, posterior margin thickened (Fig. 4), posterior aperture large, ventral (posterior) sinus short, dorsal (anterior) sinus more than 2.5 times longer (but only 1.2 times wider); projection separating sinuses with a prominent tooth on anterior surface. Blade of paramere acute, curved ventrad like a hook from plain of projections (Fig. 6) (while most Drymini species have plain paramere), dorsal projection vestigial, ventral projection triangular with slightly arched apical margin (Fig. 5).

Measurements: (6 males and 4 females, range of paratypes in parentheses): Total body length: 5.35 (5.10-6.05); head: length 0.78 (0.72-0.92), width 0.91 (0.86-1.02), interocular space 0.54 (0.49-0.65); eye length: 0.32 (0.29-0.38); antenniferous tubercle length: 0.09 (0.07-0.10); length of antennomeres: I 0.55 (0.48-0.60), II 0.95 (0.85-0.98), III 0.79 (0.75-0.83), IV 0.82 (0.75-0.82); pronotum: length 1.22 (1.15-1.42), width 1.62 (1.62-1.85); scutellum: length 1.12 (1.12-1.30), width 0.87 (0.87-0.97); claval commissure length: 0.47 (0.43-0.48).

Diagnosis:

We had the opportunity to study two *H. tsutsuii* specimens (male and female) of the NSMT from Honshu (Japan) thanks to Dr. Tomokuni. Based on them, *H. meridionalis*, sp. nov. is rather similar to *H. tsutsuii* (Hidaka), but clearly different in several features (Table 1).

Etymology: The Latin adjective meridionalis means southern which refers to the distribution of the species.

Distribution (Fig. 8): *Hidakacoris meridionalis* is distributed in southeastern part of the Oriental Region (Malaysia: Malaya, Sabah, Indonesia: Sumatra, Philippines: Samar) and in New Guinea (both Indonesian and Papua New Guinean part). The Philippine specimen cannot located on the map, because there are many localities with name “Dolores”.

Table 1: Comparison of *Hidakacoris* species

Character	***H. tsutsuii***	***H. meridionalis***
dull spot of vertex	reaching to ocelli	largely surpassing ocelli
antenniferous tubercle : eye length	more than two-third	about one-third
pronotal collar	medially much wider than laterally	almost evenly thick
lateral margin of pronotum	wide at transverse impression, narrowing anteriad and posteriad	almost evenly wide
anteroventral teeth of profemur	row in apical three-fourth	row in apical half
posteroventral teeth of profemur	barely recognizable	11-15 tiny teeth extending to apical two-third
ratio of tarsomeres I : II-III of metatarsus	2.2-2.3	1.6-1.8
colour of antenna	fuscous, distiflagellum white except dark base	pale, distiflagellum unicolorous dark or paler towards base

Acknowledgements

The authors are grateful to the curators of the collections for lending specimens: Mick Webb (BMNH), Anna Somogyi (HNHM), Mercedes París (MNCN), Masaaki Tomokuni (NSMT), Herbert Zettel (NHMW), Max Caspers (RMNH), the late Jim Boone (BPBM) and Michael Raupach (ZSMC), also for Péter Kóbor for proofreading and correcting the manuscript.

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https://doi.org/10.11646/zootaxa.4299.2.4

Natura Somogyiensis 44: 15-20. Kaposvár, 2024 https://doi.org/10.24394/NatSom.2024.44.15
Submitted: 12.08, 2024; Accepted: 30.08, 2024; Published: 16.09 2024 www.smmi.hu/termtud/ns/ns.htm

Dendroleon longicruris (C.-k. Yang, 1986) - a new record for the Vietnamese antlion fauna (Neuroptera: Myrmeleontidae)

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Papp, Z. & Ábrahám, L. 2024: *Dendroleon longicruris (C.-k. Yang, 1986) - a new record for the Vietnamese antlion fauna (Neuroptera: Myrmeleontidae). - Natura Somogyiensis 44: 15-20.*
Abstract: In this study, the authors describe the occurrence of a rare and representative antlion species, namely *Dendroleon longicruris* (C.-k. Yang, 1986), in northern and central Vietnam. This is the first time that this species has been found in the fauna of Vietnam. The most important distinguishing, phenological and distribution features are given.

Keywords: faunistic, new record, distribution, Vietnam, Oriental region

Introduction

Antlions are well known for the pit-building lifestyle of their larvae. Although most species do not even build pits, these hide beneath the dry, loose soil surface or hunt directly on the surface. Perhaps even more peculiar than the predatory lifestyle of the pit-building larvae is the lifestyle of those antlions that hide as predatory larvae in hollows in trees, cracks in tree trunks, and among lichens covering tree trunks in forested areas (Gepp 2010).

The best-known representatives of this group belong to the genus *Dendroleon*. The distribution hotspot of *Dendroleon* species is in South East Asia, but some species are also found in Europe, North America and Australia (Stange 2004). There are 25 species in the genus worldwide (Oswald 2024).

As a result of intensive neuropterological research in China in recent years (Yang 1986, Wan et al. 2004, Zhan et al. 2012, Zheng et al. 2022, 2023), the number of *Dendroleon* species in the region has increased significantly. The latest *Dendroleon* fauna list (Zheng et al. 2022) comprises 11 *Dendroleon* species from China.

The contrast in the intensity of research between Indo-Chinese areas (Cambodia, Laos, Myanmar, Thailand, Vietnam, and parts of Malaysia) and south of China is great, both in terms of taxonomic and faunistic examination. So far one species (*Dendroleon pupillaris* (Gerstaecker, 1894)) from Myanmar, two species (*Dendroleon pupillaris* (Gerstaecker, 1894), *Dendroleon vitripennis* (Navás, 1912)) from Malaysia (Banks 1931), and one species (*Dendroleon fukoeki* Ábrahám & X.-l. Wang, 2011) have been documented from Laos.

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

In the present study, we report a new occurrence of *Dendroleon longicruris* (C.-k. Yang, 1986) in Vietnam.

Material and methods

During light trapping of different insect orders, strikingly large and decorative ant-lion species are sometimes found from areas covered with subtropical forests in several areas of Vietnam (ÁBRAHÁM et al. 2023). These specimens are also collected by entomologists and forwarded to neuropterologists for identification. So, two specimens of a very decorative and rare *Dendroleon* species were found from Vietnam.

The new habitus photos were taken using Canon EOS 400 digital camera equipped with a flashlight system (Sigma EM140 DM).

The distribution map was made using the SimpleMappr software (SHORTHOUSE 2010).

Abbreviations: Checklist - Chlist, Distribution - Dist, Monograph - Mon, Originak description - Odescr, Synonym - Syn..

Results and discussion

Two female specimens of *Dendroleon longicruris* (C.-k. Yang, 1986) have been found in Vietnam during insect sampling in recent years. One is from the humid subtropical climate and mountainous dense forests of northern Vietnam and the other from the same habitat in central Vietnam.

Myrmeleontidae Latreille, 1802
Dendroleontinae Banks, 1899
Dendroleontini Banks, 1899
Dendroleon Brauer, 1866

Dendroleon longicruris (C.-k. Yang, 1986)
Type specimen: *Pantheroleon longicruris* (C.-k. Yang, 1986): 424 (Odescr).
Type locality: China: Yunnan (Yongde).
Dendroleon perlistigma Wan & Wang, 2004: 505 (Odescr), Wang & Wang 2008: 42 (Syn).
Type locality: China: Guangxi.
Dendroleon longicruris (C.-k. Yang, 1986) - Stange, 2004: 84 (Mon), Wang et al. 2018 (Mon), Zhan et al. 2012 (Dist), Yang et al. 2018: 62 (Chlist).

Material examined: CHINA: holotype female of *Pantheroleon longicruris* (Fig. 1), Zhengmu, Dedang Town, Yongde County, Yunnan (lamp-induced), 1661 m, 1980.V.26, Fan Yafu, CAU-N101291, Holotype male of *Dendroleon perlistigma*, Baiyan, Longsheng, Guangxi, 1150 m, 1963.VI.22, Wang Chunguang, Chinese Academy of Sciences, CAU-N101290; Paratype female, Hongkan Reservoir, Parrotling, Hainan (lamp-induced), 600 m, 2009. IV.22, Ao Weiguang, CAU-N102033. Deposited in the collection of China Agricultural University, Beijing (CAU)

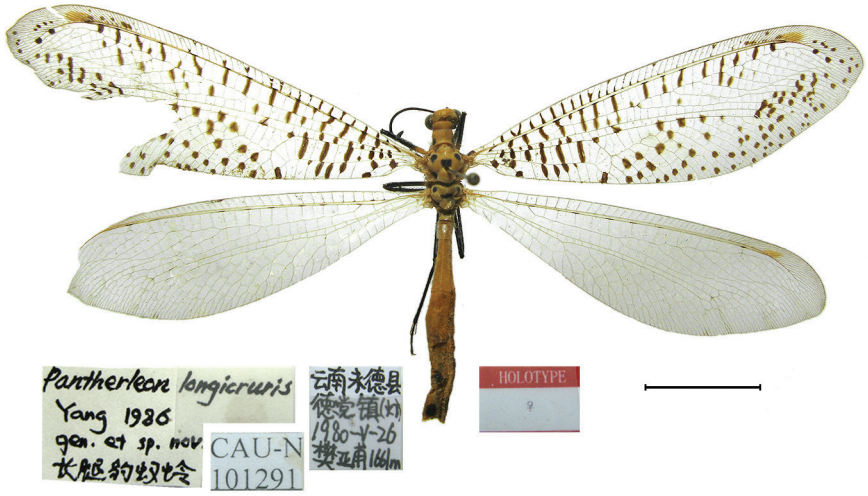

Fig. 1: Holotype female of *Dendroleon longicruris* (C.-k. Yang, 1986)

Fig. 2: New record of *Dendroleon longicruris* A– habitus, (Scale: 10 mm)
B– head in frontal view, C– vertex and pronotum in dorsal view

VIETNAM: 1♀, Đắk Lắk prov. Chu Yang Sin NP, 19. May, 2023, at light, leg: Dang Ngoc Van (Fig. 2), 1♀, Yên Bái prov, Yên Bái 11. July, 2023, at light, leg: Dang Ngoc Van. Deposited in the private collection of Z. Papp, Hungary.

Among the known *Dendroleon* species with similar size, colour and wing pattern, two other species described from southern China resemble the species of *D. longicruris* in their morphological features. The closest species are *Dendroleon lii* X. Wan & al., 2004. and *Dendroleon callipterum* X. Wan & al., 2004, but the latest is less morphologically similar and both species are expected to occur in Vietnam. The striking differences among the species are summarised in Table 1.

Table 1: Comperative matrix for three similar *Dendroleon* species in SE Asia

Species/features	***D. longicruris***	***D. lii***	***D. callipterum***
Lenght of forewing	38-43 mm	41-43 mm	38-39 mm
Vertex in dorsal view	without spots	with two lateral spots	with two lateral spots
Pronotum in dorsal view	with two caudo-lateral round spots	without spots	without spots
Forewing shape and marks	with small round and rectangular shape marks	predominantly with rectangular shape marks and few small round spots	with large irregular shape marks distally and small distinct rectangular shape marks basally
Pattern in costal area before pterostigma in forewing	only with some round spots	with rectangular shape marks, at least twice longer than wide	with rectangular shape marks, at least three times longer than wide
Hindwing	without large distinct marks and spots	with large distinct marks and spots	with large indistinct marks and spots

Since an easily recognisable species, mapping its populations is generally recommended for citizen science projects.

Although very little is known about the lifestyle of *Dendroleon* species in Southeast Asia, the lifestyle of the larvae of the newly recorded species is probably the same as that of the species belonging to the genus (ZHAN et al. 2012).

Distribution: Southern China: Yunnan, Guangxi, Hainan (ZHAN et al. 2012, WANG et al. 2018). It is a new species for the fauna of Vietnam: Đắk Lắk, Yên Bái. (Fig. 3)

Ackownledgement

The authors thank Bálint Csernák for taking the excellent photos. The authors express their sincere thanks to Prof. dr. Wang Xinli for providing access to the type collection materials.

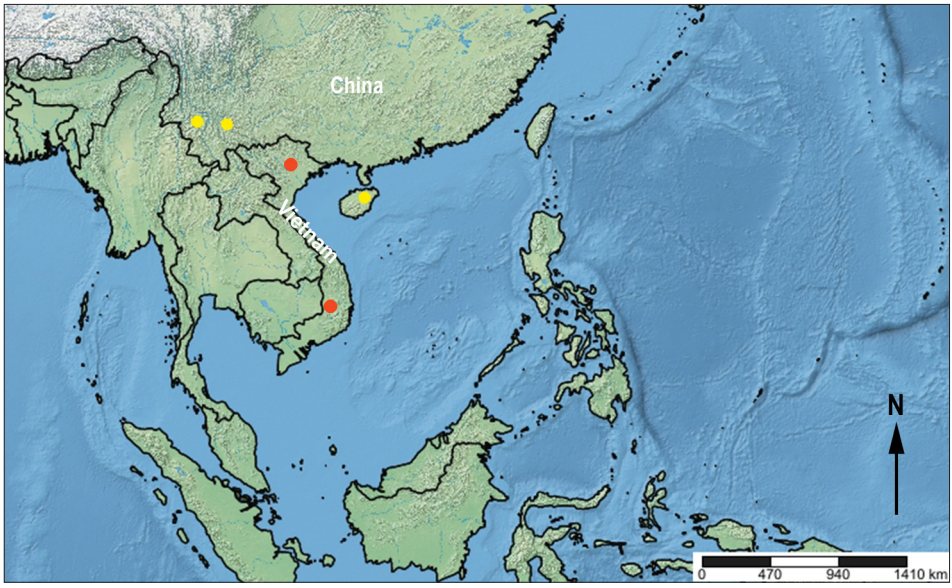

Fig. 3: Distribution of *Dendroleon longicruris* with new records (red dots) in Southern Asia

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Submitted: 07.07, 2024; Accepted: 04.09, 2024; Published: 20.09 2024 www.smmi.hu/termtud/ns/ns.htm

On the taxonomic status of *Grammoptera geniculata* Kraatz, 1886 (Coleoptera: Cerambycidae)

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Skořepa, L. 2024: *On the taxonomic status of Grammoptera geniculata Kraatz, 1886 (Coleoptera: Cerambycidae). Natura Somogyienis 44: 21-26.*
Abstract: *Grammoptera ustulata* (Schaller, 1783) was described from Halle environs (Germany) but its area is extending to Euro-Anatolian species of oak forests. *Grammoptera ustulata* var. *geniculata* Kraatz, 1886 from Andalusia (Spain) was known as a variation. Based on the morphological differences, the status of *Grammoptera geniculata*, Kraatz, 1886 should be reinstated to the species level. The present paper provides additional morphological features of this taxon.

Keywords: taxonomy, status revision, longhorn beetle, Spain

Introduction

Currently, there are six recognized longhorn beetle species of the genus *Grammoptera* in Europe. The three species *G. abdominalis* Stephens, 1831; *G. ruficornis* Fabricius, 1781, and *G. ustulata* Schaller, 1783 are widely distributed across the Europe, while *G. auricollis* Mulsant & Rey, 1863; *G. baudi* Sama, 1985, and *G.viridipennis* Pic, 1893 have restricted ranges in the Mediterranean region.

Grammoptera ustulata (Schaller, 1783) is a widespread Euro-Anatolian species of oak forests, which has been described as *Leptura ustulata* from the surroundings of Halle (Germany). The present paper gives additional characters of *Grammoptera geniculata* Kraatz, 1886, which was described as a variation of *G. ustulata* var. *geniculata* Kraatz, 1886 from Andalusia (Spain).

Material and methods

During the field trip in southern Spain in February 2020, a 6 cm diameter oak branch infested with *Vuilleminia* sp. was collected. Subsequently, 10 specimens of the longhorn beetle *Grammoptera* sp. were reared from the branch. The longhorn beetle specimens obtained differed from other known European species of *Grammoptera*. The specimens were identified by Danilevsky (2021) as *G. ustulata* var. *geniculata* on the basis of the photographic documentation sent. Later, this taxon was listed as a valid species in the catalogue of Palaearctic Cerambycoidea by Danilevsky (2021), but the distinguishing characters of the species were missing.

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

Results and discussion

The description refers to the darker coloured specimens of *G. ustulata* from Andalusia, Spain, which is easily distinguished by their dark red to black legs (including femora) and dark antennae. Kraatz's description emphasises the dark colouration of the hind legs.

However, the syntype material could not be found, but the newly collected specimens show exact morphological characteristics with Kraatz's description (in LEDER 1886).

Additional material:
(5♂♂, 6♀♀) Spain, Andalusia, Cadiz, 5km W Los Barrios, ex. Quercus,7.ii.2020, L. Skořepa lgt.

Cerambicydae
Grammoptera J. Müller, 1835
Grammoptera geniculata Kraatz, 1886

Diagnostic characters:
G. geniculata also has dark antennae and very dark red to black femora, especially on the hind legs. *G. geniculata* is also distinguished from *G. ustulata* by its pronotum, which is covered with dense, bright golden pubescence. It also has more convex elytra and face. It is also distinguished by the male genitalia, namely the parameres, the aedeagus and the last abdominal segment (Figs. 1 and 2). The parameres and aedeagus of *G. geniculata* are more elongated, slender and apically clearly pointed. The tip of the aedeagus is curved. In contrast, the aedeagus of *G. ustulata* is short, rounded at the apex, without a curved tip, and the parameres are also broad and short. Other diagnostic features between the two species are e.g. that *G. geniculata* is darker overall, has shorter antennae and a smaller extent of the dark (covered with black pubescence) apical part of the elytra. The body is more robust than that of *G. ustulata*. It is shown in Figs. 3 and 4, and female *G. geniculata* in Fig. 5.

Based on the added description and the characters listed, *G. geniculata* is undoubtedly a different species. The bionomy of *G. geniculata* is probably the same as that of *G. ustulata*, at least in the larval stage. *G. geniculata* may be distributed not only in Andalusia, Spain, but also in northern Morocco.

Based on the morphological differences, the status of *Grammoptera geniculata*, Kraatz, 1886 should be reinstated to the species level.

Acknowledgements

I would like to thank my friends T. Peterka and D. Šanc for their help with this study. Special thanks are due to David Navrátil (Litomyšl) for the preparation of photographs for this publication and to Jiří Foit (Mendel University in Brno, Faculty of Forestry and Wood Technology, Czech Republic) for his invaluable help in compiling the manuscript.

Fig. 1: Male genitalia (aedeagus, parameres, last abdominal segment) and abdomen (ventral view) of *Grammoptera geniculata* (Spain, Andalusia)

Fig. 2: Male genitalia (aedeagus, parameres, last abdominal segment) and abdomen (ventral view) of *Grammoptera ustulate* (Czech republic, south Bohemia)

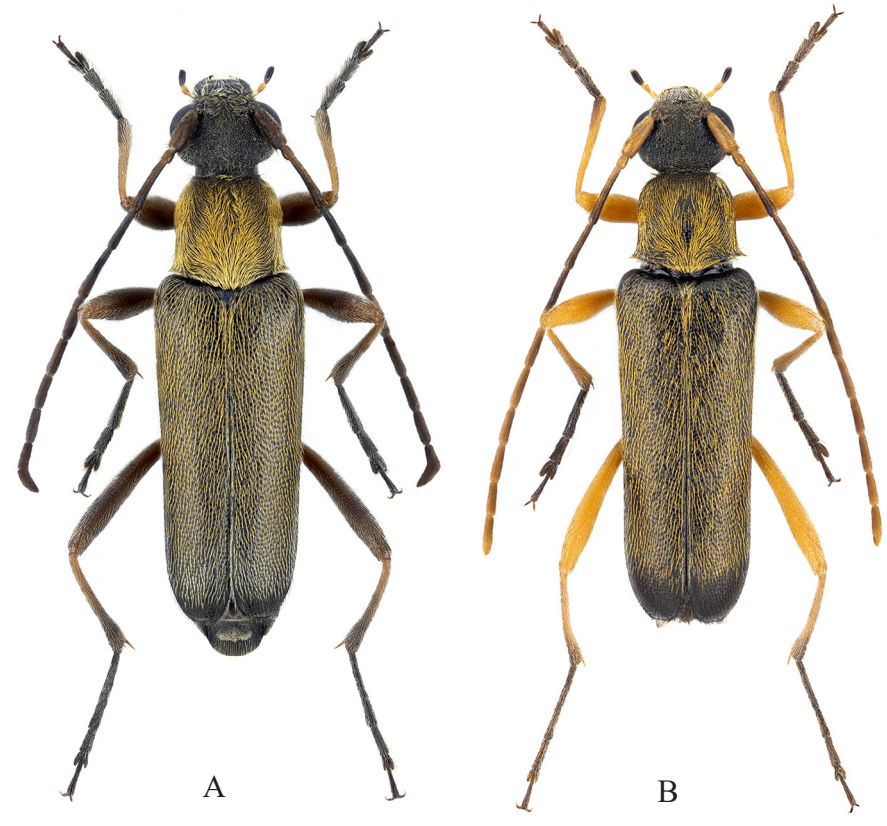

Fig. 3: Comparison habitus (dorsal view) males, A - *G. geniculata* (Spain, Andalusia) and B - *G. ustulata ustulata* (Czech republic, south Bohemia)

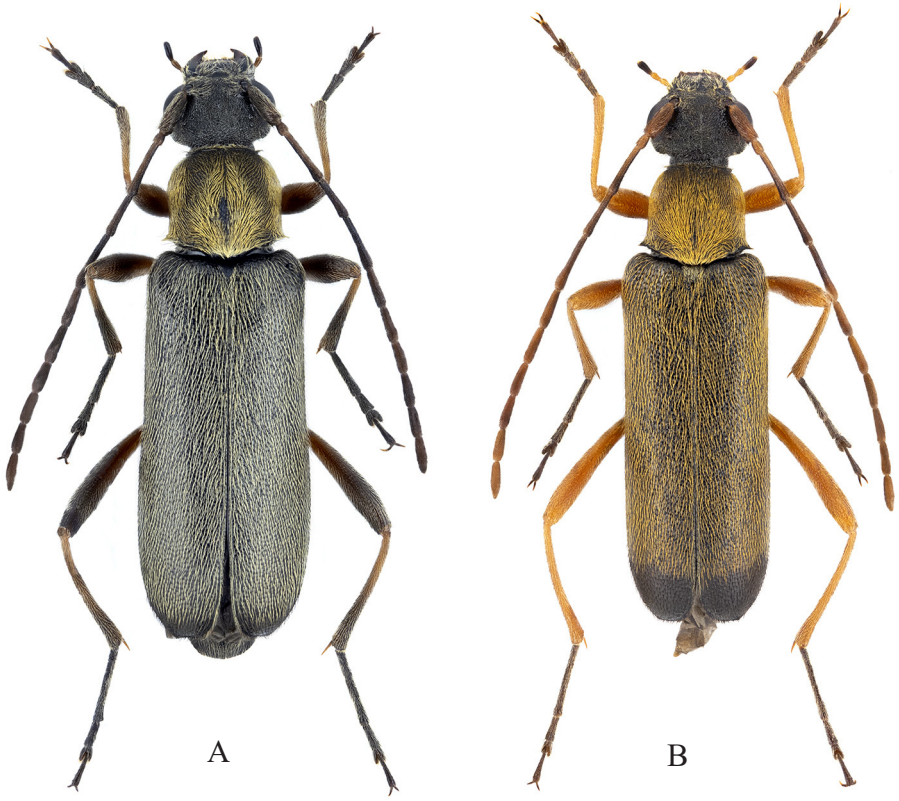

Fig. 4: Comparison habitus (dorsal view) females A - *G. geniculata* (Spain, Andalusia) and B - *G. ustulata ustulata* (Czech republic, south Bohemia)

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Submitted: 30.09, 2024; Accepted: 04.10, 2024; Published: 09.10, 2024 www.smmi.hu/termtud/ns/ns.htm

Sawflies of Vashlovani National Park (Georgia - Sakartvelo) (Hymenoptera: Symphyta)

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Japoshvili, G. & Haris, A. 2024: *Sawflies of Vashlovani National Park (Georgia - Sakartvelo) (Hymenoptera: Symphyta) Natura Somogyiensis 44: 27-40.*
Abstract: Thirty-five species were collected from Vashlovani National Park in Sakartvelo (Georgia). *Megalodontes eversmanni* (Freymuth, 1870), *Aprosthema freyi* (Forsius, 1921), *Sterictiphora furcata* (Villers, 1789), *Tenthredo aulica* Enslin, 1912, *Tenthredo dissidua* (Konow, 1899) and *Tenthredo longipes* (Konow, 1886) are new records for the country. Male genitalia of *Pristiphora araratensis* Haris, 2006 is figured and separated from its relatives.

Keywords: Caucasus, Hymenoptera, Symphyta, faunistics, ecology

Introduction

The present paper is the 10th publication of our series studying the sawfly communities of Sakartvelo (Georgia) after Japoshvili and Haris (2022a, b, c, d, e 2023a, b, c) Supatashvili, Japoshvili and Haris (2022). Our final goal is to gain a broader understanding of the sawfly fauna of Sakartvelo (Georgia) and to better understand the environmental factors that influence them. In this paper, we study 2 very different regions of South-West Georgia. Two sampling sites are located at lower altitudes in the region, between 95 and 98 m, namely Mijniskure: Alazani bank and Mijniskure meadow, and the other two sampling sites are at 450-495 m, namely Datvish Khevi and Vashlovani meadow. At the two different altitudes, we observed different faunas, different species richness, and different population densities and population dynamics, which are discussed below. Beyond these 4 major sites, some other sporadically collected species were also listed from various regions of Sakartvelo, collected by using various methods in the last year.

Material and methods

Vashlovani National Park is located in the eastern part of Georgia (Sakartvelo). Georgia's Kakheti Region near the Azerbaijani border, boasts diverse natural features. The park encompasses several distinct zones, including steppe, forest-steppe, semi-

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

desert, and deciduous forests. Vashlovani experiences a dry climate, with elevations ranging from 150 to 450 meters above sea level. Summers are hot and dry. Winters are cooler, with temperatures rearly dropping to around 0°C.

The Alazani River (particularly Mijniskure) and its tributaries provide essential water sources for the region. The region features a mix of forests, grasslands, and wetlands. Natural Vegetation of Mijniskure Alazani is characterized by diverse vegetation types dominated by *Quercus, Pistacio, Carpinus, Populus, Granatum, Rosa, Scirpus* and *Rubus*. Typical endemic species of this region is Iris iberica – Georgian Iris (Gagnidze, 2005). Climate in Mijniskure Alazani, varies based on elevation and proximity to the Caspian Sea. The region experiences moderate precipitation throughout the year. Rainfall is more abundant in the spring and autumn months. These mountains are geologically diverse, with sedimentary rocks, volcanic formations, and metamorphic rocks. The Alazani River has shaped the landscape over millennia, carving deep valleys and depositing fertile alluvial soils.

Datvish Khevi, is located in the western part of Vashlovani protected areas. The area is characterized semi desert (arid) canyon, with *Pyrus, Carpinus, Pistacio, Tamarix, Rosa* and *Tuja* trees and bushes. It's a dry river valley, with xerophytic vegetation: *Paliurus, Tamarix, Pistacea, Tuija* and *Rosae*. To the south, the valley gradually expands and reveals an extensive panorama of "Alesilebi". The river valley during most of the year is dry and water appears only dring rains, which is very rear, as the annual precipitation is around 400 mm. Summers are very host and dry.

For identification Zhelochovtsev's work on the sawflies of the European part of the former USSR (ZHELOCHOVTSEV 1988), the handbook of Lacourt on the identification of the European sawflies (LACOURT 2020), the monograph of Robert Benson on the Turkish fauna (BENSON 1968), Gussakovskij's and monographs on the sawflies of the former USSR (GUSSAKOVSKIJ 1935, 1947) were used. We also consulted recent revisions (GYURKOVICS and HARIS 2014, HARIS 2006) to confirm the identifications of particular taxa. The general distribution of species are reported based on ROLLER and HARIS (2008), SUNDUKOV (2017) and TAEGER et al. (2006). Host plant records are given according to MACEK et al. (2020).

Major collecting sites (Figs. 1-4)

1. Mijniskure: Alazani bank, 41.111663°N, 46.649028°E, 94m asl, This is floowplane forest on the Alazani river (one of the biggest river in Georgia) side, with *Quercus, Pistacio, Carpinus, Populus, Granatum, Rosae, Scirpus, Rubus*. (Fig. 2).

2. Datvish Khevi, 41.240505°N, 46.383119°E, 450 m asl., It's a dry river valley, with *Paliurus, Tamarix, Pistacea, Tuija, Rosae* (Fig. 1)

3. Mijniskure meadow, 41.112362°N, 46.646654°E, 98m asl., meadow with different grass species.

4. Vashlovani meadow, 41.205162°N, 46.423541°E, 495 m asl., *Stipa* meadow surrounded with *Pistacio* light forest (Fig. 3).

Additional sites or collecting methods:

Kakheti, Vashlovani, near central bungaloes, 41.159782°N,, 46.567286°E, 275m alt, *Thuya* and *Pistacio* trees, arid-light forest, subdesert, color traps.

Kakheti, Vashlovani, Mijniskure, 41.111663°N, 46.649028°E, 94m alt, Floodplane forest, color traps.

Kakheti, Vashlovani, Mijniskure, 41.111663°N,, 46.649028°E, 94m alt, Floodplane forest, Sweeping net.

Kakheti, Vashlovani, Mijniskure, 41.111663°N, 46.649028°E, 94m alt, Floodplane forest, color traps.

Fig. 1: Datvish Khevi landscape

Fig. 2: Mijniskure: Alazani landscape

Fig. 3: Vashlovani meadow

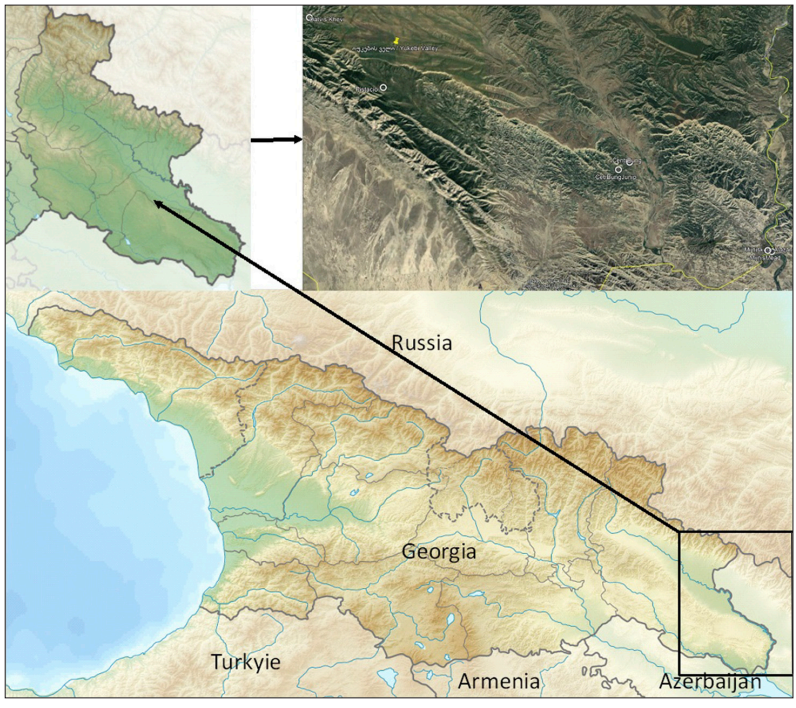

Fig. 4: Map of the investigated area

List of species:

Megalodontes eversmanni (Freymuth, 1870): Datvish Khevi, 22. 05. - 08. 06. 2023, 2 females. Pontocaspian and North Mediterranean. Sporadic. Hostplant unknown. New record for Georgia.

Aprosthema ballioni (Konow, 1892): Mijniskure: Alazani, bank of River Alazani, 05-16. 05. 2023, 1 female, 16-27. 05. 2023, 2 females. Pontocaspian species, known only from Georgia. Sporadic. Hostpalnt unknown.

Aprosthema freyi (Forsius, 1921): Mijniskure: Alazani, bank of River Alazani, 27. 05. - 09. 06. 2023, 1 female, Sporadic. New record for Georgia. Pontocaspian species. Hostplant unknown.

Sterictiphora furcata (Villers, 1789): Datvish Khevi, 16 - 27. 05. 2023, 1 male; Vashlovani meadow, 24. 04. - 04. 05. 2023, 1 female, 16 - 26. 05. 2023, 1 female. Sporadic. Hostplant: *Rubus idaeus*. New record for Georgia. West Palaearctic.

Arge melanochra (Gmelin, 1790): Mijniskure: Alazani, bank of River Alazani, 15-25. 04. 2023, 1 female. Frequent. Larva on *Crataegus oxycantha*. West Palaearctic.

Halidamia affinis (Fallén, 1807): Mijniskure: Alazani, bank of River Alazani, 05-15. 04. 2023, 3 females; Mijniskure meadow, 05-15. 04. 2023, 2 females; Vashlovani meadow, 04 – 14. 04. 2023, 1 female. Frequent. Host plants: *Galium aparine* and *G. molugo*. West Palaearctic species, introduced to North America.

Allantus (*Emphytus*) *cinctus* (Linné, 1758): Mijniskure: Alazani, bank of River Alazani, 27. 05. - 09. 06. 2023, 1 female, 23. 09. - 12. 10. 2023, 1 female; Mijniskure meadow, 23. 09. - 13. 10. 2023, 1 female; Datvish Khevi, 04 - 14. 04. 2023, 1 male. Frequent. Host plants: *Fragaria* and *Rosa* spp. Palaearctic.

Allantus (*Emphytus*) *didymus* (Klug, 1818): Mijniskure: Alazani, bank of River Alazani, 24. 07. - 04. 08. 2023, 1 male; Datvish Khevi, 24. 04. - 04. 05. 2023, 5 females, 4 males, 05-16. 05. 2023, 1 female, 1 male, 16 - 27. 05. 2023, 1 male, 22. 05. - 08. 06. 2023, 3 females, 3 males; Vashlovani meadow, 24. 04. - 04. 05. 2023, 1 female, 16 - 26. 05. 2023, 1 female, 27. 05. - 08. 06. 2023, 1 female. Frequent. Larva on *Sanguisorba minor*; old records from *Rubus* and *Rosa* spp. need checking. West Palaearctic.

Allantus (*Emphytus*) *laticinctus* (Serville, 1823): Vashlovani meadow, 27. 05. - 08. 06. 2023, 1 female. Sporadic, West Palaearctic species. Hostplant: *Rosa* spp.

Allantus (*Allantus*) *viennensis* (Schrank, 1781): Mijniskure: Alazani, bank of River Alazani, 25. 04. - 05. 06. 2023, 1 female, 16-27. 05. 2023, 1 female; Datvish Khevi,05-16. 05. 2023, 1 female, 22. 05. - 08. 06. 2023, 2 females. Sporadic, West Palaearctic species, introduced to North America. Larva on *Rosa* spp.

Athalia ancilla Serville, 1823: Mijniskure: Alazani, bank of River Alazani, 22. 06. - 03. 07. 2023, 1 male; Mijniskure meadow, 27. 05.-08. 06. 2023, 2 females, 16-26. 05. 2023, 2 females, 05-15. 09. 2023, 1 female, 08-19. 06. 2023, 11 females, 23. 09. - 13. 10. 2023, 1 female, 05-15. 09. 2023, 1 female, 14-23. 09. 2023, 2 females; Datvish Khevi, 23. 09.

- 13. 10. 2023, 3 females, 2 males, 22. 05. - 08. 06. 2023, 1 female; Vashlovani meadow, 23. 09. - 13. 10. 2023, 1 female. West Palaearctic species. Frequent in Georgia, otherwise sporadic. Larva on *Brassica* spp., *Cardamine* spp., *Raphanus* spp., *Sinapis* spp., *Sisymbrium* spp. and *Alliaria petiolata*.

Athalia bicolor Serville, 1823: Datvish Khevi, 04 - 14. 04. 2023, 3 females; Vashlovani meadow, 04 – 14. 04. 2023, 1 female; Kakheti, Vashlovani, 24 – 25. 07. 2023, 1 female; Kakheti, Vashlovani, Mijniskure, 05 – 06. 04. 2023, 1 male. Frequent. Host plant: *Ranunculus* spp. Palaearctic.

Athalia cordata Serville, 1823: Mijniskure: Alazani, bank of River Alazani, 15-25. 04. 2023, 1 female, 1 male, 14-23. 09, 2023, 1 female, 23. 09. - 12. 10. 2023, 7 females, 6 males; Mijniskure meadow, 05-15. 04. 2023, 1 female, 23. 09. - 13. 10. 2023, 2 females, 05-15. 09. 2023, 1 female; Datvish Khevi, 04 - 14. 04. 2023, 3 females, 4 males, 14 - 24. 04. 2023, 2 females, 7 males, 24. 04. - 04. 05. 2023, 1 male, 13 – 23. 09. 2023, 2 females, 1 male, 23. 09. - 13. 10. 2023, 11 females, 32 males; Vashlovani meadow, 04 – 14. 04. 2023, 1 male, 23. 09. - 13. 10. 2023, 2 females, Kakheti, Vashlovani, 03-05. 2023, 1 female, 1 male. Common. Larva on *Misopates orontinum, Antirrhinum majus, Ajuga reptans, Teucrium scorodonia* and *Plantago* spp. West Palaearctic.

Athalia liberta (Klug, 1815): Mijniskure: Alazani, bank of River Alazani, 22. 06. - 03. 07. 2023, 1 female, Mijniskure meadow, 05-15. 09. 2023, 1 female; Datvish Khevi, 16 - 27. 05. 2023, 1 female; Kakheti, Vashlovani, Mijniskure, 24 – 25. 07. 2023, 1 female. Frequent. Larva on *Brassicaceae, Alliaria petiolata, Cardamine* spp.. *Sisymbrium* spp., *Lunaria rediviva* and *Dentaria bulbifera*. Palaearctic.

Athalia rosae (Linné, 1758): Datvish Khevi, 23. 09. - 13. 10. 2023, 1 male; Mijniskure: meadow, 21. 06. - 03. 07. 2023, 1 female. Common. Host plants: *Raphanus sativus, R. raphanistrum, Sinapis arvensis, Sisymbrium officinale, Armoracia rusticana, Barbarea sp., Brassica napus, B. juncea, B. rapa, B. oleracea, Tropaeolum majus, Sinapis arvensis, Alliara petiolata* and *Cardamine* spp. Palaearctic.

Athalia rufoscutellata Mocsáry, 1879: Datvish Khevi, 04 - 14. 04. 2023, 1 female, 14 - 24. 04. 2023, 1 male, 24. 04. - 04. 05. 2023, 2 females, 16 - 27. 05. 2023, 2 females. Frequent. Palaearctic. Hostplant unknown.

Monostegia abdominalis (Fabricius, 1798): Datvish Khevi, 04 - 14. 04. 2023, 3 females, 24. 04. - 04. 05. 2023, 2 females. Palaearctic species, introduced to USA and Canada.

Taxonus sticticus (Klug, 1817): Mijniskure: Alazani, bank of River Alazani, 05-15. 04. 2023, 1 male, 15-25. 04. 2023, 1 male, 25. 04. - 05. 06. 2023, 1 female; Datvish Khevi, 16 - 27. 05. 2023, 1 male. West Palaearctic.

Macrophya (*Macrophya*) *diversipes* (Schrank, 1782): Datvish Khevi, 05-16. 05. 2023, 1 female, 16 - 27. 05. 2023, 1 female. Palaearctic.

Tenthredo (*Elinora) aulica* Enslin, 1912: Mijniskure meadow, 05-15. 04. 2023, 1 female; Kakheti, Vashlovani, 03-05. 2023, 1 female. Pontocaspian. Sporadic. New record for Georgia. Hostplant unknown.

Tenthredo (*Cephaledo*) *bifasciata* ssp. *bifasciata* O.F. Müller, 1766: Datvish Khevi, 24. 04. - 04. 05. 2023, 4 females, 1 male, 05-16. 05. 2023, 1 female, 16 - 27. 05. 2023, 2 females, 1 male. North Mediterranean and Pontocaspian.

Tenthredo (*Maculedo*) *vestita* André, 1881: Mijniskure meadow, 05-15. 04. 2023, 2 females. Pontocaspian-Anatolian-Persian. Sporadic. Hostplant unknown.

Tenthredo (*Elinora*) *dissidua* (Konow, 1899): Kakheti, Vashlovani, 03-05. 2023, 1 female. New record for Georgia. Sporadic, Pontocaspian species.

Tenthredo (*Zonuledo*) *distinguenda* (Stein, 1885): Mijniskure: Alazani, bank of River Alazani, 25. 04. - 05. 05. 2023, 1 female, Frequent. Larva on *Hypericum perforatum*. West Palaearctic.

Tenthredo (*Zonuledo*) *distinguenda* ssp. *hyrcana* Benson, 1968: Datvish Khevi, 24. 04. - 04. 05. 2023, 3 males. Frequent. Hotplant unknown. East-Mediterranean.

Tenthredo (Elinora) longipes (Konow, 1886): Kakheti, Vashlovani, Mijniskure, 05 – 06. 04. 2023, 1 female. Pontocaspian. Sporadic. New record for Georgia.

Tenthredopsis annuligera (Eversmann, 1847) (sculptura Tenthredopsis albopunctata (Tischbein, 1852): Mijniskure meadow, 15-25. 04. 2023, 1 male. Sporadic, West-Palaearctic species. Host plant unknown.

Tenthredopsis festiva Konow, 1890: Mijniskure meadow, 05-15. 04. 2023, 1 female. Sporadic, Ponto-Caspian species. Host plant unknown.

Cladius (*Cladius*) *pectinicornis* (Geoffroy, 1785): Datvish Khevi, 22. 05. - 08. 06. 2023, 1 male; Vashlovani meadow, 23. 09. - 13. 10. 2023, 1 female. Holarctic. Common. Host plants: *Alchemilla, Filipendula, Fragaria, Potentilla, Sanguisorba, Rosa* and *Rubus* spp.

Pristiphora araratensis Haris, 2006: Mijniskure: Alazani, bank of River Alazani, 23. 09. - 12. 10. 2023, 1 male, 09-20. 06.. 2023, 1 female; Vashlovani meadow, 04 – 14. 04. 2023, 1 male, 24. 04. - 04. 05. 2023, 1 male; 27. 05. - 08. 06. 2023, 1 female. Frequent. Hostplant unknwon. Anatolian-Pontocaspian.

Orussus abietinus (Scopoli, 1763): Kakheti, Vashlovani, Mijniskure, 26. 04. 2023, 1 female. Ectoparasitoid Symphyta, the hosts are buprestid and longhorn beetles from the genera *Buprestis, Eurythyrea, Chrysobothris, Agrilus, Acmaeodera, Dicerca, Asemum, Arhopalus* etc., as well as woodwasps (genera *Sirex, Urocerus, Tremex* and probably *Xiphydria*). Frequent. Palaearctic.

Cephus pygmeus (Linné, 1767): Datvish Khevi, 24. 04. - 04. 05. 2023, 9 females, 6 males, 05-16. 05. 2023, 33 females, 1 male, 16 - 27. 05. 2023, 9 females, 1 male, 22. 05. - 08. 06. 2023, 2 females. Common. Insect pest of cereals and *Gramineae*. Palaearctic, introduced to North America.

Janus luteipes (Lepeletier, 1823): Mijniskure: Alazani, bank of River Alazani, 16-27. 05. 2023, 1 female. Sporadic. Host plants: *Salix* spp., *Populus tremula* and *Viburnum lantana*. Palaearctic.

Syrista parreyssii (Spinola, 1843): Datvish Khevi, 05-16. 05. 2023, 1 female, 22. 05. - 08. 06. 2023, 1 female, Frequent. Host plant: *Rosa* spp. like *Rosa alba, R. canina x damascena, R. rubiginosa.* Holomediterranean.

Trachelus tabidus (Fabricius, 1775): Datvish Khevi, 05-16. 05. 2023, 46 females, 3 males, 16 - 27. 05. 2023, 1 female, 22. 05. - 08. 06. 2023, 1 female, 1 male; Vashlovani meadow, 05 – 16. 05. 2023, 2 females, 16 - 26. 05. 2023, 4 females, 27. 05. - 08. 06. 2023, 1 female. Host plant: various *Poaceae* including cereals. Frequent. Holomediterranean-Central European. Introduced to the USA.

Male of *Pristiphora araratensis* Haris, 2006 (Figs. 5-7)

Although this species is frequent in the Ponto-Caspian and Anatolian region (Calmasur, 2020), the separation of males from the related species is not resolved. This time, we captured several male specimens for genitalia dissection to help in the separation of this species from the other members of *Pristiphora rufipes* group. Females can be separated from the related species by their extremely dark wings. The other descibed character, the entirely yellow hind femora, may darken in the basal quarter. Males can be separated by their extremely dark wing (Fig. 5) and penial valve (Figs. 6 and 7).

Fig. 5: Male of *Pristiphora araratensis* Haris, 2006

Fig. 6: Male genitalia of *Pristiphora araratensis*

Fig. 7: Apex of penis valve of *Pristiphora araratensis*

Species richness and zoogeographic distribution

At 450-495 m asl., We detected 23 species, and in 94-98 m asl., 19 species. 10 species occurred in all 4 sampling sites. Generally, we may say, the sawfly fauna of this region is poor, however, it contains some characteristic and local species for this region.

Table 1. The zoogeographic origin of the collected sawflies was evaluated

Zoogeographical area	Number of species	%
Ponto-Caspian-Anatolian-Persian	1	2.8%
Ponto-Caspian	5	14.4%
North Mediterranean-Ponto-Caspian	2	5.8%
East Mediterranean	1	2.8%
Pontocaspian-Anatolian	2	5.8%
Holomediterranean-Central-European	1	2.8%
Holomediterranean	1	2.8%
West Palaearctic	11	31.4%
Palaearctic	10	28.6%
Holarctic	1	2.8%

The zoogeographic origin of the collected sawflies was evaluated (Table 1). Most of the species have wide geographic distribution, i.e. Holarctic, Palaearctic and West Palaearctic, Their proportion is 62.1%. The so called characteristic components are the species with limited distribution areas: Ponto-Caspian-Anatolian-Persian, Ponto-Caspian, East Mediterranean and Pontocaspian-Anatolian. These species are: *Aprosthema ballioni* (Konow, 1892), *Aprosthema freyi* (Forsius, 1921), *Tenthredo aulica* Enslin, 1912, *Tenthredo vestita* André, 1881, *Tenthredo dissidua* (Konow, 1899), *Tenthredo distinguenda* ssp. *hyrcana* Benson, 1968, *Tenthredo longipes* (Konow, 1886), *Tenthredopsis festiva* Konow, 1890.

Their proportion is 24.4%. Significantly larger than that we were experienced during our investigations in the different regions of Caucasus (12-13%) (JAPOSHVILI and HARIS 2022b, c and d).

Population dynamics and species richness of sawflies of the 2 different altitudes. Population dynamics are presented in Fig. 8 and temporal changes of species richness in Fig. 9. Due to the different climatic conditions, the population densities culminate in the last decade of April in the 95 m elevation and one month later in the higher elevation, which seems normal. Flight activity of sawflies starts when the daily average temperature close to soil (approximately 1.5 meter) reaches 10 degrees Celsius most of the daytime (*Dolerus* spp.). We estimate, the flight period must start in the lover altitude in the first decade of March and in the higher 450 m) elevation in the first decade of April. Unfortunately, the fauna of the early period was not monitored. In the high elevation, the maximum measured population size is nearly 8x higher than in 95 m. asl. In the temporal changes of species richness, the situation is also similar. Species richness culminates 5 weeks later in the higher altitudes.

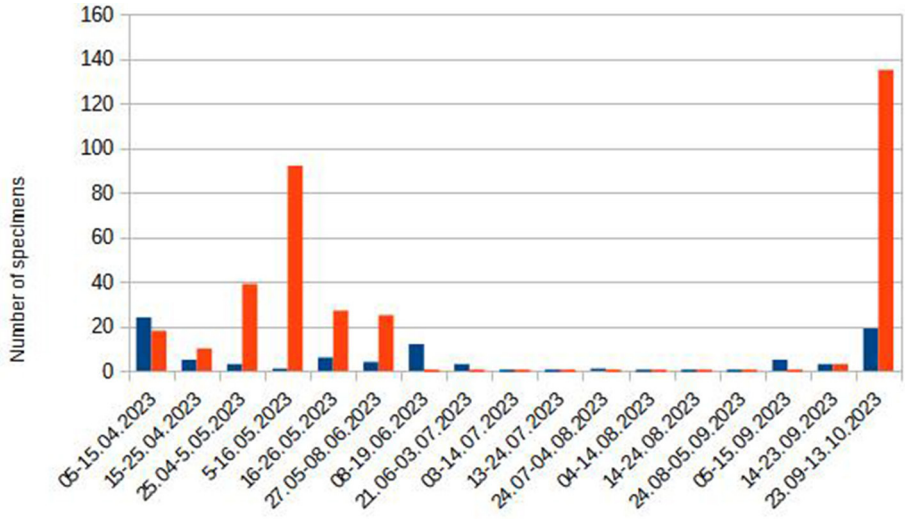

Fig. 8: Temporal changes of number of collected sawflies (blue: 94-98 meters, orange: 450-495 meters asl.)

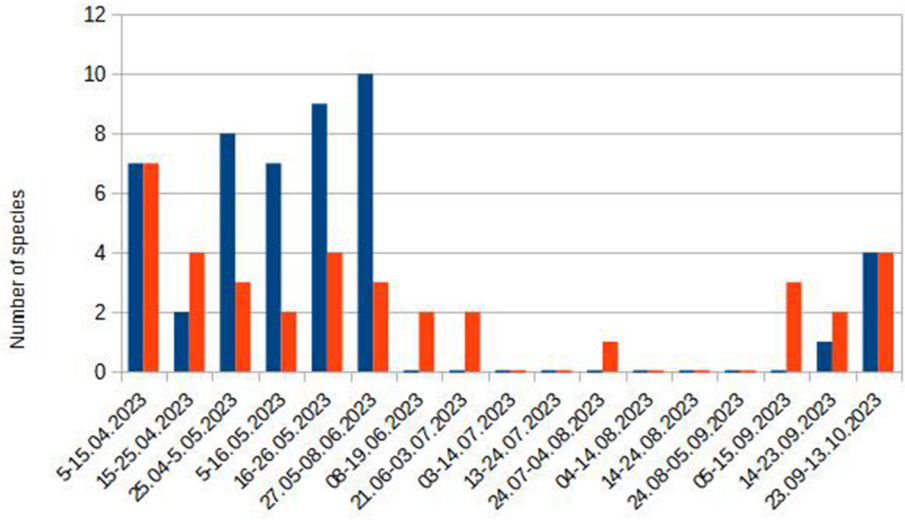

Fig. 9: Temporal changes of species richness of sawflies (orange: 94-98 meters, blue: 450-495 meters asl.)

Acknowledgments

This work was supported by Shota Rustaveli National Science Foundation of Geoegia (SRNSFG), project ref. NFR-22-1235, Hymenoptera Biodiversity in the Vashlovani National Park. We also thank the BMBF-funded project Caucasus Barcode of Life (CaBOL), ref. number: 01DK20014A for the financial support. We express of our grateful thanks to Dr. Katalin Hári (Hungarian University of Agriculture and Life Sciences) for the high quality photos and to Dr. Levente Ábrahám (Rippl-Rónai Museum, Kaposvár) for editing our paper.

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Submitted: 10.07, 2024; Accepted: 04.09, 2024; Published:21.11, 2024 www.smmi.hu/termtud/ns/ns.htm

European antlion data from the EFMEA collection (Neuroptera: Myrmeleontidae)

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Aistleitner, E. & Ábrahám, L. 2024: *European antlion data from the EFMEA collection (Neuroptera: Myrmeleontidae). - Natura Somogyiensis 44: 41-50.*
Abstract: In this paper, the authors publish the faunistic data of the antlion material of the EFMEA collection from Central and Southern Europe. This collection is one of the largest private collections in Austria. The most important species of the collection from a faunistic and nature conservation point of view are: *Neuroleon arenarius* (Navás, 1904), *Neuroleon ochreatus* (Navás, 1904), *Creoleon aegyptiacus* (Rambur, 1842), *Myrmeleon noacki* Ohm, 1963, and *Nedroleon anatolicus* Navás, 1914.

Keyword: antlion, faunistic, distribution, Europa.

Introduction

In the private Entomological Research Museum, EFMEA (*Entomologisches Forschungsmuseum Eyjolf Aistleitner, Feldkirch, Austria*), the revision of the lacewing collection started in 2022. In 2023, the authors of this paper documented the ecofaunistic data of the material in three papers with information on Ascalaphidae (Aistleitner & Ábrahám 2023a), Nemopteridae (Aistleitner & Ábrahám 2023b) from Europe, Asia and Africa. They summarized the results of several decades of fieldwork in Cabo Verde antlion and owlfly fauna (Aistleitner & Ábrahám 2023c).

The publication of the ecofaunistic data of the collection will continue with the contribution to the knowledge of the Spanish antlion fauna (Aistleitner & Ábrahám 2024 in press).

In previous years, the first author of the collection already prepared publications on the micro-taxonomy, ecofaunistics, and distribution data of the genus of *Libelloides* and *Nemoptera* (Aistleitner 1973, 1980, 1981, 1982a, b, 2007, 2015, 2019, 2020). This information is not included again in the authors' subsequent publications.

This paper aims to contribute to the knowledge of the distribution and flight activity of the adult European antlion fauna with ecofaunistic data.

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

Material and methods

A small proportion of the material examined originates from the occasional entomological fieldwork undertaken by the first author, while the majority has been donated to the collection by other entomologists during their entomological fieldwork.

The monograph of ASPÖCK et al. (1980) and the entomological collection of the Ripp-Rónai Museum (SCMK, Kaposvár) were used as reference and comparative material for species identification.

The data of the collection are not uniform, because they come from different periods and different collectors, therefore the faunistic data are presented in the order of the data on the label, they have not been standardised. The data of the collection are published in alphabetical order of the species, according to the recommendations of the Nagoya Protocol for documentation (STIEGELER et al. 2016), which were taken into account in the paper.

The faunistic data were grouped by country and smaller geographical units (province, geographical landscape unit, etc.) with phenological and other information. The survey data come from several countries. The spelling of the local languages or the information on the label has been retained in this way for easier retrieval in the collection. Most of the labels are in German.

Results and discussion

The European fauna is well documented from a taxonomic and faunistic point of view (e.g. ASPÖCK et al. 1980, MONSERRAT & Acevedo 2013). However, the faunistic research of the last two decades shows that even more new species can be detected in Southern Europe (PANTALEONI et al. 2010, PANTALEONI & BADANO 2012, BADANO et al. 2016) since the antlion species prefer arid Mediterranean areas to continental ones.

In this publication, faunistic data of 186 specimens of 24 species from Southern and Central European countries from the EFMEA collection are published. This publication does not include data on specimens from Spain, as these have been published in a separate publication.

The material studied has not been collected systematically, but over many years material from occasional samplings have been added to the collection.

No new species for the local fauna were found in the collection from any country. However, it does contain some rare species of interest from a faunistic and conservation point of view, namely *Neuroleon arenarius* (Navás, 1904) and *Neuroleon ochreatus* (Navás, 1904) from Italy and South France, *Creoleon aegyptiacus* (Rambur, 1842) from Italy and South France, *Myrmeleon noacki* Ohm, 1963, and *Nedroleon anatolicus* Navás, 1914 from Greece.

The nomenclature and the list of species follow the mongraph of ASPÖCK et al. (2001).

Family **Myrmeleontidae** Latreille, 1802
Subfamily **Palparinae** Banks, 1911
Tribe **Palparini** Banks, 1911

Palpares libelluloides (Linnaeus, 1764)
Examined material: **Albanien**, Durrës, Villa Zogu, 80 m, 09.06.2017, 1♂, leg. Aistleitner. - Berat, 15 km SW Berat, Mte. Terpanit, 850 m, 02.07.2015, 2♀♀, leg. Aistleitner. - **Bulgaria**, Burgas, Sozopol, 20.06.1973, 1♂ 1♀, leg. Navratil. - Černomorec, 50 m, 21.07.1985, 2♂♂ 3♀♀, leg. Anonymus. - **Kroatien**, Insel Cres, Stivan, 23.7.-3 .8.1998, 7 ex., leg. Ortner S. - Dalmatien, Šibenik, o.D., 1♀, leg. Anonymus. - **Frankreich**, Alpes-Maritimes, Vence N, 500-600 m, 28.07.1973, 2♂♂, leg. Groß. - Herault, Saint-Guilhem-le-Desert, 16.07.1984, 1♂ 4♀♀, leg. Anonymus. - Korsika, Calvi, 22.07.1983, 1♀, leg. Schurig. - Golfo de Porto, Piano, Col de San Martino, 09.07.1982, 1♀, leg. Anonymus. - **Griechenland**, Delphi, 19.06.1985, 1♂ 1♀, leg. Laube. - Fokida, Dorida-Eratini, 17.06.1979, 1♂, leg. Mühle. 25.05.1981, 1♂, leg. Probst. - Kreta, Spili, 35-13-45 N, 24-32-34 E, o.D., 1♂, leg. Mühle. - Chania, Dramia, Kavalos, 01.06.1981, 1♀, leg. Probst. - Paros (Kykladen), 26.05.1979, 1♂, leg. Gawehn. - Peleponnes, Arkadien, Leonidi, 15.06.1979, 1♂, leg. Mühle. - Sparta, 3 km N m, 30.5.-6.6.1997, 1♂ 3♀♀, leg. Fischer H. - Kalavryta, Mega Spileo, 1000 m, 8.-16.6.1972, 1♂, leg. Spinder. - Samos, Mandates N, "Nachtigallental" m, 25.07.2002, 1♂, leg. Aistleitner U. - Thessalia, Larisa, Kypseli, 250 m, 08.06.1988, 2♀♀, leg. Oswald R. - Thrakien, Avdira-Lagos, 01.08.1987, 1♂, leg. Anonymus. - **Italien**, Savona, Andora, Capo Mele, 230 m, 03.07.1987, 1♂, leg. Drouet. - Livorno, Insel Elba, Patresi, 2.-6.6.1970, 1♀, leg. Trettau ex coll. Groß. - **N-Mazedonien**, Skopje, Mte. Vodno, 21.07.1976, 1♂, leg. Groß. - Štip, 22.06.1988, 1♀, leg. Kautt. [Drenovo, Dolnja-Klissura] am Rajekfluss, 300 m, 5.7.1979, 3 ♂♂, leg. Schaider. - Veles, Topolka (Mt.?), 150 m, 04.07.1979, 1♀, leg. de Freina.

Subfamily **Myrmeleontinae** Latreille, 1802
Tribe **Acanthaclisini** Rambur, 1842

Acanthaclisis occitanica (Villers, 1789)
Examined material: **Frankreich**, Pyrénées-Orientales, Banyuls sur Mer, 24.-30.7.1951, 1♀, leg. Groß.

Tribe **Myrmecaelurini** Esben-Petersen, 1918

Myrmecaelurus trigrammus Pallas, 1781)
Examined material: **Albanien**, Lushnja, Kolonia, Kloster Ardenica, 250 m, 22.08.1995, 2♀♀, leg. Aistleitner. - **Griechenland**, Parnass, Arachova, 1100-1200 m, 31.07.1977, 1 ex., leg. Groß. - Aegaeis, Samos, Manolates, Nachtigallental, 25.07.2002, 4 ex., leg. U. Aistleitner.

Tribe **Myrmeleontini** Latreille, 1802

Myrmeleon formicarius Linnaeus, 1767
Examined material: **Austria**, Vorarlberg, Innerbraz, Rüttenen, 1020 m, 06.07.2004, 1 ex., leg. Aistleitner. - **Deutschland**, Bayern, Oberpfalz, Kallmünz, 15.06.1974, 1 ex. und Oberfranken, Pegnitz, 27.06.1973, 1 ex., leg. Ströhle. - **Frankreich**, Isere, Mens, Mentayre, 930 m, 5.- 6.7.1985, 1 ex., leg. Drouet. - Hautes-Alpes, Vallon de Durbonas,

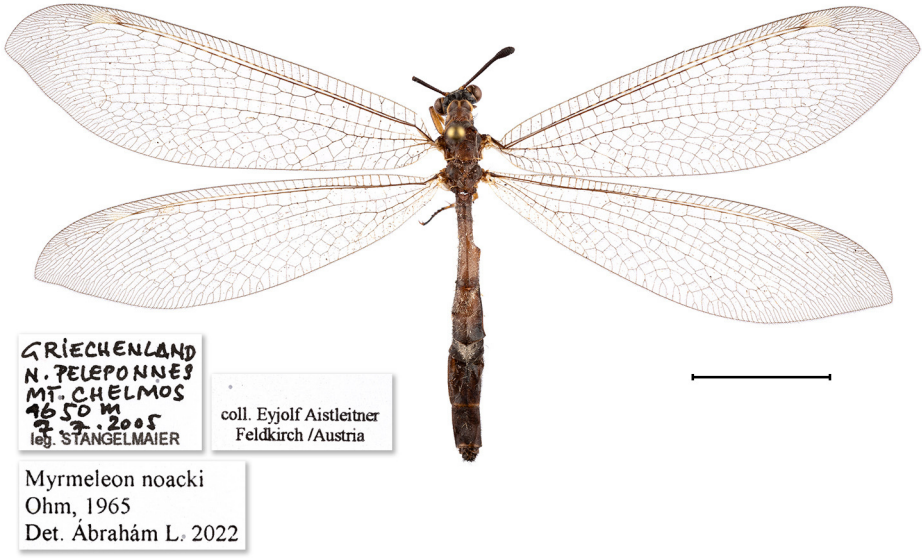

Fig. 1: ***Myrmeleon noacki*** **Ohm, 1963**

La Faurie, 44.561088, 5.742544, 880 m, 02.06.1990, 1 ex., leg. Drouet. - **Griechenland**, Peloponnes, Mt. Chelmos, 1650 m, 07.07.2005, 1 ex., leg. Stangelmaier. - Italien, Cuneo, Garessio, Colle de San Bernardo, 960 m, 07.07.1987, 1 ex., leg. Drouet. - **Schweiz**, Wallis, Mörel, 06.08.1955, 1 ex., leg. Groß.

Myrmeleon noacki Ohm, 1963 (Fig. 1)
Examined material: **Griechenland**, Chelmos, 1650 m, 07.07.2005, 1 ex., leg. Stangelmaier.

Myrmeleon inconspicuus Rambur, 1842
Examined material: **Frankreich**, Pyrénées-Orientales, Banyuls sur Mer, 24.-30.7.1951, 1♀, leg. Groß.

Myrmeleon bore (Tjeder, 1941)
Examined material: **Austria**, Kärnten, Arnoldstein, rechtes Gailufer, 23.8.xx, 3 ex., leg. Stangelmaier, (det. Gruppe).

Myrmeleon hyalinus Olivier, 1811
Examined material: **Italien**, Sardinien, Costa Rei, Mte. Nai, 16.06.1984, 1♂, leg. Eitschberger U.& A. - **Griechenland**, Peloponnes, Pylos, 10 km N, 18.07.1977, 3 ex., leg. Groß.

Euroleon nostras (Fourcroy, 1785)
Examined material: **Austria**, Vorarlberg, Dornbirn, Klotzen, 600 m, 9.+16.7.2004, 2 ex. - Götzis, Götznerberg, 680 m, 30.06.2004, 1 ex. el. - Übersaxen, Galathweg,

16.07.2004, 1 ex. el. - Feldkirch, Ardetzenberg, 11.07.2004, 1 ex. el. - Satteins, 520 m, 31.07.2004, 1 ex., alle cult. U. Aistleitner. - Thüringen, Flugelin, 680 m, 31.07.2004, 2 ex., leg. U. Aistleitner. - Rankweil, Forstgarten, 440 m, 11.07.2004, 1 ex. cult. Kapp. - **Griechenland**, Aegaeis, Samos, Prof Ilias, Mt. Ampelos, 220 m, 21.06.2014, 1 ex. und Samos, Kampos, 5 km W, Mt. Kerkis, 220 m, 20.06.2014, 1 ex., leg. Stangelmailer & Fritsch. - **Schweiz**, Graubünden, Bergell, Soglio, 1100 m, 10.06.2004, 1 ex., leg. U. Aistleitner.

Tribe **Nemoleontini** Banks, 1911

Macronemurus appendiculatus (Latreille, 1807)
Examined material: **Frankreich**, Alpes-Maritimes, Mouans-Sartoux, 21.08.1982, 3 ex. und Nice, La Turbie, 31.07.1982, 1 ex., leg. Broquet. - Alpes-de-Haute-Provence, Saint-Auban, Franchironette, 520 m, 23.07.1986, 1 ex., leg. Drouet. - Hautes-Alpes, Embrun, 44.588374, 6.475720, 28.07.1986, 2 ex., leg. Drouet. - Korsika, Golfo de Porto, Piana S, Col de San Martino, 08.07.1982, 1 ex., leg. Anonymus. - **Italien**, Sardinien, Val de Olbia, San Pantaleo env., 11.07.1982, 1 ex., leg. Anonymus. - Costa Rei, Mt. Nai, 12.06.1986, 5 ex., leg. Eitschberger U.& A. - **Kroatien**, Insel Cres, Stivan, 29.7.-3.8.1998, leg. Ortner S. - Dalmatien, Omiš, 10 m, 19.07.2012, 1 ex., leg. Stangelmaier.

Macronemurus bilineatus Brauer, 1868
Examined material: **Griechenland**, Altaia, Peleponnes, Kalavrita, 800 m, 03.07.1988, 1♂, leg. Drouet. - Fokida, Eleonas, 600 m, 11.07.1988, 1♀, leg. Drouet.

Delfimeus irroratus (Olivier, 1811)
Examined material: **Kroatien**, Dubrovnik, 21.08.1957, 1♂, leg. Groß.

Neuroleon arenarius (Navás, 1904) (Fig. 2)
Examined material: **Frankreich**, Pyrénées-Orientales, Banyuls sur Mer, 24.-30.7.1951, 1♂, leg. Groß.

Neuroleon ochreatus (Navás, 1904) (Fig. 3)
Examined material: **Frankreich**, Herault, Frontignan, 01.08.1996, 1♂, leg. Brandstetter.

Neuroleon nemausiensis (Borkhausen, 1791)
Examined material: **Italien**, Forli, Galeata, Straja, 07.09.2001, 1♂ 2♀♀, leg. Stangelmaier. - **Türkei**, Rumelien, Veracussia - ubi?, 15.-18.7.1971, 1♀, leg. Groß.

Neuroleon microsternus (McLachlan, 1898
Examined material: **Griechenland**, Fokida, Delphi, 500 m, 24.09.2000, 1♀, leg. Stangelmaier.

Distoleon tetragrammicus (Fabricius, 1798)
Examined material: **Albanien**, Diber, Rabdisht, 850 m, 08.07.2017, 1 ex., leg. Aistleitner. - **Kroatien**, Insel Cres, Stivan, 03.08.1998, 1♂, leg. Ortner S. - **Frankreich**, Alpes-Maritimes, Saorge, Vallon de Cayros, 44°00'N 07°31'E, 19.+20.7.2018, 1 ex., leg. Mayr T. - Alpes-de-Haute-Provence, Oraison, 25.07.1973, 2 ex., leg. Groß. - Hautes-Alpes, Saint-Crépin, Les Caase, 09.07.1982, 1 ex., leg. Drouet. - Pyrénées-Orientales, Banyuls sur Mer, 24.-30.7.1951, 1 ex., leg. Groß. - **Griechenland**, Boeotia, Parnassos,

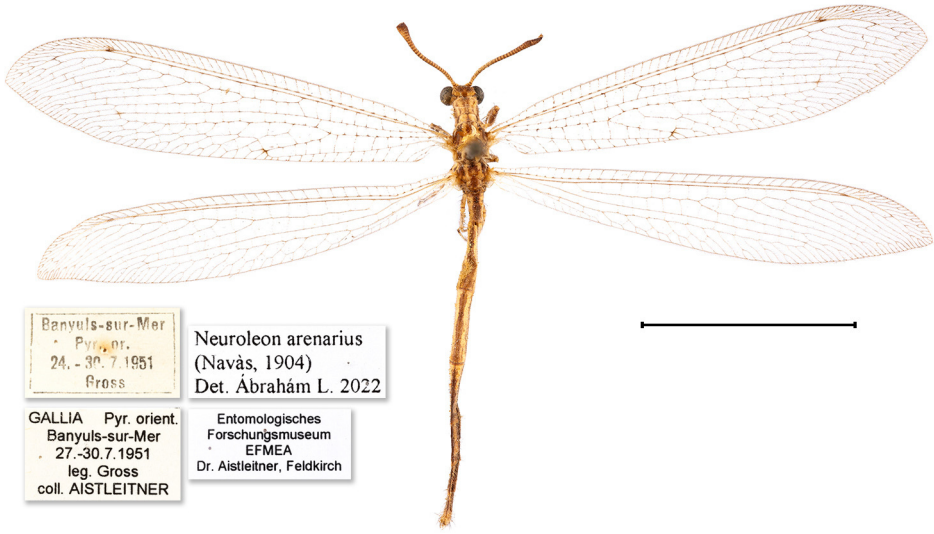

Fig. 2: ***Neuroleon arenarius*** **(Navás, 1904)**

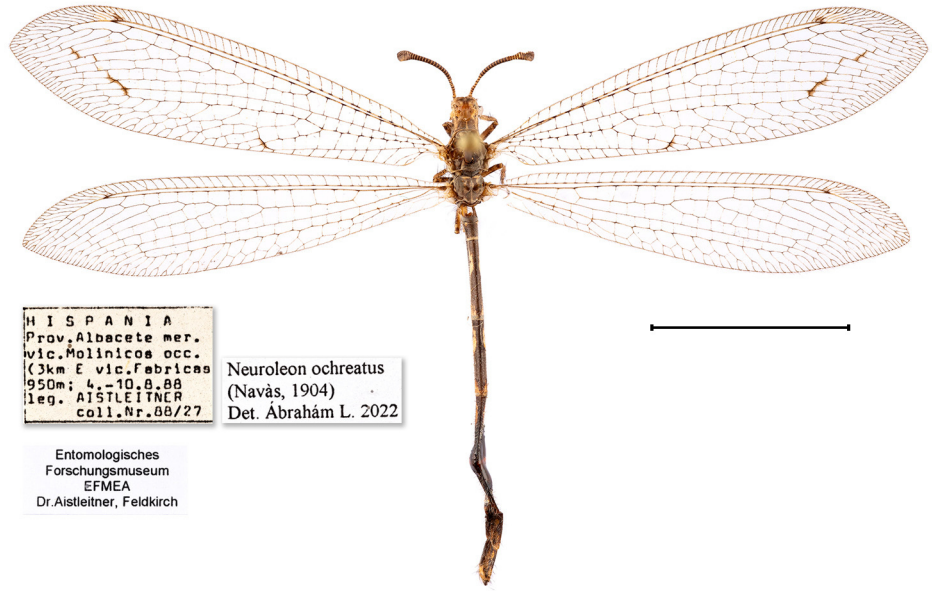

Fig. 3: . ***Neuroleon ochreatus*** **(Navás, 1904)**

Darlia, 1000 m, 08.06.1988, 1 ex., leg. Oswald. - Peloponnes, Taigetos, Trypi Pass, 1500 m, 19.07.1977, 4 ex., leg. Groß. - Kalavrita, Chelmos, 1300 m, 13.07.1977, 2 ex., leg. Groß. - Aegeis, Samos, Kampos, Kerkis, 19.-20.6.2014, 1 ex., leg. Fritsch & Stangelmaier. - **Italien**, Trento, Gardasee, Pietramurata, 250 m, 01.08.1981, 2 ex., leg. Ströhle. - Forli, Galeata, Straja, 07.09.2001, 3 ex., leg. Stangelmaier. - Isola d'Elba, Patresi, 25.-28.5.1970, 1 ex., 2.- 6.6.1970, 2 ex., leg. Trettau ex coll. Groß. - **Schweiz**, Wallis, Mörel, 06.08.1953, 3 ex., leg. Groß. - **Tschechien**, Moravia mer., Pouzdřany, 12.08.1999, 1 ex., leg. Hladky.

Distoleon annulatus (Klug, 1834)
Examined material: **Griechenland**, Fokida, Delphi, 500 m, 24.09.2000, 2 ex., leg. Stangelmaier.

Nemoleon poecilopterus (Stein, 1863)
Examined material: **Griechenland**, Aegaeis, Samos, Kampos, 5 km W, Mt. Kerkis, 220 m, 20.06.2014, 1♀ und Samos, Mylilini, 3 km W, Mt. Rampaidonis, 260 m, 11.-12.6.2014, 1♀, leg. Stangelmailer & Fritsch.

Creoleon lugdunensis (Villers, 1789
Examined material: **Frankreich**, Pyrénées-Orientales, Banyuls sur Mer, 24.-30.7.1951, 1 ex., leg. Groß. - Bouches de Rhone, Camargue, Château d'Astonin, 03.07.1983, 1 ex., leg. Broquet. - **Italien**, Sardinien, Costa Rei, Mt. Nai, 04.06.1984, 1 ex., 10.+13.+16.6.1984, 4 ex., leg. Eitschberger U.& A. - Latium, Rom, Castel Fusano, 18.07.1991, 1♂ und Ostia, 25.7.o.J., 1 ex., leg. Groß. - Toscana, Isola del Giglio, 1♂ 1♀, 17.-20.5.68, 2 ex., leg. Trettau in coll. Groß.

Creoleon plumbeus (Olivier, 1811)
Examined material: **Albanien**, Diber, Pescopi, Rabdisht, 850 m, 08.07.2017, 1 ex., leg. Aistleitner. - **Griechenland**, Thrakien, Komotini NNW, Mishos, 40 m, 07.10.1985, 1 ex., leg. de Freina. - Peloponnes, Pylos, 10 km N, 18.07.1977, 1 ex., leg. Groß. - Olympia, 28.06.1988, 1 ex., leg. Drouet. - Kalavrita, Chelmos, 38°01'N 22°10'E, 1300 m, 13.07.1977, 1 ex., leg. Groß. - Nísos Évvoia (Euboea), Nea Stira, 100 m, 4.-21.8.2000, 1 ex., leg. Aistleitner. – Aegaeis, Samos, Kampos, 5 km W, Mt. Kerkis, 220 m, 20.06.2014, 1 ex., leg. Stangelmailer & Fritsch. - Aegaeis, Aetolia, Amfilochia-Anixiatiko, 38°58'N 21°10'E, 20 m, 12.06.1988, 1 ex., leg. Oswald. - **Montenegro**, Podgorica, 19.08.1957, 2 ex., leg. Groß.

Creoleon aegyptiacus (Rambur, 1842) (Fig. 4)
Examined material: **Italien**, Sicilia, [Isole pelagii], Lampedusa, Mte. Albero Sole, 29.05.1997, 1♂ und Isola Linosa, 31.05.1997, 1♂, leg. Aistleitner. - Sardinien, Costa Rei, Mte. Nai, 10.-13.6.1984, 4 ex., 15.06.1984, 1 ex., leg. Eitschberger U.& A. - **Frankreich**, Corse, Cateraggio Aleria, 27.05.1983, 2♂♂, leg. Broquet.

Tribe **Glenurini** Banks, 1927

Nedroleon anatolicus Navás, 1914 (Fig. 5)
Examined material: **Griechenland**, Peloponnes, Anagia, Taygetos, 1100 m, 20.07.1977, 3 ex., leg. Groß and the same 2 ex. (NeuMyr8802 and NeuMyr8803) in coll. SCMK.

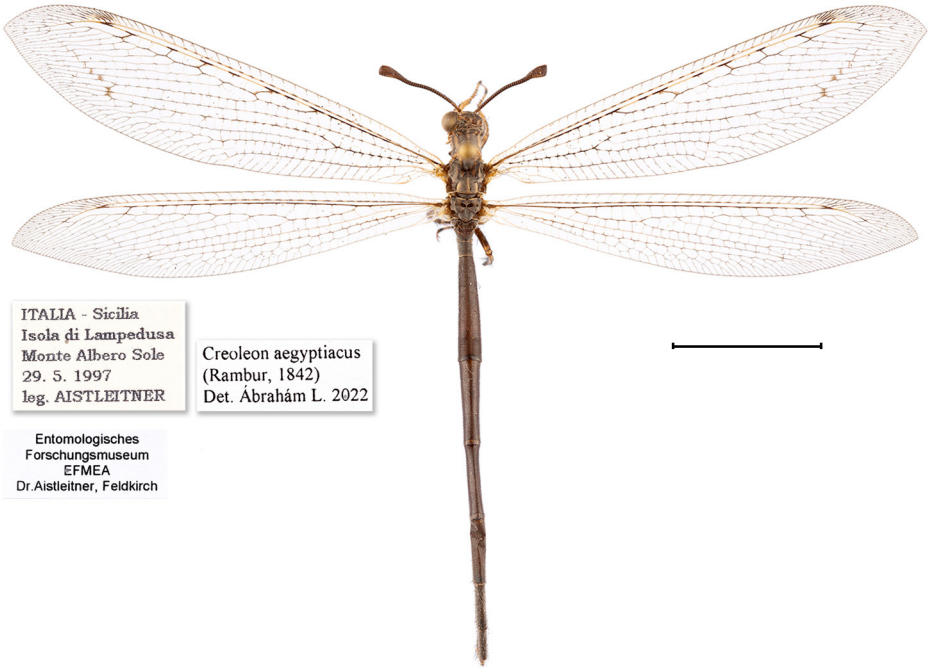

Fig. 4: *Creoleon aegyptiacus* (Rambur, 1842)

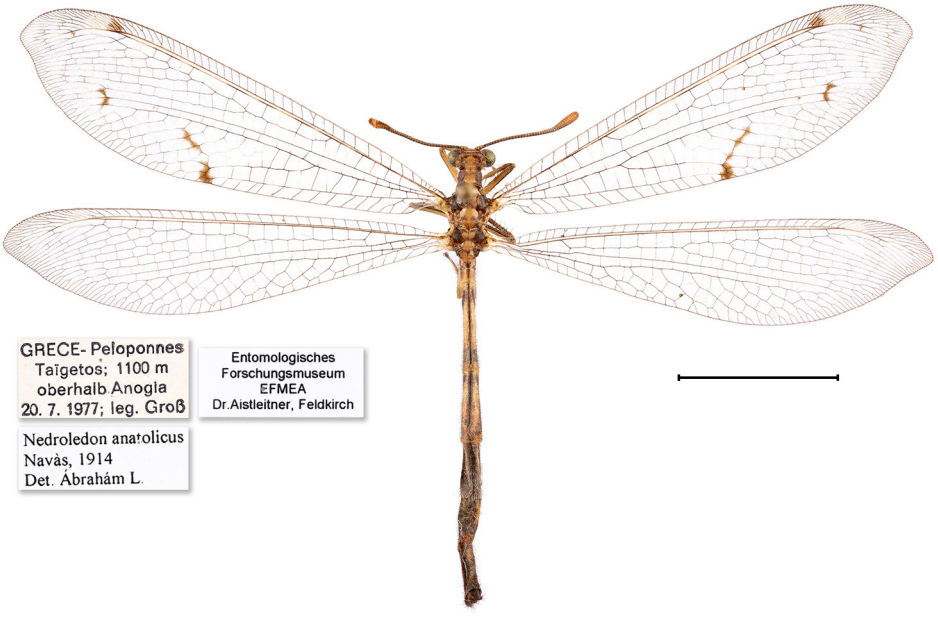

Fig. 5: *Nedroleon anatolicus* Navás, 1914

Megistopus flavicornis (Rossi, 1790

Examined material: **Frankreich**, Pyrénées-Orientales, Banyuls-sur-Mer, o.D., 1 ex., leg. Buddenbrock. - **Italien**, Sondrio, Chiavenna Piuro, Camping Aquafreggia, 400 m, 25.07.1980, 1 ♀, leg. Brandstetter. - Sardinien, Costa Rei, Mt. Nai, 11.06.1982, 2 ex., leg. Eitschberger U. & A.

Acknowledgement

The first author of this paper expresses his gratitude to the collectors who, after their successful expeditions, have donated their antlion material to the EFMEA collection during the last half century, namely Aistleitner, U.; Brandstetter, C.; Schurig, W.; Stangelmaier, G.; Ortner, S. (Austria); Hladky, L. (Czech); Broquet, G., Drouet, U. (France); von Buddenbrock, M. W.; Eitschberger, H.; Fischer, (?); de Freina, J.; Fritsch, (?); Gawehn, (?); Groß, J.; Kautt, P. ; Laube, (?); Mühle, H.; Ortner, S.; Oswald, R.; Probst, (?); Schaider, P.; (?) Spinder, G.; Ströhle, M; Trettau (?) (Germany)

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Submitted: 27.11, 2024; Accepted: 30.11, 2024; Published: 06.12, 2024 www.smmi.hu/termtud/ns/ns.htm

Review of the distribution of the Mediterranean black widow *Latrodectus tredecimguttatus* (Rossi, 1790) and the false widow spider *Steatoda paykulliana* (Walckenaer, 1806) in Italy with new records (Araneae: Theridiidae)

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Ceccolini, F. 2024: *Review of the distribution of the Mediterranean black widow Latrodectus tredecimguttatus (Rossi, 1790) and the false widow spider Steatoda paykulliana (Walckenaer, 1806) in Italy with new records (Araneae: Theridiidae) - Natura Somogyiensis 44: 51-66.*
Abstract: The current faunistic knowledge on *Latrodectus tredecimguttatus* (Rossi, 1790) and *Steatoda paykulliana* (Walckenaer, 1806) in Italy are summerized and new records for both species are given. First occurrences of *L. tredecimguttatus* from Basilicata and *S. paykulliana* from Veneto, Marche, Abruzzo, Molise, and Basilicata are given. In addition, many records for new provinces are cited for both the species, improving considerably the knowledge of the distribution of these two spiders in Italy.

Keywords: faunistic, first records, theridiids

Introduction

The knowledge of the spider fauna in Italy is still far from being satisfactory and complete and even the distribution of some impressive species are known through scattered records. Within the most recognizable species of Italian fauna thanks to their distinct morphological and chromatic features there are *Latrodectus tredecimguttatus* (Rossi, 1790) and *Steatoda paykulliana* (Walckenaer, 1806), which are two of the 116 species of Theridiidae known in Italy (Pantini & Isaia 2019), but even for these spiders the occurrence records in the country are scarce and their distribution seems to be very scattered (see Pantini & Isaia 2019).

The Mediterranean black widow *Latrodectus tredecimguttatus* has a wide distribution from the Iberian Peninsula to southeastern Europe and Central Asia (WCS 2024). It is one of the few Italian spiders that can be dangerous to humans (see Barra 1958, Trentini et al. 1993) and its poison results in latrodectism (see Bettini 1963a, Di Paola et al. 2020, Fusto et al. 2020). Despite many contributions on the consequences of its bite and cases of latrodectism described in certain areas of Italy, especially in Latium (see Pampiglione 1958, Bettini 1954, 1960a, 1960b, 1961, 1963b, Bettini & Finizio 1960), these works cannot give precise information about the occurrence of *L. tredecim-*

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

guttatus in the territory. Surprisingly, there are relatively few works providing information on the actual distribution of this spider in Italy, summarized in PANTINI & ISAIA (2019). For each region where the species is reported, there are few records in the literature and sometimes the only ones available date back to the XIX century. So far, this spider is known from 14 Italian regions, but only in Sardinia the available records give quite satisfactory (although surely not completed) information on its the real distribution (MAGRETTI 1880, COSTA 1884, GARNERI 1902, BARRA 1958, PANTINI et al. 2013), that including Asinara island (TROTTA 2009)—*L. tredecimguttatus* is also one of the only three species of spiders reported for Sardinia in the oldest catalogue of Italian spiders, although without precise localities (CANESTRINI & PAVESI 1868).

In the other regions only 31 occurrence records with a precise locality or indicating at least the province are available from the literature and 12 concern minor islands—Elba (PAVESI 1876, DI CAPORIACCO 1950) and Isola del Giglio (de DALMAS 1922) in the Tuscan Archipelago, Caprara (DI CAPORIACCO 1951) and Pianosa (CECCONI 1910) in the Tremiti Islands, Capri (COSTA 1841), and Lampedusa (PAVESI 1878, FAILLA TEBALDI 1887, ROEWER 1960, PESARINI 1995, NICOLOSI et al. 2024). Therefore, only 19 localities are reported for the whole of mainland Italy and the other main island: four in Apulia (PEPE & INGUSCIO 1999, PEPE 2005), two in Tuscany (ROSSI 1790, PALAU 1878), LATIUM (STRAND 1909, BRIGNOLI 1967) and Sicily (CANTONI 1881, BRIGNOLI 1968), one in Ligura (BERTKAU 1890), Emilia-Romagna (PESARINI 1991), Umbria (DI CAPORIACCO 1936), and Abruzzo (PONTUALE et al. 1998).

Steatoda paykulliana is widespread in Europe, from the Mediterranean to Central Asia, and India (WCS 2024). Also for this species the occurrences in Italy are scarce and scattered, with the main islands being the more documented regions. In Sardinia the presence of this spider is reported for all provinces (MAGRETTI 1880, COSTA 1882, 1884, GARNERI 1902, TROTTA 2011, PANTINI et al. 2013) and there are several records also from some minor islands—Asinara (MAGRETTI 1880, GARNERI 1902, TROTTA 2009, PANTINI & SASSU 2009), Caprera (PAVESI 1878), and Sant'Antioco (GARNERI 1902). In Sicily, in addition to the records from Lampedusa (FAILLA TEBALDI 1887, ROEWER 1960, PESARINI 1995, NICOLOSI et al. 2024) and Pantelleria (HANSEN 1991), occurrence records are reported by CANTONI (1881), DENTICI & GALASSO (2021), DENTICI (2022), DENTICI & AMATA (2024), and DENTICI et al. (2024). The Tuscan Archipelago is also quite investigated — with records from Elba (DI CAPORIACCO 1950), Isola del Giglio (DE DALMAS 1922) and Capraia (DI CAPORIACCO 1928), reported also in BRIGNOLI (1975) — while data from the continental part of Tuscany are scarce (RIZZARDI 1898, CECCONI 1898, CIANFERONI et al. 2010, PICCHI 2020).

In the other regions where *S. paykulliana* is known, there are very few records. In Trentino-Alto Adige, in addition to the general report by CANESTRINI (1875) for the province of Trento, this theridiid is cited from two localities in South Tyrol (see NOFLATSCHER 1991, STEINBERGER 2008) four localities are reported from Emilia-Romagna (see ZANGHERI 1966, PESARINI 1991, GIOVANNELLI 2002) three old records are from Lombardia (SORDELLI 1868, PAVESI 1879), just two localities are reported for Liguria (BERTKAU 1890, JACKSON 1926), Umbria (DI CAPORIACCO 1936), Latium (CANESTRINI & PAVESI 1868, THALER & ZAPPAROLI 1993), Campania (CANESTRINI & PAVESI 1870, IJLAND & VAN HELSDINGEN 2014), and Calabria (KRITSCHER 1960, PANTINI et al. 2020), and only one precise locality is given for Apulia (DI CAPORIACCO 1951).

This paper provides new records for these two species and fills some of the major gaps in their distribution.

Material and methods

The material examined consists of photographed specimens from websites (see abbreviations below).

All listed records were confirmed by the author. Both *L. tredecimguttatus* and *S. paykulliana* can be recognised from photographs due to specific characters (Nentwig et al. 2024). The colour pattern of *L. tredecimguttatus* is black with 3 longitudinal series of red spots on dorsal opisthosoma in female or more whitish in male blotches - sometimes these blotches are absent and the opisthosoma is completely black - even if in subadult specimens the outlines of the red spots are white. The colouration of *S. paykulliana* is also predominantly black, but the female opisthosoma has a red or yellow band around the front - sometimes with a median longitudinal series of chevrons - and the male has a whitish band around the front and a strongly dentate median longitudinal band. Only photos in which the specimens with these features were well visible are selected.

For each site, the following information is given (when available): locality, coordinates, date of collecting, number of specimens, photographer, source. Geographical coordinates are in decimal degrees (datum WGS84). The uncertainty (in meters) of data is indicated according to the point-radius method (Wieczorek et al. 2004).

Abbreviations used under material examined are the following:

AP = Acta Plantarum (https://www.actaplantarum.org/)

FEI = Forum Entomologi Italiani (http://www.entomologiitaliani.net/)

IN = iNaturalist (https://www.inaturalist.org/)

OB = Observations.org (https://observation.org/)

Results

Latrodectus tredecimguttatus (Rossi, 1790)

Liguria: Savona: Ceriale, 44.08775°N 8.21915°E (un. = 7250 m), 16.IX.2021, 1 female, photo by Pierpaolo Pessano (IN) https://www.inaturalist.org/observations/112076063.

Tuscany: Grosseto: Grosseto, 42.81218°N 11.08684°E (un. = 357 m), 17.X.2023, 1 female, photo by Pamela Rustici (IN) (https://www.inaturalist.org/observations/188008964); idem, Alberese, 42.66591°N 11.10702°E (un. = 578 m), 19.VII.2021, 1 female, photo by Pono Pucci (IN) (https://www.inaturalist.org/observations/87687624).

Latium: Viterbo: Tuscania, 42.42905°N 11.85454°E (un. = 1200 m), 15.VII.2021, 1 female, photo by Germano De Simoni (IN) (https://www.inaturalist.org/observations/87176409); Barbarano Romano, 42.24253°N 12.05129°E (un. not recorded), 13.XI.2022, 1 female, photo by Adriano Biressi (IN) (https://www.inaturalist.org/observations/187878271); Metropolitan City of Rome Capital: Tolfa, 42.093056°N 11.998611°E (un. not recorded), 12.XI.2011, 1 female, photo by Agostino Letardi (IN) (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=28766&hilit=latrodectus); idem, 42.04793°N 11.96691°E (un. = 366 m), 7.VIII.2021, 1 female, photo by "codazzurro09" (IN) (https://www.inaturalist.org/observations/133591731); idem, La Scaglia, 42.03831°N 11.96482°E (un. = 401 m), 11.VIII.2023, 1 female, photo by "pluvialfern" (IN) (https://www.inaturalist.org/

Fig. 1: Female of *Latrodectus tredecimguttatus* from Sperlonga, Latium (photo by Paolo Mazzei).

Fig. 2: Male of *Latrodectus tredecimguttatus* from Salerno, Campania (photo by ""lucatr98").

observations/187881104); Fiumicino, near Ospedale Pediatrico Bambino Gesù, 41.91924°N 12.13713°E (un. = 411 m), 11.VI.2021, 1 female, photo by "emi_c" (IN) (https://www.inaturalist.org/observations/82581489); Latina, Pontinia, 41.3905°N 13.14919°E (un. not recorded), 20.VIII.2021, 1 female, photo by Daniel Pizzoni (IN) (https://www.inaturalist.org/observations/91861737); Sperlonga, 41.25591°N 13.46823°E (un. = 92 m), 4.IX.2008, 1 female, photo by Paolo Mazzei (IN) (https://www.inaturalist.org/observations/20368214); idem, 41.25556°N 13.46775°E (un. = 54 m), 29.VIII.2008, 1 female (Fig. 1), photo by Paolo Mazzei (IN) (https://www.inaturalist.org/observations/21321509); idem, 41.25518°N 13.46787°E (un. = 33 m), 29.VIII.2008, 1 female, photo by Paolo Mazzei (IN); idem, 41.25552°N 13.46838°E (un. = 54 m), 21.VI.2008, 1 female, photo by Paolo Mazzei (IN) (https://www.inaturalist.org/observations/20384078).

Campania: Avellino: Mugnano del cardinale, 40.94847°N 14.65727°E (un. = 5 m), 6.VIII.2023, 1 female, photo by Marina Guglielmi (IN) (https://www.inaturalist.org/observations/194020066); Salerno: Sarno, 40.81364°N 14.66523°E (un. = 229 m), 13.VI.2023, 1 specimen, photo by Giuseppe Paudice (IN) (https://www.inaturalist.org/observations/190887983); Salerno, 40.73621°N 14.85525°E (un. = 15 m), 3.VIII.2020, 1 male, photo by "lucatr98" (IN) (https://www.inaturalist.org/observations/55585635); idem, 40.73557°N 14.85761°E (un. = 61 m), 1 male (Fig. 2), photo by "lucatr98" (IN) (https://www.inaturalist.org/observations/55585284).

Fig. 3: Female of *Latrodectus tredecimguttatus* with cocoon from Villaputzu, Sardinia (photo by Francesco Tarantino).

Apulia: Foggia: San Giovanni Rotondo, 41.72213°N 15.76485°E (un. = 5580 m), 24.VIII.2019, 1 female, photo by Mirko Galuppi (IN) (https://www.inaturalist.org/observations/31397132); Metropolitan City of Bari: Gravina in Puglia, 40.92887°N 16.33959°E (un. = 1400 m), 8.VIII.2021, 1 female and 1 male, photo by Mirko Galuppi (IN) (https://www.inaturalist.org/observations/90511934); Valenzano, 41.01444°N 16.90639°E (un. not recorded), 16.IV.2023, 1 female, photo by Leonardo Ancillotto (IN) (https://www.inaturalist.org/observations/155132789); Altamura, 40.83944°N 16.68°E (un. not recorded), 18.VII.2022, 1 female, photo by Leonardo Ancillotto (IN) (https://www.inaturalist.org/observations/127113479); Gioia del Colle, 40.80569°N 16.97379°E (un. = 3 m), 14.VI.2024, 1 male, photo by "maurizio9812" (IN) (https://www.inaturalist.org/observations/222729085); Taranto: Laterza, 40.71724°N 16.74838°E (un. = 4 m), 3.IX.2022, 1 female, photo by "philodendronjoe" (IN) (https://www.inaturalist.org/observations/134608707); Castellaneta, Riva dei Tessali, 40.45387°N 16.90526°E (un. = 1410 m), 2.X.2020, 1 female, photo by Annalisa Lucibello (IN) (https://www.inaturalist.org/observations/61471860); Lecce: Gallipoli, near Punta della Suina, 40.00246°N 18.01801°E (un. = 8 m), 23.VII.2015, 1 female, photo by Karol Tabarelli de Fatis (IN) (https://www.inaturalist.org/observations/238385184).

Basilicata: Matera: Matera, 40.67417°N 16.49469°E (un. = 122 m), 21.VIII.2022, 1 female, photo by "philodendronjoe" (IN) (https://www.inaturalist.org/observations/132193344); Scanzano Jonico, Camping Le Due Barche, 40.24733°N 16.74852°E (un. = 5 m), 5.V.2024, 1 female, photo by Andrea Battisti (IN) (https://www.inaturalist.org/observations/220755344); Potenza: Guardia Perticara, 40.33811°N 16.1543°E (un. = 8 m), 10.VII.2018, 1 female, photo by Rocco Labadessa (IN) (https://www.inaturalist.org/observations/67248445).

Calabria: Cosenza: Orsomarso, 39.79638°N 15.86440°E (un. = 2950 m), 22.VII.2024, 1 female, photo by Luigi Torino (IN) (https://www.inaturalist.org/observations/231669051); idem, 39.79516°N 15.86324°E (un. = 6600 m), 21.VII.20241 female, photo by Luigi Torino (IN) (https://www.inaturalist.org/observations/231667252).

Sardinia: Sassari: Santa Teresa Gallura, Valle dell'Erica, 11.VII.2012, 1 male, photo by Luigi Lenzini (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=37341&hilit=latrodectus); Arzachena, 7.VIII.2012, 1 female, photo by Caterina Azara (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=37258&hilit=latrodectus); Tempio Pausania, 41.14322°N 9.28703°E (un. = 244 m), 23.VIII.2018, 1 female, photo by Luigi Lenzini (IN) (https://www.inaturalist.org/observations/78820559); Sedini, 40.86597°N 8.80093°E (un = 24 m), 5.VII.2021, 1 female, photo by "walter1980" (IN) (https://www.inaturalist.org/observations/85747527); Berchidda, 40.73385°N 9.25248°E (un. = 2960 m), 21.VII.2021, 1 female, photo by "lateralus" (IN) (https://www.inaturalist.org/observations/88141139); Alghero, Spiaggia Mugoni, 40.61864°N 8.19661°E (un. = 1 m), 17.IV.2013, 1 female, Peter de Lange (IN) (https://www.inaturalist.org/observations/2931822); idem, Pischina Salida, 40.58152°N 8.16286°E (un. = 100 m), 29.VII.2020, 1 male, photo by "fededepa" (IN) (https://www.inaturalist.org/observations/58480536); Nuoro: Galtellì, 40.38703°N 9.59425°E (un. = 395 m), 7.VII.2020, 1 female, photo by Serafino Fronteddu (IN) (https://www.inaturalist.org/observations/54717540); Sud Sardegna: Villaputzu, 39.4387°N 9.57426°E (un. = 1030 m), 28.VII.2019, 1 female with cocoon (Fig. 3), photo by Francesco Tarantino (IN) (https://www.inaturalist.org/observations/36642015);

Steatoda paykulliana (Walckenaer, 1806)

Piedmont: Sondrio: Novate Mezzola, 46.22570°N 9.47950°E (un. = 2 m), 9.V.2021, photo by Fabio Bianchini (IN) (https://www.inaturalist.org/observations/78046882); Torino: Caselette, 45.10445°N 7.46269°E (un. = 78 m), 25.III.2023, 1 female [+ 4 specimens annotated], photo by Alessandro Bona (IN) (https://www.inaturalist.org/observations/153181861); Alessandria: Bosio, 44.55368°N 8.77762°E (un. = 2750 m), 29.X.2018, 1 female, photo by "luca-20" (IN) (https://www.inaturalist.org/observations/17933201).

Lombardy: Bergamo: Palazzago, 45.77694°N 9.52511°E (un. = 2 m), 22.II.2018, photos by Alessandro Mazzoleni and Fausto Leandri (IN) (https://www.inaturalist.org/observations/9977063); Pavia: Zavattarello, Rossone, 44.85008°N 9.24482°E (un. = 28 m), 13.VIII.2022, 1 specimen, photo by Myriam Rutigliano (IN) (https://www.inaturalist.org/observations/130671511).

Veneto: Belluno: Ponte nelle Alpi, Arsie, 46.17093°N 12.32838°E (un. = 3 m), 5.V.2023, 1 female, photo by "khamul87" (IN) (https://www.inaturalist.org/observations/159891557); Vicenza: Crespadoro, 45.65743°N 11.21927°E (un. = 1520 m), 1.IX.2019, 1 male, photo by Marco Vicariotto (IN) (https://www.inaturalist.org/observations/32184362); Valdagno, 45.63918°N 11.2925°E (un. = 15 m), 13.XI.2021, 1 female, photo by Marco Vicariotto (IN) (https://www.inaturalist.org/observations/101144445); idem, 45.60605°N 11.29287°E (un. = 61 m), 25.IV.2021, 1 female, photo by Marco Vicariotto (IN) (https://www.inaturalist.org/observations/75333158).

Liguria: Savona: Albenga, 44.0916°N 8.19423°E (un. = 6 m), 19.II.2017, 1 female, photo by Daniele Baroni (IN) (https://www.inaturalist.org/observations/5136160); idem, 44.10596°N 8.22902°E (un. = 172 m), 27.IV.2019, 1 female, photo by Marco Bonifacino (IN) (https://www.inaturalist.org/observations/25064708); Cairo Montenotte, 44.41563°N 8.30837°E (un. = 8 m), 26.V.2020, 1 female, photo by Elan Zucchetti (IN) (https://www.inaturalist.org/observations/47737216); Genova: Santo Stefano d'Aveto, Allegrezze, 44.53275°N 9.43296°E (un. = 4 m), 27.I.2024, 1 female, photo by "lola96" (IN) (https://www.inaturalist.org/observations/197680522).

Emilia-Romagna: Modena: Lama Mocogno, 44.26512°N 10.64435°E (un. = 4 m), 19.VIII.2024, 1 female, photo by "lpcasacci" (IN) (https://www.inaturalist.org/observations/236885046); Metropolitan City of Bologna: Bologna, Portico di San Luca, 44.48966°N 11.30955°E (un. = 18 m), 16.II.2024, 1 female, photo by Claudio Famigni (IN) (https://www.inaturalist.org/observations/199469876); idem, 44.4889°N 11.30878°E (un. = 20 m), 22.XII.2023, 1 female, photo by Claudio Famigni (IN) (https://www.inaturalist.org/observations/194594440); idem, 44.48831°N 11.30778°E (un. not recorded), 15.II.2024, 1 female, photo by Francesco Martoni (IN) (https://www.inaturalist.org/observations/199359753); idem, 44.48656°N 11.30352°E (un. = 20 m), 16.II.2024, 1 female, photo by Claudio Famigni (IN) (https://www.inaturalist.org/observations/199469886); idem, 44.48508°N 11.30198°E (un. = 32 m), 15.III.2023, 1 female, photo by Claudio Famigni (IN) (https://www.inaturalist.org/observations/151214527); idem, 44.48263°N 11.30275°E (un. = 20 m), 22.XII.2023, 1 female, photo by Claudio Famigni (IN) (https://www.inaturalist.org/observations/194594452); Pianoro, 44.39764°N 11.38666°E (un. = 183 m), 21.III.2023, 1 female, photo by Andrea Piccinini (IN) (https://www.inaturalist.org/observations/188054998); Ravenna: Brisighella, 44.24523°N 11.81537°E (un. not recorded), 18.IV.2023, 1 male, photo by Mirco Gruppi (IN) (https://www.inaturalist.org/observations/155934038); Forlì-Cesena: Bertinoro, 44.11415°N 12.12191°E (un. = 20

Fig. 4: Female of *Steatoda paykulliana* from Monterotondo, Latium (photo by Luigi Lenzini).

Fig. 5: Male of *Steatoda paykulliana* from Bazzano, Abruzzo (photo by Emanuele Santarelli).

m), 19.IV.2023, 1 male, photo by Claudio Danesi (IN) (https://www.inaturalist.org/observations/155630371); Talamello, Cava, 43.91012°N 12.27845°E (un. = 6 m), 24.X.2023, 1 female, photo by "tcsenpai" (IN) (https://www.inaturalist.org/observations/189257038).

Reggio Emilia, Vetto d'Enza, Spigone, IX.2009, 1 female photo by Villiam Morelli (AP) (https://www.actaplantarum.org/forum/viewtopic.php?t=14266&p=90029#p90029).

Tuscany: Lucca: Lucca, 43.88513°N 10.52205°E (un. = 8 m), 7.IX.2020, 1 female, photo by Alessandra Rossi (IN) (https://www.inaturalist.org/observations/58825991); idem, 43.82921°N 10.44705°E (un. not recorded), 11.IX.2023, 1 male, photo by "agosti" (IN) (https://www.inaturalist.org/observations/182934670); idem, 43.7861°N 10.4599°E (un. = 2 m), 3.V.2024, 1 female, photo by Jan Eerbeek (OB) (https://observation.org/observation/307634202/); Firenze: Lamporecchio, 43.7985°N 10.89586°E (un. = 914 m), 12.VII.2021, 1 female, photo by Harald Peleman (IN) (https://www.inaturalist.org/observations/86777310); Reggello, 43.66994°N 11.52676°E (un. = 24 m), 21.VI.2021, 1 female, photo by "p-france" (IN) (https://www.inaturalist.org/observations/83915812); idem, 43.6764°N 11.5544°E (un. = 5 m), 8.VII.2024, 1 female, photo by Kasper Verhelst (OB) (https://observation.org/observation/318102311/); Siena: Casole d'Elsa, 43.34122°N 11.17571°E (un. = 189 m), 25.IV.2014, 1 female, photo by Andrea Benocci (IN) (https://www.inaturalist.org/observations/125299526); Grosseto: Monterotondo Marittimo, 43.14524°N 10.86001°E (un. not recorded), 12.IV.2024, 1 male, photo by Giorgio Brunialti (IN) (https://www.inaturalist.org/observations/206784513); Roccastrada, Montemassi, 42.9931°N 11.06424°E (un. = 263 m), 20.V.2020, 1 female, photo by "joarha" (IN) (https://www.inaturalist.org/observations/47239862); Santa Fiora, 42.83242°N 11.58461°E (un = 16 m), 18.IX.2013, 1 female, photo by Emiliano Mori (IN) (https://www.inaturalist.org/observations/534010); Arcidosso, 42.82766°N 11.52432°E (un. = 7 m), 29.X.2022, 1 female, photo by Simone Meacci (IN) (https://www.inaturalist.org/observations/140379356); Semproniano, 42.71774°N 11.54023°E (un. = 4 m), 7.XI.2014, 1 male, photo by Luca Passalacqua (IN) (https://www.inaturalist.org/observations/39445236).

Marche: Pesaro-Urbino: Pesaro, Collina Baratoff, 18.XII.2013, 1 female, photo by Marco Paglialunga (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=50718&hilit=steatoda+paykulliana); Fermo: Ortezzano, 43.02546°N 13.59249°E (un. = 10 m), 17.IX.2023, 1 female, photo by "antonioinoky" (IN) (https://www.inaturalist.org/observations/223960006).

Umbria: Perugia: Scheggia e Pascelupo, 27.X.2011, 1 female, photo by Maura Bocci (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=31111&hilit=steatoda+paykulliana); San Giustino, 43.50488°N 12.17996°E (un. = 5 m), 1.IV.2024, 1 female, photo by "mattia_qcc" (IN) (https://www.inaturalist.org/observations/204998399); Magione, 43.12849°N 12.16934°E (un. not recorded), 11.VIII.2023, 1 female, photo by "pippo84" (IN) (https://www.inaturalist.org/observations/177814414); Perugia, 43.10402°N 12.36947°E (un. = 129 m), 3.X.2024, 1 female, photo by Schelly Cramer (IN) (https://www.inaturalist.org/observations/245375492); idem, Ponte San Giovanni, 43.09198°N 12.42893°E (un. not recorded), 15.II.2024, 1 female, photo by "ubpizzoli" (IN) (https://www.inaturalist.org/observations/199391841); Paciano, 43.02557°N 12.0774°E (un. = 13 m), 8.IV.2024, 1 male, photo by "moondragonitaly" (IN) (https://www.inaturalist.org/observations/206099949).

Latium: Viterbo: Bassano Romano, 42.22063°N 12.18806°E (un. = 1380 m), 5.II.2022, 1 female, photo by Ludovica Liberati (IN) (https://www.inaturalist.org/

observations/106182022); Rieti: Fiamignano, Lake of Rascino, 42.34945°N 13.14336°E (un. = 98 m), 7.IV.2024, 1 female, photo by Luca Tringali (IN) (https://www.inaturalist.org/observations/206232296); Petrella Salto, near Lake of Petrella, 42.32429°N 13.11014°E (un. = 77 m), 13.XI.2024, 1 female, photo by Luca Tringali (IN) (https://www.inaturalist.org/observations/251668689); Metropolitan City of Rome Capital: Civitavecchia, 42.06772°N 11.84222°E (un. = 121 m), 11.III.2023, 1 female, photo by "babunco" (IN) (https://www.inaturalist.org/observations/150978950); Cerveteri, 42.01671°N 12.11959°E (un. = 190 m), 9.IV.2022, 1 male, photo by Leonardo Villa (IN) (https://www.inaturalist.org/observations/110854163); Riofreddo, 42.06°N 13.00083°E (un. not recorded), 4.I.2024, 1 female, photo by Leonardo Ancillotto (IN) (https://www.inaturalist.org/observations/196018928); Monterotondo, 42.04804°N 12.6585°E (un. = 244 m), 27.IV.2024, 1 female (Fig. 4), photo by Luigi Lenzini (IN) (https://www.inaturalist.org/observations/211706851); Roma, Oasi LIPU Castel di Guido, 41.88482°N 12.29302°E (un. not recorded), 3.IX.2022, 1 female, photo by "robertovi" (IN) (https://www.inaturalist.org/observations/133450380); Anzio, 15.II.2012, 1 female (photo by Vittorio Risoldi (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=32314&hilit=steatoda+paykulliana); Frosinone: Trevi nel Lazio, 41.8574°N 13.22475°E (un. = 13 m), 4.II.2020, 1 female, photo by Edoardo Di Russo (IN) (https://www.inaturalist.org/observations/38290925); idem, Altipiani di Arcinazzo, 41.84069°N 13.19719°E (un. = 526 m), 18.IV.2019, 1 female, photo by Edoardo Di Russo (IN) (https://www.inaturalist.org/observations/24159933).

Abruzzo: L'Aquila: Campotosto, 42.56109°N 13.34769°E (un. = 8 m), 5.IX.2021, 1 female, photo by Emanuele Santarelli (IN) (https://www.inaturalist.org/observations/93790744); L'Aquila, Bazzano, 42.33686°N 13.45353°E (un. = 232 m), 12.IV.2024, 1 male (Fig. 5), photo by Emanuele Santarelli (IN) (https://www.inaturalist.org/observations/207557912); Pacentro, 42.0372°N 13.97917°E (un. no recorded), 16.VI.2023, 1 female, photo by Riccardo Novaga (IN) (https://www.inaturalist.org/observations/168035129).

Molise: Isernia, Pozzilli, 41.50023°N 14.06512°E (un. = 8 m), 19.III.2012, 1 female, photo by Daniele Ritella (IN) (https://www.inaturalist.org/observations/88715492); 41.50033°N 14.06567°E (un. = 15 m), 16.II.2017, 1 female, photo by Daniele Ritella (IN) (https://www.inaturalist.org/observations/18896754).

Campania: Avellino: San Michele di Serino, 40.87009°N 14.84317°E (un. = 220 m), 10.XI.2021, 1 female, photo by "vincedreux" (IN) (https://www.inaturalist.org/observations/123763928);.

Apulia: Foggia: Bovino, 41.2489°N 15.346°E (un. = 9 m), 10.V.2020, 1 male, photo by "fra_21" (IN) (https://www.inaturalist.org/observations/45534844); Taranto: Martina Franca, 40.70287°N 17.33926°E (un. = 1840 m), 29.III.2020, 1 female, photo by "parmigiana" (IN) (https://www.inaturalist.org/observations/40972938).

Basilicata: Potenza: Calvello, 40.46971°N 15.84977°E (un. = 947 m), 17.X.2018, 1 female, photo by Federico Biguzzi (IN) (https://www.inaturalist.org/observations/142767243); Terranova di Pollino, 39.9786°N 16.29632°E (un. = 540 m), 15.XI.2023, 1 female, photo by Luca Sattin (IN) (https://www.inaturalist.org/observations/193210324).

Calabria: Cosenza: Santa Domenica Talao, 39.79399°N 15.83009°E (un. = 267 m), 12.II.2019, 1 female, photo by "Golfopolikayak" (IN) (https://www.inaturalist.org/observations/57813576); Catanzaro: Catanzaro, Viale Pio X, 38.92571°N 16.58144°E (un. = 13 m), 1.X.2022, 1 female, photo by "marekko" (IN) (https://www.inaturalist.org/observations/137294434); San Pietro a Maida, 38.83624°N 16.34706°E (un. = 8 m), 4.IX.2022, 1 female, photo by Domenico Spanò (IN) (https://www.inaturalist.org/

observations/138368703); Reggio Calabria: Bovalino, 38.15171°N 16.17886°E (un. not recorded), 23.II.2024, 1 female and 1 male, photo by "sofiacena2" (IN) (https://www.inaturalist.org/observations/200210263).

Sicily: Messina: Gioiosa Marea, 38.16469°N 14.93029°E (un. = 320 m), 24.XI.2016, 1 female, photo by Mario Bassini (IN) (https://www.inaturalist.org/observations/155946324); Ragusa: Ragusa, Donnafugata, 12.XII.2019, 1 female, photo by Riccardo La Placa (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=88204&hilit=steatoda+paykulliana); Siracusa: Palazzolo Acreide, 23.X.2019, 1 male, Riccardo La Placa (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=87319&hilit=steatoda+paykulliana); Trapani: Alcamo, 37.90968°N 13.01348°E (un. = 977 m), 7.IV.2009, 1 female, photo by Geir Drange (IN) (https://www.inaturalist.org/observations/39095259); idem, 37.90751°N 13.01004°E (un. = 977 m), 7.IV.2009, 1 female, photo by Geir Drange (IN) (https://www.inaturalist.org/observations/39095258).

Sardinia: Sassari: Golfo Aranci, Nodu Pianu, 40.96078°N 9.58788°E (un. = 523 m), 27.IX.2021, 1 male, photo by "chris19921" (IN) (https://www.inaturalist.org/observations/96372643); Tissi, 40.67656°N 8.56661°E (un. = 2100 m), 12.XI.2023, 1 male, photo by "spiderock" (IN) (https://www.inaturalist.org/observations/190885831); Alghero, 40.52575°N 8.35556°E (un. = 25 m), 22.III.2023, 1 female, photo by Anna Rosa Carboni (IN) (https://www.inaturalist.org/observations/151944934); Cagliari: Villaputzu, 39.44072°N 9.57576°E (un. = 777 m), 13.XII.2019, 1 female and 1 male, photo by Francesco Tarantino (IN) (https://www.inaturalist.org/observations/36628241); Quartucciu, Mela Murgia, 5.I.2011, 1 male, Pier Francesco Murgia (FEI) (http://www.entomologiitaliani.net/public/forum/phpBB3/viewtopic.php?f=421&t=15861&hilit=steatoda+paykulliana).

Discussion

The knowledge of the distribution in Italy of *L. tredecimguttatus* and *S. paykulliana* is significantly increased, with 39 precise occurrence records for the first species (compared to 28 localities available from literature - see Introduction and Pantini & Isaia 2019) and 80 for the second (compared to 57 localities available from literature - see Introduction and Pantini & Isaia 2019). For *L. tredecimguttatus*, the first records are reported from Basilicata, while for *S. paykulliana* the first records are documented from Veneto, Marche, Abruzzo, Molise and Basilicata. In addition, many records for new provinces are given for both species (10 new provinces for *L. tredecimguttatus* and 24 for *S. paykulliana*). Figures 6 and 7 show the updated distribution of these theridiids in Italy.

The new records of the present contribution improve the faunistic knowledge in the country for these spiders, which was extremely poor up to now. However, there are still gaps due to lack of research. Further studies will be necessary to obtain a satisfactory knowledge of the distribution of these spiders.

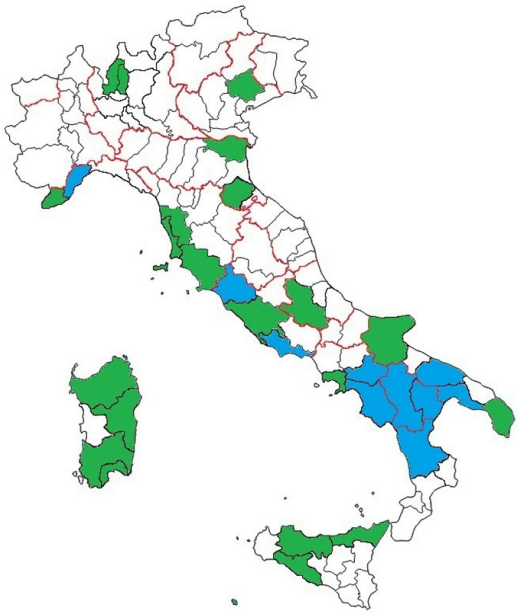

Fig. 6: Update distribution of *Latrodectus tredecimguttatus* in the provinces of Italy. Green = regions where the species known; azure = regions with new records; white = regions with no records. The borders of the regions are marked with red lines.

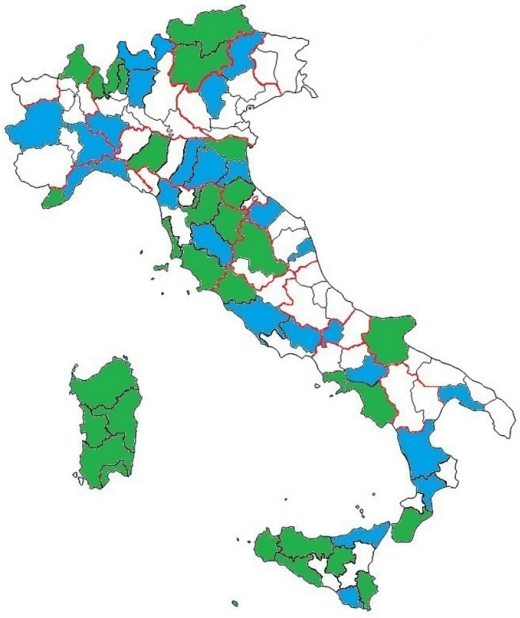

Fig. 7: Update distribution of *Steatoda paykulliana* in the provinces of Italy. Green = regions where the species known; azure = regions with new records; white = regions with no records. The borders of the regions are marked with red lines.

Acknowledgements

I would like to thank all the photographers who uploaded observations on the web. I am particularly grateful to Fabio Bianchini, Alessandro Bona, Mirko Galuppi, Alessandro Mazzoleni, Fausto Leandri, Luigi Torino, and Germano De Simoni (IN) for allowing me to use their records.

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Natura Somogyiensis 44: 67-72. Kaposvár, 2024 https://doi.org/10.24394/NatSom.2024.44.67
Submitted: 27.11, 2024; Accepted: 30.11, 2024; Published: 10.12 2024 www.smmi.hu/termtud/ns/ns.htm

First data on horseflies (Tabanidae) feeding on red deer (*Cervus elaphus*) in Hungary

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Farkas, S. & Berta, B. 2024: *First data on horseflies (Tabanidae) feeding on red deer (Cervus elaphus) in Hungary. - Natura Somogyiensis 44: 67-72.*

Abstract: The relationship between red deer and horseflies has not been studied in Hungary yet. The authors present data on the subject for the first time, which concerns the processing of horsefly material collected on a red deer farm. The studies were conducted in the summer of 2024, over three months (June 1-August 31), in Mike (Somogy county, Hungary). Five red deer (*Cervus elaphus*) were kept on the red deer farm, outdoors, in an area of 15 hectares. H-traps were installed next to the red deer enclosure, operated once a week. During the study, 283 horsefly specimens were collected and identified, and 13 species were explored. The most abundant species were *Haematopota italica, H. pluvialis* and *Tabanus bromius*. The rarest species was *Silvius alpinus*, with only one specimen caught in the traps. There was no difference between the number of specimens collected in the mornings and afternoons. The low number of species and individuals was probably due to climatic reasons and the habitat was not conducive to the reproduction of the horseflies.

Keywords: Diptera, Tabanus, Haematopota, H-trap, Hungary

Introduction

It is common knowledge that horseflies primarily feed on the blood of large mammals. Horseflies also harass farm animals raised by humans, so understandably, innumerable scientific papers have been published about tabanids sucking the blood of horses, cattle, and pigs, which cause financial damage (Majer 1985). The stress caused by the pain, blood loss, or diseases transmitted by these insects all cost a serious amount of money. However, horseflies do not only attack the animals listed above but also feed on wild mammals, such as red deer. Far fewer scientific articles have been published about parasites vexing these animals because studying that is much more difficult and the economic significance is much lower this case. The relationship between red deer and horseflies has not been studied in Hungary yet. Red deer farms make up a small segment of the livestock industry. Here, different species are kept in smaller or larger areas, in closed or almost natural conditions. A small-scale farm with only five red deer operates on the border of the village of Mike in Somogy County. We scrutinised this territory in the summer of 2024 to study the tabanids feeding on red deer (*Cervus elaphus*). We wished to find out what species is the community built up here, learn what species the community comprises, their proportion in the composition of the community, which the dominant species are, and at what time of the year they are most frequent. We were also looking for an answer to the question, of what time of day the harassing activity the strongest was.

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

Material and methods

The studies were carried out on a red deer farm of a few hectares on the outskirts of the settlement of Mike (Fig.1. and 2.). We operated seven traps, which were placed 25-30 meters apart in a line (Fig. 3.). Sampling was carried out in the summer of 2024, between June 1 and August 30. Sampling happened once a week usually on Sundays. The so-called H-traps were used for the collection, (this is a type of canopy-trap). The H-trap consists of a black shiny attracting ball, a deflector, and a collecting killing glass attached to the top of it (Fig. 4.). The glass quickly kills the insects entering it even without chemicals due to the greenhouse effect. The black ball attracts the female horsefly, and after they have unsuccessfully tried to bite the ball, they mostly fly upwards and the deflector baits them to the killing glass. This glass has a wide but narrow entrance, so the flies can easily get in but cannot get out. Inside the glass, they quickly die from the heat and dryness. The collected material was removed twice a day, at noon and in the evening, at dusk. The collected insects were tagged and provided with a label recording the collection data, then placed in an insect box that belonged to the horsefly collection of the Institute of Wildlife Management and Nature Conservation. The horseflies were identified using the key of MAJER (1987) and CHVÁLA et al. (1972). The data were recorded in an MS ACCESS database. A record contained the name of the species, the number of individuals, the date of collection and the number of the trap.

Fig. 1: Mike village in Somogy county

Fig. 2: The red deer farm at the edge of the village

Fig. 3: The red deer enclosure. The placement of the traps are marked by red dots.

Fig. 4: The H-trap

Results and discussion

The Hungarian horsefly fauna is relatively well known. Several studies have dealt with their distribution, which have proven the occurrence of a total of 61 species (MAJER 2001b). We also have a lot of data from southern Transdanubia (MAJER 2001a, TÓTH 2007, 2009). A total of 57 species are known from this regions (TÓTH 2000, 2002, 2003). During the three-month sampling period, our traps collected a total amount of 283 specimens of 13 species of horseflies (Table 1). The rather low number can be explained by several reasons. The area is unsuitable for breeding of the larvae because there is no wet, humid area nearby and water would be needed for their development. Furthermore, the animals that were a food source were few, only five red deers, which was not a great attraction. The summer of 2024 was particularly dry, with hardly any rain during July and August, which is also adverse for horseflies. Most of the species are common in Hungary, rare specialists were not present due to the unsuitable habitat. There were no species that fed exclusively or mainly on red deer. All species were previously found during collections near horses, cattle or sheep. The temporal distribution of the horseflies during the collection was in accordance with the literature data. All appeared during their known swarming season. Their quantitative distribution was somewhat distorted due to the extremely hot and dry weather. In July and August, much fewer specimens were found than expected. Horseflies occur in the same proportion in the morning and afternoon, both in terms of total numbers and in the case of mass species. Most specimens were collected by our traps from the species *Haematopota italica*. This species is common and frequent in Hungary, in places mass. It regularly occurs with the other species collected in the largest mass, *Haematopota pluvialis*. The latter has a characteristic fea-

ture that it becomes extremely aggressive when a cold front breaks in, before rain. Finally, the 3rd most abundant species was *Tabanus bromius*, a Palearctic fauna element and one of the most common horsefly species in Hungary. There was no significant difference between the numbers of this species collected in the morning and afternoon. The rarest species was *Silvius alpinus*, with only one specimen caught in the traps.

Table 1: List of collected species

1.	*Atylotus loewianus* Villeneuve, 1920
2.	*Chrysops viduatus* (Fabricius 1794)
3.	*Haematopota italica* Meigen, 1804
4.	*Haematopota pluvialis* Linnaeus, 1758
5.	*Hybomitra bimaculata* Macquart, 1826
6.	*Hybomitra ciurei* Séguy, 1937
7.	*Tabanus autumnalis* Linnaeus, 1761
8.	*Tabanus bovinus* Linnaeus, 1758
9.	*Tabanus bromius* Linnaeus, 1758
10.	*Tabanus maculicornis* Macquart, 1826
11.	*Tabanus tergestinus* Egger, 1859
12.	*Tabanus spodopterus* Meigen, 1820
13.	*Silvius alpinus* Scopoli, 1763

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Submitted: 27.11, 2024; Accepted: 30.11, 2024; Published: 10.12 2024 www.smmi.hu/termtud/ns/ns.htm

A Dél-Dunántúl lösz- és homokterületeinek valamint hegyvidékeinek fullánkos faunája (Hymenoptera: Aculeata)

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Józan Zs. 2024: *A Dél-Dunántúl lösz- és homokterületeinek valamint hegyvidékeinek fullánkos faunája (Hymenoptera: Aculeata). - Natura Somogyiensis 44: 73-114.*

Abstract: In this paper the author summarises and evaluates the results of six decades of faunistic research in South Transdanubia. 1107 species of 16 families have been found. This represents 75% of the species documented in Hungary. The 50-60 thousand specimens were found in about 300 localities. The study covers the Mecsek Hills, the Villányi Hills, the loess areas of Outer Somogy and the Zselic Hills, and the sandy areas of Inner Somogy. A significant part of the faunistic research has already been published in several publications. The list of species is arranged according to the characteristic habitat (loess, sand, mountain) of the species. The analysis compares the local faunas of the mountain, loess and sand areas. The number of species in the three areas by families and subfamilies is given, and the composition of the faunas of the three areas is evaluated on the basis of the ecofaunistic and zoogeographical characteristics of the species. The faunal similarity of the areas is examined using the Jaccard index, and rare and psammophilous species are also listed.

Keywords: Aculeata, ecofaunistic, zoogeography, South Transdanubia, Hungary

Bevezetés

A szerző hat évtizeden át rendszeresen vizsgálta Dél-Dunántúl fullánkos hártyásszárnyú faunáját. A gyűjtőmunkája a Dráva mentétől a Balatonig minden tájegységre kiterjedt. Dolgozott a Villányi-hegységben, a Mecsekben, a Zselicben, Külső- és Belső-Somogyban. Néhány alkalommal ellátogatott a Völgység, a Tolnai-hegyhát területére valamint tevékenykedett a Tengelici-homokvidéken is. Bekapcsolódott a Janus Pannonius és a Rippl-Rónai múzeumok által szervezett faunisztikai programokba. Ezek során kutatást folytatott a Barcsi-borókás TK, a Béda-Karapancsa TK, Boroka-melléki TK, a Duna-Dráva NP, a Látrányi Puszta TT területén. Az utóbbi néhány évtizedben bekapcsolódott a gyűjtőmunkába Sasvári Mária is. A gyűjtőmunka eredményeiről számos publikációban számolt be (Józan 1971, 1985, 1990, 1992a, 1992b, 1996a, 1996b, 1998, 2000a, 2000b, 2001, 2002, 2003, 2006a,2006b, 2007a, 2007b, 2010, 2015, 2018a, 2018b, 2018c, 2020, 2021, 2022). Több évtizedes munkájának összefoglalásaképpen ebben a publikációban megvizsgálja a fullánkos fauna jellegzetességeit Dél-Dunántúl környezeti tényezők szerint eltérő területeinek szempontjából.

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

Anyag és módszer

A sok évtizedes gyűjtőmunka eredménye 50-60 ezer példány lelőhelyi adatai mintegy 300 település közigazgatási területéről. 16 család 1107 faja került elő. Ez a Magyarországon kimutatott fajok 75%-a. A gyűjtési módszer mindvégig az egyelő-hálózás és a fűhálózás volt. Néhány tucatnyi példány az Ökológiai Kutatóközpont (Vácrátót) által kihelyezett fészekcsapdákból került elő. Az elemzésre kerülő fajok példányait a Villányi-hegységben, a Mecsekben, a Zselicben, Külső- és Belső-Somogyban valamint a Dráva-völgyben gyűjtöttük. Figyelembe vettük Móczár László és munkatársai által a múlt század közepén a Mecsekben, a Villányi-hegységben és a Balaton déli partja mentén kimutatott ritkább fajokat is. Ezek lelőhelyeit a múlt század ötvenes-hatvanas éveiben megjelent Magyarország Állatvilága (Fauna Hungariae) XIII. kötetének füzeteiben és a faunakatalógusokban találhatjuk meg. A fajok bizonyító példányai a Rippl-Rónai Múzeum rovargyűjteményében kerültek elhelyezésre. Nem vettük figyelembe Pillich Ferenc által a múlt század első évtizedeiben Simontornya környékén megtalált fajokat, amelyek számottevően nem befolyásolják az eredményeket. Az elemzés nem tér ki a Formicidae, Bethylidae, Dryinidae és Embolemidae családok fajaira.

Erdmények és értékelés

A vizsgált területről előkerült 16 család 1107 faját vizsgáltuk meg abból a szempontból, hogy milyen geológiai felépítésű területről kerültek elő. A Zselic és Külső-Somogy löszvidék, Belső-Somogy felszínét homok alkotja. Küső-Somogy északi részén kisebb kiterjedésű völgyválli homokleplek is vannak. A két hegyvidék főleg karbonátos kőzetekből épül fel. A Mecsekben vulkáni kőzetek is találhatók, a Nyugati-Mecsek jeletős részét permi vöröshomokkő alkotja. Itt a déli lejtőn a homokkő málladékából komglomerátum képződött és ez tovább aprózódott. A Mecsek és a Villányi-hegység déli lejtői és északi területének faunája között lényeges különbség van. Kizárólag a déli oldalon előkerült fajokat a fajjegyzében csillaggal (*) jelöltük. A két hegység déli hegylábi övezetében kiterjedt lösztakaró alakult ki. A löszterületek számos melegkedvelő faját itt is megtaláltuk.

Az előkerült fajok száma jelentős. A Magyarországon ismertté vált fajok háromnegyed része került elő Dél-Dunántúl vizsgált területeiről. Az egyes családok esetében a fajszám változó mértékű. A Tiphiidae-, Sphecidae-, Crabronidae-, Colletidae- és Halictidae fajok esetében a fajszám meghaladja a magyarországi fajok a 80%-át. Az Apidae fajok száma a legalacsonyabb, a hazai fajok csak 68 %-át sikerült megtalálni. A löszterületeken több faj került elő, mint a hegyvidékeken illetve a homokterületeken. Ez utóbbi helyen 46 fajjal többet találtunk meg, mint a hegyvidékeken. Az előkerült fajok száma a löszterületeken az Apidae-, Colletidae- és a Halictidae családban a legjelentősebb. A hegyvidékek esetében ez az Andrenidae-, Sphecidae-, Vespidae- és a Megachilidae fajokról mondható el. A homokterületeken a Crabronidae fajok száma a legmagasabb. A Pompilidae és a Colletidae család esetében a lösz- és homokterületek közt nem mutatkozott különbség. A közös fajok száma az előkerült 1107 faj mintegy 56 %-a (1. táblázat).

A Crabronidae alcsaládok fajszámait vizsgálva megállapíthatjuk, hogy a vizsgált területen nagyon jelentős a Philanthinae fajok száma. A magyarországi fajok közül mindösszse csak három faj nem került elő. A többi alcsalád fajainak aránya a Mellinae és Astatinae kivételével meghaladja a 80 %-ot (3. táblázat).

1. táblázat: Az előkerült fajok száma családonként és a hazai teljes fajszámhoz viszonyított százalékos arányuk

család	összes	hegy-vidék	lösz-vidék	homok-vidék	közös faj	%
Chrysididae	103	68	85	81	52	60,2
Mutillidae	23	11	13	15	6	70,9
Sapygidae	4	4	4	3	3	100
Scoliidae	7	3	5	5	3	100
Tiphiidae	7	7	5	6	5	87,5
Pompilidae	97	60	74	72	41	78,8
Vespidae	73	65	58	60	48	71,6
Ampulicidae	2	2	2	2	2	100
Sphecidae	18	14	13	14	10	81,8
Crabronidae	235	151	181	210	127	82,7
Andrenidae	119	105	110	94	85	75,8
Apidae	143	109	127	95	68	68,7
Colletidae	44	31	40	39	27	81,5
Halictidae	122	96	111	94	78	84,7
Megachilidae	100	95	93	78	68	75
Melittidae	10	8	10	7	4	62,5
Összesen:	1107	829	931	875	627	75,4

2. táblázat: Saját fajok száma családonként

család	hegy-vidék	lösz-vidék	homok-vidék	összes/ saját %
Chrysididae	2	10	8	19
Mutillidae	3	2	4	39
Sapygidae	0	0	0	0
Scoliidae	1	1	1	42
Tiphiidae	1	0	0	0
Pompilidae	8	9	11	29
Vespidae	4	1	4	12
Ampulicidae	0	0	0	0
Sphecidae	2	1	2	28
Crabronidae	5	8	27	17
Andrenidae	5	6	3	18
Apidae	10	12	3	17
Colletidae	1	3	2	14
Halictidae	3	10	5	15
Megachilidae	10	8	4	22
Melittidae	0	0	0	0
Összesen:	55	71	74	

3. táblázat: A Crabronidae fajok száma alcsaládonként

alcsalád	összes	hegy-vidék	lösz-vidék	homok-vidék	közös faj	saját faj	összes/ saját %
Astatinae	10	5	6	8	4	4	40
Bembicinae	46	21	29	39	17	13	28
Crabroninae	106	74	85	98	60	14	12
Mellinae	1	1	1	1	1	0	0
Pemphredoninae	49	31	44	44	30	7	14
Philanthinae	23	16	16	20	15	7	30
Összesen:	235	148	181	210	127	45	19

Az összehasonlított területek faunájának fontos jellemzője a saját fajok száma és azok családonkénti eloszlása. A legtöbb saját faj a homokterületeken került elő, szám szerint 74. Ennél alig kevesebb a löszterületek és 21 fajjal kevesebb a hegyvidékek saját fajainak száma. A homokvidékeken a saját fajok között jelentős a Pompilidae, de különösen a Crabronidae fajok száma. Ezt mondhatjuk el a löszterületek esetében az Apidae és Halictidae fajokról. A hegyvidékeken e faunaelemek számát leginkább az Apidae-, Megachilidae- és Pompilidae fajok gyarapítják. Megvizsgáltuk az összfajszám és a saját fajok arányát. Azt láthattuk, hogy a vizsgált három terület saját fajai közt a legjeletősebbek a Sphecidae-, Pompilidae- és Mutillidae család fajai. Ezt követik a Megachilidae-, Chrysididae- és Crabronidae fajok. Ezek nagymértékben befolyásolják a faunahasonlóság mértékét (2. táblázat).

A homokkedvelők (psammophil) közül számos faj előkerült Dél-Dunántúlon is: *Holopyga minuma, Spinolia unicolor* (Chrysididae), *Colpa sexmaculata* (Scoliidae), *Dasylabris maura, Dasylabris regalis, Nemka viduata, Physetopoda cingulata* (Mutillidae), *Aporinellus moestus, A. obtusus, A. sexmaculatus, Episyron rufipes, Telostegus inermis* (Pompilidae), *Pterocheilus phaleratus* (Vespidae), *Ammophila terminata mocsaryi, Prionyx kirbii* (Sphecidae), *Dryudella tricolor, Bembecinus hungaricus, B. tridens, Bembix olivacea, Belomicrus antennalis, Brachystegus scalaris, Crabro peltarius, Lestica alata, Oxybelus argentatus, O. lineatus, Palarus variegatus, Philanthus venustus, Tachysphex mocsaryi* (Crabronidae), *Andrena argentata* (Andrenidae), *Anthidium laterale* (Megachilidae), *Ammobates punctatus, Anthophora bimaculata, Nomada baccata* (Apidae), *Colletes chengtehensis* (Colletidae), *Ceylalictus variegatus, Halictus semitectus, Lasioglossum brevicorne aciculatum, Nomioides mintissimus, Sphecodes cristatus* (Halictidae), *Anthidium laterale, Coelioxys brevis, Trachusa interrupta* (Megachilidae).

Néhány homokkedvelő faj megtelepedett a Nyugati-Mecsekben a homokkő konglomerátum málladékán: *Ammobates punctatus* (Apidae), *Anthidium laterale* (Megachilidae), *Anthophora bimaculata* (Apidae), *Colletes chengtehensis* (Colletidae), *Cryptocheilus egregius* (Pompilidae), *Oxybelus lineatus* (Crabronidae), *Parnopes grandior* (Chrysididae), *Pterocheilus phaleratus* (Vespidae), *Spinolia unicolor* (Chrysididae), *Tachysphex brullii*, *Tachysphex obscuripennis* (Crabronidae). Néhány faj a fentiekben felsoroltak közül megjelent a löszhátak közé mélyen beékelődött homoksávokon és homokfoltokon is: *Bembecinus tridens, Dryudella tricolor* (Crabronidae), *Hoplitis mocsaryi* (Megachilidae), *Nomioides minutissimus* (Halictidae), *Podalonia affinis* (Sphecidae). Néhány, a Kiskunságon viszonylag gyakori állat, a vizsgált területen unikális előfordulású: *Bembix olivacea, Dryudella tricolor, Philanthus venustus* (Crabronidae). Az első kettő a Dráva-völgyben, illetve a Balaton déli partja menti homoktúrzás sávon került elő. A harmadikat a Belső-Somogyban a Nagybajom környéki homokleplen fogtuk.

A hegyvidékeken az átlagosnál több *Cryptocheilus* és *Andrena* faj került elő. A löszterületeken az *Andrena, Hylaeus, Nomada, Sphecodes* (Anthophia) és a Melittidae fajok száma a legjelentősebb. Ugyanez mondható el a homokterületeknél az *Aporinellus-, Evagetes* (Pompilidae), *Bembix, Cerceris, Harpactus, Nysson, Oxybelus. Tachysphex* (Crabronidae) és *Sphecodes* (Halictidae) fajokról. A *Crossocerus, Ectemnius* (Crabronidae) és Pemphredoniae fajok részaránya a három területen viszonylag kiegyensúlyozott. A Megachilidae fajok száma a homokterületeken a másik kettőhöz viszonyítva alacsonyabb (ld. fajjegyzék).

Hat család fajait vizsgáltuk meg ökofaunisztikai jellegük szerint. A kisebb fajszámú családokat nem elemeztük. A Pompilidae fajok között az eremophil fajok részesedése a homokterületeken 46%, a másik kettőn 53-54%. Ezek közül a szűktűrésűek részaránya

(stenoök) hegyvidékeken, de különösen a homokterületeken magas, majdnem 10%, ellenben a hipereuryök fajoké is itt a legmagasabb. A Crabronidae fajoknál a tágtűrésű melegkedvelők (euryök eremophil) arányában elhanyagolható a különbség (46-47%), de a szűktűrésüek (stenoök eremophil) aránya a homokterületeken 10% felett van, míg a másik kettőnél nem éri el az 5%-ot. A tágtűrésű melegkedvelők számában a három vizsgált terület között alig van eltérés (46-47%). A hűvösebb-nedvesebb élőhelyeket kedvelők (hylophil) részesedésében a löszterületek vezetnek (4. táblázat).

Az Andrenidae fajoknál a három vizsgált területen a stenoök eremophil fajok esetében számottevő eltérés nem mutatkozott (3-4%). Ellenben az euryök fajok számaránya a homokvidékeken alacsonyabb, mint a másik kettőn. A hylophil fajok részesedése

4. táblázat: A Pompilide, Crabronidae, Andrenidae, Apidae, Halictidae és Megachilidae fajok száma ökofaunisztikai jellegük szerint

	hegy-vidék	lösz-terület	homok-terület	hegy-vidék	lösz-terület	homok-terület
	Pompilidae			Crabronidae		
stenoök eremophil	5	1	7	6	3	23
euryök eremophil	27	39	26	71	83	96
intermedier	18	20	26	23	28	27
euryök hylophil	10	14	13	51	67	64
összesen:	60	74	72	151	181	210
	Andrenidae			Apidae		
stenoök eremophil	4	4	3	7	4	2
euryök eremophil	46	48	37	57	69	49
hipereuryök intermedier	21	21	22	19	21	20
euryök hylophil	37	38	32	26	33	24
összesen:	105	110	94	109	127	95
	Halictidae			Megachilidae		
stenoök eremophil	4	3	5	11	3	4
euryök eremophil	52	61	45	55	56	44
hipereuryök intermedier	34	38	35	11	12	12
euryök hylophil	6	9	9	18	22	18
összesen:	96	111	94	95	93	78

kiegyenlített, 35-36%. Az Apidae család fajainál azt tapasztaltuk, hogy a stenoök eremophil faunaelemek aránya a hegyvidékeken kétszerese a másik kettőnek. Ez a tény a déli lejtők fajainak tulajdonítható. Az euryök eremophil fajok esetében a löszvidékeken kismértékű többletet figyeltünk meg. A homokvidékeken a melegkedvelők részaránya 4-5%-al alacsonyabb, mint a másik két területen. A hylophil faunaelemek részesedése a három területen alig tér el, 24-26% (4. táblázat).

A Halictidae fajok között a löszvidékeken a legalacsonyabb a stenoök eremophilok részesedése. Az euryök eremophil fajok tekintetében a hegyvidékek és löszterületek közt különbség alig volt (54-55%), ám a homokvidékeken ezek részaránya csak 48%. A hegységekben a hylophil fajoknál a részarány mindössze 6%, míg a homokvidékeken ez

meghaladja a 9%-ot. A Megachilidae fajok között feltűnően magas az eremophilok aránya. A hegyvidékeken ez az érték majdnem 80%. A másik két helyen is meghaladja a 60%-ot. A legszélesebb tűréshatárúak (hypereuriök) számaránya a méhfajoknál ebben a családban a legalacsonyabb (12-15%). A hylophil fajok tekintetében a három vizsgált terület között csekély az eltérés: 24-26% (4. táblázat).

A hat család fajainak adatait összegezve megállapíthatjuk, hogy a stenoök eremophil elemek aránya a hegyvidékenen és a homokterületeken alig tér el, ám a homokterületeken ennek az értéke fele annyi, mint az előzőeknél. Az euryök eremophil fajok részesedésében a hegyvidékek és löszterületek között nem mutatkozott számottevő eltérés, de a homokterületek értéke 3-4%-al alacsonyabbnak bizonyult. A hypereuryök faunaelemek aránya szintén a hegyvidékek és löszterületek estében esik egybe, a homokterületeken ellenben 3%-al magasabb.

A Pompilidae fajok között a hegyvidéken mutatták ki a legtöbb déli elterjedésű fajt (holomediterrán, pontomediterrán, észak-mediterrán). Arányuk elérte a fajok 40%-át. Ez követi a homokvidékek 34%-al és a löszterületek 30%-al. A lösz- és homokterületek széles elterjedésű fajainak (palearktikus, nyugat-palearktikus, euroszibériai) részesedése ezzel összefüggésben magasabb, 42-44%. A szűkebb elterjedésű fajok (főleg európai) részaránya a löszterületeken bizonyult a legmagasabbnak. A Crabronidae fajok esetében a déli elterjedésűek részesedése a hegy- és homokvidékeken egyaránt 40%. Ettől a löszvidékek hasonló értéke lényegesen elmarad. A hegyvidékeken és a löszterületeken a széles elterjedésű fajok részesedése közel azonos mértékű (37-38%) a homokvidékeken ennél 5%-al alacsonyabb. A szűkebb elterjedési jellegű fajoknál pedig az értékegyenlőség a lösz- és a homokvidékeknél alakult ki 28%-al.

Az Andrenidae család fajainál megállapíthattuk, hogy a három vizsgált területen kimutatottak között a déli elterjedésűek részesedése viszonylag kiegyenlített, 36-39%. A széles elterjedésűek aránya a homok- és löszvidékeken 39%, a hegyvidékeken ennél 5%-al magasabb. A szűk elterjedési jellegű fajoknál az arányok fordítva alakultak.

Az Apidae fajokat tekintve a hegyvidékeken legjelentősebb a déli elterjedésű állatok aránya, majdnem 40%. Ezek részaránya a homokvidékeken 8%-al alacsonyabb. A széles elterjedésűek esetében éppen ellentétes a részesedési érték. A homokvidékeken ezek az előbbiek közé esnek. A szűkebb elterjedésű, főleg európai faunaelemek részaránya mindhárom területen 31%. A déli elterjedési jellegű Halictidae fajok részaránya a hegyvidékeken és a löszterületeken közel azonos, a homokterületeken alacsonyabb (30-31%, illetve 26%). Ezzel szemben a széles elterjedésűeké a homokterületeken magasabb és a másik kettőn 3%-al alacsonyabb (59 és 56%). A szűkebb elterjedésűek aránya kiegyenlített. A Megachilidae fajoknál is azt állapíthattuk meg, hogy a hegyvidékeken a legmagasabb a részesedésük, majdnem 54%. A másik két területen jóval alacsonyabb, a homokterületeken már csak 43%. A szűk elterjedésű fajok részarányában kicsi az eltérés. Ebből következik, hogy a széles elterjedésű elemek aránya éppen fordítottja déli elterjedésűekének. (5. táblázat).

A hat család fajainak elterjedési adatait összegezve láthattuk, hogy a hegyvidékeken előkerült fajok 40%-a déli elterjedésű faunaelem. Ez az érték a homok- és löszvidékeken 35-36%. A széles elterjedésűek tekintetében az arányok kiegyenlítettek, 39-41% között találhatók az értékek. A szűkebb elterjedésűek esetében lépcsőzetesen emelkedő értékeket találhatunk: hegyvidékek 20%, löszterületek 23% és a homokterületek 25%.

A hegyvidékek saját darázsfajainak 87%-a meleg és szárazságkedvelő (stenoök és euryök eremophil). A csak a déli oldalon előkerült valamennyi faj ebbe a csoportba tartozik. Kétharmaduk déli elterjedési jellegű. A löszterületek saját fajainak 84%-a sorolható az eremophil fajok közé. A déli elterjedési jellegűek aránya 80%. A homokterületek saját fajainak 88%-a eremophil, ezek között a szűktűrésűek (stenoök) arány nagyon

5. táblázat: Néhány család fajainak száma elterjedési jellegük szerint

	hegy-vidék	lösz-terület	homok-terület	hegy-vidék	lösz-terület	homok-terület
	Pompilidae			Crabronidae		
déli elterjedésű	24	22	25	61	62	84
széles elterjedésű	23	31	32	58	68	67
szűk elterjedésű	13	21	15	32	51	59
összesen:	60	74	72	151	181	210
	Andrenidae			Apidae		
déli elterjedésű	39	44	34	43	46	30
széles elterjedésű	45	44	37	32	41	35
szűk elterjedésű	20	23	23	34	40	30
összesen:	104	111	94	109	127	95
	Halictidae			Megachilidae		
déli elterjedésű	29	35	25	51	45	34
széles elterjedésű	54	61	56	29	33	29
szűk elterjedésű	13	15	13	15	15	15
összesen:	96	111	94	95	93	78

magas, 52%. A déli elterjedésűek részesedése 54%. Ezek az értékek az összes fajok között lényegesen alacsonyabbak. A méhfajok esetében az egyes családoknál eltérő értékeket tapasztaltunk. Az Andrenidae család esetében a hegyvidékek saját fajainál a meleg- és szárazságkedvelők és a nedvesebb-hűvösebb (hylophil) élőhelyeket kedvelők száma megegyezik. A széles elterjedésűek száma négyszerese a déli elterjedésűekének. A löszterületek saját fajai esetében az eremophil fajok száma hatszorosa a hylophilokénak, és a kétharmaduk déli elterjedésű. A homokterületek méhalkatúi között mindössze három Andrenidae fajt találtunk, ezek egyike stenoök, egy másik euryök eremophil. Egy déli, kettő széles elterjedésű. A hegyvidékek saját Apidae fajai között a stenoök eremophil csoport eléri a 60%-os részarányt, 80% déli elterjedésű. A löszterületek esetén ez az érték az euryök eremohpil fajoknál van, ám itt a hylophil fajok száma – ellentétben a hegyvidékekkel – is jelentős. A déli elterjedésű fajok 50%-nál alacsonyabb részarányúak. A homokvidékeken a saját Apidae fajok között csak euryök eremophil van. A Colletidae családban a saját fajok között csak eremophil faunaelemet találtunk. A Halictidae fajoknál szintén az eremophil elemek jelentős túlsúlyát állapíthattuk meg. Mindhárom területen csak egy-egy hylophil található a saját fajok sorában. Itt a déli és széles elterjedésűek részarányában csekély a különbség. A Megachilidae család saját fajai egy kivételével eremophil jellegűek. A stenoök fajok száma megelőzi az euryök elemekét. A déli elterjedésű fajok túlsúlya szintén jelentős (6-7. táblázat).

A hegyvidékeken a csak a déli lejtőkön előkerült fajok között jóval nagyobb az eremophil, különösen stenoök, illetve a déli elterjedési jellegű fajok aránya. Ezeket a fajjegyzékben csillaggal (*) jelöltük meg.

Tíz család és öt alcsalád faunahasonóságát vizsgáltuk a Jaccard-index értékeinek alapján. Az index értéke a legalacsonyabb az Astatinae alcsaládnál, mindössze 0,52. Ennél csak alig magasabb a Bembicinae fajoké: 0,53. A nagyon közel eső két érték úgy alakult ki, hogy az utóbbi alcsalád fajszáma több, mint négyszerese az előbbinek. A Pompilidae család esetében az érték csak három századdal magasabb. A Sphecidae és Chrysididae fajok hasonlósága 0,60 és 0,65 közé esik. E két család értékeinek szórása számottevően kisebb, mint a Pompilidae családé. Az Apidae és Melittidae család faunahasonlósági átlagértéke már eléri a 0,67-et. Mindkettőnél a részértékek szóródása elég jelentős, külö-

6. táblázat: A saját fajok száma ökofunisztikai jellegük szerint

	hegy-vidék	lösz-terület	homok-terület	hegy-vidék	lösz-terület	homok-terület
	Chrysididae és Vespoidea			Andrenidae		
stenoök eremophil	4	6	26	0	0	1
euryök eremophil	16	20	18	2	6	1
hiper-euryök int.	0	1	1	0	0	0
euryök hylophil	3	4	5	2	1	1
	Apidae			Colletidae		
stenoök eremophil	6	0	0	1	0	0
euryök eremophil	3	5	3	0	3	2
hiper-euryök int.	0	0	0	0	0	0
euryök hylophil	1	4	0	0	0	0
	Halictidae			Megachilidae		
stenoök eremophil	0	1	2	7	2	3
euryök eremophil	2	7	3	2	6	1
hiper-euryök int.	0	1	0	0	0	0
euryök hylophil	1	1	1	0	0	1

7. táblázat: A saját fajok száma elterjedési jellegük szerint

	hegy-vidék	lösz-terület	homok-terület	hegy-vidék	lösz-terület	homok-terület
	Chrysididae és Vespoidea			Andrenidae		
déli elterjedésű	16	17	31	1	4	1
széles elterjedésű	2	12	16	3	0	2
szűk elterjedésű	4	7	10	0	2	0
	Apidae			Colletidae		
déli elterjedésű	7	5	1	1	0	1
széles elterjedésű	0	0	0	0	2	1
szűk elterjedésű	2	7	2	1	2	2
	Halictidae			Megachilidae		
déli elterjedésű	2	7	2	8	5	3
széles elterjedésű	1	4	2	0	2	0
szűk elterjedésű	0	0	0	1	1	2

nösen a Melittidae fajoknál. A Colletidae-, Crabronidae- és Megachilidae családok értéke egyaránt 0,7. A Megachilidae fajok részértékei között nagymértékű a szóródás: 0,17. A Vespidae fajok hasonlósága csak egy tizeddel magasabb az előzőknél. A Pemphredoninae és Philanthinae alcsalád, továbbá a Halictidae család fajainál a hasonlósági érték 0,73 és 0,75 közé esik. A Philanthinae fajoknál a részértékek nagyon szóródnak (0,25), de a Pemphredoninae fajok esetében is magas ennek a mértéke (0,21). A Jaccard-index értéke az Andrenidae fajok esetében a legmagasabb, 0,8. Az adatokat összegezve legnagyobb hasonlóság a hegyvidékek és löszterületek között alakult ki. Ettől csak kismértékben marad el a lösz- és homokterületek hasonlósági értéke. E két átlagértéktől a hegyvidékek és homokterületek faunahasonlósága lényegesen elmarad. A faunahasonlóság értékei és a fajszámok között nem találtunk kapcsolatot (8-9. táblázat).

8. táblázat: A vizsgált területek faunáinak hasonlósága a Jaccad-index szerint

	hegy-vidék	lösz-terület	homok-terület	hegy-vidék	lösz-terület	homok-terület	hegy-vidék	lösz-terület	homok-terület
	Chrysididae			Pompilidae			Vespidae		
hegy-vidék	x	0,66	0,61	x	0,54	0,52	x	0,78	0,73
lösz-terület	0,66	x	0,67	0,54	x	0,63	0,78	x	0,73
homok-terület	0,61	0,67	x	0,52	0,63	x	0,73	0,73	x
	Sphecidae			Pemphredoninae			Astatinae		
hegy-vidék	x	0,64	0,6	x	0,71	0,64	x	0,57	0,44
lösz-terület	0,64	x	0,64	0,71	x	0,85	0,57	x	0,55
homok-terület	0,6	0,64	x	0,64	0,85	x	0,44	0,55	x
	Bembicinae			Crabroninae			Philanthinae		
hegy-vidék	x	0,56	0,45	x	0,69	0,65	x	0,88	0,63
lösz-terület	0,56	x	0,49	0,69	x	0,76	0,88	x	0,63
homok-terület	0,45	0,49	x	0,65	0,76	x	0,63	0,63	x
	Colletidae			Andrenidae			Apidae		
hegy-vidék	x	0,68	0,68	x	0,85	0,76	x	0,69	0,57
lösz-terület	0,68	x	0,74	0,85	x	0,79	0,69	x	0,66
homok-terület	0,68	0,74	x	0,76	0,79	x	0,57	0,66	x
	Halictidae			Melittidae			Megachilidae		
hegy-vidék	x	x	0,77	x	0,8	0,5	x	0,79	0,62
lösz-terület	0,77	x	0,73	0,8	x	0,71	0,79	x	0,7
homok-terület	0,72	0,73	x	0.5	0,71	x	0,62	0,7	x

9. táblázat: Jaccard-index családonként, illetve alcsaládonként

	Jaccard index értékek			átlag	fajszám
Chrysididae	0,61	0,66	0,67	**0,64**	103
Pompilidae	0,52	0,54	0,63	**0,56**	97
Vespidae	0,73	0,7	0,71	**0,71**	73
Sphecidae	0,6	0,64	0,64	**0,62**	18
Pemphredoninae	0,64	0,71	0,85	**0,73**	49
Astatinae	0,44	0,55	0,57	**0,52**	10
Bembicinae	0,45	0,56	0,59	**0,53**	46
Crabroninae	0,65	0,69	0,76	**0,7**	106
Philanthinae	0,63	0,88	0,75	**0,75**	23
Andrenidae	0,76	0,79	0,85	**0,8**	119
Apidae	0,57	0,66	0,69	**0,67**	143
Colletidae	0,68	0,74	0,68	**0,7**	44
Halictidae	0,72	0,73	0,77	**0,74**	122
Megachilidae	0,62	0,7	0,79	**0,7**	100
Melittidae	0,5	0,71	0,8	**0,67**	10
Átlag:				**0,67**	

Faunisztikai értékelés

Dél-Dunántúlon számos ritka faj került elő. A lelőhelyek számánál a faunakatalógusok és a Fauna Hungariae XIII. kötetének füzeteiben közölt adatokat is figyelembe vettük. Ezek a fajok csökkentik az egyes területek közti faunahasonlóság mértékét.

Dél-Dunántúlon csak egy lelőhelye ismert:

Hegyvidékeken: *Skorikovia pliginskiji* (Mutillidae), *Priocnemis fennica, Priocnemis propinqua* (Pompilidae), *Ancistrocerus antilope* (Vespidae), *Astata gallica, Cerceris stratiotes* (Crabronidae), *Colletes graeffei* (Colletidae), *Hoplitis bisulca, Hoplosmia scutellaris, Megachile hungarica* (Megachilidae), *Tetraloniella pollinosa* (Apidae).

Löszterületeken: *Cystomutilla ruficeps, Physetopoda sericeiceps* (Mutillidae), *Arachnospila opinata, Evagetes pontomoravicus, Priocnemis pillichi, Tachyagetes filicornis* (Pompilidae), *Polistes omissus, Allodynerus floricola* (Vespidae), *Astata jucunda, Cerceris tuberculata, Crossocerus denticrus, Psammaecius punctulatus* (Crabronidae), *Colletes hederae* (Colletidae), *Andrena erythrocnemis, Andrena mehelyi* (Andrenidae), *Lasioglossum laeve* (Halictidae), *Nomada moeschleri, Nomada tridentirostris, Tetraloniella lyncea* (Apidae).

Homokterületeken: *Chrysis chrysoprasina* (Chrysididae), *Ceropales helvetica* (Pompilidae), *Astata apostata, Astata rufipes, Bembix olivacea, Cerceris bupresticida, Cerceris somotorensis, Crossocerus denticoxa, Crossocerus heydeni, Crossocerus walkeri, Didineis crassicornis, Harpactus consanguineus, Harpactus exiguus, Harpactus lunatus, Harpactus tauricus, Philanthus venustus, Tachysphex mocsaryi* (Crabronidae), *Hylaeus punctus* (Colletidae), *Andrena tridentata* (Andrenidae), *Nomiapis femoralis*, *Sphecodes geofrellus* (Halictidae), *Hoplitis mocsaryi* (Megachilidae), *Nomada baccata* (Apidae).

Dél-Dunántúlon két lelőhelyről kerületek elő:

Hegyvidékeken: *Astata gallica, Pseneo exaratus, Tachysphex plicosus* (Crabronidae), *Andrena clarkella* (Andrenidae), *Nomada cruenta* (Apidae)

Hegyvidékeken és löszterületeken: *Arachnospila conjungens* (Pompilidae), *Ammophila hungarica, Podalonia tydei, Nysson variabilis* (Sphecidae), *Dioxys pannonica* (Megachilidae), *Nomada integra, Nomada signata* (Apidae)

Hegyvidékeken és homokterületeken: *Symmorphus angustatus* (Vespidae)

Löszterületeken: *Miscophus niger* (Crabronidae), *Halictus damascenus, Lasioglossum minutulum* (Halictidae), *Coelioxys caudata* (Megachilidae), *Nomada chrysopyga, Nomada trapeziformis* (Apidae)

Löszterületeken és homokterületeken: *Pseudomalus triangulifer* (Chrysididae), *Dipogon vechti, Priocnemis hankoi* (Pompilidae), *Dryudella tricolor* (Crabronidae), *Andrena fulvida* (Andrenidae), *Amegilla magnilabris, Epeolus schummeli, Nomada guttulata, Nomada posthuma* (Apidae)

Homokterületeken: *Ancistrocerus ichneumonideus* (Vespidae).

A fentieken kívül még számos faj három lelőhelyről ismert Dél-Dunántúlon.

Csak Dél-Dunántúlról előkerült fajok:

Homokterületeken: *Agenioideus ciliatus* (Pompilidae), *Crossocerus heydeni, Crossocerus walkeri, Passaloecus vandeli* (Crabronidae), *Andrena tridentata* (Andrenidae)

Löszterületeken: *Entomobora crassitarsis* (Pompilidae), *Lasioglossum pseudocaspicum* (Halictidae).

Löszterületeken és homokterületeken: *Passaloecus brevilabris* (Crabronidae), *Nomada platythorax* (Apidae)

A *Nomada platythorax* (Apidae) két paratípusa a Rippl-Rónai Múzeum rovargyűjteményében található.

Több olyan faj van, melynek első hazai lelőhelyei a szerző gyűjtőmunkája során a vizsgált teületen váltak ismertté. Lelőhelyeik többsége továbbra is Dél-Dunántúlon található: *Poecilagenia sculpturata* (Pompilidae), *Mimesa bicolor, Passaloecus pictus, Pemphredo morio, Polemistus abnormis, Tachyphex fugax* (Crabronidae), *Lasioglossum bischoffi, Lasioglossum kussariense* (Halictidae), *Chelostoma styriacum, Coelioxys obtusa, Hoplitis praestans, Hoplitis ravouxi, Stelis odontopyga* (Megachilidae), *Bombus haematurus, Eucera parvula* (Apidae)

Az *Epeolus tarsalis* irodalmi adatok szerint előkerült Simontornyáról (1936) és Tihanyból (1906) (BOGUSCH & HADRAVA 2018). A Magyarország Állatvilága Apidae füzetében az *Epeolus* fajok között nem szerepel. Magyarországi bizonyító példány csak a Rippl-Rónai Múzeum gyűjteményében van.

Dél-dunántúli lelőhelye: *Epeolus tarsalis* Morawitz, 1874 – Simonfa: Messzelátó, löszmélyút (46.2789'; 17.8269') 2019. 09. 14. 1 nőstény.

10. táblázat: Fajok jegyzéke a Dél-Dunántúlról

Csillaggal (*) jelöltük a hegyvidékek déli lejtőin előkerült fajokat

Taxon	hegyvidék	löszterület	homokterület
Chrysididae: Cleptinae			
Cleptes nitidulus		x	x
Cleptes pallipes		x	
Cleptes semiauratus		x	x
Chrysididae: Chrysidinae			
Elampus bidens			x
Elampus constrictus	x		x
Elampus panzeri	x	x	x
Elampus sanzii		x	
Elampus soror	x	x	x
Hedychrum gerstaeckeri	x	x	x
Hedychrum niemelai	x	x	x
Hedychrum nobile	x	x	x
Hedychrum rutilans	x	x	x
Hedychridium aheneum		x	
Hedychridium ardens	x	x	x
Hedychridium caputaureum	x	x	x
Hedychridium coriaceum	x	x	x
Hedychridium elegantulum	x	x	x
*Hedychridium femoratum**	x		x
Hedychridium flavipes		x	
Hedychridium jucundum	x	x	x
Hedychridium krajniki	x		
Hedychridium lampadum		x	
Hedychridium mediochrum	x	x	

Hedychridium monochroum	x	x	x
*Hedychridium parkanense**	x	x	x
Hedychridium roseum	x	x	x
Hedychridium valesiense	x	x	x
Hedychridium zelleri		x	x
Holopyga chrysonota	x	x	x
*Holopyga fervida**	x	x	
Holopyga generosa	x	x	x
Holopyga ignicollis	x	x	x
*Holopyga inflammata**	x	x	
*Holopyga jurinei**	x		
Holopyga minuma			x
Omalus aeneus	x	x	x
*Omalus biaccinctus**	x	x	x
Philoctetes bidentulus	x	x	
Philoctetes truncatus	x	x	x
Pseudomalus auratus	x	x	x
*Pseudomalus bogdanovi**	x	x	x
Pseudomalus pusillus	x	x	x
Pseudomalus triangulifer		x	
Pseudomalus violaceus		x	x
Chrysidea disclusa	x	x	x
*Chrysis angustifrons**	x		x
Chrysis angustula		x	
Chrysis bicolor		x	x
Chrysis brevitarsis			x
Chrysis calimorpha			x
Chrysis chrysoprasina			x
*Chrysis chrysostigma**	x	x	x
Chrysis cingulicornis	x	x	x
Chrysis clarinicollis		x	x
Chrysis coeruleiventris			x
Chrysis comparata		x	
Chrysis comta		x	x
Chrysis distincta	x	x	x
Chrysis fasciata		x	x
Chrysis fulgida		x	x
Chrysis germari	x	x	x
Chrysis gracillima	x	x	x
Chrysis graelsii	x	x	x

Chrysis grohmanni	x	x	x
Chrysis ignita	x	x	x
Chrysis illigeri		x	x
Chrysis impressa	x	x	x
Chrysis inaequalis	x	x	x
Chrysis indigotea	x	x	x
Chrysis interjecta		x	x
Chrysis iris	x	x	
Chrysis leachii	x	x	x
Chrysis leptomandibularis		x	x
Chrysis longula		x	
Chrysis marginata	x	x	x
Chrysis mediata	x	x	x
Chrysis millenaris		x	x
*Chrysis phryne**	x		x
Chrysis pseudobrevitarsis	x	x	x
Chrysis pulchella	x	x	x
Chrysis ragusae	x	x	x
Chrysis rutilans	x	x	x
*Chrysis rutiliventris**	x	x	
Chrysis schencki		x	x
Chrysis scutellaris	x	x	x
Chrysis sexdentata		x	
Chrysis solida	x	x	x
Chrysis splendidula		x	x
Chrysis subsinuata	x	x	x
Chrysis taczanovskii		x	x
Chrysis viridula	x	x	
Chrysura austriaca		x	
Chrysura cuprea	x	x	
Chrysura dichroa	x	x	x
Chrysura radians	x	x	
Chrysura trimaculata	x	x	x
Euchroeus purpuratus			x
Pseudospinolia neglecta	x	x	
Pseudospinolia uniformis	x	x	x
Spinolia dallatorreana			x
Spinolia unicolor	x		x
Trichrysis cyanea	x	x	x

Chrysididae: Parnopinae			
*Parnopes grandior**	x		x
Sapygidae			
*Polochrum repandum**	x	x	
Sapyga clavicornis	x	x	x
Sapyga quinquepunctata	x	x	x
Sapygina decemguttata	x	x	x
Scoliidae			
*Colpa quinquecincta**	x		
Colpa sexmaculata			x
Megascolia maculata	x	x	x
Scolia fuciformis		x	
Scolia galbula		x	x
Scolia hirta	x	x	x
Scolia sexmaculata	x	x	x
Thynnidae			
Methocha ichneumonides	x	x	x
Tiphiidae			
*Ludita fulvipennis**	x		
*Ludita villosa **	x	x	x
*Meria tripunctata**	x		x
Tiphia femorata	x	x	x
Tiphia minuta	x	x	x
*Tiphia unicolor**	x	x	x
Mutillidae			
Cystomutilla ruficeps		x	
Dasylabris maura			x
Dasylabris regalis			x
Mutilla europaea		x	
Myrmilla calva	x	x	x
Myrmilla mutica	x	x	x
Myrmosa atra	x	x	x
Nemka viduata			x
Paramyrmosa brunnipes	x	x	x
Physetopoda cingulata			x
Physetopoda daghestanica		x	x
Physetopoda halensis	x	x	x
*Physetopoda pusilla**	x		
Physetopoda scutellaris		x	x
Physetopoda sericeiceps		x	

*Ronisia brutia**	x		x
*Skorikovia pliginskiji**	x		
*Smicromyrme ruficollis**	x	x	
Smicromyrme rufipes	x	x	x
Smicromyrme sicanus	x		x
*Tropidotilla litoralis**	x		
Pompilidae: Pepsinae			
Auplopus albifrons	x	x	x
Auplopus carbonarius	x	x	x
Auplopus rectus	x	x	x
Caliadurgus fasciatellus	x	x	x
*Cryptocheilus egregius**	x		
Cryptocheilus fabricii			x
Cryptocheilus notatus affinis	x	x	x
*Cryptocheilus richardsi**	x		
Cryptocheilus varabilis	x		x
Cryptocheilus versicolor	x	x	x
Dipogon bifasciatus	x	x	x
Dipogon monticolus		x	
Dipogon subintermedius		x	x
Dipogon variegatus			x
Dipogon vechti		x	x
Poecilagenia rubricans	x	x	x
Poecilagenia sculpturata		x	x
Priocnemis agilis	x	x	x
Priocnemis confusor	x		
Priocnemis coriacea	x	x	x
Priocnemis enslini	x	x	x
Priocnemis exaltata	x	x	x
Priocnemis fastigiata	x		
Priocnemis fennica	x		
Priocnemis hankoi		x	x
Priocnemis hyalinata	x	x	x
Priocnemis melanosoma	x	x	x
Priocnemis mesobrometi	x	x	
Priocnemis minuta		x	x
Priocnemis parvula		x	x
Priocnemis perturbator	x	x	x
Priocnemis pillichi		x	
*Priocnemis propinqua**	x		

Priocnemis pogonioides		x	
Priocnemis pusilla	x	x	x
Priocnemis schioedtei		x	
Priocnemis sulci	x	x	x
Priocnemis susterai	x	x	
Priocnemis vulgaris	x	x	x
Cryptocheilus variabilis	x		x
Pompilidae: Pompilinae			
Agenioideus ciliatus			x
Agenioideus cinctellus	x	x	x
Agenioideus nubecula		x	x
Agenioideus sericeus	x	x	x
Agenioideus usurarius		x	x
Anoplius alpinobalticus			x
Anoplius caviventris	x	x	x
Anoplius concinnus	x	x	x
Anoplius infuscatus	x	x	x
Anoplius nigerrimus	x	x	x
Anoplius viaticus paganus	x	x	x
Anospilus orbitalis	x	x	x
Aporinellus moestus	x		x
Aporinellus obtusus			x
Aporinellus sexmaculatus			x
*Aporus bicolor**	x	x	
*Aporus pollux**	x	x	
Aporus unicolor	x	x	x
Arachnospila abnormis	x	x	x
Arachnospila anceps	x	x	x
*Arachnospila conjungens**	x	x	
Arachnospila fumipennis	x	x	x
Arachnospila gibbomima			x
Arachnospila minutula	x	x	x
Arachnospila opinata		x	
Arachnospila spissa	x	x	x
Arachnospila trivialis	x	x	x
Arachnospila wesmaeli			x
*Batozonellus lacerticida**	x	x	x
*Dicyrtomellus tingitanus**	x	x	x
Entomobora crassitarsis		x	
*Eoferreola manticata**	x		x

*Eoferreola rhombica**	x		x
Episyron albonotatum	x	x	x
Episyron arrogans	x	x	x
Episyron rufipes			x
Evagetes crassicornis		x	x
Evagetes dubius		x	x
Evagetes elongatus	x	x	x
Evagetes gibbulus		x	x
Evagetes littoralis		x	x
Evagetes pectinipes			x
Evagetes pontomoravicus		x	
Evagetes proximus	x	x	
Evagetes sahlbergi		x	x
Evagetes siculus	x	x	x
Homonotus balcanicus		x	x
Homonotus sanguinolentus	x		
Nanoclavelia leucoptera		x	x
Pompilus cinereus		x	
*Tachyagetes filicornis**	x		
Telostegus inermis			x
Pompilidae: Ceropalinae			
Ceropales albicincta	x	x	
Ceropales helvetica		x	
Ceropales maculata	x	x	x
Ceropales pygmaea		x	
Ceropales variegata		x	x
Vespidae:Vespinae és Polistinae			
Polistes associus	x		
Polistes bischoffi	x	x	x
Polistes dominulus	x	x	x
Polistes gallicus	x	x	x
Polistes nimpha	x	x	x
Polistes omissus		x	
Vespa crabro	x	x	x
Dolichovespula media	x	x	x
Dolichovespula saxonica	x	x	x
Dolichovespula sylvestris	x	x	x
Vespula germanica	x	x	x
Vespula rufa	x	x	x
Vespula vulgaris	x	x	x

Vespidae: Eumeninae			
Alastor mocsaryi	x	x	x
*Alastorynerus microdynerus**	x	x	
Allodynerus delphinalis	x	x	x
*Allodynerus floricola**	x		
Allodynerus rossii	x	x	x
Ancistrocerus acutus	x	x	x
Ancistrocerus antilope	x		
Ancistrocerus claripennis	x	x	x
Ancistrocerus gazella	x	x	x
Ancistrocerus ichneumonideus			x
Ancistrocerus nigricornis	x	x	x
Ancistrocerus oviventris	x		
Ancistrocerus parietinus	x	x	x
Ancistrocerus parietum		x	
Ancistrocerus trifasciatus	x	x	x
Antepipona deflenda	x	x	x
Antepipona orbitalis	x	x	x
Discoelius dufourii		x	x
Discoelius zonalis		x	x
Eumenes coarctatus	x	x	x
Eumenes coronatus	x	x	x
Eumenes lunulatus	x	x	x
Eumenes mediterraneus	x		x
Eumenes papillarius	x	x	x
Eumenes pedunculatus	x	x	x
Eumenes pomiformis	x		
Eumenes sareptanus insolatus			x
*Euodynerus dantici**	x		x
Euodynerus egregius			x
Euodynerus notatus	x	x	x
Euodynerus posticus	x	x	x
Euodynerus quadrifasciatus		x	x
Gymnomerus laevipes	x	x	x
Jucancistrocerus jucundus	x	x	
Leptochilus alpestris	x	x	x
Leptochilus regulus	x	x	x
Microdynerus longicollis	x	x	
Microdynerus nugdunensis	x	x	x
Microdynerus timidus	x	x	x

Odynerus femoratus	x	x	
Odynerus melanocephalus	x	x	x
Odynerus poecilus	x	x	x
Odynerus reniformis	x	x	x
Odynerus spinipes	x	x	x
*Paragymnomerus spiricornis**	x		
Parodontodynerus ephippium	x	x	x
Pseudomicrodynerus parvulus	x	x	x
*Pterocheilus phaleratus**	x		x
Stenodynerus bluethgeni	x	x	x
Stenodynerus chevrieranus	x	x	x
Stenodynerus clypeopictus			x
Stenodynerus steckianus	x	x	
Stenodynerus xanthomelas	x	x	x
Symmorphus angustatus	x		x
Symmorphus bifasciatus	x	x	x
Symmorphus connexus			x
Symmorphus crassicornis	x	x	x
Symmorphus debilitatus	x	x	x
Symmorphus gracilis	x	x	x
Symmorphus murarius	x	x	x
Ampulicidae			
Ampulex fasciata	x	x	x
Dolichurus corniculus	x	x	x
Sphecidae			
Ammophila campestris	x	x	x
Ammophila heydeni	x	x	x
*Ammophila hungarica**	x	x	
Ammophila sabulosa	x	x	x
Ammophila terminata mocsaryi			x
Chalybion femoratum	x	x	x
Chlorion magnificum	x		
Isodontia mexicana	x	x	x
Podalonia affinis		x	x
*Podalonia luffii**	x		x
Podalonia hirsuta	x	x	x
*Podalonia tydei**	x		
Prionyx kirbyi			x
Sceliphron caementarium	x	x	x
Sceliphron curvatum	x	x	x

Sceliphron destillatorium	x	x	x
Sceliphron spirifex		x	
*Sphex funerarius**	x	x	x
Crabronidae: Pemphredoninae			
Ammoplanus handlirschi		x	x
Ammoplanus hofferi	x	x	x
Diodontus brevilabris	x	x	x
Diodontus insidiosus			x
Diodontus luperus	x	x	x
*Diodontus major**	x	x	x
Diodontus minutus	x	x	x
Diodontus tristis	x	x	x
Mimesa bicolor			x
*Mimesa equestris**	x	x	x
Mimesa nigrita		x	
Mimumesa atratina	x	x	x
Mimumesa beaumonti	x	x	
Mimumesa dahlbomi	x	x	x
Mimumesa littoralis		x	x
Mimumesa unicolor	x	x	x
Passaloecus brevilabris		x	x
Passaloecus borealis		x	
Passaloecus clypealis	x	x	x
Passaloecus corniger	x	x	x
Passaloecus gracilis	x	x	x
Passaloecus insignis	x	x	x
Passaloecus pictus		x	x
Passaloecus singularis	x	x	x
Passaloecus turionum			x
Passaloecus vandeli		x	x
Pemphredon austriaca			x
Pemphredon baltica		x	x
Pemphredon inornata	x	x	x
Pemphredon lethifera	x	x	x
Pemphredon lugens	x	x	x
Pemphredon lugubris	x	x	x
Pemphredon morio		x	x
Pemphredon rugifera	x	x	x
Polemistus abnormis		x	x
Psen ater		x	x

Pseneo exaratus	x		
Psenulus chevrieri	x	x	x
Psenulus concolor		x	x
Psenulus fuscipennis	x	x	x
Psenulus laevigatus	x	x	x
Psenulus meridionalis	x	x	x
Psenulus pallipes	x	x	x
Psenulus schencki	x	x	x
Spilomena beata	x	x	x
Spilomena mocsaryi	x	x	x
Spilomena troglodytes	x	x	x
Stigmus pendulus	x	x	x
Stigmus solskyi	x	x	x
Crabronidae: Astatinae			
Astata apostata			x
Astata boops	x	x	x
Astata costae			x
*Astata gallica**	x		
Astata jucunda		x	
Astata kashmirensis	x	x	x
Astata minor	x	x	x
Astata rufipes			x
Dinetus pictus	x	x	x
Dryudella tricolor		x	x
Crabronidae: Bembicinae			
Alysson spinosus	x	x	x
Alysson tricolor		x	x
Didineis crassicornis			x
Didineis lunicornis	x	x	x
Bembecinus hungaricus			x
Bembecinus tridens	x	x	x
Bembix megerlei			x
Bembix oculata	x		x
Bembix olivacea			x
Bembix rostrata			x
Bembix tarsata	x		x
Argogorytes fargeii		x	x
Argogorytes mystaceus	x	x	x
Gorytes fallax	x	x	x
Gorytes laticinctus	x	x	x

Gorytes pleuripunctatus	x	x	
Gorytes procrustes		x	x
Gorytes quadrifasciatus	x	x	x
Gorytes quinquecinctus	x	x	x
Gorytes quinquefasciatus	x	x	x
Gorytes sulcifrons		x	
Harpactus affinis	x	x	x
Harpactus consanguineus			x
Harpactus elegans	x		x
Harpactus exiguus			x
Harpactus laevis	x	x	x
Harpactus lunatus			x
Harpactus moravicus	x		x
Harpactus tauricus		x	
Harpactus tumidus		x	
Hoplisoides latifrons	x	x	x
Hoplisoides punctuosus	x	x	x
Lestiphorus bicinctus			x
Lestiphorus bilunulatus		x	x
Psammaecius punctulatus		x	
Brachystegus scalaris			x
Nysson dimidiatus	x	x	x
Nysson fulvipes			x
Nysson interruptus		x	x
Nysson maculosus		x	x
Nysson niger			x
Nysson roubali			x
Nysson spinosus	x	x	x
Nysson tridens		x	x
Nysson trimaculatus	x	x	x
Nysson variabilis	x	x	
Crabronidae: Crabroninae			
Crabro cribrarius	x	x	x
Crabro peltarius			x
Crabro scutellatus		x	x
Crossocerus acanthophorus	x	x	x
Crossocerus annulipes	x	x	x
Crossocerus assimilis	x	x	x
Crossocerus binotatus	x	x	
Crossocerus capitosus	x	x	x

Crossocerus cetratus	x	x	x
Crossocerus denticoxa			x
Crossocerus denticrus		x	
Crossocerus distinguendus	x	x	x
Crossocerus elongatulus	x	x	x
Crossocerus exiguus	x	x	x
Crossocerus heydeni			x
Crossocerus megacephalus	x	x	x
Crossocerus nigritus		x	x
Crossocerus ovalis	x	x	x
Crossocerus palmipes		x	x
Crossocerus podagricus	x	x	x
Crossocerus pusillus		x	x
Crossocerus quadrimaculatus	x	x	x
Crossocerus tarsatus		x	x
Crossocerus vagabundus	x	x	x
Crossocerus walkeri			x
Crossocerus wesmaeli	x	x	x
Ectemnius cavifrons	x	x	x
Ectemnius cephalotes	x	x	x
Ectemnius confinis	x	x	x
Ectemnius continuus	x	x	x
*Ectemnius crassicornis**	x		
Ectemnius dives	x	x	x
Ectemnius fossorius	x	x	x
Ectemnius guttatus		x	x
Ectemnius lapidarius	x	x	x
Ectemnius lituratus	x	x	x
Ectemnius meridionalis	x	x	x
Ectemnius nigritarsus		x	x
Ectemnius rubicola	x	x	x
Ectemnius ruficornis	x	x	x
Ectemnius rugifer	x	x	x
Ectemnius schlettereri	x	x	x
Entomognathus brevis	x	x	x
Entomognathus dentifer	x	x	
Lestica alata	x		x
Lestica clypeata	x	x	x
Lindenius albilabris	x	x	x
Lindenius laevis	x	x	x

Lindenius panzeri	x	x	x
Lindenius parkanensis		x	x
Lindenius pygmaeus armatus	x	x	x
Rhopalum austriacum		x	x
Rhopalum clavipes		x	x
Rhopalum coarctatum		x	x
Rhopalum gracile	x	x	x
Tracheliodes curvitarsis		x	x
Belomicrus antennalis			x
*Belomicrus italicus**	x		
Oxybelus argentatus			x
Oxybelus aurantiacus			x
Oxybelus bipunctatus	x	x	x
*Oxybelus latidens**	x		x
Oxybelus latro			x
*Oxybelus lineatus**	x		x
Oxybelus mandibularis		x	x
Oxybelus mucronatus	x	x	x
Oxybelus quatordecimnotatus	x	x	x
Oxybelus trispinosus	x	x	x
Oxybelus uniglumis	x	x	x
Oxybelus variegatus	x	x	x
Oxybelus victor	x	x	x
Larra anathema		x	x
*Liris nigra**	x	x	x
Tachysphex brullii	x		x
*Tachysphex fugax**	x	x	x
Tachysphex fulvitarsis	x	x	x
*Tachysphex grandii**	x	x	x
*Tachysphex helveticus**	x		x
*Tachysphex incertus**	x		x
Tachysphex mocsaryi			x
*Tachysphex obscuripennis**	x		x
Tachysphex panzeri			x
Tachysphex plicosus	x	x	
Tachysphex pompiliformis	x	x	x
*Tachysphex psammobius**	x	x	x
Tachysphex tarsinus	x	x	x
*Tachysphex unicolor**	x	x	x
Tachytes etruscus			x

Tachytes obsoletus		x	x
*Tachytes panzeri**	x	x	x
*Miscophus ater**	x	x	x
Miscophus bicolor	x	x	x
Miscophus concolor			x
Miscophus niger		x	
Nitela fallax		x	x
Nitela spinolae	x	x	x
Solierella compedita	x	x	x
*Palarus variegatus**	x	x	x
Pison atrum	x	x	x
Trypoxylon attenuatum	x	x	x
Trypoxylon clavicerum	x	x	x
Trypoxylon figulus	x	x	x
Trypoxylon fronticorne		x	x
Trypoxylon medium		x	x
Trypoxylon minus	x	x	
Trypoxylon scutatum	x	x	x
Crabronidae: Mellinae			
*Mellinus arvensis**	x	x	x
Crabronidae: Philanthinae			
*Cerceris albofaciata**	x	x	x
Cerceris arenaria	x	x	x
*Cerceris bicincta**	x	x	
Cerceris bracteata			x
Cerceris bupresticida			x
Cerceris circularis dacica			x
Cerceris fimbriata			x
Cerceris flavilabris	x	x	x
Cerceris hortivaga	x	x	x
Cerceris interrupta	x	x	x
Cerceris quadricincta	x	x	x
Cerceris quadrifasciata	x	x	x
Cerceris quinquefasciata	x	x	x
Cerceris rubida	x	x	x
*Cerceris ruficornis**	x	x	x
Cerceris rybyensis	x	x	x
Cerceris sabulosa	x	x	x
Cerceris somotorensis			x
Cerceris stratiotes	x		

Cerceris tuberculata		x	
*Philanthus coronatus**	x	x	x
Philanthus triangulum	x	x	x
Philanthus venustus			x
Andrenidae			
*Andrena aciculata**	x	x	x
Andrena aeneiventris	x	x	x
Andrena agilissima		x	
Andrena alfkenella	x	x	x
Andrena apicata	x	x	
Andrena argentata	x		x
Andrena atrata	x	x	x
*Andrena barbilabris**	x	x	x
Andrena bicolor	x	x	x
Andrena bimaculata	x	x	x
Andrena bisulcata	x	x	x
Andrena bluethgeni		x	
*Andrena braunsiana**	x		
Andrena bucephala	x	x	x
Andrena carantonica	x	x	x
Andrena chrysopus			x
Andrena chrysopyga	x	x	x
Andrena chrysosceles	x	x	x
Andrena cineraria	x	x	x
Andrena clarkella	x		
*Andrena combaella**	x		
*Andrena combinata**	x	x	
Andrena cordialis	x	x	x
Andrena curvana	x	x	x
Andrena curvungula	x	x	
Andrena decipiens		x	
Andrena denticulata	x	x	x
*Andrena distinguenda**	x	x	x
Andrena dorsalis	x	x	x
Andrena dorsata	x	x	x
*Andrena enslinella**	x	x	
Andrena erythrocnemis		x	
Andrena falsifica	x	x	x
Andrena flavipes	x	x	x
Andrena florea	x	x	

Andrena floricola	x	x	x
Andrena florivaga	x	x	
Andrena fulva	x	x	x
Andrena fulvago	x	x	x
Andrena fulvata	x	x	x
Andrena fulvicornis	x	x	x
Andrena fulvida		x	x
Andrena gelriae	x	x	x
Andrena gravida	x	x	x
Andrena haemorrhoa	x	x	x
Andrena hattorfiana	x	x	x
*Andrena hedikae**	x	x	
Andrena helvola	x	x	x
Andrena humilis	x	x	x
*Andrena hypopolia**	x	x	
Andrena impunctata	x	x	x
Andrena intermedia	x		
Andrena labialis	x	x	x
Andrena labiata	x	x	x
Andrena lagopus	x	x	x
Andrena lathyri	x	x	x
Andrena lepida			x
Andrena limata	x	x	x
*Andrena marginata**	x	x	x
Andrena mehelyi		x	
Andrena minutula	x	x	x
Andrena minutuloides	x	x	x
Andrena mitis		x	x
Andrena mocsaryi	x	x	x
Andrena nana	x	x	x
Andrena nanula	x	x	x
*Andrena nasuta**	x	x	x
Andrena nigroaenea	x	x	x
Andrena nitida	x	x	x
Andrena nitidiuscula	x	x	x
Andrena niveata		x	x
*Andrena nobilis**	x	x	x
Andrena nychtemera	x	x	x
*Andrena oralis**	x	x	x
Andrena ovatula	x	x	x

Andrena pallitarsis		x	
Andrena pandellei	x	x	x
Andrena paucisquama	x	x	x
*Andrena pilipes**	x	x	x
Andrena polita	x	x	x
Andrena potentillae	x	x	x
Andrena praecox	x	x	x
Andrena propinqua	x	x	x
Andrena proxima	x	x	x
Andrena pusilla	x	x	x
Andrena rosae	x	x	x
Andrena roseipes		x	x
Andrena rufula	x	x	x
Andrena saxonica	x	x	x
Andrena schencki	x	x	x
Andrena schlettereri	x	x	x
*Andrena scita**	x	x	
Andrena seminuda	x	x	x
Andrena sericata	x	x	x
*Andrena similis**	x	x	x
Andrena simontornyella	x	x	x
Andrena strohmella	x	x	
Andrena subopaca	x	x	x
Andrena suerinensis		x	x
Andrena susterai	x	x	x
Andrena symphyti	x	x	x
Andrena taraxaci	x	x	x
Andrena thoracica	x	x	
Andrena tibialis	x	x	x
Andrena tridentata			x
Andrena trimmerana	x	x	x
*Andrena truncatilabris**	x	x	x
Andrena tscheki	x	x	x
*Andrena ungeri**	x	x	
Andrena vaga	x	x	x
Andrena varians	x	x	x
Andrena ventralis	x	x	x
Andrena ventricosa	x	x	
ndrena viridescens	x	x	x
*Andrena wilkella**	x		

*Camptopoeum frontale**	x	x	
*Melitturga clavicornis**	x	x	x
*Panurginus labiatus**	x	x	x
Panurgus calcaratus	x	x	x
Apidae			
*Amegilla albigena**	x	x	
*Amegilla garrula**	x	x	x
Amegilla magnilabris		x	x
Amegilla quadrifasciata		x	x
Amegilla salviae	x	x	x
*Ammobates punctatus**	x		x
*Ammobates similis**	x		
Ammobates vinctus	x		
Ammobatoides abdominalis		x	
*Anthophora aestivalis**	x	x	
*Anthophora bimaculata**	x		x
Anthophora crinipes	x	x	x
Anthophora furcata	x	x	x
Anthophora plagiata	x	x	x
Anthophora plumipes	x	x	x
Anthophora pubescens	x	x	x
Anthophora quadrimaculata	x	x	x
Anthophora retusa	x	x	x
Biastes brevicornis	x	x	x
Biastes emarginatus	x	x	
Bombus argillaceus	x	x	x
Bombus confusus		x	
Bombus haematurus	x	x	x
Bombus hortorum	x	x	x
Bombus humilis	x	x	x
Bombus hypnorum	x	x	x
Bombus lapidarius	x	x	x
Bombus lucorum	x	x	
Bombus muscorum	x	x	x
Bombus paradoxus	x	x	x
Bombus pascuorum	x	x	x
Bombus pomorum		x	x
Bombus pratorum	x	x	x
Bombus ruderarius	x	x	x
Bombus ruderatus	x	x	

Bombus subterraneus	x		
Bombus sylvarum	x	x	x
Bombus terrestris	x	x	x
*Ceratina acuta**	x	x	
Ceratina chalybea	x	x	x
Ceratina cucurbitina	x	x	x
Ceratina cyanea	x	x	x
Ceratina gravidula	x	x	x
Ceratina nigolabiata		x	x
Epeoloides coecutiens	x	x	x
Epeolus cruciger		x	x
Epeolus schummeli			x
Epeolus tarsalis		x	
Epeolus variegatus	x	x	x
Eucera chrysopyga	x	x	x
*Eucera cineraria**	x		
*Eucera clypeata**	x	x	
Eucera interrupta	x	x	x
Eucera longicornis	x	x	
Eucera nigrescens	x	x	x
Eucera parvula	x	x	
*Eucera proxima**	x	x	
*Eucera seminuda**	x	x	x
*Eucera (Synhalonia) hungarica**	x	x	
*Eucera (Synhalonia) tricincta**	x	x	
Melecta albifrons	x	x	x
Melecta luctuosa		x	x
Nomada alboguttata	x	x	x
Nomada argentata		x	x
Nomada armata	x	x	x
Nomada atroscutellaris	x	x	
Nomada baccata hrubanti			x
Nomada basalis		x	x
Nomada bifasciata	x	x	x
Nomada bispinosa		x	x
Nomada bluethgeni	x	x	x
Nomada braunsiana	x	x	
Nomada calimorpha		x	x
Nomada castellana	x	x	x
Nomada chrysopyga		x	

Nomada conjungens	x	x	x
*Nomada cruenta**	x		
Nomada distinguenda	x	x	x
Nomada emarginata		x	
Nomada errans		x	x
Nomada fabriciana	x	x	
Nomada facilis	x	x	
Nomada femoralis	x		
Nomada ferruginata	x	x	x
Nomada flava	x	x	
Nomada flavoguttata	x	x	x
Nomada flavopicta	x	x	x
Nomada fucata	x	x	x
Nomada fulvicornis	x	x	x
Nomada furva	x	x	x
Nomada furvoides		x	x
*Nomada fuscicornis**	x	x	x
Nomada goodeniana	x	x	x
Nomada guttulata		x	x
Nomada hirtipes		x	
Nomada incisa		x	
Nomada integra	x	x	
Nomada kohli	x	x	x
Nomada lathburiana	x	x	x
Nomada leucophthalma		x	x
Nomada marshamella	x	x	x
Nomada melanopyga		x	x
Nomada moeschleri		x	
Nomada mutabilis		x	
Nomada nobilis	x		
Nomada panzeri	x	x	x
Nomada platythorax		x	x
*Nomada pleurosticta**	x	x	
Nomada posthuma		x	x
Nomada rhenana	x	x	x
*Nomada rostrata**	x	x	x
Nomada ruficornis	x	x	x
Nomada rufipes	x	x	x
Nomada sexfasciata	x	x	x
Nomada sheppardana	x	x	x

Nomada signata	x	x	
Nomada stigma		x	x
*Nomada striata**	x	x	
Nomada succincta	x	x	x
Nomada symphyti	x	x	x
Nomada trapeziformis		x	
Nomada tridentirostris		x	
Nomada trispinosa	x	x	x
Nomada verna	x	x	
Nomada villosa	x	x	
Nomada zonata	x	x	x
*Parammobatodes minutus**	x	x	
Pasites maculatus		x	x
Tetralonia malvae	x	x	x
Tetraloniella alticincta	x	x	
Tetraloniella dentata	x	x	x
Tetraloniella fulvescens	x	x	
*Tetraloniella graja**	x		
Tetraloniella lyncea		x	
Tetraloniella nana	x	x	x
*Tetraloniella pollinosa**	x		
Tetraloniella salicariae	x	x	x
Thyreus affinis			x
Thyreus histrionicus		x	x
*Thyreus orbatus**	x	x	x
Thyreus ramosus	x	x	x
*Thyreus truncatus**	x		
Triepeolus tristis	x	x	x
Colletidae			
*Colletes chengtehensis **	x		x
Colletes cunicularius	x	x	x
Colletes daviesanus	x	x	x
Colletes fodiens	x	x	x
*Colletes graeffei**	x		
Colletes hederae		x	
*Colletes hylaeiformis**	x	x	x
Colletes inexpectatus	x	x	x
Colletes marginatus			x
*Colletes mlokossewiczi**	x	x	x
*Colletes nasutus**	x	x	x

Colletes similis	x	x	x
Colletes succinctus		x	
Hylaeus angustatus	x	x	x
Hylaeus annularis	x	x	x
Hylaeus bisinuatus	x	x	x
Hylaeus brevicornis	x	x	x
Hylaeus cardioscapus		x	x
Hylaeus communis	x	x	x
Hylaeus confusus	x	x	x
Hylaeus cornutus	x	x	x
Hylaeus difformis	x	x	
Hylaeus duckei	x	x	x
*Hylaeus euryscapus**	x	x	x
Hylaeus gibbus	x	x	x
Hylaeus gracilicornis		x	
Hylaeus gredleri		x	x
Hylaeus hyalinatus	x	x	x
Hylaeus imparilis		x	x
Hylaeus kahri		x	x
Hylaeus lineolatus	x	x	x
Hylaeus moricei		x	x
Hylaeus nigritus	x	x	x
Hylaeus pectoralis		x	x
Hylaeus pfankuchi		x	x
Hylaeus pictipes		x	x
Hylaeus punctatus	x	x	x
*Hylaeus punctulatissimus**	x	x	x
Hylaeus punctus			x
Hylaeus rinki	x	x	x
Hylaeus signatus	x	x	x
Hylaeus sinuatus	x	x	x
Hylaeus styriacus	x	x	x
Hylaeus trinotatus		x	x
Halictidae			
*Halictus (Hal.) asperulus**	x	x	x
Halictus (Hal.) brunnescens		x	
Halictus (Hal.) eurygnathus	x	x	x
Halictus (Hal.) langobardicus	x	x	x
Halictus (Hal.) maculatus	x	x	x
Halictus (Hal.) quadricinctus	x	x	x

Halictus (Hal.) rubicundus	x	x	x
*Halictus (Hal.) sajoi**	x	x	x
Halictus (Hal.) scabiosae	x	x	
Halictus (Hal.) sexcinctus	x	x	x
Halictus (Hal.) simplex	x	x	x
Halictus (Sel.) confusus		x	x
Halictus (Sel.) kessleri	x	x	
*Halictus (Sel.) leucaheneus**	x	x	x
*Halictus (Sel.) seladonius**	x	x	x
Halictus (Sel.) semitectus			x
Halictus (Sel.) smaragdulus	x	x	x
Halictus (Sel.) subauratus	x	x	x
Halictus (Sel.) tumulorum	x	x	x
*Halictus (Vest.) pollinosus**	x	x	
*Halictus (Vest.) vestitus **	x	x	x
Lasioglossum (Evyl.) aeratum	x	x	x
Lasioglossum (Evyl.) albipes	x	x	x
Lasioglossum (Evyl.) angusticeps	x	x	
Lasioglossum (Evyl.) bluethgeni	x	x	x
Lasioglossum (Evyl.) brevicorne	x	x	x
Lasioglossum (Evyl.) brev. aciculatum			x
*Lasioglossum (Evyl.) buccale**	x	x	
Lasioglossum (Evyl.) calceatum	x	x	x
*Lasioglossum (Evyl.) clypeare**	x	x	
*Lasioglossum (Evyl.) convexiusculum**	x	x	x
*Lasioglossum (Evyl.) corvinum**	x		x
Lasioglossum (Evyl.) crassepunctatum			x
Lasioglossum (Evyl.) damascenum		x	
Lasioglossum (Evyl.) elegans		x	
Lasioglossum (Evyl.) euboeense		x	x
Lasioglossum (Evyl.) fulvicorne	x	x	x
Lasioglossum (Evyl.) glabriusculum	x	x	x
*Lasioglossum (Evyl.) griseolum**	x	x	x
Lasioglossum (Evyl.) interruptum	x	x	x
Lasioglossum (Evyl.) laeve		x	
Lasioglossum (Evyl.) laticeps	x	x	x
*Lasioglossum (Evyl.) leucopum**	x		
Lasioglossum (Evyl.) lineare	x	x	x
Lasioglossum (Evyl.) lucidulum	x	x	x
Lasioglossum (Evyl.) malachurum	x	x	x

Lasioglossum (Evyl.) marginatum	x	x	x
Lasioglossum (Evyl.) marginellum	x	x	
Lasioglossum (Evyl.) mesosclerum		x	x
Lasioglossum (Evyl.) minutissimum	x	x	x
Lasioglossum (Evyl.) minutulum		x	
Lasioglossum (Evyl.) morio	x	x	x
Lasioglossum (Evyl.) nigripes	x	x	x
Lasioglossum (Evyl.) nitidiusculum	x	x	x
Lasioglossum (Evyl.) nitidulum	x	x	x
*Lasioglossum (Evyl.) obscuratum**	x	x	
Lasioglossum (Evyl.) parvulum	x	x	x
Lasioglossum (Evyl.) pauxillum	x	x	x
Lasioglossum (Evyl.) politum	x	x	x
Lasioglossum (Evyl.) punctatissimum	x	x	x
Lasioglossum (Evyl.) puncticolle	x	x	x
Lasioglossum (Evyl.) pygmaeum	x	x	x
Lasioglossum (Evyl.) quadrinotatulum		x	x
Lasioglossum (Evyl.) quadrisignatum		x	
Lasioglossum (Evyl.) semilucens	x	x	x
Lasioglossum (Evyl.) setulellum	x		
Lasioglossum (Evyl.) sexstrigatum		x	x
*Lasioglossum (Evyl.) trichopygum**	x	x	x
*Lasioglossum (Evyl.) tricinctum**	x		
*Lasioglossum (Evyl.) truncaticolle**	x	x	
Lasioglossum (Evyl.) villosulum	x	x	x
Lasioglossum (Las.) bischoffi	x	x	
Lasioglossum (Las.) costulatum	x	x	x
Lasioglossum (Las.) discum	x	x	x
Lasioglossum (Las.) kussariense	x	x	
Lasioglossum (Las.) laevigatum	x	x	x
*Lasioglossum (Las.) laterale**	x	x	x
Lasioglossum (Las.) lativentre	x	x	x
Lasioglossum (Las.) leucozonium	x	x	x
Lasioglossum (Las.) majus	x	x	x
Lasioglossum (Las.) pallens	x	x	x
Lasioglossum (Las.) pseudocaspicum		x	
Lasioglossum (Las.) quadrinotatum	x	x	x
Lasioglossum (Las.) sexnotatum	x	x	x
Lasioglossum (Las.) subfasciatum	x	x	
Lasioglossum (Las.) xanthopus	x	x	x

Lasioglossum (Las.) zonulum	x	x	x
Ceylalictus variegatus			x
*Nomiapis bispinosa**	x	x	x
Nomiapis diversipes	x	x	x
Nomiapis femoralis		x	
*Nomioides minutissimus**	x		x
Rophitoides canus	x	x	x
*Rophites algirus**	x	x	
Rophites hartmanni	x	x	x
Rophites quinquespinosus	x	x	x
Sphecodes albilabris	x	x	x
Sphecodes alternatus	x	x	x
*Sphecodes crassus**	x	x	x
Sphecodes cristatus			x
Sphecodes croaticus	x	x	x
Sphecodes ephippius	x	x	x
Sphecodes ferruginatus	x	x	x
Sphecodes geofrellus		x	x
Sphecodes gibbus	x	x	x
Sphecodes hyalinatus			x
Sphecodes longulus	x	x	x
Sphecodes majalis	x	x	x
Sphecodes marginatus		x	x
Sphecodes miniatus	x	x	x
Sphecodes monilicornis	x	x	x
Sphecodes niger	x	x	x
Sphecodes pellucidus	x	x	x
Sphecodes pseudofasciatus	x	x	x
Sphecodes puncticeps	x	x	x
Sphecodes reticulatus		x	x
Sphecodes rubicundus		x	
Sphecodes rufiventris	x	x	x
Sphecodes scabricollis		x	x
Sphecodes spinulosus		x	
Systropha curvicornis	x	x	x
Systropha planidens	x	x	x
Megachilidae			
*Anthidium cingulatum **	x		
Anthidium florentinum	x	x	x
*Anthidium laterale**	x		x

Anthidium manicatum	x	x	x
Anthidium nanum	x	x	x
Anthidium oblongatum	x	x	x
Anthidium punctatum	x	x	x
Anthidium septemspinosum		x	x
Anthidium strigatum	x	x	x
Anthidium tenellum			x
Chelostoma campanularum	x	x	x
Chelostoma distinctum	x	x	x
Chelostoma emarginatum	x	x	x
Chelostoma florisomne	x	x	x
Chelostoma foveolatum	x	x	
Chelostoma handlirschi			x
Chelostoma rapunculi	x	x	x
Chelostoma styriacum	x	x	x
Chelostoma ventrale	x	x	x
Coelioxys acanthura		x	
Coelioxys afra	x	x	x
Coelioxys alata			x
Coelioxys aurolimbata	x	x	x
Coelioxys brevis			x
Coelioxys caudata		x	
Coelioxys conoidea	x	x	x
Coelioxys echinata	x	x	x
*Coelioxys elongata**	x	x	x
*Coelioxys emarginata**	x		
*Coelioxys haemorrhoa**	x		
Coelioxys inermis	x	x	x
Coelioxys mandibularis	x	x	x
Coelioxys obtusa	x	x	x
Coelioxys polycentris		x	
Coelioxys quadridentata	x	x	x
Coelioxys rufescens	x	x	x
*Dioxys cincta **	x		
*Dioxys pannonica**	x	x	
*Dioxys tridentata**	x	x	x
Heriades crenulata	x	x	x
Heriades rubicola	x	x	x
Heriades truncorum	x	x	x
Hoplitis acuticornis	x	x	x

Hoplitis adunca	x	x	x
Hoplitis anthocopoides	x	x	
*Hoplitis bisulca**	x		
Hoplitis claviventris	x	x	x
Hoplitis laevifrons	x	x	x
Hoplitis leucomelana	x	x	x
*Hoplitis manicata**	x	x	x
*Hoplitis mazzuccoi**	x	x	
Hoplitis mocsaryi		x	
Hoplitis papaveris		x	
*Hoplitis praestans**	x		
Hoplitis ravouxi	x	x	
Hoplitis tergestensis	x	x	
Hoplitis tridentata	x	x	x
Hoplosmia bidentata	x	x	x
*Hoplosmia ligurica**	x	x	
*Hoplosmia scutellaris**	x		
Hoplosmia spinulosa	x	x	x
Lithurgus chrysurus	x	x	x
Lithurgus cornutus	x	x	x
Megachile albisecta	x	x	x
Megachile apicalis	x	x	x
Megachile centuncularis	x	x	x
Megachile circumcincta	x	x	x
*Megachile deceptoria**	x	x	
Megachile ericetorum	x	x	x
*Megachile flabellipes **	x	x	
*Megachile genalis**	x	x	
*Megachile giraudi**	x		
*Megachile hungarica**	x		
Megachile lagopoda		x	
Megachile leachella	x	x	x
Megachile ligniseca		x	x
Megachile maritima	x	x	x
Megachile melanopyga	x	x	x
Megachile octosignata	x	x	x
Megachile parietina		x	
Megachile pilicrus	x	x	x
Megachile pilidens	x	x	x
Megachile pyrenea	x		

Megachile rotundata	x	x	x
Megachile versicolor	x	x	x
Megachile willughbiella	x	x	x
Osmia andrenoides	x	x	x
Osmia aurulenta	x	x	x
Osmia bicolor	x	x	x
Osmia bicornis	x	x	x
Osmia brevicornis	x	x	x
Osmia caerulescens	x	x	x
Osmia cerinthidis	x	x	
Osmia cornuta	x	x	x
Osmia gallarum	x	x	x
Osmia leaiana	x	x	
Osmia melanogaster	x	x	x
Osmia niveata	x	x	x
Osmia pilicornis		x	x
Osmia rufohirta	x	x	x
Stelis breviuscula	x	x	x
Stelis iugae		x	
Stelis minuta	x	x	
Stelis odontopyga	x	x	
Stelis ornatula	x	x	x
*Stelis phaeoptera**	x		x
Stelis punctulatissima	x	x	x
Stelis signata	x	x	x
Trachusa byssina	x	x	x
Trachusa interrupta			x
Melittidae			
Dasypoda hirtipes	x	x	x
Dasypoda morawitzi		x	x
Macropis europaea	x	x	x
Macropis frivaldszkyi	x	x	
Macropis fulvipes	x	x	x
Melitta dimidiata		x	x
Melitta haemorrhoidalis	x	x	
Melitta leporina	x	x	
Melitta nigricans	x	x	x
Melitta tricincta	x	x	x

Irodalom

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Submitted: 23.10, 2024; Accepted: 13.11, 2024; Published: 15.12, 2024 www.smmi.hu/termtud/ns/ns.htm

A new record of *Glenochrysa zeylanica* (Banks, 1913) (Neuroptera: Chrysopidae) from India

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Suryanarayanan, T. B. & Bijoy, C. 2024: *A new record of Glenochrysa zeylanica (Banks, 1913) (Neuroptera: Chrysopidae) from India. - Natura Somogyiensis 44: 115-124.*

Abstract: The species, *Glenochrysa zeylanica* (Banks, 1913) belonging to the family Chrysopidae is rediscovered and recorded for the first time from India. Besides, the global distribution of *G. zeylanica* is also figured.

Keywords: green lacewing, taxonomy, Western Ghats, India.

Introduction

Chrysopidae commonly known as green lacewings is one of the predominant families of order Neuroptera with 1200 species under 80 genera from the world of which 74 species belong to 23 genera have been reported from India (Brooks & Barnard 1990, Singh et al. 2020, Winterton & Gupta 2020, Winterton et al. 2021, Suryanarayanan & Bijoy 2021a,b). Chrysopidae includes three extant subfamilies: Chrysopinae, Apochrysinae, and Nothochrysinae. Among these, Chrysopinae is the principal subfamily with Chrysopini as the chief tribe (40 genera worldwide). The genus *Glenochrysa* Esben-Petersen, 1920 belongs to the tribe Chrysopini with 16 species and 5 subspecies globally, of which three species are known from India i.e., *G. gloriosa* (Navás, 1931) from Maharashtra, *G. marmorata* (Needham, 1909) from Assam, West Bengal, Andaman and Nicobar Islands, *G. splendida* (van der Weele, 1909) from Andaman and Nicobar Islands (Ghosh & Sen 1977, Ghosh (1990, 1998, 2000), Singh et al. 2020). According to Singh et al. (2020), *G. gloriosa* (Navás, 1931) is the only species known from the Western Ghats.

G. zeylanica (Banks, 1913), a species previously thought to be endemic to Sri Lanka has been rediscovered after 111 years and reported for the first time from India (Western Ghats, Kerala region). This discovery validates the similarity between faunal elements in Sri Lanka and also in Southern Western Ghats (Kerala).

ISSN 1587-1908 (Print); ISSN 2062-9990 (Online)

Material and methods

The adult specimens were collected using a sweep net and transferred into a killing jar filled with ethyl acetate (1-2 drops in cotton). After that, specimens were pinned, stretched, dried, labeled, and preserved as per standard procedures. The specimens were examined through Labomed® Luxeo 6Z Stereomicroscope. The terminology of wing venation and identification as follows BANKS (1913) and BREITKREUZ et al. (2017) respectively. The digital photos of the specimens were taken with Nikon Coolpix P900 digital camera with a Raynox 250 lens. The specimens were deposited in the Insect collections of Shadpada Entomology Research Lab (SERL), Kerala, India.

Abbrevations: Odescr – original description, Comb – new combination, Chlist – Checklist.

Results

Glenochrysa Esben-Petersen, 1920
Type species: *Glenochrysa typica* Esben- Petersen, 1920

Diagnosis: Distinctively black and dark-brown marked wings, frequently extensive, with additional iridescent embossed pustules on wing membrane, short subcostal (Sc) vein (meeting costa before wing apex), recurrent second cubital vein (Cu_2), tignum and pseudopenis absent in male terminalia, sternite 8+9 highly modified with medial and lateral projections bearing gonocristae (TJEDER 1966, NEW 1980, BROOKS & BARNARD 1990, WINTERTON et al. 2015).

Distribution: Afrotropical, Oriental, and Australasian regions (TJEDER 1966, NEW 1980, HÖLZEL 1991, BROOKS & BARNARD 1990, HÖLZEL & DUELLI 2001).

Glenochrysa zeylanica (Banks, 1913)
Chrysopa zeylanica Banks, 1913: 220. Odescr, Kimmins 1940: 449. Comb, Brooks & Barnard 1990: 273. Chlist.
Type locality: Kandy, Sri Lanka.

Type material:
Label information: / Type // Type / 11967 // Peradeniya / Ceylon 22 Jan[uary] // Green/ coll // collection / N. Banks // *Chrysopa ceylonica* / type Bks // MCZ-ENT / 000011967 /
In BANKS (1913): *Chrysopa zeylanica* n. sp.- Type. – ♂. From Kandy, Ceylon, May (Green). (Fig. 1A–F).
The type was deposited in MCZ (Museum of Comparative Zoology – United States, Massachusetts, Cambridge).
Comments: The data on the type specimen labels differ from the published data in several details, species name: ceylonica – zeylanica, collecting site: Peradeniya – Kandy, and collecting date 22 Jan – May, therefore the origin of the type specimen is doubtful.

Material examined: 1♀ INDIA, Kerala State, Wayanad Dist.[rict], Mananthavady, 792 m, coordinates: 11°48′04.91″N, 76°00′15.74″E, 13.VI.2022, leg. Suryanarayanan. T. B., SERLNR317. 2♀ INDIA, Kerala State, Wayanad Dist.[rict], Thirunelly, 862 m, coordinates: 11°54′40.17″N, 76°00′00.83″E, 21.VI.2022, leg. Suryanarayanan. T. B., SERLNR319, SERLNR320.

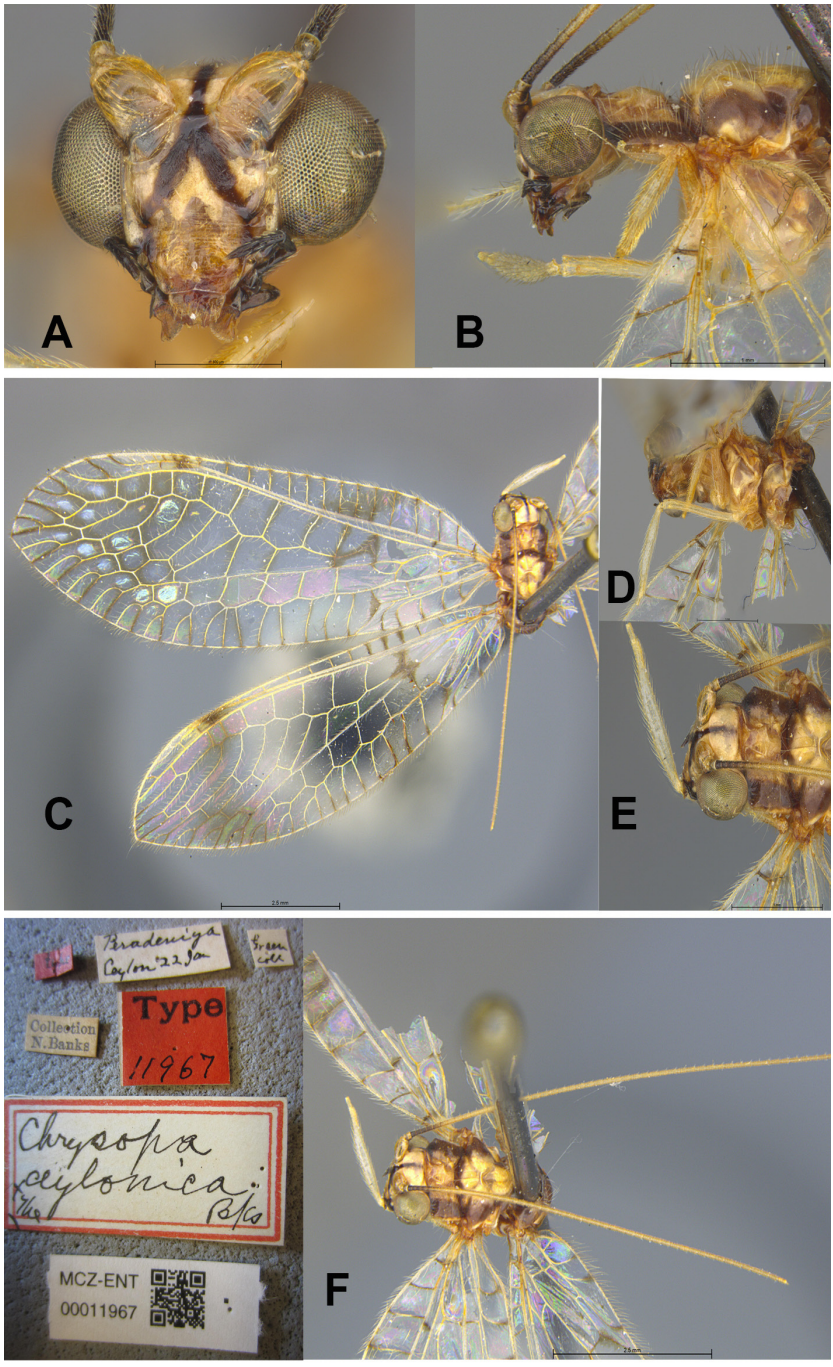

Fig. 1: Type male of *Glenochrysa zeylanica* (Banks, 1913), A – Head in frontal view; B – Head and thorax in lateral view; C – Wing venation; D – Head and thorax in ventral view; E – Head in dorsal view; F – Dorsal view (in MCZ collection).

Diagnosis. Face with a prominent distinctively brown inverted Y-mark, an oblique streak across costal area near base of forewing; gradate series and cross-veins between radial sector and radius faintly margined with brown; base of radial sector and cross-vein to median vein black, a dark spot in fork of cubital branch of forewing.

Description (Fig. 2A–C).

Measurements: Female: Length 9 mm from head to abdomen and 1 mm wide.
Head: Vertex yellow, medially separated by dark-brown stripe. Frons with a prominent dark-brown inverted Y-mark extending to vertex. Inter-antennal marking dark-brown. Eyes black, large, slightly wider than half of head width. 1-4 basal segments of antennae black and rest of antennal segments deep pale-brown.
Thorax: Pronotum nearly twice as wide as long, green, with dark-brown stripes on each lateral margin. Mesonotum green with dark-brown markings. Metanotum dark-brown.
Wings: narrow elongate and veins pale-yellow with dark-brown and yellowish-brown shading around crossveins and usually with iridescent pustules. Forewing 12 mm long and 4 mm wide, long quadrangular intramedian cell present. Oblique dark-brown streak across costal area near base of forewing. Cubital fork with dark-brown spot. Pterostigma long and narrow with light brown colour. Hindwing 10 mm long and 3 mm wide. Membrane with dark-brown veins in some costals, marginal veinlets.
Abdomen: green with dark-brown stripe in 4-5 abdominal segments.
Female easily distinguished from males by their broad abdominal tip and bilobed subgenital and a pillbox-shaped spermatheca with long coiled duct.

Habitat and flight period: The specimen was collected from forest ecosystem surrounded by short and tall trees. The live specimen was resting in the top of the leaf (Fig. 3A)

Distribution (Fig. 3B): Sri Lanka, India: Kerala (Wayanad Dist.: Mananthavady, Thirunelly).

Discussion

There is a definite decline in studies on the taxonomy of the order Neuroptera after the Ghosh research period (1977-2000) in India. Only one new species, *Joguina unimaculata* Winterton, Suryanarayanan & Bijoy, 2021, has been added to the Indian Chrysopidae after his research period. In the last five years, there has been a remarkable increase in research on Neuropteran families by KAUR et al. (2019a, 2019b, 2021); WINTERTON & GUPTA (2020); SURYANARAYANAN & BIJOY (2021a, 2021b, 2021c, 2021d, 2022, 2024); SURYANARAYANAN et al. (2022, 2023a, 2023b, 2024a, 2024b, 2024c, 2024d) through their revisions and distribution records. In this paper, a very rare green lacewing, *G. zeylanica* (Banks, 1913), originally described from Kandy, Sri Lanka, has been rediscovered and reported from India (Kerala) for the first time after 111 years. This connection highlights the close zoogeographical relationship between the Western Ghats and Sri Lanka, making the region ideal for more such exciting discoveries.

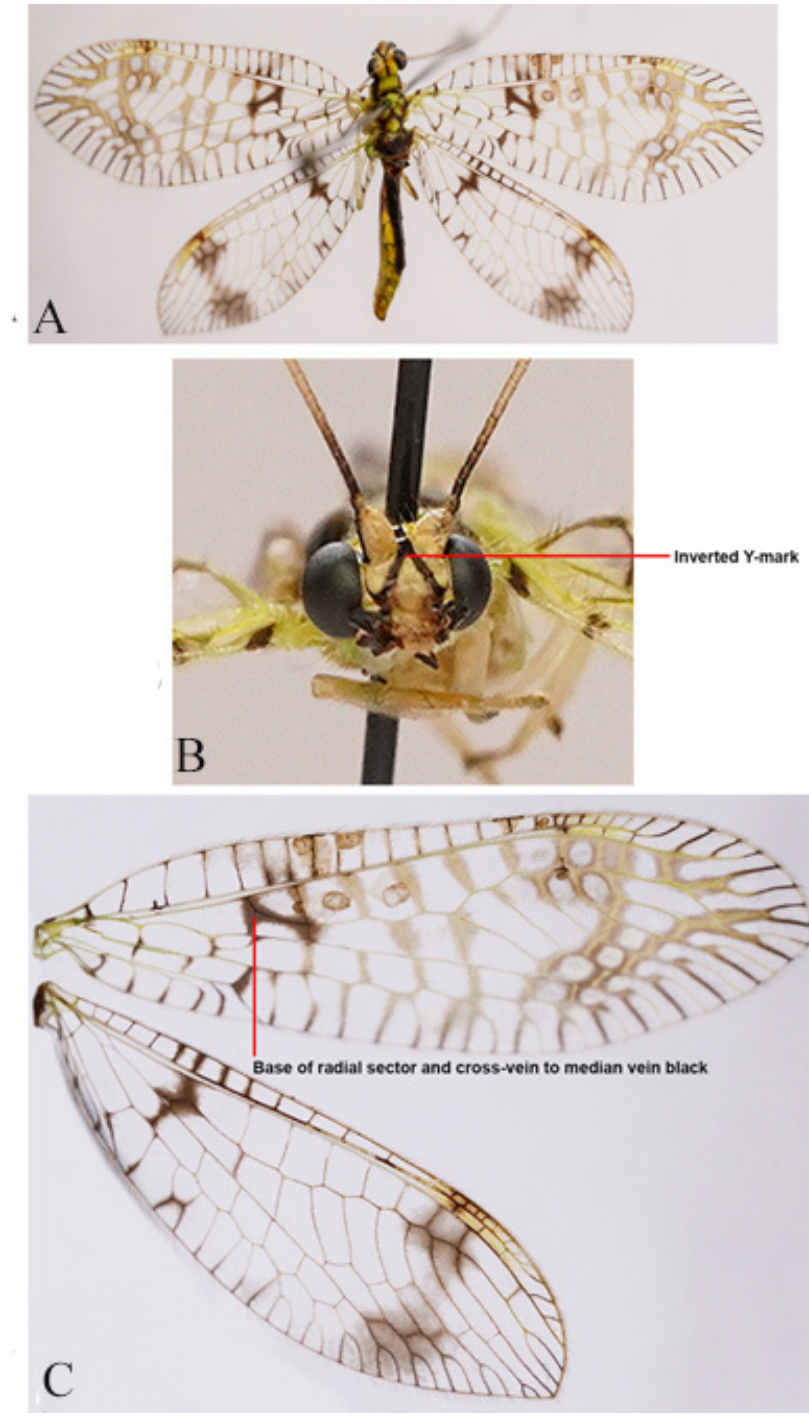

Fig. 1: *Glenochrysa zeylanica* (Banks, 1913),
A – Female habitus; B – Head in frontal view; C – Wing venation.

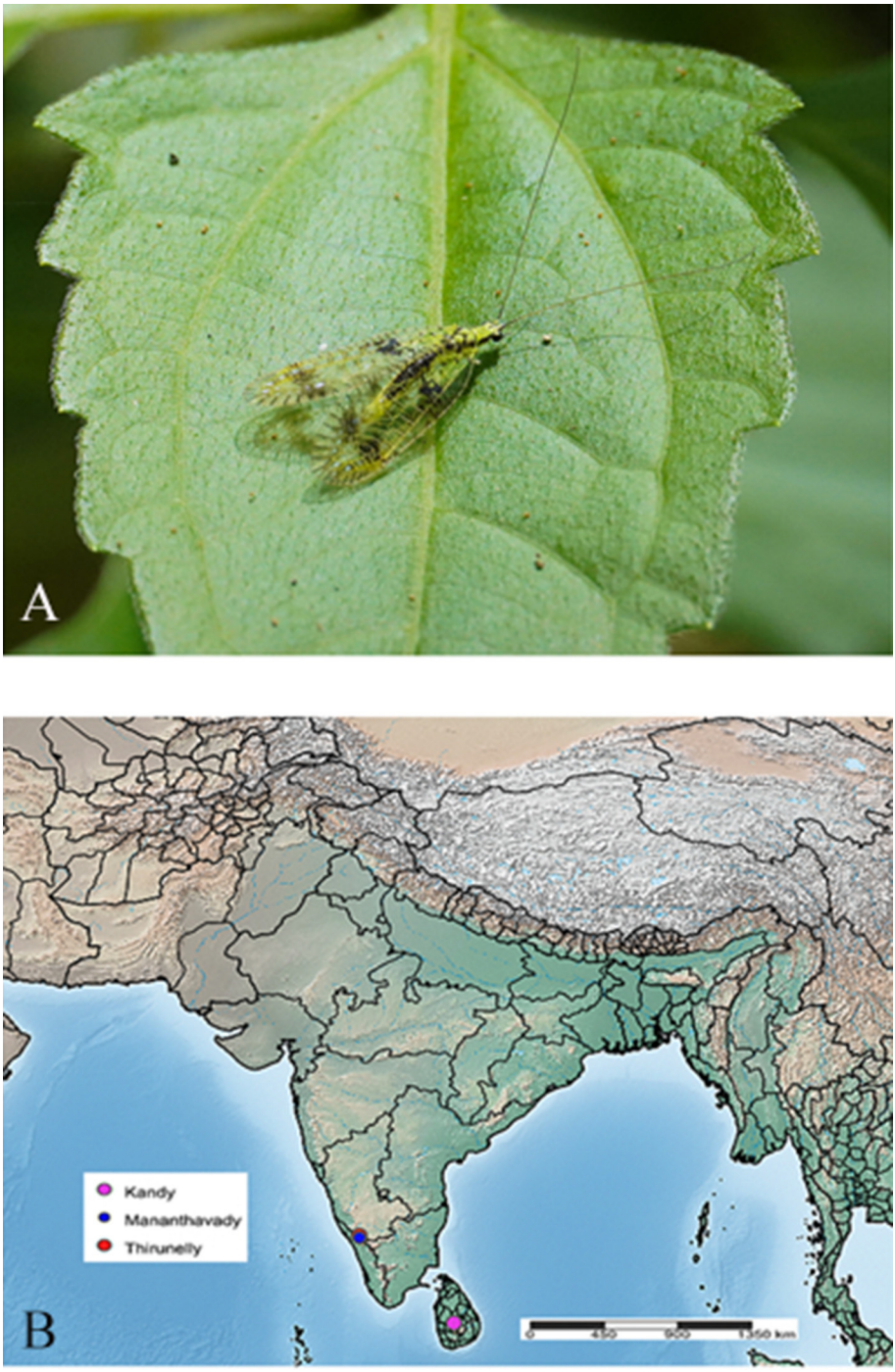

Fig. 3: A – Adult female of *Glenochrysa zeylanica (*Banks, 1913);
B – Distribution of *Glenochrysa zeylanica* (Banks, 1913) from the Oriental

Acknowledgements

We are grateful to the Principal, Christ College (Autonomous), Irinjalakuda, Kerala for providing us with the facilities for undertaking this work. The first author offers sincere gratitude to the Council of Scientific & Industrial Research (CSIR), Government of India, for financial support in the form CSIR Senior Research Fellowship (08/376(0010)/2019-EMR-I). We are thankful to the Chief Wildlife Warden, Kerala, for the collection permit to the forest (KFDHQ-6559/2019-CWW/WL10). We are grateful to the Museum of Comparative Zoology, Harvard University; ©President and Fellows of Harvard College for providing the photos of type specimen in their museum. We are grateful to Crystal A. Maier and Charles Whittemore Farnum (MCZC, Cambridge, USA), for locating the type specimen and taking photo series for their study. Thanks to Dr. Shaun L. Winterton and Yunlong Ma, for providing guidance and support in this study. Thanks to Adarsh P. K., Athira K. K., Vivek Chandran A., for field assistance in collecting and photographing the specimens.

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