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The Börzsöny lacewing collection II. (Neuroptera: Myrmeleontidae: Myrmelontinae)

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Abstract: The entomological collection of László Börzsöny was donated to the Rippl-Rónai Museum (Kaposvár) in 2019. The collection includes 392 specimens of 74 antlion species. The most interesting and rare species are *Iranoleon octavus* Hölzel, 1981, and *Centroclisis minor* Banks in Strong, 1930. During the determination, the type specimens of several species have been examined and proposed several taxonomic changes. The valid status of *Myrmecaelurus varians* Navás, 1913 is confirmed. *Myrmecaelurus acerbus* (Walker, 1853) (**syn. n.**) is a new junior synonym of *Myrmecaelurus laetus* (Klug in Ehrenberg, 1834). The lectotypes and paralectotypes of *Myrmecaelurus acerbus* (Walker, 1853) and *Myrmecaelurus laetus* (Klug in Ehrenberg, 1834) are presently designated. *Myrmeleon atlas* Banks, 1911 (**syn. n.**). is a new junoir synonym of *Myrmeleon quinquemaculatus* Hagen, 1853. Several species were found as new records for the local fauna. With 8 figures.

Keywords: faunistics, new synonyms, antlions, Myrmelontinae

Introduction

László Börzsöny, Hungarian entomologist, odonatologist, died in 2016. After his death, his widow donated his rich insect collection to the Natural History Department of the Rippl-Rónai Museum (SCMK, Kaposvár).

This material contained more than a thousand specimens of Neuroptera, mainly Myrmeleontidae, and some other specimens of Osmylidae, Mantispidae, Hemerobiidae, Chrysopidae, and Nemopteridae.

In 2020, the first report of the Börzsöny lacewing collection was published. In this paper (Ábrahám 2020) the taxonomic division of Machado & Oswald (2019) was followed, according to which in the subfamily Ascalaphinae Lefébvre, 1842 the tribes Dimarini Navás, 1914, Palparini Banks, 1911, Ululodini van der Weele, 1909, Haplogleniini Newman, 1853 and the Ascalaphini Lefèbvre, 1842 were documented in the collection.

In the present paper, the material of the tribes Myrmecaelurini Esben-Petersen, 1918, Nesoleontini Markl, 1954, Acanthaclisini Navás, 1912, Myrmeleonini Latreille, 1802, Dendroleontini Banks, 1899, Nemoleontini Banks, 1911, Megistopini Navás, 1912, and Glenurini Banks, 1927 of the subfamily Myrmeleontinae is published. The material examined comes from Africa, Asia, Europe, and South America. Several taxonomically problematic species and species groups or undescribed species were found in the collection and the description of the new species will be published in further editions of the paper series.

The importance of the material is that the collection contains many new faunistic data from poorly studied areas, thus this paper significantly contributes to the distribution of species.

Material and methods

In terms of material and methods, the present paper follows the methodology described in the previous publication (Ábrahám 2020).
For identification, the specimens in the collection were compared with the type specimens or their photographs. Published photographs of type specimens and little-known species will help to identify the species in the future.
Monographs, checklists, and databases (e.g. Aspöck et al. 2001, Stange 2004, Oswald 2024) and the comparative collection of the Rippl-Rónai Museum were used for species determination.

The checked type specimens used in the work are from the following collections:
EMAU – Ernst-Moritz-Arndt Universitat Greifswald, Zoologisches Institut und Museum, Greifswald, Germany,
NHMUK – The Natural History Museum, London, UK,
NHMW – Naturhistorisches Museum, Wien, Austria,
NHRS – Naturhistoriska riksmuseet, Stockholm, Sweden,
SCMK – Rippl-Rónai Museum, Kaposvár, Hungary,
ZMB – Museum für Naturkunde – Leibniz-Institut für Evolutions – und Biodiversitätsforschung Berlin, Germany

Results and discussion

The faunistic data are given on the basis of the labels in the collection in English, German, and Hungarian, as they spelled out on the original label. The faunistical data of each specimen (sex, country, collecting site, date, and collector) is separated by semicolons. If the end of the abdomen was missing and the sex could not be identified, these were indicated by a line (–) after the number of specimens.

After presenting the faunistic data of each species, a brief taxonomic, faunistic, distribution, etc. information is provided.

The collection contains 392 specimens of 74 species. To determine these, it was necessary to check the type specimens in several cases. The SCMK collection was used as a comparative material.

Family **Myrmeleontidae** Latreille, 1802
Subfamily **Myrmeleontinae** Latreille, 1802
Tribe **Myrmecaelurini** Esben-Petersen, 1918

Iranoleon octavus Hölzel, 1981 (Fig. 1).
Specimens examined: 2 ♂ 4 ♀ Jordania südl. Totes Meer

250m –.v.1999 leg. G. Müller; 1 ♂ Jordania Jordan, Oberes Jordantal –.vi.1999 leg. G. Müller.

Remarks: The type specimens are known from the Sinai Peninsula (Aspöck et al. 2001, Stange 2004, El Hamouly et al. 2011). This is a new record for the fauna of Jordan.

Furgella damarina (Péringuey, 1910)
Specimens examined: 1 ♀ Namibia ca 80 km NE Windhoek 4.1-4.2.1999 leg. H. Lehmann, mounted; 2 ♀ Namibia Hardap Dam 31.10.1994 leg. Werner, mounted.

Remarks: Only two species from the endemic genus distributed in southern Africa are known. The type specimens come from the Damara Plateau in central Namibia (Péringuey 1910). Later, it was incorrectly synonymized by Esben-Petersen (1928) as *Creagris nubifer* Kolbe, 1897 (now *Creoleon nubifer*). The name of the species was also listed as a synonym by Kimmins (1939), probably based on the work of Esben-Petersen (1928). Mansell (1979) reinforced the status of the species and moved it to a new combination. Stange (2004) extended the distribution to South Africa but Mansell & Oswald (2024) later did not confirm it.

Furgella intermedia Markl, 1953
Specimens examined: 2 ♀ Botswana Ghanzi 28.01.1995 leg. Werner; 4 ♀ Namibia ca. 80 km SW Windhoek 1360 m 12.1-10.2.1997 leg. H. Lehmann; 1 ♀ Namibia ca. 80 km SW Windhoek Farm Heimat 05.01.1999 leg. H. Lehmann; .

Remarks: When the species was described, the type localities from Namibia and Mozambique were documented by Markl (1953). It was later recorded from South Africa and Botswana (Mansell 2000, Mansell & Oswald 2024).

Gepus invisus Navás, 1912
Specimens examined: 1 ♀ Jordania südl. Totes Meer 250 m –.v.1999 leg. G. Müller.

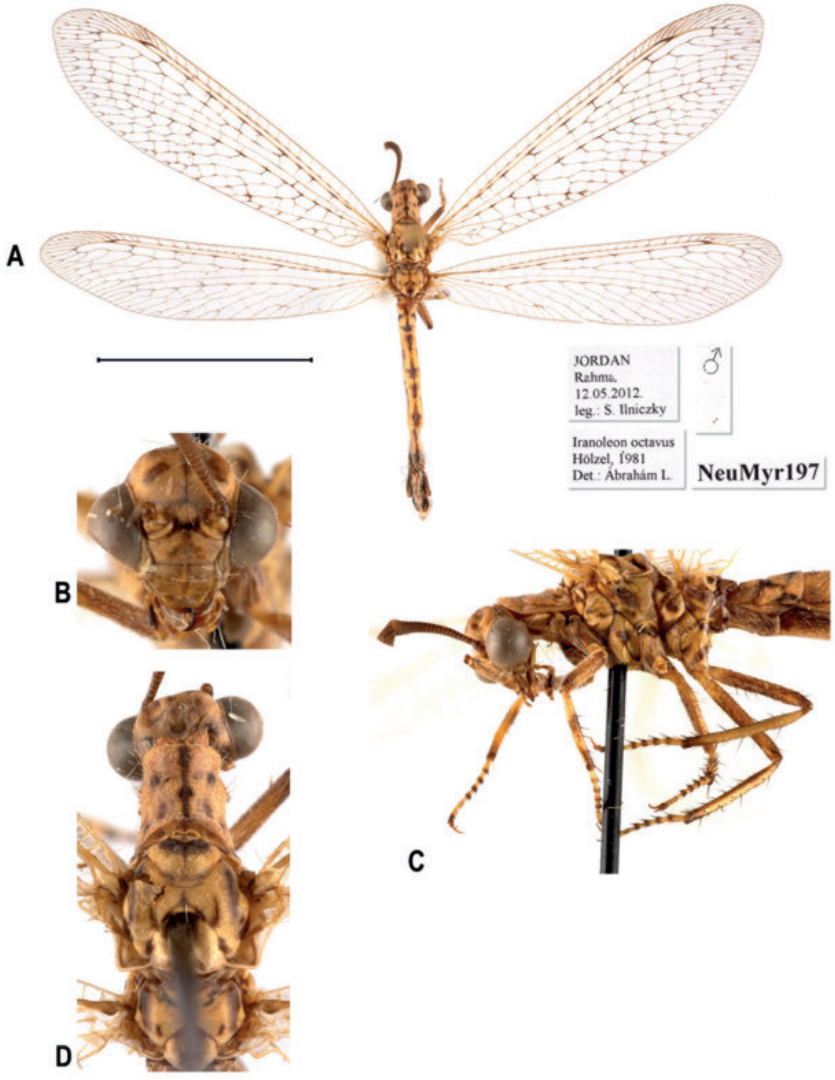

Fig. 1. Iranoleon octavus Hölzel, 1981 A – habitus, B – head in frontal view, C – thorax and legs in lateral view, D – head and thorax in dorsal view. Scale 10 mm.

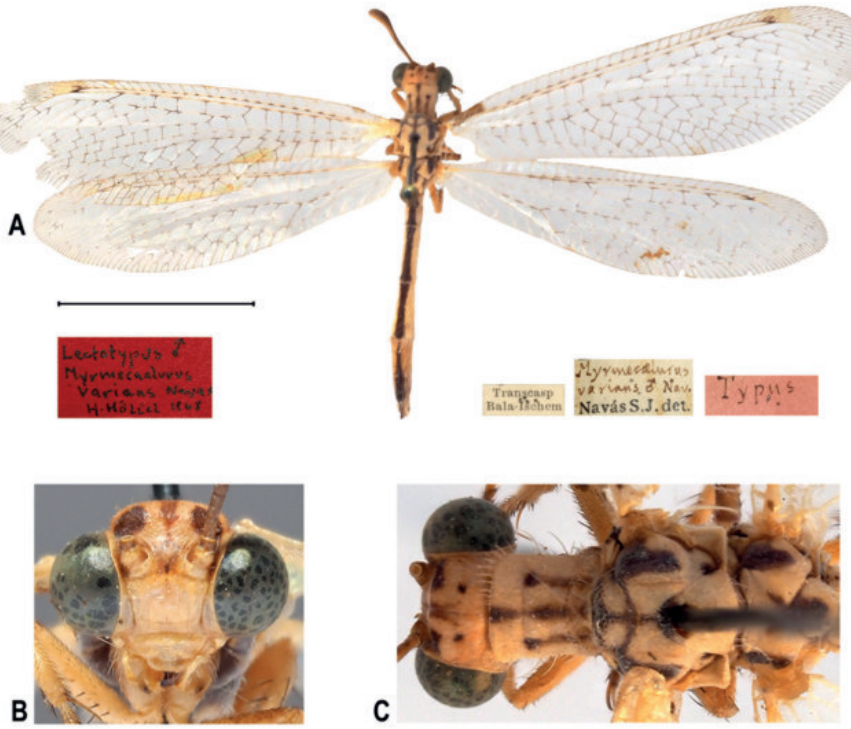

Fig. 2. Lectotype of Myrmecaelurus varians Navás, 1913 A – habitus, B – head in frontal view, C – head and thorax in dorsal view, preserved in coll. NHMW (Photo: Harald Bruckner). Scale: 10 mm.

Remarks: It is a widespread species in the Saharan zone from Morocco to Egypt and also occurs in the Middle East (Arabian Peninsula and Iran) (Aspöck et al. 2001). Some specimens from Pakistan (Balochistan province) are preserved in the SCMK collection. It was already mentioned by Kimmins (1950) from Jordan (Transjordan).

Solter simoni Hölzel, 1981
Specimens examined: 1 ♀ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller.

Remarks: So far, only the data of the type specimens from Israel have been published (Hölzel 1981). It is a new species for the Jordanian fauna.

Myrmecaelurus solaris Krivokhatsky, 2002
Specimens examined: 1 ♂ Iran Estalak, E of Teheran, indoturanisches Grassland 2-4 week of July, 1996 leg. G. Müller.

Remarks: It is a widespread species in Central Asia but can also be found in dry mountainous areas, e.g. in Iran and the southern Caucasus (Krivokhatsky et al. 2015, Kacirek & Šumpich 2024). It is a new record for the fauna of Turkey (prov. Van) based on the collection of SCMK. Aspöck et al. (2001) did not list this species from the Western Palearctic.

Myrmecaelurus trigrammus (Pallas, 1771)
Specimens examined: 2 ♂ Portugal Praiha de Rocha –.07.2000 leg. H. Lehmann.

Remarks: A common and widespread species throughout Europe except of northern Europe. Its range extends from Asia Minor, the Caucasus, and the South Asian mountains (Iran, Tajikistan, Afghanistan) to Inner Asia (Aspöck et al. 2001). Its occurrence in Africa (Navás 1914: Somalia) and India (Chandra & Sharma 2009) is doubtful.

Myrmecaelurus varians Navás, 1913
Specimens examined: 2 ♀ Iran Salt Lake near Bager Abad 2–4 week of July, 1996 leg. G. Müller.

Type material examined:
Lectotype: *Myrmecaelurus varians* Navás, 1913, preserved in NHMW (Fig. 2).
Label information: / Typus // Transcasp / Bala-Ischem // Myrmecaelurus / varians ♂ Nav. / Navás S.J. det. // Lectotype ♂ / Myrmecaelurus / varians Navas / H. Hölzel 1968 /.

Syntypes of *Myrmecaelurus acerbus* Walker, 1853, preserved in NHMUK (Fig. 3).
Label information: / Syn- / type // W / 52 // N. India / Named / at sight by / W. F. K. // One of Walkers / series so named as / acerbus // NHMUK010288331/; / Lectotype ♂ / *Myrmeleon acerbus* / Walker, 1853 / design. L. Ábrahám /; / Syn- / type // Type // 49 / 52 // N. India // acerbus // NHMUK010288332/; / Papalectotype ♂ / *Myrmeleon acerbus* / Walker, 1853 / design. L. Ábrahám / (**present designation**)

Syntypes of *Myrmecaelurus laetus,* preserved in ZMB (Fig. 4).

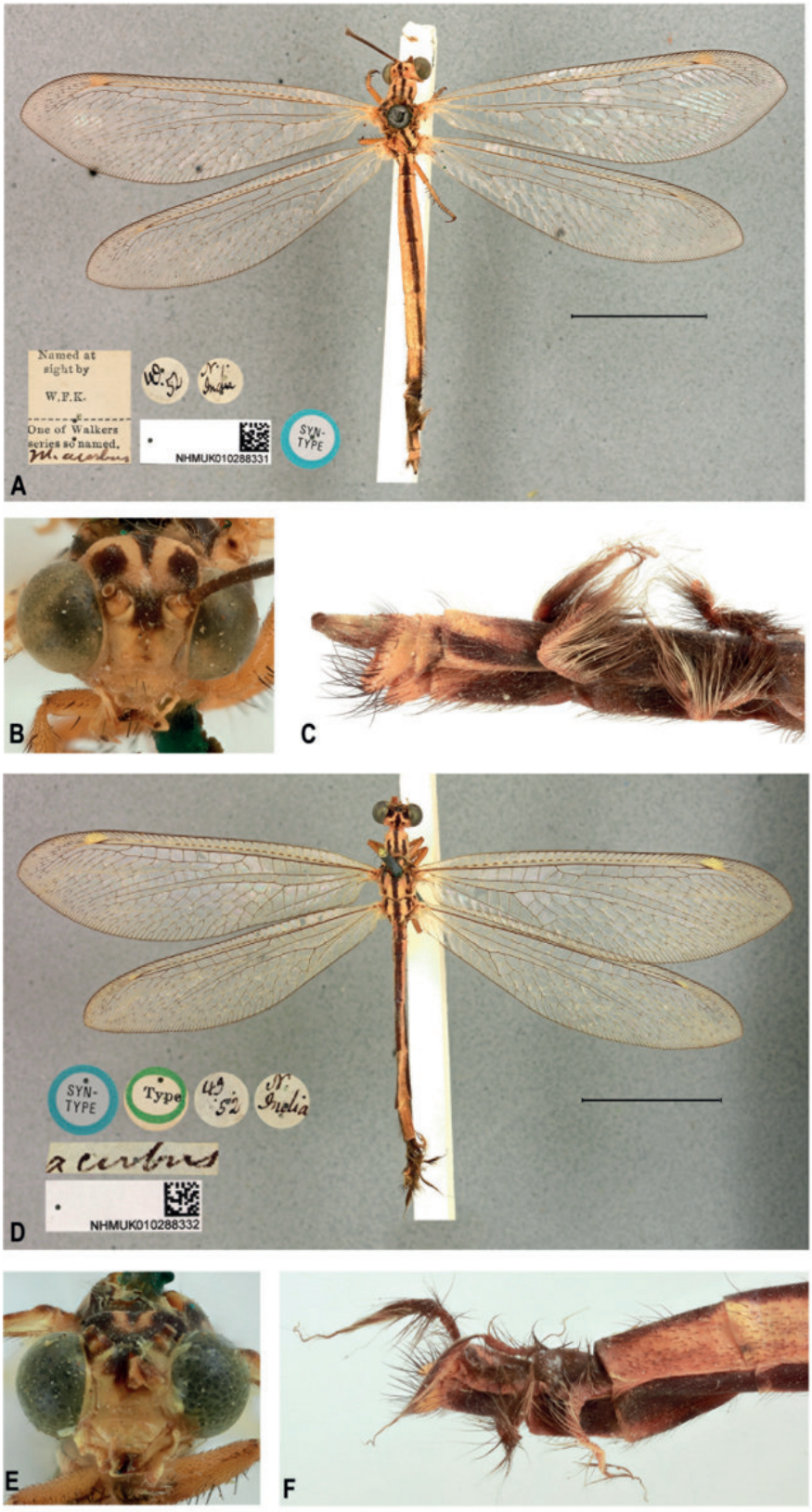

Fig. 3. Lectotype of Myrmecaelurus acerbus (Walker, 1853) A – habitus, B – head in frontal view, C – male terminalia in lateral view; Paralectotype D – habitus, E – head in frontal view, F – male terminalia in lateral view in coll. NHMUK (Photo: Dan Hall). Scale: 10 mm.

Label information: / Type // Arabia des. // Zool. Mus / Berlin // 86. // laetus Kl. / typ. // http://collmfn- / berlin.de/u/ / c2e3ea /, / Lectotype ♀ / *Myrmeleon laetus* / Klug in Ehrenberg, 1834 / design. L. Ábrahám 2024 /;
/ Type // Arab d. / mtg. // 86. // Hung. ?? // laetus Kl* / typ. // http://collmfn- / berlin.de/u/ / c2e3e0 /, / Paralectotype I. ♀ / *Myrmeleon laetus* / Klug in Ehrenberg, 1834 / design. L. Ábrahám 2024 /;
/ Type // Arabien // 86. // Zool. Mus / Berlin // http://collmfn- / berlin.de/u/ / c2e3cc /, / Paralectotype II. ♀ / *Myrmeleon laetus* / Klug in Ehrenberg, 1834 / design. L. Ábrahám 2024 / (**present designation**).

Remarks: *Myrmecaelurus varians* Navás, 1913 is a valid taxon, the lectotype male was designated by Hölzel (1968). Krivokhatsky et al. (2015) incorrectly synonymised the species as *Myrmecaelurus acerbus* (Walker, 1853). Two syntype specimens of *Myrmecaelurus acerbus* (Walker, 1853) can be found in the coll. NHMUK. However, *Myrmecaelurus acerbus* (Walker, 1853) (**syn. n.**) also proved to be a new junior synonym of *Myrmecaelurus laetus* (Klug in Ehrenberg, 1834). There are three syntype specimens of *Myrmecaelurus laetus* (Klug in Ehrenberg, 1834) in ZMB. The lectotype and paralectotypes of *M. acerbus* and *M. laetus* were designated (**present designation**).

The two species can be easily distinguished from each other by wing characters. *M. varians* is slightly smaller than *M. laetus*, its wings are narrower, and the wing tips are rounded. The radial veins alternate between pale and dark sections on both wings. The wings of *M. laetus* are wide, the tips are subacute, and the radius predominantly unicolour dark along its entire length on both wings.
The range of *M. varians* extends to eastern Turkey, Iran, Turkmenistan, Uzbekistan, and Afghanistan (Aspöck et al. 2001), further data are known from Tajikistan, Pakistan, and northern Oman in coll. SCMK.

Nesoleontini Markl, 1954

Cueta clara Hölzel, 1980
Specimens examined: 1 ♀ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller; 1 ♂ 2 ♀ Jordania Jordan, Oberes Jordantal –.vi.1999 leg. G. Müller; 1 ♀ Jordania near Aquaba –.iv.1999 leg. G. Müller.

Remarks: The known distribution is limited to West Asia: Israel, Saudi Arabia, Palestine (Hölzel 1980, 1988), and Iran (Fars prov.) (Mirmoayedi 2007). It is a new record for the fauna of Jordan. It is only possible to reliably distinguish the species by examining the genitalia.

Fig. 4. Lectotype of Myrmecaelurus laetus (Klug in Ehrenberg, 1834) A – habitus, B – head in frontal view, C – abdomen in lateral view in coll. ZMB (Photo: Stefanie Krause)

Cueta divisa (Navás, 1912)
Specimens examined: 1 ♀ Ethiopia Sidamo prov., near Negele Borana 25-27.04.1998 leg. K. Werner; 3 ♂ 3 ♀ Ethiopia Region de Addish-Abeba 11.04-02.05.1998 leg. Rautenstrauch; 1 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 05.04.1989 leg. U. Kupka; 1 ♂ Kenya Voi, Sagala Reg. 12.1994 leg. Werner, mounted.

Remarks: It has a limited distribution in West Asia: Israel, Saudi Arabia, Palestine (Hölzel 1980, 1988), and Iran (Fars prov.) (Mirmoayedi 2007) but is common and widespread in the African Sahara region (Ábrahám & Giacomino 2020). It was already documented in Ethiopia by Banks (1911) (as *Nesoleon variegatus*) and in Kenya by Navás (1914).

Cueta kurzi (Navás, 1912)
Specimens examined: 1 ♀ Thailand Chiang Mai 30.3-2 .5.1986 leg. H. Lehmann; 2 ♂ Thailand Sansai 4.vi.1986 leg. H. Lehmann.

Remarks: Its synonyms were listed by Giacomino & Ábrahám (2018). It is a widely distributed species in Southeast Asia and a new record for the fauna of Thailand.

Cueta lineosa (Rambur, 1842)
Specimens examined: 1 ♂ 3 ♀ Iran Salt Lake near Bager Abad 2-4 week of July, 1996 leg. G. Müller; 2 ♀ Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller; 2 ♀ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller.

Remarks: It is a common species. Aspöck et al. (2001) documented its distribution in N Africa, SE Europe, Inner Asia, and SW Asia in the Arabian Peninsula.

Cueta minervae Hölzel, 1972
Specimens examined: 1 ♀ Iran Salt Lake near Bager Abad SSE of Teheran Seeufer, Salzsumf 2-4 week of July, 1996 leg. G. Müller.

Remarks: It was recorded in Persian Gulf countries (Ábrahám & van Harten 2014), and was recently redescribed by Hassan et al. (2022) based on specimens from Pakistan.

Cueta mysteriosa (Gerstaecker, 1894)
Specimens examined: 5 ♀ Namibia ca. 80 km SW Windhoek 1360 m 12.1-10.2.1997 leg. H. Lehmann; 6 ♀ Kenya Voi, Sagala Reg. 12.1994 leg. Werner, mounted; 1 ♀ Tanzania 100 km N Songea 06.-07.12.1994 leg. Werner, mounted.

Remarks: The species is distributed south of equatorial Africa and is often locally abundant. Based on coll. SCMK, new records are known from Ethiopia and Zimbabwe. Its occurrence in Madagascar (Stange 2004) needs to be confirmed, again.

Cueta trivirgata (Gerstaecker, 1894)
Specimens examined: 1 ♀ Botswana 60km N Maun 29.01.1995 leg. Werner.

Type materaial examined:
Syntype of *Cueta trivirgata* preserved in EMAU (Fig. 5). Label information: / trivirgatus / Gerst* / Transvaal Stdgr. // Zool. Mus. / Greisfwald / II 27452 /.

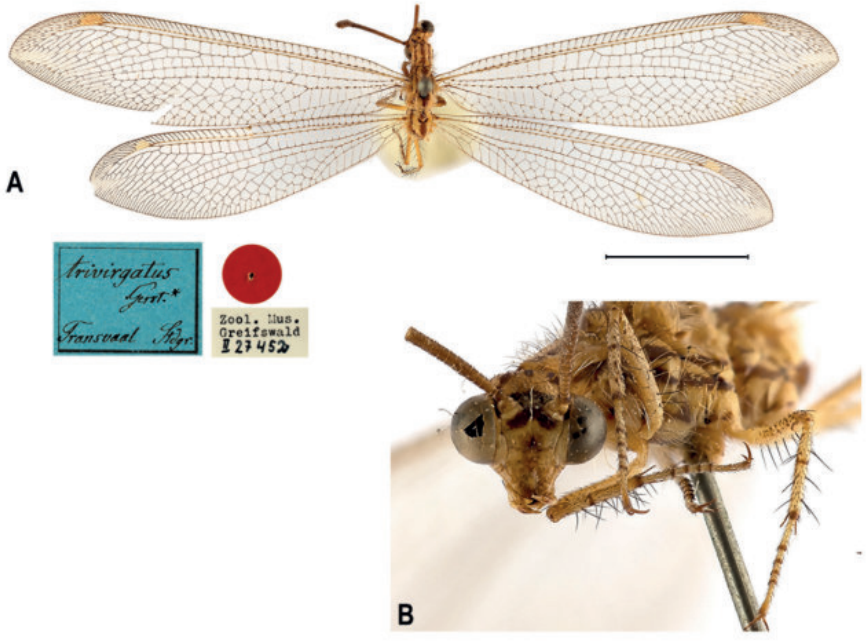

Fig. 5. Type of Cueta trivirgata (Gerstaecker, 1894) A – habitus, B – head in frontal view, in coll. EMAU (Photo: Lara Lopardo)

Remarks: The syntype lacks an abdomen, so the sex is unknown. Its range is the southern half of Africa (Mansell & Oswald 2018). Based on coll. SCMK, there are unpublished new records for the fauna of Zimbabwe.

Cueta sp. 1.
Specimens examined: 2 ♀ Namibia Hardap Dam 31.10.1994 leg. Werner, mounted; 1 ♀ Namibia Fish River Canyon 04-05.02.1995 leg. Werner; 11 ♀ Namibia Aranos 03.02.1998 leg. Werner; 4 ♂ 14 ♀ Namibia Ca. 80 km SW Windhoek 1360m 12.01-10.02.1997 leg H. Lehmann, 11 ♀ Namibia Ca. 80 km SW Windhoek Farm Heimat 05.01.1999 leg. H. Lehmann; .

Remarks: It is found in several European collections, but as an undetermined or misidentified species. The description of the species by Mansell is in progress (comm. by e-mail).

Nesoleon boschimanus (Péringuey, 1910)
Specimens examined: 6 ♂ 16 ♀ Namibia ca. 80 km SW Windhoek 1360 m12.1-10.2.1997 leg. H. Lehmann.

Remarks: It is a characteristic and widespread species found in southern Africa (Stange 2004).

Acanthaclisini Navás, 1912

Centroclisis cf. ***brachygaster*** (Rambur, 1842)
Specimens examined: 2 ♀ Botwana Ghanzi 28.01 1995 leg. Werner, 1 ♂ 1 ♀ Botwana Ghanzi 28.01 1995 leg. Werner mounted; 1 ♀ Botwana Toteng Ghanzi 30.01.1995 leg. Werner; 1 ♀ Namibia Hardap Dam 06.02. 1995 leg. Werner, 1 ♀ Namibia Aranos 03.02. 1995 leg. Werner; 3 ♂ 9 ♀ Namibia ca 80 km SW Windhoek 1360 m 12.01-10.02. 1997 leg. H. Lehmann, 1 ♂ 9 ♀ Namibia ca 80 km NE Windhoek 4.1-4.2. 1999 leg. H. Lehmann; 1 ♂ 1 ♀ Tanzania Namanga 16.11.1995 Werner mounted.

Remarks: According to Stange (2004) and Oswald (2024), there are about 25–26 *Centroclisis* species in Africa, excluding taxonomically well-known species occurring in the Palearctic areas of North Africa.
The taxonomic status of the first two *Centroclisis* species (*C. distincta* and *C. brachygaster*) described by Rambur (1842) was also documented differently by researchers. For example, the type locality of *C. distincta* is known from Senegal and Mauritius. These localities are very distant from each other and the type material does not belong to the same species. Therefore, it is necessary to re-examine the syntypes again (lectotype designated by Prost (1998) from Senegal in coll: RBINS, Bruxelles; the type material from Senegal examined by Mansell (1976) in coll. MNHP, Paris; and other syntypes from Mauritius published by Tauber et al. (2019) in coll. OXUM, Oxford).
The syntype *C. brachygaster* (Rambur, 1842) is not located, so the status of the taxon is currently uncertain. Rambur's (1842) description is too general to identify a taxon with certainty. The type locality cannot be identified either. Stange (2004) gave a summary of the synonyms of the species *C. brachygaster*. There are several additional problems with the identification of the African *Centroclisis* species. Due to the lack of type specimens of the morphologically relatively close species, they cannot be identified based on the species description. There is no consensus among researchers regarding the status of valid and synonymous species. Van der Weele (1907), Esben-Petersen (1920), Banks (1920), Navás (1912, 1921, 1927) also conducted a scientific debate on the separability of species in several papers. In many cases, species described on the basis of wing colouration were deemed to have an uncertain taxonomic status (Krivokhatsky 2005). Another problem is the identification of the pinned and discoloured specimens, especially in the case of females.
According to the Lacewing Digital Library (Oswald 2024), Navás described 13 *Centroclisis* species from tropical Africa that currently have valid status and at least 5–6 species were later synonymised. In addition, there may be several undescribed *Centroclisis* species. The African *Centroclisis* species require a complete morphological and genetic revision.

Centroclisis *cf.* ***lineatipennis*** (Péringuey, 1910)
Specimens examined: 1 ♂ 17 ♀ Namibia ca. 80 km SW Windhoek 1360 m 12.1-10.2.1997 leg. H. Lehmann.

Remarks: According to Krivokhatsky (2005), *C. lineatipennis* is only a morph of *Centroclisis distincta* (Rambur, 1842), the other researchers, Prost (1998), Stange (2004) and Oswald (2024) listed it as a valid taxon. Further studies are needed to establish the validity of the taxon.

Centroclisis minor Banks in Strong, 1930 (Fig. 6).
Specimens examined: 3 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 05.04.1989 leg. U. Kupka.

Remarks: Only the type specimen was known from Kenya. Probably the smallest *Centroclisis* species in Africa. The flight period (April) is the same as that of the type specimen. There is no published illustration of this species.
There are two similar species in this region (Ethiopia, Kenya, Somalia), namely *Centroclisis cervina* (Gerstaecker, 1863) and *Centroclisis lineata* (Kirby in Forbes, 1903). It can be easily distinguished from them by the shape of the labial palp.

Centroclisis negligens (Navás, 1911)
Specimens examined: 1 ♀ Laos Phu Soal Dao –.4.1997 leg. NC/Lehmann.

Remarks: In recent years, it has become known mainly from SE China (Wang et al. 2018), and it has also been documented in Taiwan (Stange & Wang 1997, Lin et al. 2019). There are also specimens from Vietnam in the SCMK collection. A new record for the fauna of Laos.

Centroclisis vitanda **(Navás, 1912)**
Specimens examined: 2 ♂ Namibia 20 km S Windhoek 01.11 1994 leg. Werner, 1 ♀ Namibia Aranos 03.02. 1995 leg. Werner, 1 ♂ Namibia 10 km E Stampriet 06.02

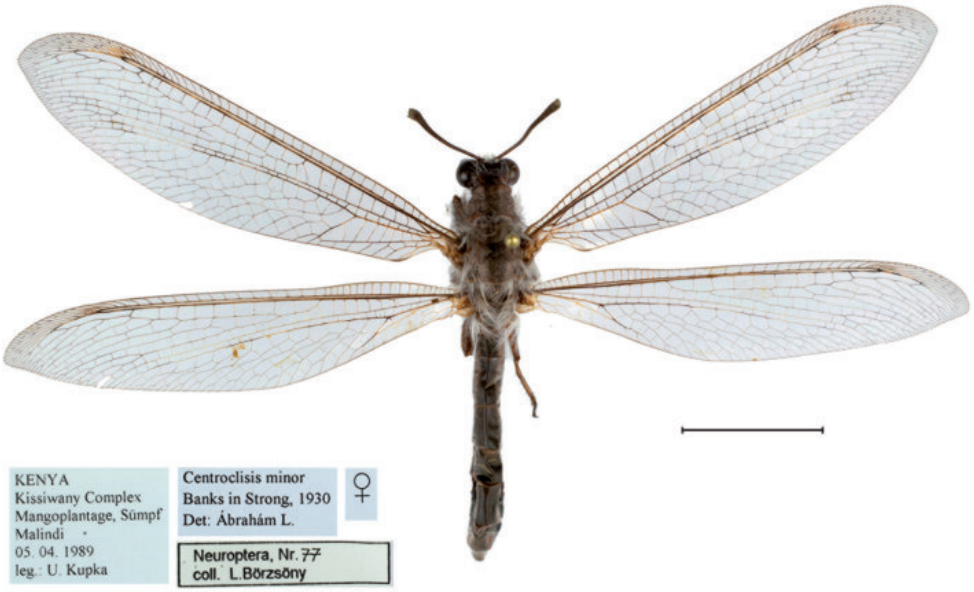

Fig. 6. Habitus of Centroclisis minor Banks in Strong, 1930

1995 leg. Werner, 6 ♂ 15 ♀ Namibia ca 80 km SW Windhoek 1360 m 12.01-10.02. 1997 leg. H. Lehmann; 1 ♂ South Africa Ohrigstadt, Transval 08.11.1994 leg. Werner.

Remarks: An endemic *Centroclisis* species, its distribution is limited to the southern part of Africa (South Africa, Namibia) (Stange 2004). It can be easily distinguished from the *Centroclisis* species by its smaller size, and the pronotum pattern consists of parallel narrow gray bands, the ventro-caudal processus of male ectopocts are strikingly long.

Centroclisis sp. 1
Specimens examined: *Specimens examined*: 1 ♂ Ethiopia Sidamo prov. near Negele borana 25-27.04.1996 leg. Werner; 4 ♂ Ethiopia Region de Addish-Abeba 11.04.-02.05.1998 leg. Rautenstrauch; 1 ♂ N Kenya Sidiot 18-19.11.1995 leg. Werner mounted; 1 ♂ 1 ♀ Kenya Voi, Sagala Reg. 12.1994 leg. Werner mounted; 1 ♂ Tanzania 100 km N Songea 06.-07.12.1994 leg. Werner mounted; 1 ♀ Tanzania ca. 25 km S Babati 03.-04.04.1995 leg. Werner mounted.

Remarks: The determintation of this taxon is currently not possible without checking and partially revising the type specimens.

Jaya dasymalla (Gerstaecker, 1863)
Specimens examined: 1 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 02.04.1989 leg. U. Kupka; 1 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 03.04.1989 leg. U. Kupka; 5 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 05.04.1989 leg. U. Kupka; 2 ♂ 3 ♀ Namibia ca 80 km NE Windhoek 4.1-4.2.1999 leg. H. Lehmann; 1 ♀ South Africa Saltpan, N. Transvaal –.12.1995 leg. ?(NC).
Remarks: Its general distribution in Africa is mainly south of the Equator but there are also data from West Africa (Prost 1996).

Fadrina sp. 1.
Specimens examined: 1 ♀ Tanzania 100 km N Songea 06.-07.12.1994 leg. Werner, mounted.

Remarks: The genus *Fadrina* was known from the northern half of Africa, but records in collections from many parts of Africa have recently been found. The known species (Stange 2004) are morphologically very similar, especially the discoloured mounted specimens that are difficult or impossible to distinguish. The genus needs both morphological and genetic revision.

Syngenes medialis Mansell, 2018
Specimens examined: 1 – South Africa Saltpan, N. Transvaal –.12.1995 leg. ?(NC).

Remarks: It is a recently described species, its distribution is restricted to the southern part of Africa (Mansell 2018). Based on the SCMK collection, it is a new species for the fauna of Kenya.

Myrmeleonini Latreille, 1802

Hagenomyia tristis (Walker, 1853)
Specimens examined: 4 ♂ 2 ♀ 1 – Cameroon Duala –.06.1997 leg. H.Lehmann; 1 ♂ 1 ♀ South Africa Natal,

Izotsha –.12.1995 leg. ?(NC); 2 ♂ 1 ♀ South Africa Izotsha, Natal –.03.1995 leg. ?(NC); 1 ♂ Tanzania Usambara Mts. Amani 16-17.12.1997 leg. Werner & Lizler.
Remarks: It seems to be a common species in the tropical zone of Africa. In the coll. SCMK, many specimens from Ghana, Guinea, Liberia, Malawi, Zambia, and Zimbabwe have not yet been listed in Stange's (2004) monograph or Oswald's (2024) database. The species is a new record of the fauna in these countries. The occurrence of the species in Madagascar (Banks 1911) has not been confirmed by recent research (Ábrahám & Dobosz 2011).

Hagenomyia lethifera (Walker, 1853)
Specimens examined: 3 ♂ 5 ♀ Ethiopia Region de Addish-Abeba 11.04.-02.05.1998 leg. Rautenstrauch.

Remarks: It is a widespread species in southern and eastern Africa and a new species for the fauna of Ethiopia.

Myrmeleon quinquemaculatus Hagen, 1853
Specimens examined: 1 ♂ 1 ♀ Ethiopia Region de Addish-Abeba 11.04.-02.05.1998 leg. Rautenstrauch.

Type material examined:
Syntype of *Myrmeleon atlas* Banks, 1911, preserved in ZMB (Fig. 7).
Label information: / Type // Ost-Afrika / Kwidjwi 11.[19]08 / Grauer S. V. // Myrmeleon / atlas / type Bks // http://coll.mfn- / berlin.de/u/ / dbca6b /.

Remarks: The distribution of the species extends to the tropical areas of Africa, its range stretches from West Africa through Central Africa to East Africa (Oswald 2024). The SCMK collection also includes specimens from Ghana, Guinea, Liberia, and Zambia, which are new species to the local fauna. Its distribution in Madagascar (Navás 1934) is doubtful, as it has not been subsequently confirmed. The type locality of *Myrmeleon atlas* Banks, 1911 (**syn. n**.) is also found in East Africa, and is proposed to be a new junior synonym of *Myrmeleon quinquemaculatus* Hagen, 1853. The other synonyms are listed by Stange (2004).
There is a slight sexual dimorphism between males and females. Males are usually smaller than females and have narrower wings with axillary pelote in the base of the hind wing. The pattern of the frons, clypeus, labrum, vertex, and pronotum is variable and cannot be considered a species-level difference.
The larva was recently described (Badano 2020). It is a common pit-building species in tropical regions of Africa (Prost & Popov 2021).

Myrmeleon alcestris Banks, 1911
Specimens examined: 2 ♀ Botswana Ghanzi 28.01.1995 leg. Werner, mounted; 1 ♂ Namibia ca. 80 km SW Windhoek Farm Heimat 05.01.1999 leg. H. Lehmann; 3 ♂ 2 ♀ Namibia ca. 80km SW Windhoek 1360 m 12.1-10.2.1997 leg. H. Lehmann; 1 ♀ South Africa Saltpan, N. Transvaal –.12.1995 leg. ?(NC).

Remarks: The species is distributed in the southern and eastern half of Africa. A new species in the fauna of Mozambique, Tanzania, and Zimbabwe, voucher specimens can be found in the SCMK collection.

Myrmeleon bore (Tjeder, 1941)
Specimens examined: 1 ♂ 3 ♀ China Hunan Province –.06-07.1999 leg. NC/GMU.

Remarks: It is also widespread in the central part of the Palearctic from the Atlantic to the Pacific Ocean (Ábrahám & Giacomino 2020).

Myrmeleon doralice Banks, 1911
Specimens examined: 1 ♂ 1 – Namibia ca. 80 km SW Windhoek 1360 m 12.1-10.2.1997 leg. H. Lehmann.

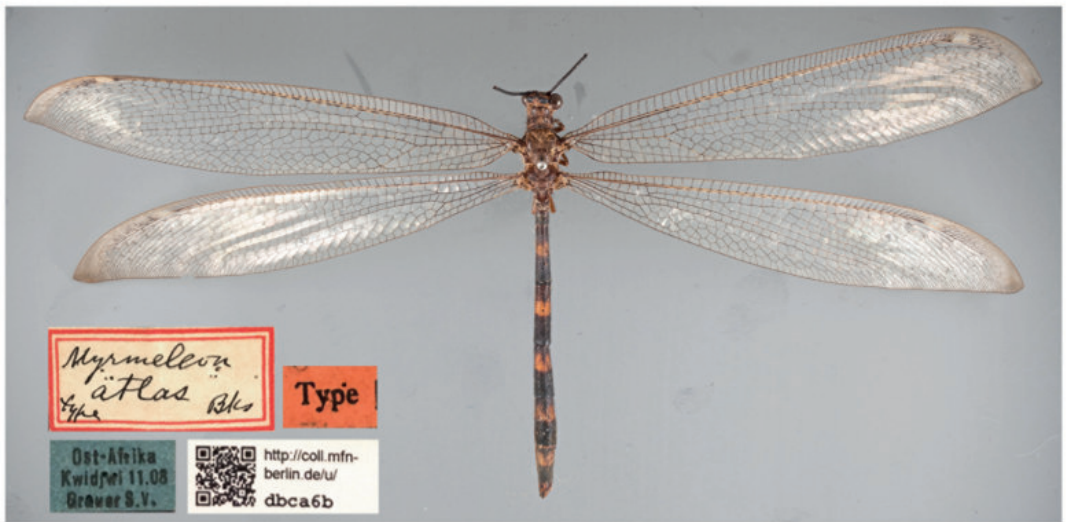

Fig. 7. Type of Myrmeleon atlas Banks, 1911 in coll. ZMB (Photo: Stefanie Krause)

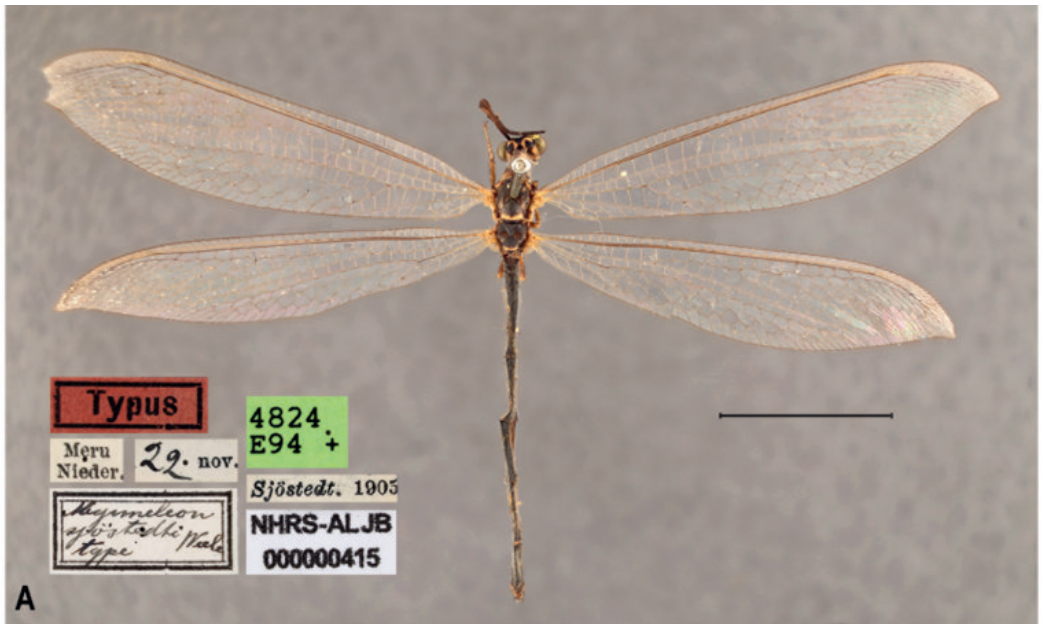

Fig. 8. Type of Myrmeleon sjostedti van der Weele, 1910 in coll. NHRS (Photo: Anna Jerve)

Remarks: The species was described from Namibia. Its faunistic data come from the southern half of Africa (Stange 2004). Several similar species (e.g. *M. sjostedti*) are known from Africa, therefore its exact range is unclear. Esben-Petersen (1916) published its occurrence in Kenya but this needs further confirmation.

Myrmeleon formicarius Linnaeus, 1767
Specimens examined: 1 ♀ Turkiye [Turkey] near Yarpuz 1750 m 20-30.06.1998 leg. Werner & Lizler; 1 ♀ Hungary Balatonszőlős, Veszprém megye leg. L. Börzsöny.

Remarks: A pit-building species with a wide distribution in the Palearctic region.

***Myrmeleon obscurus* Rambur, 1842**
Specimens examined: 1 ♀ Seychelles Grand Anse, Praslin 10.3.1997 leg. Moosburg, M.

Remarks: The type specimens of the species come from Mauritius. It is considered a common species throughout Africa. Many similar species (e.g. *Myrmeleon caliginosus* Hölzel & Ohm, 1983) have been described, so the distribution of the species is completely uncertain. Not only should the type specimens be checked but the related taxa should also be revised morphologically and genetically.

Myrmeleon sjostedti van der Weele, 1910 (Fig. 8).
Specimens examined: 1 ♂ Ethiopia Sidamo prov., near Negele Borana 25-27.04.1998 leg. K. Werner; 1 ♂ Tanzania Namanga 16.11.1995 leg. Werner.

Remarks: *M. sjostedti* is slightly larger than *M. doralice*. The vertex of the species is black with a yellow curved line on each side, the frons is shiny black above and yellow below, and the labrum is completely yellow. In contrast, the vertex of *M. doralice* is brown to black with a yellow pattern, broken at right angles and curved outwards, the frons completely black, the labrum brown, or with two brown spots.
It seems to be an endemic species in the eastern half of Africa, it is morphologically similar to *M. doralice*. No faunistic data have been published since the description. A new record for the fauna of Ethiopia.

Myrmeleon timidus Gerstaecker, 1888
Specimens examined: 2 ♀ Peru Opto Loreto Yarinacocha 09. 11. 1964 leg. P. Hocking, mounted

Remarks: A common species distributed in the western part of Central and South America.

Myrmeleon trivialis Gerstaecker, 1885
Specimens examined: 2 ♂ 3 ♀ Burma [Myanmar] Dawna 23.06.1995 leg. H. Lehmann; 1 ♂ Burma [Myanmar] Dawna 28.05.1996 leg. H. Lehmann.

Remarks: An abundant and widespread pit-building species in Southeast Asia. Its range extends from Pakistan to China (Zhan et al. 2011).

Dendroleontini Banks, 1899

Dendroleon pantherinus (Fabricius, 1787)
Specimens examined: 1 ♀ Hungary Veszprém megye Balatonszőlős leg. L. Börzsöny.

Remarks: It is a widespread but rare species in the Palaearctic from the Atlantic to the Pacific Ocean.

Fissuleon nigristriatus New, 1985
Specimens examined: 1 ♀ Australia Queensland, Emerald –.02.1998 leg. Rautenstrauch.

Remarks: It was recently combined into a new genus (Machado & Oswald 2020). Widespread across mainland Australia.

Nemoleontini Banks, 1911

***Banyutus lethalis* (Walker, 1853)**
Specimens examined: 1 ♀ Ethiopia Sidamo prov. near Negele Borana 25-27.04.1998 leg. K. Werner; 1 ♂ 1 ♀ Kenya Voi, Sagala Reg. 12.1994 leg. Werner, mounted.

Remarks: Based on the coll. SCMK, it is a new species for the fauna of Kenya, Botswana, and Zambia. A common species in southern Africa.

Creoleon aegyptiacus (Rambur, 1842)
Specimens examined: 1 ♀ Iran Salt Lake near Bager Abad 2-4 week of July, 1996 leg. G. Müller.

Remarks: The distribution of the species extends from the Mediterranean of Europe and the Palaearctic of North Africa, through the desert areas of Inner Asia, to Western China. Occurrence is sporadic in the dry mountainous regions of South West Asia.

Creoleon cinerascens (Navás, 1912)
Specimens examined: 1 - Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller; 1 ♂ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller; 1 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 05.04.1989 leg. U. Kupka.

Remarks: It is a locally frequent species with a wide distribution in the Sahara. The high similarity of *Creoleon* species from the Sahara and adjacent arid areas requires a revision that is not only morphologically but also genetically confirmed.

Creoleon cinnamomeus (Navás, 1913)
Specimens examined: 1 ♀ Thailand Corat 26.05.1995 leg. H. Lehmann, mounted.

Remarks: It is the only known *Creoleon* species in the Oriental region (New 2003), documented in China (Fujian, Hainan, Yunnan) (Wang et al. 2018), India, Sri Lanka, and Vietnam (Suryanarayanan et al. 2024).

Creoleon limpidus (Kolbe, 1897)
Specimens examined: 4 ♂ 4 ♀ Ethiopia Region de Addish-Abeba 11.04.-02.05.1998 leg. Rautenstrauch.

Remarks: Its type locality and faunistic data in East Africa are known from Sudan and Tanzania (Oswald 2024). It is a new species for the fauna of Ethiopia.

Creoleon elegans Hölzel, 1968
Specimens examined: 1 ♀ Jordania E Ghor südl. Totes Meer 250 m 05. 1999 leg. G. Müller.

Remarks: The species is difficult to distinguish morphologically, its margin under the wing tip is never concave. According to the LDL database (Oswald 2024), this species is widespread in the Middle East, but not frequent.

***Creoleon mortifer* (Walker, 1853)**
Specimens examined: 1 ♀ Namibia ca. 80 km SW Windhoek Farm Heimat 05.01.1999 leg. H. Lehmann; 5 ♀ Namibia ca. 80 km SW Windhoek 1360 m 12.1-10.2.1997 leg. H. Lehmann; 1 ♀ South Africa Margate, Natal 10.05.1994 leg. ?(NC); 1 ♀ South Africa Saltpan, N. Transvaal –.12.1995 leg. ?(NC); 1 ♀ South Africa Margate, Natal –.03.1995 leg. ?(NC).

Remarks: Based on the literature (Stange 2004) it appears to be widespread but there are significant morphological differences between the East African and South African specimens. The type specimen of *C. mortifer* is from South Africa, so the East African *Creoleon* specimens need to be revised.

Creoleon nubifer (Kolbe, 1897)
Specimens examined: 1 ♂ 4 ♀ Ethiopia Region de Addish-Abeba 11.04.-02.05.1998 leg. Rautenstrauch.

Remarks: Its distribution area is located south of the sub-Saharan areas. It shows a high degree of morphological similarity with the species Creoleon africanus Rambur, 1842, so its distribution data also need to be revised (Ábrahám & Dobosz 2011).

Creoleon parvulus Hölzel, 1983
Specimens examined: 1 ♀ Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller; 1 - Jordania Jordan, Oberes Jordantal –.vi.1999 leg. G. Müller.

Remarks: It was described from the Arabian Peninsula (Aspöck et al. 2001), since then the new faunistic data have been published only from the UAE (Dobosz et al. 2017). A new species in the fauna of Jordan.

Creoleon plumbeus (Olivier, 1811)
Specimens examined: 1 ♀ Jordania near Aquaba –.iv.1999 leg. G. Müller; 1 ♂ Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller; 1 ♂ Iran Estalak, E of Teheran, indoturanisches Grassland 2-4 week of July, 1996 leg. G. Müller.

Remarks: Its distribution extends from Southeastern Europe to Inner Asia, where extends to the Eastern Mediterranean areas and the xeromountain regions of Asia (Suryanarayanan et al. 2024).

Creoleon sp. 1
Specimens examined: 4 ♀ Kenya Malindi, Kissiwany Complex Mangoplantage 05.04.1989. leg. U. Kupka; 2 ♀ the same, mounted.

Remarks: Read the remarks under *C. mortifer*.

Delfimeus friedeli (Hölzel, 1972)
Specimens examined: 1 ♂ Turkiye [Turkey] Pr. Hakkari Sat Dag Shagulat SW Yüksekova 1650-2000 m 4.-8.9.1982 leg. Kiedel.

Remarks: Krivokhatsky (2019) first documented the species of *Delfimeus* as synonyms of *Delfimeus irroratus* (Olivier, 1811) and later as subspecies. The status of the species described by Hölzel (1972) is valid (Aspöck et al. 2001, Stange 2004). *D. friedeli* was previously known only from Turkey (Canbulat 2007), where it is considered a frequent species in eastern Turkey. Several specimens are preserved from Armenia and western Iran in the collection of SCMK.

Delfimeus morgani (Navás, 1913)
Specimens examined: 3 ♂ 4 ♀ Iran Wadi Shur, semidesert near Hasanabad 2-4 week of July, 1996 leg. G. Müller.

Remarks: It is also a valid species (Aspöck et al. 2001). It is mainly known from the northern and northwestern mountains of Iran, other voucher specimens can be found in Eastern Turkey (Prov. Agri, Erzurum, Van). New for the fauna of Turkey.

Delfimeus punctatus (Navás, 1914)
Specimens examined: 1 ♀ Jordania E Ghor südl. Totes Meer 250 m 05. 1999 leg. G. Müller; 1 ♀ Jordania near Amman 1000 m 07. 1999 leg. G. Müller.

Remarks: It occurs in the eastern Mediterranean (Aspöck et al. 2001), where is a new species for the fauna of Jordan.

Distoleon dirus (Walker, 1853)
Specimens examined: 1 ♀ Burma [Myanmar] Dawna 23.06.1995 leg. H. Lehmann.

Remarks: One of the well-known *Distoleon* species in Southeast Asia, which is also widespread in the Malay Archipelago. However, the species of *Distoleon* described from the Oriental region require revision.

Distoleon nigricans (Okamoto, 1910)
Specimens examined: 3 ♀ China Hunan Province –.06-07.1999 leg. NC/GMU; 1 ♀ China South Hubei, border to Hunan 1200-1600m –.08.1999 leg. NC/GMU; 3 ♀ China Hubei Province Mufu Shan 800-1600m – 7-8.2000 leg. NC/GMU.

Remarks: Widespread in the temperate zone of East Asia (Japan, Korea, and China) (Stange 2004).

Distoleon tetragrammicus (Fabricius, 1798)
Specimens examined: 1 ♀ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller; 1 ♀ Hungary Budapest, II. Rózsadomb, Bogár u. 28.08.1996 leg. L. Börzsöny; 1 ♂ 2 ♀ Hungary Veszprém megye Balatonszőlős 29.08.2004 leg. L. Börzsöny; 2 ♀ Turkiye near Yarpuz 1750 m 20-30.06.1998 leg. Werner & Lizler.

Remarks: European populations have stronger wing patterns than those in the eastern Mediterranean. The species is widespread in the western Palearctic (Aspöck et al. 2001), and is a new species for the fauna of Jordan.

Ereoleon punctipennis (Banks, 1910)
Specimens examined: 1 ♀ Peru Rodriguez de Mendoza, Dept. Amazonas 15.09.1997 NC/RAU; 1 ♀ Peru Rodriguez de Mendoza, Dept. Amazonas 07.07.1998 NC/RAU.

Remarks: It is a widespread species, found along the Andean Cordillera from Venezuela to Argentina.

Euroleon nostras (Geoffroy in Fourcroy, 1785)
Specimens examined: 1 ♀ Hungary Budapest, II. Rózsadomb, Bogár u. 23.08.1996 leg. L. Börzsöny; 1 ♀ 2 - Hungary Veszprém megye Balatonszőlős leg. L. Börzsöny.

Remarks: It is a widespread species in Europe and even found in the southern half of Northern Europe. In the west, Morocco is in Africa (Ábrahám 2017), and in the east, Iran is the limit of its range in Asia (Hajiesmaeilian et al. 2020).

Macronemurus delicatulus Morton, 1926
Specimens examined: 2 ♂ 3 ♀ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller;

Remarks: It is a widespread species in the Middle East: Israel, Saudi Arabia, Qatar, and the United Arab Emirates (Aspöck et al. 2001). It is a frequent species in rocky grasslands. Based on coll. SCMK, the adults are on the wing in the evening hours from May to July.

Mesonemurus harterti Navás, 1920
Specimens examined: 1 ♀ Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller.

Remarks: A species with a wide distribution in deserted and semi-deserted habitats. It is a new species in the fauna of Jordan that also occurs in Azerbaijan based on specimens preserved in the SCMK collection.

Neuroleon arenarius (Navás, 1904)
Specimens examined: 1 ♀ Spain (? Sierra Secura) 24.06.1987 leg. Udo Kupka.

Remarks: It is a typical species of Mediterranean dry habitats in Europe, North Africa, and West Asia.

Neuroleon microstenus (McLachlan, 1898)
Specimens examined: 1 ♂ 1 – Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller; 1 ♀ Jordania Jordan, Oberes Jordantal –.vi.1999 leg. G. Müller.

Remarks: The distribution of the species is mainly limited to the Mediterranean and sub-Mediterranean areas of the eastern Mediterranean basin (Europe, Asia, Africa), but extends to the southern part of the Caucasus (Armenia,

Azerbaijan). Krivothatsky (2011) also cites it from Hungary but no voucher specimen has yet been found (Szőke 2021). It is a new species for the fauna of Jordan but it has already been recorded in neighbouring countries (Aspöck et al. 2001).

Neuroleon tenellus (Klug in Ehrenberg, 1834)
Specimens examined: 2 ♀ Iran Salt Lake near Bager Abad 2-4 week of July, 1996 leg. G. Müller; 2 ♂ 2 ♀ Jordania südl. Totes Meer 250m –.v.1999 leg. G. Müller.

Remarks: It was found in the southern part of the Palaearctic, from the Sahara to the Central Asian deserts and dry mountainous areas. It can also be a locally common species.

***Neuroleon* s**p. 1.
Specimens examined: 1 – Kenya Malindi, Kissiwany Complex Mangoplantage 04.04.1989 leg. U. Kupka, mounted

Remarks: The species of the genus *Neuroleon* are small and show slight morphological differences. The species known from Africa require a complete revision, as there may be many new synonyms and undescribed species.

Obus infirmus Navás, 1929
Specimens examined: 1 ♂ Namibia Hardap Dam 31.10.1994 leg. Werner, mounted.

Remarks: The species has been recorded from Angola, Namibia and South Africa (Oswald 2024). The species of the genus are restricted to the southwestern Africa.

Pseudoformicaleo gracilis (Klug in Ehrenberg, 1834)
Specimens examined: 1 ♀ Jordania near Amman 1000 m –.vii.1999 leg. G. Müller.

Remarks: In Africa, it is widespread in the Sahara region and even in the desert parts of Kenya. It is found in the Arabian Peninsula and documented in the dry mountainous areas from Turkey to Pakistan. It is a new species for the fauna of Jordan.

Megistopini Navás,1912

Megistopus flavicornis (Rossi, 1790)
Specimens examined: 1 ♂ Hungary Balatonszőlős, Cserény-hegy 1.6.1999 leg. L. Börzsöny.

Remarks: It is a widespread species in the western Palaearctic. It occurs in the Mediterranean regions and in the mountains of western and central Asia.

Glenurini Banks, 1927

Dimarella bolivarensis Stange in Miller & Stange, 1989
Specimens examined: 1 ♀ Peru Panguana April 2012 leg. E. Diller.

Remarks: It is a new species for the fauna of Peru. It was previously known only from Brazil and Venezuela.

Dimarella angusta (Banks, 1908)
Specimens examined: 1 ♀ Peru Panguana, Rio Yuyapichis Dept. Huanucho 9°37′ S 74°56′ W 28.09-06.10.2000 leg. G. Burmeister; 1 ♀ Peru Panguana, Rio Yuyapichis Dept. Huanucho 260 m 9°37′ S 74°56′ W 5.iv-18iv.2003 leg. G.Riedel; 1 ♀ Peru Panguana, biol. Stat. Rio Yuyapichis, Huanucho 220 m 9°37′ S 74°57′ W Oct.2010 leg. E. Diller; 1 ♂ Peru Panguana, Rio Yuyapichis Dept. Huanucho 220 m 9°37′ S 74°57′ W 23.09-11.10.2011 leg. L.Börzsöny; 7 ♀ Peru Panguana, biol. Stat. Rio Yuyapichis, Huanucho 220 m 9°37′ S 74°57′ W 27.ix-12.x.2014 leg. L.Börzsöny.

Remarks: It is a widespread species in tropical South America (Stange 2004).

Glenurus penningtoni (Navás, 1918)
Specimens examined: 1 - Peru Chancamoyo ,.xi.1965 leg. GMU/NC; 1 ♀ Peru Panguana, Rio Yuyapichis Dept. Huanucho 220 m 9°37′ S 74°57′ W 03-18.10.2009 leg. L. Börzsöny.

Remarks: It was previously known only from Argentina, Paraguay, and Bolivia (Petko et al. 2016). It is a new species for the fauna of Peru.

undet. sp. 1
Specimens examined: 1 – Mexico Province Chiapas,,.v.1990 leg. H. Lehmann, mounted.

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