J. Entomol. Res. Soc., 25(1): 119-136, 2023 *Research Article*
Doi: 10.51963/jers.v25i1.2215 *Online ISSN:2651-3579*

Revision of the Caucasian Myrmeleontoid Lacewings (Neuroptera: Myrmeleontidae, Ascalaphidae, Nemopteridae) Collection of the Georgian National Museum, Identified By P. Esben-Petersen

Ilhama G. KERIMOVA[1*] Viktor A. KRIVOKHATSKY[2] Vera PKHAKADZE[3]
Natalia D. MANDARIA[4] Valera PETROV[5]

[1*]Institute of Zoology, Ministry of Science and Education, A. Abbaszadeh str. 115, passage 1128, block 504, Baku, Az1004, AZERBAIJAN
[1*]Western Caspian University, 31 Istiglaliyyat, Baku 1001, Baku, AZERBAIJAN
[2]Zoological Institute of the Russian Academy of Sciences, Universitetskaya Emb.,1,St. Petersburg,199034, RUSSIA
[3]National Museum of Georgia, Rustaveli Ave. 3, Tbilisi, GEORGIA
[4]Akaki Tsereteli State University, Biology Department, Kutaisi, GEORGIA
[5]National Museum of Georgia, Rustaveli Ave. 3, Tbilisi, GEORGIA
e-mails: [1*]ilkershah@mail.ru, [1*]administration@wu.edu.az, [2]krivokhatsky@yandex.ru, [3]vera_pkhakadze@mail.ru, [4]Natalia_mandaria@yahoo.com, [5]valerapetrovi@mail.ru
ORCID IDs: [1*]0000-0002-0665-131X, [2]0000-0003-3362-3928, [3]0000-0003-4836-0278, [4]0000-0002-0826-3169, [5]0000-0002-2710-6839
*Corresponding author

ABSTRACT

The present work assesses the Tiflis collection (now the collection of the National Georgian Museum in Tbilisi) of Myrmeleontoid lacewings (Neuroptera: Myrmeleontidae, Ascalaphidae, Nemopteridae), identified by the remarkable taxonomist Peter Esben-Petersen at the beginning of the 20th century (Esben-Petersen, 1913). We have confirmed most of his determinations, some of which have been updated in modern accepted combinations. Some of the specimens listed in the original publication were not found in the collection, and some specimens belonging to species not described during Petersen's lifetime were identified or redefined. The total list of 17 described and assigned species in the collection is updated to 20. To facilitate the identification of Caucasian species of the tribe Myrmecaelurini, keys are provided. New synonymy in Nemopteridae established: *Lertha palmonii* Tjeder, 1970: 219 = *Nemoptera extensa* Olivier, 1811 [recently *Olivierina extensa* (Olivier, 1811)] syn. nov.

Keywords: revision, checklist, antlions, owlflies, spoontails.

Kerimova, G. I., Krivokhatsky, V. A., Pkhakadze, V., Mandaria, N. D., & Petrov, V. (2023). Revision of the Caucasian Myrmeleontoid lacewings (Neuroptera: Myrmeleontidae, Ascalaphidae, Nemopteridae) collection of the Georgian National Museum, identified By P. Esben-Petersen. *Journal of the Entomological Research Society*, 25(1), 119-136.

Received: February 10, 2022 *Accepted: February 09, 2023*

INTRODUCTION

Revision and curation of old collections is a necessary task of taxonomists. For example, the revision of long-established identified specimens of the lacewings in a collection can not only confirm their location, but it also allows the systematists to update the taxonomy as needed (McLachlan, 1868; Tjeder, 1952; Pantaleoni, 1991; Krivokhatsky, 1998; Letardi & Pantaleoni, 1996; Whittington, 2002). The National Museum of Georgia in Tbilisi contains specimens collected in the Caucasus during foreign expeditions by famous Georgian and Russian zoologists in the 19th and early 20th centuries. The lacewings (Neuroptera) in this collection were identified by the Danish entomologist Peter Esben-Petersen and kept in good condition in the museum under the supervision of regular employees, including V. Pkhakadze and V. Petrov. The Myrmeleontoid families (Myrmeleontidae, Ascalaphidae, Nemopteridae), to which the present work is dedicated, are stored in five standard boxes with pinned specimen labels, some of which were written by the hand of Esben-Petersen. All three families of myrmeleontoid lacewings Myrmeleontoidea are considered by the authors as distinct families, not integrating them, as proposed by Machado et al, (2018). The classification of Myrmeleontidae is justified by us (Krivokhatsky, 2011), and Ascalaphidae are arranged according to the system of the collection in the Zoological Institute, St. Petersburg, Russian Academy of Sciences. The collection primarily contains 12 species of antlions, 4 species of owlflies, and 2 species of spoon wings, collected from different countries, but mostly in Transcaucasia. The old pinned specimens are the basis of the collection, determined and published by P. Esben-Petersen, 1913. Some specimens are major damaged. Location data and determinations are presented for each species or for small sets of specimens. The names of some species are old, so they are presented in this paper with their currently recognized names. Most specimens had been previously determined by Esben-Petersen and provided with handwritten labels, pinned individually, or with common bottom labels. Some labels are misspelled. Some specimens in this collection are recognized here as synonyms. We present them, as they are given on the labels and in the original text (Esben-Petersen, 1913). Sometimes, among the bottom labels among the species trays of correctly determined specimens, there are some other pinned species. We do not know whether Esben-Petersen mixed all these series himself, or whether the other specimens were added later, but here we also present these specimens. To contrast the identification labels of the various specimens, Esben-Petersen had placed several species in this collection that were from Hugo Theodor Christoph, a collector from Sarepta on the Volga, labeled with “Ch.”, or “Chr.”. Caucasian Neuroptera were collected mostly by Edward Koenig, Konstantin Satunin, Andrey Šhelkovnikov, Boris Uvarov, and Philipp Zaytsev, who used personalized printed labels. Since Esben-Petersen worked during the pregenital period of taxonomy, we made slides of the male genitalia in some cases to clarify the diagnosis of taxa. Additionally, we used for comparison some species from the collection of the Zoological Institute of Russian Academy of Science in St. Petersburg (ZIN) and also made slides of genitalia from specimens in the collection of the Institute of Zoology, National Academy of Sciences of Azerbaijan, Baku (ANAS),

as well as from specimens from the original Georgian collection. Information about the world distribution of each species is presented.

RESULTS AND DISCUSSION

The list presented below includes all taxa designated in the collection and/or published by Esben-Petersen.

Order: NEUROPTERA Linnaeus, 1758

Family: MYRMELEONTIDAE Latreille, 1802

Subfamily: PALPARINAE Banks, 1911

Genus: *Palpares* Rambur, 1842

***Palpares libelluloides* (Linnaeus, 1764)**

Distribution: Europe: Spain, South France, Italy, Croatia, Montenegro, Serbia, Albania, Greece, Romania, Bulgaria, Asia: Cyprus, Turkey, Russia (Dagestan), Georgia, Armenia, Azerbaijan, Syria, Israel, NW Iran, Africa: Tunisia, Morocco, and Algeria. Wide spread East-Mediterranean species with two distinctive main parts: South European - North African and Caucasian - Anatolian.

Material examined: ***Azerbaijan***. *1♀, Castr. limit, Aslanduz, ad. Arax, 12.07.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; 4♂♂, 1♀, 1 damaged specimen, Steppe Mugan, prov. Baku, 10.07.1913, Mus.Caucasus, № 58-14, leg. N. Kostin; 1♂, St. v. f. Aljat, ad. lit., Mar. Casp., 21.06.1912, Mus.Caucasus, № 31-12, leg. V. Bankovski; 1♀, Šhachčinar, ad. Mamruch, 07.1916; *1♂, p. Šhachčinar, dist. Karjagin, 1.07.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; *1♀, Castr.limit, Šhachčinar, ad. Arax, 5.07.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; *1♀, Castr. limit, Šhachčinar, ad. Arax. 9.07.1912. Mus. Caucasus, № 22-12, leg. K.A. Satunin; *1 damaged specimen, Castr. limit, Šhachčinar, ad. Arax, Mus. Caucasus, № 22-12, leg. K.A. Satunin; 1♂, Alexandrovka, Steppe Mugan, 07.1913, Mus.Caucasus, № 10-13, leg. N. Volçanetski; 1♀, Steppe Mugan. prov. Baku, 06-07.1913, Mus.Caucasus, №58-14. leg. N. Kostin; 1♀, St. Mursolini. V.1915; Caucasus, Kreis, Nucha, Without data, leg. E. Koenig; 1♂, Steppe Mugan, prov.Baku, 06-07.1919, Mus.Caucasus, №58-14, leg. N. Kostin; *2♂♂, P. Aslanduz. dist. Karjagin,11.07.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; *1♀, Castr. limit, Aslanduz, d. Arax, 12.07.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; *1 damaged specimen , P. Aslanduz, dist. Karjagin, 14.07.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; 1 damaged specimen, Steppe Mugan, prov. Baku, 10.07.1913, Mus.Caucasus, № 58-14, leg. N. Kostin; *1♀, Chanagei, Karabach, prov. Elisabet, p. V.1908, Mus.Caucasus, № 47-1908, leg. A.A. Florenski; 1♂, Aresh, Caucasus, leg. A. Šhelkovnikov; *1♂, Geok-Tapa, Aresh, Mus.Caucasus, № 46-08, leg. Šhelkovnikov; *1♀, Geok-Tapa, Aresh, 07.1908, Mus.Caucasus, № 46-08, leg. A. Šhelkovnikov; ***Georgia***. 1♀, 1♂, 1 damaged specimen, Mtschketi, prov. Tiflis, V.1929, leg. Zimin; 1♀, 2 damaged specimens, Tsarsk. Kolodez, dist. Signarch, 8-10.07.1915, Mus. Caucasus, № 94-15, leg. B. Uvarov; ***Armenia***. 1♀, Karçevan, prov. Erivan, 7.07.1916, leg.Vinokurov; ***Iran.*** 4♀♀, Teheran et. vic., Persia, 21.07.1915, Mus.Caucasus, № 90-15, leg. H.Bocquillon; 1 damaged specimen, Teheran. et. vic., Persia, 4.07.1915, Mus.Caucasus, № 90-15, leg. H.Bocquillon; 1♂, 2♀♀, Teheran et. vic., Persia, 15.07.1915, Mus.Caucasus, № 90-15, leg. H.Bocquillon; 1 damaged specimen, Teheran. et. vic., 12.X.1915, Mus.Caucasus, № 90-15, leg. H.Bocquillon; 1♀, 1 damaged specimen, Karimabad, lac. Urmia, ocr. 17.06.1916, Mus.Caucasus, № 100-16, expedicia Urmiana.

Notes: Among typical specimens of the species, with longitudinal brown stripes along the entire length of the abdomen, there are some specimens with characters

that bring them close to *Palpares turcicus* Koçak; the distal part of the abdomen is partially equipped with brown rings. However, small spots on the cubital forks of the hind wing convince us that such specimens belong to the immature individuals of *P. libelluloides*, described from Azerbaijan as *Myrmeleon nordmanni* Kolenati, 1846 (Krivokhatsky et al, 2017). Esben-Petersen knew this synonymous form and cited it in his work (Esben-Petersen, 1913, p. 287). Eight males and females marked in our list with asterisks (*) were examined by Esben-Peterson. The remaining specimens in his Caucasian work were not listed as well as the series of the following species, which are not found in the Caucasus.

Genus: *Parapalpares* Insom, Carfi, 1988

***Parapalpares solidus* (Gerstaecker, 1893)**

Distribution: Iraq, Iran, Turkmenistan, Afghanistan, Pakistan, Oman, India, and Uzbekistan. This South-Palaearctic species is mainly a mountain species from Tourano-Central-Asia. Has never been collected in the Caucasus and records reported from there are erroneous (Kerimova & Krivokhatsky, 2018).

Material examined: ***Iran***. 4♀♀, Teheran et. vic., Persia, 4.07.1915; 1♀, Teheran et. vic., Persia, 21.07.1915, Mus.Caucasus, № 90-15, leg. H. Bocquillon; 1♂, Teheran et. vic., Persia, 15. II.1915, Mus. Caucasus, № 90-15, leg. H. Bocquillon.

Notes: We do not know whether Esben-Petersen himself included the incorrectly defined specimens in the series of *Palpares libelluloides*, or whether someone else did. We do know that Esben-Petersen never published any material on *Parapalpares solidus*, which suggests that he did not add the specimens. All specimens collected by Bocquillon in Persia are typical *P. solidus*.

Subfamily: ACANTHACLISINAE Navás, 1912

Genus: *Acanthaclisis* Rambur, 1842

***Acanthaclisis occitanica* (Villers, 1789)**

Distribution: This is mainly a greater Mediterranean-area species occurring in Morocco, Tunisia, Egypt, Southern Europe, in addition to Anatolia, Caucasus, Israel, Iran, Kazakhstan, Russia, Uzbekistan, Tajikistan, and Kyrgyzstan.

Material examined: ***Georgia***. 1♀, Hort. botan., Tiflis [Tbilisi], 10.07.1912, Mus. Caucas., 47-12, [leg. Ph.A.] Zaitsev; '*Acanthaclisis occitanica* Vill. [E.-Pet. det.]'; 1♀, Tiflis, 11.07.1912, Mus. Caucas., 47-12, [leg. Ph.A.] Zaitsev; 1♀, Tiflis, 20.06.1915; 2 damaged spec., Kodzori, 12.07.1911; ***Azerbaijan***. 2♀♀, 2♂♂, Geok-Tapa, Caucas, 06.1917, [leg. A.] Šhelkov[nikov]; 1♂, Geok-Tapa, Caucas, without data, [leg. A.] Šhelkov[nikov]; 2♀♀, lac. Gok-gol, distr. Elisavetpol, 07.1913, Mus.Caucas. 94-13, [leg. Ph.A.] Zaytsev; 1♂, Adzikent, pr. Elisavetpol, 28.06.1914, Mus.Caucas. 100-14, A. Vasilinin; 2♂♂, Adzikent, pr. Elisavetpol, 23.06.1914, Mus.Caucas. A. Vasilinin; 1♀, Adzikent, pr. Elisavetpol, 21.07.1913, Mus. Caucas. № 100-14, A. Vasilinin; ***Russia***. 1♂, 'Sarepta, *Acanthiaclisis occitanica,* Ch[ristoph].

Notes: This species has a well-known association with Esben-Petersen; a specimen from Sarepta was used by him for comparison. There are 17 specimens of this species

in the collection. In his publication, Esben-Petersen (p. 228) writes about the rarity of the species in the Caucasus. In the collection of the Museum there is one female from the Botanical garden in Tiflis, 10. 07. 1912, Zaitzev leg. Thus, the remaining Caucasian findings were not included in the publication (Esben-Petersen, 1913).

Subfamily: MYRMECAELURINAE Esben-Petersen, 1919

Tribe: MYRMECAELURINI Esben-Petersen, 1919

Esben-Petersen worked at a time when the structure of the genitalia was not used in classical neuropteran taxonomy. Since some specimens of this tribe located in the collection required reidentification, we provide here a determination key for species of the Caucasus region according to the male genitalia as well as other external features.

Key to the genera of tribe Myrmecaelurini from the Caucasus Region

1. Males with one pair of hair-pencils on segment VI of the abdomen; .....
.....*Lopezus* Navás, 1913

- *Lopezus fedtschenkoi* (McLachlan, 1875) known in Caucasus only.

- Males with two pairs of hair pencils on the VI and VII segments of the abdomen.....2

2. Wings rounded at ends; Abdomen same length in both sexes; ventral margin of male ectoproct does not extend beyond the line of the VIII sternite of the abdomen; gonarcus tube straight, conical.....*Myrmecaelurus* Costa, 1855

- Wings lanceolate; abdomen of the male longer than that of female; Ectoproct of the male with a strongly drawn angle, which protrudes beyond the line of segment VIII of abdomen..... 3

3. Male abdomen much longer than that of female and strongly protrudes beyond ends of folded wings; gonarcus tube straight, conical.....*Aspoeckiana* Hölzel, 1969

- Male abdomen slightly longer than that of female and protrudes slightly beyond ends of folded wings; gonarcus tube arcuately curved..... *Nohoveus* Navás, 1918

Key to species and subspecies of the genus *Aspoeckiana*

1. Frons and vertex yellow with dark spots; ectoprocts of male about 1.5 mm.....
.....*Aspoeckiana uralensis* (Hölzel, 1969).....….2

- Frons and vertex red-brown with dark spots; ectoproct over 2 mm.....
.....*Aspoeckiana glaseri* Hölzel,1972

2. Predominant body color is straw yellow; main longitudinal veins dark with some light areas; vein *Sc* + *R* light. Forewing 23-25 mm.....
.....*Aspoeckiana uralensis jakushenkoi* (Zakharenko, 1983)

- Predominant body color is reddish yellow; Longitudinal veins, including *Sc* + *R*, yellow, with almost no pronounced darkening; forewing length 18-25 mm.....
.....*Aspoeckiana uralensis curdica* Hölzel,1972

Key to species of the genus *Myrmecaelurus*

1. Smaller species with fore wing shorter than 35 mm.....2

- Larger species with fore wing length 35-40 mm.....4

2. Wing membrane stramineus or yellow; veins wholly yellow; hair pencils dark 3

- Wing membrane transparent; veins pale, with weak shading; hair pencils pale. .....*Myrmecaelurus acerbus* (Walker, 1853)

3. Wings usually transparent with yellowish nuance; immature specimens (var. *derbendicus* Hölzel, 1972) with slight mesh grayish darkening of the membrane along the longitudinal and transverse veins; pronotum with equiform medial and lateral longitudinal dark brown stripes; hair pencils dark yellow..... .....*Myrmecaelurus trigrammus* (Pallas, 1781)

- Wing membranes yellow with ochre points around crossveins; pronotum with wide medial and full narrow lateral longitudinal dark brown stripes; hair pencils brownish..... .....*Myrmecaelurus spectabilis* Navás, 1912

4. Wing membrane light yellow or transparent; the main longitudinal veins are brown; *Rs* of the hind wing is black; pronotum with medial and lateral longitudinal dark brown stripes; hair pencils dark.....*Myrmecaelurus major* McLachlan, 1875

- The membrane of the wings is lemon yellow; all veins are yellow; pronotum with a full medial longitudinal light brown line and, sometimes, with incomplete lateral ones; hair pencils with silver hairs.....*Myrmecaelurus solaris* Krivokhatsky, 2002

Key to species of the genus *Nohoveus*

1. Wing membrane in the costal area of the forewing with a number of brown dots around the bases of the transverse veins..... .....*Nohoveus zigan* (Aspöck, Aspöck & Hölzel 1980)

- The wing membrane is completely transparent without a pattern..... .....*Nohoveus armenicus* (Krivokhatsky, 1993)

Genus: *Myrmecaelurus* A. Costa, 1855

***Myrmecaelurus trigrammus* (Pallas, 1771)**

Distribution: This Ancient-Mediterranean species prefers plain steppe areas of Algeria, Libya, Albania, Hungary, Slovakia, North Macedonia, Serbia, Croatia, Romania, Montenegro, Spain, Italy, Greece, Ukraine, Moldova, Russia, Turkey, Cyprus, Israel, Iran, Azerbaijan, Kazakhstan, Kyrgyzstan and Uzbekistan, (Krivokhatsky, 2011). It is still one of the most common species of antlions in the West Palearctic (Aspöck et al, 2001; Krivokhatsky, 2011).

Material examined: *Georgia*. *1♂, Mtschet, prov. Tiflis, 10.07.1911; *1♀, Mtschet, prov.Tiflis, 30.07.1911, Mus. Caucas., 36-11, E. Rimanson, *Myrmecaelurus trigrammus* Pall., handwriting bottom lable by E.-Petersen; *1 damaged specimen, Mtschet, prov. Tiflis, 18.07.1915; 1 damaged specimen, Mtschet, prov. Tiflis, 19.07.1913, Mus. Caucas., № 97-13, leg. K.A.Satunin; 1 damaged specimen,

Mtschet, prope Tiflis, 9.07.1915. Mus.Caucasus, № 93-15, leg. L.Bančkovski; *1 damaged specimen, Tiflis, Caucasus, 06.1907, Mus.Caucasus, № 52-07; 1♂, Borshom; 1♀, Borjomi, without data of collection; 1♂(?); ***Armenia***. 1♂, Van et.vic., Armenia, turc, Migri, 19.06.1916; ***Azerbaijan***. 1♀, p.Karaduly, dist. Dzevat, 2.06.1912, Mus.Caucasus, № 22-12, leg. K.A. Satunin; ***Russia***. *1♀, Volgograd region, Sarepta, Chr. *Myrmecaelurus trigrammus*. [Th. Christoph leg. et det.]; ***Turkey***. 1♀, Zardanec, distr. Olty, pt. Kars [prov. Erzurum], 15. 07. 1908. Mus. Caucas., 47-08, leg. K.A. Satunin, '*Myrmecaelurus major* MacLachl.?', E.-Petersen det. 1 damaged specimen without abdomen, 29. 07. [18]99.

Notes: The entire center of the second box of specimens is occupied by similar specimens under a single Esben-Petersen's label reading '*Myrmeleon trigrammus* Pallas'. Labels '*Myrmecaelurus trigrammus* Pall., are also pinned to some of them. We confirmed a small part of the identifications, but many specimens were reassigned to the closely related species *Myrmecaelurus solaris* Krivokhatsky, 2002, whose area in the Caucasus is in contact with that of *M. trigrammus*. On the other hand, one specimen identified by Petersen presumably as a *Myrmecaelurus major* has been assigned here to *M. trigrammus*. Esben-Petersen lists in his work (Esben-Petersen, 1913, p. 288) 27 specimens, which were mixed with two species, *Myrmecaelurus trigrammus* and synonymous name *Myrmeleon laetus* Kolenati, 1846, *nec* Klug, 1834. It turned out that the second name, not allocated separately by Esben-Petersen, refers here to the species described later, *Myrmecaelurus solaris* Krivokhatsky 2002. All of the 27 specimens of last '*trigrammus'* are marked in both lists with asterisks (*). A pair of specimens from Esben-Petersen's list [1♀. Liškvas, 7.07.1911 (Satunin leg.), 1♀ Geok-Tapa, 07.1908 (Schelkovnikov leg.)] are lost and were not found. For comparison with true *M. trigrammus*, Esben-Petersen had correctly identified specimens of this species from the Volga region (Sarepta), which he had acquired from Christoph. *Myrmecaelurus trigrammus* is a variable species that is difficult to identify; sometimes it is necessary to study the structure of the male's genitalia to make a positive identification.

***Myrmecaelurus solaris* Krivohatsky, 2002**

Distribution: This Irano-Turanian species occurs in Turkmenistan, Tajikistan, Uzbekistan, Kyrgyzstan, Iran, Armenia.

Material examined: ***Armenia***. 1 ♂, Migri-Sahi, 11.07.; ***Azerbaijan***. *1 specimen without abdomen, Castr. limit, Veisaly ad. Arax, 19.07.1912, Mus.Caucas, № 47-12, [leg. Ph.A.] Zaitzev, '*Myrmecaelurus trigrammus* Pall. [E.-Pet. det.]'; 1♂, Castr.limit, Dzebrail, ad. Arax. 2.07.1912, Mus.Caucas, [leg. K.A.] Satunin; *1♂, Castr. limit., Djebrail ad. Arax, 2.07.1912, Mus.Caucas, № 22-12, [leg. K.A.] Satunin, '*Myrmecaelurus trigrammus* Pall. [E.-Pet. det.]'; *1♀, Castr.limit, Šachčinar, ad. Arax. 5.06.1912. Mus. Caucasus, № 22-12, leg. K.A. Satunin '*Myrmecaelurus trigrammus* Pall. E.-Petersen det.'; *1 damaged ♀, Castr. limit. Šachčinar, d. Arax. 3.07.1912, Mus.Caucas, 11-12, [leg. K. A.] Satunin '*Myrmecaelurus trigrammus* Pall.'; 1♀, Castr. limit., ad. Arax, 5.07. 1912, [leg. K.A.] Satunin; 1 (damaged) Šachčinar, 3.V.1922, Mus.Caucas, 22-12, [leg. K.A.] Satunin;*1damaged specimen without abdomen, Castr. limit, Karaduly, ad. Arax. 11.07.1912. Mus.Caucasus, №22-12. K.A. Satunin '*Myrmecaelurus trigrammus* Pall.; *1♀, P. Karaduly, distr. Dževat, 11.07.1912. Mus.Caucasus, №22-12. K. Satunin; 1 damaged specimen without abdomen, Adzikent, 24.07.1914. Mus.Caucasus, 105-14, A. Wasilinin; 1♀, Steppe Mugan, prov. Baku, 4.07.1913, Mus.Caucas. 58-14, N. Kostin; 1 damaged specimen without abdomen, Kaukasus, Kr. Aresch., E. Koenig.; 1♀, Geok-Tapa, Aresh, 07. 1908, [leg. A.] Shelkov[nikov], Mus.Caucas., 46-08, '*Myrmecaelurus trigrammus* Pall. [E.-Pet. det.]'; 1♀, lac. Gök-göl, distr. Elisvetpl [Gok-gol, Ganja distr.],

07.1913, Mus.Caucasus, № 94-13, [leg. Ph.A.] Zaitsev; ***Georgia***. 1♀, Caucasus, Tiflis, E. Koenig; 1 damaged specimen, Hort.botan, Tiflis, 10.07.1912, Mus.Caucasus, № 47-12, [leg. Ph.A.] Zaitsev '*Myrmecaelurus trigrammus* Pall., [E.-Petersen det.]'; 1♀, Strashnyi Okop [close Borshom], 20 IX. 909, anonym; *1♀, Mtschet, prov. Tiflis, 30.07.1911, Mus.Caucasus, № 86-11, E. Rimanson, '*Myrmecaelurus trigrammus* Pall., [E.-Petersen det.]'; 1♂, Tsarski Kolodez, dist. Signach, 10.07.1915; Mus.Caucasus, № 94 - 15, leg. B.Uvarov;.1♂, Mtschet, prov. Tiflis, 30.07.1915, Mus.Caucasus, № 94-15, B. Uvarov; 1♀, Sagaredzo distr., Tiflis, 4.07.1915, Mus.Caucasus, № 94-15, B. Uvarov; 1♂, 1♀, Tsarsk. Kolodez [Royal well], dist. Signach, 7,10.07. 1915, Mus.Caucas., 94-15, B. Uvarov; ***Iran***. 1♀, Teheran. et vic., Persia, 10.07.1915, Mus.Caucasus, № 90-15, [leg. (H.] Bocquillon; 1 damaged specimen, Teheran, et. vic., Persia, 27.V.1915, Mus.Caucasus, № 90-15, [leg. H.] Bocquillon; 1 damaged specimen, Teheran, et. vic., Persia, 18.07.1915, Mus.Caucasus, № 90-15, [leg. H.] Bocquillon; 1♀, 2 damaged specimens, Teheran, et. vic. Persia, 28.V.1915, Mus.Caucasus, № 90-15, [leg. H.] Bocquillon; 1♀, Leškerek, prope Teheran, 27.07.1915, Mus.Caucasus, № 90-15, [leg. H.] Bocquillon; 1♀, Teheran et.vic. Persia, 28.V.1915, Mus. Caucas., 90-15, Bocquillon, with bottom lable '*Myrmecaelurus trigrammus* Pall.' [E.-Pet. det.]; ***Turkey***. 1 damaged specimen, Van et vic., 19.06.1916, Mus.Caucasus, № 111-16, A. Kaznakov; 1♀, Van et vic., 19.06.1916, Mus. Caucas., 111-16, A. Kaznakov; *2 damaged specimens, V. Zardanes, dist. Olty, Pr. Kars, 15.07.1908, Mus.Caucas. 45-08, leg. K.A. Satunin, '*Myrmecaelurus trigrammus* Pall. [E.-Petersen det.]'. ***Russia***. *1♂, damaged, Rutul-Borch, dist. Samur, 30.07.1910, Mus.Caucasus, № 55-10, leg. A. Schelkovnikov '*Myrmecaelurus trigrammus* Pall., E.-Petersen det.

Notes: Esben-Petersen was not familiar with this species, and he mixed some of the specimens he listed with *M. trigrammus*. The specimens of *M. solaris* in the collection show a considerable range of variability, including an increase in melanism in the pronotum pattern. However, *Myrmecaelurus solaris* can always be recognized, taking into consideration its extreme forms. Unlike *M. trigrammus*, which has three complete longitudinal brown stripes on the pronotum, typical individuals of *M. solarius* have only a medial, relatively lighter, pigment strip. In another form, most often in males, lateral stripes extending from the base, not higher than the pronotal fossae, are added to the median. Another variant of melanization is demonstrated by some specimens of *M. solaris* where brown pigment fringes the edges of the pronotum, which should not be confused with full lateral submedian bands on the pronotum of *M. trigrammus*. For all of the above mentioned variants of pronotum melanization, all specimens of *M. solaris* retain other distinct characteristics, including lemon coloration of the membrane of the wings and unpainted light longitudinal and transverse veins, silver hair pencils in males, and a generally a larger body size. In the *M. solaris* series we examined, males were slightly smaller than females. Sometimes, they can fall into the size category of *M. trigrammus*, and then, the entire collection series should be carefully studied. These two similar species may co-occur in some districts although in different localities. For example, in the vicinity of Tbilisi, *M. trigrammus* was repeatedly registered in 'Mtschet, prov. Tiflis', in Tiflis itself, while *M. solaris* is known from other surrounding villages. In Tiflis itself, *M. solaris* was caught only in the Botanical garden. Of particular interest is the fact that both of these species occur together in separate localities in Turkey at the same time. Thus, in V. Zardanes, dist. Olty, Pr. Kars 15.07.1908, two specimens of *M. solaris* were caught by Satunin and identified by E.-Petersen as *M. trigrammus*, and one male of *M. trigrammus* was erroneously identified as *M. major*.

Myrmecaelurus major McLachlan, 1875

Distribution: This species mostly has a East-Mediterranean-North-Turanian

distribution (Krivokhatsky, 2011). It has been reported from Armenia, Turkey, Russia, Kazakhstan, Uzbekistan, Turkmenistan, Tajikistan, Iran, and Afghanistan.

Material examined: Absent in the collection.

Notes: A specimen was recorded in the paper (Esben-Petersen 1913:288), but the present specimen in the collection with the bottom and specimen labels definitely refers to *Myrmecaelurus trigrammus* (Pallas, 1771). In his paper, Esben-Petersen (1913:288, 289) indicated a female with pale longitudinal veins from Turkey with a label [Zardanes, 15. 07. 1908 (Satunin leg.)] and wrote: "It is with some hesitation that I refer this not full-colored specimen to the above-named species, but I think I am right in doing so. I have one male in my collection from Van ([Turcish] Armenia) and 1 female from Berlad, Romania". However, two other specimens collected by Satunin in the same place (Zardanes), were determined by Esben-Petersen to be *Myrmecaelurus trigrammus*. We redefined them here as *M. solaris*, not *trigrammus*. *Myrmecaelurus major* was not previously known from the Caucasus, but we recently discovered this species in Armenia (Krivokhatsky et al, 2020).

***Myrmecaelurus acerbus* (Walker, 1853)**

Distribution: Sethian species: India, Afghanistan, Pakistan, Turkmenistan, Tajikistan, Kyrgyzstan, Turkey, Iran, Iraq, Israel, Saudi Arabia.

Material examined: No real *M. atrox* presented in the collection. Collections determined as *Myrmecaelurus atrox* (Walker) occupy the two upper rows of the third box. Esben-Petersen (1913, p. 289) had written, that "it is a very distinct species easily recognizable by its smaller size, by the shape of the wings and by the dark banded nervures". In the collection under the name *Myrmecaelurus atrox*, Esben-Petersen mostly had placed a specimen of *Nohoveus armenicus* (Krivokhatsky, 1994) from Armenia, which had not yet been described. We have already known (Krivokhatsky, 2011: 273-274) that one specimen of *Nohoveus zigan* (Aspöck, Aspöck, & Holzel, 1980), known in his time as *Myrmecaelurus punctulatus* (Steven in Waldheim, 1846), Esben-Petersen, was defined under an erroneous definition of *Myrmecaelurus atrox* Walker. It was 1♂, Sarepta, Coll. Duske from Finnish Museum of Natural History, Helsinki (seen). Based on a number of his works, we suggested that Esben-Petersen, judging by the description and the cited material (Esben-Petersen, 1913: 289), mixed this species with *Nohoveus armenicus* (Kriv.) and brought it under the name *Myrmecaelurus atrox* Walk. for several places in Armenia (where it was *N. armenicus*), and here also referred specimens (really *N. zigan*) from the mouth of the river Kuma, from Sarepta, and the floodplain of the river Ural (Bostanzhoglo coll.). The present collection that we have studied shows that under the name *Myrmecaelurus atrox* E.-Pet., nec Walker, representatives of not only the genus *Nohoveus*, but also the genus *Aspoeckiana* are hiding. Both genera, Nohoveus and Aspoeckiana, reliably differ mostly according to the male genitalia; we distinguished females or broken specimens from Azerbaijan and Armenia by more fuzzy species characteristics of the head and pronotum patterns and coloration of wing venation.

Genus: *Nohoveus* Navás, 1918

***Nohoveus armenicus (*Krivokhatsky, 1993)**

Material examined: ***Armenia***. 1♂ with broken wings, Takältu, decliv. Ararat, 21.06.1911, Mus.Caucas. K. Satunin, as 'Myrme*caelurus atrox* Walk. [E.-Petersen det.];

Notes: Determination of the male was confirmed after the preparation of genitalia, which clearly show relatively elongated ectoprocts and a straight gonarcus tube.

Genus: *Aspoeckiana* Hölzel, 1969

***Aspoeckina uralensis jakushenkoi* (Zakharenko, 1983)**

Material examined: ***Azerbaijan***. 1 damaged specimen without abdomen, Ordubad, prov. Erivan, 25.06.1911; Mus. Caucas., 22. II, K. Satunin; '*Myrmecaelurus atrox* Walk. [E.-Petersen det.]; 1♂, 6 damaged specimens, Ordubad. 20-29.06.1911, K. Satunin; ***Russia***. 1♀, Steppae ad.fl. Kuma. Ciscaucasia, Mus.Caucas. 30-06. '*Myrmecaelurus atrox* Walk. [E.-Petersen det.]; 3 damaged specimens, Steppae ad. fl. Kuma. Ciscaucasia, Mus.Caucas. 30-06.

Notes: The subspecific position of the female from the mouth of the Kuma is doubtful; perhaps it belongs to the nominative subspecies.

Genus: *Lopezus* Navás, 1913

***Lopezus fedtschenkoi* (McLachlan, 1875)**

Distribution: Algeria, Tunisia, Ukraine, Russia (Dagestan), Turkey, Saudi Arabia, Iraq, Iran, Kazakhstan, Turkmenistan, Uzbekistan, Tajikistan, Kyrgyzstan, Afghanistan, Pakistan, China, Mongolia. Sakharo-Gobian species, preferring sandy deserts.

Material examined: ***Russia***. 1♀, 2 damaged specimens, without abdomen, Steppae, ad. fl. Kuma, Mus. Caucas., 30-06.

Notes: Three damaged specimens listed in publication on p. 289, complete with common label *'Myrmecaelurus fedtschenkoi* M.L.*'* placed in the top of the first box. All three specimens belong to the typical, non-striped morph of the species.

The indicated old location (the mouth of Kuma River) confirmed by modern collection finds: (Krivokhatsky & Khabiev, 2016: 46).

Genus: *Cueta* Navás, 1911

***Cueta lineosa* (Rambur, 1842)**

A thorough study of more than 50 specimens by A. Krivokhatsky from Armenia, Azerbaijan, Iran, Albania, and Russia made it possible to come to the conclusion that although *C. anomala* and *C. lineosa* are outwardly very similar, the first species reliably differ from the second one only by the structure of the male genitalia. Therefore, it is quite understandable why G. Holzel considered the females of *C. anomala* and *C. albanica* to be synonyms of *C. lineosa*. Krivokhatsky separated female specimens

in a large series of *C. anomala* from Transcaucasia, (Armenia: river Araks, between Nyuvadi and Syurtui, 3 IX 1932, I. Rodionov; Azerbaijan: Geoktape, Elizavetpol province, 24 July 1901, R. Schmidt), reliably compared with the types of *C. anomala* and *C. albanica* (Krivokhatsky, 2011).

Females of *C. lineosa* on the membrane of the forewing have an oblique brown streak running from a bright dot on the regma to the apical area of the wing along a row of stepped veins; the females of *C. anomala*, as well as the males of both species, do not have such a streak; they usually retain only a dot on the regma. The Eastern Mediterranean *C. anomala* and the Iranian-Turanian *C. lineosa* are sympatrically distributed. All indications of the location of *C. lineosa* in Russia (Luppova, 1987) are erroneous (Krivokhatsky, 2011).

Distribution: North Africa, the Middle East, Turkey, Azerbaijan, Kazakhstan, Iran, Turkmenistan, Uzbekistan, Afghanistan, Pakistan (Aspöck et al., 2001; Krivokhatsky, 2011). Wide spread (Krivokhatsky, 2009: 114), Ancient Mediterranean species.

Material examined: ***Azerbaijan***. 2 damaged specimens without abdomen (the wing pattern corresponds to ♀), Geok-Tapa, Aresch, Shelkovnikov, 07. 1908, Mus.Caucas. 46.08., '*Nesoleon oulianini* M. L.'[E.-P. det.]; 2 damaged specimens, Castr.limit. Altar. ad.Arax. 20.07.1912, Mus Caucasus, 22-12, [K.A.] Satunin; 4♂, 1♀, Šhachčinar, 3.07.1912, Mus Caucas., 22-12, [leg. K.A.] Satunin; 1♀, Šhachčinar, 5.07.1912, Mus Caucas., 22-12, [leg. K.A.] Satunin, '*Nesoleon oulianini* M. L. [E.-P. det.]'; 1♂, Steppa Mugan, prov. Baku, 06 - 07. 1913, Mus.Caucas. 58 - 14. N. Kostin.

Notes: The full third row of the second box of 10 specimens is accompanied by a common label *Nesoleon vulianini* M.L.'. This grammatical error leads us to assume that the collection, after being processed by Esben-Petersen, was exaggerated.

Subfamily: NEMOLEONTINAE Banks, 1911

Genus: *Distoleon* Banks, 1910

Distoleon tetragrammicus (Fabricius, 1798)

Distribution: Europe, Russia, Caucasus, Israel, Syria, Turkey, Iraq, N Iran. European-Mediterranean species.

Material examined: ***Georgia***. 1♀, damaged specimen, Tbilisi, v. Silva Chudatovi, IV.1938, A. Vash[agidze leg], '*Myrmeleon europeos'*, anonym det. (after bottom lable '*Myrmeleon europaus*'); 1♂, Tiflis. 12.07.1912. Mus. Caucas., 47-12 P.A. Zaitsev; 2 damaged specimens, Mtschet, prov. Tiflis, 22.06. 1912; 1 damaged specimen, Caucasus, Tiflis, leg. E.Koenig; 1♀, Tiflis, 21.07.1907, Mus.Caucasus, № 61-02. leg. Ph.A.Zaytsev; 1 damaged specimen, Tiflis. 4.07.1912. Mus.Caucasus, № 47-12, leg. Ph.A.Zaitsev;1♀, Borjom, 5.07.1910, leg. Winogradow - Nikitin); 1♂, 1 damaged specimen, Teliani, prope Telavi, Kachetia, 10.07.1907, leg. N.L.Fursov.; ***Azerbaijan***. 1♀, Castr. limit., Karad[uly] ad. Arax. 29.06.1912, Mus. Caucas, 22-12, leg. K.A.Satunin 1♂, Steppe Mugan. prov.Baku. 06-07.13. N.Kostin; 1 damaged specimen, 1♀, Geok-Tapa, Aresh, 07. 1908, Shelkov[nikov], Mus. Caucas., 46-08, '*Formicaleon tetragrammicus* Fabr.', Esben-Petersen det.; 1♀, Adjikent, Pr. Elisavetpol, 23.07.1912, Mus. Caucas., 8-12, Vasilinin; 5♀, Adjıkent, Elisavetpol, 26.07.1913, Mus. Caucas., 6-13, Vasilinin; 1 damaged specimen, Geok-Tapa, Aresh, 6.07.1915; 1 damaged specimen, Geok-Tapa, Aresh, 07.1908, leg. A.Šhelkovnikov, Mus.Caucasus, № 46-08; 1 damaged specimen, Geok-Tapa, Caucasus, № 40-15; 1♂, Geok-Tapa, Caucasus, A.Šhelkovnikov, Mus.Caucasus, №40, 3.06.1915; 2♀♀, 1 damaged specimen, Geok-Tapa, Caucasus, leg. A.Šhelkovnikov; 1 damaged specimen, Geok-Tapa, dist. Aresh, 6.07.1915.

Notes: Two last full rows of the third box occupied by identified *Formicaleon tetragrammicus*, labelled with the name in an obsolete combination, like in Esben-Petersen publication. Only one specimen placed in second position after bottom label '*Myrmeleon europaus'* (sic!) and added with other wrong spelling label '*Myrmeleon europeos'* (sic!).

Genus: *Neuroleon N*avás 1909

***Neuroleon nemausiensis* (Borkhausen, 1791)**

Distribution: Ancient-Mediterranean species, distributed in Europe, Northern Africa and West Asia.

Material examined: ***Georgia***. 1 damaged specimen, Tiflis, Caucasus, 10.07.1913, leg. K.A. Satunin; ***Turkey***. 1 specimen without abdomen, distr. Artvin, Chod-Salačur, 26.07.1911, Mus. Caucas., 74 - 11, leg. J. Voronov, '*Neuroleon nemausiensis* Borkh.' [E.-P. det.].

Notes: Esben-Petersen (p. 291) discussed the significant variability of the species from east to west with a large number of synonyms, not dividing them into subspecies. We propose that Turkish damaged specimen with the bottom label '*Neuroleon nemausiensis* Borkh.' belongs to *Neuroleon nemausiensis ssp. nemausiensis* Borkh.

Genus: *Macronemurus* Costa, 1855

***Macronemurus bilineatus* Brauer, 1868**

Distribution: Nemoral-steppe, Euxine-Black-sea species.

Material examined: Absent.

Notes: E.-Petersen gives one specimen (without abdomen) from Zardanes, 15.07.1908 (Satunin leg.) for the Georgian collection. Unfortunately, the specimen is lost now.

Genus: *Creoleon* Tillyard, 1918

***Creoleon plumbeus* (Olivier, 1811)**

Distribution: Czech Republic, Hungary, Romania, Montenegro, Albania, Macedonia, Bulgaria, Greece, Crete, Ukraine, Moldova, Russia, Turkey, Cyprus, Syria, Israel, Georgia, Armenia, Azerbaijan, Iraq, Iran, Kazakhstan, Turkmenistan, Uzbekistan, Afghanistan, Tajikistan, Kyrgyzstan. A broad Eastern-ancient-Mediterranean species, distributed from the Eastern Mediterranean to Central Kazakhstan and Tajikistan (Krivokhatsky, 2011).

Material examined: ***Georgia***. *1♂, Hort.botan. Tiflis. 10.07.1912, Mus.Caucasus, 47-12, Zaitsev, '*Creagris plumbeus* Oliv. [E.-Pet. det.]'; 2 damaged specimens, Hort.botan. Tiflis. 26.07.1912, Mus. Caucasus, № 47-12, leg. Ph.Zaitsev; 3♂, Sagaredjo, distr. Tiflis, 4.07.1915.; ***Azerbaijan***. *1♂,1♀, 2 damaged specimens, Castr.limit, Šhachčinar. ad. Arax. 3.07.1912; *1♀, Castr. limit, Dzebrail, ad. Arax, 2.07.1912, Mus. Caucas, 2-12, [leg. K.A.] Satunin; 1♀, Sachčinar ad Arax, 3.07.1912, Mus. Caucas, 2-12, Satunin; 1♂, Sachčinar ad Arax, [p. Šhachčinar, dist. Karjagin], 3-10.07.1912, Mus. Caucas, 2-12.

[leg. K.A.] Satunin; 1♂, Petropavlovsk, Steppa Mugan, 07.1913, Mus. Caucas, № 141-13, M. Volčanetski; 2 damaged specimens, Castr. limit, Šhachčinar, ad.Arax, 22.07.1912.; ***Turkey***. *1♀, v. Ardanuç, 21.07.1908, Mus. Caucas, 45-08, [leg. K.A.] Satunin, '*Creagris plumbeus* Oliv. [E.-Pet. det.]; ***Russia.*** 1♀, West Caucasus, [Krasnodar Reg.], Utch-Dere, E. Koenig.

Notes: It is clearly seen that in the row behind the bottom label '*Creagris plumbeus* Ol.' in the third box there are several specimens with very long abdomens characteristic of males of this common species. Of the dozen specimens listed in the article (marked with an asterisk *), we found only two, Kosmalian (1500 m altitude), 20. 07. 1906 and Geok-Tapa (Ares), 07. 1908 (Schelkovnikov leg.), but the collection itself is much richer.

Subfamily: MYRMELEONTINAE Latreille, 1802

Genus: *Euroleon* Esben-Petersen, 1919

***Euroleon nostras* (Geoffroy in Fourcroy, 1785)**

Distribution: Widespread in Europe. Ukraine, Moldova, European Russia, Turkey, Georgia, Armenia, Azerbaijan. West Palaearctic nemoral species.

Material examined: ***Georgia***. 1♀, damaged spec., Tbilisi, Hortus botanicus, 11.07.1912, Mus. Caucas, 47-12, [leg. Ph.] Zaytsev, '*Myrmeleon europaus'* M.Lachl.' Esben-Petersen det., bottom label - *'Myrmeleon europaus* M.L.; ***Azerbaijan***. 1 damaged specimen, Geok-Tapa, Aresh, 07.1915.; ***Turkey***. 1♂, damaged specimen, Ani, prov. Kars [Turkish], 14.07.1914, Mus.Caucas., 133-14, Loris.-Kalantar.

Notes: The pair of specimens with a common bottom label *Myrmeleon europeus* is followed by a double row of *Creagris plumbeus*. The first of them added with the individual Esben-Petersen identification label «*Myrmeleon europas* M.L.», but the second one appeared in the collection in the Soviet period and really belongs to Distoleon tetragrammicus. Esben-Petersen's Caucasian publication (p. 290) also indicates two samples from Tiflis, but the second is now replaced by a later one, which was later, determined incorrectly. It is surprising that there are no representatives of the true genus *Myrmeleon* in the collection and the Caucasian list.

Family: ASCALAPHIDAE Lefébvre, 1842

In the publication about the collection of the Caucasian Museum, there is no information about the owlflies, identified by Esben-Petersen, but there are labels with his own handwritten definitions in the collection.

Subfamily: HAPLOGLENIINAE Burmeister, 1839

Genus: *Idricerus* McLachlan, 1871

***Idricerus sogdianus* McLachlan, 1875**

Distribution: Kazakhstan, Kyrgyzstan, Uzbekistan, Turkmenistan, Tajikistan, Afghanistan, India. Turano -Turkestanian species does not occur in the Caucasus.

Notes: Two specimens with the bottom label '*Idricerus sogdianus* M. L.' is preceded by a small collection of ascalaphids. Both specimens, including one much-destroyed

specimen with handwritten label '*Idricerus sogdianus* MacLachl., det. Esb.-Petersen', belongs to *Bubopsis hamatus* (Klug). The determination was checked against specimens of *I. sogdianus* from Tajikistan and Turkmenistan and a series of *B. hamatus* from the ZIN collection collected in all areas. The redetermination was confirmed by us, despite the fact that the damaged specimen is superficially similar to *I. sogdianus,* in part because of its damage.

Material examined: Absent.

Subfamily: ASCALAPHINAE Lefèbvre, 1842

Genus: *Bubopsis* Mac Lachlan, 1898

Bubopsis hamatus (Klug, 1834)

Distribution: Turkey, Azerbaijan, Georgia, Russia, Kazakhstan, Kyrgyzstan, Iran, Israel, Jordania, Syria, UAE. East-Mediterranean species.

Material examined: ***Azerbaijan***. 1 damaged specimen, Kaukasus. Kr. Aresch. 30.06.1899. E. Koenig, '*Idricerus sogdianus* MacLachl., det. Esb.-Petersen'; 1♀, Geok-Tapa, Aresh, 07.1908, Mus. Caucasus, № 46-08, [A.] Šhelkov[nikov].

Notes: Both specimens are in the first row of the box immediately behind the bottom label of a representative of another subfamily «*Idricerus sogdianus».*

It is noteworthy that a synonym for this species, *Ascalaphus forcipatus* Eversmann 1850, has been described from the southern Caucasus.

Genus: *Deleproctophylla* Lefebvre, 1842

Deleproctophylla variegata (Klug, 1845)

Distribution: Greece, Cyprus, Caucasus, Russia, Kazakhstan, Kyrgyzstan, Uzbekistan, Iran. Ancient-Mediterranean species.

Material examined: ***Azerbaijan***. 1 damaged specimen, Chanagei, Karabagh, prov. Elisavetpol, V.1908. Mus.Caucasus, № 47-08, leg. A.A. Florensk.; 2 damaged specimens, Geok-Tapa, Aresh, 07.1908, Mus.Caucasus, № 46-08, A. Šhelkovnikov, det. Esben Petersen; 2♀♀, Aresh, Caucasus, Mus. Caucasus, № 40-15, leg. A. Šhelkovnikov.

Notes: All specimens are placed after bottom label '*Theleproctophylla variegata* Klug.' and three of them have handwriten labels '*Theleproctophylla variegata* Klug., det. Esben Petersen'.

Genus: *Libelloides* Schäffer, 1763

Libelloides macaronius kolyvanensis (Laxmann, 1842)

Distribution: Europe, Caucasus, Turkey, Iran, Middle Asia. East Mediterranean widespread steppe and semi-desert form (Krivokhatsky 1998: 430).

Material examined: ***Georgia***. 1♀, Mtschet, prope. Tiflis, 17.07.1915, Mus.Caucasus, № 93-15,

leg. L.Bančkovski; 1♀, Mtschet, prope. Tiflis, 8.07.1915, Mus.Caucasus, № 94-15, leg. B.Uvarov; 1♂, Mtschet, prope. Tiflis. 29.06.1915, Mus.Caucasus, № 93-15, leg. L.Bančkovski; 3♀,Tsarsk. Kolodez, dist. Signach, 10.07.15. Mus.Caucasus. № 94-15. leg.B.Uvarov; 1♂, 6♀, Mtschet, prope. Tiflis. 29.06.1915, Mus.Caucas., 93-15, L. Bančkovski; 1♀, Mtschet, prope. Tiflis, 21.06.1915, Mus.Caucasus, № 94-15, leg. L.Bančkovski; 1♀, Mtschet, prope. Tiflis, 21.07.1915, Mus.Caucasus, № 94-15, leg. B.Uvarov; 1♀, Mtschet, prope. Tiflis, 8.07.1915, Mus. Caucasus. № 93-15, leg.B.Uvarov; ***Azerbaijan***. 1♂, Helenendorf [Göygöl], 10.05. 1910, anonym coll.; 2♂♂, Elisavetpol, Caucasus, 12.V.[1]911, leg. A.Wasilinin; 1♀, without head, Lenkoran, Mai 1910, anonym coll.; ***Iran***. 1♀, Cheregirduk, deşt. Urmia, 06.1916, Mus. Caucas, № 94-15. [leg. B.] Uvarov, exp. Urmiana; 1♀, Cherrri-Qirdjk, dest, 06.1916, Mus.Caucas, 100-16. exp. Urmia, [leg. B. Uvarov]; ***Turkmenistan***. 1♀, Sarykamyś et vicina, 7.07.1914, Mus. Caucas, 49-14, Poltoratski; ***Russia***. 1♀, [Dagestan], Kasumkent, *Ascalaphus kolyvanensis* Chr[istoph].

Notes: Almost all material consists of yellow specimens belonging to typical morph (Krivokhatsky et al., 2018: 54). There are no specimens determined by Esben-Petersen himself, only one sample provided with a label handwritten by Christoph.

Libelloides lacteus (Brullé,1832)

Distribution: Albania, Bulgaria, Greece, Italy, Croatia, Serbia, Montenegro, France, North Macedonia, Turkey. East-Mediterranean-Anatolian species.

Material examined: ***Turkey***. 1♀, Artvin, Caucasus, 14.06.1914, leg. Petrosjan.

Notes: The drawing of Brulle type, female (1832), is very schematic. Our female is identical in color and wing shape to the male from southern Bulgaria depicted by Popov (2004).

Libelloides hispanicus ustulatus (Eversmann, 1850)

Distribution: Georgia, Armenia, Azerbaijan, Turkey, Russia. Kura-Araxian-Anatolian subspecies of disjunctive Mediterranean species.

Material examined: ***Georgia***. 2♀♀, 1♂, Borjomi, Transcaucasus, [P.] Winogradow, 05.07.1911 (all specimens are yellow); 1♂, Borjomi, Likani, A.Wasilinin, 04.06.1912 (white morph).

Notes: There are no known handwritten labels by Esben-Petersen under specimens of that species. The taxon is represented in nature by two co-inhabiting color morphs with a white and yellow wing pattern background. Both morphs are in the collection.

Family: NEMOPTERIDAE Burmeister,1839

Genus: *Nemoptera* Latreille, 1802

Nemoptera sinuata Olivier, 1811

Distribution: Bulgaria, North Macedonia, Greece, Lebanon, Syria, Turkey, Southern Russia, Armenia, Azerbaijan. East-Mediterranean species.

Material examined: ***Armenia***. 1♀, 1 damaged specimen, pag. Liškvas, distr. Zangezur, 8.07.1911, Mus.Caucasus, № 22-11, leg. K.A. Satunin; 1♀, pag. Liškvas distr. Zangezur, 8.07.1911, Mus.Caucasus, № 22-11. leg. K.Satunin; 1♀, Karchevan, prov. Erivan, 7.07.1916, Mus.Caucasus, № 152-11, leg. Vinokurov; ***Turkey***. 1♀, Artvin, distr. Batum, 07.1913, 20-14. Petrosjan; ***Iran***. 11♀♀, 3♂♂, 6 damaged specimens, Benarve, Sausdinan, 10.06.1916, Mus.Caucasus, № 100-16, expedisia Urmiana.

Notes: These insects occupy two rows in the fourth box under a single common bottom label: *Nemoptera sinuate*.

Genus: *Lertha* Navás 1910

***Lertha extensa* (Olivier, 1811)**

Distribution: Turkey, Armenia, Azerbaijan, Iran. Irano-Anatolian species.

Material examined: ***Azerbaijan***. 1♀, Ordubad, prov. Erivan, 24.06.1911, Mus. Caucas., 22-11, K. Satunin; ***Iran***. 7♂♂, 4♀♀, 1 damaged specimen, Karim-abad, Lac. Urmia coc, 17.06.1916, Mus.Caucasus, № 100-16, expedisia Urmiana; 5♂♂, 1♀, 2 damaged specimens, Leškerek, prov. Teheran, V.1916.

Notes: This species, as well as the family as a whole, is absent from Esben-Petersen's publication (1913). Nevertheless, in the work of O. Martynova (1930), we have found an almost complete list of specimens of this species, corresponding to the above. According to published information, all of them belong to the ZIN collection and identified by Dr. Kolbe at her request. Moreover, for this article, she made drawings of the males' genital segments and the color variation of the apical plates of the hind wing in specimens from the Urmia expedition. It is noteworthy that all of studied specimens are characterized by the presence of the distinct apical white round spot on the apical extension of the hind wing. The views of modern researchers in respect to the separateness of *Olivierina extensa* and *Lertha palmonii* Tjeder, 1970 on this basis are not in alignment (Dobosz & Ábrahám 2009:124). Here we add a couple more names from the old Navás catalog (1910), *Kirbynia extensa* from Iraq, Iran and Arax and *K. litigiosa* from Arax summarized in synonyms by O. Martynova (1930). According to the ideas of both of these authors, typical *Olivierina extensa* is distinguished by a pronounced apical white spot on the hind wing. At the same time, we note that this spot is characteristic of almost all individuals of the Transcaucasian and Anatolian populations of the early 20th century, as well as those collected 100 years later (Krivokhatsky, Karagyan, Ghrejyan, & Kalashian, 2019). Specimens with dark apical plates on the hind wings and missing white spots were attributed by us to geographical variability (sbsp.), but if we take into account the drawings of the hind wings from the works of Alexandrova-Martynova (1930) and Tjeder (1970), they should be attributed to the infraspecific variability (var.) of one species. Moreover, the brown form attributed by Tjeder to *Nemoptera extensa*, the type of which is lost, has not been proven. To conclude, we establish a synonym here: *Lertha palmonii* Tjeder, 1970: 219 = *Nemoptera extensa* Olivier, 1811 [recently *Olivierina extensa* (Olivier, 1811)] syn. nov. The most secure are full rows of lacewings and mantispids, which will be discussed separately.

ACKNOWLEDGMENT

We would like to express our gratitude to N. Y. Snegovaya for her help in the work on the collection. We are extremely grateful to the reviewers Drs. Robert B. Miller, Dusan Devetak, Muhammad Asghar Hassan, Roberto A. Pantaleoni and David E. Bowles

for valuable corrections and advices. The study was performed in the framework of the state research project AAAA-A19-119020690082-8 of ZIN RAS.

REFERENCES

Alexandrova-Martynova, O. M. (1930). Zur Kenntnis der Nemopteriden Persiens und einiger Mittelmeerlander. *Zoologischer Anzeiger,* 90(9/12), 235-250.

Aspöck, H., Hölzel, H., & Aspöck, U. (2001). Kommentierter Katalog der Neuropterida (Insecta: Raphidioptera, Megaloptera, Neuroptera) der Westpaläarktis. *Denisia,* 2,1-606.

Dobosz, R. & Ábrahám, L. (2009). Contribution to the knowledge of the Turkish tail-wings (Neuroptera: Nemopteridae). *Natura Somogyiensis,* 15, 113-125.

Esben-Petersen, P. (1913). Notes concerning Neuroptera from Caucasus. *Proceedings of the Kavkazskyi Muzeum,*7, 287-294.

Kerimova, I.G. & Krivokhatsky, V. A. (2018). Current composition of the fauna of antlions (Neuroptera: Myrmeleontidae) of Azerbaijan. *Caucasian Entomological Bulletin,* 14, 55-66.

Krivokhatsky, V., Hajiesmailian A, Mirmoayedi A, Khabiev G, Dobos R., & Ostroverkhova, M. (2017). *Palpares turcicus* Koçak, 1976 - New name for Iranian fauna and its place in the *P. libelluloides* species group (Neuroptera: Myrmeleontidae). *Proceedings of the Zoological Institute of the Russian Academy of Sciences.* 321, 377-402.

Krivokhatsky, V. A. & Khabiev, G. N. (2016). To the fauna of ant lions (Neuroptera: Myrmeleontidae) of Tyuleniy island and the lower reaches of Kuma. *Proceedings of State Natural Reserve "Daghestanskyi"*, 11, 44-48.

Krivokhatsky, V. A. (1998). Myrmeleontoid lacewings (Neuroptera: Myrmeleontidae, Ascalaphidae) from the A.P. Fedchenko collection (Zoological Museum, Moscow State University), identified by R. McLachlan. *Entomological Review*, 78 (6), 682-690.

Krivokhatsky, V. A. (2011). Ant lions of Russia (Neuroptera: Myrmeleontidae). Russian Academy of Sciences, Zoological Institut. Keys for Russian fauna published by Zoological Institute, Russian Academy of Sciences. V. 174. / KMK Scientific Press Ltd. St.Petersburg, Moscow. (In Russian).

Krivokhatsky, V. A., Bagaturov, M. F., & Prokopov, G. A. (2018). Owlflies (Neuroptera: Ascalaphidae) of Crimea and allied taxa from the West Palearctic. *Caucasian Entomological Bulletin,* 14, 41-72.

Krivokhatsky, V. A., Karagyan, G. H., Ghrejyan, T. L., & Kalashian M. Yu. (2019). New faunistic records of Myrmeleontoid lacewings (Neuroptera: Myrmeleontidae, Ascalaphidae, Nemopteridae) of Armenia. *Caucasian Entomological Bulletin,* 15, 293-298.

Krivokhatsky, V. A., Kerimova, I. G., Anikin, V. V., Astakhov, D. M., Astakhova, A. I. Ilyina, E. V., Plotnikov, I. S., & Samartseva, J. V. (2020). Antlions (Neuroptera, Myrmeleontidae) along the North Caspian shore; distributional analysis and zoogeographical division of Caspian coast of Russia. *Biodiversitas,* 21, 258-281.

Letardi, A. & Pantaleoni, R. A. (1996). I neuroptteroidei W-Paleartici della collezione del Museo di Zoologia dell'Università di Roma (Neuropteroidea). *Fragmenta Entomologica,* Roma, 28,277-305.

Luppova Y. P. (1987). Myrmeleontoidea. Key to insects of the European part of the USSR. Nauka. Leningrad, 4(6), 73-96. (In Russian).

Machado, R., Gillung, J., Winterton, S., Garzón-Orduña, I., Lemmon, A. A., Lemmon, E., & Oswald, J. (2018). Owl flies are derived ant lions: anchored phylogenomics supports a new phylogeny and classification of Myrmeleontidae (Neuroptera), *Systematic Entomology*, 44(2), 418-450.

McLachlan, R. (1868). New genera and species of neuropterous insects; and a revision of Mr. F. Walker's British Museum Catalogue of Neuroptera, part ii. (1853), as far as the end of the genus Myrmeleon. *Journal of the Linnean Society of London, Zoology,* 9, 230-281.

Pantaleoni R. A. (1991). I Neurotteri (Insecta Neuropteroidea) della collezione dell'Istituto di Entomologia Agraria dell'Università di Padova. *Bollettino dell'Istituto di Entomologia "Guido Grandi" della Università degli studi di Bologna*, 45, 73-99.

Popov, A. (2004). The Ascalaphidae (Neuroptera) of the Balkan Peninsula. *Denisia*,13, 229-237.

Tjeder, B. (1952). Specimina typorum insectorum a Carolo Linnaeo descriptorum in Museo Degeeriano asservata. Pars III. Neuroptera. *Entomologisk Tidskrift*, 73, 203-206.

Tjeder, B. (1970) A new *Lertha* from Israel (Neur., Nemopteridae). *Entomologica Scandinavica*, 1, 219-222.

Whittington, A. E. (2002). Resources in Scottish Neuroptology. *Acta Zoologica Academiae Scientiarum Hungaricae*, 48 (Supplement 2), 371-387.