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New data to the Moroccan Myrmeleontiformia (Nemopteridae, Myrmeleontidae, Ascalaphidae) fauna

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Ábrahám, L.: *New data to the Moroccan Myrmeleontiformia (Nemopteridae, Myrmeleontidae, Ascalaphidae) fauna.*
Abstract: Between 2008-2010 the author six times three-week-long collecting trips were carried out in Morocco. During this survey, total of 2369 specimens (Nemopteridae: 52, Myrmeleontidae: 2089, Ascalaphidae: 228) were collected by net, light and portable light trap methods. 6 nemopterid, 53 myrmeleontid and 8 ascalaphid species were found. A total of 41% (28 species) of the collected species were the first record for the Moroccan fauna. *Palpares martini* Weele, 1907 **syn. n**., and *Palpares germaini* Navás, 1919 **syn. n**. are new junior synonyms of *Palpares angustus* Mclachlan, 1898; *Solter micheli* **sp. n.** is a new species compared to *Solter naevipennis* Navás, 1913. New synonyms are *Cueta arenosa* (Navás, 1913) **syn. n.** a new junior synonym of *Cueta lineosa* (Rambur, 1842); *Neuroleon danieli* (Lacroix 1922) **syn. n.,** a new junior synonym of *Neuroleon gafsanus* (Navás, 1921) **comb. n.**, *Distoleon divisus* (Navás, 1913) **syn. n**. a new junior synonym of *Neuroleon cuigneti* (Navás, 1912) **comb. n**., *Neuroleon egenus stirpis* Steffan, 1971 without description is a nomen nudum but *Neuroleon stirpis* Steffan, 1975 **stat. n.**, is a valid species. *Creoleon antennatus* (Navás, 1914) **syn. n**. and *Creoleon arenosus* (Navás, 1934) **syn. n**. are new junior synonyms of *Creoleon neurasthenicus* (Navás, 1913). *Creoleon surcoufi* (Navás, 1912) **syn. n**. is a junior synonym of *Creoleon cinerascens* (Navás, 1912). *Ascalaphus hyalinus* Navás, 1921 **syn. n**. is a new junior synonym of *Stylascalaphus krueperi* (van der Weele, 1909) **comb. n**. *Cueta impar* Navás, 1932, *Neuroleon gafsanus* (Navás, 1921) and *Stylascalaphus* Sziráki, 1998 taxa were redescribed. The paper contains short characterization of the species in taxonomic, morphologic, habitat and distribution point of view. An annotated checklist of the Moroccan Nemopteridae, Myrmeleontidae, Ascalaphidae fauna was compiled. With 56 figs.

Keywords: new species, new synonym, Nemopteridae, Myrmeleontidae, Ascalaphidae, Morocco

Introduction

Morocco is located in the North Africa along the Atlantic coast. Its surface is dominated by the Atlas Mountains and the Anti Atlas Mountains as well as their submountain regions. The Sahara Desert reaches the country's border from east side. Nowadays, the coastal, flat or low-lying areas are cultivated by intensive agriculture, as a result the biodiversity of these parts is rather low. The sand and stone deserts, coastal dunes and dry river valleys, the medium high and eremial high ranges can be found close to each other and different types of habitat alternate each other in short distances. The variety of the terrain and the dry climate are very favourable for the fauna of Myrmeleontiformia.

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Morocco is situated in the Palearctic zoogeographical realm, but the transitional zone of the Ethiopian realm has an important influence on the fauna (KRIVOKHATSKY 1998, ASPÖCK et al. 2001).

The Neuropteran fauna of the area is very diverse, but few data were published in the past. The earliest described species, *Ascalaphus barbarus* (Linnaeus, 1767) from Morocco was published by LINNAEUS (1767) in his famous work, Systema natura (12th Edition). Then, it passed more than a century until new information on the fauna was published again in the shorter works of KOLBE (1884) and MCLACHLAN (1889).

In the early 20th century, several new species were described and many new species of the local fauna were listed (JACOBS & MECH 1913, LESTAGE 1928, ESBEN-PETERSEN 1931a). In this respect, especially Navás's publications (1913a, 1913b, 1921, 1922a, 1922b, 1923, 1927, 1928a, 1928b, 1929a, 1929b, 1932, 1933, 1934, 1935a, 1935b) are important. He kept providing faunistic information all his life long and described many new species from Morocco.

In the second part of the 20th century, several major contributions (DUISIT-RACLIN 1962, HÖLZEL 1987, MEINANDER 1963, MONSERRAT 1976, 1985, MONSERRAT & PAPENBERG 2006, MONSERRAT et al. 1990, STEINMANN 1963) to the Moroccan Neuropteroidea fauna were also made.

In the early 21st century, the investigation of the fauna was continued, new species, their habitats and way of life were described (ASPÖCK & ASPÖCK 2009, ÁBRAHÁM 2009, 2010, ÁBRAHÁM & MÉSZÁROS 2004, BADANO & PANTALEONI 2012, FAUCHEUX 2006a, 2006b, FAUCHEUX et al. 2012, MICHEL 2013, 2014).

The description of several new species (*Pseudimares aphrodite* H. Aspöck & U. Aspöck, 2009, *Bankisus antiatlasensis* Ábrahám, 2009, *Cirrops berbericus* ÁBRAHÁM, 2010, *Agadirius trojani* Badano & Pantaleoni, 2012, *Gymnocnemia editaerevayae* Michel, 2013, *Solter francoisi* Michel, 2014, *Solter leopardalis* Michel, 2014) from the subordo of Myrmeleontiformia shows that the area is probably rich in endemic species and our knowledge is still incomplete.

The earlier decribed North African species need to be revised as synonyms may occur among them impairing further fauna surveys, mapping and the evaluation of biodivesity.

The aim of this paper is to contribute to the evaluation of local fauna based on the collecting expeditions organized by the author and his colleagues in Morocco.

Material and methods

Hungarian entomologists made a significant contribution to the survey of Moroccan neuropteran fauna donating their collected material to the author for further examination. Between 2008 and 2010, the author, himself also participated in five expeditions. Each fieldwork was about three-week-long while several Hungarian researchers focused mainly on neuropterans besides other insect groups.

The expedition trips were executed in spring, early summer and autumn. The samples were deposited in the entomological collection of the Ripp-Rónai Museum, Kaposvár (Hungary) and in the Upper Silesian Museum, Bytom (Poland).

More than one collection methods were used.

Most Myrmeleontiformia species are strongly attracted by UV light. Thus, they were recorded by a 160 W mixed light lamp (normal and mercury, Tungsram HMLI type) at night, on a 8 m² size white sheet and another UV lamp, Philips TLD 18W blacklight blue tube was installed on one of the holders of the sheet for a higher catching efficiency.

More efficient collecting work was also assisted by three portable light traps operated by a 8 W Daishin F8T5BLB type blacklight UV tube.

Nights were extremely windy during samplings which made the field work almost impossible because it swept the flying insects away.

During the daytime, high temperatures made insects hide, therefore, the samplings could be done in the morning (till 10 am) and from the early afternoon hours (after 4 pm). Sweeping net on grass and tree or bush foliage was the most important daytime sampling method. Pit-building ant-lion larvae were collected from their pits, then hatched in the lab.

The samplings were carried out in the regularly visited sampled areas to be able to draw other ecological conclusions as well.

To support our revision, in many cases, types were loaned or type-photographs were requested from the following museums:

BMNH – The Natural History Museum, London, England,
MNHN – Museum National d'Histoire naturelle, Paris, France,
MNMS – Museo Nacional de Ciencias Naturales, Madrid, Spain,
MCSN – Museu Civico de Storia Naturale "Giacoma Doria", Genoa, Italy,
RMNH – Nationaal Natuurhistorische Museum, Leiden, Netherlands.

The collecting periods:

1. 02.05. 2008 – 11.05. 2008 Leg: Ábrahám, L., Fábián, Gy., Rozner, Gy.
2. 21.06. 2008 – 05.07. 2008 Leg: Ábrahám, L., Bognár, L., Nagy, L.
3 22.06. 2009 – 06.07. 2009 Leg. Ábrahám, L., Malgay, V., Szalóki, D.
4. 17.09. 2009 – 01.10. 2009 Leg: Ábrahám, L., Kisbenedek T., Orsik, M.
5. 04.11. 2009 – 04.25. 2009 Leg. Gy. Fábián, B., Maklári-Kis, A., Szappanos
6. 08.06. 2010 – 19.06. 2010 Leg: Ábrahám, L., Kisbenedek, T., Wágner, L.

To study the morphological characters, Olympus SZX9 stereo microscope was used. Habitus photographs were taken using a digital camera Nikon D 3200 equipped with a AF-S micro Nikkor 40 mm lens and the type of the flash system F&V 230D.

To examine genitalia, the caudal part of the abdomen was removed, treated with a 10% KOH solution with heating for 10 minutes and after cooling rinsed in distilled water. It was put into glycerine for further examination and finally stored in a genital vial. For photographs, the caudal part of the abdomen was placed in a Petri dish (dia-meter: 50 mm) filled with glycerine.

Photos of morphological characters were also taken using a Olympus SZX9 stereo microscope equipped with a Alpha KL-1001 digital camera. The photos were adjusted and corrected with Adobe Photoshop software.

Results and discussion

Between 2008-2010, six field trips were organised to Morocco to study the Myrmeleontiformia fauna. Altogether 2369 Myrmeleontiformia specimens belong to 6 Nemopteridae, 53 Myrmeleontidae and 8 Ascalaphidae species were collected. During the field work, 3 new species were found and 23 species proved to be new records for the Moroccan Myrmeleontiformia fauna.

Abbrevations:
A1, A3 - Anal veins, C- Costa, CuA - Cubitus anterior, CuA1 - anterior branch of Cubitus, CuA2 - posterior branch of Cubitus anterior, MP1 - anterior branch of Median posterior, MP2 - posterior branch of Median posterior, Rs - Radial sector.

Family **Nemopteridae** Burmeister, 1839
Subfamily **Crocinae** Navás, 1910

Croce aristata (Klug, 1838)
Specimens examined: Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 4♀; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 25.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂.

Remarks: It is collected only in the extreme dry Anti Atlas Mts. and in a dried river valley (eg. Draa river) in June.

Distribution: It is a widespread species in the Saharan zone from Libya to Oman (ASPÖCK et al. 2001). This species is new record for the Moroccan fauna.

Dielocroce chobauti (Mclachlan, 1898)
Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 2km S from Tassetift W06°16'50", N30°25'50" 13.06, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 3♂ 2♀.

Remarks: It is collected at light in dry rocky habitats in the Anti Atlas Mts. Imago flies in June.

Distribution: This species is known from the Arabian Peninsula and also reported from Israel and North Africa: Algeria, Tunisia, Egypt (ASPÖCK et al. 2001). It is the first record for the fauna of Morocco.

Dielocroce berlandi (Navás, 1936)
Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 3♂ 2♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 1♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 3♂ 3♀.

Remarks: Its habitat is characterized by large rocks covered the surface and dry low vegetation in the Anti Atlas Mts. Imago flies in June and July and is attracted by light.

Distribution: According to ASPÖCK et al. (2001), it was found in Algeria, Egypt, Sudan, Kenya and in the Arabian Peninsula. It is the first record for the fauna of Morocco.

Dielocroce harterti (Navás, 1913)
Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂.

Remarks: It lives in dry river valleys covered by sand sheet and sandy dunes. It was recorded in early May at ligth.

Distribution: It is known only in Algeria (NAVÁS 1913b, HÖLZEL 1975) and later GÜSTEN (2003) revealed in Tunisia. HÖLZEL (2002) reported it from Yemen, too. This species is new record for the Moroccan fauna.

Subfamily **Nemopterinae** Burmeister, 1839

Brevistoma bardii (Navás, 1914)

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂.

Remarks: Güsten (2003) rank it into a new combination. Only one specimen was collected in a dry sandy dune area during the survey.

Distribution: It is known only in North Africa: Algeria, Lybia (Aspöck et al. 2001), Tunisia (Güsten 2003). This species is new record for the Moroccan fauna.

Halter halteratus (Forskål, 1775)

Specimens examined: Morocco 6km Ait Saoun 1606m N30°42'22.5" W06°35'59.0" 06.25, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Tissint 647m N29°52'20.0" W07°16'45.8" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 4♂ 4♀; 12.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco 13km SW from Agdz 1050m N30°39'11.6" W06°33'51.2" 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 1♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 3♂ 1♀.

Remarks: Fabricius (1798) published a new record from Morocco, which is the western part of the present known distribution of *Halter halteratus*. According to Guérin-Méneville (1829-1838), Fabricius (1798) confused this Moroccan specimen with *Lertha extensa* (Olivier, 1811). Although, *Lertha extensa* is known only in the eastern part of Mediterranean but a similar and later described species, *Lertha barbara* (Klug, 1836) lives in the western part of North Africa, so Fabricius (1798) characterized the later mentioned species as it is commented by Monserrat (1988-1989).

Distribution: It was cited from Morocco by Monserrat et al. (1990), Aspöck & Hölzel (1996), Hölzel (1999), Aspöck et al. (2001) and Monserrat (2008). Its distribution was summarized by Ábrahám (2014). It is a widespread species in the Saharan zone as well as in SW Asia (Arabian Peninsula).

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

Palpares hispanus Hagen, 1860

Specimens examined: Marokko Meknes Tanger 06.07, 1992 Leg. Mrácek 1♀; Morocco 5km N from Reserves de Granka 947m W07°32'21,2" N31°32'36,7" 22.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 22-23.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 2♂ 1♀; Morocco 3km from Chafarni 1519m W08°22'40.5" N30°50'04.8" 29.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 3♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; 10.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂; Morocco Tiz-n-Tichka 2089m W07°22'8.8" N31°18'26.7" 23.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 3♀; 03.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 3♀; 03-04.07, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 5♂ 13♀; 18.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 10♂ 11♀; Morocco 2km from Imini 1434m W07°17'30.4" N31°05'07.4" 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 3♂ 3♀; Morocco Erg Hamada Mhamid 573m W 05°35'41.8" N29°50'51,9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 10♂ 11♀.

Remarks: In Morocco, it habits in several biotops from coastal area via high dry rocky mountains to Saharan sandy dunes. It flies mainly in June and early July and usually on wing not only at nigth but also in daytime.

Distribution: It surely occurs in South Spain (Monserrat & Triviño 2013) and North Africa: Morocco, Algeria, Tunisia (Aspöck et al. 2001). Moroccan population was firstly reported by Kolbe (1884) and McLachlan (1889). Its occurrence is less mapped in the eastern part of Mediterraneum (Ábrahám 2012).

Palpares angustus McLachlan, 1898 (Fig. 1)

Specimens examined: Morocco Tiz-n-Bachkoun 10km N from Tazenakt W07°16'20.7" N30°41'12.0" 1594m 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 1♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 02.07, 2008 1♂ 1♀ Leg. Ábrahám L., Bognár L., Nagy L.; 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀; 30.06, 2009 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 6km Ait Saoun W06°35'59.0" N30°42'22.5" 1606m 28-29.06, 2009 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 1♀ 1- (missing the tip of abdomen); 15.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 3♂ 1♀; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂. Morocco 14km Ait Saoun 1606m 29.06, 2009 Leg. Ábrahám L., Bognár L., Nagy L. 1♂.

Remarks: At first, above mentioned faunistical data were published in ÁBRAHÁM & DOBOSZ (2011) under the name *Palpares martini* Weele, 1907. According to WEELE (1907), the type locality "Marocco" (Morocco) was a mislabelling and it was probably collected in Madagascar. However, his assumption of the recording site of the specimen was incorrect since it was really collected in Morocco. KLAPÁLEK (1912) reported it as *Palpares martini* from Egypt, evenmore he was also sceptical about the collecting site of *Palpares martini*. So this specimens was identified as *Palpares martini* Weele, 1907. Later, Dr. Bruno Michel called my attention to the Fig. 1. in ÁBRAHÁM & DOBOSZ (2011) shows a specimen of *Palpares angustus* McLachlan, 1898. I checked the type material (*Palpares angustus* McLachlan, 1898 and related synonymous taxa *Palpares angustus oranensis* McLachlan, 1898, *Palpares angustus gloriosa* Navás, 1913 preserved in BMNH, London and in MNMS, Madrid). I can also confirm that *Palpares martini* Weele, 1907 is really a new synonym of *Palpares angustus* McLachlan, 1898. In the same paper ÁBRAHÁM & DOBOSZ (2011) synonimized *Palpares germaini* Navás, 1919 as *Palpares martini* Weele, 1907 from this region. Consequently, this species is also a new synonym of *Palpares angustus* McLachlan, 1898.

Distribution: Known in North African coastal countries: Morocco, Algeria, Tunisia, Libya and Egypt as well as in SW Asia: Libanon, Jordania, Syria, Saudi Arabia, Yemen, Somalia (ASPÖCK et al. 2001, STANGE 2004) and Oman (coll. Mus., Kaposvár).

Palpares dispar Navás, 1912 (Fig. 2)

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 7♀.

Remarks: It flies in autumn in this region and collected in the warm desert climatic area at relatively low altitude inspite of *Palpares angustus* Mclachlan, 1898 which was collected only in higher part of the Anti-Atlas Mts. in summer time.

Distribution: It is known from Northern Africa (Lybia, Egypt) to Eastern Saharan zone (Israel, Saudi Arabia, Yemen, Oman, UAE and Eritrea). PROST (2010) mentioned this species in North Mali which is not far from Morrocan collecting site. It is new record for the Moroccan fauna.

Subfamily **Myrmeleontinae** Latreille, 1802

Tribe **Acanthaclisini** Rambur, 1842

Synclisis baetica (Rambur 1842)

Specimens examined: Morocco Tizi'n Trakatile 29.09, 2005 Leg. László M. Gy., G. Ronkay 1♂.

Remarks: It occurs mainly in sandy areas. Imago flies in Morocco during autumn.

Distribution: It is a widely distributed species from the Atlantic Isles via North Africa and Southern Europe to West Asia (STANGE 2004).

Fig. 1: Habitus of *Palpares angustus* McLachlan, 1898, type

Fig. 2: Habitus of *Palpares dispar* Navás, 1912, female

Fadrina nigra Navás, 1912

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀.

Remarks: It flies in autumn in this region.

Distribution: According to GÜSTEN (2003), it is known from the Maghreb Savanna Zone, the Central Eastern Sahara as well as the Somali Arid Zone and further records from Asia: Sinai Peninsula (Egypt), Oman and the UAE (ÁBRAHÁM & VAN HARTEN 2014). It is a new species in the Moroccan fauna.

Centroclisis cervina (Gerstaecker, 1863) (Fig. 3)

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 3♀.

Remarks: It flies in autumn in this region.

Distribution: In Africa: Egypt, Lybia (ESBEN-PETERSEN 1936), Tunisia (GÜSTEN 2002, 2003), Algeria (AUBER 1955), Sudan (HÖLZEL 2002), In Asia: Israel (SIMON 1979), Saudi Arabia, Oman, Yemen (HÖLZEL 2002), the UAE (SAJI & WHITTINGTON 2008). It is new record for the Moroccan fauna.

Phanoclisis longicollis (Rambur, 1842)

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 4♀.

Remarks: It also flies in autumn in this region.

Distribution: It is a widespread species in the sub-Saharan and Saharan Zones (PROST 1998) and in the Arabian Peninsula (ASPÖCK et al. 2001). It was the first time to collect in Morocco.

Fig. 3. Habitus of *Centroclisis cervina* (Gerstaecker, 1863), male

Tribe **Myrmecaelurini** Esben-Petersen, 1918

Myrmecaelurus lachlani Navás, 1912

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N20°39'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂ 10♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 4♂ 10♀; Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°32'51.8" 21.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 04-05.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 3♂ 5♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 2♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 3♀; 10.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 17.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 4♂ 1♀; 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 8♂ 11♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 1♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀; 11.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 2♂ 2♀; Morocco Draa Valley 5km Taokilt 791m W06°07'42.5" N30°23'28.6" 26.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 4♀.

Remarks: The type material was collected in Morocco. According to Güsten (2003), North African *Myrmecaelurus* species should be thoroughly revised in the future. The presently recorded material belongs to the same taxon from Morocco. It is a sporadic pit building species, flies in June and July and sometimes on wing in daytime, too.

Distribution: This species is known in Morroco, Algeria, Tunisa and Libya (Aspöck et al. 2001).

Nohoveus lepidus (Klug, 1834)

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀; 22.09, 2009. Leg. Ábrahám L., Kisbenedek T., Orsik M. 5♂ 9♀; Morocco 5km N from Reserves de Granka 947m W07°32'21.2" N31°32'36.7" 06.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8' N29°50'51.9" 25-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 4♀; 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀. 15.04, 2009 Fábián Gy., Maklári-Kis A., Szappanos A. 1♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 23.09, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂.

Remarks: It is the type species of genus. *Nohoveus* Navás, 1919 is characterised by narrower wings, longer abdomen of male and genitalia than that of *Myrmecaelurus* Costa, 1855. This pit building species prefers sandy habitats. It flies from May to October in Morocco.

Distribution: It is a widespread species from NW Africa to the Arabian Peninsula. It was the first time to collect in Morocco.

Nohoveus palpalis (Klapálek, 1914)

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8' N29°50"51.9' 27.06, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀.

Remarks: This species prefers sandy habitats and is collected at light. It flies in summer in this region.

Distribution: It is a widely distributed in NW Africa: Algeria, Libya, Tunisia, Egypt and in Asia: Israel, Iran, Saudi Arabia (Stange 2004) and the UAE (Ábrahám & van Harten 2014). This species is new record for the Moroccan fauna.

Nophis teillardi Navás, 1912

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 2♂ 2♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 4♂ 5♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 2♀; 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 4♂ 4♀; Morocco Erg Hamada Mhamid 573m W 05°35'41.8' N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 8♀; 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♀.

Remarks: Imago flies in daytime, too, the seasonal activity spreads from May to July. It prefers sandy covered habitats e.g. dry river valleys (wadi) and sandy dune area.

Distribution: It is a widespread species, occurs in the Saharan Zone: the Arabian Peninsula and Israel. It is new record for the Moroccan fauna.

Lopezus arabicus Hölzel, 1972

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 15.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 1♂ 2♀; Morocco 25km E of Tinerhir stone desert 1100m W05°15'34" N31°26'28" 23.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 1♂.

Remarks: Imago is typically active in spring time (GÜSTEN 2002). It lives in stone (hamada) and sandy desert area.

Distribution: This species is a widespread, occurs in the Saharan Zone: Algeria (ASPÖCK et al 2001), Tunisia (GÜSTEN 2002) and the Arabian Peninsula (HÖLZEL 1982). It is new record for the Moroccan fauna.

Tribe **Gepini** Markl, 1954

Subgulina lineata (Navás, 1913)

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8' N29°50"51.9' 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 27♀; 27.06, 2009 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂ 7♀; 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♀.

Remarks: It was collected in sand covered habitat in May and June.

Distribution: It is also a widespread species in the Saharan region from NW Africa to the Arabian Penisula. This species is new record for the fauna of Morocco.

Gepus invisus Navás, 1912

Specimens examined: Morocco 10km from Taddert 1656m W07°22'49.6" N31°19'59.8" 02.09, 2008 exlarva 1♂; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 06.25, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 6♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 7♂; 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 5♂ 9♀; 25-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀.

Remarks: It lives in both rocky and sandy habitats, flies from June to October in the drier southern part of Morocco.

Distribution: It occurs not only in the northern Subsaharan Zone (Morocco, Algeria, Tunisia, Egypt) but also found in the Saharan countries: Mauritania, N Sudan. In Asia: Israel, Iran, Saudi Arabia was mentioned by STANGE (2004) and in Pakistan, Oman, the UAE based on the entomological collection of Museum, Kaposvár.

Gepus tersus Navás, 1919

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 2♀; 27.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 10♂ 12♀; 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 2♀; Morocco Tioke village 1297m W07°12'21.21" N30°57'14.5" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂.

Remarks: It prefers sandy habitats, flies from May to July.

Distribution: Its area is restricted to N Africa: Algeria, Tunisia, Egypt (STANGE 2004). It was the first time to collect in Morocco.

Solter liber Navás, 1912

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀.

Remarks: *Solter* species collected in NW Africa were recently revised by Michel (2014). It flies in the second half of summer time.

Distribution: This species is surely known from only the West European Mediterranean area and NW Africa and in the Saharan region in Mauritania (Aspöck et al. 2001, Michel 2014). The occurrence of this species should be revised in the East Mediterranean: Israel (Simon 1979) and Turkey (Ari & Kiyak 2000, Aspöck et al. 1980).

Solter naevipennis Navás, 1913

Specimens examined: Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 06.25, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 29♂ 35♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 15♂ 18♀.

Remarks: It has a wide range of habitats from dry rocky mountaineous to extremely hot and dry sandy dunes. It flies in summer time.

Distribution: It was only known from Algeria (Michel 2014). This species is new record for the Moroccan fauna.

Solter rothschildi Navás, 1913

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♀; 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; Morocco Draa Valley 5km Taokilt 791m W06°07' 42.5" N30°23' 28.6" 26.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂.

Remarks: Michel (2014) gave a detailed redescription in his revision on the NW African *Solter* species.

Distribution: Aspöck et al. (2001) and Stange (2004) listed this species from Algeria, Tunisia and Egypt. It was the first time to record for the fauna of Morocco.

Solter lucretii Michel, 2014

Specimens examined: Morocco Draa valley 5km Taokilt 791m W06°07'42.5" N30°23'28.6" 06.26, 2008 Leg. Ábrahán L., Bognár L., Nagy L. 2♂ 1♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 3♂; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 2♀.

Remarks: It was recently described (Michel 2014) from Algeria. Based on collecting sites, it prefers dry sandy habitats.

Distribution: So far, the type material is known from Algeria (Michel 2014). It is new record for the Moroccan fauna.

Solter francoisi Michel, 2014

Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 29.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂.

Remarks: It has recently been described from the Anti Atlas Mts. in Morocco so only the type material is known. The new recording site is characterized by dry rocky habitat in the Anti Atlas Mts. It flies beetwen July and October.

Distribution: It is known from Morocco (Michel 2014).

***Solter micheli* sp. n.** (Fig. 4)

Holotype: ♂ Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L.

Paratypes: as holotype 1♂; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♀.

Types are deposited in the entomological collection of Rippl-Rónai Museum, Kaposvár

Description:

Head: Vertex yellow, two indistinct brown broken stripes transversally on top of vertex, 6 larger distinct brown spots in transversal row on backside. Frons, gena, clypeus and labrum shining yellow (Fig. 5). Head above antenna with wide dull and brown band. Mandible yellow with dark brown apices and inner side. Maxillary and labial palpi yellow, last segment considerably enlarged with elongate palpimacula (Fig. 6). Eyes large shining brown. Scape, pedicel yellow, flagellar segments brown ringed yellow apically, club yellow ventrally, brown dorsally.

Thorax: Pronotum longer than wide subromboid-shaped, yellow with brown marks. Sparse short and black setae on apical corner and frontal margin. Rigid white bristles curved forwardly on lateral margin. Meso and metanotum yellow with distinct and indistinct brown marks. (Fig. 7)

Legs: Yellow. Fore and middle femora with a long black bristles ventrally otherwise fore, middle and hind femora with rigid white bristles in two rows ventrally. Fore and middle tibiae with central indistinct brown ring and distinct dark brown ring at distal joint as well as with rigid white bristles. Hind tibia only with distinct dark brown ring at distal joint. Tibial spurs as long as tarsal segments 1-4 together on fore and middle leg. Tibial spurs somewhat longer than segment 1-3 combined on hind leg (Fig. 8). Tarsal segment 1 about twice longer than segment 2. Segment 2-4 subequal. Segment 5 longer than segment 1-4 together. All segments with shinning black setae.

Fig. 4: Habitus of *Solter micheli* sp. n., holotype male

Fig. 5: *Solter micheli* sp. n., head in frontal view

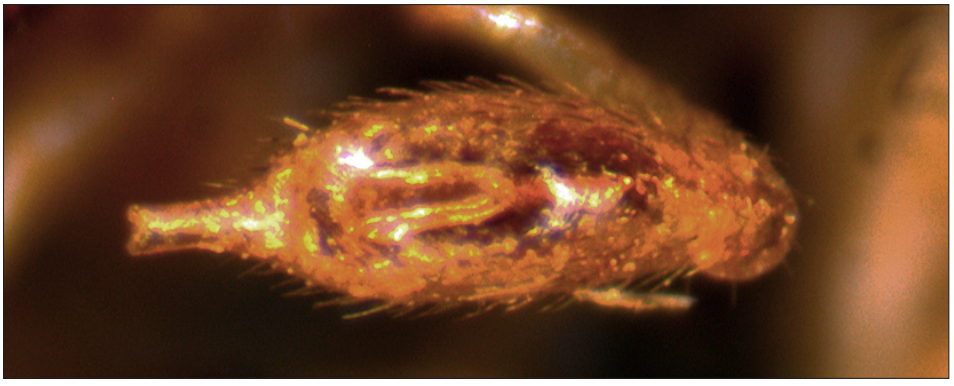

Fig. 6: *Solter micheli* sp. n., last segment of labial palp

Wings: As in Fig. 4. Fore wing: 25-26 mm long. Hind wing: 22-23 mm long. Apical area subrounded, sligtly concave below apices. Membrane transparent with some brownish shadows in fore wing. Longitudinal veins yellow interrupted with brown at intersections of cross-veins. Pterostigma suffused basally. Rs with 8-9 branches, 5-7 presectoral veins.

Hind wing pterostigma indistinct white. 5 presectoral veins. Pilula axillaris large reddish brown.

Abdomen: 12-14 mm long. Tergites dominantly brown with large indistinct yellow marks anteriorly. Pubescence medium long white on tergite 2 laterally otherwise sparse short black. Sternites dominantly yellow.

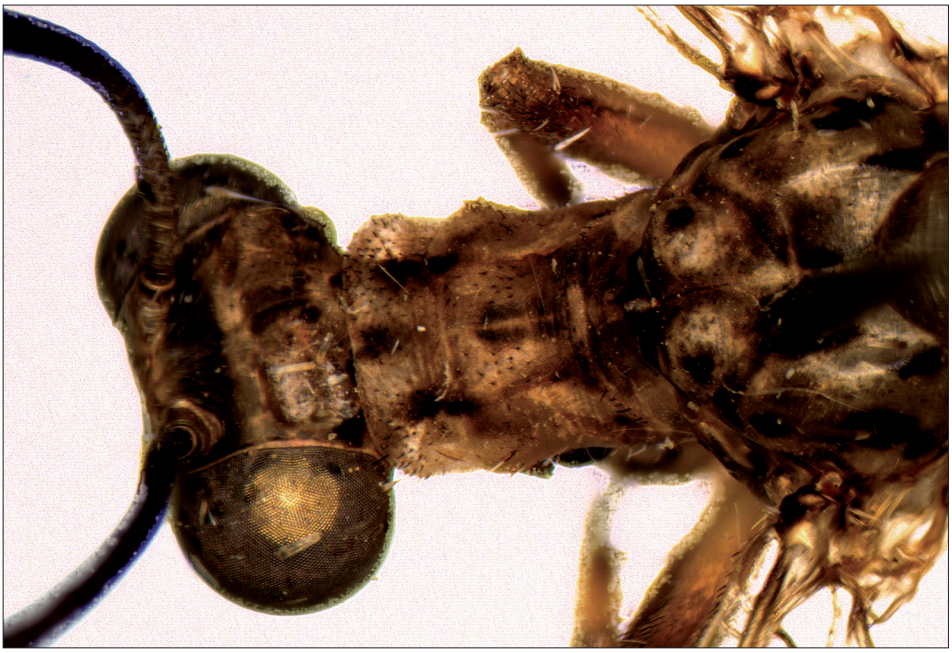

Fig. 7: *Solter micheli* sp. n., notum in dorsal view

Fig. 8: *Solter micheli* sp. n., hind tarsus and tibial spurs

Genitalia: Male genitalia in caudal view as in Fig. 9. Paratype female postventral lobe as in Fig. 10.

Diagnosis: MICHEL (2014) revised the *Solter* species living in Africa and compiled a key for the species. Based on these results, this new species shows considerable differences from the known species. It is easily recognised by enlarging last segment of labial palp like *Solter naevipennis* Navás, 1913 and it is easily recognised by the length of tibial spurs extending segment 1-3 combined on the hind leg which is considerably longer than that of *Solter naevipennis.*

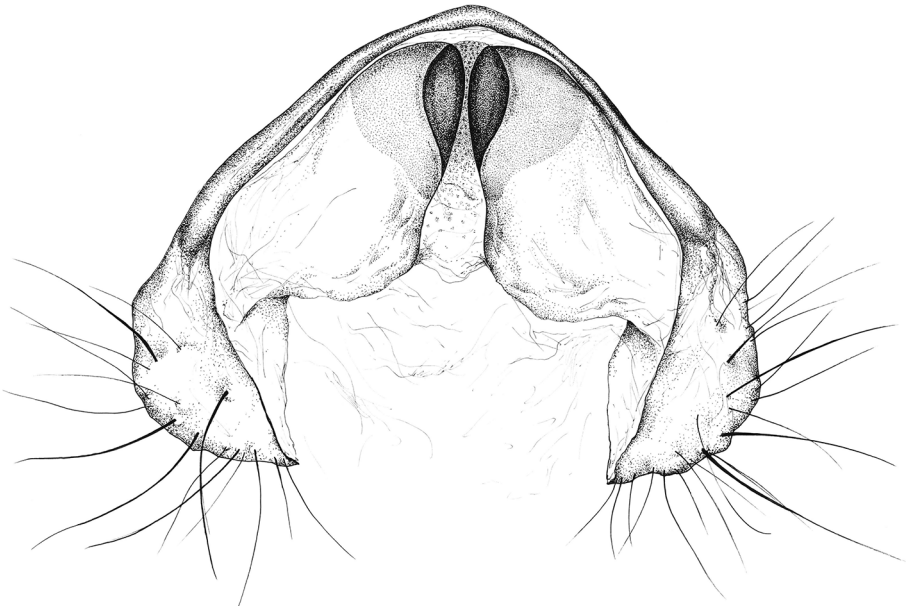

Fig. 9: *Solter micheli* sp. n., male genitalia in caudal view

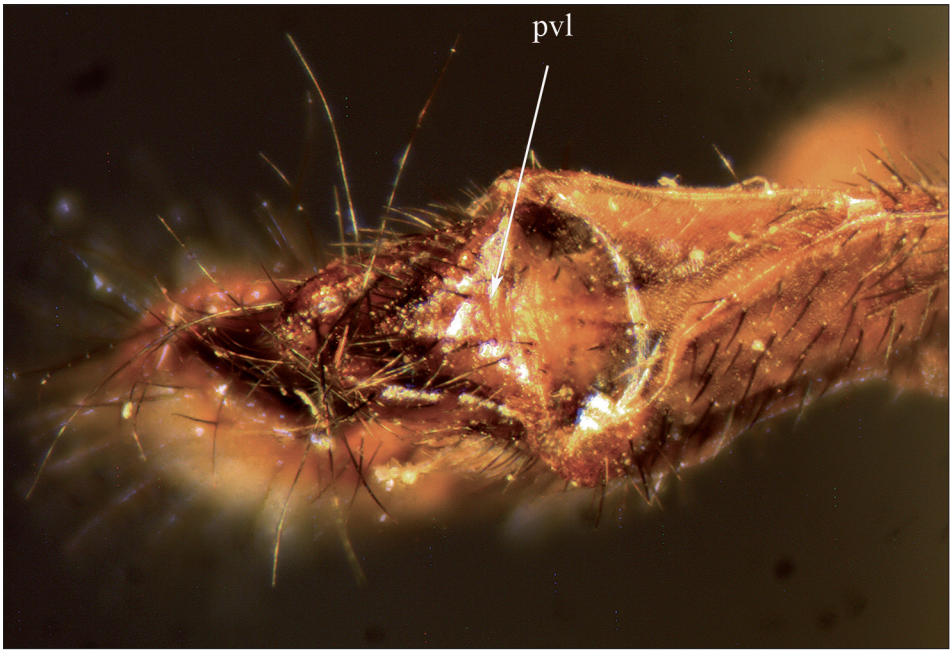

Fig. 10: *Solter micheli* sp. n., female postventral lobe (pvl) in ventral view

Etymology: This species is named after Dr. Bruno Michel, French entomologist who made excellent contribution on the Saharan antlion fauna.

Tribe **Nesoleontini** Markl, 1954

Cueta lineosa (Rambur, 1842) (Figs. 11-14)

Specimens examined: Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°32'51.8" 04.08, 2008 Leg. Ábrahám L., Malgay V., Szalóky D. 2♂ 1♀ exlarva; 04-05.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 5♀; 05.09, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ exlarva; 14.09, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ exlarva; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2008 Leg. Ábrahám L., Malgay V., Szalóky D. 1♂; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 19-20.07, 2010 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ exlarva; 11.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°31'51.8" 08.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 06-10.09, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 2♂ 1♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 4♂ 3♀; 16-19.08. 2010 1♂ ex larva; Morocco 25km N from Settat 1209m W07°48'14.2" N32°38'03.1" 21.08, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ exlarva; 19.08, 2008 Leg. Ábrahám L., Bognár L., Nagy L 1♂ 2♀ exlarva; 04.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂.

Remarks: The type specimen of *Cueta arenosa* (Navás, 1913) (syn. n.) preseverd in BMNH, London, is a new junior synonym of *Cueta lineosa* (Rambur, 1842).

During the survey, it was mostly collected in the warm mediterranean influenced area of NW part of Morocco as well as in higher region of the High Atlas Mts. and the Anti Atlas Mts. where it is a frequent pit building species but rather rare in Saharan area. The seasonal activity of the imagoes is a wide range from July to September.

Distribution: It is a widespread species in the West Palearctic, not only known in the African Mediterranean area but also in West and Middle Asia moreover in Sudan (ESBEN-PETERSEN 1931b, HÖLZEL 1969), Pakistan (IQBAL & YOUSUF 1997, ASPÖCK et al. 2001) and India (Rajasthan) (GHOSH 1977, CHANDRA & SHARMA ????).

Cueta impar Navás, 1932 (Figs. 15-19)

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 2♂ 9♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 25-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 4♀.

Redescription.

Head: Vertex yellow with brown spots in two rows. In anterior row two oval brown spots, in posterior row four round brown spots. In the middle of vertex longitudinal narrow line from posterior row to pronotum. Vertex with sparse very short black setae. Frons, gena, clypeus and labrum shinning yellow. Small oblong indistinct and brown spot between antennas, curved brown mark above antennas (Fig. 16). Mandible yellow with dark brown apex and inner side. Maxillary and labial palpi yellow; last segment of labial palp enlarged and tip incised, dark brown palpimacula oval. Scape, pedicel, flagellar segments and club brownish dorsally. Basal flagellar segments and club yellowish ventrally.

Thorax: Pronotum longer than wide subromboid-shaped, yellow with three wide brown stripes. Medial strip continuous, lateral stripes interupted anteriorly. White bristles curved frontally on lateral margin. Notum yellow with interrupted dark brown stripes and short sparse white hairs. Sides yellow with distinct brown pattern and short sparse white hairs.

Legs: Yellow. Femora with stiff black bristles inwards, stiff white bristles outwards otherwise covered with dense small white hairs. No upstanding long setae dorsally on hind

Fig. 11: Habitus of *Cueta lineosa* (Rambur, 1842), male

Fig. 12: *Cueta lineosa* (Rambur, 1842), head in frontal view

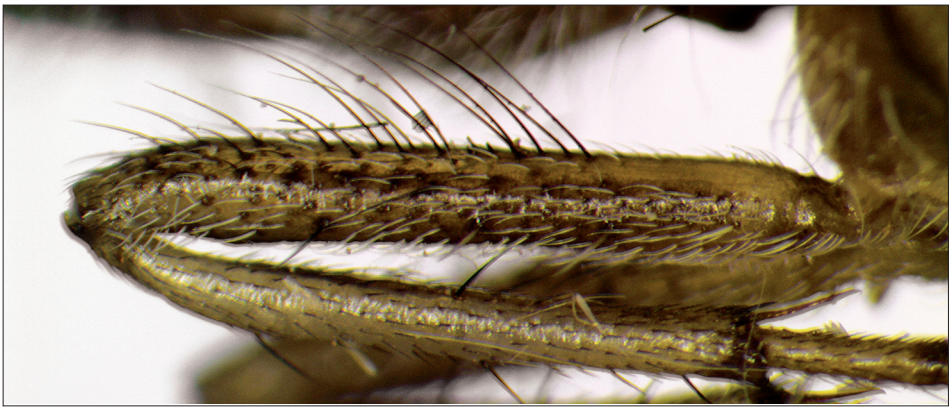

Fig. 13: *Cueta lineosa* (Rambur, 1842), hind femur in lateral view

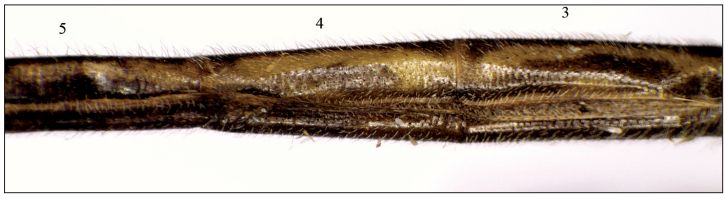

Fig. 14: *Cueta lineosa* (Rambur, 1842), abdomen in lateral view

Fig. 15: Habitus of *Cueta impar* Navás, 1932, male

Fig. 16: *Cueta impar* Navás, 1932, head in frontal view

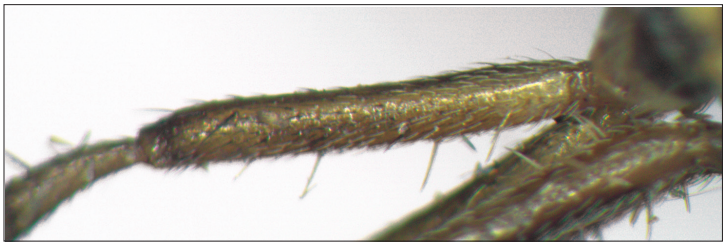

Fig. 17: *Cueta impar* Navás, 1932, hind femur in lateral view

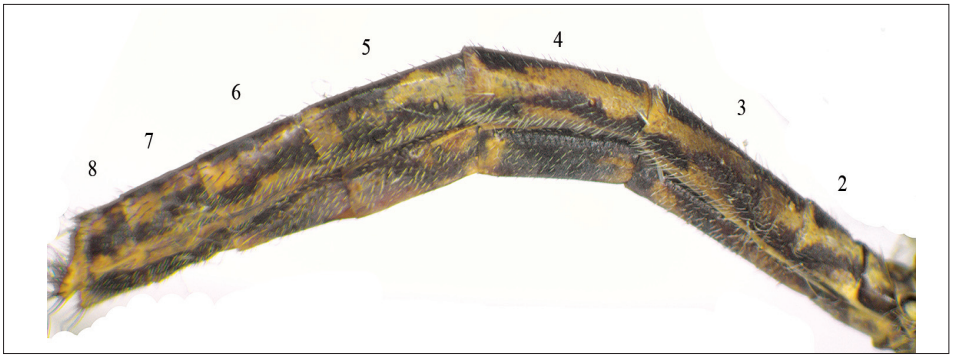

Fig. 18: *Cueta impar* Navás, 1932, abdomen in lateral view

femur (Fig. 17) at all. Tibiae with brown ring in the middle and stiff black bristles. Tarsal segments yellow; segment 5 with small brown mark apically. Segment 1 as long as segment 5, segment 2-4 subequal. Tibial spurs shorter than segment 1 in all legs. All segments with shinning stiff black setae inwardly. Tibial spurs and claws shinning reddish brown.

Wings: Fore wing: 19-20 mm long, 5 mm wide. Hind wing: 16-17 mm long, 4.5 mm wide. Membrane transparent. C and cross-veins in subcostal area yellow. Otherwise longitudinal veins yellow interrupted with brown at intersections of cross-veins. Pterostigma yellowish white with brown cross-veins basally and white cross-veins distally. 7-8 presectoral cross-veins and 6-7 radial veins in fore wing. Membrane with little shadow at confluence of MP1 and inner series of cross-veins in apical area, along cross-veins connected CuA2 and A1 and at forking veins in marginal area. Hind wing with 7 presectoral veins and 6 radial veins.

Abdomen: 14 mm long, shorter than wings. Tergites yellow with three wide dark brown bands. Sternites dominantly brown with yellow marks ventrally. Marks in abdomen in lateral view as in Fig. 18.

Genitalia: In lateral view male ectoproct short, not reaches sternal margin. Tip of ectoproct with stiff black bristles. Gonarcus with parameres as in Fig. 19.

Female: Fore wing: 20-21 mm, hind wing: 16-17 mm, abdomen 14-15 mm long.

Diagnosis: In the North African region, this species is easily distinguished from all the other known *Cueta* species by the characteristic shadows of the membrane, the shape of mark between antennas, the pattern of abdomen, missing a row of upstanding hairs on the hind femur of male and the short ectoprocessus of male. Based on male inner genitalia, it belongs to *Cueta lineosa* group.

Distribution: So far, only the type specimen has been known from Lybia, it is new record for the fauna of Morocco.

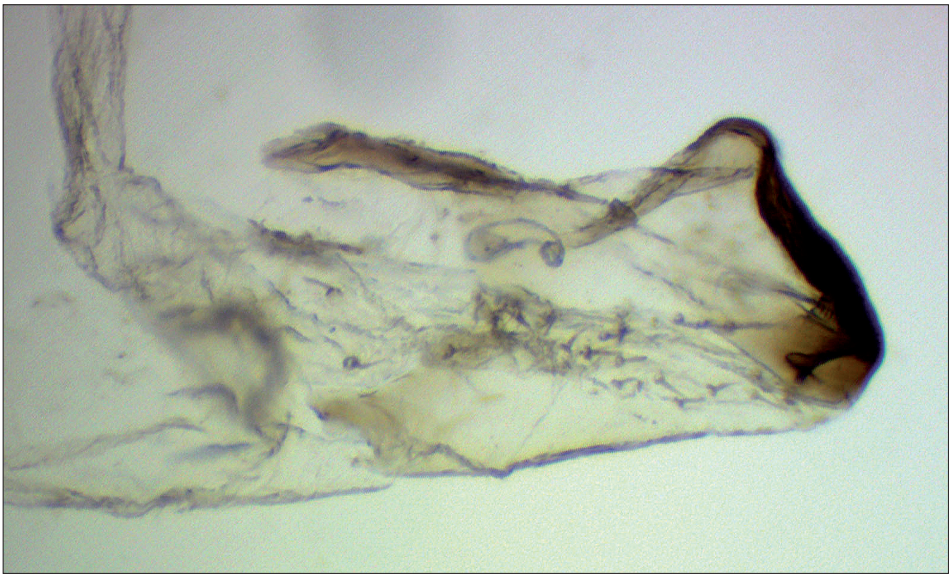

Fig. 19: *Cueta impar* Navás, 1932, gonarcus with parameres in lateral view

Cueta pallens (Klug in Ehrenberg, 1834)

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 3♂ 6♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 3♂ 4♀; 27.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂.

Remarks This species is similar to *Cueta senegalensis* Navás, 1914 but there is no pattern on the wings. It can be easily distinguished by the less extensive abdomen pattern, male ectoprocessus are thinner and much longer than that of *Cueta senegalensis*. Güsten (2003) mentioned *Cueta senegalensis* from Tunisia. This species has not been found in Morocco yet.

Distribution: It is widespread in the Saharan and Sub-Saharan Africa and also known in the Arabian Peninsula. It is new record for the Moroccan fauna.

Cueta puella (Navás, 1913) (Figs. 20-24)

Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 5♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 4♂ 4♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 3♂ 2♀; 10.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂; 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 6♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 2♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂; Morocco S from Tiz-n-Tichka 1693m W07°26'52.1" N31°09'05.9" 14-25.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ exlarva; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀ exlarva; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 29.06, 2009 Leg. Ábrahám L., Malgay V. Szalóki D. 1♂; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 06-10.09, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 2♂ exlarva; 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 2♂; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 6♀.

Fig. 20: Habitus of *Cueta puella* (Navás, 1913), male

Fig. 21: ***Cueta puella*** **(Navás, 1913), head in frontal view**

Fig. 22: ***Cueta puella*** **(Navás, 1913), hind femur in lateral view**

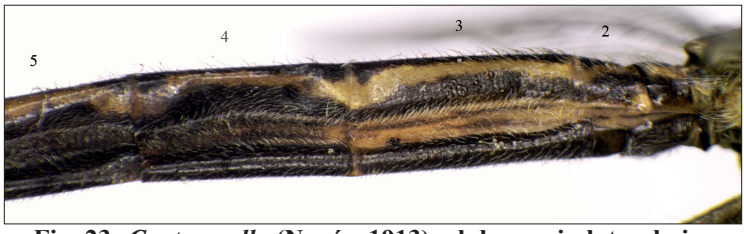

Fig. 23: ***Cueta puella*** **(Navás, 1913), abdomen in lateral view**

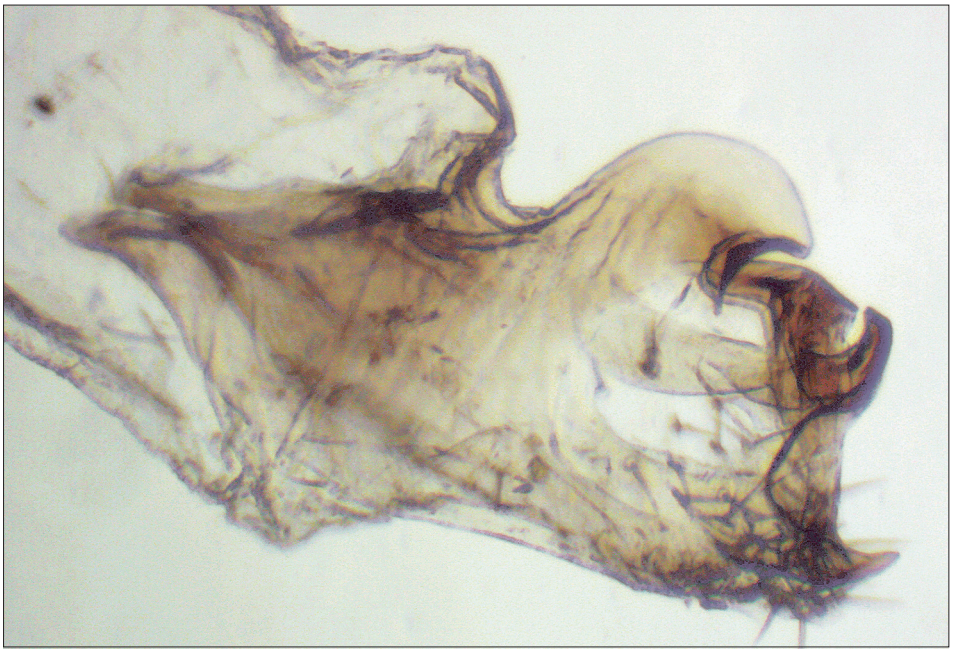

Fig. 24: *Cueta puella* (Navás, 1913), gonarcus with parameres in lateral view

Remarks: This species resembles to *Cueta anomala* group. *Cueta anomala* group is a new replacment name for *Cueta beieri* group since *Cueta beieri* Hölzel, 1969 is a synonym of *Cueta anomala* Navás, 1915 (Krivokhatsky 2011). Gonarcus with parameres is very charachteristic for this species (Fig. 24). Taxonomical status was checked and commented by Güsten (2003) but he did not published real differences between the two species. The occurrences of the both pit-building species *Cueta lineosa* and *Cueta puella* are overlaped. Typical specimens of *Cueta puella* can be easily distinguished from *Cueta lineosa* by the large X-shaped mark between antennae. This shining black mark reaches to gena below antenna (Fig. 21) Male has also got a row of sparse equal length upstanding and black hairs on hind femur while *Cueta lineosa* has dense different lengths upstanding and black hairs on hind femur. The ventro-caudal processus on male ectoproct is shorter than that of *Cueta lineosa*. Gonarcus with parameres as in Fig. 24 in lateral view places this species clearly to *Cueta anomala* group. Specimens of *Cueta lineosa* are dominantly larger than that of *Cueta puella* (Fig. 20).

Distribution: The occurrence of this species is not clear, probably widespread in North Africa from Morocco to Egypt, but the distribution in Somalia (Navás 1930b) should be confirmed. It is a new species for the fauna of Morocco.

Tribe **Myrmeleontini** Latreille, 1802

Myrmeleon gerlindae Hölzel, 1974

Specimens examined: Morocco Anti Atlas Sidi M'sal 30.09, 2005 Leg. László M. Gy., G. Ronkay 1♂ 4♀; Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°32'51.8" 04-05.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 16-19.08, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ exlarva.

Remarks: Pronotum pattern is variable (cf. ASPÖCK et al. 1980, 2001). It is a pit building species, flies in second half of the year.

Distribution: Its occurrence is known in the West Mediterranean area and also in Morocco.

Myrmeleon hyalinus Olivier, 1811

Specimens examined: Marokko Agadir 08-22.08, 1982 Leg. M. Ströhle 1♀; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbendek T., Orsik M. 1♂ 1♀; 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 5♂ 2♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 6♂ 9♀; 19.07, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀ exlarva; 12.07, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀ exlarva; 16-19.08, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♂ 2♀ exlarva; 20-24.09, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♂ 1♀ exlarva; 29.09-06.10, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀ exlarva; Morocco S from Tiz-n-Tichka 1693m W07°26'52.1" N31°09'05.9" 02.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; 14-25.07, 2008 Ábrahám L., Fábián Gy., Rozner Gy. 1♂ exlarva; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 08.09, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀ exlarva; Morocco 15km from Anezol 1530m W07°16'03.3" N30°11'35,9" 06.07, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ exlarva; Morocco 3km from Taddert 1684m W07°23'47.8" N31°20'57.6" 30.08, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀ exlarva; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 2♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂; Morocco 25km from Foum Zguid 847m W06°51'17.4" N30°21'42.2" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂; Morocco 5km from Tissint 647m W07°16'46" N29°52'20" 14.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis & A. Szappanos 2♀; 12.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂; 16.-19.08, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 3♂ exlarva; 06-10.09, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♂ 1♀ exlarva; 20-24.09, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♂ 2♀ exlarva; 27.09-06.10, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 3♀ exlarva; Morocco 35km SW of Zagora 800m 16.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis & A. Szappanos 1♀.

Remarks: It is the most frequent pit building species, flies at night and daytime too, prefers the sandy areas.

Distribution: It is a widespread species in the West Palearctic. Known in N Africa: Morocco, Algeria, Tunisia, Libya, Egypt but also in the Saharan Zone from Senegal, Gambia to Sudan moreover collected in West and Middle Asia (ASPÖCK et al. 2001, STANGE 2004).

Myrmeleon pseudohyalinus Hölzel, 1972 (Fig. 25)

Specimens examined: Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 06.25, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 1♂; Morocco 14km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 28-29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 1♂.

Remarks: It is a little known species and very similar to the previous species but it is easily distinguished by the shape of broadened fore wing, rounded apices and pronotum with a central wide brown band. In the fore wing of this species MP2 usually reaches the CuA1 before the Cu fork. While *Myrmeleon hyalinus* has a narrow elongated wing, acute apex, pronotum with 5-6 small separate dark brown spots (ÁBRAHÁM & VAN HARTEN 2014) and MP2 reaches CuA1 after the Cu fork.

Distribution: Hitherto, it has been known only around the Persian Gulf (Iran, Afghanistan) (HÖLZEL 1972) and the UAE (ÁBRAHÁM & VAN HARTEN 2014). Unpublished data are from Pakistan based on the entomological collection of Museum, Kaposvár. It is new record for the Moroccan fauna.

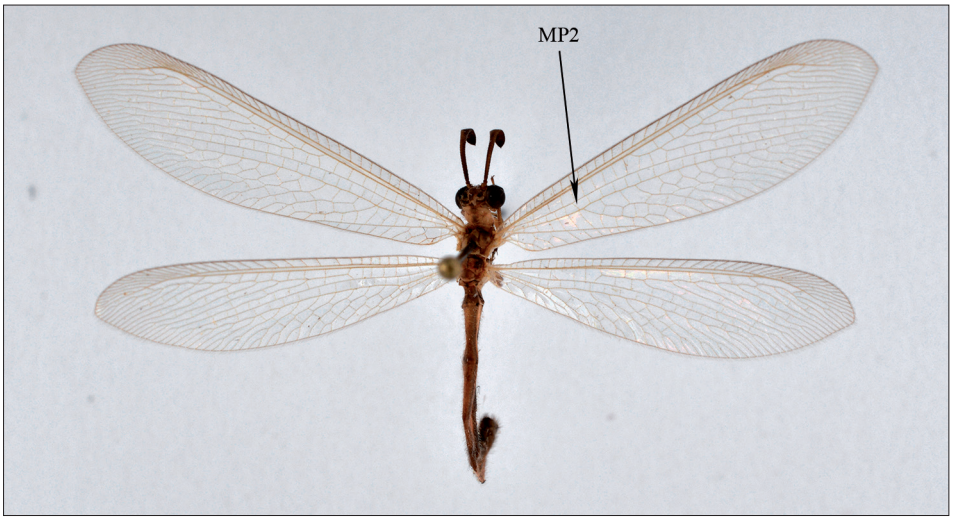

Fig. 25: Habitus of *Myrmeleon pseudohyalinus* Hölzel, 1972
MP2 - posterior branch of Median posterior

Myrmeleon fasciatus (Navás, 1912)

Specimens examined: Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 28-29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 1♀; 15.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; 27.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂; 30.06, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ exlarva; 10.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂ 1♀; 12.07, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂; 13.07, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; Morocco Tiz'n'Tarakatile 29.09, 2005 Leg. László M. Gy., G. Ronkay 1♂; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 23.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; Morocco Anti Atlas Sidi M' Sal 30.09, 2005 Leg. László M. Gy., G. Ronkay 1♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 25-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; Morocco Tioke village 1297m W07°12'21.2" N30°57'14.4" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 5♂ 4♀; Morocco 2km S from Tassetift 1000m W06°16'50" N30°25'50" 13.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 6♂ 4♀; Morocco 18km from Tata 954m W08°03'49.0" N29°50'56.6" 11.11, 2008 Ábrahám L., Fábián Gy., Rozner Gy. 1♀ exlarva; Morocco S from Tiz-n-Tichka 1693m W07°26'52.1" N 31°09'05,9" 02.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; 14-25.07, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂ exlarva; 17.10, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀ exlarva; 30.07, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂ exlarva; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 03.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 3♂ 5♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 3♀; 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 3♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 2♀; 20.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 2♀; 21.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 2♀; 29.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 3♂ 1♀; 10.06, 2010 leg Ábrahám L., Kisbenedek T., Wágner L. 1♂ 1♀; Morocco Anti Atlas Mts. W. Tafraoute 1200m 02.05, 2014 Leg. Takács 2♂ 3♀; 15 km from Anezol 1530m W07°16' 03.3" N30°11 35,9"13.07, 2010 Leg. Ábrahám L., Kisbenedek T. Wágner L. 1♀ ex larva.

Remarks: It is a frequent pit building species, flies from April to October in Morocco.

Distribution: This species is a widespread in the desert area from Morocco to the Arabian Peninsula.

Tribe **Dendroleontini** Banks, 1899

Bankisus antiatlasensis Ábrahám, 2009 (Fig. 26)

Specimens examined: In Ábrahám (2009) Holotype Morocco 5km from Anezol 1533m N30°47'21.7" W07°17'59.1" 24.06, 2008 Leg. Ábrahám L., Bognár, L., Nagy L. 1 ♂; Paratypes: Morocco 5km from Anezol 1533m N30°47'21.7" W07°17'59.1" 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 4♀; 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 1♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 4♂ 4♀.

Remarks: *Bankisus* Navás, 1912 is a typical African genus (MANSELL 1985) does not spread to China (ZHAN & WANG 2012) and Chinese *Bankisus sparsus* Zhan & Wang, 2012 belongs to an undescribed genus. It was very surprised that *Bankisus* occured in the Anti Atlas Mts. where lived only in a dry rocky valley.

Distribution: Only the type material is known from Morocco.

Fig. 26: Habitus of *Bankisus antiatlasensis* Ábrahám, 2009

Tribe **Nemoleontini** Banks, 1911

Macronemurus appendiculatus (Latreille, 1807)

Specimens examined: Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°31'51.8" 21.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♀; 22.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 6♂ 9♀; 22-23.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 3♂ 4♀; Morocco Tiz-n-Tichka 2089m W07°22'38.8" N31°18'26.7" 03.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 2km from Toufliht 1155m W07°28'02.6" N31°30'35.2" 23.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 2♀; Morocco 2km from Imini 1434m W07°17'30,4" N31°05'07,4" 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'9.1" 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♀; 10.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 6♂ 5♀.

Remarks: It is a frequent species, occurs everywhere in the Atlas Mts. and the Anti Atlas Mts. even in agricultural fields, flies in daytime, too.

Distribution: It is a typical West Mediterranean species, its occurrance cited by NAVÁS (1926), HÖLZEL (1987) and ASPÖCK et al. (2001) from the Eastern Mediterranean region is uncertain.

Macronemurus elegantulus Mclachlan, 1898 (Fig. 27)

Specimens examined: Morocco Ad Lucem Aoufouss 19.05, 1989 Leg. L. Buchholz 1♂; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 9♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♀; 10.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 11.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 1♀; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 15.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂.

Remarks: Imago is on the wing from May to July.

Distribution: It was found in NW Africa: Morocco, Algeria, Tunisia (Hölzel 1987).

Fig. 27: Habitus of *Macronemurus elegantulus* Mclachlan, 1898, male

Macronemurus maroccanus Hölzel, 1987 (Fig. 28)

Specimens examined: Marokko, Cukaimedn 2400-2600m 06-30. 06, 1985 Leg. Ströhle 1♂; Morocco 2km from Toufliht 1155m W07°28'02.6" N31°30'35.2" 04-05.07, 2009 Leg. Ábrahám, L., Malgay V., Szalóki D. 1♂ 1♀.

Remarks: It flies from July to September in the High Atlas Mts. collected at night.

Distribution: This species is only known from Morocco (Hölzel 1987, Aspöck et al. 2001). It seems to be endemic since the known occurrence restricted to the High Atlas Mts.

Macronemurus maghrebinus Hölzel, 1987

Specimens examined: Morocco Tioke village 1297m W07°12'21.2" N30°57'14.5" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 3♀; Morocco 5km from Anezol 1533m W 07°17'59.1" N30°47'21.7" 03.05, 2008 Leg. Ábrahám L., Rozner Gy., Fábián Gy. 2♂; 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 1♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 1♂ 4♀; Morocco Draa valley 5km Taokilt 791m W06°07'42.5" N30°23'28.6" 26.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco Tiz-n-Bachkoun

Fig. 28: Habitus of *Macronemurus maroccanus* Hölzel, 1987, male

10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 02.07, 2008 Leg. Ábrahám L., Malgay V., Szalóky D. 1♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀; Morocco 25km E of Tinerhir stone desert 1100m W05°15'34" N31°26'28" 23.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 6♂ 5♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 14.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 1♂.

Remarks: It flies from July to September in the High Atlas Mts. collected at night.

Distribution: This species is only known from Morocco (HÖLZEL 1987, ASPÖCK et al. 2001) but it was recorded in wide range of habitats from low sandy deserts to dry high mountains.

Geyria lepidula (Navás, 1912)

Specimens examined: Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 59♂ 67♀; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♂; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 01.07, 2008 Leg. Ábrahám L. Bognár L., Nagy L. 1♂; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 25-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀.

Remarks: Imago flies in summer and autumn, locally frequent.

Distribution: It is a common and widespread species, known in the Saharan zone from Morocco via Israel to the Arabian Peninsula (ASPÖCK et al. 2001). Its area expands to SW Asia: NW India (Rajasthan) (GHOSH 1981) and Iran (HÖLZEL 1987) Unpublished data are from S Pakistan based on the entomological collection of Museum, Kaposvár.

Geyria saharica Esben-Petersen, 1920 (Fig. 29)

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 26♂ 56♀; 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 4♂ 16♀; Morocco Draa valley 5km Taokilt 791m W06°07'42.5" N30°23'28.6" 06.26, 2008 Leg. Ábrahám L. Bognár L., Nagy L. 2♀.

Remarks: It flies in June and abundant species in sandy habitats. Both known *Geyria* species from Morocco can easily be distinguished by their pronotum pattern.

Distribution: It was recorded in the Saharan zone from Morocco to the Arabian Peninsula (Hölzel 1987).

Fig. 29: Habitus of *Geyria saharica* Esben-Petersen, 1920, male

Mesonemurus harterti Navás, 1919

Specimens examined: Morocco 25km E of Tinerhir stone desert W05°15'34" N31°26'28" 23.04, 2009 Leg. Gy. Fábián, Maklári-Kis, A. Szappanos 1♂ 2♀.

Remarks: It seems to be a rare species in Morocco, imagoes were only in spring.

Distribution: It is very widespread from NW Africa (Magreb countries) via the Arabian Peninsula to West Asia as far as Pakistan (Aspöck et al. 2001). This species is new record for the Moroccan fauna.

Delfimeus scriptus Navás, 1912

Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 18♂ 65♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 4♂ 12♀; 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 2♂ 1♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 22♂ 35♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 39♂ 11♀; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 3♂ 17♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 15♂ 21♀; 11.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 5♂ 2♀; 17.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 5♂ 1♀; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 5♂ 17♀;

Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 04.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 3♂; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 06.25, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀.

Remarks: This is the type species of the genus and the only one species in the genus is known from Africa.

Distribution: It was collected in Algeria (NAVÁS 1912b), Tunisia (GÜSTEN 2002, 2003) and new species for the fauna of Morocco. The Moroccan recording sites are characterized by warm desert climate.

Ganguilus pallescens Navás, 1912

Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 20.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; 21.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 2♀; 29.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 02.07, 2008 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ exlarva.

Remarks: MICHEL & MANSELL (2010) revised *Ganguilus* Navás, 1912, redescribed and illustrated *Ganguilus pallescens* in detail and gave a key for the species.

Distribution: It is a widely distributed species from the Saharan and Subsaharan zone and Arabian Peninsula (MICHEL & MANSELL 2010).

Neuroleon arenarius (Navás, 1904)

Specimens examined: Morocco Draa valley 5km Taokilt 791m W06°07'42.5" N30°23'28.6" 06.26, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 13km SW from Agdz 1050 W06°33'51.2" N30°39'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂.

Remarks: In Morocco, it was recorded at the end of June on warm desert climatic influenced area.

Distribution: It is known from coastal countries of the Mediterranean Sea (ASPÖCK et al. 2001, STANGE 2004). Moroccan occurrence was revealed by NAVÁS (1913a).

Neuroleon cuigneti (Navás, 1912) comb. n. (Figs. 30-38)

Specimens examined: Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 28-29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 3♀; 15.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 11.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂;17.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 1♀. Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 20.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; 21.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂ 2♀.

Remarks: It was taxonomically dubious species (ASPÖCK et al. 2001). NAVÁS's (1912b) description is short and concise but too general and no figured. In the diagnosis, it was compared to *Neuroleon nemausiensis*, which is similar to this species in the measurement and wing pattern. This species can be easily recognized from the Distoleon species spreading in Nord Africa on the basis of size, narrower wings, long and weak legs and length of tibial spurs. After description, NAVÁS (1913a) also described a new species from Morocco as *Formicoleo divisus* Navás, 1913, which is a new junior synonym of *Neuroleon cuigneti* (Navás, 1912). Type material of *Formicoleo divisus* Navás, 1913, peserved in MNCN, Madrid was checked. GÜSTEN (2003) gave a short description of *Neuroleon cuigneti* (Navás, 1912) and confirmed the high degree of similarity to *Distoleon divisus* (Navás, 1913) without changing the status. Morphological point of view, the type of *Distoleon divisus* (Navás, 1913) is not variable to be treated as a separate species.

Fig. 30: Habitus of *Neuroleon cuigneti* (Navás, 1912), male

Fig. 31: *Neuroleon cuigneti* (Navás, 1912), head in frontal view

Fig. 32: ***Neuroleon cuigneti*** **(Navás, 1912), pronotum in dorsal view**

Fig. 33: ***Neuroleon cuigneti*** **(Navás, 1912), male hind leg in lateral view**

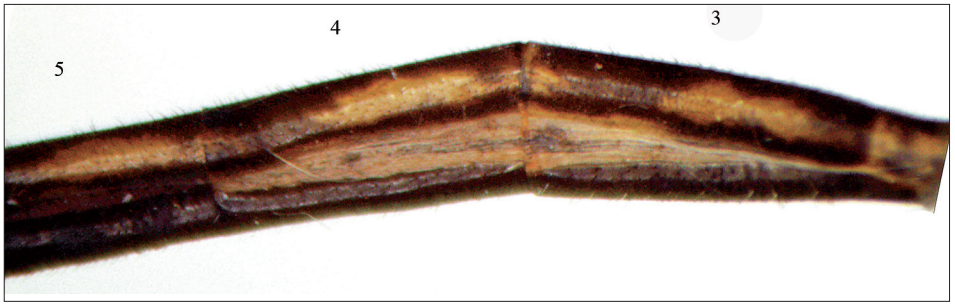

Fig. 34: *Neuroleon cuigneti* (Navás, 1912), abdomen in lateral view

Studying the description of *Neuroleon maroccanus* Navás, 1912 collected from Morocco, this species is also very similar to *Neuroleon cuigneti* (Navás, 1912) but it remained incertae sedis because the type specimen (Navás 1912a) was preserved in Navás's private and destroyed collection (Monserrat 1985).

The length of male fore wing is 20-23 mm. The females are somewhat larger, the length of fore wing is 24-27 mm. There is no dark brown stripe right below the antenna on frons but a wide dull black cross stripe can be seen above the antenna and it extends as a narrow shining black line towards the mouth. The pattern of pronotum as in Fig. 32. Wings are transparent and have characteristic pattern. In the fore wing, the cross-veins are featured with brown shadows at the basal part of MP and CuA (Fig. 30). In hind wing, the proximal cross-vein of the prestigmatic cell is pigmented on both sides, otherwise the membrane is entirely transparent. An irregular shaped longitudinal yellow mark can be seen on each side of the abdomen. It is equal and/or longer than the half of the tergal segments (Fig. 34). Male is characterized with upstanding long dense thin and white hairs on the hind femur and tibia (Fig. 33). Female has only white or black bristles on hind leg.

It flies from June to September, collected at light.

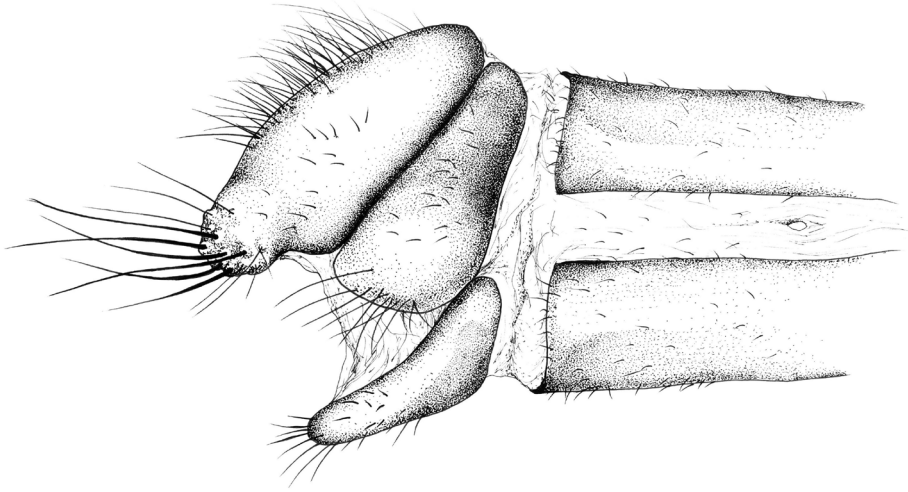

Fig. 35: *Neuroleon cuigneti* (Navás, 1912), male genitalia in lateral view

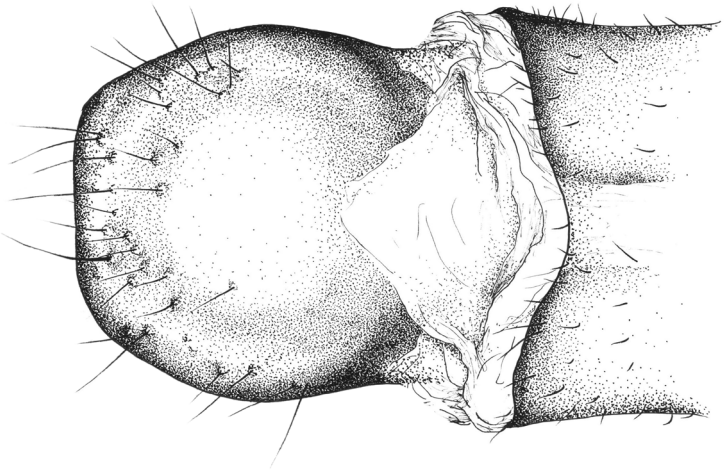

Fig. 36: ***Neuroleon cuigneti*** **(Navás, 1912), male postventral lobe in ventral view**

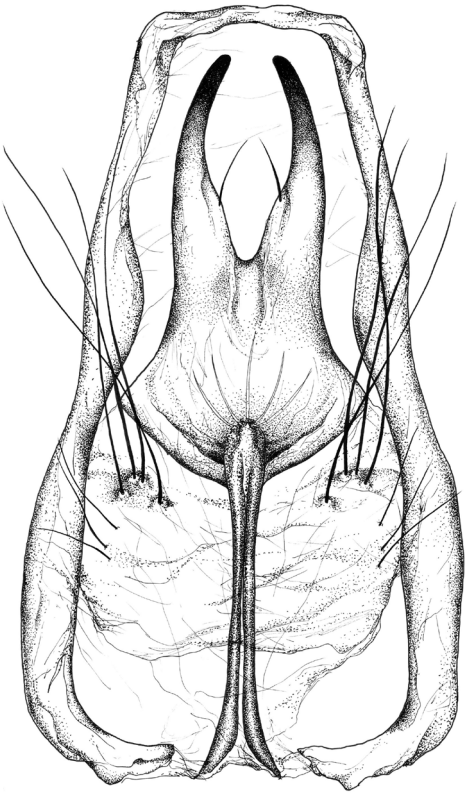

Fig. 37: ***Neuroleon cuigneti*** **(Navás, 1912), gonarcus with parameres in ventral view**

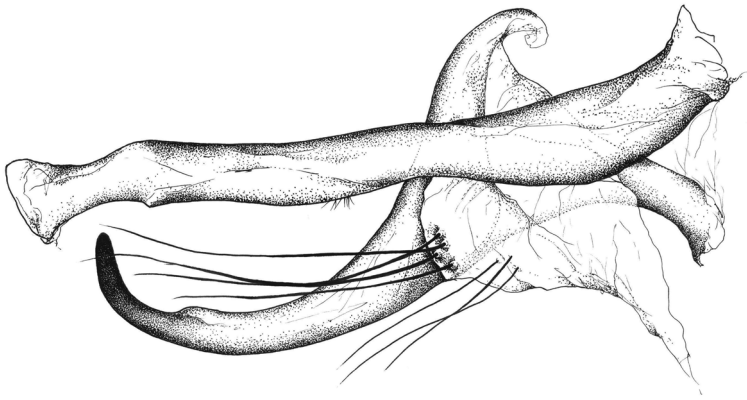

Fig. 38: ***Neuroleon cuigneti*** **(Navás, 1912), gonarcus with parameres in lateral view**

Distribution: Only new faunistical data were published by Güsten (2003) from Tunisia after describing it by Navás (1912b) from Algeria. During this survey, it was recorded only in the Anti Atlas Mts. and new record for the Moroccan fauna. Since the type specimens was collected in Melilla (NW Africa) belonging to African Spain embedded by Morocco. Monserrat et al. (2012) have not listed it as a Spanish species.

Neuroleon distichus (Navás, 1903)

Specimens examined: Morocco Tiz'n'Tarakatile 29.09, 2005 Leg. László M. Gy., G. Ronkay 2♀; Morocco 2km from Toufliht 1639m W07°25'31.6" N31°28'22.2" 22.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 2km from Toufliht 1155m W07°28'02.6" N31°30'35.2" 02.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂.

Remarks: Taxonomic and ecological point of view, Steffan (1971) published a comprehensive study on the South France *Neuroleon* species in which this species was also redescribed and figured thoroughly. The specimens collected in Morocco, the High Atlas Mts. agreed with European ones morphologically. The flying time of adults is from June to October.

Distribution: Its European occurrences were published by Aspöck et al. (1980) and later it was also collected in Morocco and Portugal (Monserrat 1985, Letardi et al. 2013).

Neuroleon gafsanus (Navás, 1921) comb. n. (Figs 39-45)

Specimens examined: Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°32'51.8" 21.06, 2008 Leg. Ábrahám L., Bognár L. Nagy L. 2♂ 1♀; 04-05.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 1♀.

Redescription

Head: Vertex strongly arched, dark grey with black spots in two rows. Ventral part of frons yellow with short sparse black hairs, dorsal part dark brown to black. Frons with yellow ring around base of scapes, otherwise dull black under and above antenna (Fig. 40). Gena, clypeus and labrum yellow. Lateral corner of clypeus with sparse black hairs. Mandible yellow inner side dominantly brown. Maxillary palp brown. Labial palp yellow but last segment brown with oval-shaped black sensory pit. Eye large and shiny brown. Antenna about 7 mm long. Scape, pedicel and flagellar segments dark brown with distal narrow yellow ring. Distal margin of scape with short and white setae. Flagellar segments with short and black setae.

Thorax: Pronotum somewhat longer than wide, dark brown with yellow pattern. Short sparse and white hairs on pronotum dorsally and some stiff prominent and white bristles on lateral margin. Mesonotum and metanotum dominantly dark brown with a few yellow spots and with short sparse and white pubescence. Side dark brown with short sparse and white hairs.

Legs: Slender. Fore coxa brown outside, yellow inside covered with short white setose and some stiff prominent upstanding and white bristles in two rows. Middle and hind coxae dark brown with short sparse and white hairs. Fore and middle femora somewhat shorter than tibiae, hind femur as long as hind tibia. Femora dark brown. Fore and middle femora with white hairs and rigid white bristles in two rows which prominent especially on fore femur. Hind femur with long rigid and black bristles inside and some white ones outside. Tibiae dominantly brown inside and yellow outside with brown half ring outside close to basal joints. Middle and hind tibiae with dark brown ring on distal ends. Tibiae covered with white hairs and upstanding stiff white and black bristles. Tarsal segment 1 yellow basally, black distally, other segments black. Segment 5 somewhat shorter than segment 1-4 combined. Tibial spurs on fore and middle legs as long as segment 1-4 and on hind leg those as long as segment 1-3 together. Tibial spurs almost straight. Claws long shiny reddish brown.

Wings: Fore wing: 18-19 mm long. Hind wing: 15-17 mm long, narrow. Apices round, apical field with cross-veins, 5-7 radial cross-veins before origin of Rs. 6 braches in Rs. Membrane transparent with some brownish shadows and dots on fore wing as in Fig. 39. C yellow, other longitudinal veins yellow interrupted with dark brown at intersections of cross-veins. Pterostigma distinct dark brown basally, white distally with 3-4 cross-veins. Hind wing with indistinct white pterostigma and little brown shadow both sides of basal cross-vein of prestigmatic cell otherwise transparent.

Abdomen: 18-19 mm long, dark brown with narrow yellow ring on distal edges. Pubescence short sparse and black on tergal side and same but white on sternal side.

Genitalia: Male as in Figs. 43-45.

Females: Dark pattern variable on legs. Abdomen shorter than length of wings.

Remarks: After the original description, only ASPÖCK & HÖLZEL (1996) mentioned this species. Some time later, ASPÖCK et al. (2001) listed it as the nomen dubia and STANGE (2004) documented it as a valid species in their monographs. ASPÖCK & HÖLZEL (1996) combined it to *Distoleon* traditionally based on the original combination *Formicoleo gafsanus* Navás, 1921.

Neuroleon danieli (Lacroix, 1922) (syn. n.) from Morocco is a new junior synonym of *Neuroleon gafsanus* (Navás, 1921). This species is easily recognised by characteristic dark shadow along the CuA and CuA1 (LACROIX 1922: Plate 2. Fig. 5).

It was collected at ligth in the High Atlas Mts, flies in June and July.

Distribution: So far, only the type material has been known from Tunisia and newly synonymed type materials are from Algeria and Morocco.

Neuroleon leptaleus (Navás, 1912)

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 16.06, 2010 Leg. Ábrahám L., Kisbenedek T. Wágner L. 1♂ 5♀; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 25.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 4♂ 1♀; 12.06, 2010 Leg. Ábrahám L., Kisbenedek T. Wágner L. 1♀; 05.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 6♂ 6♀ 1- (missing the tip of abdomen); Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 2♀; 14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♀; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 25.06, 2008 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♀.

Fig. 39: Habitus of *Neuroleon gafsanus* (Navás, 1921), male

Fig. 40: *Neuroleon gafsanus* (Navás, 1921), head in frontal view

Fig. 41: ***Neuroleon gafsanus*** **(Navás, 1921), male hind femur in lateral view**

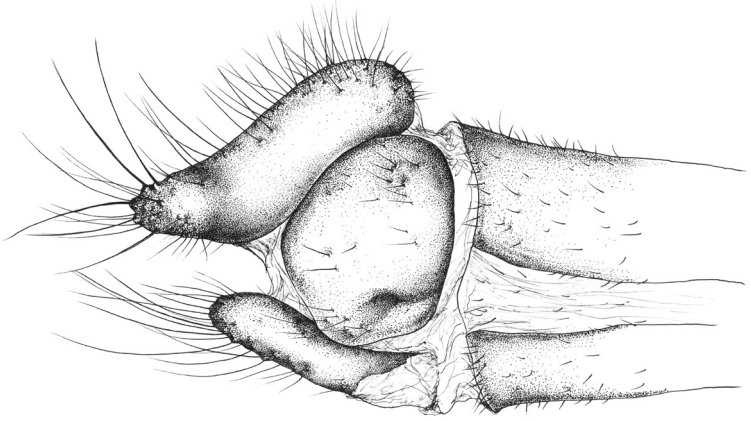

Fig. 42: ***Neuroleon gafsanus*** **(Navás, 1921), male genitalia in lateral view**

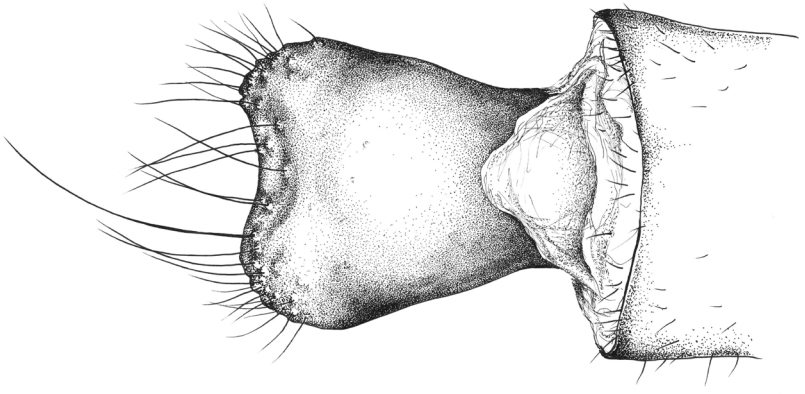

Fig. 43: ***Neuroleon gafsanus*** **(Navás, 1921), male postventral lobe in ventral view**

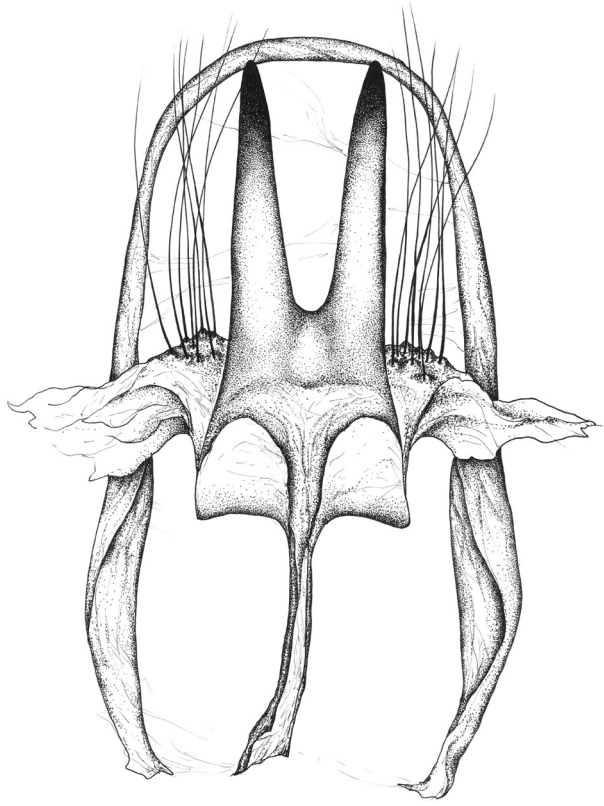

Fig. 44: *Neuroleon gafsanus* (Navás, 1921), gonarcus with parameres in ventral view

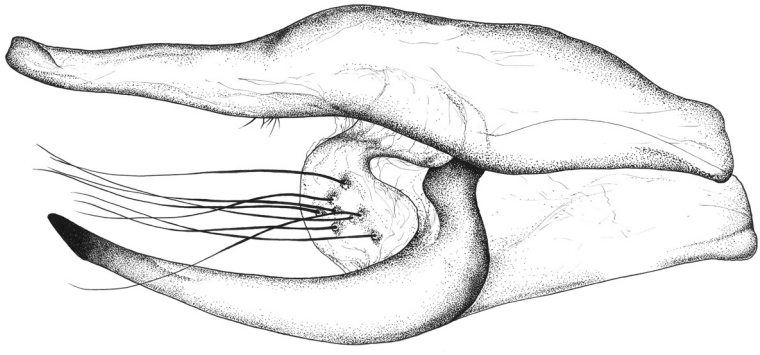

Fig. 45: *Neuroleon gafsanus* (Navás, 1921), gonarcus with parameres in lateral view

Remarks: Habitat preference is wider than that of the following species. It was collected at light both sand and stone deserts. Adult flies in June and July.

Distribution: Occurrence is found in South Europe and North Africa (ASPÖCK et al. 2001) via West Asia to Middle Asia (ÁBRAHÁM & VAN HARTEN 2014). It is new record for the fauna of Morocco.

Neuroleon tenellus (Klug, 1834)

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀.

Remarks: It is a typical sandy desert species.

Distribution: It is also a widely distributed species known from South Europe and North Africa (ASPÖCK et al. 2001) via West Asia to Middle Asia (ÁBRAHÁM & VAN HARTEN 2014). It is new record for the fauna of Morocco.

Neuroleon stirpis Steffan, 1975 stat. nov. (Fig. 46)

Specimens examined: Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 01.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 5km N from Reserves de Granka 947m W07°32'21.2" N31°32'36.7" 17-18.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51,9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 6♂ 12♀;14.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 2♀; 25.-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂; Morocco 2km from Toufliht 1155m W07°28'02.6" N31°30'35.2" 04-05.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀ Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 12.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 3♂ 2♀.

Fig. 46: Habitus of *Neuroleon stirpis* Steffan, 1975, strongly pigmented male specimen

Remarks: In the Western Mediterranean area, *Neuroleon stirpis* Steffan, 1975 stat. nov. is a vicariant species of *Neuroleon egenus* (Navás, 1914) distributed in the Eastern Mediterranean area.

At first, the later mentioned taxon was described by Navás (1903) as *Myrmeleon sticticus* Navás, 1903 from Spain, but the name is proved to be a homonym of *Myrmeleon sticticus* Blanchard in Blanchard & Brullé, [1845]) revealed by Steffan (1971).

Later, Navás (1914) also described this species from the East Mediterranean area namely as *Neuroleon egenus* (Navás, 1914) (original name: *Nelees egenus* Navás, 1914). The type locality can be found in Syria (Akbés) but today it is in Turkey. According to Steffan (1971), *Neelees cyprius* Navás, 1940 from Cyprus is a synonym of *Neuroleon egenus* (Navás, 1914).

At first, the name as *Neuroleon egenus stirpis* was mentioned by Steffan (1971) without description. Consequently, it is a nomen nudum. Later, Steffan (1975) described it as a subspecies and Stange (2004) supposed that their syntypes come from the Balkans but they were collected in the Western Mediterranean area.

According to Steffan (1975), *Neuroleon egenus* (Navás, 1914) can be easily differentiated from *Neuroleon stirpis* Steffan, 1975 stat. nov. based on the pattern of metascutum and abdomen.

The further differential characters:

Characters	***Neuroleon egenus***	***Neuroleon stirpis***
Marks below scape	continious brow line	two small spots
Meso and metanotum pattern	dominantly dark brown	about equal yellow and dark brown marks
Shape of wings	wide	narrow
Pterostigma	dominantly dark	dominantly white
Small brown spots along Cu in forewing	absent	present
Marks on tergites	smaller	larger

There is a very similar species known from the Canary Islands namely *Neuroleon canariensis* (Navás, 1906), its taxonomical status should be compered to *Neuroleon stirpis* Steffan, 1975 in the future. According to Hölzel & Ohm (1991), it is valid species and different from *Neuroleon egenus*. However, Monserrat (1979) cited it as *Neuroleon egenus.*

Distribution: In Europe: Spain, South France and Africa: Morocco, Algeria while the distribution data of *Neuroleon egenus* (Navás, 1915) are known from Turkey, Syria, Cyprus, Israel (Aspöck et al. 2001) and Iran (coll. Mus. Kaposvár). The status of the species needs revision in Tunisia and Italy.

***Neuroleon* sp. 1**

Specimens examined: Morocco 5km from Tissint 647m W07°16'46" N29°52'20.0" 12 .06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°31'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂ 1♀.

Remarks: It needs further revision to identify the taxon.

Quinemurus numidus (Navás, 1928) (Fig. 47)

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 25-26.09, 2009 Ábrahám L., Kisbenedek T., Orsik M. 3♀.

Remarks: STANGE (2004) listed three species in *Quinemurus* Kimmins, 1943 and GÜSTEN (2003) placed *Neuroleon numidus* Navás, 1928 into *Quinemurus*. He mentioned *Quinemurus cinereus* Kimmins, 1943 known only from the Arabian Peninsula. ASPÖCK et al. (2001) did not examined the taxonomical status of *Quinemurus inflatus* (Navás, 1926), which was the firstly described species in this genus from Egypt. *Quinemurus inflatus* and *Quinemurus cinereus* are very similar to each other morphologically so their statuses need to be revised in the future. Based on pronotal patterns, *Quinemurus numidus* can be easily distinguished from *Quinemurus inflatus* and *Quinemurus cinereus.* It has one or sometimes two (near to each other parallel) longitudinal brown bands in the middle while these bands are rather V-shaped on the pronotum of *Quinemurus inflatus* as well as *Quinemurus cinereus.* Imago flies in September and October in sandy desert area.

Distribution: For a long time, only the type material was known from Algeria (NAVÁS 1928a) but GÜSTEN (2002, 2003) also revealed an abundant population in Tunisia. It is a new species for the fauna of Morocco.

Noaleon limbatellus (Navás, 1913) (Fig. 48)

Specimens examined: Morocco Erg Hamada Mhamid 573m W05°35'41.8" N29°50'51.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 3♀ 1- (missing the tip of abdomen); Morocco 5km from Tissint 647m W07°16'46" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀; 14.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 2♀; Morocco 2km S from Tassetift 1000m W06°16'50" N30°25'50" 13.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 4♂ 4♀; Morocco Tioke village 1297m W07°12'21.2" N30°57'14.5" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♀.

Remarks: HÖLZEL (1972) separated the species from *Neuroleon,* described a new genus, *Noaleon* Hölzel, 1972 and ranked to *Glenurini* Banks, 1927 tribe but it belongs to *Nemoleontini* Banks, 1911: *Neuroleontina* Navás, 1912. *Noaleon* is characterized by A3 divergated in fore wing, there is one cross-vein before the radius sector in hind wing and it has relatively long legs compared those of *Neuroleon*. ESBEN-PETERSEN (1918) mentioned this species from the Saharan zone which mainly covered by sandy desert. During the survey collected sites are dominantly characterized also by sandy habitats influenced by warm desert climate. Imago flies in the first part of the year, from April to June.

Distribution: It is a widespread species, occurs in the Canary Islands, Maghreb countries, Middle East and Arabian Peninsula (STANGE 2004). This species is new record for the Moroccan fauna.

Distoleon tetragrammicus (Fabricius, 1798)

Specimens examined: Morocco 2km from Toufliht 1639m W17°25'31.6" N31°28'22.2" 09.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂.

Remarks: In Morocco, it lives in the High Atlas Mts. where the climate is rather continental than the surrounding dry mountainous area. It flies early summer and rare in Morocco.

Distribution: It is a widespread and rather frequent species in the continental Europe. In South Europe, West Asia as well as Morocco it lives in high mountainous area. The collected site can be found in the boarder of its distribution area. In Africa, it is known only from Morocco (ASPÖCK et al. 2001).

Fig. 47: Habitus of *Quinemurus numidus* (Navás, 1928), female

Fig. 48: Habitus of *Noaleon limbatellus* (Navás, 1913), female

Distoleon annulatus (Klug, 1834)

Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 20.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 5♂ 6♀ 1- (missing the tip of abdomen); 21.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 27♂ 18♀ 1- (missing the tip of abdomen); 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 6♂ 4♀; 29.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 13♂ 6♀ 1- (missing the tip of abdomen); Morocco Tiz-n-Tichka 2089m W07°22'38.8" N31°18'26.7" 19-20.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 3♀ 1- (missing the tip of abdomen); Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 22.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♀ 1- (missing the tip of abdomen); Morocco Tiz'n'Tarakatile 29.09, 2005 Leg. László M. Gy. & G. Ronkay 4♂ 10♀; Morocco Anti Atlas, Sidi M' Sal 30.09, 2005 Leg. László M. Gy., G. Ronkay 29♂ 36♀ 4- (missing the tip of abdomen); Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 23.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 4♂ 5♀; Morocco Immouzzer 01-02.10, 2005 Leg. László M. Gy., G. Ronkay 6♂ 29♀; Morocco Tizi'n'Tarakatile 29.09, 2005 Leg. László M. Gy., G. Ronkay 4♂ 27♀; Morocco Anti Atlas Mts. SW Tafaoute Ait Mausour 1200m 02.05, 2014 Floriani, Saldaitis 2♂ 1♀; Morocco Anti Atlas Sidi M' Sal 30.09, 2005 Leg. László M. Gy., G. Ronkay 17♂ 34♀ 5- (missing the tip of abdomen).

Remarks: In autumn, it is the dominant species in the High Atlas Mts. and the Anti Atlas Mts. This species was frequently collected at light.

Distribution: It is a widespread species from NW Africa to the Arabian Peninsula and also known from the South European Mediterranean area and West Asia (STANGE 2004).

Creoleon lugdunensis (Villers, 1789)

Specimens examined: Morocco Tiz-n-Tichka 2089m W07°22'38.8" N31°18'26.7" 23.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 37♂ 20♀; 03.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 4♂ 10♀; 03-04.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 8♂ 7♀; 18.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♂ 10♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 6♂ 5♀; Morocco Erg Hamada Mhamid 573m W05°3541.8" N29°5051.9" 27.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 8♂ 9♀.

Remarks: It is a frequent species, flies in daytime and attracted by ligth too. Imago is on wing in June and July.

Distribution: This species is widespread in Mediterranean countries surrounded by the west part of the Mediterranean Sea. It has already known from Morocco (ASPÖCK et al. 2001). In Africa, its area spreads to the northern edge of the Sahara desert.

Creoleon aegyptiacus (Rambur, 1842)

Specimens examined: Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 11.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 10.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; 17.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀.

Remarks: During the survey, this species was collected only in the Anti Atlas Mts. in rocky habitats at light. This species flies from June to September.

Distribution: It is very widespread species from North Africa via West Asia to Middle Asia (West China).

Creoleon neurasthenicus (Navás, 1913) (Fig. 49)

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°39'11.6" 24.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 4♀; 13.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂; 16.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 4♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂; 11.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 6♂ 3♀; 17.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 1♀; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 25.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 1- (missing the tip of abdomen); 28.09, 2009 Leg. Ábrahám L., Kisbenedek L., Orsik M. 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♂ 4♀; 03.05, 2008 Leg. Ábrahám L., Malgay V., Szalóki D. 9♂ 1♀ +1; 29.06,2009 Leg. Ábrahám

L., Malgay V., Szalóki D. 2♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀; 30.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♀; Morocco S from Tiz-n-Tichka 1533m W07°26'52.1" N31°09'05,9" 06.05, 2008 Leg. Ábrahám L., Fábián Gy. Rozner Gy. 2♀; Morocco 2km S from Tassetift 1000m W06°16'50" N30°25'50" 13.04, 2009 Leg. Gy. Fábián, B. Maklári-Kis, A. Szappanos 3♂ 6♀; Morocco Erg Hamada Mhamid 573m W05°35'41.8' N29°50'51,9" 25-26.09, 2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 2♂1♀; 06.14, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 3♀; Morocco Tioke village 1297m W07°12'21.2" N30°57'14.5" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 2♂ 6♀; Morocco 18 km from Tata 954m W 08°03' 49" N 29°50' 56.6" 08.05, 2008 Leg. Ábrahám L., Fábián Gy. Rozner Gy. 1♂ ; Morocco 5km from Tissint 647m W07°16'45.8" N29°52'20.0" 07.05, 2008 Leg. Ábrahám L., Fábián Gy. Rozner Gy. 1♀; 12.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 9♂ 9♀ ; 25.06,2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 2♀; 22.09,2009 Leg. Ábrahám L., Kisbenedek T., Orsik M. 1♂; Morocco Anti Atlas Mts. SW Tafraoute Ait Mansour Mt. H-1200m 02.05, 2014 Leg. Floriani, Saladaitis 2♂ 1♀; 14 km Ait Saoun 1606m 29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♀.

Remarks: From taxonomic point of view, *Creoleon* species need revision. In Afrotropic and Palearctic areas, some widely distributed species were probably described more than once. It is not easy to clarify the validity of the taxa because of the poor condition of the type specimens, difficult access, lack of photographs and good illustrations and high degree of similarities between the species. According to the literature (Aspöck et al. 2001, Stange 2004), *Creoleon neurasthenicus* (Navás, 1913) is a little-known species. Stange (2004) cited only the collecting site of the type. Navás intensively investigated the fauna of North Africa and he repeatedly described the same species from different countries. Thus, *Creoleon antennatus* (Navás, 1914) (syn.n.) described from Egypt and also *Creoleon arenosus* (Navás, 1934) (syn.n.) from Tunisia are new junior synonyms of *Creoleon neurasthenicus* (Navás, 1913).

Distribution: This species has a wide distribution area is in North Africa, the Middle East via the Arabian Peninsula to Pakistan based on the entomological collection of Museum, Kaposvár. It is a new species for the fauna of Morocco.

Fig. 49. Habitus of *Creoleon neurasthenicus* (Navás, 1913), male

Creoleon cinerascens (Navás, 1912)

Specimens examined: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°31'11.6" 13.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 4♂ 8♀; 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 3♂ 1♀.

Remarks: Both species *Creoleon cinerascens* (Navás, 1912) and *Creoleon surcoufi* (Navás, 1912) were described by Navás in the same year. Based on Lacewing Digital Library (OSWALD 2015), the description of *Creoleon cinerascens* (Navás, 1912) was published in February, 1912 that of *Creoleon surcoufi* (Navás, 1912) was in October, 1912. Consequently, *Creoleon cinerascens* (Navás, 1912) name has a priority, so the status of *Creoleon surcoufi* (Navás, 1912) (syn. n.) is a junior synonym of *Creoleon cinerascens* (Navás, 1912).

Distribution: It is probably widespread in the SW Palaearctic region from Morocco to the Arabian Peninsula but taxonomical statuses of *Creoleon* species known this area need further revision.

***Creoleon* sp. 1**

Specimens examined: Morocco Draa Valley 5km Taokilt 791m W06°07'42.5" N30°23'28.6" 26.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂: Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°31'11.6" 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂.

Remarks: It needs further revision to able to identify the taxon.

Family **Ascalaphidae** Lefébvre, 1842

Subfamily **Ascalaphinae** Lefébvre, 1842

Ascalaphus barbarus (Linnaeus, 1767)

Specimens examined: Morocco 5km N from Reserves de Granka 947m W07°32'21.2" N31°32'36.7" 22.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂; 22-23.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♂ 3♀; Morocco 2km from Toufliht 1155m W07°28'02.6" N31°30'35.2" 04-05.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♂ 1♀.

Remarks: It spreads at low altitude between 1000-1500m in dry, rocky and grassy habitats influenced by warm semiarid climate in the High Atlas Mts. This species has a bimodal daytime activity from 7 to 10 in the morning till hot period and from late afternoon to twilight when the temperature decreases and the insects can come to fly again.

Distribution: It is known only from Morocco.

Stylascalaphus Sziráki, 1998

The type species: *Ascalaphus* (*Haploglenius*) *obscurus* Westwood, 1847

Redescription

Stylascalaphus medium sized species. Eye divided by a transverse furrow. Sexual dimorphism present, male slimmer than female, male antenna somewhat longer than length of base of fore wing and pterostigma, male wings narrower than that of female.

Frons and vertex covered with medium long hairs, antenna hairless, club subglobular shaped with flattened apex.

Thorax dominantly unicolor, with medium long hairs. Side with short dense hairs. Wings strongly elongate, transparent but usually dark shadow in apical area of female hind wing. Fore wing longer than hind wing, base of costal margin of fore wing not swollen abruptly, base of fore wing obtuse and without tufts of hairs, apieces rounded. Legs rather slim, claws almost as long as tarsal segment 5.

Abdomen with large pale marks and covered only with short sparse hairs. Tergite 3 and 4 with more or less short strong bristles especially dense on distal upstanding part of tergite 3 (Fig. 51).

Male genitalia, ectroproct elongated narrow plate, with short appendices, apex rounded and bristled.

Remarks: *Stylascalaphus* Sziráki, 1998 is an objective replacement name for *Stylonotus* Needham, 1909 because that was a junior homonym of *Stylonotus* Olfers, 1907 (Collembola). The type species is *Ascalaphus* (*Haploglenius*) *obscurus* Westwood, 1847 lost (McLachlan 1891, Needham 1909). Based on description, Needham (1909) gave a detailed morphological characterization on the species found in India. *Stylascalaphus fabiani* Mészáros & Ábrahám, 2005 was the second species combined with the genus. It was recorded in Pakistan, Iran and SE Turkey (Dobosz & Ábrahám 2007).

Stylascalaphus krueperi (Weele, 1909) (comb. n.) is a new combination for *Helicomitus krueperi* Weele, 1909, which Weele (1909) placed tentatively into *Helicomitus* and Sziráki (1998) listed it as *Ascalaphus krueperi* (Weele, 1909). *Ascalaphus* species were traditionally divided into two groups (Kimmins 1949, Prost 2013). The species in *Ascalaphus* were collected mainly in Africa and in the Arabian Peninsula and recently in Sardinia (Europe). Most of the species are recognized by the swollen base of the costal margin of fore wing and the tufts of hairs directed basally.

The species of the other group recorded only in Asia especially in the Oriental realm from Pakistan via SE Asia to Malaysian Archipelago. The most species of this group, *Helicomitus* MacLachlan, 1871 were described by Kimmins (1949) and I also agree with him that it is a well separated genus from African *Ascalaphus* distinguished by absence of the tufts of hairs in the base of fore wing and by specialized tufts of hairs and/or protuberance present on notum.

Stylascalaphus Sziráki, 1998 is recognised by unicolor thorax, strongly elongate, transparent wings, upstanding distal margin on tergite 3, tergite 3 and 4 with more or less short strong bristles in male, male ectroproct elongated narrow plate with short postventral appendices.

Stylascalaphus krueperi (van der Weele, 1909) **comb. n**. (Fig. 50)

Specimens examined: Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀; 17.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 2♂; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 01.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♀.

Remarks: It is a lesser-known species. Based on a male and a female of the type specimens, it was described by Weele (1909) from Syria. Decade later, Navás (1921) also described this species as *Helicomitus hyalinus* Navás, 1921 (misspelling in print version as *Helicomitus hyatinus*) from Algeria. Oswald (2015) called the attention to the nomenclature problem, *Ascalaphus hyalinus* is a junior homonym of *Ascalaphus hyalinus* Latreille in Humboldt & Bonpland, 1817. Since the description, the name of the species was cited by only a faunal list (Aspöck & Hölzel 1996) and a monograph (Aspöck et al., 2001), but there was no real faunistic data except from the paper published by Ábrahám (2010). Later, the taxonomic status of *Ascalaphus hyalinus* (preserved in MNHN, Paris) was examined and compared to the type specimen to *Ascalaphus krueperi* (Weele, 1909) (original combination *Helicomitus* (?) *Krüperi*) (preserved in RMNH, Leiden). It is not only a new synonym of *Stylascalaphus krueperi* (van der Weele, 1909) but also a new combination.

Stylascalaphus krueperi is a similar species to *Ascalaphus barbarus*. The main features are: frons shining brown, thorax unicolour reddish brown, number of cross-veins before Rs in hind wing 3-4, short strong black bristles on male tergal segment 3-4, apical part of female hind wing pigmented. The same characters are in *Ascalaphus barbarus* frons yellow, thorax brown with a wide longitudinal and yellow central band, number of

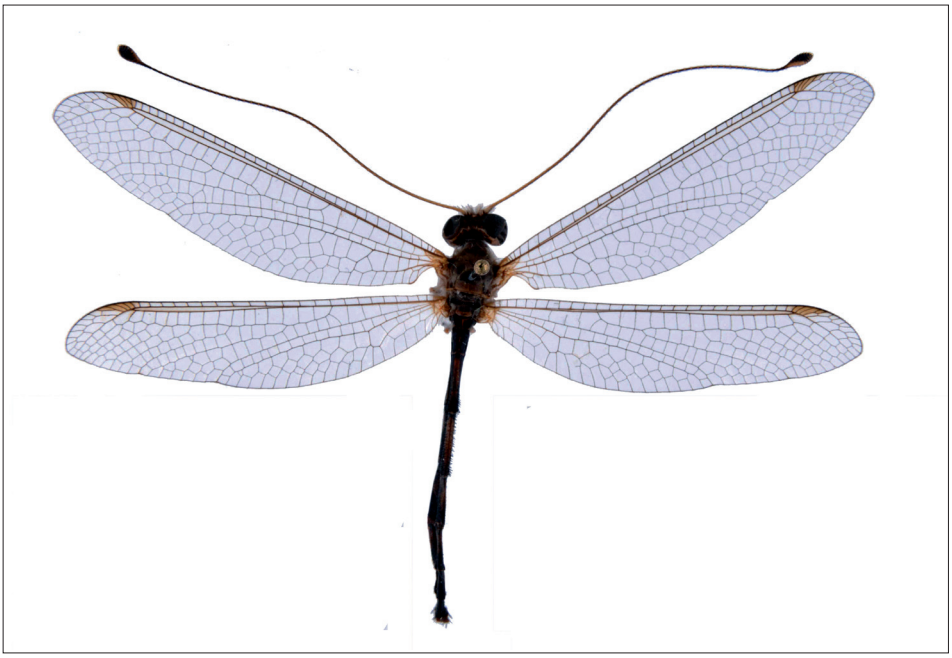

Fig. 50: Habitus of *Stylascalaphus krueperi* (van der Weele, 1909), male

Fig. 51: *Stylascalaphus krueperi* (van der Weele, 1909), abdomen in lateral view

cross-veins before Rs in hind wing 2, long pale hairs on male tergal segments, apical part of female hind wing not pigmented.

It flies in June and July, active at twilight and is collected at light. Imago is a hill-toping flyer species at dusk.

Distribution: It probably occurs from NW Africa to West Asia but known only in Syria, Egypt (ASPÖCK et al. 2001) and Algeria (NAVÁS 1921). ÁBRAHÁM (2010) reported it as *Ascalaphus hyalinus* from Morocco. One specimen was collected by Monnerat (Switzerland) from Jordan, too.

Bubopsis agrionoides (Rambur, 1838) (Fig. 52)

Specimens examined: Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 01.07, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 17.06, 2010 Leg. Ábrahám L., Bognár L., Nagy L. 2♂; 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀.

Remarks: The type of female *Bubopsis costai* Navás, 1912 comes from Morocco. Ábrahám (2010) checked the taxonomical status and found that it is a junior synonym of *Bubopsis agrionoides* (Rambur, 1838). Imago flies in June at twilight but can be collected by light as well. During flying, it prefers the top of hills.

Distribution: It is well known from SW Europe, which the distribution area continues in Morocco and the coastal countries of the Mediterranean Sea. Distribution data were published by Navás (1912c) as *Bubopsis costai* from Morocco, Tunisia (Navás 1930a) and Lybia (Navás 1929c).

Bubopsis eatoni Mclachlan, 1898 (Fig. 53)

Specimens examined: Morocco Tioke village 1297m W07°12'21.2" N30°57'14.5" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 28.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 2♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♂ 1♀; 11.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♂; 17.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 4♀; Morocco 5km N from Reserves de Granka 947m W07°31'45.6" N31°32'51.8" 04-05.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 24.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 3♀; 02.07, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 6km Ait Saoun 1606m W06°35'59.0" N30°42'22.5" 29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 1♀; 15.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 2♀; Morocco 13km SW from Agdz 1050m W06°33'51.2" N30°31'11.6" 16.06, 2010 Leg. Ábrahám L., Kisbenedek L., Wágner L. 1♀.

Remarks: *Bubopsis eatoni* is a very similar to *Bubopsis agrionoides*. Based on the following characters, it can be distinguished from *Bubopsis agrionoides*. The pterostigma in both wings are longer than wide, yellow in fore wing, brown in hind wing and that of *Bubopsis agrionoides* shorter than wide, proximal part yellow, distal part brown in fore wing, brown in hind wing. The number of cross-veins before Rs in hind wing 4-5 and that of *Bubopsis agrionoides* 6-7. The male ectropoct forceps have a ventral projection which is as long as basal part of ectoproct forceps that of *Bubopsis agrionoides* is short. Beside, the ectoproct forceps of *Bubopsis eatoni* have short dorso-medial projection but that of *Bubopsis agrionoides* is absent at the dorso-medial angle of forceps (Fig. 54-55).

In Morocco, it was collected mainly in the warm desert and warm semi-arid climate areas. Seasonal activity of the imago is from May to end of July. In daytime it flies from late afternoon to midnight also attracted by light. Imago also shows a hilltopping behaviour.

Distribution: It was described from Algeria cited by several authors (Navás 1912c, 1928a, Weele 1909). Recently, the occurrence became known from Tunisia (Güsten 2003). General distribution is summarized by Aspöck & Hölzel 1996, Aspöck et al. 2001. It is the first record for Moroccan fauna.

Cirrops berbericus Ábrahám, 2010 (Fig. 56)

Specimens examined: Morocco 6km Ait Saoun 1606m W06°35'59.0" N0°42'22.5" 29.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 13♂ 19♀; Morocco Tiz-n-Bachkoun 10km N from Tazenakt 1594m W07°16'20.7" N30°41'12.0" 17.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♂ 1♀.

Remarks: According to the recording sites, this species populates in the Anti Altas Mts. where lives in extreme dry and rocky area in altitude of 1300-1800m. Seasonal activity of the species takes from end of June till middle of July. Due to the hot period between 10 am and 6 pm, it has two daily activity peaks. One is in the morning between 7 and 9.30 am and the other is in the late afternoon after 6 pm till dusk. In the morning, it flies

Fig. 52: Habitus of *Bubopsis agrionoides* (Rambur, 1838), male

Fig. 53: Habitus of *Bubopsis eatoni* Mclachlan, 1898, male

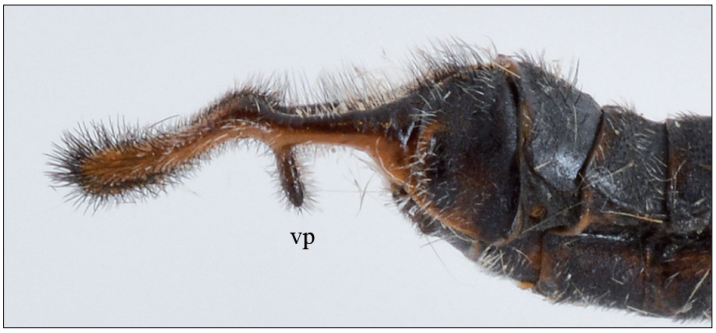

Fig. 54: Male ectropoct of *Bubopsis agrionoides* (Rambur, 1838), in lateral view; vp - ventral projection of forceps

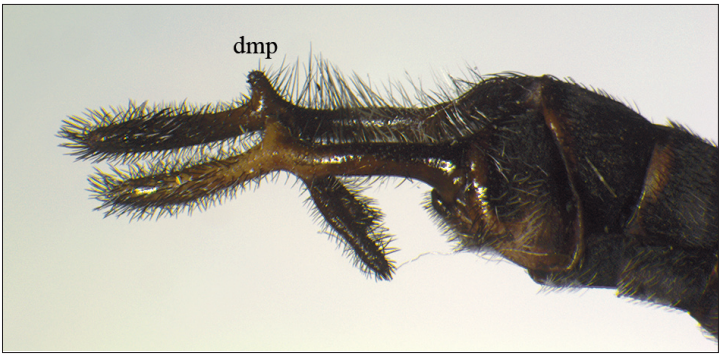

Fig. 55: Male ectropoct of *Bubopsis eatoni* Mclachlan, 1898 in lateral view; dmp - dorso medial projection of forceps

Fig. 56: Habitus of *Cirrops berbericus* Ábrahám, 2010, male

very quickly hunting for small insects in the air or searching sexual partners. Before twilight, this abundant species flies together with two other species (*Stylascalaphus krueperi* and *Bubopsis eatoni*). It also shows hilltopping behaviour.

Distribution: Both known *Cirrops* species spread in W and NW Africa in the Subsaharan zone. *Cirrops kumari* Tjeder, 1980 occurs south from the Sahara in Gambia, Ghana and Nigeria (HYND 1992) and S Mali (MICHEL 2000). Only the type material of *Cirrops berbericus* is known from the Anti Atlas Mts.

Deleproctophylla gelini Navás, 1919

Specimens examined: Marocco High Atlas Tamri 20m 28.06, 2003 V. Major 2♂ 2♀; Morocco Tamri 15m W08°51'26.1' N30°42'31.9' 30.06, 2008 Leg. Ábrahám L., Bognár L., Nagy L. 5♂ 1♀.

Remarks: Based on the distribution in Morocco, this species prefers the relatively cool coastal desert habitats at low altitude (FAUCHEUX 2006a). On the Atlantic coast, the primary habitat is a typical sand dune overgrown with *Tamarix* sp., the secondary habitats are in embankment of roads. The known occurrences are at low altitudes 50 m high asl. Imago is in flying from late June to early August it has daytime activity over the low grasslands (20-25 cm high).

Distribution: So far, it has been known only from Morocco (ASPÖCK et al. 2001), probably endemic.

Libelloides ictericus ictericus (Charpentier, 1825)

Specimens examined: Marocco Haut Atlas ?.06, 1992 J. Macek 1♀; Marocco Haut Atlas Marakesh 01.07, 1992. J. Macek 1♀; Marocco High Atlas Oukaimeden 2400m 15-17.06, 2003 V. Major 1♂ 2♀; Marocco Hauth Atlas N Oukaimeden 1600m 15-17.06 2003 V. Major 1♂; Morocco 5km N from Reserves de Granka 947m W07°31'45.6"N31°32'36.7" 29.04, 2008 Leg. Ábrahám L., Fábián Gy ., Rozner Gy. 16♂ 16♀; 02.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 13♂ 10♀; 22-23.06, 2009 Leg. Ábrahám L., Malgay V., Szalóky D. 7♀; Morocco 2km from Toufliht 1639m W07°25'31.6" N31°28'22.2" 01.05, 2008 Leg. Ábrahám L., Fábián Gy ., Rozner Gy. 22♂ 14♀; Morocco 22km from Taddert 1425m W07°24'21.4" N 31°27'46.4" 11.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 2♂ 8♀; Morocco 3km of Chafarni 1519m W08°22'40.5" N30°50'04.8" 09.05, 2008 Leg. Ábrahám L., Fábián Gy ., Rozner Gy. 17♂ 7♀; Morocco Tioke village 1297m W07°12'21.2" N30°57'14.5" 06.05, 2008 Leg. Ábrahám L., Fábián Gy., Rozner Gy. 1♂ 2♀, Morocco 2km from Imini 1434m W07°17'30.4" N31°05'07.4" 24.06, 2009 Leg. Ábrahám L., Malgay V., Szalóki D. 2♀; Morocco 5km from Anezol 1533m W07°17'59.1" N30°47'21.7" 10.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀; Morocco Tiz-n-Tichka 2089m W07°22'38.8" N31°18'26.7" 03-04.07, 2009. Leg. Ábrahám L., Malgay V., Szalóky D. 1♀ 18.06, 2010 Leg. Ábrahám L., Kisbenedek T., Wágner L. 1♀.

Remarks: At low altitude above sea level (700-1000 m), it already flies in April while at higher (over 2000m) the imago is on the wing in late June and July. It prefers 30-40 cm high grassy habitats where sometimes is common as well.

Distribution: It is a widespread species found in South Western Europe (S France, Spain) and western parts of North Africa (Morocco, Algeria, Tunisia). In Morocco, this species is typical for the High Atlas Mts. influenced by the warm Mediterranean and warm semiarid climate but rather rare in the drier Anti Atlas Mts. influenced by warm semiarid climate.

Libelloides cunii (Selys-Longchamps, 1880)

Specimens examined: Morocco, High Atlas, Tizi-n-Test, 02.04, 1995 Jan Macek lgt., 4♂ 2♀.

Remarks: The taxonomic status of species was previously questioned by several neuropterists (cf. ASPÖCK et al. 1980, ASPÖCK et al. al. 2001). MONSERRAT et al. (2012, 2014) confirmed the validity of the species and outlined the distribution in Spain which was considered to be an endemic species in the Iberian Peninsula and South France (HÁVA & ÁBRAHÁM 2014).

Distribution: HÁVA & ÁBRAHÁM (2014) have recently published the new findings in Morocco.

The annotated checklist of the Moroccan Myrmeleontiformia

Previously, Aspöck & Hölzel (1996), Aspöck et al. (2001), Stange (2004) and Faucheux et al. (2012) compiled a checklist on the Moroccan fauna. In the latest list below the asterisk (*) means the new records for the Moroccan fauna. Annotation concerns to the only Moroccan fauna.

Abbrevations:
Tax – Taxonomy, Chlist – Checklist, Comb – New combination, Dist – Distribution, Mon – Monograph, Odescr – Original description, Syn – Synonym, Behav – Behavior

Subordo **Myrmeleontiformia**
Family **Nemopteridae** Burmeister, 1839
Subfamily **Crocinae** Navás, 1910

Josandreva sazi Navás, 1906
Josandreva sazi Navás, 1906 – Monserrat 2008 (Dist)
Croce aristata (Klug, 1838)*
Dielocroce chobauti (Mclachlan, 1898)*
Dielocroce berlandi (Navás, 1936)*
Dielocroce harterti (Navás, 1913)*
Dielocroce herbacea Hölzel, 1975
Dielocroce herbacea Hölzel, 1975 – Monserrat 2008 (Dist)
Pterocroce capillaris (Klug, 1836)
Pterocroce capillaris (Klug, 1836) – Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Monserrat 2008 (Dist)

Subfamily **Nemopterinae** Burmeister, 1839

Nemoptera bipennis (Illiger, 1812)
Nemoptera bipennis (Illiger, 1812) – Jacobs & Mech 1913 (Dist), Aspöck et al. 2001 (Mon)
Lertha barbara (Klug, 1836)
Lertha barbara (Klug, 1836) – Navás 1913a (Dist), 1922c (Dist), 1930a (Dist), Esben-Petersen 1931a (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon)
Lertha escalerai Navás, 1913
Lertha escalerai Navás, 1913 – Navás 1913a (Odescr), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon)
Lertha bolivari Navás, 1913
Lertha bolivari Navás, 1913 – Navás 1913a (Odescr), Monserrat 1988 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon)
Lertlia sofiae Monserrat, 1988
Lertlia sofiae Monserrat, 1988 – Monserrat 1988 (Odescr)
Brevistoma bardii (Navás, 1914)*
Halter halteratus (Forskal, 1775)
Halter halteratus (Forskal, 1775) – Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Chlist), Hölzel (1999), Aspöck et al. 2001 (Mon), Monserrat 2008 (Dist)
Savigniella costata (Klug, 1836)
Savigniella costata (Klug, 1836) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon)

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

Palpares hispanus Hagen, 1860
Palpares hispanus Hagen, 1860 – Kolbe 1884 (Dist), McLachlan 1889 (Dist), Navás 1913a (Dist), 1919 (Dist), 1922c (Dist), 1924 (Dist), 1929a (Dist), 1935b (Dist, Larva Odescr), Esben-Petersen 1931a (Dist), Duisit-Raclin 1962 (Dist), Stange 2004 (Mon), Ábrahám 2012 (Dist),
Palpares angustus Mclachlan, 1898
Palpares angustus Mclachlan, 1898 – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon)
Palpares angustus var gloriosa – Navás 1913a (Odescr)
Palpares martini van der Weele, 1907 – Weele 1907 (Odescr), Stange 2004 (Mon), Ábrahám & Dobosz 2011 (Dist) **syn. n.**
Palpares dispar Navás, 1912*
Pseudimares aphrodite H. Aspöck & U. Aspöck, 2009
Pseudimares aphrodite H. Aspöck & U. Aspöck, 2009 – Aspöck & Aspöck 2009 (Odescr), Pantaleoni et al. 2012 (Dist)

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

Acanthaclisis occitanica (Villers, 1789)
Acanthaclisis occitanica (Villers, 1789) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon)
Synclisis baetica (Rambur, 1842)
Synclisis baetica (Rambur, 1842) – Navás 1935b (Dist), Stange 2004 (Mon), Faucheux et al. 2012 (Dist)
Fadrina nigra Navás, 1912*
Centroclisis cervina (Gerstaecker, 1863)*
Phanoclisis longicollis (Rambur, 1842)*

Tribe **Myrmecaelurini** Esben-Petersen, 1918

Myrmecaelurus lachlani Navás, 1912
Myrmecaelurus lachlani Navás, 1912 – Navás 1912a (Odescr), 1922c (Dist), Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Nohoveus lachlani Navás, 1912 – Navás 1924 (Dist)
Nohoveus lepidus (Klug, 1834)*
Nohoveus palpalis (Klapálek, 1914)*
Nophis teillardi Navás, 1912*
Lopezus arabicus Hölzel, 1972*

Tribe **Gepini** Markl, 1954

Subgulina lineata Navás, 1913*
Gepus invisus Navás, 1912
Gepus invisus Navás, 1912 – Hölzel 1982 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),

Gepus tersus Navás, 1919*
Solter liber Navás, 1912
Solter liber Navás, 1912 – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon), Michel 2014 (Dist), Navás 1919 (Dist)
Solter naevipennis Navás, 1913
Solter naevipennis Navás, 1913 – Michel 2014 (Dist)
Solter rothschildi Navás, 1913*
Solter lucretii Michel, 2014*
Solter francoisi Michel, 2014
Solter francoisi Michel, 2014 – Michel 2014 (Odescr)
Solter leopardalis Michel, 2014
Solter leopardalis Michel, 2014 – Michel 2014 (Odescr)
Solter micheli *sp.n.*

Tribe **Nesoleontini** Markl, 1954

Cueta lineosa (Rambur, 1842)
Cueta lineosa (Rambur, 1842) – Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Whittington 2002 (Dist), Stange 2004 (Mon)
Cueta impar Navás, 1932 *
Cueta puella (Navás, 1913)
Nesoleon puellus Navás, 1913 – Navás 1913a (Dist)
Cueta puella (Navás, 1913) – Aspöck & Hölzel 1996 (Dist)
Cueta pallens (Klug in Ehrenberg, 1834)*

Tribe **Myrmeleontini** Latreille, 1802

Myrmeleon gerlindae Hölzel, 1974
Myrmeleon gerlindae Hölzel, 1974 – Hölzel 1974 (Odescr), Aspöck & Hölzel 1996 (Dist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon)
Myrmeleon inconspicuus Rambur, 1842 – Aspöck & Hölzel 1996 (Chlist)
Myrmeleon arisi Navás, 1913 – Navás 1913a (Odescr)
Grocus inconspicuus var. *leonina* – Navás 1935b (Odescr)
Myrmeleon inconspicuus Rambur, 1842 – Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon)
Myrmeleon hyalinus Olivier, 1811
Myrmeleon hyalinus Olivier, 1811 – Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Dist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon), Faucheux et al. 2012 (Dist)
Myrmeleon cinereus Klug, 1834 – Navás 1913a (Dist)
Mymeleon distinguendus Rambur, 1842 – McLachlan 1889 (Dist)
Morter hyalinus (Olivier, 1811) – Navás 1935b (Dist)
Myrmeleon pseudohyalinus Hölzel, 1972*
Myrmeleon fasciatus (Navás, 1912)
Myrmeleon fasciatus (Navás, 1912) – Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Dist), Aspöck et al. 2001 (Mon),
Euroleon nostras (Geoffroy in Fourcroy, 1785)
Euroleon nostras (Geoffroy in Fourcroy, 1785) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon)

Tribe **Dendroleontini** Banks, 1899

Bankisus antiatlasensis Ábrahám, 2009
Bankisus antiatlasensis Ábrahám, 2009 – Ábrahám 2009 (Odescr)

Tribe **Nemoleontini** Banks, 1911

Macronemurus appendiculatus (Latreille, 1807)
Macronemurus appendiculatus (Latreille, 1807) – McLachlan 1889 (Dist), Navás 1913a (Dist), 1923 (Dist), 1928b (Dist), Esben-Petersen 1931a (Dist), Hölzel 1987 (Mon), Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Whittington 2002 (Dist), Stange 2004 (Mon), Faucheux et al. 2012 (Dist), Navás 1935b (Dist),
Macronemurus elegantulus Mclachlan, 1898
Macronemurus elegantulus Mclachlan, 1898 – Navás 1913b (Dist), Hölzel 1987 (Mon), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Macronemurus quedenfeldti (Kolbe, 1884)
Myrmeleon quedenfeldti Kolbe 1884 (Odescr)
Macronemurus lacroixi Navás, 1923 – Hölzel 1987 (Tax) Navás 1923 (Odescr)
Macronemurus hedigeri Navás, 1929 – Hölzel 1987 (Tax), Navás 1929b (Odescr)
Nemurius lacroixi (Navás, 1923) – Navás 1935b (Dist), Duisit-Raclin 1962 (Dist)
Macronemurus quedenfeldti (Kolbe, 1884) – Esben-Petersen 1931a (Dist) Hölzel 1987 (Mon), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Macronemurus maroccanus Hölzel, 1987
Macronemurus maroccanus Hölzel, 1987 – Hölzel 1987 (Odescr), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange (Mon),
Macronemurus maghrebinus Hölzel, 1987
Macronemurus maghrebnus Hölzel, 1987 – Hölzel 1987 (Odescr), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange (Mon),
Macronemurus gallus Hölzel, 1987
Macronemurus gallus Hölzel, 1987 – Hölzel 1987 (Odescr), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange (Mon),
Geyria lepidula (Navás, 1912)
Geyria lepidula (Navás, 1912) – Hölzel 1987 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Geyria saharica Esben-Petersen, 1920
Geyria saharica Esben-Petersen, 1920 – Hölzel 1987 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Mesonenturus harterti Navás, 1919*
Delfimeus scriptus Navás, 1912*
Ganguilus pallescens Navás, 1912*
Neuroleon arenarius (Navás, 1904)
Neuroleon arenarius (Navás, 1904) – Navás 1913a (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon),
Neuroleon tenellus (Klug, 1834)
Neuroleon tenellus (Klug, 1834) – Whittington 2002 (Dist)
Neuroleon stirpis Steffan, 1975 nom. nov.
as partim *Neuroleon egenus* (Navás, 1914) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon)

Neuroleon nemausiensis (Borkhausen, 1791)
Neuroleon nemausiensis (Borkhausen, 1791) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon), Faucheux et al. 2012 (Dist)
Neuroleon distichus (Navás, 1903)
Neuroleon distichus (Navás, 1903) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon),
Neuroleon leptaleus (Navás, 1912)
Neuroleon leptaleus (Navás, 1912) – Stange 2004 (Mon)
Neuroleon algericus Navás, 1913 – Navás 1913a (Dist)
Neuroleon gafsanus (Navás, 1921)
Distoleon gafsanus (Navás, 1921) – Aspöck & Hölzel 1996 (Mon)
Neuroleon danieli (Lacroix, 1922) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon), **syn. n.**
Neuroleon cuigneti (Navás, 1912)*
Formicoleon divisus Navás, 1913 – Navás 1913a (Odescr), **syn. n.**
Distoleon divisus (Navás, 1913) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Quinemurus numidus Navás, 1928*
Noaleon limbatellus (Navás, 1913)*
Distoleon tetragrammicus (Fabricius, 1798)
Distoleon tetragrammicus (Fabricius, 1798) – Navás 1935b (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon),
Distoleon annulatus (Klug, 1834)
Formicoleo annulatus (Klug, 1834) – McLachlan 1889 (Dist), Navás 1919 (Dist)
Distoleon annulatus (Klug, 1834) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon), Faucheux et al. 2012 (Dist)
Nemoleon notatus (Rambur, 1842)
Nemoleon notatus (Rambur, 1842) – Navás 1913a (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 1980 (Mon), (Mon), Stange 2004 (Mon)
Pseudoformicaleo gracilis (Klug, 1834)
Pseudoformicaleo gracilis (Klug, 1834) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon)
Creoleon lugdunensis (Villers, 1789)
Creoleon lugdunensis (Villers, 1789) – Aspöck & Hölzel 1996 (Chlist), Monserrat et al. 1990 (Dist), Aspöck et al. 1980 (Mon), 2001 (Mon), Whittington 2002 (Dist), Faucheux et al. 2012 (Dist)
Creoleon africanus (Rambur, 1842)
Creoleon africanus (Rambur, 1842) – Navás 1919 (Dist), 1929b (Dist), 1935b (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon),
Creoleon aegyptiacus (Rambur, 1842)
Creoleon v-nigrum Rambur, 1842 – Navás 1919 (Dist), 1928a (Dist), 1929b (Dist)
Creoleon aegyptiacus (Rambur, 1842) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon)
Creoleon neurasthenicus (Navás, 1913)*
Creoleon cinerascens (Navás, 1912)
Creoleon surcoufi (Navás, 1912) – Faucheux et al. 2012, **syn. n.**

Tribe **Glenurini** Banks, 1927

Megistopus flavicornis (Rossi, 1790)
Megistopus flavicornis (Rossi, 1790) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Whittington 2002 (Dist), Stange 2004 (Mon)
Gymnocnemia editaerevayae Michel, 2013
Gymnocnemia editaerevayae Michel, 2013 – Michel 2013 (Odescr)

Family **Ascalaphidae** Lefébvre, 1842
Subfamily **Ascalaphinae** Lefébvre, 1842

Ascalaphus barbarus (Linnaeus, 1767)
Myrmeleon barbarus Linnaeus, 1767 – Linnaeus 1767 (Odescr)
Helicomitus barbarus (Linnaeus, 1767) – Navás 1913a (Dist)
Ascalaphus barbarus (Linnaeus, 1767) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon)
Ascalaphus festivus (Rambur, 1842)
Helicomitus festivus (Rambur, 1842) – Navás 1913a (Dist)
Stylascalaphus krueperi (Van der Weele, 1909) comb. n.
Ascalaphus hyatinus [misspelling: *hyalinus*] Navás, 1921 – Navás 1921 (Odescr), Ábrahám 2010 (Dist), **syn. n**.
Bubopsis agrionoides (Rambur, 1838)
Bubopsis agrionoides (Rambur, 1838) – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Ábrahám 2010 (Dist, Behav)
Bubopsis costai Navás, 1912 – Navás 1912c (Odescr), Aspöck et al. 2001 (Mon), Ábrahám 2010 (Tax)
Bubopsis eatoni Mclachlan, 1898*
Bubopsis eatoni Mclachlan, 1898 – Ábrahám 2010 (Dist, Behav)
Cirrops berbericus Ábrahám, 2010
Cirrops berbericus Ábrahám, 2010 – Ábrahám 2010 (Odescr)
Deleproctophylla bleusei Kimmins, 1949
Deleproctophylla bleusei Kimmins, 1949 – Aspöck et al. 2001 (Mon),
Deleproctophylla gelini Navás, 1919
Theleproctophylla gelini Navás, 1919 – Navás 1919 (Odescr), Navás 1930 (Dist)
Deleproctophylla gelini Navás, 1919 – Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Whittington 2002 (Dist), Ábrahám & Mészáros 2004 (Morph, Dist), Faucheux 2006 (Dist, Ecol), Faucheux et al. 2012 (Dist)
Puer algericus (Van der Weele, 1909)
Puer algericus – Navás 1913a (Dist)
Agadirius trojani Badano & Pantaleoni, 2012
Agadirius trojani Badano & Pantaleoni, 2012 – Badano & Pantaleoni 2012 (Odescr)
Libelloides ictericus ictericus (Charpentier, 1825)
Ascalaphus ictericus – McLachlan 1889 (Dist), van der Weele 1909 (Dist), Navás 1929a (Dist), 1930 (Dist), 1934 (Dist), Esben-Petersen 1931a (Dist)
Ascalaphus ictericus var. *atlantica* Navás, 1913 – Navás 1913a (Odescr)
Libelloides ictericus (Charpentier, 1825) – Monserrat et al. 1990 (Dist), - Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Whittington 2002 (Dist)
Libelloides cunii (Selys-Longchamps, 1880)
Libelloides cunii (Selys-Longchamps, 1880) – Háva & Ábrahám 2014 (Dist)

Valid species but not distributed in Morocco

Palpares libelluloides (Linnaeus, 1767) – Kolbe 1884 (Dist), Jacobs & Mech 1913 (Dist), Monserrat et al. 1990 (Dist), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 1980 (Mon), 2001 (Mon), Stange 2004 (Mon), Whittington 2002 (Dist)
Palpares libelloides (Linnaeus, 1767) – Stange 2004 (Mon)
Creoleon plumbeus (Olivier, 1811)
Creagris plumbeus Olivier, 1811 – Kolbe 1884 (Dist)
Creoleon plumbeus (Olivier, 1811) – Navás 1922c (Dist), 1928a (Dist), 1929b (Dist), 1935b (Dist), Stange 2004 (Mon),

Valid but misidentified species

Myrmeleon doralice Banks, 1911 – Whittington 2002 (Dist)

Taxonomic status remained uncertain

Necrophylus arenarius Roux, 1833 – Roux (1833) only larva description
Neuroleon deceptor Navás, 1915
Neuroleon deceptor Navás, 1915 – Navás 1915 (Odescr), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon)
Neuroleon maroccanus Navás, 1912
Neuroleon maroccanus Navás, 1912 – Navás 1912a (Odescr), Aspöck & Hölzel 1996 (Chlist), Aspöck et al. 2001 (Mon), Stange 2004 (Mon)
Myrmecaelurus segonzaci Navás, 1912
Myrmecaelurus segonzaci Navás, 1912 – Navás 1912d (Odescr), Stange 2004 (Mon)

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