

*"On the other hand, what is this Eastern
aeshnoides?"* (Morton 1926) – an undescribed
Palpares species from the Eastern Mediterranean
(Neuroptera: Myrmeleontidae)

LEVENTE ÁBRAHÁM

Somogy County Museum, Natural History Department,
H-7400 Kaposvár, P.O. Box 70, Hungary, e-mail: labraham@smmi.hu

ÁBRAHÁM, L: *"On the other hand, what is this Eastern aeshnoides?"* (Morton 1926) – an undescribed *Palpares* species from the Eastern Mediterranean (Neuroptera: Myrmeleontidae).

Abstract: This paper summarizes the history of *Palpares libelloides* (Linnaeus, 1764) and related taxa described from the Mediterranean in the neuropterological literature. Based on these results *Palpares assyriorum* sp. n. from Syria, Jordan, Turkey and Israel is described. *Libellula turcica* Petiver & Empson, 1767 is a new homonym of *Libellula* Linnaeus 1758 (Odonata) (hom. n.) and a new synonym of *Palpares libelloides* (Linnaeus, 1764) (syn. n.). *Palpares aeshnoides* is a nomen nudum, only a collection name. *Palpares chrysopterus* Navás, 1910 is a valid taxon and *Palpares turcicus* Koçak, 1976 (syn. n.) is a new junior synonym of *Palpares chrysopterus* Navás, 1910.

Keywords: ant-lion, new species, *Palpares*, Mediterranean

Introduction

Even though the large and decorative *Palpares libelloides* (Linnaeus, 1764) is a well-known ant-lion species, in taxonomical, nomenclatural and faunistical literature, the status and the distribution of this species and its related taxa has been unclarified in the entomological publications for centuries.

The only one taxon, "*Palpares libelluloides* (Linnaeus, 1767)" from Southern Europe was mentioned by ASPÖCK et al. (1980) in their monograph. This taxon was considered morphologically variable, and *Palpares hispanus* Hagen, 1860 from the Iberian Peninsula was not regarded as a separate species.

Twenty years later, species status of *Palpares hispanus* was changed by ASPÖCK et al. (2001) but they emphasized that "*Palpares libelluloides*" and related taxa were very variable in this work. On the whole, both excellent works agreed that the taxonomical status of "*Palpares libelluloides*" and its closely related *Palpares hispanus* Hagen, 1860 is uncertain.

In a recently published prominent book, KRIVOKHATSKY (2011) is concerned with the taxonomical status of the species belonging to the *Palpares* genus in the Mediterranean. He came to the conclusion that the name of "*Palpares libelluloides* (Linnaeus, 1767)" was used for several valid taxa (*Palpares hispanus* Hagen, 1860, *Palpares aeshnoides*

(Illiger, 1807), *Palpares papilionoides* (Klug in Ehrenberg, 1834), *Palpares turcicus* Koçak, 1976) but their distribution is not clear.

Not only in the above mentioned works but also in many papers the opinion of neuropterologists varies on the validity of the different taxa. One can find numerous arguments for and against the existence of these taxa in the neuropterological literature, which I intend to follow closely later in this study.

So I started to deal with the taxonomic and nomenclatural problems described above, when a larger series of collected material was available to me from Turkey and later from Iran. However, I got the real motivation when wanted to put a dozen *Palpares* from Syria into the entomological collection of Somogy County Museum (SCMK) and noticed that all of these specimens in size and morphological characters differ significantly from those taxa found in Eastern Mediterranean. After reading some papers, I had to realize quickly that there was a complex taxonomic and nomenclatural problem.

Material and methods

The research work was carried out in two general directions. First of all, I thoroughly studied all the literature ever published on taxonomical, nomenclatural and faunistical data concerning to *Palpares* species.

The other part of the research consisted of the thorough morphological study of the types and topotypes, the samples collected around their sites of origin of the type material. Examined materials are listed in the results and discussion chapter.

Results and discussion

In the first part, the taxa collected in or ever reported from the Mediterranean area are focused and then the information found in the literature based on our recent knowledge are reevaluated.

The second part of the section describes the results of taxonomical examinations.

Abbreviations: Chlist – Checklist, Comb – New combination, Dist – Distribution, K – Key with comment, Mon – Monograph, Morf – Morphology, Nom – Nomenclature, Odescr – Original description, Syn – Synonym, Syst – Systematics

Palpares Rambur, 1842 – a short historical outline on the genus

Type species: *Hemerobius libelloides* (Linnaeus, 1764) designated by CHENU & DESMAREST 1859 (as *Palpares libelluloides* [sic!] (Linnaeus, 1767)).

The largest (the length of fore wing 30-80 mm) and most decorative species with darkly spotted wings belong to the subfamily Palparinae Banks, 1911. The subfamily is characterized by not connecting 1A and CuP in the fore wing and pronotum shorter than wider apart from some exceptions.

In the 10th edition of the *Systema Naturae*, LINNAEUS (1758) classified some species into the order of Neuroptera and the genus of *Hemerobius*, which nowadays are considered different species of Neuroptera families (Chrysopidae, Hemerobiidae, Myrmeleontidae).

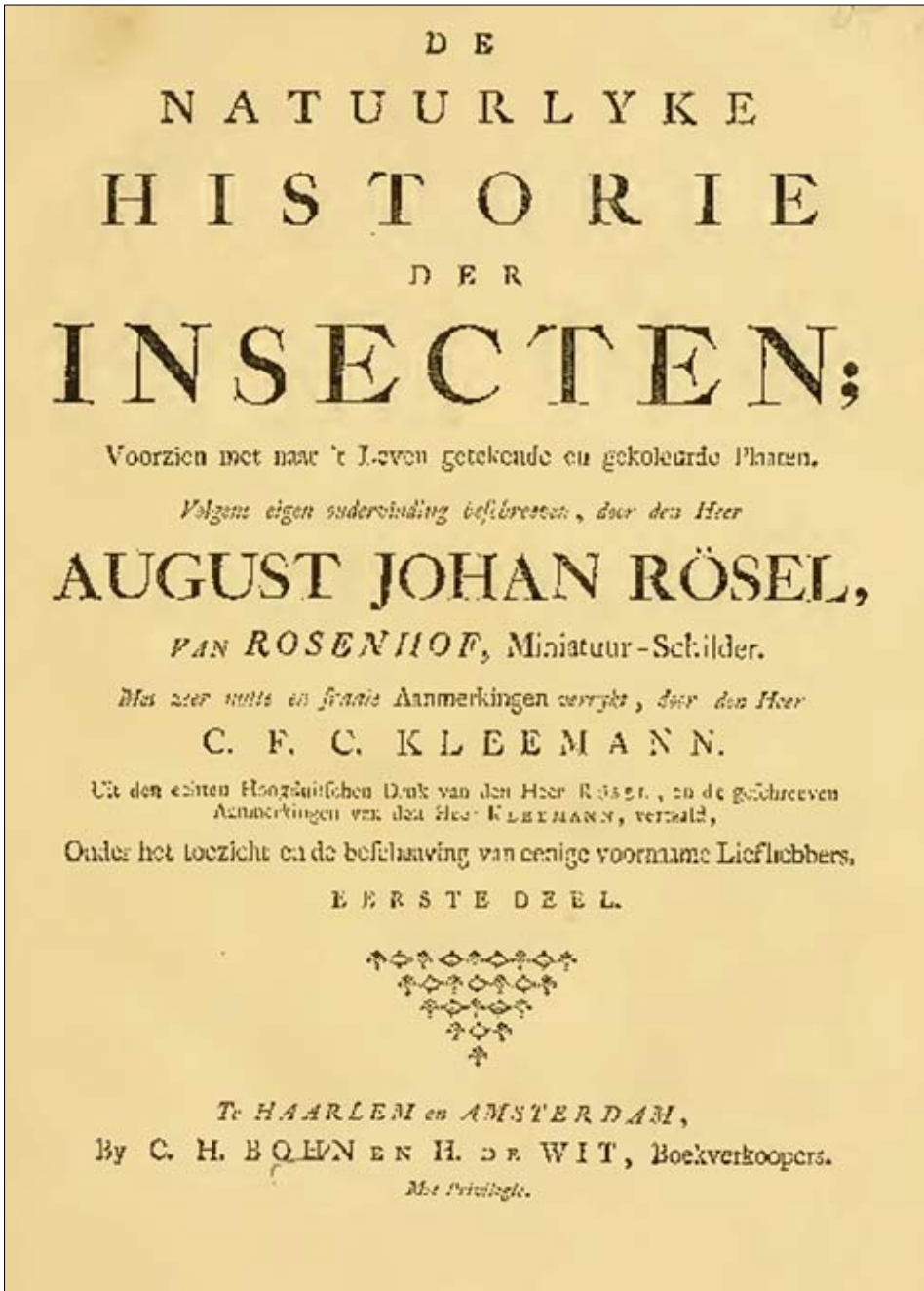


Fig. 1: Inner title page from Rösel & Kleemann's book (1764-68)

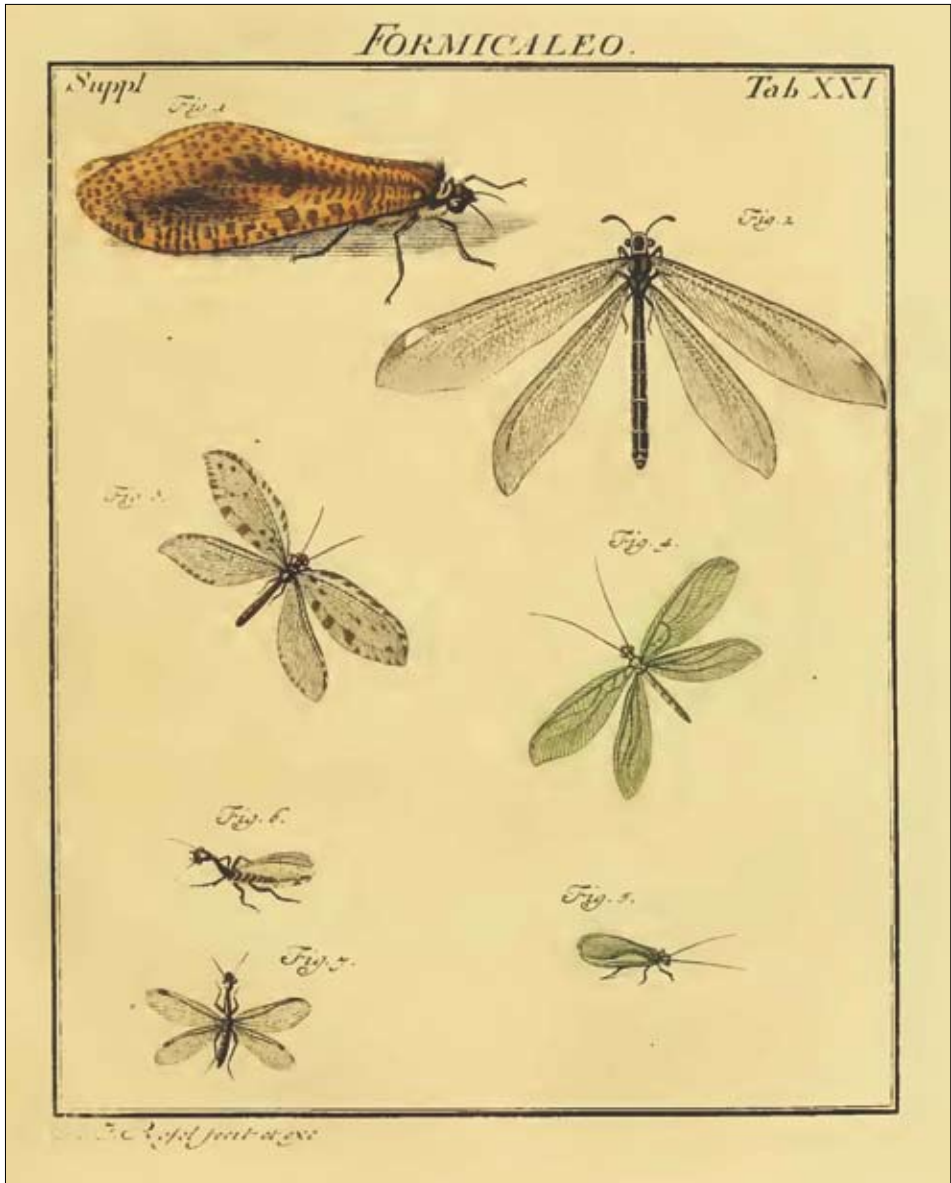


Fig. 2: *Palpares speciosus* (Linnaeus, 1758) "Fig. 1." - was artistically illustrated by RÖSEL (1755)

In the 12th edition of the *Systema Naturae*, LINNAEUS (1767) moved the ant-lion species in the genus *Myrmeleon* Linnaeus, 1767 (e.g. as "*Myrmeleon libelluloides*" Linnaeus, 1767). Almost a hundred years later the genus *Palpares* Rambur, 1842 was described but the type of specimen was not yet designated by RAMBUR (1842) since *Myrmeleon libelluloides* was also a well known species in Europe. This designation was done later on by CHENU & DESMAREST (1859) as "*Palpares libelluloides* (Linnaeus, 1767)" occurring in Southern Europe and in and around Asia Minor.

***Palpares speciosus* (Linnaeus, 1758) – the first described *Palpares* species**

Myrmeleon maculatum De Geer, 1773 - DE GEER 1773 (Odescr), FABRICIUS 1775 (Syn), RAMBUR 1842 (Syn)

Myrmecoleon speciosus (Linnaeus, 1758) - BURMEISTER 1839 (Comb)

Palpares speciosus (Linnaeus, 1758) - RAMBUR 1842 (Comb)

In the 10th edition of the *Systema Naturae*, LINNAEUS (1758) described the species *Hemerobius speciosus* Linnaeus, 1758, which was moved by LINNAEUS (1767) into the genus *Myrmeleon* (as "*Myrmeleon speciosus*") later. Its description was only one line long, but he referred to the excellent figure of RÖSEL (1755) which was also published (RÖSEL et al. 1764-68) several times (Fig. 2).

It was reported the species from Africa and from the south of Europe ("*Africa et Europa australi*").

Even today, RÖSEL's (1755) illustration contributes to the easy determination of the first described *Palpares* species. Rösel, being an excellent illustrator, depicted the animals so realistically that his beautiful drawings often became the base of the species description by LINNAEUS (1758).

Although, the specimen of *Palpares speciosus* was originally deposited in the Linnaeus's collections is uncertain (Fig. 3). In fact, the insect collection was rearranged and supplemented by the son of Linnaeus and Smith. Possible, the labels were moved



Fig. 3: The specimen of *Palpares speciosus* (Linnaeus, 1758) with labels preserved in the collection of the Linnean Society of London, in lateral and ventral views, specimen number: 2352

and transferred several times (FITTON and HARMAN 2007). Originality is supported by the fact that wings are not arranged and the pin is from Linnaeus's era. Contradict it: there is no the original label with species name. Although, the label "*papilionoides*" was written by Linnaeus with his typical handwriting which refers to the trivial name which used for color wing neuropterans (ant-lions and owl-flies). On the other hand, Linnaeus did never use the name of "*papilionoides*" for any ant-lions described by him. The largest second label "*libelluloides*" was written by Smith after purchasing the collection in 1784 when he relabeled the collection based on the 12th edition of the *Systema Naturae*.

Supposedly LINNAEUS (1758) knew about distribution of *Palpares libelloides* (Linnaeus, 1764) in the south of Europe from the work of PETIVER (1702) or RAY (1710), but he did not recognize the status of this taxon (*Palpares libelloides*) based on the descriptions and the illustrations (Fig. 4). The inaccurate distribution of both species (*P. speciosus* and *P. libelloides*) described by LINNAEUS (1758, 1764) caused taxonomical confusion later on.

OLIVIER (1811), however, reported this species only from Africa and distinguished between *Palpares* species (*P. speciosus* and *P. libelloides*) described by LINNAEUS (1758, 1764) based on morphologically and their distribution.

CHARPENTIER (1825) compared the two taxa morphologically and confirmed their different taxonomical status, but he could not clarify the differences between their occurring places.

The name of this species reappears in the monograph of BURMEISTER (1839), who classified the ant-lion species in the genus *Myrmecoleon* Berthold, 1827. He regarded *P. speciosus* (as *Myrmecoleon speciosus*) as a valid taxon, separating it from the species *P. libelloides* (as "*Myrmecoleon libelluloides*"). He distinguished between the two species morphologically as well as according to their distribution. Only South Africa was specified as the distribution for *P. speciosus*.

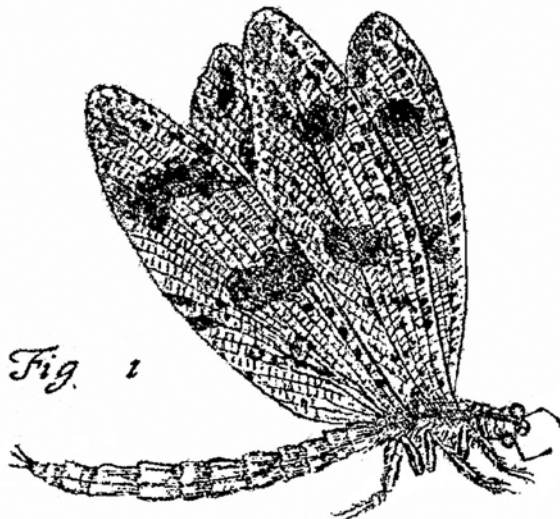


Fig. 4: *Libellula turcica* figured by PETIVER (1702)

Later on RAMBUR (1842) put the species into new combination as *Palpares speciosus* (Linnaeus, 1758), reporting the occurrence of the species only from the southern part of Africa (*cap de Bonne-Espérance*). RAMBUR (1842), who had described several *Palpares* species by then listed 16 *Palpares* species altogether in his monograph. He did not find CHARPENTIER'S (1825) morphological comparison convincing enough and he doubted that Charpentier had really diagnosed *P. speciosus*.

Based on our recent knowledge it can be concluded that the distribution of *Palpares speciosus* (Linnaeus, 1758) is only spread in the southern hemisphere in Africa (South Africa), (MANSELL and ERASMUS 2002) and it is significantly different from the *Palpares libelloides* (Linnaeus, 1764) which distributed in the southern part of Europe and in Asia Minor.

The current status of *Palpares speciosus* (Linnaeus, 1758) is a valid (STANGE 2004) but the combination needs to be revised (MANSELL 2010).

***Palpares libelloides* (Linnaeus, 1764) or *Palpares libelluloides* (Linnaeus, 1767)**

Hemerobius libelloides Linnaeus, 1764 - LINNAEUS 1764 (Odescr)

Libellula turcica Petiver & Empson, 1767 - PETIVER & EMPSON 1767 (hom. n., syn. n.)

Myrmeleon libelluloides [sic!] (Linnaeus, 1764) - LINNAEUS 1767 (Comb)

Myrmecoleon libelluloides (Linnaeus, 1767) - BURMEISTER 1839 (Comb)

Palpares libelluloides (Linnaeus, 1767) - RAMBUR 1842 (Comb)

Palpares libelloides (Linnaeus, 1764) - HAGEN 1866 (Comb), STANGE 2004 (Comb)

Six years after *Palpares speciosus* (Linnaeus, 1758) was described, another species of the genus *Palpares* was also described as "*Hemerobius libelloides* Linnaeus, 1764". According to LINNAEUS (1764), the area ("*Europe australi, Aleppo, Cap. b. spei*") of this species was Southern Europe, Aleppo (Syria) and Cape of Good Hope, (South Africa). His description is much more detailed than that of *Palpares speciosus* described earlier. His work was probably facilitated by PETIVER (1702) who earlier mentioned and illustrated (Fig. 4) a species from Aleppo named as "*Libellula turcica*".

At the end of the 17th and at the beginning of the 18th century, James Petiver (1663-1718), an English researcher had significant achievements in several areas of science. He adopted the binominal nomenclature from the prominent naturalist John Ray (1627-1705), using binominal names to the living organisms. This nomenclature was effectively introduced only after the 10th edition of the *Systema Naturae*, in which a systematic scientific description was given of each species by LINNAEUS (1758). Petiver had such a telling affect, that his works were amended and published post mortem several times (PETIVER and EMPSON 1767). Today the species *Libellula turcica* Petiver & Empson, 1767 is to be considered a junior synonym of *Palpares libelloides*, since it meets the requirements of taxonomical methodology but the valid name was given three years earlier by LINNAEUS (1764). Besides this, the genus *Libellula* Petiver & Empson, 1767 in Neuroptera is a new junior homonym of *Libellula* Linnaeus, 1758 (Odonata).

Contemporaneously with the work of PETIVER & EMPSON (1767), LINNAEUS (1767) published the 12th edition of the *Systema Naturae*, in which the species *Palpares libelloides* was listed again as "*Myrmeleon libelluloides*" in a new combination. While quoting his own work (LINNAEUS 1764) he either misspelled the name of this species or it was misprinted.

The original label handwritten by Linnaeus would solve the above mentioned question. The two specimens in the collection of the species can be found. The specimen number: 4924 has prepared wings but no labels (Fig. 5), its pin seems to be from Linnaeus's era. The specimen number: 4917 has wings at resting, labeled as "*Genoa*



Figs. 5-6: The specimen of *Palpares libelloides* without label and with arranged wings, specimen number: 4924 (Fig. 5); the specimen with label as "Genoa 1787" [Italy] and wings are in resting position, the specimen number: 4917 (Fig. 6) from the collection of the Linnean Society of London



Fig. 7: An excellent colour drawing of "*Myrmeleon libelluloides*" from Smyrna (today: Izmir), Turkey (DRURY 1770)

1787" [Italy] (Fig. 6). In 1778 Linnaeus died, probably Smith labeled the specimens because his handwriting is typical but the pin seems to be used in Linnaeus era.

This miswriting was first noticed by HAGEN (1866) who synonymized it as "*Libelloides L. Mus. L. Ulr. 401 = Palpares Libelluloides L.*". In the literature of neuropterology this was, however, long forgotten. Even HAGEN (1866) started to use the name *Palpares libelluloides* in his papers. Up to now, in the catalogues, publications and databases, almost without an exception (STANGE 2004, OSWALD 2007) have been using the names of *Palpares libelluloides*. As the 12th edition of the Systema Naturae was the most widely used in scientific works, the species was mentioned in the literature under this name for more than 200 years.

When the name "*Myrmeleon libelluloides*" was mentioned for the first time by LINNAEUS (1767), he also stated that *Libellula turcica* described in PETIVER's work (1702) was identical with "*Hemerobius libelloides*" described by him. He came to the same conclusion about the species named as "*Musca rarissima*" which was reported from Italy after the death of RAY (1710). However, he did not seem to know the exact distribution of the species, since he reported the occurrence from "*Oriente, Africa, inque Cap. b. spei*" (Asia Minor, Africa and Cape of Good Hope, South Africa) besides the southern part of Europe.

Being a very large and decorative species among the insects, *Palpares libelloides* is often illustrated in taxonomical studies. These figures help identify the species because the short descriptions at places often do not carry enough information to identify the species belonging to the genus *Palpares*. The illustration of RÖSEL et al. (1764-68) (Fig. 2) is a good example along with DRURY's (1770) drawings (Fig. 7) and his most detailed description ever given for a specimen found in Smyrna (today Izmir, Turkey) named as "*Myrmeleon libelluloides*".

DRURY (1770) realized that the specimen from South Africa ("Cape of Good Hope") and the ones from Asia Minor were not conspecific but he did not recognize the difference between the two species, *P. libelloides* and *P. speciosus*. Ten years later, DRURY (1782) described and illustrated an ant-lion specimen from Sierra Leone as a variety of *Palpares libelloides*. However, this description and drawing later on were proved to belong to the species *Lachlathetes gigas* (Dalman, 1823) (Fig. 8) (DALMAN 1823).



Fig. 8: A variety of *Palpares libelloides* from Sierra Leone (DRURY 1782) which was described by Dalman in 1823 as "*Myrmeleon gigas*"

The Swedish entomologist, De Geer (1752-1778) found Linnaeus system too progressive and he just partially used the binominal nomenclature in his works, often changing the names given by Linnaeus. This is how *Palpares speciosus* was renamed as "*Myrmeleon (maculatum)*" (De Geer 1773). It should be marked though that the figure in the work of DE GEER (1773) (Fig. 9) is similar to the earlier depicted *Palpares speciosus* (RÖSEL 1740), where the insect was presented in a natural position, at rest, with the closed wings above the abdomen. The wing patterns of the depicted animal are, however, similar to *Palpares libelloides*. The specimen described by De Geer (1773) was wrongly synonymized (FABRICIUS 1775) by a student of Linnaeus, the Danish Fabricius (1745-1808). According to him *Myrmeleon maculatum* De Geer, 1773 is a junior synonym of *Palpares libelloides*. By RAMBUR (1842), however, *Myrmeleon maculatum* occurring in Africa is the junior synonym of *Palpares speciosus*, which is accepted in the present day scientific nomenclature.

A thorough look at the species description of *Palpares libelloides* (as *Myrmeleon libelluloides*) in "*Systema Entomologiae*" can shed some light on the wrong synonym given by FABRICIUS (1775) since he marked South Africa as the distribution following LINNAEUS (1764, 1767). At the same time he claimed that *Palpares speciosus* was a somewhat variety of *Palpares libelloides* ("*A Hemerobius speciosus Linnaei ejusdem speciei?*") which is contradictory if the description year of the two species is considered. In his later works, FABRICIUS (1787, 1793) reported South Africa as the area for *Palpares libelloides*. Presumably the false distribution data, reported by LINNAEUS (1758, 1764, 1767), caused FABRICIUS (1775) not to separate the two species precisely.

Shortly after the first major work by FABRICIUS (1775), a report of the species was published in German as "*Myrmeleon libelluloides*" in the monograph published by SULZER (1776). While mentioning the species from Sicily he also documented the species with a very nice drawing, but the pattern on the hind wings and the body of *Palpares libelloides* is not typical (Fig. 10).

Another German entomologist, GMELIN (1788), following the *Systema Naturae* by LINNAEUS (1767), mentions "*Myrmeleon libelluloides*" as distributed in South Africa.

One year later, in the third volume of his comprehensive entomological study, the French VILLERS (1789) referred to the species as "*Myrmeleon libelluloides*" and he quoted the names and the figures of former researchers, adding South of France as a new record of distribution.

Fig. 9

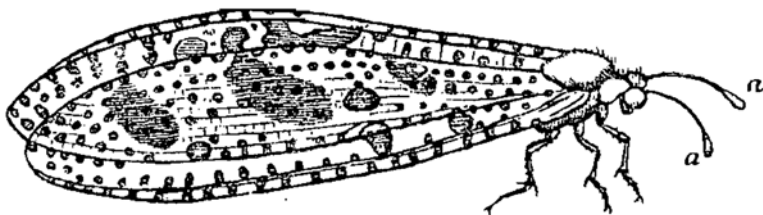


Fig. 9: De GEER's (1773) figure on "*Myrmeleon (maculatum)*" which was synonymised by RAMBUR (1842) as "*Palpares speciosus*"

IV. NEUROPTERA.

Hemerobius. 1. 2. *Myrmeleon*. 3. 4. *Panorpa*. 5. 8. *Raphidia*. 9. 10.

Tab. XXV.

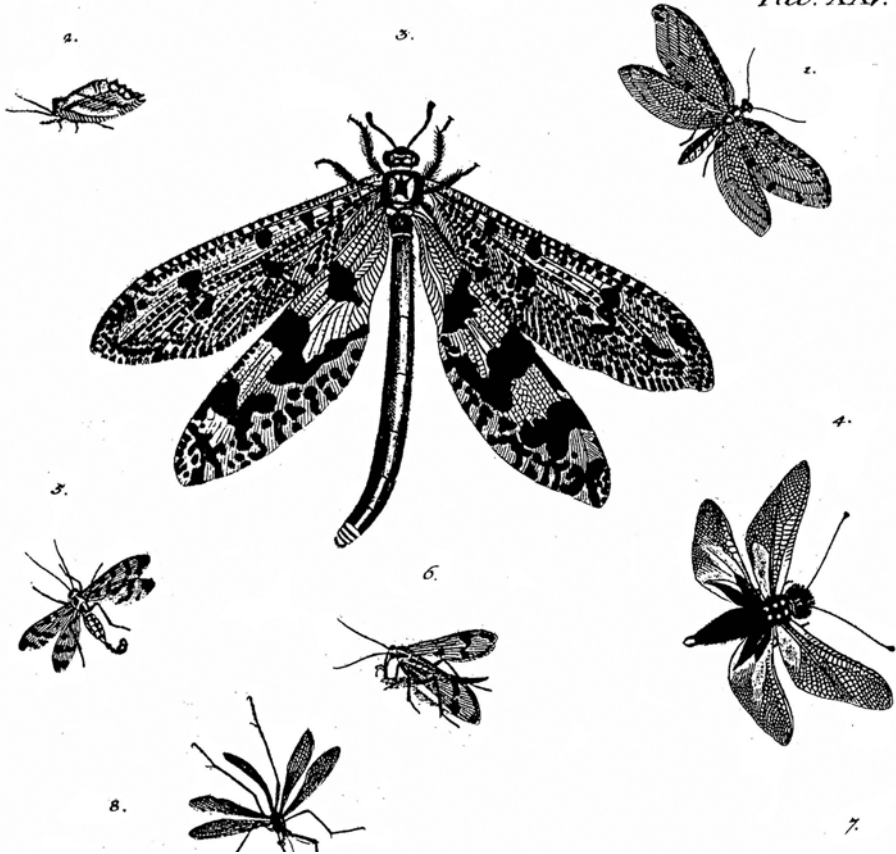


Fig. 10: SULZER's (1776) illustration on "*Myrmeleon libelluloides* Fig. 3", however, the specimen may not be conspecific with *Palpares libelloides* or the drawing is rather artistic than realistic

In the first edition of "*Fauna Etrusca*" (ROSSI 1790) two recording sites of *Palpares libelloides* (as "*Myrmeleon libelluloides*") ("*Florentine; Pisano*" - Firenze; Piza) were mentioned from Italy. In his work ROSSI (1790) cited from several earlier monographs (LINNAEUS 1758, 1767, DRURY 1770, DE GEER 1773, RAY 1710, PETIVER 1702). It is a matter of curiosity that based on the species conception of FABRICIUS (1775), he probably considered both *Myrmeleon maculatum* and *Hemerobius speciosus* synonyms for *Myrmeleon libelluloides*. Besides this, he also described a new taxon from the vicinity of Piza as "*Myrmeleon libelluloides pisanus*" which proved to be the junior synonym of *Acanthaclisis occitanica* Villers, 1789 later.

The distribution of the species was still not known by the first half of the 19th century. LEACH (1815) reported "*Myrmeleon libelluloides*" from the southern part of Europe and from Africa ("*the south of Europe, and all Africa*"). A couple of years earlier the French OLIVIER (1811) gave the distribution accurately as France, Greece, Italy and the eastern half of the Mediterranean Basin (as "*Levant*").

A few years before the species was combined to genus *Palpares*, the knowledge of the distribution of *P. libelloides* (as "*Myrmecoleon libelluloides*") was completed by BURMEISTER (1839) by adding North Africa and the South of Europe to the species distribution.

In "*Histoire Naturelle des Insectes*", RAMBUR (1842) described the genus *Palpares* and he listed all the taxa described or illustrated in his earlier works (SAVIGNY 1805-1814, KLUG in EHRENBERG 1834) under the name of "*P. libelluloides* Linné". However, the distribution of the species was not clarified. He described a new morphological form of the species, marked as "*Variété A*". He reported its occurrence from "*l'Andalousie et du cap de Bonne-Espérance Andalusia*" (South of Spain and South Africa). By doing so he pointed out the morphological characteristics of the later described *Palpares hispanus* Hagen, 1860, but he did not recognize the taxonomical status of *Palpares papilionoides* (Klug in Ehrenberg, 1834) by examining only one female specimen (more information below).

The usage of names such as *libelloides* or *libelluloides*, is still a nomenclatural controversy. In the voluminous monographs, ASPÖCK et al. (2001) and KRIVOKHATSKY (2011) preferred the traditional names (*Palpares libelluloides*). On the other hand, in STANGE'S (2004) monograph and OSWALD'S (2007) database the name *Palpares libelloides* was recommended. KRIVOKHATSKY (2011) suggested the usage of *libelluloides*, because this was the name the topotype of this species was referred as (CHENU and DESMAREST 1859). The current status of *Palpares libelloides* (Linnaeus, 1764) is a valid (STANGE 2004).

The history of the name of Myrmeleon aeschnoides up until present

Myrmeleon aeschnoides – ILLIGER in ROSSI 1807 (**nomen nudum**)

Palpares aeschnoides (Illiger, 1807) - HAGEN 1866 (Comb)

In the second edition of "*Fauna Etrusca*" (ILLIGER in ROSSI 1807), the German entomologist, Johann Karl Wilhelm Illiger (1775-1813) completed the work of ROSSI (1790) (Fig. 11). In this book a new name of *Palpares libelloides* was mentioned, marked by ILLIGER in ROSSI (1807) as "♀ *M. Aeschnoides* Mus. Hellw. Hoffm."

In the editorial preface, ILLIGER in ROSSI (1807) stated that the symbol "♀", in front of the name of the species, referred to the synonym, which had never been used in the literature before. He found this name in the collection of Johann Christian Ludwig Hellwig (1743-1831) and Johann Centurius Hoffmann Graf von Hoffmannsegg (1766-1849).

The material collected between 1795-1801, in Hungary, Austria, Italy and Portugal by Hoffmannsegg was given to Illiger for revision when he stationed in Braunschweig (Brunswiek, Germany). His collection was the first one in the "*Berlin museum*" (ZMHB - Museum für Naturkunde der Humboldt Universität zu Berlin, Bereich Zoologisches Museum, Berlin, Germany), where Illiger was employed as a curator. ILLIGER in ROSSI (1807) in his work pointed out that the species (as "*Hemerobius speciosus*" and "*Myrmeleon libelluloides*") described by LINNAEUS (1758, 1764) had been mixed up by certain researchworkers. It is probably due to the fact that LINNAEUS (1758, 1764) reported the occurrence of the two species as identical. ILLIGER in ROSSI (1807) mentioned the name "*Myrmeleon Aeschnoides*" while comparing the specimens in his collection with the descriptions and illustrations of *Palpares libelloides* in other works (LINNAEUS 1758, DRURY 1770). Therefore *Myrmeleon aeschnoides* is a nomen nudum – that is, no adequate description of such species was ever published, it is only a naked name used in Hoffmannsegg's a collection. During my research I have tried to find the specimen labeled as "*aeschnoides*" in the Berlin (ZMHB) and the Braunschweig (SNMBR) museums but no specimens with the exact name were found.

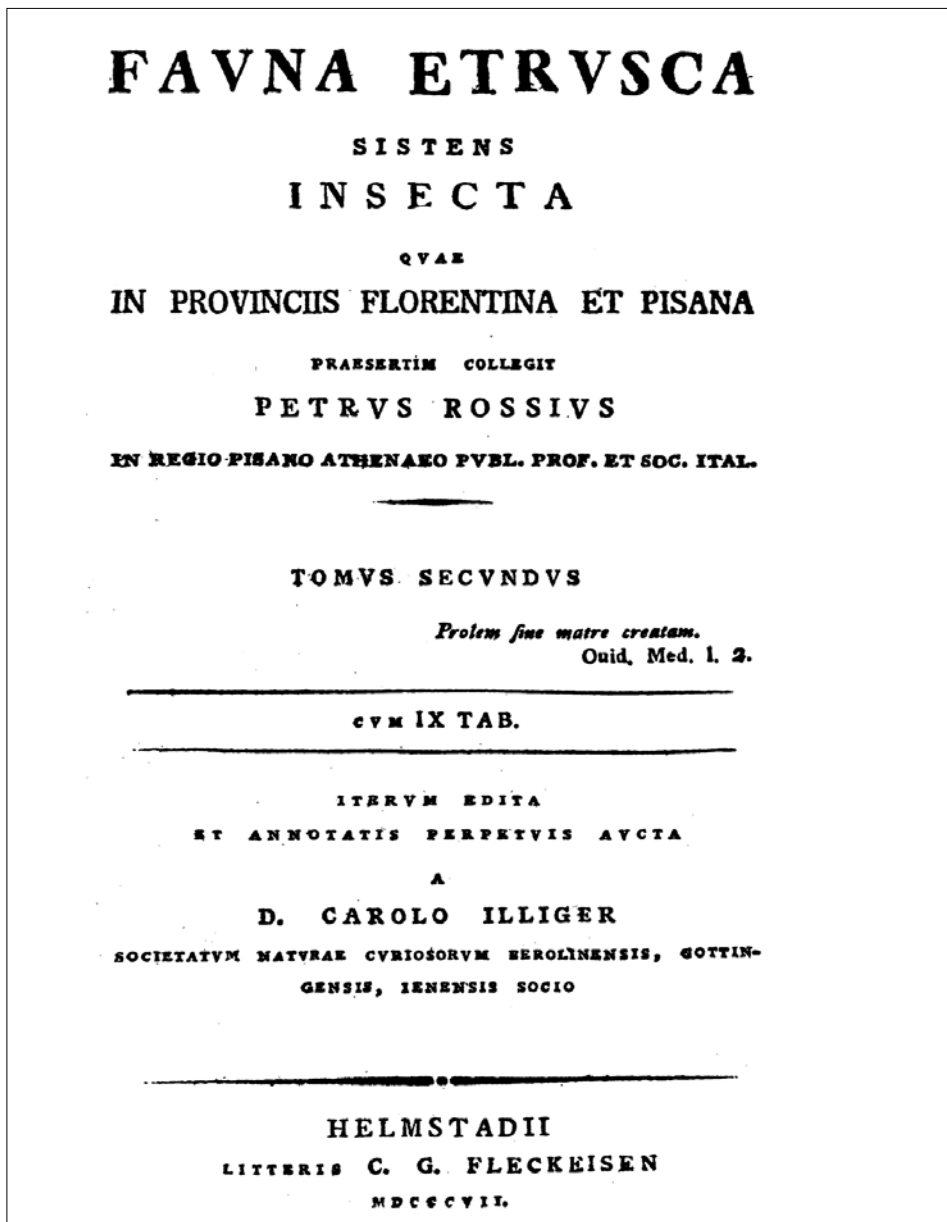


Fig. 11: Inner title page of Fauna Etrusca by ILLIGER in ROSSI (1807)

It is remarkable though, that DALMAN (1823) did not mention *Myrmeleon aeschnoides* but only referred from the work of ILLIGER in ROSSI (1807) as a monograph where a description was given on *P. libelloides* (as "*Myrmeleon libelluloides*").

Later on another German entomologist, CHARPANTER (1825) mentioned the name *M. aeschnoides* as the synonym of "*M. libelluloides*", but after that the name could not be found in the literature, too.

At the end of the first half of the 19th century, RAMBUR's (1842) monograph was the most detailed checklist, in which RAMBUR (1842) cited from the work of ILLIGER in ROSSI (1807), but he did not mention the name *Myrmeleon aeschnoides* as well.

It was HAGEN (1858) to first use the name of "*Myrmeleon aeschnoides*" for a species described by Illiger (as "*M. aeschnoides* Illiger Fn. Etrusc.") occurring in Asia Minor, but he considered it to be conspecific with *Palpares libelloides*. In one of his later paper HAGEN (1860a) affirmed this information on *Palpares hispanus* Hagen, 1860 and reported that the specimen deposited in "*Mus. Berol.*" (ZMHB Berlin) was from Asia Minor and it was the synonym of "*M. libelluloides*". Later on HAGEN (1860b, 1866) was tenacious of his opinion. Under the name of *Palpares aeschnoides* he listed the species into a new combination (HAGEN 1866), but he emphasized that morphologically it distinguished from the *Palpares hispanus* and he thought it to be a synonym of *Palpares libelloides* together with *Palpares nordmanni* (Kolenati, 1846) reported from the Caucasus Mountains.

From this point, several authors referred to this name as a valid taxon. In the second half of the 19th and the first half of the 20th century the name *Palpares aeschnoides* seemed to cause major misunderstandings among the neuropterologists, especially when they tried to determine the specimens from the Middle East.

BRAUER (1876), who probably had an insight of Hagen's work, mentioned three *Palpares* species (*P. libelluloides*, *P. hispanus*, *P. aeschnoides*) when compiling the checklist of Neuroptera in Europe, but he was not sure that "*Palpares Aeschnoides* Illig. ? = *libelluloides* Dalm. var. *Kleinasion*" was a valid taxon.

McLACHLAN (1873) studied some ant-lion species described by RAMBUR (1842) and among them some *Palpares* species. In his work, the species reported from the Arabian Peninsula by KLUG in EHRENBURG (1834) were supposed to be conspecific with the ones from the Mediterranean. He considered *Palpares papilionoides* (Klug in Ehrenberg, 1834) a local variety of *P. libelloides*, but on the other hand, in the same monograph, he assumed the species illustrated as "*Myrmeleon papilionoides varietas*" was conspecific with *P. aeschnoides* described by Illiger. McLACHLAN's (1873) assumptions can later be found in the English neuropterological literature.

One year later KOLBE (1884) also studied some *Palpares* specimen collected in the Mediterranean (South of Europe, North Africa and Asia Minor). From taxonomical point of view, he did not distinguish between *P. libelloides* (as "*P. libelluloides*") and *P. hispanus*. He regarded *P. libelloides* as a variable species occurring in the whole Mediterranean. Therefore he reported *P. libelloides* not only from Morocco in North Africa, but also from Senegal. He made a remark, however, that the specimen from Senegal differed from *P. libelloides* known in Dalmatia (Croatia) and Greece, considering the patterns and the size of the wings.

Based on the research of PROST (2010) AKOUDJIN and MICHEL (2011), we can conclude that the species mentioned above are definitely not conspecific with *P. libelloides*. Today's knowledge of species distribution excludes the possibility of the occurrence of *P. hispanus* in Senegal.

KOLBE (1884) regarded the taxon from the eastern half of the Mediterranean ("*Brussa und Syrien*") as specimen similar to species *P. aeschnoides* mentioned by HAGEN (1860b), but when summarizing his opinion about the taxa he agreed to a revision considering the species of *Palpares*.

In one of his later studies, HAGEN (1887) mentioned the name of *P. aeschnoides* as a synonym of *Palpares papilionoides* Klug in Ehrenberg, 1834 (as "*Myrmeleon papilionoides*"). These synonyms later on cannot be found in the neuropterological literature.

A couple of years after the publication of KOLBE (1884), the name of *P. aeshnoides* appeared again in the paper of MCLACHLAN (1889) when investigating the fauna of the Strait of Gibraltar. In this work, MCLACHLAN (1889) did not investigate the taxon *P. aeshnoides* (as "*var. aeshnoides* Illig.") but he shed some light on the differences between *P. hispanus* and *P. libelloides* from morphological and distributional point of view. He drew borderline of the area of *P. libelloides* from the southern parts of France to Syria. Unlike KOLBE (1884) he regarded the two valid species and gave a differential diagnosis between them. He also criticized KOLBE (1884) for reporting *P. libelloides* from Africa, which led to confusion about the distribution of this species. To make things worse he mixed up the morphological characters of *P. libelloides* and *P. hispanus*. MCLACHLAN (1889) therefore emphasized that *P. libelloides* did not occur in South Africa. He also supposed that *P. libelloides* var. *aeshnoides* can be found in the north-east of Africa (a smaller form of *P. libelloides* from Egypt). This assumption was based on the figure (Fig. 12) of the beautifully illustrated monograph of SAVIGNY (1805-1814) which shows a life-sized, habitus drawing with all its body parts (mandible and labial palps).

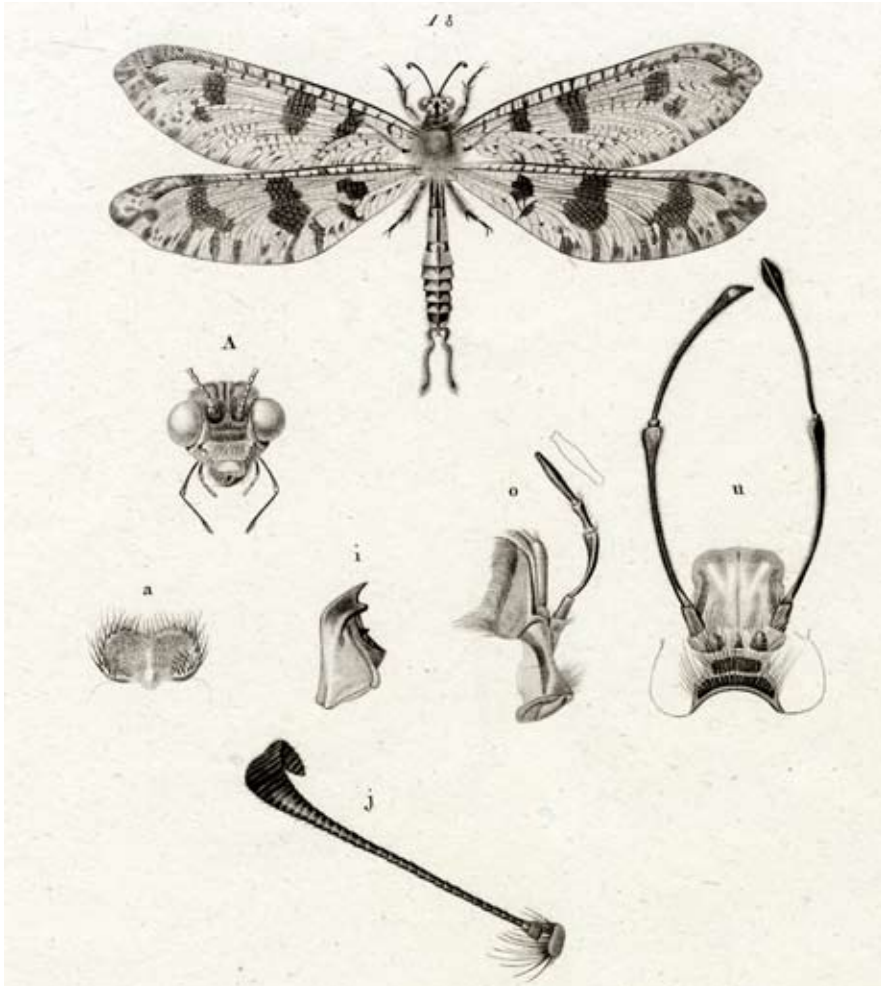


Fig. 12: SAVIGNY's (1805-1814) figures from "*Description de l'Égypte névroptères par Vol 2.*"

During the Egyptian campaigns, Napoleon decided to take with him a corps of scholars in order to discover the natural and cultural treasures. Savigny (Marie Jules César LeLorgne de Savigny, 1777-1851) was an excellent illustrator working in the zoological section run by Geoffroy (Étienne Geoffroy St. Hilaire, 1772-1844). During the expedition he drew two big plates of the neuropteran species, but no description of the species was given, and only the orders were identified (SAVIGNY 1805-1814). Several undescribed species were recorded by his artistic drawings which had been unknown to science until then. Among these are, for example, *Libelloides ictericus* (Charpentier, 1825), *Bubopsis hamata* (Klug in Ehrenberg, 1834), *Nemoptera aegyptiaca* Rambur, 1842, and *Nophis teillardii* Navás, 1912 etc. which were described only several years later.

After the turn of the 20th century, KLAPÁLEK (1906) reported the name *P. aeshnoides* (Fig. 13.) from Enyusek (Enyusek Dagħ Taurus) (now in SE Turkey) in a paper, in which he listed three *Palpares* species. He separated *P. libelloides* (as "*P. libelluloides*") from *P. hispanus*, but it is worthy of note, that he did not give the author name to the third taxon *P. aeshnoides* unlike in the case of the other two taxa the abbreviations of authors were given. Therefore, it can be concluded that KLAPÁLEK (1906) was aware of the existence of the eastern Mediterranean species different from the *P. libelloides*, but he identified it as *P. aeshnoides*, probably based on HAGEN's (1958) work.

At the beginning of the 20th century, the name *P. aeshnoides* appeared in a study about the morphology of insects' wings (COMSTOCK 1918). The drawing illustrated the wing venation of a *Palpares* species. The occurrence of the species illustrated was not reported.

"On the other hand, what is this Eastern aeshnoides?" – it is a question, first worded by MORTON (1926), and published earlier on by MCLACHLAN (1873, 1889) which seemed to be under debate by all the entomologists studying specimens from the Middle East. MORTON (1926) investigated the ant-lion fauna of Palestine, and based on the results of MCLACHLAN (1889), he realized that the specimen he studied did not belong to either *P. libelloides* or *P. hispanus*. Being aware of this problem, he showed his specimen to Esben-Petersen, a prominent Danish neuropterologist of his age, who identified it as *P. hispanus*. He also clarified that the species *P. papilionoides* (Klug in Ehenberg, 1834) reported from Palestine by NAVÁS (1912) was also based on a false identification. However, the species *Palpares chrysopterus* Navás, 1910 described by NAVÁS (1910) was not taken into consideration.

From this time forth, the most extensive monographic coverage of the fauna of this area was presented by HÖLZEL (1972). Only some specimens of *P. libelloides* collected in Anatolia (Asia Minor) and Syria were available for HÖLZEL (1972) and among these, no specimens were found bearing the morphological characters of *P. hispanus*. Based on the research of MORTON (1926), HÖLZEL (1972) assumed that *P. aeshnoides*, a variety of *P. hispanus* could be found in the Middle East.

In the monograph of ASPÖCK et al. (1980, 2001), the species *P. libelloides* was regarded as an extremely polymorph taxon, and the validity of *P. hispanus* was questioned and KRIVOKHATSKY (1998a) was not cited.

In the faunistical work of KRIVOKHATSKY (1998a, 2011), the name "*P. aeshnoides* (Illiger, 1807)" appeared as a valid species besides *P. libelloides* and *P. hispanus*. The drawings of the wings and the genitalia were illustrated (Fig. 14). In addition, KRIVOKHATSKY (1998b) presented it as a valid taxon from Israel in his online database (ZIN database). In the Upper Silesian Museum (USMB Bytom, Poland), I found a specimen collected also in Israel identified as 1 female / "*Israel Camp Ziouani en. Ziwan (Gollan hills) III-IV. 1996 leg. R. Rosa / P. aeshnoides Ill. [sic!] det. Krivokhatsky*" (Fig. 15).

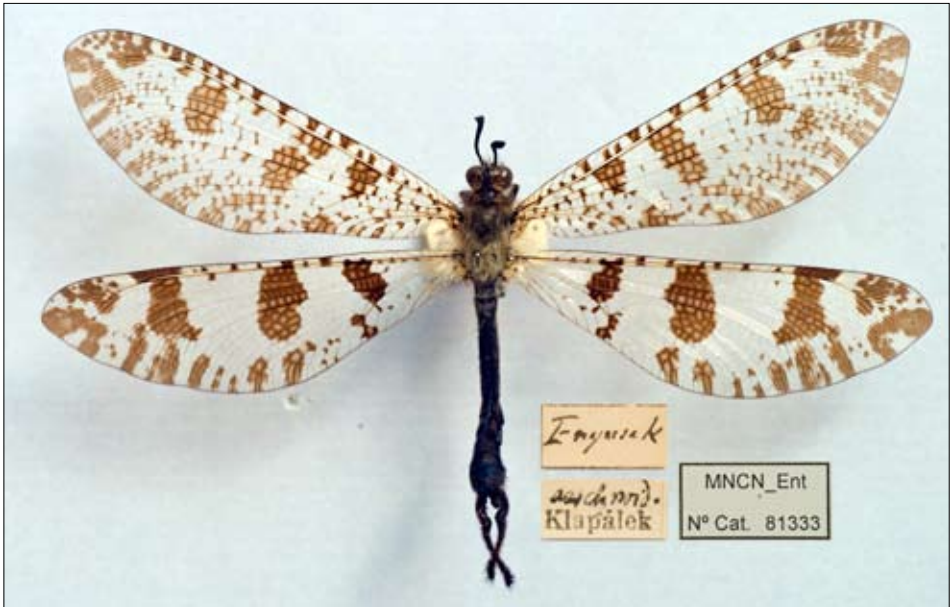


Fig. 13: The specimen determined by Klapálek as *Palpares aeschnoides* in coll. MNCN, Madrid

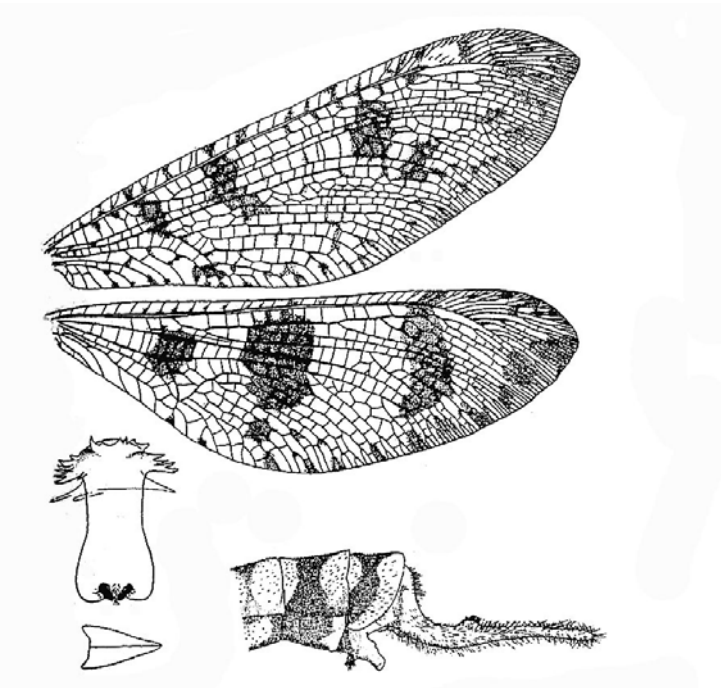


Fig. 14: KRIVOKHATSKY's (1998a) original figures on "*P. aeschnoides* (Illiger, 1807)" wings and male genitalia



Fig. 15: The female specimen from the collection of USMB (Bytom) determined by Krivokhatsky as "*P. aeshnoides*" [sic!]

Following HAGEN (1858) and KRIVOKHATSKY (1998b), the species was mentioned by STANGE (2004) as a valid taxon as *Palpares aeshnoides* Illiger in Rossi 1807.

It can be concluded after all, that the name of *P. aeshnoides* is a nomen nudum. Based on the work of HAGEN (1858), the name is reoccurring in the neuropterological literature, and the taxon, significantly different from *P. libelloides* or *P. hispanus* was only revealed by some entomologists investigating the fauna of Middle East and the eastern Mediterranean. This was emphasized mainly by MORTON (1926), but the species was not described due to the nomenclatural ambiguity in the literature.

The current status of the taxon is an invalid.

Actual and supposed synonyms of Palpares libelloides

Myrmeleon libelluloides var. *nigriventris* Costa, 1855

Myrmeleon libelluloides var. *nigriventris* Costa, 1855 – COSTA 1855 (Odescr), PANTALEONI 1999 (Tax)

According to PANTALEONI (1999), the status of the taxon is a nomen dubium or a junior synonym. In Costa's collection, he could not find the type species originating from Calabria. The description of taxon provided by Costa was based on PETAGNA's (1787) work. According to our present knowledge, in Italy only the nominotypical form of *P. libelloides* can be found. Specimens of the species with different colours have no taxonomical value.

The current status of the taxon is an invalid.

***Palpares libelluloides* var. *nigripes* Navás, 1912**

Palpares libelluloides var. *nigripes* Navás, 1912 - NAVÁS 1912 (Odescr), DEVETAK 1992 (Tax)

NAVÁS (1912) mentioned only some differences in colour when he described this variety from the current distribution of the species ("Portugal, Spain, Italy, N. Dalmacia, Asia Minor"). Based on the syntypes described by NAVÁS (1912) from N. Dalmacia Gylek (MZBS), DEVETAK (1992) synonymized it.

The current status of the taxon is an invalid.

***Myrmeleon nordmanni* Kolenati, 1846**

Myrmeleon nordmanni Kolenati, 1846 - KOLENATI 1846 (Odescr), HAGEN 1858, 1860a,b (Tax), KRIVOKHATSKY 2003 (Tax)

KOLENATI (1846) described the taxon from the area of Caucasus. The scientific name was used by HAGEN (1858, 1860a,b) in several papers, each time accompanied by Hagen's comments claiming it to be conspecific with the species of *Palpares libelloides*. Although Hagen admitted that he personally could not examine the species but, based on the description given by KOLENATI (1846), he said it could easily be identified with the well-known and common species of the Mediterranean (*Palpares libelloides*). HAGEN (1860a,b) upheld his synonymization in his later papers as well. Thereafter, in later monographs, the name of the species only occurred on the list of synonyms (BRAUER 1876, ASPÖCK et al. 1980, 2001, STANGE 2004).

Finally, the status of *Myrmeleon nordmanni* Kolenati, 1846 was clarified by KRIVOKHATSKY (2003, 2011) when he designated a lectotype specimen labeled as "*Myrmeleon Nordmanni Caucasus*" by Kolenati in the ZIN collection (Saint-Petersburg), consequently confirming its synonymization with *P. libelloides*.

The current status of the taxon is an invalid.

***Palpares chrysopterus* Navás, 1910**

Palpares chrysopterus Navás, 1910 - Navás 1910 (Odescr), Navás 1913 (Descr), Aspöck et al. 1980, 2001 (Tax), Oswald 2007 (Tax)

Navás gave two descriptions of the species: first he described a male specimen (NAVÁS 1910) then a female (NAVÁS 1913); both specimens were from the area known today as Iran.

When describing the species for the first time, NAVÁS (1910) also published two illustrations. However, the published drawings did not feature the same specimen. The characteristic genitalia of "*Palpares chrysopterus* Nav. (fig. 3), Persia, Bazouft, Hout Karoum, Junio de 1899, ♂, cotipo (Escalara)" can be seen in reversed position (Fig. 16). This specimen, in addition to another six specimens (2 males, 4 females), is part of the collection of Museo Nacional de Ciencias Naturales (MNMS) Madrid, Spain (lectotype and paralectotypes are designated by Abraham Fig. 17.). In this paper NAVÁS (1910) the wing pattern of a female specimen of "*Palpares chrysopterus* sp.n." ("*Kourdistan de Sineh* (R. de Mecquenem, J. de Morgan, 1908)") was presented which otherwise can be seen in the Museum National d'Histoire naturelle, Paris (MNHN), France (Fig. 16). The description of the above mentioned female specimen was published only three years later (NAVÁS 1913) without an illustration.

The species described by NAVÁS (1910) was synonymized by BANKS (1913) in a paper focusing on *Palpares* genus. Banks (1913) considered the taxon as a variety of *P. libelloides*.

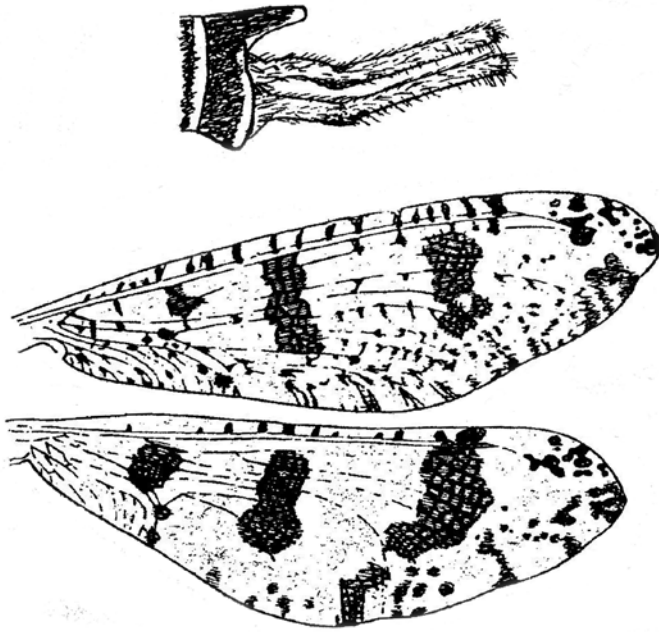


Fig. 16: NAVÁS's (1910) figures on "*Palpares chrysopterus* Nav. (fig. 3)" male abdomen in reversed position, drawing of wing from the female specimen found in the Museum National d'Histoire naturelle (MNHN), Paris



Fig. 17: The designated lectotype of *Palpares chrysopterus* Navás, 1910



Fig. 18: KOÇAK's (1976) original figure
"Fig. 3. *Palpares hispanus turcicus* ssp. n. - ♂ (Holotype)"

The name of the species could not be found in HÖLZEL's (1972) monograph, describing the ant-lion fauna of Middle East, although the synonym names of other species from this region were listed.

The name of the species was only mentioned in the voluminous monographs of ASPÖCK et al. (1980, 2001) as the synonym of *P. libelloides*.

Although NAVÁS (1913) gave a description of the species in his later publications repeatedly, the time of the species description can be dated around 1910 since the description given by NAVÁS (1910) fulfilled all the criteria of species description. The name presented in NAVÁS (1913) was a primarily junior homonym (OSWALD 2007). STANGE (2004) listed both descriptions of the species among the synonym names of *Palpares libelloides* without mentioning homonymy.

The examination of the designated lectotype specimen housed in Madrid revealed that *Palpares chrysopterus* Navás, 1910 is conspecific with taxon *Palpares turcicus* Koçak, 1976.

The current status of the taxon is a valid.

***Palpares hispanus turcicus* Koçak, 1976 and *Palpares turcicus* Koçak, 1976 (Fig. 18)**
Palpares hispanus turcicus Koçak, 1976 - KOÇAK 1976 (Odeser), ASPÖCK et al. 2001 (Syn)
Palpares turcicus Koçak, 1976 - KOÇAK 1995 (Tax), STANGE 2004 (Syn)

The taxon described by KOÇAK (1976) was regarded as a synonym of *P. libelloides* by ASPÖCK et al. (1980). The authors in this monograph did not consider *P. hispanus* a valid taxon either. They reiterated this opinion in their later monograph ASPÖCK et al. (2001), too. Although *P. hispanus* was listed as a valid species at this time and *P. hispanus turcicus* was mentioned as a synonym of *P. hispanus*.

KOÇAK et al. (1995) changed the status from subspecies to species. In his online database (ZIN database), KRIVOKHATSKY (1998b,) mentioned it as a valid species, however it was not included in the published checklist (KRIVOKHATSKY 1998a). More than a decade later, the species was mentioned by (KRIVOKHATSKY 2011) as a valid species again.

The status of taxon was not discussed in the monograph written by ASPÖCK et al. (2001). STANGE (2004) mentioned it among the list of synonyms, but the synonym of the species was not indicated as "*NEW SYNONYM*" in this book.

During examination of the male specimen of *Palpares chrysopterus* Navás, 1910, *Palpares turcicus* Koçak, 1976 proved to be a junior synonym of *Palpares chrysopterus* Navás, 1910.

The current status of the taxon is an invalid.

***Palpares hispanus* Hagen, 1860**

Palpares hispanus Hagen, 1860 – HAGEN 1860 (Odescr), KOLBE 1884 (Syn), BRAUER 1876 (Tax), ASPÖCK et al. 1980 (Syn), 2001 (Tax)

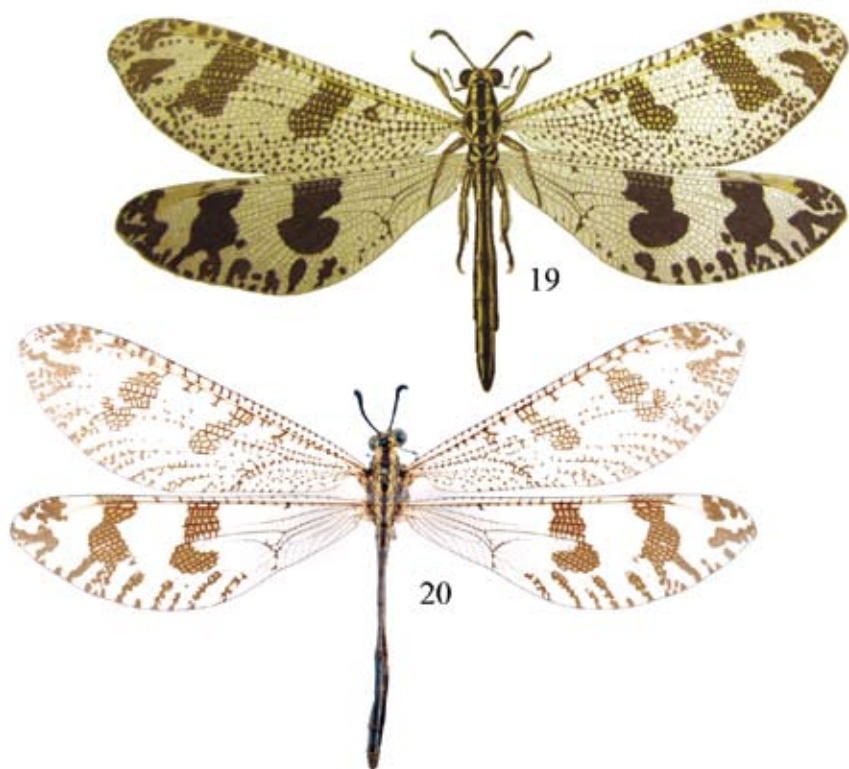
For the beginning of the 19th century, the real distribution of *P. libelloides* was more clearly understood, especially the fact that the species did not occur in South Africa. At the same time, even before the description of *Palpares hispanus*, it was also presumed (RAMBUR 1842, WALKER 1853) that a *Palpares* taxon different from *P. libelloides* populated the West Mediterranean.

RAMBUR (1842) reported *Palpares libelloides* from the South of Europe and Constantinople (today: Istanbul, Turkey) and distinguished it, for the first time, from species collected in Spain. He referred to them as a Spanish (Andalusia) variety of *P. libelloides*. WALKER (1853) also regarded the taxon living in Spain as a variety of *P. libelloides*.

Not much later, HAGEN (1860a) described a new *Palpares* species from the Mediterranean, namely *Palpares hispanus* Hagen, 1860, and gave a differential diagnosis on *P. libelloides* and *P. hispanus* taxa. Hagen (1860b,c) further clarified the distribution of *P. hispanus* ("Spain and Tunisia") in a later publications. Soon after this, he gave a brief description of the larvae of the species (HAGEN 1866) stating, at the same time, that all the specimens he had examined earlier, previously assumed to be *P. libelloides* from Spain, proved to be *P. hispanus*. Later on, HAGEN (1873) and McLACHLAN (1873) simultaneously produced a detailed description of the larva of the species. A few years later, it was listed as a valid species by the Austrian BRAUER (1876) in his European fauna catalogue, too.

Nevertheless the taxonomical status of *P. hispanus* later became uncertain, as KOLBE (1884) published a paper claiming that *P. hispanus* was only a variety of *P. libelloides* and the *Palpares libelloides*-group required revision. This opinion has dominated the German literature ever since i.e. HÖLZEL (1972), ASPÖCK et al. (1980, 2001).

On the other hand, mainly due to the publications of McLACHLAN (1889), *P. hispanus* was presented as a valid species in the English literature (McLACHLAN 1889, 1898, BANKS, 1913, MORTON 1926, STANGE 2004) as well as in the Spanish literature (PICTET 1865, NAVÁS 1904, 1915, 1916, MONSERRAT 1978, 1982, MONSERRAT and DÍAZ-ARANDA 1987, DÍAZ-ARANDA and MONSERRAT 1988). McLACHLAN (1889) pointed out that KOLBE (1884), by specifying Africa as an occurring place of *P. libelloides*, did not facilitate the clarification of the actual distribution of the species. To make the situation even worse, he confused the morphological characters of *P. libelloides* and *P. hispanus*. In his study, he emphasized the different characters of the two species and noted that *P. libelloides* did not occur in North Africa. Furthermore he presumed that *P. hispanus* also lived in the



Figs. 19-20: KLUG in EHRENBERG (1834) "Tab. XXXV. Fig. 2." as "*Myrmeleon papilionoides*" a female specimen of *Palpares papilionoides* (Fig. 19) and the same in photo (Fig. 20)

Northeast of Africa, he regarded this taxon from Egypt as a smaller form of *P. hispanus* (see section on *P. aeshnoides* taxon).

Apparently, the distribution of *P. hispanus* requires further clarification especially in North Africa as this species can certainly be found from Spain to Tunisia. However, the specimens from the region stretching from Egypt to the Northeast of Iran were surrounded by taxonomical uncertainties. Species from this area were defined in various different ways: *P. hispanus* (NAVÁS 1911, 1926, ESBEN-PETERSEN 1918, MORTON 1926, SIMON 1979) and *P. hispanus turcicus* (KOÇAK 1976), *P. turcicus* (KOÇAK et al. 1995), *P. libelloides* (HAGEN 1860a, NAVÁS 1926, HÖLZEL 1972, ASPÖCK et al. 1980, 2001).

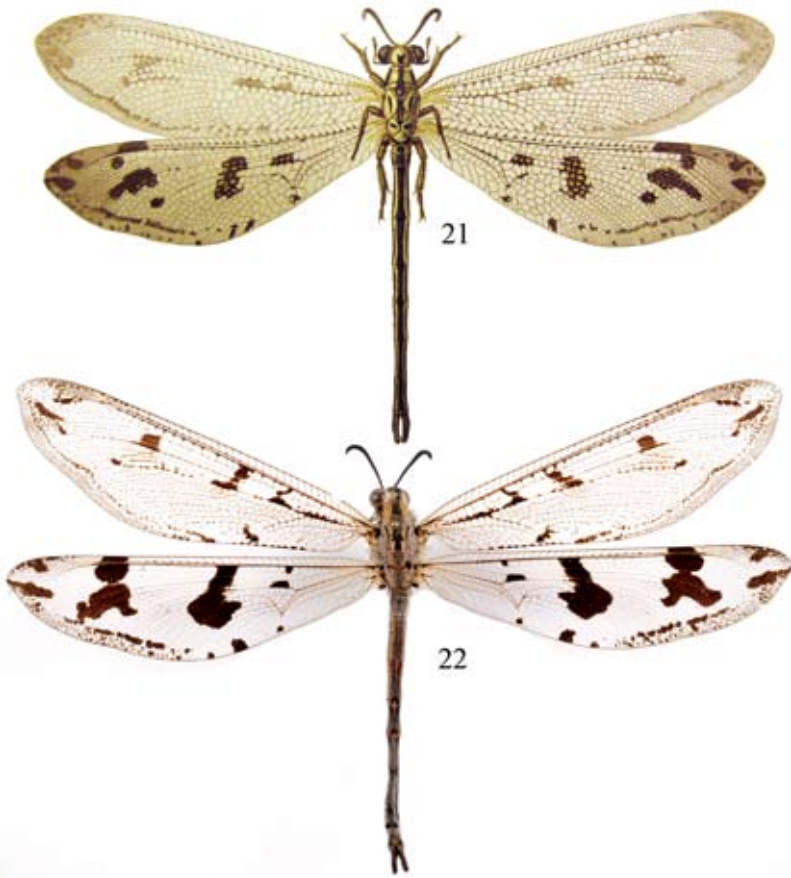
MORTON (1926) had admittedly never seen the species MCLACHLAN (1889) reported from Syria as *P. aeshnoides*. Therefore he showed his specimens to Esben-Petersen, a notable expert of neuropterology of the time, who identified them as *P. hispanus*.

Nevertheless, MORTON (1926) still maintained some uncertainty as his specimens from Palestine were smaller than the well-known specimens of *P. hispanus* found in Spain and Algeria. In the end, he decided to list "the smaller sized specimens" from the Middle East under the name of *P. hispanus*.

The current status of the taxon is a valid.

Palpares papilionoides (Klug in Ehrenberg, 1834)*Myrmeleon papilionoides* Klug in Ehrenberg 1834 – KLUG in EHRENBERG 1834 (Odescr)*Palpares papilionoides* (Klug in Ehrenberg, 1834) – RAMBUR 1842 (Comb), PROST 2010 (Dist)

When describing the species, KLUG in EHRENBERG (1834) presented two figures of the species in his lavishly illustrated monograph written on the Arabian Peninsula. Nevertheless, it is known today that "Tab. XXXV. Fig. 2." actually featured a female specimen with normal wing patterns of *Palpares papilionoides* (as "*Myrmeleon papilionoides*") (Figs. 19-20) while "Tab. XXXV. Fig. 3." was presented under the name of "*Var. Papilionoides*" (Fig. 20) by KLUG in EHRENBERG (1834). According to HÖLZEL 1982, ASPÖCK et al. 2001 and STANGE (2004) it was conspecific with a male specimen of the later described *Goniocercus klugi* (Kolbe, 1898). The possibility that the two specimens of different sexes and different wing patterns might belong to two different species were discussed on several occasions earlier.



Figs. 21-22: KLUG in EHRENBERG (1834) "Tab. XXXV. Fig. 3." as "*Var. Papilionoides*" (Fig. 21) and a specimen of *Goniocercus klugi* (Kolbe, 1898) (Fig. 22)

First RAMBUR (1842) listed the published figures under different taxa: the male specimen under the name of "*Var. Papilionoides*" was presented as "*Palpares papilionoides*", while the female specimen was specified as "*P. libelluloides*".

WALKER (1853) adopted the species concept of RAMBUR (1842) and noted that the female illustrated in KLUG in EHRENBERG (1834) monograph had uncertain taxonomical status, and designated it as assumed synonym of *P. libelloides* (as "*Myrmeleon papilionoides*, Fem. ? fig, Symb. Phys. dec. 4, 2, pl. 35, f. 2.>").

MCLACHLAN (1873) also pointed out that "*P. papilionoides* had nothing whatsoever to do with *P. aeshnoides*" but he made a mistake.

HAGEN (1887) adopted MCLACHLAN's (1873) opinion regarding the status of species *Palpares papilionoides* (Klug in Ehrenberg, 1834). Therefore, the synonymization of HAGEN (1887) was not taken into consideration in later publication however, it was not denied either.

Later NAVÁS (1911) reported *Palpares papilionoides* from Palestine (Jerusalem, today Israel). MORTON (1926) found the distribution of this species incorrect.

The presently known distribution of the species really does not reach as far as Palestine but it is reported from the southern part of the Arabian Peninsula and from Africa (East and Middle Africa) (ASPÖCK et al. 2001, PROST 2010).

The current status of the taxon is a valid.

Description of a new species

Palpares assyriorum sp. n. (Figs 23-24)

Material examined:

Holotype male: Syria, Prov. As Suwayda, 30 km SE As Suwayda 15 km E of Bosra Salkhad 32°29,686'N; 36°39,050'E 1211m 21.05, 2007 Leg. Rozner, I, Rozner, Gy. & Rozner, Ib.

Paratypes 5 males and 2 females as holotype, 2 males Jordan NW Jarash Burma env. Al Huna 15.05.2010. leg. Snížek; male or female Jordan SW S of At Tafila 12.05.2010 leg. Snížek. Holotype and paratypes are deposited in the entomological collection of Somogy County Museum, Kaposvár; 1 male [SE Turkey] /white label: Enyusek/ /white label: aeshnoid. Klapálek/ /white label: MNCN_Ent N° Cat. 81333 /; 1 male the same / MNCN_Ent N° Cat. 81334 / in the collection of Museo Nacional de Ciencias Naturales, Madrid, Spain; 1 female Israel Camp Ziouani en. Ziwan (Gollan hills) III-IV. 1996 leg. R. Rosa" „*P. aeshnoides* Ill. [sic!] det. Krivokhatsky in the collection of the Upper Silesian Museum (USMB) Bytom, Poland

Head: Vertex shining black, strongly arched and rectangular shape in frontal view; top of vertex yellow with shining black median strip and two small lateral black spots; decumbent and pale hairs on vertex. Frons shining black with short and pale hairs. Gena, clypeus and labrum yellow with short ochreous hairs. Mandible yellow with black apex. Maxillary palps long, shining black. Labial palps brown. Eye brown. Antenna 6-6.5 mm long. Scape shining black with rigid outstanding and black hairs, pedicel black with narrow yellow margins, flagellar segments and club dark brown.

Thorax: Pronotum wider than long, anterior and posterior margins flexed upward with pale hairs, yellow with wide and black median strip. Black pattern spreads along shallow transversal inflection. Lateral margin black. Mesonotum shining black with dense medium long and pale hairs. Metanotum shining black with dense medium long and pale hairs. Two yellow spots on metascutum. Sides dark with dense medium long and pale hairs. Mesopleuron with soft dense and white hairs.

Legs: Coxae black with dense pale hairs. Femora shining black with rigid and black bristles and short white hairs. Tibiae slightly shorter than femora. Tibiae yellowish brown dorsally, black ventrally and with stiff and black bristles. Tarsal segments 1-4 subequal; segment 5 as long as segments 1-4 combined. Tarsi black with stiff and black setae. Tibial spurs as long as segment 1-2 together. Tibial spurs and claws brown.

Wings: Fore wing: 39 mm long, 14 mm wide. Hind wing: 38 mm long, 13 mm wide. Membrane transparent with large and small brown spots. Venation yellow but brown in spotted areas. Pterostigma indistinct pale yellowish. Male with pillula axillaries.

Abdomen: 27 mm long. Tergite yellow with large black pattern. Hairs on tergite 1-3 medium long soft and pale and on other tergites short black. Sternites shining black, margins yellow with short and white hairs.

Genitalia: Male. Ectoproct with postventral processus (Figs. 25-26. and 29-30.). Processus divided by inner angle (iame – inner angle of male ectoproct) into two unequal parts. Proportion of proximal part of processus considerably shorter than distal part. Shape of gonarcus and parameres complex as in Figs. 31-33.

Paratype females: (Figs: 13 and 23)

Forewing: 29-30 mm long, 7 mm wide. Hind wing: 27-28 mm long, 6.5 mm wide; abdomen 19-20 mm long. Females slightly larger than males. Wings wider than those of males. Otherwise like holotype.

Diagnosis: The new species is very similar to those species (*Palpares libelloides*, *Palpares hispanus*, *Palpares chrysopterus*) which live in Eastern Mediterranean. Their areas may overlap partially but based on morphological features they can be distinguished from each other. *Palpares libelloides* and *Palpares chrysopterus* are significantly larger than the new species. The hind wing spots and bands of *Palpares libelloides* are much smaller and light brown (Fig. 37), while the same spots of *Palpares chrysopterus* are larger and dark brown (Fig. 38). The hind wing spots and their colour on hind wing of *Palpares assyriorum* sp. n. (Fig. 40) are similar those of *Palpares chrysopterus*.

Table 1: Comparative matrix for species of *libelloides*-group

Features	<i>P. libelloides</i>	<i>P. chrysopterus</i>	<i>P. hispanus</i>	<i>P. assyriorum</i> sp.n.
frons	brown and yellowish	dark brown to black	shining dark brown	shining dark brown
size	large	very large	medium	small
length of FW (mm)	male: 52-58 mm	male: 54-56 mm	male: 45-55 mm	male: 38-45 mm
	female: 55-60 mm	female: 65-68 mm	female: 50-57 mm	female: 44-48 mm
shape of wing	narrow	narrow	wide	wide
basal band of FW	missing or small	large	missing or small	medium
marginal spots of HW	few rather large	many	many small	few rather large
subbasal spot of HW	mere a point, not touch to subcosta	large touch to subcosta in a section	large, not touch to subcosta	large, touch to subcosta in one point
pattern of abdomen	longitudinal lines	boardly and transversely banded	boardly and transversely banded	boardly and transversely banded
position of inner angle on male ectoproct	weakly developed	well developed	well developed	well developed

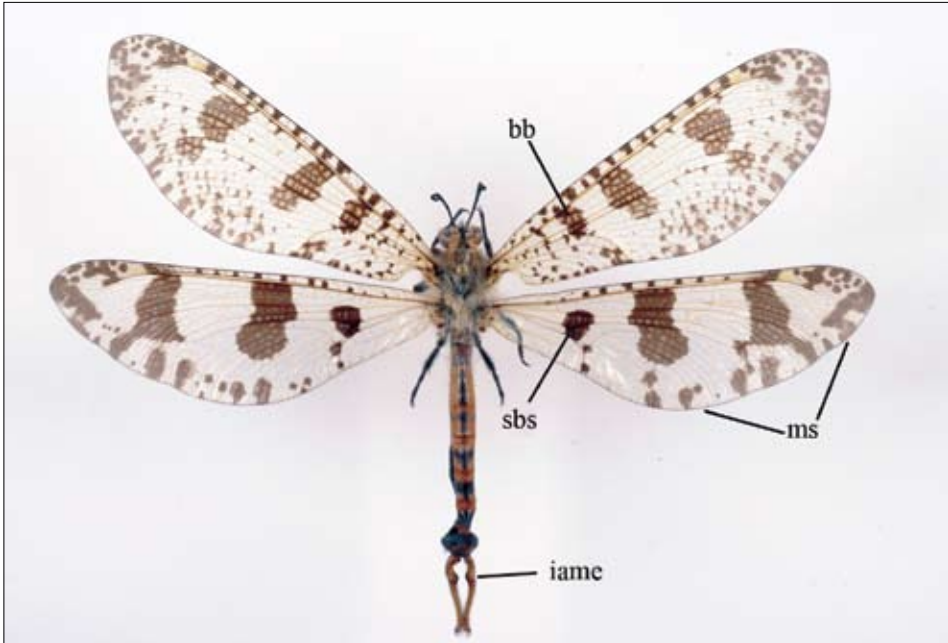
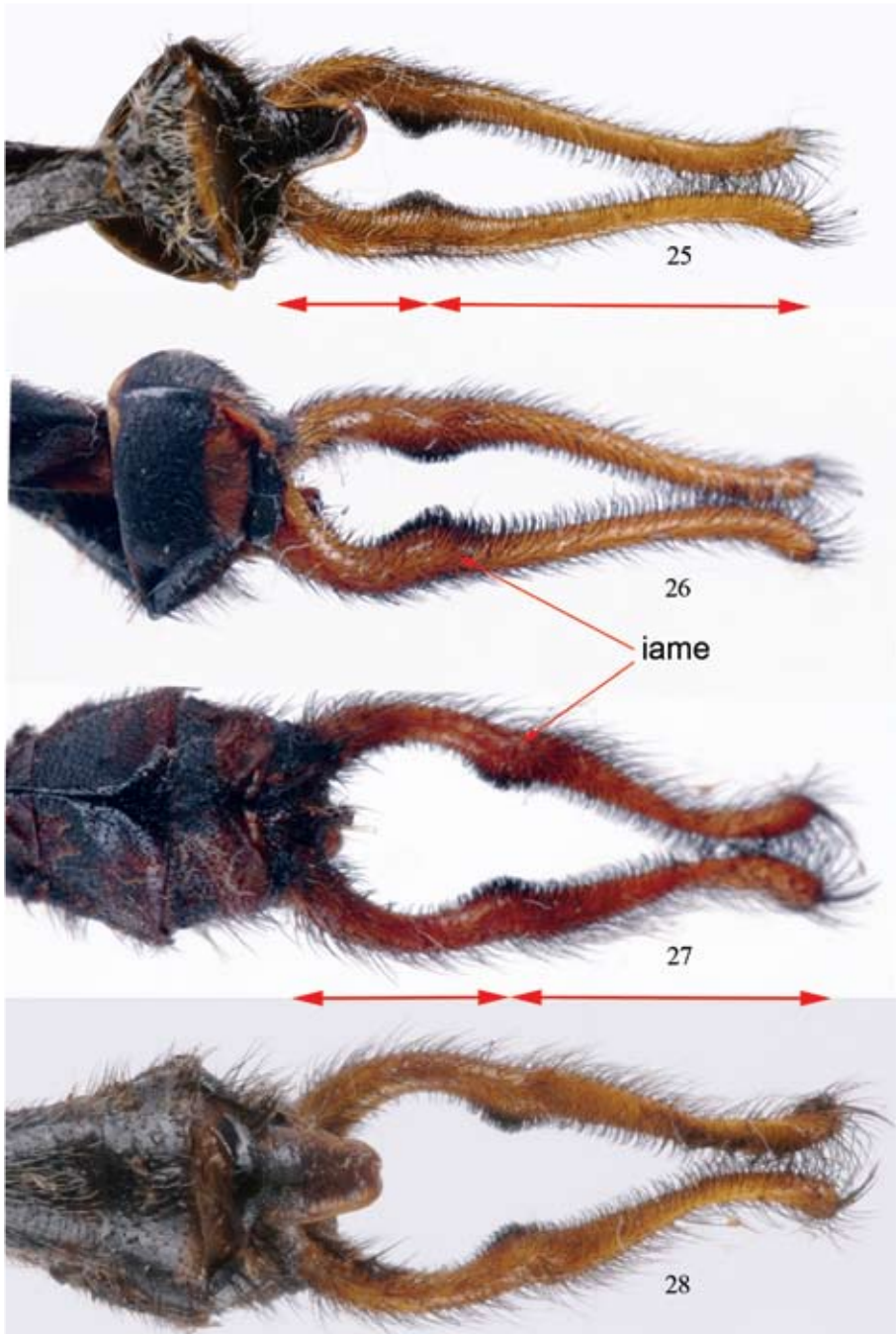


Fig. 23: Holotype male of *Palpares assyriorum* sp. n.

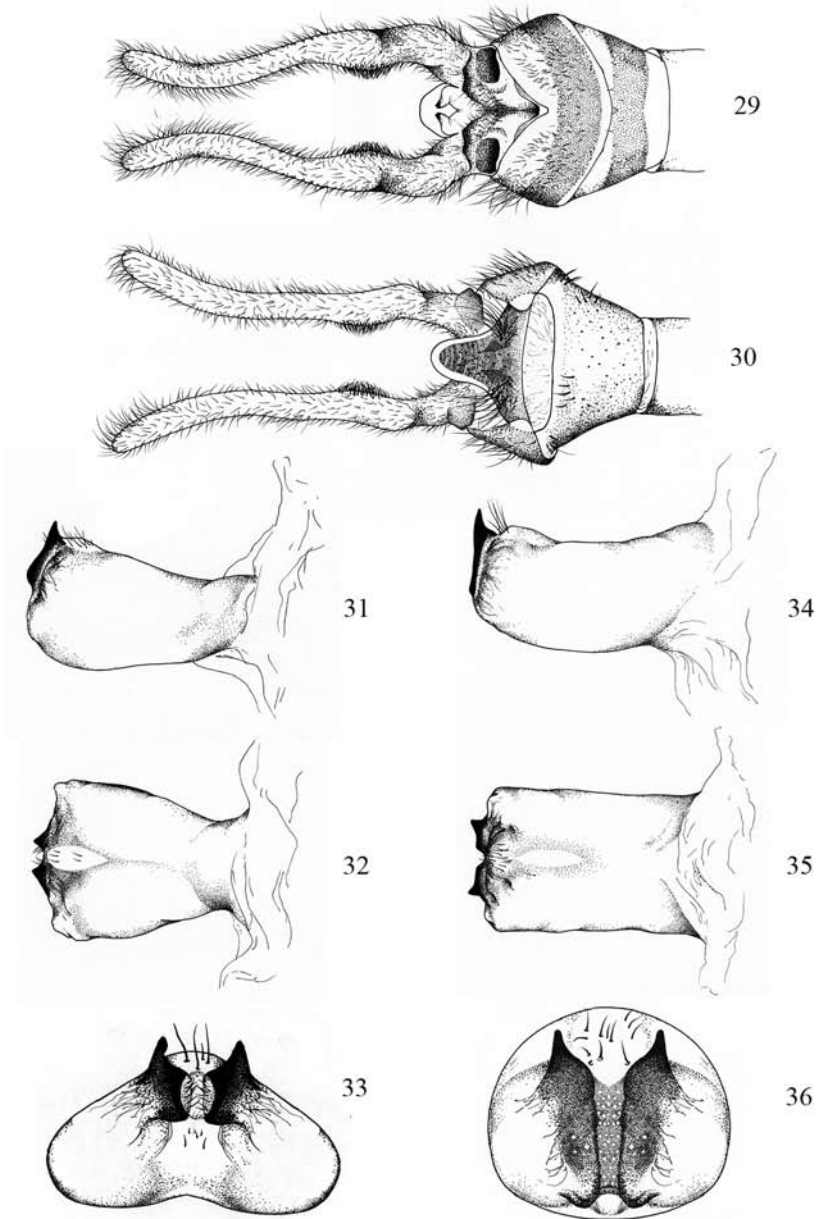
Abbreviations: bb - basal band, ms – marginal spots, sbs - subbasal spot, iame - inner angle on male ectoproct



Fig. 24: Paratype female of *Palpares assyriorum* sp. n.



Figs. 25-28: Male ectroproct of *Palpares assyriorum* sp. n in ventral (Fig. 25) and dorsal views (Fig. 26); Ectroproct of *Palpares hispanus* Hagen, 1860 in dorsal (Fig. 27) and ventral views (Fig. 28) and their dimension compared to each other showing with red arrows
 Abbreviation: iame - inner angle of male ectroproct



Figs 29-36: Apex of male abdomen of *Palpares assyriorum* sp. in dorsal (Fig. 29) and ventral views (Fig. 30), gonarcus and parameres in lateral (Fig. 31), dorsal (Fig. 32) and caudal views (Fig. 33); gonarcus and parameres of *Palpares hispanus* Hagen, 1860 in lateral (Fig. 34), dorsal (Fig. 35) and caudal views (Fig. 36)

After all, the size, pattern and colour of the new species resemble to *Palpares hispanus* (Fig. 39) but it is not yet clear, whether the areas of the two species overlap or not in Egypt. Based on the shape of ectoproct processus males of two species are easily distinguished. The proximal part of processus of *Palpares assyriorum* (Figs 25-26) is considerably shorter and the distal part of processus is longer than those of *Palpares hispanus* (Figs 27-28). The two species differ in the shape of gonarcus and parameres, too, see Figs. 32-36. To distinguish from each other the females of two species is not easy in many cases, the identification requires several morphological characteristics of co-occurrence examination. The comparative matrix of morphological features (Table 1) helps the identification.

In the Eastern Mediterranean *Palpares geniculatus* Navás, 1912 especially the female is also similar to above mentioned species but it is easily distinguished on the shape of apical spot of hind wing and abdomen pattern.

Since the large morphological similarities among species are present, there are numerous misidentified specimens in the faunistical data (eg. STITZ 1912, PONGRÁCZ 1923) to which KRIVOKHATSKY (2011) also called the attention.

Distribution and re-examined specimens

Palpares speciosus (Linnaeus, 1758)

General distribution: Africa: South Africa (Mansell 2002)

Examined material: In coll Somogy County Museum, Kaposvár: RSA. Transval near Tshipise 1999. 01. 19. Leg: Werner; 1♂; RSA Lotnig. R. Kwazulu-Natal 2002. 12.13-14. Leg: Werner; 1♀; RSA Sani Pass Kwazulu-Natal 2002. 12. 11-12. Leg: Werner; 1♀; RSA Weenen Kwazulu-Natal; 2002. 12. 10. Leg: Werner 1♀; RSA Thabazimbi 2002. 11. 16. Leg: Werner; 1♀; RSA 25 km NW of Setlagole WGS 84: 26°05', 524°58'E; 2003. 02. 01-02. Leg: Faugué R.+H. 3♀; RSA Pietersburg 1999. 01. 16. Leg: Werner 3♀;

Palpares libelloides (Linnaeus, 1764)

General distribution: Europe: Spain, South France, Italy, Slovenia, Croatia, Montenegro, Serbia, Albania, Greece, Romania, Bulgaria, Asia: Cyprus, Turkey, Russia (Dagestan), Georgia, Armenia, Azerbaijan, Syria, Israel, NW Iran.

Examined material: In coll Somogy County Museum, Kaposvár: Albania bor. occ. Shkoper env. c. 400m 3. 7. 2000 Dr. R. Fenci Lgt. 2♀; Armenia Garni 1200m 2001.06.28. I. Pljushch leg. 1♂; Armenia Hojan 1152m N40°17.509'; EO44°14.472' 2007.06.30. Leg: Ilniczky S. 1♂; Bulgaria Topolita 1983.07.23. Leg: Ábrahám L. 2♂ 3♀; Bulgaria Micurin 1982.10.07. Leg: Charvát 1♂; Bulgaria Kresna 1988.07.08. Leg: Hác T. 1♀; [Bulgaria] Szandanszki [Sandanski] 1983.04.03. Leg: Holl 1♂; Croatia Ninski Stanovci 40m 2004.07.14. Leg: Ábrahám L. 3♂ 6♀; Croatia Ston 2002.06.20. Leg: Haltrick A. 1♀; Croatia Ninski Stanovci 40m 2004.07.14. Leg: Ábrahám L. 8♂ 9♀; Croatia Istria Peninsula Rakalj 2001.06.21. Leg: Ábrahám L. 1♂; Croatia Trogir Leg: Or.J.Romsauer 2001.06.21. 2♀; [Croatia] Krk sziget [island] 1995.26.15. 1♂; [Croatia] Yugoslavia Pećane 1988.07.02. Leg: Ábrahám L. 2 ♀; [Croatia] Yugoslavia Karlobag 1988.07.05. leg: Ábrahám L. 1♂ 1♀; [Croatia] Yugoslavia Pol. Deljesac Zuljana 1987.07.06-23. B. Makovsky Lgt. 1♂; Cyprus Larnaka 1986.07.10. 1♀; Cyprus Afluin 1998.10.05. Ferucsik 1♂; Greece Meteora körny. [evr.] 1991.07.14. Leg: Sipos I. 1♂; Greece N car Andiuistra 2003.06.29. Leg: Garai A., Gyulai P. 1♀; Greece Pelopones Arkadia 3km of Kapsia 2003.06.25. Leg: Garai A., Gyulai P. 1♀; Greece Andikira 200m 1997.06.14. Leg: Ábrahám L. 4♂ 2♀; Greece Andikira 200m 1997.06.15. Leg: Ábrahám L. 1♀; Greece Thessalia Meteora 2003.06.29. Leg: Garai A., Gyulai P. 1♂; Greece Thermopülai Emlékmű [Thermopiles] 2001.06.19. Leg: Pintér A. 1♀; Greece Rhodos Kolumbia 2005.06.23. Leg: Haltrich A. 1♂; Greece Asplováta 1977.06.17-19. Leg: Podlussány I. 1♀; Greece Sunlon Attika 1981.05.10. Leg: Podlussány I♂; [Greece] Hellas Leptokaria 1992.06.30. Leg: L. Balásházy 1♂; [Greece] Hellas Preveza 1992.06.12. Leg: Slachta 1♂ 1♀; [Greece] Hellas Litochoro 1992.07.29. 1♂; Iran Prov. Zangan [Zanjan] Mt.Kühha-ye Tales Gilvan 2000.06.16. leg: Gaskó K. 2♀; Iran [Prov. Lorestan] Quir előtt 15km Firuzabad fele szél:28°-30° hossz:52°-54° 2004.04.12. Leg: Hác T., Benedek B. 1♀; [Macedonia]



Fig. 37: Male wing of *Palpares libelloides* (Linnaeus, 1764) from Croatia



Fig. 38: Male wing of *Palpares chrysopterus* Navás, 1910 from Iran



Fig. 39: Male wing of *Palpares hispanus* Hagen, 1860 from Spain



Fig. 40: Male wing of *Palpares assyriorum* sp. n. from Syria

Demir Karpija 1986.06.16. Nagy Lóránt 1♂; Macedonia Yugoslavia Titov Veles 1990.07.13. Leg: Kalalza 1♂; Syria Prov. Hama near Salamiyeh 35°03.928'; 36°57.266' 490m 2007.06.03-04. Leg: Rozner I., Rozner G., & Rozner Ib. 1♂ 1♀; Syria 25km SW of Ariha 2km S of Al Bara H 35°39.017'; 36°32.911' 626m 2007.05.31-06.02. Leg: Rozner I., Rozner G. & Rozner Ib 1♂; Syria 35km SE of Tartus 34°43.213'; 36°13.206' 229m 2007.05.26. Leg: Rozner I., Rozner G. & Rozner Ib 1♀; Turkey Yeniköğ 1994.06.12. 1♂; Turkey Prov. Elazig Hazar Gölü 1200m 1994.05.14. Leg: Gaskó Kálmán 1♀; Turkey Prov. Elazig Hazar Gölü 1994.04.07. Leg: Ábrahám L. 8♂ 2♀; Turkey Prov. Malatya valley Göksu S of Erkenek 1994.03.07. Leg: Gyulai P. 11♂ 11♀; Turkey Prov. Ankara Bagcilar 1994.07.12. Leg: Ábrahám L. 4♀; Turkey [Prov. Ankara] Tuz Gölü 1994.06.09. Leg: Gaskó K. 3♂ 1♀; Turkey near Ergidir 2001.08. Leg: Varner 1♀; Turkey Prov. Urfa Halfeti Euphrat river 1994.07.02-03. Leg: Ábrahám L. 1♂; Turkey [Prov. Ankara] Tuz Gölü 20km NW of Sereflíochisar 1994.07.01. Leg: Ábrahám L. 1♂ 2♀; Turkey Prov. Elazig 30km SE of Elazig Hazar-Gölü 1200m 1995 05.14. Leg: Fábíán Gy. 1♂; Turkey Prov. Urfa valley of Euphrat 500m 8km N of Halfeti 37°35'E; 37°13'N 1990.05.25. Leg: Szabóky Cs. 1♂; Turkey [Prov. Aydin] Kusadasi 1977.05.03. Leg: Podlussány 1♂; [Turkey] Silrflle Tr. 1992.06.14-16. Leg: Juhász Cs. 1♀.

Palpares chrysopterus Navás, 1910

General distribution: Asia: Armenia, Israel, Syria, SE Turkey, W Iran.

Examined material: In coll. Museo Nacional de Ciencias Naturales, Madrid:

Lectotype male: white label: / *Palpares chrysopterus* Nav. ♂ /; white label: / Persia, Bazouft, Haut Karoum, VI-1899, Escalera /; white label: / *Cotypus* / red label: / MNCN_Ent N° Cat 12279 /; red label: /Lectotype male: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /

Paralectotypes: female / MNCN_Ent N° Cat 81327; Persia, Bazouft, Haut Karoum, VI-1899, Escalera // visto or Klapalek / red label: /Paralectotype female: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /; female / MNCN_Ent N° Cat 81328; Persia, Bazouft, Haut Karoum, VI-1899, Escalera / red label: /Paralectotype female: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /; female / MNCN_Ent N° Cat 81329; Persia, Bazouft, Haut Karoum, VI-1899, Escalera // visto por Klapalek / red label: /Paralectotype female: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /; female / MNCN_Ent N° Cat 81330; Persia, Kouh Sefid, Haut Karoum, VII-1899, Escalera / red label: /Paralectotype female: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /; male / MNCN_Ent N° Cat 81331; Persia, Bazouft, Haut Karoum, VI-1899, Escalera // red label: /Paralectotype male: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /; female / MNCN_Ent N° Cat 81332 Chindaar, Escalera // visto or Klapalek // red label: /Paralectotype female: *Palpares chrysopterus* Navás, 1910 Designated: Ábrahám L. /.

In coll Somogy County Museum, Kaposvár: Armenia Udjin 2009. 06.27. leg.: Ilniczky S. 1♂; Armenia Azat Res. N40°11'0" E45°52'0" leg.: Ilniczky S. 1♀; Iran Prov. Esfahan vill. Miyandast 2000.06.20. Leg: Gaskó K. 1 ♀; Iran Prov. Esfahan Qusmar (Quaz An) 1772m N33°44.425' E51°28.905' 2005.07.06. Leg: Ábrahám L. 1♀; Iran Prov. Esfahan Fereidun Shar 2700-3000m 2006.07.10-12. Leg: HácZ T. 1♂ 1♀; Iran Prov. Esfahan Asgaran 2714m N 32°55.262' E 50°56.643' 2005.06.27. Leg: Ábrahám L. 5 ♂ 2 ♀; Iran Prov. Fars Dehdib 2000. 06. 22. leg: Rozner Gy. 1♀; Iran Prov. Hamadan Nehavend 1851m N34°02.756'; E48°22.614' 2005.06.26. Leg: Ábrahám L. 2♂ 3♀; Iran Prov. Hamadan Zagros Mts 25km W Khakadan N48°20'30"; E34°2'53" 2200m 2000.06.21. Leg: Fábíán Gy. 1 ♂ 2♀; Iran Prov. Kordestan Faqih Soleyman N35°05.085'; E46°54.118' 2005.06.25. Leg: Ábrahám L. 1♀; Iran Prov. Kordestan (Mt) Kúhha-ye Zagros Kamyaran 2000.06.17. Leg: Rozner Gy. 1♀; Iran Prov. Lorestan (Mt)Kúhha-Ye Zagros 25km S of Dorud Sepiddast 2005.06.20-21. Leg: Rozner Gy. 1♂ 1♀; Iran-occ. Prov. Lorestan Zagros Mts Dorud 2500-3000m 1999.06.19-21. Leg: L. Liber 1♀; Iran-mer.occ. Fars prov. 2500m Zagros Mts Dosht Arzhan 1999.06.08-10. Leg: L. Bieber 1♀; Iran Prov. Tehran Mt. Elbrus Sharak 1800m 2000.07.02. Leg: HácZ I., Kószegi G. 2♂ 11♀; Iran Prov. Yazd Mazra Ehye Tagi 2582m N31°34.949'; E53°49.387' 2005.07.04. Leg: Ábrahám L. 5♀; Iran Prov. Zangan Zanjan 2300m 2000.07.01. Leg: HácZ T. Kószegi G. 4♂ 4♀; Iran Prov. Zangan Lar 1021m N36°48.333'; E48°54.881' 2005.06.24. Leg: Ábrahám L. 2♂, 2♀; Iran Prov. Zangan Golliéh 2125m N° 42.288' E 48° 45.287' 2005.06.24. Leg: Ábrahám L. 1♂; Iran Prov. Zangan Mt. Kúhha-ye Tales Gilvan 2000.06.16. Leg: Gaskó K. 2♂; Israel Tel Aviv 2010. 06. 1♀; Turkey Prov. Bitlis Kusgunkiran Gecidi 2300m N42°46'; E38°17'N 1989.07.22-23. Leg: Gyulai M. Hreblay 1♀; Turkey Prov. Bitlis-van Kusgunkiran Gecidi 2400-2500m 42° E38°17'N 1988.08.02. Leg: Gyulai Hreblay Ronkay et Ronkay 1♀; Turkey Prov. Tunceli Muzur Daglari 11km m Ne of Tunceli Munzur Vadisi Mili Park 1050m 2005.07.31. Leg: Csövári.T. coll Csövári Tibor 2♂ 2♀; [Turkey] Turquie [Prov. Sivas] Gürün 1989.07.07. Leg: P. Marosi 1♀; Turkey Prov. Sivas 5km W of Gürün 1500m 37°12'5 38°45' N 1988.08.28. Leg: Gyulai, Hreblay, Ronkay et Ronkay 1♂; Syria occ. muh. Al

Ladhgiyah Mts Ansariya Salahad Din Citadel N35°35.828' E30°03.278' 360m 2006.06.24. Leg: N. Rahné, A. Kotán, A. Márkus, D. Szalóki & K. Székely 1♀.

***Palpares hispanus* Hagen, 1860**

General distribution: Europe: South Spain, Portugal, Africa: Morocco, Algeria, Tunisia, Libya, Egypt.

Examined material: In coll Somogy County Museum, Kaposvár: Morocco 3km from Chafarni 1519m N30°50'04.08"; W08°22'40.5" 2008.06.29. Leg: Ábrahám L., Bognár L., Nagy L.3 ♀; Morocco 5km N from Danger 947m Reserves de Granka Chasse Interdite N31°32'36.7"; W07°32'21.2" 2008.06.28. Leg: Ábrahám L., Bognár L., Nagy L. 1♂; Morocco 5km N from Danger 947m Reserves de Granka Chasse Interdite N31°32'36.7"; W07°32'21.2" 2009.06.22-23. Leg: Ábrahám L., Malgay V., Szalóki D. 1♂; Morocco Tiz-n-Tichka 2089m N31°18'26.7"; W07°22'38.8" 2008.07.03. Leg: Ábrahám L., Bognár L., Nagy L. 3♂ 6♀; Morocco Tiz-n-Tichka 2089m N31°18'26.7"; W07°22'38.8" 2009.07.03-04. Leg: Ábrahám L., Malgay V., Szalóki D. 5♂ 13♀; Morocco 5km from Anezol 1533m N30°47'21.72"; W07°17'59.1" 2008.07.02. Leg: Ábrahám L., Bognár L., Nagy L. 1♀; Morocco 5km from Anezol 1533m N30°47'21.7"; W07°17'59.1" 2010.06.10. Leg: Ábrahám L., Kisbenedek T., Vágner L. 1♂; Morocco 2km from Imini 1434m N31°05'07.4"; W07°17'30.4" 2009.06.24. Leg: Ábrahám L., Malgay V., Szalóki D. 3♂ 3♀; Morocco Erg Hamada Mhamid 573m N29°50'51.9"; W05°35'41.8" 2009.06.27. Leg: Ábrahám L., Malgay V., Szalóki D. 11♂ 10♀; [Morocco] Meknes Tanger 1992.07.06. Maroko Lgt: Mráček 1♀; [Spain] Mellila Spanien Afrika 1909.06. Arres 1♂; [Spain] Los Barrios, Sierra de Ojén (Cádiz) Hispánia 1991.06.28. Leg: J. Vives 1♂ 1♀; [Spain] Hispánia Algeciras 1978.06.18. Leg: Cs. Juhász 1♀.

***Palpares assyriorum* sp. n.**

General distribution: Asia: Syria, Jordan, Iran, Turkey, Israel, Africa: Egypt (?).

Examined material: see the description.

***Palpares papilionoides* (Klug in Ehrenberg, 1834)**

General distribution: Asia: Saudi Arabia, Yemen, Africa: Cameroon, Ethiopia, Kenya, Niger, Senegal, Somalia, Sudan, Uganda, Tanzania.

Examined material: In coll Somogy County Museum, Kaposvár: Ethiopia 1380 m Arba Minch E 037°32'54"; 2010. 04. 25. Leg: Ströhle 1♀; Ethiopia Negele Borena 2002. 05. 14. Leg: Werner 3♀; Kenya near Garissa 2000. 05. 12. Leg: Werner et Lizner 1♂ 3♀; Kenya near Mwingi 2000. 05. 04. Leg: Werner et Lizner 5♂ 15♀; Kenya E. Prov. Hola 2000. 05. 05. Leg: Werner et Lizner 1♂ 11♀; Kenya E. Prov. Hola 2000. 05. 09-10. Leg: Werner et SMRZ 1♂; Kenya El Wak 2001. 05. 01-03. Leg: Werner et SMRZ 3♂, 1♀; Kenya SE SW of Voi 2010. 12. 08. Leg: Snizek 1♀; Kenya Garissa 15 km S of Bura 2011. 29.4 lgt: Snizek 1♂ 1♀; Kenya Garissa 40 km N of Bura 2011. 29.4 lgt: Snizek 6♂

Acknowledgements

I wish to express my grateful thanks to Rozner family namely Mr. István Rozner, György Rozner and Ibolya Rozner Hungarian entomologists and Miroslav Snížek, Czech entomologist for the donation of the valuable ant-lion material collected in Syria and Jordan.

I would also like to wish my deepest thanks to Mercedes Paris, curator for collection of Museo Nacional de Ciencias Naturales, Madrid, (Spain) and Roland Dobosz curator for Neuroptera collection of Upper Silesian Museum, Bytom, (Poland) for taking excellent pictures of the types as well as Dr. Michael Ohl curator for Neuropterida, Orthopteroidea and Sphecidae of Museum für Naturkunde Leibniz-Institut für Evolutions- und Biodiversitätsforschung, Berlin (Germany) and Prof. Dr. Ahmet Omer Koçak (Turkey) providing me with suitable information on their collections.

My special thanks to Ágnes Nagy for excellent drawings.

References

- AKOUDJIN, M., MICHEL, B. 2011: A new species of Palpares Rambur (Neuroptera: Myrmeleontidae) with an identification key to the species of West Africa. - *Zootaxa* 2792: 33-40.
- ASPÖCK, H., ASPÖCK, U., HÖLZEL, H. 1980: Die Neuropteren Europas. 2 vols. - Goecke and Evers, Krefeld, West Germany. 495 and 355 pp.
- ASPÖCK, H., HÖLZEL, H., ASPÖCK, U. 2001: Kommentierter Katalog der Neuropterida (Insecta: Raphidioptera, Megaloptera, Neuroptera) der Westpaläarktis. - *Denisia* 2:1-606.
- BANKS, N. 1913: The neuropterous genus Palpares. - *Annals of the Entomological Society of America* 6: 171-195.
- BERTHOLD, A. A. 1827: Latreille's, Natürliche familien des thierreichs. Aus dem Französischen. Mit anmerkungen und zusätzen von Dr. Arnold Adolph Berthold. - Weimar. 606 pp.
- BRAUER, F. 1876: Die Neuropteren Europas und insbesondere Oesterreichs mit Rücksicht auf ihre geographische Verbreitung. - Pp. [263]-300 in *Festschrift zur Feier des fünfundzwanzigjährigen Bestehen Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft, Wien*.
- BURMEISTER, H. C. C. 1839: Handbuch der Entomologie. Zweiter [=2nd] Band. Besondere Entomologie. Zweite [=2nd] Abtheilung. Kaukerfe. Gymnognatha. (Zweite [=2nd] Hälfte; vulgo Neuroptera). - Theod. Chr. Friedr. Enslin, Berlin. [i]-xii + 757-1050.
- CHARPENTIER, T. DE. 1825: Horae entomologicae, adjectis tabulis novem coloratis. - A. Gosohorsky, Wratislaviae. xvi + 255 pp.
- CHENU, J. C., DESMAREST, E. 1859: Encyclopédie d'histoire naturelle; ou, traité complet de cette science d'après les travaux des naturalistes les plus éminents de tous les pays et de toutes les époques - Buffon, Daubenton, Lacépède, G. Cuvier, F. Cuvier, Geoffroy Saint-Hilaire, Latreille, De Jussieu, Brongniart à etc. Vol. 8 (Annees) (part 3?). - Marescq et compagnie, Paris. iv + 312 pp.
- COMSTOCK J. H. 1918: The Wings of Insects: An Exposition of the Uniform Terminology of the Wing-veins of Insects and a Discussion of the More General Characteristics of the Wings of the Several Orders of Insects. - The Comstock Publishing Company p. 204.
- DALMAN, J. W. 1823. *Analecta Entomologica*. - Typis Lindhianis, Holmiae. vii + 104 pp.
- DÍAZ-ARANDA, L. M., MONSERRAT, V. J. 1988: Contribución al conocimiento de los neurópteros de Granada (Insecta, Neuropteroidea). Pp. 211-227 in *Actas III Congreso Ibérico de Entomología*. Granada.
- DRURY, D. 1770: Illustrations of Natural History wherein are exhibited upwards of two hundred and forty figures of exotic insects, . . . interspersed with remarks and reflections on the nature and properties of many of them. - Vol. 1. London. 130 pp.
- DRURY, D. 1782. Illustrations of Natural History wherein are exhibited upwards of two hundred and forty figures of exotic insects, à interspersed with remarks and reflections on the nature and properties of many of them. - Vol. 3. London.

- ESBEN-PETERSEN, P. 1918: Help-notes towards the determination and the classification of the European Myrmeleonidae. - *Entomologiske Meddelelser* 12: 97-127.
- FABRICIUS, J. C. 1775: Systema entomologiae, sistens insectorvm classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus. - Flensbvirgi et Lipsiae. 832 pp.
- FABRICIUS, J. C. 1787: Mantissa Insectorvm sistens eorvm species nuper detectas adiectis characteribus genericis, differentiis specificis, emendationibus, observationibus. - Hafniae. Tome 1. 348 pp.
- FABRICIUS, J. C. 1793: Entomologia systematica emendata et aucta secundum classes, ordines, genera, species adiectis synonymis, locis observationibus, descriptionibus. - Hafniae. Tome 2. 519 pp.
- FITTON, M. FLS, HARMAN, K. 2007: The 'Linnaean' insect collection. - Linnaean collection (GARDINER, B. & MORRIS, M. eds), The Linnaean special issue 7: 47-57.
- DE GEER, C. 1773: Memoires pour servir a l'Histoire des Insectes. Vol. 3. P. Hesselberg, Stockholm. 696 pp. Text in French. - Notes: Neuropterida parts: Des Hémerobes exotiques, pp. 559-563; Des Fourmilions exotiques, pp. 564-566.
- GMELIN, J. F. 1788: Caroli a Linne, equatis aurati de stella polari, à systema naturae per regna tria naturae, secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis à Editio decima tertia [=13th Edition], aucta, reformata. - Tom. 1, Pars IV and Pars V. Georg. Emanuel Beer, Lipsiae.
- HAGEN, H. A. 1858: Russlands Neuropteren. - *Stettiner Entomologische Zeitung* 19: 110-134.
- HAGEN, H. A. 1860a: Neuroptera Neapolitana von A. Costa, nebst Synopsis der Ascalaphen Europas. - *Stettiner Entomologische Zeitung* 21: 38-56.
- HAGEN, H. A. 1860b: Beitrag zur Kenntniss der Myrmeleon-Arten. - *Stettiner Entomologische Zeitung* 21: 359-369.
- HAGEN, H. A. 1860c: Neuroptera Neapolitana von A. Costa, nebst Synopsis der Ascalaphen Europas. - *Stettiner Entomologische Zeitung* 21: 38-56.
- HAGEN, H. A. 1866: Hemerobidarum Synopsis synonymica. - *Stettiner Entomologische Zeitung* 27: 369-462.
- HAGEN, H. A. 1873: Die Larven von Myrmeleon. - *Stettiner Entomologische Zeitung* 34: 249-295, 377-398.
- HAGEN, H. A. 1887: Stray notes on Myrmeleonidae [Part 1]. - *Canadian Entomologist* 19: 89-93, 101-112.
- HÖLZEL, H. 1972: Die Neuropteren Vorderasiens IV. Myrmeleonidae. - *Beiträge zur Naturkundlichen Forschung in Südwestdeutschland, Beiheft* 1: 3-103.
- ILLIGER, J. K. W. 1807: Tomvs Secvnde. Favna Etrusca sistens Insecta quae in provinciis Forintina et Pisana praesertim colligit Petrvs Rossivs. - Iterum edita et annotatis perpetvis avcta. C.G. Fleckeisen. 2.
- KLAPÁLEK, F. 1906: Algunos Mirmeleónidos y Ascalafidos de Persia y Siria recogidos por el Sr. Martínez de la Escalera. - *Boletín de la [Real] Sociedad Española de Historia Natural* 6: 94-95.
- KLUG J. C. F. 1834 : Symbolae physicae, seu icones et descriptiones Insectorvm, quae ex itinere per Africam borealem et Asiam occidentalem F.G. Hemprich et C.G. Ehrenberg studio novae aut illustratae redierunt. Bd. 4. - Berlin, 1829-45: pl. 35, 36.
- KRIVOKHATSKY, V. A. 1998a: Zoogeography of Palaearctic antlions (Neuroptera, Myrmeleontidae). Report of the 51st Annual Reading in Memory of Nicolai Alexandrovich Holodkovskij, - St. Petersburg. 90 pp.
- KRIVOKHATSKY, V. A. 2003: To the nomenclature of some Palaearctic antlions (Neuroptera, Myrmeleontidae). - *Entomologicheskoe Obozrenie* 82(1):229-230. 1 figure. Separate: 82(1):229-230.
- KRIVOKHATSKY, V. A. 2011: Antlions (Neuroptera: Myrmeleontidae) of Russian. - KMK Scientific Press Ltd. St. Petersburg – Moscow pp. 334.
- KOÇAK, A. Ö. 1976: A new subspecies of Myrmeleonidae (Neuroptera) from Turkey. - *Nachrichtenblatt der Bayerischen Entomologen* 25: 97-100.
- KOÇAK, A. Ö., SEVEN, S., HOSEINPOUR, Y. 1995: On the taxonomic position of *Palpares hispanus turcicus* Koçak (Planipennia, Myrmeleonidae). - *Centre for Entomological Studies, Miscellaneous Papers* 25: 5-7.
- KOLBE, H. J. 1884: Neuroptera aus Marocco, gesammelt von Herrn Prem. Lieut. M. Quedenfeldt. - *Berliner Entomologische Zeitschrift* 28: 132-136
- KOLENATI, F. A. 1846: Meletemata entomologica. Fasc.V. Insecta Caucasi. Coleoptera, Dermaptera, Lepidoptera, Neuroptera, Mutillidae, Aphaniptera, Anoplura. - *Typis Imperialis Academiae Scientiarum, Petropoli*, 169 pp.
- LEACH, W. E. 1815: Order XIII. Neuroptera. Pp. 725-728__+?__ in *Edinburgh Encyclopaedia*, D. Brewster, ed. - Vol. 8, pt. 2, Edinburgh.
- LINNAEUS, C. 1758: Systema natura per regna tria naturae secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis. - 10th Edition. Vol. 1. Salvii, Holmiae. 824 pp.

- LINNAEUS, C. 1764: *Museum S:ae R:ae M:tis ludovicae ulricaе reginae svecorum, gothorum, vandalorumque &c. &c. &c.* - In quo animalia rariora, exotica, imprimis insecta & Conchilia Salvii, Holmiae. 720 pp
- LINNAEUS, C. 1767: *Systema natura per regna tria naturae secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis.* - 12th Edition. Vol. 1, pt. 2 [pp. 533-1327]. Salvii, Holmiae.
- MANSELL M. W. 2010: Towards a catalogue of Afrotropical Lacewings and Alderflies (Neuroptera, Megaloptera). - Proceedings of the Tenth International Symposium on Neuropterology Piran, Slovenia, 2008. DEVETEK D., LIPOVŠEK S. & ARNETT A. E. (eds.) Maribor, Slovenia 2010. Pp. 191-200.
- MANSELL, M. W., ERASMUS, B. F. N. 2002: Southern African biomes and the evolution of Palparini (Insecta: Neuroptera: Myrmeleontidae). in SZIRÁKI, GY. (ed.). Neuropterology 2000. Proceedings of the Seventh International Symposium on Neuropterology (6-9 August 2000, Budapest, Hungary). Acta Zoologica Academiae Scientiarum Hungaricae 48(Suppl. 2): 175-184.
- MCLACHLAN, R. 1873: Notes sur les Myrméléonides décrits par M. le Dr. Rambur. - Annales de la Société Entomologique de Belgique 16: 127-141.
- MCLACHLAN, R. 1889: Neuroptera collected by Mr. J. J. Walker, R. N., on both sides of the Straits of Gibraltar. - Entomologist's Monthly Magazine 25: 344-349.
- MCLACHLAN, R. 1898: Neuroptera-Planipennia collected in Algeria by the Rev. A. E. Eaton. - Transactions of the Entomological Society of London 46: 151-168.
- MONSERRAT, V. J. 1978: Sobre los Neurópteros Ibéricos (I) (Neuroptera, Planipennia). - Graellsia 34:171-176.
- MONSERRAT, V. J. 1982: Contribución al conocimiento de los Neurópteros de C ceres (Neur., Planipennia). - Graellsia 38: 67-84.
- MONSERRAT, V. J., DÍAZ-ARANDA, L. M. 1987: Contribución al conocimiento de los neurópteros de Cuenca (Neuropteroidea, Raphidioptera, Planipennia). - Boletín de la Asociación Española de Entomología 11: 171-189.
- MORTON, K. J. 1926: Notes on Neuroptera from Palestine, including a description of a new species of Myrmeleontidae. Transactions of the Entomological Society of London 73: 403-412.
- NAVÁS, L. 1904: Notas neuropterológicas. V. Myrmeleontidos de España. Butlletí de la Institució Catalana d'Història Natural (1)4:6-10, 19-25.
- NAVÁS, L. 1910: Algunos neurópteros del Museo de Madrid. - Pp. 1-7 in Asociación Española para el Progreso de las Ciencias, Congreso de Valencia (held 1910).
- NAVÁS, L. 1911: Algunos Ortópteros y Neurópteros de Palestina. - Revista Montserratina 5: 118-121.
- NAVÁS, L. 1912: Insectos neurópteros nuevos o poco conocidos. - Memorias de la Real Academia de Ciencias y Artes de Barcelona (3)10: 135-202.
- NAVÁS, L. 1913: Les Névroptères. - Annales d'Histoire Naturelle, Délégation en Perse, Paris 2.
- NAVÁS, L. 1915: Mirmeléonidos (Ins. Neur.) de Europa. - Revista de la Real Academia de Ciencias Exactas Físicas y Naturales de Madrid 13: 602-635.
- NAVÁS, L. 1916: Les Myrméléonides d'Europe et des contrées limitrophes [V]. - Insecta, Rennes 6: 79-89.
- NAVÁS, L. 1926: Névroptères d'Égypte et de Palestine. 2me partie. - Bulletin de la Société Entomologique d'Égypte 10: 26-62.
- PETAGNA, V. 1787: Specimen insectorum ulterioris Calabriae. - Varrentrapp et Wenner, Francofurti et Moguntiae. vi + 46 pp.
- PETIVER, J. 1767: *Jacobi Petiveri opera, historiam naturalem spectantia: containing several thousand figures of birds, beasts, fish, reptiles, insects, shells, corals, and fossils; also of trees, shrubs, herbs, fruits, fungus's, mosses, sea-weeds, &c. from all parts, adapted to Ray's History of Plants, ... to which are now added seventeen curious tracts, ... the additions corrected by the late Mr. James Empson, ... John Millan, London. 2 Vols.*
- PICTET A. E. 1865: *Synopsis des Névroptères d'Espagne.* - H.G. Bailliére & F. Savy, Genève: 123 pp.
- PONGRÁCZ, S. 1923: Csiki Ernő állattani kutatásai Albaniában. XI. Recésszárnyúak. - A MTA Balkán-kutatásainak tudományos eredményei 1: 142-166.
- PROST, A. 2010: Pattern of distribution of Palparini (Neuroptera: Myrmeleontidae: Palparinae) in the northern half of Africa. Faunal transitions and regional overlaps. - Proceedings of the Tenth International Symposium on Neuropterology Piran, Slovenia, 2008. DEVETEK D., LIPOVŠEK S. & ARNETT A. E. (eds.) Maribor, Slovenia 2010. Pp. 257-266.
- OLIVIER, G. A. 1811: *Encyclopedie méthodique. Histoire naturelle.* - Vol. 8 (Insectes). Paris.
- RAMBUR, [J.] P. 1842: *Histoire Naturelle des Insectes, Névroptères.* - Librairie encyclopédique de Roret. Fain et Thunot, Paris. [xviii]+534 pp.
- RAY, J. 1710: *Historia insectorum / autore Joanne Raio; cui subjungitur appendix de scarabæis britannicis, autore M. Lister Landmarks II, monographs xv, 400 p.*

- ROSSI, P. 1790: Fauna Etrusca sistens insecta quae in provinciis Florentina et Pisana praesertim collegit Petrus Rossius. - Vol. 2. Liburni. 348 pp.
- RÖSEL VON ROSENHOF, A. J. 1755: Der monatlich-herausgegebenen Insecten-Belustigung Dritter Teil worinnen ausser verschiedenen, zu den in den beeden ersten Theilen enthaltenen Classen, gehörigen Insecten, auch mancherley Arten von acht neuen Classen nach ihrem Ursprung, Verwandlung und anderen wunderbaren Eigenschafften, aus eigener Erfahrung beschrieben, und in sauber illuminirten Kupfern, nach dem Leben abgebildet vorgestellt werden. J.J. Fleischmann, Nürnberg, 624 pp.
- RÖSEL VON, J. A. & KLEEMANN C. F. C. 1764-68: De natuurlyke historie der insecten; voorzien met naar 't leven getekende en gekleurde plaaten. Volgens eigen ondervinding beschreeven, door den Heer August Johan Rösel, van Rosenhof, miniatuur-schilder. Met zeer nutte en fraaie aanmerkingen verrykt, door den Heer C. F. C. Kleemann. Haarlem en Amsterdam By C. H. Bohn en H. de Wit, boekverkoopers
- SAVIGNY J. C. 1809-1814: Trois planches Zoologie, animaux invertébrés, névroptères par Vol 2. - Description de l'Égypte ou Recueil des observations et des recherches qui ont été faites en Égypte pendant l'expédition de l'armée française, Paris, Imprimerie impériale (puis royale), 1809-1822.
- SIMON, D. 1979: The Ant-lions (Myrmeleonidae) of Israel. Masters thesis. - Tel Aviv University, Tel Aviv, Israel. 123 pp.
- SULZER, J. H. 1776: Abgekürzte Geschichte der Insecten nach dem Linaeischen System. H. Steiner: Winterthur. 274 pp.
- STANGE, L. A. 2004: A systematic catalog, bibliography and classification of the world antlions (Insecta: Neuroptera: Myrmeleontidae). - *Memoirs of the American Entomological Institute* 74:[iv+]1-565.
- STITZ, H. 1912. Palpares aus der Sammlung des Berliner Museums. - *Mitteilungen aus dem Zoologischen Museum in Berlin* 6: 103-116.
- VILLERS, C. J. 1789: Caroli Linnaei entomologia, faunae Suecicae descriptionibus aucta. - Vol. 3. Lugduni. 657 pp.
- WALKER, F. 1853: Catalogue of the specimens of neuropterous insects in the collections of the British Museum. Part II. Sialides-Nemopterides. - *British Museum (Natural History)*, London: 193-476.

websites

- KRIVOKHATSKY, V. 1998b: ZIN – Family Myrmeleontidae (after Krivokhatsky, 1998; corrected). <http://www.zin.ru/projects/zinsecta/eng/ZInsecta.asp>
- SAVIGNY J. C. 1809-1814: Description de l'Égypte <http://descegy.bibalex.org/>
- OSWALD, J. D. 2007: Lacewing Digital Library. Downloads page. Neuropterid Genera of the World download [date 5 September 2007]. <http://insects.tamu.edu/lacewing/downloadgenera.html>. Accessed on 14 September 2007.

Submitted: 25. 06. 2012

Accepted: 15. 07. 2012

Published: 30. 09. 2012