BIOLOGICA NYSSANA
4 (1-2) • December 2013: 93-96 11th SFSES • 13-16 June 2013, Vlasina lake

Original Article

A contribution to the knowledge of the Neuroptera (Insecta) fauna of Serbia

Sonja Petrović

University of Nis, Faculty of Science and Mathematics, Department of Biology and Ecology, Višegradska Str. 33, 18000 Niš, Serbia

** E-mail: sonjichka@gmail.com*

***Abstract*:**
Petrović, S.: ***A contribution to the knowledge of the Neuroptera (Insecta) fauna of Serbia. Biologica Nyssana, 4 (1-2), December 2013: 93-96.***

We present a record of a rare species *Libelloides lacteus* Brullè, 1832 (Ascalaphidae, Ascalaphinae) inhabiting Jelašnica Gorge, formerly known to be present only in one single site located inside Serbia's province Kosovo and Metohija. Existing literature data regarding Balkan Peninsula distribution of this species is listed here. Jelašnica Gorge's adult and larval stage specimen findings are illustrated. Morpho-anatomical parameters essential for species determination are listed. Species habitat conditions presented here, have a closer determination according to vegetation units and according to EUNIS classification system. It is concluded that a Jelašnica Gorge population has the most continental distribution on Balkan Peninsula. Further species investigation is recommended, especially the one regarding it's ecology and it's relationship to other populations.

Key words: *Libelloides lacteus* Brullè, 1832, Jelašnica Gorge, Serbia.

Introduction

Serbian Neuroptera fauna is not researched sufficiently enough, and it's study is rather fragmented. First written data is to be found in Pongracz (1923) work that refers to fauna belonging to this group in Albania which states 12 more species in Kosovo and Metohija. Researching an insect fauna on university land near Majdanpek, Živojinović (1950) affirmed the existence of 7 more Neuroptera species among large number of others. In a contribution about Kosovo and Metohija's Neuroptera species, Devetak and Jakšić (2003) are listing findings of a 51 species of this group. Jones and Devetak (2009) gave new fauna data on *Nevrorthus apatelios* species. As part of an ecological study on macro-invertebrates in Ivanštica river, had been noted a finding of Neuroptera *Osmylus fulvicephalus* (Scopoli, 1763) (Đuknić et al., 2010).

Beside this faunistic works, there is existent literature data where Neuroptera is not the object of primary faunistic research, but mentioned and regarded to as a predator of other groups of insects (Graora, 2009; Jerinić-Prodanović, 2010; Tomanović, 2008, and others). Summing the results of data in this literature, we are free to conclude that there are 54 species of Neuroptera described in Serbia. In Balkan Peninsula Neuroptera fauna, there are 244 species known (Popov & Letardi, 2010). Genus *Libelloides* is occurring in Europe by the number of 9 species. Looking into an overview of a literature quoted here, we can conclude that Serbian fauna recognizes only two species of *Libelloides*: *Libelloides macaronius* (Scopoli, 1763) (syn.: *Ascalaphus macaronius*) and *Libelloides lacteus* Brullè, 1832 [syn.: *Ascalaphus ottomanus* (Germar, 1817)]. However, this work present a newly discovered finding of *Libelloides lacteus* Brullè, 1832 species.

Material and methods

Field research on Jelašnica gorge domain, had been done during 2011 and 2012. Material concerning this species had been registered on the site, habitat and species pictures photographed using a digital camera. Due to population preservation concerns, only a few of evidential specimens had been collected. Morphologic and anatomical parameter analysis used for determination, had been done in a standard procedure in a form of classic microscopic slide preparation. Photographs of specimen *in situ* had been taken using "Olympus" SP-510UZ (7.1 megapixel and 10X optical zoom), photographs of mandible had been taken using "Leica DM 1000" microscope with "Camera Leica DEC 290". All of the material (specimens and mandible slides) are deposited in the author's collection.

Results and discussion

In a few recent years of fieldwork in Jelašnica Gorge area, species *L. macaronius* had been found rather regularly. In early May of 2012, however, we had found a few adult specimens of *A. lacteus* species, clearly discerned by it's charachteristic habitus of white base colored wings with blue tones heading toward an apex area, as opposed to *L. macaronius* whose wings are dominated by a yelow. We have sampled evidential specimens and made our snapshots *in situ* (Fig.1).

Fig. 1. *Libelloides lacteus* in Jelašnica gorge (Photo S. Petrović)

One month later and according to our expectations, during a careful field inspection we have noticed a number of characteristic sand funnels (Fig. 2), on bottoms of which we had found and sampled a few adult larvae.

Fig. 2. Characteristic habitat (sand funnels) of the larvae of *Libelloides lacteus* (Photo S. Petrović)

Conserved larvae have been photographed previously (Fig. 3), followed by dissection of a mandible under a binocular and preserved in a form of a permanent microscopic slide preparation (Fig. 4). Comparison of larvae habitus and morphological details of mandible to the same parameters found on other related species, led to an unambiguous conclusion of the matter being a larval species listed (G e p p, 1984). Mandible is characterised by three pronounced teeth on the inside, with presence of an accompanying hairs over a whole surface.

Fig. 3. Larva of *Libelloides lacteus* (Photo S. Petrović)

Ecological conditions of the habitat, and the species that exist on it, fully correspond to those in which the species had been found in Bulgaria (B u r e s c h, 1936) or on the Adriatic side of Balkan Peninsula (D e v e t a k, 1998). We may charachterise them as being an exeptionally arid climate habitats, exposed to a south wind, and being poor in vegetation. In Jelašnica Gorge we have established the species exactly on such kind of a site, inscribed in a geographical literature by the toponym Ploča (Fig. 5). This site's vegetation is represented by a plant associations of species *Poterio-Festucetum valesiacae* Danon 1969, and

Sedo-Potentilletum arenariae Ružić 1978. According to EUNIS habitat classification system, habitats being registered on this site are : E1.224 (Perennial calcareous grassland and basic steppes) dominated by *Festuca valsiaca* s. lat. and E1.5 (Mediterranean-montane grassland).

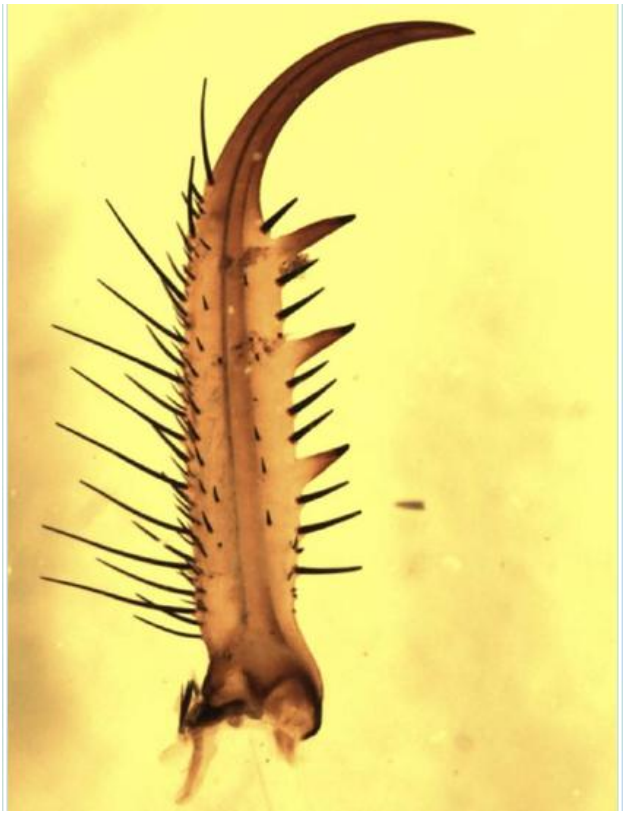

Fig. 4. Mandubula of adult larva of *Libelloides lacteus* (Photo I. Gnjatović)

Summary review shown on a map (Fig.6), displays a distribution of this species on a Balkan Peninsula according to Aistleitner (2007), supplemented with our own finding in Jelašnica Gorge. It is shown that the find of this Anatolian Ponto Mediterranean species, is being the most continental one. Buresch's (1936) findings are comming from Thrace part of European Turkey and Bulgaria (Patlejna monastery near Preslav, St. Todor monastery near Bodom, Dede Agač) . Place of discovery in Jelašnica Gorge, is located 350 km further away from that teritory. It is certain that a communication to populations on the east of Bulgaria is achived over a valley of Nišava river. Due to non existent, inadequate habitats and mountain barriers (Kukavica Mt., Radan Mt., Jastrebac Mt., Kopaonik Mt.) which do not permit populations mixing, a communication with populations from Kosovo and Metohija is a less certain one. Bearing these facts in mind, we may infer that further ecological and molecular-genetic research would complement a comprehensive biologycal knowledge on this species.

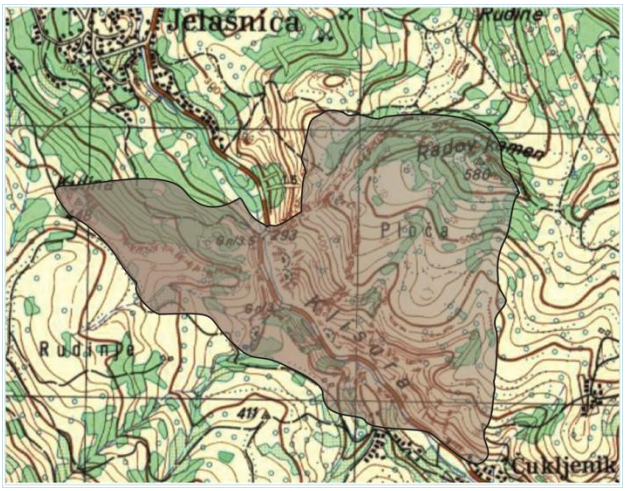

Fig. 5. Site Pleče in the Jelašnica Gorge

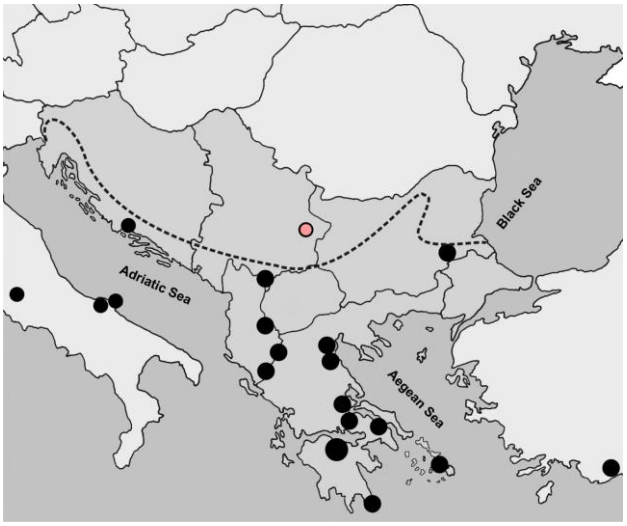

Fig. 6. Distribution of *Libelloides lacteus* on Balkan penninsula, Italy and Turkey (dashed line is the boundary of the distribution of species on the Balkan Peninsula according to Aistleitner, 2007)

Conclusion

On a basis of morphological parameters in adults and on a basis of a larvae structure details, a pressence of a *Libelloides lacteus* Brullè, 1832 (Neuroptera, Ascalaphidae) in Jelašnica Gorge, near Niš, has been proven. This is by far the most continental finding of this species on Balkan Peninsula.

References

Aistleitner, E., 2007. Zur Taxonomie und Chorologie des Schmetterlingshaftes *Libelloides*

lacteus (Brullè, 1832). - *Entomofauna*, **28**(26): 357-368.

Buresch, I., 1936. Prinos' k'm' izučvaneto na mrežokrilnata fauna na B'lgaria. - *Izvestija na B'lgarskoto entomologično družestvo*, **IX**: 135-150.

Devetak, D,.1998. *Libelloides ottomanus* (Germar, 1817) in the Northwestern part of the Balkan Peninsula (Neuroptera, Ascalaphidae). - *Ent.Croat*., (1997) 1998. **3**(1-2): 45-48.

Devetak, D. and Jakšić, P. 2003. Neuroptera of Kosovo and Metohija (Serbia). - *Z. Arb. Germ. Ost. Ent.Öst.Ent*., **55**: 45-53.

Đuknić, J., Bjelanović, K., Durutović, A. and Jovanović, J. 2010. Ecological Survey of Macroinvertebrate Communities in the Vrelska Padina and the Ivanštica Rivers (Eastern Serbia). - BALWOIS 2010 - Ohrid, Republic of Macedonia. Pp.: 1-12.

Davies, C., Moss, D., Hill, O.M., 2004. EUNIS Habitat Classification Revised 2004. http://www.searchmesh.com/pdf/GMHM1%20EUNIS_Habitat_Classification_Revised_2004.pdf

Gepp, J., 1984. Erforschungsstand der Neuropteren-Larven der Erde. Progress in World's Neuropterology. Gepp J., H. Aspöck & H. Hölzel Ed, 265 pp 1984, Pp.: 183-239, Graz.

Graora, D. 2009. Parazitoidi i predatori štitastih vašiju iz familije Diaspididae u nekim voćnjacima u Srbiji. - *Pestic. fitomed.* (Beograd), **24**(4), 2009, 295-301.

Jerinić-Prodanović, D., 2010. Predatori i parazitoidi *Cacopsylla pyri* (L.) (Hemiptera: Psyllidae) u Srbiji. - *Pestic. fitomed.* (Beograd), **25**(1), 2010, 29-42

Jones, R. and Devetak, D. 2009. First record of Nevrorthidae from Slovenia. Acta entomologica slovenica **17**(2): 99-106.

Pongracz, S. 1923. Recesszarnyuak. Neuropteroiden. – In: Csiki Erno Allattani Kutatasai Albaniaban. Explorationes zoologicae ab E. Csiki in Albania perectae. IX. A. Magyar Tudomanyos Akademia Balkan-Kutatasainak Tudomanyos Eredmenyei. Budapest, **1**(1): 143-166.

Popov, A., Letardi, A., 2010. Comparative zoogeographical analysis of Neuropterida of the Apennine and Balkan peninsulas. - Proceedings of the Tenth International Symposium on Neuropterology. Piran, Slovenia, 2008. Devetak, D., Lipovšek, S. & Arnett, A.E. (eds). Maribor, Slovenia, 2010. Pp. 239–256.

Tomanović, Ž., Kavallieratos, N.G., Stary, P., Petrović-Obradović, O., Athanassiou, C.G., Stanisavljević, Lj.Ž., 2008: Cereal aphids (Hemiptera: Aphidoidea) in Serbia: Seasonal dynamics and natural enemies. - *Eur. J. Entomol.* **105**: 495–501.

Živojinović, S. 1950. Fauna insekata šumske domene Majdanpek. SAN, Knjiga **CLX** (2), Beograd.