

1901, together with the recent data from Mučanj, Javor and Vlasina gives a clear picture of its distribution, even though it was thought to be present only on Kopaonik. This taxon also represents an endemic Balkan butterfly.

With the research known up until now, the conclusion is that, because of a great number of protected and endangered species, this area is of exceptional value for conservation. It is necessary to continue and improve the research to obtain even greater knowledge about the butterfly distribution of southwestern Serbia, but also Balkan in general.

Key words: butterfly, endangered species, fauna, Jadovnik, protection, Slapovi Sopotnice

VILINI KONJICI (INSECTA: ODONATA) NA PODRUČJU PIO „VLASINA”

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Vilini konjici (Insecta: Odonata) su dobro proučena grupa insekata koja u svijetu obuhvata preko 5500 vrsta. U Srbiji je do danas zabilježeno 65 vrsta, 23 iz podreda djevice (Zygoptera) i 42 iz podreda pravih vilinih konjica (Anisoptera). Neke vrste imaju široku ekološku valencu i rasprostranjenost, dok su druge ograničene na veoma specifična staništa, ili se javljaju na manjim oblastima. Njihov razvojni ciklus je u većoj ili manjoj mjeri vezan za vodena staništa. Vilini konjici su model organizmi za različite tipove procjena i monitoringa, kao što su određivanje indeksa diverziteta, procjena stanja vodenih tijela (uključujući kvalitet vode i funkcionalnost ekosistema), upravljanje ekosistemima i njihova obnova kao i detektovanje i predviđanje uticaja globalnog zagrijavanja na biološke sisteme.

Predeo izuzetnih odlika Vlasina se nalazi u jugoistočnoj Srbiji i predstavlja područje koje obuhvata planinski plato prosječne nadmorske visine 1000-1300 m. Obimnim hidrotehničkim intervencijama je formiran značajan hidrografski objekat Vlasinsko jezero. Iako je antropogeni uticaj doveo do degradacije ekosistema, raznovrsnost i specifičnost biotopa Vlasinskog područja usloveli su visok diverzitet flore, faune, fungije i ekosistema koji se odlikuju izraženim stepenom reprezentativnosti, autohtonosti i autentičnosti prirodnih karakteristika. Cilj istraživanja prvenstveno je bila faunistika – popis vrsta vilinih konjica na teritoriji PIO Vlasina, kako bi se stvorio temelj za daljnja istraživanja, uključujući monitoring rijedih vrsta.

Terenska istraživanja organizovana su u okviru studentskih kampova u organizaciji Naučno-istraživačkog društva studenata biologije i ekologije „Josif Pančić” gdje su na proljetnim, ljetnim i jesenjim kampovima u periodu od 2013. do 2017. godine vršena istraživanja vilinih konjica. Identifikacija adultnih jedinki vršena je na terenu, pri čemu je korišten ključ za identifikaciju vilinih konjica. Kada je bilo neophodno, jedinke su uhvaćene entomološkom mrežom, pregledane pod lupom i karakteri važni za identifikaciju su fotografisani.

Na području PIO Vlasina u periodu od 2013. do 2017. godine zabilježeno je ukupno 25 vrsta, svrstanih u 8 porodica, što čini 38,46% vrsta Srbije. Najbrojnije vrste bile su *Enallagma cyathigerum* (Charpentier, 1840)

i *Orthetrum cancellatum* (Linnaeus, 1758). Vrste *Sympetrum vulgatum* (Linnaeus, 1758), *Onychogomphus forcipatus* (Linnaeus, 1758) i *Sympetrum striolatum* (Charpentier, 1840) bile su rijetke na istraživanom području, pri čemu je *S. striolatum* prvi put zabilježen na jesenjem kampu 2017. godine. Vrsta *Epitheca bimaculata* (Charpentier, 1825) je jedina zabilježena zaštićena vrsta na teritoriji PIO Vlasina, a zaštićena je prema Pravilniku o proglašenju i zaštiti strogo zaštićenih i zaštićenih divljih vrsta biljaka, životinja i gljiva. *E. bimaculata* je brojna na prostoru Vlasinskog jezera i nalažena je duži niz godina pri čemu je potvrđeno i njeno razmnožavanje na istraživanom području putem teneralnih jedinki.

Ključne riječi: Anisoptera, *Epitheca bimaculata*, fauna, vodena staništa, Zygoptera

DRAGONFLIES (INSECTA: ODONATA) OF LANDSCAPE OF OUTSTANDING FEATURES VLASINA

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Dragonflies are well studied group of insects that includes over 5500 species in the world. Until today, 64 species have been recorded in Serbia, encompassing the 42 species of dragonflies (Anisoptera) and the 23 species of damselflies (Zygoptera). Some are widespread, while others are limited to very specific habitats, or occur in smaller areas, but generally their life cycle is more or less related to an aquatic habitat. Odonata constitute a valuable tool for various types of assessment and monitoring, such as the measure of biodiversity, the appraisal of water-body health or integrity (including water quality and ecosystem function), the monitoring of management or restoration practices, and the detection and prediction of the biological impact of climate warming.

Landscape of Outstanding Features Vlasina is located in southeastern Serbia and represents an area that includes a mountain plateau of an average elevation of 1000-1300 m. Extensive hydro-technical interventions have formed hydrographic object Vlasina Lake. Although the anthropogenic effect has led to degradation of ecosystems, the diversity and specificity of the Vlasina region's biotope have resulted in a high diversity of flora, fauna, fungi and ecosystems that are characterized by a high level of representativity and authenticity of natural characteristics. The aim of the research was primarily the faunistics – to make a list of the species of dragonflies in the territory of Landscape of Outstanding Features Vlasina, in order to provide the basis for further research, including the monitoring of more rare species.

Field research was organized within student camps organized by the Scientific Research Society of Biology and Ecology Students “Josif Pančić”, where biological research was carried out in spring, summer and autumn camps between 2013 and 2017. The identification of adult individuals was carried out on the field, using the key to identify dragonflies. When necessary, the individuals were captured by an entomological net, checked under the magnifier glass and important identification characters were photographed.

In the area of Landscape of Outstanding Features Vlasina in the period from 2013 to 2017, a total of 25 species were recorded, classified into eight families, which makes 38.46% of the species of Serbia. The most numerous species were *Enallagma cyathigerum* (Charpentier, 1840) and *Orthetrum cancellatum* (Linnaeus, 1758). Species *Sympetrum vulgatum* (Linnaeus, 1758), *Onychogomphus forcipatus* (Linnaeus, 1758) and *Sympetrum*

striolatum (Charpentier, 1840) were rare in the explored area where *S. striolatum* was first recorded at the autumn camp in 2017. The species *Epitheca bimaculata* (Charpentier, 1825) is the only protected species on the territory of the Landscape of Outstanding Features Vlasina. *E. bimaculata* is numerous in the area of Vlasina Lake and has been found for several years, confirming its reproduction in the explored area.

Key words: Anisoptera, aquatic habitats, *Epitheca bimaculata*, fauna, Zygoptera

AN UPDATED CHECKLIST OF AQUATIC INVERTEBRATES IN DOJLAN LAKE AND ITS WATERSHED (R. MACEDONIA)

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The presented checklist is the first critical list of aquatic invertebrates from Dojran Lake and its watershed (R. Macedonia). The list is based on historical literature data and field research by the authors during the August of 2016th. In addition, identification and registration of errors from previous studies have been also indicated. Results show that Dojran Lake supports extremely high diversity of aquatic invertebrates (225 species), including numerous local, national and Balkan endemic species, thereby confirming once again that the lake meets the Key Biodiversity Areas criteria in the country.

Key words: aquatic invertebrates, biodiversity, checklist, Dojran Lake

NEW DATA ABOUT THE OCCURRENCE OF LARVAE OF *CORDULEGASTER HEROS* THEISCHINGER, 1979 (ODONATA: CORDULEGASTRIDAE) IN R. MACEDONIA

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The Balkan goldenring (*Cordulegaster heros* Theischinger, 1979) is a Natura 2000 species of community interest and it is listed as “near threatened” on the IUCN Red List of Threatened Species. However, negligible conservation efforts are being made in some regions, including R. Macedonia.

Larvae were collected during several hydrobiological studies conducted in 2016-2017 with Surber sampler and Kick net. The collected specimens were preserved in 70% ethanol and taken to the Laboratory of Invertebrate Zoology at the Faculty of Natural Sciences and Mathematics for further identification.