

habitats that are below 100 m a.s.l. compared to the higher elevations. Two substitute subspecies were observed: the Yellow-bellied slider (*T. s. scripta*) was recorded on four localities, while the Cumberland slider (*T. s. troostii*) was noticed on two localities. All three present subspecies can freely hybridize which can lead to an increase in genetic diversity and thus likely increase invasive potential of this species.

The number of introduced turtles in Serbia has significantly increased in regard to the previously published data. Also, new localities where these turtles are present were marked. The largest populations of these turtles are found in big cities such as Novi Sad and Belgrade, where successful reproduction is confirmed. Lowland habitats were noticed to be more vulnerable and preferable for their expansion.

Even though it is banned to import and trade any *Trachemys scripta* subspecies, this has not yet resolved the problem of its presence in the Serbian pet trade. By respecting the already existing legislation should consequently lead to reduced number of cases where people release these invasive turtles into natural ecosystems. Opening and maintaining shelters for these animals would without doubt contribute to protection of natural ecosystems. Besides that, it is necessary to raise awareness through public presentation of the problem whenever that is possible. The species has a great invasive potential so IUCN suggests that these animals should be removed from natural habitats across Europe.

Key words: ecosystems, invasive species, natural habitats, turtles

ISTRAŽIVANJE FAUNE GMIZAVACA, VODOZEMACA I ZGLAVKARA NA PLANINI CER, SA OSVRTOM NA VRSTE ZNAČAJNE ZA „NATURA2000”

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Planina Cer je smeštena u severozapadnom delu Srbije i predstavlja ka severu najistureniju ostrvsku planinu južnog oboda Panonskog basena. Okarakterisana je kao predeo raznovrsnih geomorfoloških, hidroloških, biogeografskih i drugih prirodnih odlika. Kroz istoriju Cer je predstavljao značajno mesto za razne ljudske aktivnosti (arheološki nalazi, srednjevekovni gradovi i manastiri, značajne bitke), pa tako i danas, pored toga što je slabo naseljen, trpi određeni antropogeni pritisak (seča šuma, izgradnja vikendica) koji mahom ostavlja negativne posledice po prirodne vredosti ovog predela. Flora i fauna Cera su veoma slabo istraživani u skorije vreme, izuzev ornitofaune koja je obrađena krajem prošlog veka, a publikovana je i lista fungije područja. Planina je prepoznata kao područje od izuzetnog značaja za istraživanja biodiverziteta, između ostalog, te su podaci iz ove oblasti potrebni što pre.

Trenutno je u toku projekat kartiranja određenih životinjskih vrsta značajnih za zaštitu prirode. U periodu od 2012. do 2017. godine je održano više naučno-istraživačkih kampova u organizaciji NIDSBE „Josif Pančić” iz Novog Sada, dok su u prethodne dve godine intenzivirane terenske aktivnosti, te je u intervalu od aprila 2016. do oktobra 2017. ostvareno 12 izlazaka na teren istraživačkog karaktera. Istraživanje se sprovodi neinvazivnim metodama: jedinke se identifikuju na terenu i fotografišu zarad potvde nalaza. Rad na terenu se svodi na georeferenciranje svakog pojedinačnog nalaza taksona, a dobijeni podaci se obrađuju u softveru „QGIS”.

U okvir istraživanja ulazi kompletna herpetofauna (Reptilia) i batrahofauna (Amphibia), dnevni leptiri (Lepidoptera: Rhopalocera), kao i predstavnici insekatskog reda tvrdokrilaca (Coleoptera) koji su značajni za područja evropske ekološke mreže „Natura2000“. Tvrdokrilci su zastupljeni sa četiri „Natura2000“ predstavnika: *Carabus variolosus* Fabricius, 1787, *Lucanus cervus* (Linnaeus, 1758), *Rosalia alpina* (Linnaeus, 1758) i *Morimus asper funereus* Mulsant, 1862. Vrste *L. cervus*, *R. alpina* i podvrsta *M. a. funereus* predstavljaju saproksilne insekte koji su od koristi za procenu starosti i kvaliteta šuma, a pritom se nalaze i na Evropskoj crvenoj listi saproksilnih insekata. Zabeleženo je 66 vrsta dnevnih leptira, od kojih se osam nalazi na Pravilniku o proglašenju zaštićenih i strogo zaštićenih vrsta biljaka, životinja i gljiva, međutim nije zabeležena nijedna vrsta koja je značajna za područja evropske ekološke mreže „Natura2000“. Među nalazima zglavkara, istakli bismo nalaze potočnog raka *Austropotamobius torrentium* (Schrank, 1803) koji predstavlja vrstu značajnu za formiranje ekološke mreže. Predstavnici herpetofaune i batrahofaune su izabrani kao idealni pokazatelji stanja ekosistema, i za sada je zabeleženo ukupno 18 vrsta, od čega su tri vrste zaštićene, a čak 12 ima status strogo zaštićene vrste u Republici Srbiji. Među zabeleženim, pet vrsta vodozemaca: *Bombina variegata* (Linnaeus, 1758), *Pseudepidalea viridis* (Laurenti, 1768), *Pelophylax ridibundus* (Pallas, 1771), *Rana graeca* Boulenger, 1891, *Rana dalmatina* Bonaparte, 1840, i sedam vrsta gmizavaca: *Testudo hermanni* (Gmelin, 1789), *Lacerta viridis* (Laurenti, 1768), *Podarcis muralis* (Laurenti, 1768), *Coronella austriaca* Laurenti, 1768, *Zamenis longissimus* (Laurenti, 1768), *Natrix tessellata* (Laurenti, 1768), *Vipera ammodytes* (Linnaeus, 1768), označeno je kao značajno za formiranje evropske ekološke mreže „Natura2000“ jer se nalaze na Prilozima II, IV ili V Direktive o staništima EU.

Nedavno je pokrenuta inicijativa da se Cer proglašava zaštićenim prirodnim dobrom i time zaštititi Zakonom o zaštiti prirode Republike Srbije. Očekujemo da će podaci prikupljeni u ovim istraživanjima doprineti jasnijoj i potpunijoj slici biološke raznovrsnosti i bogatstva planine Cer. Kao izuzetno vredan kulturno-istorijski spomenik sa velikim potencijalom za razvoj ekoturizma, ovaj predeo zaslužuje da bude označen i prepoznat kao bitno utočište za veliki broj biljnih i životinjskih vrsta koje su skladno raspoređene u više različitih životnih zajednica po čitavoj površini planine.

Ključne reči: batrahofauna, dnevni leptiri, ekološka mreža, herpetofauna, Srbija, tvrdokrilci

RESEARCH OF REPTILES, AMPHIBIANS AND ARTHROPODS ON THE CER MOUNTAIN, WITH A REVIEW OF SPECIES SIGNIFICANT FOR NATURA2000

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Mountain Cer is located in the northwestern part of Serbia and it presents the most distal island mountain to the north in the southern edge of the Pannonian basin. It is characterized as a landscape of diverse geomorphological, hydrological, biogeographical and other natural features. Through out the history, mountain Cer has been an important place for various human activities (archaeological finds, medieval castles and monasteries, significant battles), so today, although the mountain is sparsely populated, it suffers from certain anthropogenic pressure (deforestation, construction of cottage), which leaves negative effects on natural values. Flora and fauna of Cer are poorly explored nowadays, except ornithofauna, which was processed at the end of the last century. Also, a checklist of fungi has been published. Cer has been recognized as an area of great importance for biodiversity researches, among other things, so the data in this area is needed as soon as possible.

Currently there is a project of mapping certain animal species which are important for nature conservation. Several scientific-research camps organized by SRSBES "Josif Pančić" have been held in the period from 2012 to 2017, but in the last two years, field activities have been intensified, and in the interval from April 2016 to October 2017, 12 field research visits have been realized. The survey is conducted by non-invasive methods: identification of individuals on the ground and photograph for the confirmation. Field work is reduced to georeferencing of each taxon findings, and the obtained data is processed in the software "QGIS".

Research includes all of the herpetofauna (Reptilia) and batrachofauna (Amphibia), butterflies (Lepidoptera: Rhopalocera), and also representatives of beetle insect order (Coleoptera) which are important for areas of European ecological network Natura2000. Beetles are represented with four Natura2000 representatives: *Carabus variolosus* Fabricius, 1787, *Lucanus cervus* (Linnaeus, 1758), *Rosalia alpina* (Linnaeus, 1758) and *Mori-musasper funereus* Mulsant, 1862. Species *L. cervus*, *R. alpina* and subspecies *M. a. funereus*, represent saproxylic insects which are useful when estimating the age and the quality of forests, also they are on the European Red List of Saproxylic Beetles. Not a single species, among the butterflies, that is important for the European ecological network Natura2000 has been noticed, however among 66 recorded species eight are in the Regulation on the proclamation and protection of strictly protected and protected wild species of plants, animals and fungi. Among arthropods we could point out findings of crayfish *Austropotamobius torrentium* (Schrank, 1803) which is recognized as important for Natura2000 network. Representatives of herpetofauna and batrachofauna were chosen as an ideal indicators of ecosystem condition, and for now there are a total of 18 species, out of which three species are protected, and 12 have the status of strictly protected in Republic of Serbia. Among recorded, five species of amphibians: *Bombina variegata* (Linnaeus, 1758), *Pseudepidalea viridis* (Laurenti, 1768), *Pelophylax ridibundus* (Pallas, 1771), *Rana graeca* Boulenger, 1891, *Rana dalmatina* Bonaparte, 1840, and seven species of reptiles: *Testudo hermanni* (Gmelin, 1789), *Lacerta viridis* (Laurenti, 1768), *Podarcis muralis* (Laurenti, 1768), *Coronella austriaca* Laurenti, 1768, *Zamenis longissimus* (Laurenti, 1768), *Natrix tessellata* (Laurenti, 1768), *Vipera ammodytes* (Linnaeus, 1768), are marked as important for the formation of ecological network Natura2000 because they are on the Annex II, IV or V of the Habitats directive EU.

Recently, an initiative has been launched to declare Cer Mountain a protected natural good and therefore protecting nature by the Law on nature protection of the Republic of Serbia. We expect that the collected data in this study will contribute to a clearer and more complete picture of the biological diversity and richness of Cer Mountain. As a valuable cultural and historical monument, with a great potential for developing ecotourism, this area deserves to be highlighted and recognized as a haven for large number of plant and animal species that are consistently arranged in a various living communities throughout the surface of mountain.

Key words: batrachofauna, beetles, butterflies, ecological network, herpetofauna, Serbia

