

CONCLUSIONS:

These conclusions are in accordance with the results of previous research showing that, in the early stage of litter decomposition, the litter quality had the strongest influence on mass loss, whereas there was no significant effect of land-use or

Alpha diversity index	Studied locations					
	OF	OF	OF	SF	SF	SF
	1	2	3	1	2	3
Taxa_S	6	6	6	3	5	4
Individuals	44	40	29	23	31	28
	1,6	1,7	1,6	0,8	0,9	0,6
Shannon_H	9	1	6	2	1	6
Evenness_e^H/S	0,9	0,9	0,8	0,7	0,5	0,4
	0	2	7	6	0	8
	0,3	0,2	0,2	0,7	0,7	0,8
Berger-Parker	0	8	8	0	4	2

Table 1. Alpha diversity index of earthworm fauna in the studied locations

management practices. The microbial decomposition is carried out by many groups of microorganisms and is not limited by nutrients during the growing season. Still, differences in the litter mass loss among the land-use types increase in the later phases—as decomposition progresses—because of the decomposer groups being more selected, since fewer microbes possess the degradation enzymes for the remaining organic compounds. This pattern is clearer in Green tea, because Rooibos tea has much slower plant litter decomposition rate, due to high lignin content.

T1-P-8 First record of the endemic earthworm *Allolobophora (sensu lato) strumicae* (Šapkarev, 1973) (Clitellata: Lumbricidae) in Serbia, with comments on its ecology and distribution

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KEYWORDS: earthworm; new record; *Allolobophora (sensu lato) strumicae*; Serbia;

INTRODUCTION:

The earthworm fauna of Serbia is quite well-known. It is worth mentioning that most of the earlier research focused mainly on northern, central and eastern Serbia, and not many collecting expeditions were led to the areas of Kopaonik Mountain. The Kopaonik Mt. (43°16'N, 20°49'E) is situated between the central and southern part of Serbia and belongs to the Dinaric Mountain range.

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OBJECTIVES:

The aims of the present study are to provide information on the distribution of *Allolobophora (sensu lato) strumicae* (Šapkarev, 1973) in the country and in the adjacent areas of the Balkan Peninsula. In addition, we comment on the ecological preferences.

METHOD / DESIGN:

The specimens for this study were collected during the period from 2018 to 2021, in the southwestern and southern slopes of Kopaonik Mt. They were collected using the diluted formaldehyde method complemented with digging (0.4 x 0.4 m²). The earthworms were killed in 70% ethanol, immediately fixed in 4% formalin solution and transferred and stored in 90% ethanol. Earthworms were identified to species level and only mature individuals were counted. All of the specimens collected and examined are permanently archived at either and the Earthworm Collection of the University of Kragujevac, Serbia (CEKUS).

RESULTS:

Identified the earthworm material recently collected from this mountain range, resulting in a new record of the endemic species *All. (s.l.) strumicae*. The endemic earthworm species *All. (s.l.) strumicae* previously known only from the Strumica region in North Macedonia (Šapkarev, 1973; Mršić, 1991), is reported from the Serbia for the first time. Further, the new localities from Kopaonik Mt. represent the northernmost limit of the species' natural range for now. The distribution of this species is hill meadows, pastures and oak forests at altitudes of 600 to 800 m a.s.l. The most represented period of *All. (s.l.) strumicae* is identified as April–May. Regarding ecological categories, it belongs to the deep-burrowing-endogeic species. Actually, this species has a remarkable adaptation to life in the deep soil and strong development of the capacities of displacement in the soil.

CONCLUSIONS:

The results of our study provide new faunistic data about expand the knowledge about the distribution of *All. (s.l.) strumicae* on the Balkan Peninsula. The finding endemic species in the Serbia confirms the rich and remarkable biodiversity in this country as well the importance of defining mitigation measures for minimizing the negative anthropogenic impacts towards the habitats of this species. Also, currently this species has an uncertain status within the genus *Allolobophora*. Our future research will try to solve the taxonomic status of this species by applying integrative systematics.

T1-P-9 Comparison of the earthworm fauna of oak and spruce forest on western slopes Kopaonik mountain in Serbia

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KEYWORDS: earthworm; diversity; oak forest; spruce forests; Kopaonik Mountain;

INTRODUCTION:

In this paper, we compare the earthworm fauna of coniferous and deciduous forests with different environments in the western slopes of Kopaonik Mountain.

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OBJECTIVES:

Our objectives were: a) to determine earthworm fauna in oak and spruce forests b) to determine which forest is richer in earthworm fauna c) to examine the impact of vegetation cover, soil and altitude on the diversity of earthworm fauna in the studied forests.

METHOD / DESIGN:

Earthworm communities were sampled within two months in both 2018 and 2020 (from May and June, coinciding with the rainy season) in the western slopes of Kopaonik Mt. In the hilly belt up to 1.000 m, sampled three plots of the oak forest (OF1 411 m, OF2 670 m and OF3 800 m a.s.l.) which is where sierozem on serpentines and humus silicate soil on serpentines occurs. Also, the mountain belt from 1.500 to 1.950 m, sampled three plots of the spruce forest (SF1 1.750 m, SF2 1.830 m and SF3 1950 m a.s.l.), types of soil present are brown podzolic soil and acidic humus-silicate soils. We were sampled eight samples 50x50 cm from each of the sampling units (plots). Earthworms were identified to species level and only mature individuals were counted. Paleontological statistics software (PAST) was utilized for calculating the alpha diversity index (Shannon-Wiener, Evenness and Berger-Parker) in the studied localities.

RESULTS:

A total of 195 earthworm individuals (113 individuals in oak forest/82 individuals in a spruce forest), of which 9 species *Allolobophora chlorotica*, *Allolobophora leoni*, *Allolobophora (s.l.) strumicae*, *Apporectodea rosea*, *Dendrobaena vejdvskyi*, *Dendrobaena octaedra*, *Eisenia fetida*, *Lumbricus rubellus* and *Proctodrilus antipai* were recorded in oak forest, while species *Dendrobaena attemsi attemsi*, *Dendrobaena alpina alpina*, *Dendrobaena byblica byblica*, *Dendrobaena illyrica* and *D. octaedra* were recorded in a spruce forest. Oak forests were the richer in earthworm species (average 6 species). Upper montane spruce forests were the poorer in earthworm species (average 4 species). to the Shannon-Wiener and Evenness index, it was indicated that oak forest had a higher species diversity than the spruce forest. In contrast, the Berger-Parker index showed higher dominance species in spruce forests (Table 1).

This study indicates that oak forests are richer in the earthworm taxa relative to the spruce forests. This is because of the optimum environmental factors in oak forests and they can also provide suitable habitats for earthworms (i.e., more humidity and food). However, dominance was higher in spruce forests, because mostly epigeic species has freeze-hardiness and tolerate acid soils. Overall, our results support that climatic factors, vegetation cover, soil characteristics and altitude is impacting the diversity of earthworm fauna in studied forests.

T1-P-10 Available vs used prey – combined methods reveal breeding diet of the European Roller (*Coracias Garrulus*) in Serbia

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KEYWORDS: Ivlev index; sweep net; pitfall trap; arthropod

INTRODUCTION:

Population recovery of the threatened European roller (*Coracias garrulus*) was achieved during the last few decades by in-

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