

SIMILARITY OF THE WEEVIL FAUNA (CURCULIONOIDEA) ON THE MOUNTAINS TARA AND STARA PLANINA (SERBIA)

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ABSTRACT: Comparative studies of two or more faunistic complexes have been rarely conducted in our country. Such investigations can help us to understand the processes of migration, colonization, and evolution. The results of preliminary investigations of weevil fauna composition carried out on two mountains in Serbia, Tara and Stara Planina, are presented here. Although they are far (about 230 km) apart and separated by geographically very different places, these mountains have certain similarities, based on their geological past. Preliminary parallel investigations of their weevil populations indicate that they are similar too. Twenty species are held in common. Values of the Sørensen and Jaccard similarity indices are 0.23 and 0.13, respectively.

KEY WORDS: Curculionoidea, similarity, Tara, Stara Planina, Serbia.

INTRODUCTION

The mountains Tara and Stara Planina are located in the extreme western and eastern parts of Serbia, respectively (Fig. 1). The former belongs to the Dinaric massif, and the latter to the Carpatho-Balkan massif. Both mountains are very old, dating from the Paleozoic (GAJIĆ, 1988; MIŠIĆ *et al.*, 1978). They represent practically the oldest terrestrial surfaces in the Serbia. These mountains have similar age, latitude, and forest vegetation zones; their geological, pedological, and hydrographical situations are similarly complex; and they both have refugia, developed vertical differentiation of vegetation, and confrontation of maritime and continental airstreams (GAJIĆ, 1988; MIŠIĆ *et al.*, 1978). This accounts for the existence of some similar habitats and plant associations, and, it seemed logical to expect similarity of the weevil settlements because weevils are phytophagous.

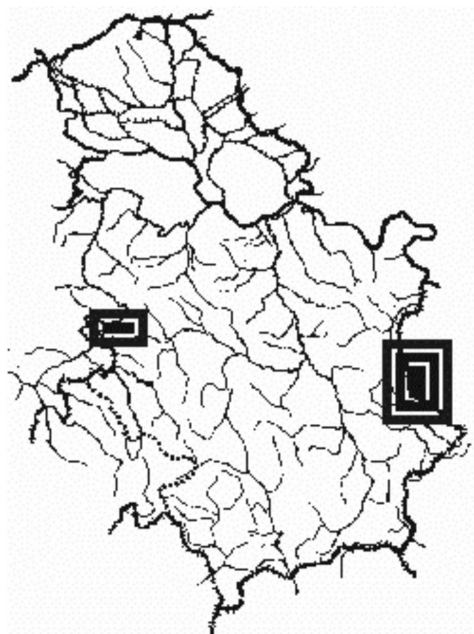


Fig. 1. Location of the mountains Tara (left) and stara Planina (right)

MATERIAL AND METHODS

Adult weevils on Tara were collected at the beginning of May of 1991 and 2002 in the western part of Tara National Park. Material was collected in the most common climatogenic types of biotopes of two typical forest associations – the first composed of spruce, fir, and beech (*Piceeto-Abieto-Fagetum*) and the second consisting of pine forests (dominantly *Pinetum nigrae-silvestris* facies *ericosum*), as well as on mountain meadows, pastures and ruderal vegetation, and at the foot of Tara near the Year-Long River (365 meters) (PEŠIĆ, 2002a).

Collecting of material on Stara Planina was conducted in July of 1997, at 13 localities. Research included 11 different habitats/biotopes: a community of pygmy juniper and blueberry; a beech forest; upland meadows and pastures; mountain meadows and pastures; subalpine pastures and meadows; a peat-bog; a well; a willow grove; a tufa waterfall; ruderal vegetation with shrubs; and a grove of planted spruces (PEŠIĆ, 2002c).

Different collecting techniques were used: beating of tree branches and bushes, sweeping of the ground floor of vegetation and hand collecting on both of the mountains; plus, on Stara Planina, searching of the soil surface close to potential host plants and under stones, using a Tullgren-Berlesse apparatus for soil samples and traps with attractants.

In comparing the researched weevil faunas, we used the most sensitive mathematical indices, the Sørensen (1948) similarity index (SOUTHWOOD & HENDERSON, 2000): $C_s = 2a/2a+b+c$, and the Jaccard index (1908) : $C_j = a/a+b+c$; where a is the number of species held in common; b and c are the numbers of species found at only one of the sites. (SOUTHWOOD & HENDERSON, 2000).

RESULTS AND DISCUSSION

The results presented here are based on already published preliminary faunistic and ecological data (PEŠIĆ, 2002a, 2002b, 2002c).

Since they are based on material collected in different periods of the different years, the result can be considered only preliminary. Although the researched mountains are similar, environmental conditions are not the same on them. For example, even though the Serbian part of Stara Planina is higher than Tara, it does not have many coniferous forests, which are dominant on Tara.

The conducted research resulted in 145 findings on Tara, where the author collected 305 adult specimens of weevils (130 males and 175 females), encompassing 72 species, 41 genera, and four families [Nemonychidae (one species), Rhynchitidae (one species), Apionidae (22 species), and Curculionidae (48 species)] (PEŠIĆ, 2002a).

Belonging to four families (Rhynchitidae, Apionidae, Nanophyidae, and Curculionidae), nine subfamilies, and 49 genera, 101 species were identified among 596 adult weevils collected on Stara Planina (PEŠIĆ, 2002b).

Comparing the lists of taxa, we see that 20 species, from two families [Apionidae (nine) and Curculionidae (11)], are held in common by both of the mountains (Table 1). Similarity between the Tara and Stara Planina weevil settlements is mathematically expressed by values of 0.23 (according to Sørensen) and 0.13 (Jaccard index). Eight of the listed species are also registered on Kopaonik (JANKOVIĆ, 1972), but they are either widely distributed, with high ecological tolerance, or simply specialized for a host plant regardless of where it grows [for example *Curculio* (*Curculio*) *glandium* and *Orchestes* (*Salix*) *fagi*].

The present work is just a beginning of more intensive investigation of the weevil fauna on Serbian mountains. Even Stara Planina and Tara deserve much more prolonged and extensive collecting, using a number of different collecting techniques. Faunistic data will then be much more precise, and the possibility of adequately judging their similarity will be much greater.

Table 1. Weevils recorded on both mountains (Tara and Stara Planina).

T A X A	
	Fam. A P I O N I D A E Schönherr, 1823
	Subfam. Apioninae Schönherr, 1823
	Trib. K a l c a p i i n i Alonso-Zarazaga, 1990
	<i>Taeniapion</i> Schilsky, 1906
1	<i>Taeniapion urticarium</i> (Herbst, 1784)
	Trib. O x y s t o m a t i n i Alonso-Zarazaga, 1990
	Subtrib. Oxystomatina Alonso-Zarazaga, 1990
	<i>Eutrichapion</i> Reitter, 1916
2	<i>Eutrich. (Psilacolymma) punctigerum</i> (Paykull, 1792)
	Subtrib. Sinapiina Alonso-Zarazaga, 1990
	<i>Ischnopterapion</i> Bokor, 1923
3	<i>Ischnopterapion (Ischnopterapion) loti</i> (Kirby, 1808)
4	<i>Ischnopterapion (Chlorapion) virens</i> (Herbst, 1797)
	Trib. P i e z o t r a c h e l i n i Voss, 1959
	<i>Protapion</i> Schilsky, 1908
5*	<i>Protapion assimile</i> (Kirby, 1808)
6*	<i>Protapion fulvipes</i> (Fourcroy, 1785)
7	<i>Protapion interjectum</i> (Desbrochers, 1895)
8	<i>Protapion trifolii</i> (Linnaeus, 1768)
9	<i>Protapion varipes</i> (Germar, 1817)
	Fam. C U R C U L I O N I D A E Latreille, 1802
	Subfam. Curculioninae Latreille, 1802
	Trib. C u r c u l i o n i n i Latreille, 1802
	Subtrib. Curculionina Latreille, 1802
	<i>Curculio</i> Linné, 1758
10*	<i>Curculio (Curculio) nucum</i> (Linnaeus, 1758)
	Trib. R h a m p h i n i Rafinesque, 1815
	Subtrib. Rhamphina Rafinesque, 1815
	<i>Orchestes</i> Illiger, 1798
11*	<i>Orchestes (Salius) fagi</i> (Linnaeus, 1758)
	<i>Tachyerges</i> Schönherr, 1825
12	<i>Tachyerges decoratus</i> Germar, 1821
	Subfam. Ceutorhynchinae Gistel, 1856
	Trib. C e u t o r h y n c h i n i Gistel, 1856
	<i>Nedyus</i> Schönherr, 1825
13	<i>Nedyus quadrimaculatus</i> (Linnaeus, 1758)
	(= <i>didymus</i> Fabricius, 1781)
	Trib. P h y t o b i i n i Gistel, 1856
	<i>Rhinoncus</i> Schönherr, 1825
14	<i>Rhinoncus pericarpus</i> (Linnaeus, 1758)
	Subfam. Entiminae Schönherr, 1823
	Trib. B r a c h y d e r i n i Schönherr, 1826
	<i>Strophosoma</i> Billberg, 1820

Table 1. Continued.

15	<i>Stroph. (Strophosoma) melanogrammum</i> (Forster, 1771) Trib. O m i i n i Shuckard, 1840 <i>Omiamima</i> Silfverberg, 1977
16*	<i>Omiamima mollina</i> (Boheman, 1843) Trib. O t i o r h y n c h i n i Schönherr, 1826
17	<i>Otiorhynchus (Pendragon) merkli</i> (Stierlin, 1880)
18*	<i>Otiorhynchus (Pendragon) ovatus</i> (Linnaeus, 1758) Trib. S i t o n i n i Gistel, 1856 <i>Sitona</i> Germar, 1817
19*	<i>Sitona (Sitona) striatellus</i> (Gyllenhal, 1834) (= <i>tibialis</i> Herbst, 1795)
20*	<i>Sitona (Sitona) sulcifrons</i> (Thunberg, 1798)

* - species also registered on Mt. Kopaonik (according to JANKOVIĆ, 1972)

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**СЛИЧНОСТ ФАУНЕ СУРЛАША (CURCULIONOIDEA)
НА ТАРИ И СТАРОЈ ПЛАНИНИ (СРБИЈА)**

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Упоредне студије два или више фаунистичка комплекса су ретко спровођене у нашој земљи. Таква истраживања могу да помогну да се схвате процеси миграције, колонизације и еволуције. У овом раду су изнети резултати прелиминарних истраживања изведених на планинама Тара и Стара планина. Иако удаљене (око 230 km), географски раздвојене врло различитим подручјима, ове планине имају извесне сличности, у чијој основи лежи геолошка прошлост. Судећи по прелиминарним истраживањима и њихове фауне сурлаша су у извесној мери сличне. Заједничко им је 20 врста. Исказана преко Sørensen-овог и Jaccard-овог индекса сличност износи 0,23, односно 0,13.

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