

The malacofauna of the Bélavára-Scarita Belioara mountain (Bihar Mountains, Romania).

By KÁROLY BÁBA, Szeged & ANDREI SÁRKÁNY-KISS, Cluj.

Zusammenfassung

Die Autoren untersuchten acht Steppen- und Waldbiotope mit verschiedenen Sammelmethoden ("Quadrat"-, Fallenmethode) am Südhang des Berges Bélavára-Scarita Belioara (Bihar Gebirge in Rumänien). Die Aufsammlungen brachten 48 Schneckenarten und zeigten, daß die Theorie von CSÜRÖS & al. 1996 gleichermaßen für Pflanzen und Tiere anwendbar ist. Steppen niederer Höhenlage sind vom submediterranen Typus mit einer hohen Zahl endemischer Arten, während die Waldgemeinschaften in Gipfelnähe eher kontinental sind. (Fig. 1,2).

Abstract

The authors carried out examinations using different collection methods (square-method, soiltrap) in eight grassland and woodland biotopes on the southern slope of Bélavára-Scarita Belioara Mountain in the Bihar Mountains in Romania. Field studies yielded 48 species. The examinations proved the theory of CSÜRÖS & al. 1996 correct for both phytogeographical and zoogeographical distribution, namely that lower grasslands are of submediterranean nature, which also means a high degree of endemics, while woodland communities close to the peak are more decidedly continental. (Fig. 1, 2)

Introduction

The authors carried out field studies in a malacologically still unexplored territory, the southern slope of Bélavára-Scarita Belioara Mountain in the Bihar Mountains in biotopes of different plant associations and using different collection methods, between 200-1350 m above sea level.

Material and Methods

The authors collected samples on the southern slope of the mountain in the plant communities listed below (Table 1.):

1. Bank of a stream approx. 200 m above sea level with mixed plant communitis. *Cytisus hirsutus* (shrubbery), *Salix purpurea*, *Fagus sylvatica*, *Betula pubescens*, *Juniperus communis*, *Equisetum sylvaticum* (10x25x25 cm quadrat plots).
2. *Asplenio rutamurariae* - *Seslerietum rigidae* CSÜRÖS 1958, *Helictotrichetum decori* (DOMIN 1932) GERGELY 1972, *Alyso repentis* - *Seslerietum rigidae* (CSÜRÖS 1958) 1988.
3. (10x25x25 cm quadrat plots). Time of collection: 08.07.1996 - 03.10.1996. *Alyso* - *Seslerietum rigidae* (CSÜRÖS 1958) 1988.
4. *Juniperetum sabiniae* CSÜRÖS 1958.
5. *Asplenio Seslerietum rigidae* CSÜRÖS 1958,
6. *Seslerietum rigidae* - *Pinetum sylvestris* (CSÜRÖS 1958) CSÜRÖS et SPIRCHÉZ 1963,
7. *Melitti-Fagetum subcarpaticum* SOÓ 1962. In collection sites 3-7 we used ethylene-glycol soil traps for 75 days, emptying them twice daily, starting in 07.1996.

Different methods used for collecting of samples rule out the possibility of the direct comparison of results for the number of individuals, therefore the total sum of individuals can be found at the end of Table 1.

We examined all species in relation to their distribution using area-analytic zoogeographical methods for fauna-circle distribution (Fig. 1, 2.) Fauna-circles can be grouped as continental and subatlantic. Continental fauna-circles: 1. Siberian-Asian, including: 1.1 East-Siberian, 1.3 Euro-Siberian, 1.4 Holarctic (polycentric), 2.2 Turkestanian, 3. Caspian-Sarmatian, 5.3 Ponto-Pannonian, 9.5 Dacian-Podolian, 10.1 Boreo-alpine. Fauna-circles showing subatlantic Mediterranean traits: 5.2.1 Tracian, 5.2.2 Illyrian-Moesian, 6. Adriato-Mediterranean, 7. Atlanto-Mediterranean, 8. Holo-Mediterranean, 9. the members of the Central European collective faunacircle: 9.1 Carpathian, 9.2 Carpathian-Sudetan, 9.3 Carpathian-Baltic, 9.4 Alpine-Carpathian.

We would like to express our gratitude to Gábor Majoros for the identification of slugs and to Miklós Szekeres for the revision of Clausilid species.

The vegetation of the mountain

The characteristics of the vegetation of the mountain were summarized by CSÜRÖS & al. 1996. On the southern slope xerothermophilic grasslands can be found. Phytogeographically Eurasian elements in 13.3%, Central-European element in 24.9% and endemic elements in 21.7% make up the vegetation. The mountain - as the rest of the Bihar Mountains - is built of limestone.

Species encountered

During the investigation we encountered 48 species. Most of the species were found on the bank of the stream (collection site 1) and three grassland communities (collection site 2) (19-23 species), both were examined with the square method. Soil traps indicated the presence of 3-12 species, though they were left at the site for 75 days and were emptied twice daily (Table 1). This result raises the question of the efficiency of the two methods. Soil traps catch selectively and are especially adequate for catching slugs. According to observations in Síkfőkút (Hungary), these animals may crawl into the trap from a distance of 100-200 m.

Among the species encountered 4 proved to be quite rare. No specimen of *Argna parreysi* had ever been found in this territory before. 120 individuals of the *Cochlodina marisi* were collected alive. Using the square method 68 living *Alopiopsis bielzi tenuis* and 189 *Clausilia dubia gratiosa* were found. All four are endemic to the 9.1 Carpathian fauna-circle. All of these species were found in square plots on the grasslands. From all the encountered ten species endemic to the Carpathian (9.1) fauna-circle, only *Balea stabilis* and *Trichia bielzi* were found at the Fagetum of the collection site 7, the rest at the collection site 2. Of the Carpathian fauna-circle a high number of individuals was collected from *Pupilla bigranata* (923) and *Speleodiscus triarius* (47). *Vitrea transsylvanica*, however, was represented by two dead individuals. SOÓS 1943 also reports the presence of *Chilostoma banaticum* in the Bihar mountains (collection sites 3, 5, 7; Table 1).

Zoogeographical distribution of the fauna

The distribution of fauna-circles shows a diverse picture. In Fig. 1 the combined continental and subatlantic fauna-circles the subatlantic fauna-circle group is dominant, which is quite natural for mountains and in accordance with the xeromesophilic nature of grasslands. The situation is similar in the case of the bank of the stream (collection site 1) and the collection site 2, consisting of three different types of xeromesophilic grasslands, based on square samples. The continental feature of the Lays-Seslerietum (collection site 3) is conspicuous, 85.71 %. The distribution of the continental and subatlantic fauna-circles at collection sites 4 and 5 (Juniperetum sabinae-Asplenio-Seslerietum) is 50%-50%. At collection site 6 (Seslerietum-Pinetum sylvestris) continental features are absolutely dominant in partly open territories at 800-900 m. There is a 60% subatlantic predominance in the territory of Fagetum at the top.

Fig. 2 shows the correlation of phytogeographical and zoogeographical distribution according to each collection site, representing the sum total (Σ) distribution of Eurasian (zoogeographically the 1.1, 1.3, 1.4 fauna-circles) and endemic (by zoogeographically merging the 9.1, 9.2, 9.3, 9.4 fauna-circles) in each collection site.

In view of the distribution of Eurasian and Central European fauna-circles (the phytogeographical and zoogeographical results are in accordance) show great similarity. Phytogeographically 13.3 % Eurasian elements correspond with 16.66% zoogeographically. The phytogeographical proportion of Central European elements (24.9%) correlates with the zoogeographical proportion (33.32%), which also shows the Carpathian endemic relations zoogeographically. In respect to proportions, the similarity is great.

The situation is somewhat different in the case of the distribution of Eurasian and Central-European (that is, endemic) fauna-circles at each locality.

In the Fagetum (site 7) the proportion of endemic elements is higher than in the rest - stream bank (collection site 1), the combined results of the three grasslands (site 2), the Juniperetum (site 4) and the Asplenio-Seslerietum communities, residing close to the peak (site 5), where Eurasian elements are dominant. At collection site 3 the Alyssio-Seslerietum on rocky territory, and also at collection site 6 (Seslerietum-Pinetum sylvestris) fauna-circles with endemic Carpathian connections are missing.

Summary

The authors collected 5224 individuals belonging to 48 species from 5 grassland and 3 woodland biotopes on the southern slope of Bélavára-Scarita Belioara mountain in the Bihar Mountains, which had never been examined before (table 1), using different collection methods (square, soiltrap). As a result, the mountainous characteristic is shown in the higher proportion of subatlantic fauna-circles, which also characterizes the collection sites 1, 2 and 7, while at other collection sites continental elements dominate (collection sites 3, 6), or equals subatlantic fauna-circles (collection sites 4 and 5). Some degree of similarity can be detected in the phytogeographical (endemic and Eurasian) distribution and the zoogeographical distribution (1. Siberian-Asian and 9. fauna-circles with Carpathian connections) of fauna-circles. Though differences can be discovered where (collection sites 1, 2, 3, 4, 5, 6) high altitude mountain circumstances correspond with the higher proportion of continental Eurasian species.

The use of different collection methods did not allow comparing numbers of individuals. Among the 10 encountered species endemic to the Carpathian faunacircle (9.1), *Argna pareysii* was found for the first time.

Literature

Soós L. (1943): A Kárpát- medence Mollusca faunája.- 478 S., Magyar Tud. Akad. Budapest.

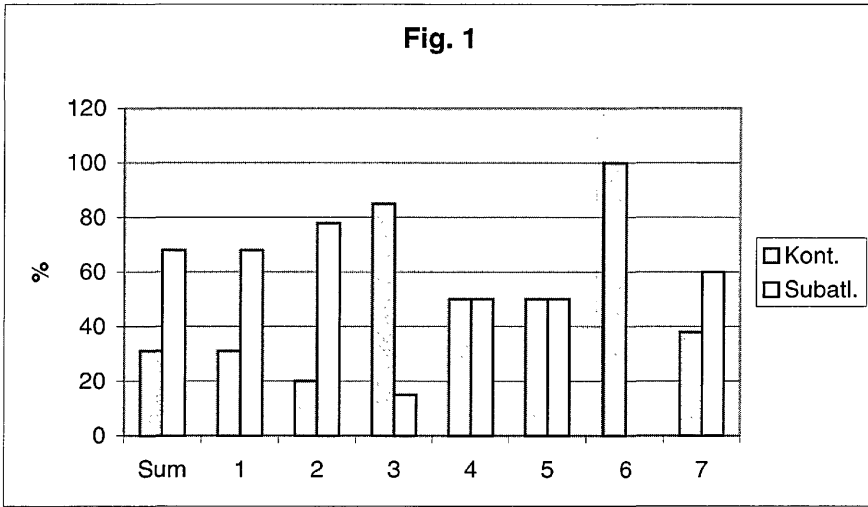
Addresses of the authors:

Dr. Károly Bába, Vár u. 6., H-6720 Szeged, Hungary.

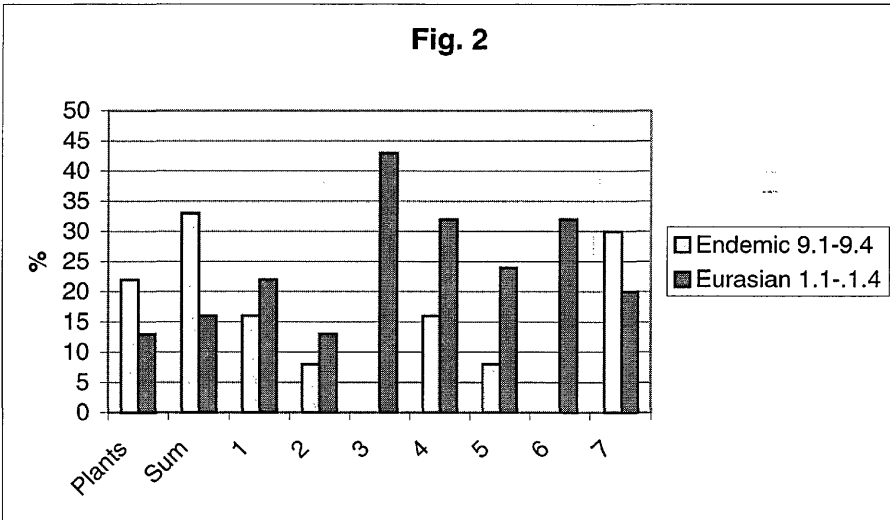
Dr. Andrei Sárkány-Kiss, Univ. Babes-Bolyai, Dept. of Zoology, str Clinicilor 5-7, Cluj, Romania.

Table 1. Distribution of species in different biotopes in Bélavára-Scarita Belioara

No	Fc	Species	1	2	3	4	5	6	7
1	8	<i>Oxyloma elegans</i> (Risso 1826)	+	-	-	-	-	-	-
2	2.1	<i>Pyramidula rupestris</i> (Draparnaud 1801)	-	+	-	-	-	-	-
3	8	<i>Truncatellina cylindrica</i> (Ferussac 1807)	-	+	-	-	-	-	-
4	10.1	<i>Vertigo modesta</i> (Say 1824)	-	+	-	-	-	-	-
5	9.1	<i>Oreula jetschimi</i> M. v. Kimakowicz 1883	+	-	-	-	-	-	-
6	5.2.1	<i>Granaria frumentum</i> (Draparnaud 1801)	-	+	-	-	-	-	-
7	5.2.2	<i>Chondrina clienta</i> (Westerlund 1883)	-	+	-	-	-	-	-
8	9.1	<i>Pupilla bigranata</i> (Rossmässler 1839)	-	+	-	-	-	-	-
9	9.1	<i>Argna panyessii</i> (L. Pfeiffer 1884)	-	+	-	-	-	-	-
10	9.1	<i>Spelaodiscus triarius</i> (Rossmässler 1879)	-	+	-	-	-	-	-
11	1.4	<i>Vallonia costata</i> (O. F. Müller 1774)	-	+	-	-	-	-	-
12	1.4	<i>Vallonia pulchella</i> (O. F. Müller 1774)	-	+	-	-	-	-	-
13	8	<i>Chondrula tridens</i> (O. F. Müller 1774)	-	+	-	-	+	-	-
14	1.1	<i>Arion subfuscus</i> (Draparnaud 1805)	-	-	+	+	+	-	+
15	1.4	<i>Vitrina pellucida</i> (O. F. Müller 1774)	+	-	+	-	+	+	-
16	9.4	<i>Vitrea subrimata</i> (Reinhardt 1871)	-	+	-	-	-	-	-
17	9.1	<i>Vitrea transsylvanica</i> (Clessin 1877)	-	+	-	-	-	-	-
18	5.2.1	<i>Aegopinella minor</i> (Stabile 1864)	+	-	-	+	-	-	+
19	8	<i>Oxychilus hydatus</i> (Rossmässler 1838)	-	+	-	-	-	-	-
20	5.2.2	<i>Oxychilus depressus</i> (Sterki 1880)	+	-	-	-	-	-	-
21	1.4	<i>Zonitoides nitidus</i> (O. F. Müller 1774)	+	-	-	-	-	-	-
22	8	<i>Limax maximus</i> Linné 1758	-	-	-	-	+	-	+
23	6	<i>Limax cinereoniger</i> Wolf 1803	-	-	+	+	+	-	+
24	6	<i>Lehmania marginata</i> (O. F. Müller 1774)	+	-	-	-	-	-	-
25	1.3	<i>Deroceras reticulatum</i> (O. F. Müller 1774)	-	-	+	+	+	-	+
26	9.4	<i>Deroceras rodnae</i> Grossu & Lupu 1965	-	-	-	-	-	-	+
27	9.1	<i>Alopia bielzi tenuis</i> (E. A. Bielz 1861)	-	+	-	-	-	-	-
28	6	<i>Cochlodina laminata</i> (Montagu 1803)	+	-	-	-	-	-	-
29	9.1	<i>Cochlodina marisi</i> (A. Schmidt 1857)	-	+	-	-	-	-	-
30	9.3	<i>Cochlodina orthostoma</i> (Menke 1928)	-	+	-	-	-	-	-
31	9.3	<i>Ruthenica filograna</i> (Rossmässler 1836)	+	+	-	-	+	-	-
32	9.1	<i>Clausilia dubia gratiosa</i> Sajó 1968	-	+	-	-	-	-	-
33	5.2.2	<i>Clausilia pumila</i> (C. Pfeiffer 1828)	+	-	-	-	+	-	-
34	5.2.2	<i>Lacinaria plicata</i> (Draparnaud 1801)	+	-	-	-	-	-	-
35	5.2.2	<i>Balea biplicata</i> (Montagu 1803)	+	-	-	-	+	-	-
36	7	<i>Balea perversa</i> (Linné 1758)	-	+	-	-	-	-	-
37	9.1	<i>Balea stabilis</i> (L. Pfeiffer 1847)	-	-	-	+	-	-	+
38	1.1	<i>Bradybaena fruticum</i> (O. F. Müller 1774)	+	-	-	-	-	-	-
39	9.2	<i>Perforatella vicina</i> (Rossmässler 1842)	+	-	-	-	-	-	-
40	1.1	<i>Perforatella rubiginosa</i> (A. Schmidt 1853)	+	-	-	-	-	-	-
41	5.2.2	<i>Trichia hispida</i> (Linné 1758)	+	-	-	-	-	-	-
42	9.1	<i>Trichia bielzi</i> (A. Schmidt 1860)	-	+	-	-	-	-	+
43	3	<i>Euomphalia strigella</i> (Draparnaud 1801)	-	+	+	+	+	+	+
44	9.3	<i>Chilostoma faustinum</i> (Rossmässler 1825)	+	+	-	-	-	-	-
45	9.5	<i>Chilostoma banantium</i> (Rossmässler 1838)	-	-	+	-	+	-	+
46	3	<i>Cepaea vindobonensis</i> (Ferussac 1821)	+	-	-	-	-	-	-
47	5.3	<i>Helix pomatia</i> Linné 1758	-	-	+	-	-	+	-
48	5.3	<i>Helix lutescens</i> Rossmässler 1837	+	-	-	-	+	-	-
		Number of species	19	23	7	6	12	3	10
		Number of individuals	474	901	48	52	56	33	85



The distribution of Continental and Subatlantic fauna-circles (Σ total)



The distribution of phytogeographical (Eurasian, endemic) and zoogeographical (Siberian-Asian 1.1, 1.3, 1.4) and endemic Carpathian (9.1, 9.2, 9.3, 9.4) flora elements and fauna-circles in total and per collection sites (1-7).

ZOBODAT - www.zobodat.at

Zoologisch-Botanische Datenbank/Zoological-Botanical Database

Digitale Literatur/Digital Literature

Zeitschrift/Journal: [Nachrichtenblatt der Ersten Malakologischen Gesellschaft Vorarlbergs](#)

Jahr/Year: 2001

Band/Volume: [9](#)

Autor(en)/Author(s): Karoly Baba, Sarkany-Kiss Andrei

Artikel/Article: [The malacofauna of the Bélavára-Scarita Beliora moountain \(Bihar Mountains, Romania\). 21-25](#)