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Data to malacologic valuation of Hungarian waters

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ABSTRACT: The author points out the problems concernina SHANNON–WIENER diversity used in evaluation of habitats. He proposes to start using „malacological value number" which doesn't neglect the abundancv of species, oecological type and soread in Hungary.

There are 49 species of watersnail living in Hungarian waters (Richnovszky, A.–Pintér, L. 1979). They turn up several wav according to their spread (Pintér, L. et alii. 1979) and association of them. Caves are verv poor in species but slowlv moving or inmovable waters overarown by plantes are rich in them.

Oecological groubing of molluscs occurence is done and based on Lozek, V.: Entwicklung der Molluscenfauna der Slovakei in der Nacheszeit (Lozek, V. 1965) over Europe. For measuring diversity entropy information (SHANNON–WIENER diversity: „H_S" is used (Wilson, E.–Bossert, W. 1981).

The „H" diversity index is higher the examined habitat is also diverse. SHANNON diversity is so general in oecological literature and it can be a base for comparison with other habitats or with other associations of the examined habitat.

Malacological value number

The mistake of SHANNON–WIENER entropy is that the species are considered to be equal in rank it neglects the really are species. On that places where there are only a species (for example: one endemical „RED BOOK's" species *Sadleriana pannonica* living in mountain Bükk, or the most ordinarv water spail *Anisus spirorbis* living in sodic water of „Apajpuszta" in Kiskunság) we can not speak about diversity, but in spite of this we definitely feel malacological value's difference the two places.

This problem is solved if beside SHANNON–WIENER diversity we examine the malacological value of the habitat (Szabó, S. 1994).

$$M_v = \sum_{1-1}^{s} \frac{p_{A-i}}{m_s}$$

M_V = malacological value of the habitat
s = number of turned-up species
P_{A-i} = abundacv of species „i"
m_S = malacological value number (see chart)

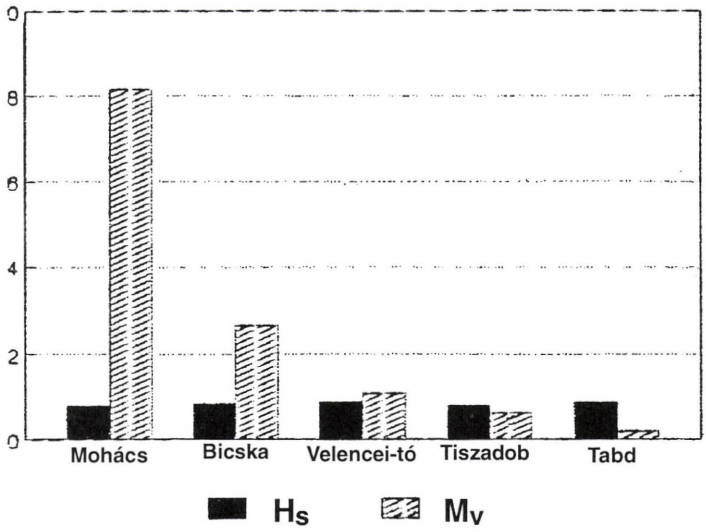
The malacological value number (ms) can be counted by adding up the LOZEK's division into group /1–10/ (L) (Lozek, V. 1995) and the percentage value – turned up on „UTM" network – of the spread of the species in Hungary (e), at last the sum has to be divided by two.

$$m_S = (L+e)/2$$

Malacological value number of Hungary

Species:	L	e %	ms
1. Acroloxus lacustris	5	6.65	5.82
2. Amphimelania holandri	3	0.92	1.96
3. Ancylus fluviatilis	2	2.76	2.38
4. Anisus leucostuma	9	0.3	4.65
5. Anisus septemgyratus	7	2.76	4.88
6. Anisus spirorbis	9	16.17	12.58
7. Anisus vortex	6	5.22	5.61
8. Anisus vorticulus	5	3.88	4.44
9. Aplexa hypnorum	9	3.58	6.29
10. Armiger crista	5	6.96	5.98
11. Bathyomphalus contortus	6	4.7	5.85
12. Bithynella austriaca	1	1.7	1.85
13. Bithynia leachii	7	4.5	5.75
14. Bithynia tentaculata	4	15.35	9.67
15. Fagotia acicularis	3	2.96	2.93
16. Fagotia esperi	3	1.9	2.45
17. Ferissia wauteri	4	2.35	3.17
18. Gyraulus albus	5	9.1	7.05
19. Gyraulus laevis	5	2.04	3.52
20. Hippeutis complanatus	5	5.93	5.46
21. Lymnaea auricularia	5	5.73	5.36
22. Lymnaea palustris	7	10.2	8.6
23. Lymnaea peregra	4	18.6	11.3
24. Lymnaea peregra v. amola	4	5.73	4.86
25. Lymnaea stagnalis	5	12.99	8.99
26. Lymnaea truncatula	8	14.6	11.3
27. Lithoglyphus naticoides	3	7.7	5.35
28. Physa acuta	4	7.06	5.53
29. Physa fontinalis	5	5.73	5.36
30. Planorbis carinatus	5	1.53	3.26
31. Planorbis planorbis	7	15.55	11.27
32. Planorbarius corneus	5	16.37	10.68
33. Potamopyrgus jenkinsi	5	0.2	2.6
34. Sadleriana pannonica	1	1.22	1.11
35. Segmentina nitida	7	11.6	8.8
36. Succinea elegans	7	12.18	9.59
37. Succinea oblonga	10	17.2	13.6
38. Succinea putris	7	7.26	7.13
39. Theodoxus danubialis	3	3.37	3.18
40. Theodoxus fluviatilis	3	0.81	1.9
41. Theodoxus prevostianus	1	0.81	0.9
42. Theodoxus transversalis	3	2.45	2.72
43. Valvata cristata	7	7.26	7.13
44. Valvata piscinalis	4	6.96	5.48
45. Valvata pulchella	9	0.8	4.9
46. Viviparus acerosus	4	6.96	5.58
47. Viviparus contectus	6	11.97	8.9

During the aveluation abundacv value of everv turned-up species average individual number (PA-i) is divided by malacological value number of species (ms) and then these data have to be summarize. This gives us the malacological value of the habitat (Mv). One species is more valuable from malacological point of view of its malacological value if the malacoassociation is higher.



The diagram shows, that in case of „nearly-the-same" SHANNON–WIENER diversities how different can be the malacological value of habitats.

Összefoglalás

A szerző rámutat a habitatok értékelésénél használatos Shannon–Wienwer diverzitással kapcsolatos problémákra. Javaslatot tesz a „Malakológiai értékszám" bevezetésére, mely során figyelembe veszi a fajok abundaciáját, ökológiai típusát és a magyarországi elterjedtségét.

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