

ECOLOGICAL STATUS AT THE KONJSKO LOCALITY OF LAKE PRESPA ACCORDING TO THE ASPT INDEX OF BOTTOM FAUNA COMPOSITION

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Basic characteristics of the Prespa Lake area



Lake Prespa is composed of two interconnected lakes, the Great Prespa Lake and the Small Prespa Lake, located at the tripoint between: the Republic of North Macedonia (which holds the largest portion of the Great Prespa Lake), the Republic of Greece, and the Republic of Albania. The Great Prespa Lake has an area of 284 km², sits at an elevation of around 850 meters, and has a maximum depth of 54 meters. Of the lake's surface area, 65% belongs to the Republic of North Macedonia, 18% to the Republic of Albania, and 17% to the Republic of Greece. The small Prespa Lake is located in the territory of the Republic of Greece and only a small part in the Republic of Albania.

Aim of the investigation

- Assessment of the ecological status of the locality Konjsko on Prespa lake, based on benthic macroinvertebrates as indicator.
- The application of the Average Score Per Taxon (ASPT) index to determine ecosystem health based on benthic fauna. (ASPT-the average tolerance score of all taxa within the community is calculated by dividing the BMWP score)
- Research on the macrozoobenthos in Lake Prespa is crucial for assessing ecological changes and protecting this ecosystem.

Research methodology

- Sampling period:
July 2022 and August 2023
- Sampling site: Konjsko, Lake Prespa
- Sampling methodology:
 - multihabitat transect method (2m, 5m, 10m)
 - standard limnological methods by Lind (1985), Wetzel (1975), Wetzel and Likens (1979); and in accordance with EU Directives (EU 2000).

Type of facies sampled: 1) sundy-muddy with detritus and low/high density of macrovegetation;
2) muddy (covered by shells of dead mollusc).

*SAPRO soft 195 for ecological indices



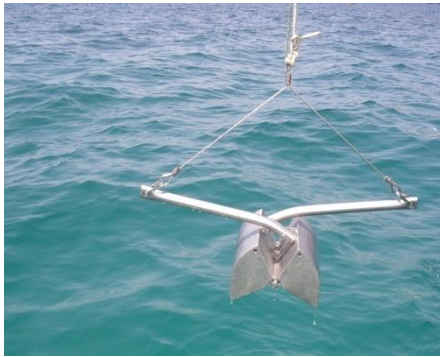
Instruments (equipment) used for sample and laboratory analysis

A. van Veen-o6 6azep with an area of 225 cm² (15 x 15 cm)

B. Dredza

C. Sampling benthic material

D. Binocular stereomicroscope (20-100x)



A. van Veen-grab



B. Dredza



***C. Sampling and sorting
benthic material***



D. Binoculars

Results

List of species composition of macrozoobenthic community in Konjsko, Prespa Lake (summer 2022/2023)

Class Oligochaeta

Eiseniella tetraedra (Savigny, 1826)

Limnodrilus hoffmeisteri Claparède, 1862

Class Gastropoda

Planorbis prespensis Sturany, 1894

Valvata piscinalis (O. F. Müller, 1774)

Pyrgohydrobia prespaensis (Urbański, 1939)

Class Amphipoda

Gammarus triacanthus prespensis (Karman S. & G., 1959)

Class Insecta

Chironomus plumosus (Linnaeus, 1758)

Class Bivalvia

Dreissena carinata (Dunker, 1853)



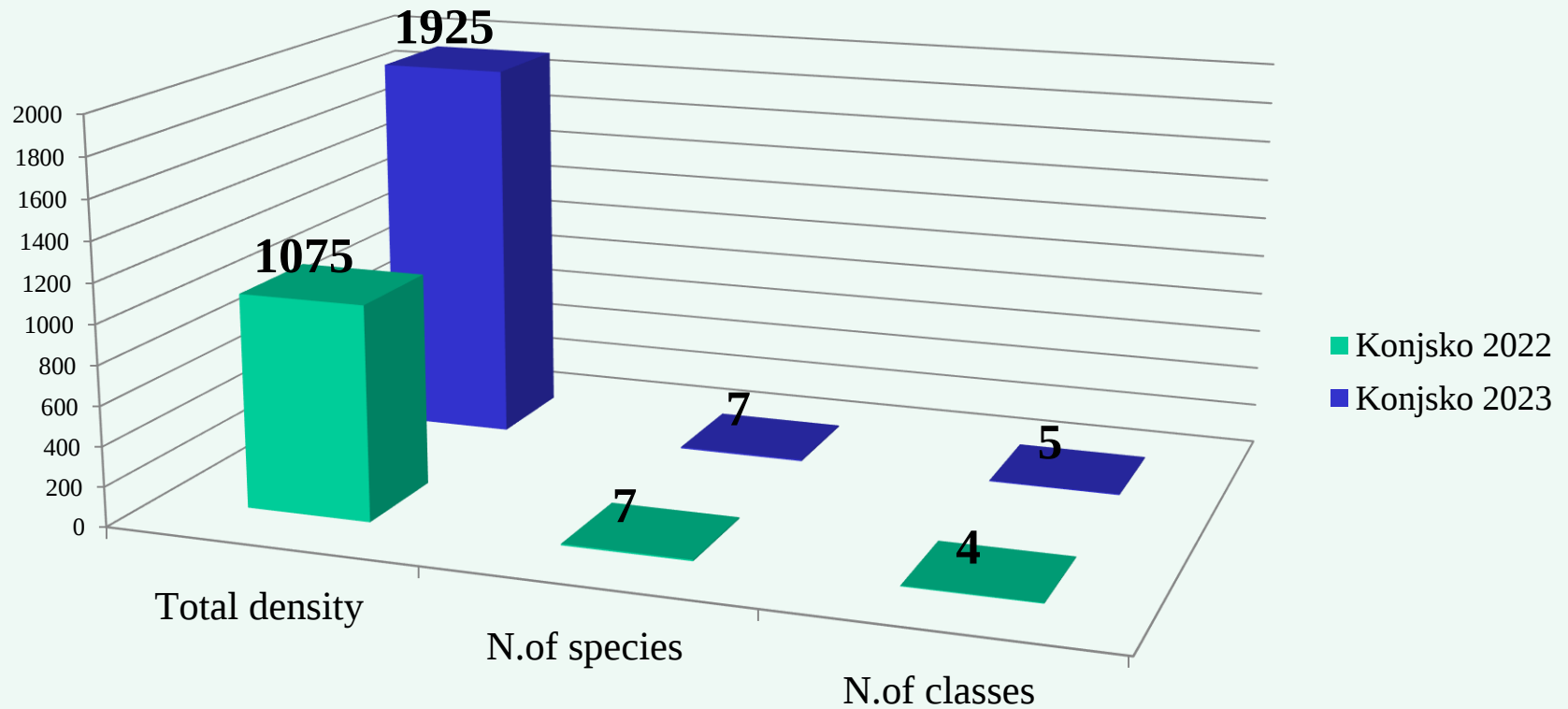
The most abundant species
Dreissena carinata

*8 macrozoobenthos species

* 5 taxonomical classes

*875 individuals per square
meter at a depth of 2 meters

Density and diversity in Konjsko, Lake Prespa



Greater biodiversity and density were observed at the Konjsko locality in the summer of 2023, while lower density and diversity were noted in the summer of 2022.

Quality categorisation after the standards of the WFD (2000/60/EC)

High
Good
Moderate
Poor
Bad

*red color-very heavily polluted waters; *orange - heavily polluted waters; *yellow -medium polluted waters; *green-slightly polluted waters; *blue - clean unpolluted waters

Ecological status of Konjsko according to the indices (summer 2022/2023)

Indices	Locality Konjsko	
Summer	2022	2023
N (ind/m ²)	1075	1925
Number of species S	7	7
Shannon & Weaver H	3.2	2.56
Margalef d	3.3	3.65
Pielou e	0.92	0.69
Simpson c	0.12	0.27
ASPT	3.57	4.14
ASPT	Moderate	

The Konjsko locality has a moderately environmental status, with signs of environmental changes.

CONCLUSIONS:

- ↗ In the Konjsko locality, Prespa Lake, eight species from five systematic groups of bottom fauna were recorded: Oligochaeta, Gastropoda, Bivalvia, Amphipoda, and Insecta.
- ↗ The richest diversity was observed in the Gastropoda group, with three species. The Oligochaeta group was represented by two species, while Bivalvia, Amphipoda and Insecta each had only one representative.
- ↗ The most abundant species of the bottom fauna was *Dreissena carinata*.
- ↗ According to the ASPT index, the Konjsko locality has a moderate ecological status (medium polluted waters).
- ↗ However, the lake remains a shelter for many benthic macroinvertebrate species of international concern and of interest for conservation.



Recommendations for the protection of the locality Konjsko and Prespa Lake:

- Continuation of Benthic Fauna Monitoring
- Measures to protect against anthropogenic influences are urgently needed. These include actions for the protection and sustainable management of the lake's resources, such as controlling water sources, reducing the use of chemicals, and safeguarding endemic species.
- Efforts are necessary to restore the natural balance and preserve the biodiversity of Lake Prespa. Specific measures should focus on preventing pollution and controlling invasive species. Additionally, it is crucial to renew and implement plans for the sustainable management of natural resources in the region.

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Thank you!

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