



Conference Abstract

Dots on Earth with huge genetic diversity: relict flatworm *Crenobia alpina* in the alpine lakes of Tatra Mountains

Kornélia Tuhrinová^{‡,§}, Jana Bozáňová^{‡,§}, Fedor Čiampor Jr[‡], Zuzana Čiamporová-Zaťovičová^{‡,§}

[‡] ZooLab, Plant Science and Biodiversity Centre, Slovak Academy of Sciences, Bratislava, Slovakia

[§] Department of Ecology, Faculty of Natural Sciences, Comenius University in Bratislava, Bratislava, Slovakia

Corresponding author: Zuzana Čiamporová-Zaťovičová (zuzana.zatovicova@savba.sk)

Received: 24 Feb 2021 | Published: 04 Mar 2021

Citation: Tuhrinová K, Bozáňová J, Čiampor Jr F, Čiamporová-Zaťovičová Z (2021) Dots on Earth with huge genetic diversity: relict flatworm *Crenobia alpina* in the alpine lakes of Tatra Mountains. ARPHA Conference Abstracts 4: e64946. <https://doi.org/10.3897/aca.4.e64946>

Abstract

Mountain lakes, typical signs of an alpine landscape all around the world, were formed in the western part of the Carpathian Arch about 10,000-15,000 years ago, as remnants of the last continental glaciation. In the Tatra Mountains (Slovak-Polish border), more than 110 permanent lakes of glacial origin and many other small ponds exist. These (sub)alpine lakes, with their specific conditions, are very vulnerable and any change in their environment can largely impact their biodiversity, which is, despite long-term faunistic and ecological research, still not fully recognized. This shortcoming could be strongly improved by molecular approaches, which, even within population-genetic studies, often reveal unsuspected cryptic lineages or potential new species.

Our long-term research is aimed at revealing the genetic diversity of aquatic macroinvertebrate species in the alpine environment of the Western Carpathians. One of the currently studied species is the glacial relict flatworm taxon *Crenobia alpina* (Dana, 1766) (Tricladida: Planariidae), representing an element of the permanent aquatic fauna. Totally, 88 COI haplotypes of *C. alpina* forming at least five well-separated genetic lineages were identified within 348 individuals collected from 45 lakes and ponds in the Tatra Mts. Based on tests of selective neutrality and population stability, *C. alpina* populations in the Tatra lakes did not overcome recent population expansions or contractions. It seems that

great genetic differences between localities and their population stability could be a consequence of the presence of natural topographic barriers (ridges, mountain peaks) dividing the mountains into small and relatively isolated valleys. Moreover, other important factors that could play a significant role are the limited dispersal ability of the species as well as its ability to reproduce asexually. Our findings were also compared with all publicly available sequences (Barcoding of Life Datasystems - BOLD and GenBank) in order to shift our data from a local to a holistic view on *C. alpina*. Our results support the assumption of Brändle et al. 2017 that *C. alpina* represents a complex of cryptic lineages or species in Europe. As part of the AquaBOL.sk initiative, the data obtained contribute to the knowledge of genetic variability and barcoding of aquatic organisms in Slovakia.

Keywords

mtDNA, *Crenobia alpina*, alpine lakes, genetic diversity, permanent fauna

Presenting author

Kornélia Tuhrinová

Presented at

1st DNAQUA International Conference (March 9-11, 2021)

Acknowledgements

This study was partially supported by the project VEGA 2/0084/21.

References

- Brändle M, Sauer J, Opgenoorth L, Brandl R (2017) Genetic diversity in the Alpine flatworm *Crenobia alpina*. *Web Ecology* 17: 29-35. <https://doi.org/10.5194/we-17-29-2017>