

Aquatic beetles of the alpine lakes: diversity, ecology and small-scale population genetics



In this study, we summarize water beetle fauna of the alpine lakes and ponds of the Tatra Mountains. The literature and recent data were used to assess species diversity. Out of around 95 studied alpine water bodies, beetles were found in 61. Altogether, 54 taxa from six families were identified. The different altitudinal zones and lake areas were compared with species richness and species incidence concerning the sites sampled. Besides faunistics, some ecological notes on *Agabus bipustulatus* are provided. The seasonal dynamics of this species is influenced by its life cycle. The larvae and adults comprised a regular part of the samples during the whole period of the study with a decrease in density from June to the late fall. During the summer and the early fall, fast growth of the larvae was observed. The adults reached their abundance peak in September–October. For the first time, analysis is provided of the genetic diversity of the macroinvertebrate species of the alpine lakes. We used a 345bp fragment of cytochrome b in two dytiscids, *Agabus bipustulatus* and *A. guttatus*. Seven and eight haplotypes were identified, respectively, with slightly different distribution patterns of genetic diversity across the study area in both species. A high proportion of the lakes was characterized by a single haplotype and the majority of the haplotypes were restricted to only one of the sampled valleys.

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Obtenir le document : EDP Sciences

Mots clés : Coleoptera, alpine lake, *Agabus*, haplotype, Tatra Mountains, Coleoptera, lac alpin, *Agabus*, haplotype, montagnes Tatra

Thème (issu du Text Mining) : MILIEU NATUREL, FAUNE, SCIENCES EXACTES SCIENCES HUMAINES

Date : 2011-11-25

Format : text/xml

Source : <https://doi.org/10.1051/kmae/2011064>

Langue : Anglais

Télécharger les documents : <https://www.kmae-journal.org/10.1051/kmae/2011064/pdf>

Permalien : <https://www.documentation.eauetbiodiversite.fr/notice/aquatic-beetles-of-the-alpine-lakes-diversity-ecology-and-small-scale-population-genetics0>

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