



INTERNATIONAL  
**MALACOLOGY**  
SYMPOSIUM

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# PROCEEDINGS BOOK

Bodrum, Muğla / Türkiye  
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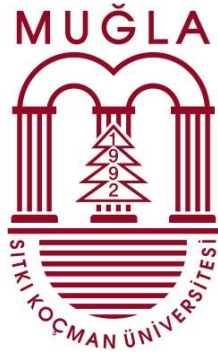


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## *PROCEEDINGS BOOK*



Muğla Sıtkı Koçman University



Bodrum Maritime Museum

IN COLLABORATION WITH



## Freshwater molluscs at the extremes: ice, heat, and darkness

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### **Abstract**

The communication is devoted to the freshwater snail communities inhabiting extreme biotopes (high-latitude and high-altitude ecosystems, geothermal sites, subterranean waterbodies, great depths of large lakes). It is shown that, despite the relatively low species richness and abundance, the gastropods living in such habitats demonstrate an array of adaptations, which can be, in some cases, of convergent origin. Some parallelisms are observed in morphology and patterns of genetic diversity of these extremophilic snails. One of the most obvious parallels is that between molluscs of the high-latitude (Arctic, Subarctic) and high-mountainous areas. One of the driving factors of this parallelism may be the so-called “environmental filtering process” creating an invisible and semipermeable barrier allowing only a small portion of preadapted species to invade the extreme biotopes. Many living populations of extremophile gastropods are evolutionary young, and thus, they did not reach status of “full” species. However, the microevolutionary processes in the studied biotopes are going extensively, creating numerous ‘local’ and ‘ecological’ races of various phenotypic prominence. The most obvious exception to this rule is the subterranean ecosystems that harbour diverse and highly endemic fauna of microsnailes (Hydrobiidae s. lato). Another example of prominent evolutionary progress among extremophilic snails is the genus *Tibetoradix*, endemic to the Tibetan Plateau, which contains 6-7 species restricted to a very small geographic area in High Asia. The evolution of this taxon took place in Tibet during the last 17-18 mya and it shows signs of adaptation to the specific conditions of the ‘Rood of the World’. The concept of ‘evolutionary trap’ can be applied to describe this case (and some other similar cases). According to it, the adaptation to an extreme habitat leads to extraordinary adaptations, which make the organisms unable to leave their habitats of origin and to expand their ranges to the less extreme areas.

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