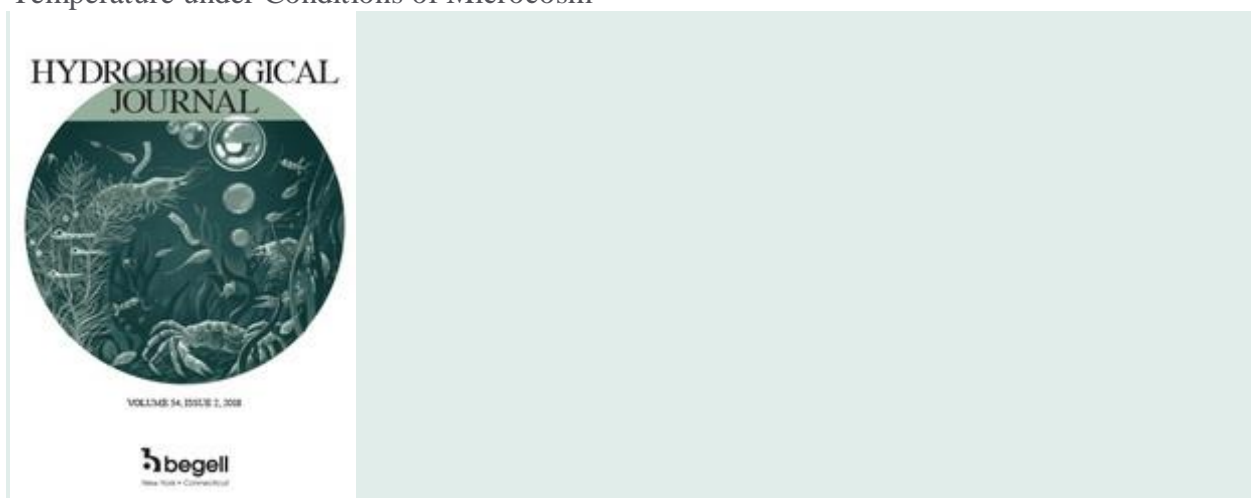


DOI: 10.1615/HydrobJ.v60.i1.30

[Hydrobiological Journal Volume 60, 2024 Issue 1](#) Cytogenetic Analysis of the Crustacean *Pontogammarus robustoides* (Amphipoda, Gammaridae) at Increased Water Temperature under Conditions of Microcosm



Articles

[Purchase \\$55.00](#) (open in a new tab) [Check subscription](#) [Download MARC record](#) (open in a new tab) [Get Permissions](#) (open in a new tab)

Cytogenetic Analysis of the Crustacean *Pontogammarus robustoides* (Amphipoda, Gammaridae) at Increased Water Temperature under Conditions of Microcosm

Volume 60, Issue 1, 2024, pp. 43-53

DOI: 10.1615/HydrobJ.v60.i1.30



[Get access](#)

M. T. Goncharova

O. V. Romanenko

L. S. Kipnis

Yu. G. Krot

Yu. O. Stoyka

ABSTRACT

Adaptive reactions of *Pontogammarus robustoides*, a representative of the family Gammaridae, were studied at the cellular level at the increase in water temperature to its critical values under conditions of a model ecosystem - a microcosm. A cytogenetic analysis of its embryo cells was carried out and the activity of nucleoli of somatic cells was investigated. It has been shown that normal development of *P. robustoides* embryo cells was observed within the temperature range from 25.0°C to 27.5°C. The increase in water temperature up to 30.0–30.5°C resulted in such structural and functional changes in its cells as the increase in chromosome aberrations and the

increase in the number of micronuclei. At the prolonged exposure to the increased water temperature, these indices approached critical levels. The number of embryo cells with nuclear fragmentation increased, which is evidence of the development of the processes directed to apoptosis. The destruction of embryo cell structures was registered at 32.0°C. The total volume of nucleoli in the somatic cells increased, which can be indicative of the increased synthesis of proteins probably involved in the processes of adaptation. A decrease in water temperature to the initial level of 25.0°C favored recovery of the structural and functional indices of Gammaridae genome. However, a high contribution of cell division disorders was still observed, which was accompanied by a significant decrease in the number of micronuclei.

KEY WORDS: [Gammaridae](#), [Pontogammarus robustoides](#), [temperature](#), [cytogenetic analysis](#), [adaptation reactions](#), [microcosm](#)