

Avoidance of teratogenic effects of ultraviolet radiation in a population of *Boeckella poppei* (Crustacea: Calanoida) from Livingston Island, Maritime Antarctica

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Antarctic environments are characterised with potentially high levels of ultraviolet radiation (UVR) damaging to living organisms. Aquatic organisms have different strategies to minimise their negative effects. These strategies might be behavioural (migrating to deeper aquatic layers) or biochemical (photoprotection or enzymatic repair of the incurred damages). The calanoid genus *Boeckella* has a high level of plasticity with regard to UVR, which ensures its wide distribution in different regions of Antarctica.



Livingston Island

Boeckella poppei (Mrázek, 1901) is common in freshwater habitats in the three main biogeographic regions in Antarctica: continental, Maritime Antarctica and sub-Antarctic islands.

➤ *Boeckella poppei* colonised newly formed small temporary shallow water bodies in the NW Hurd Peninsula, Livingston Island after the expansion of permanent ice-free habitats during the last 25 years.



We sampled temporary murky freshwater ponds, situated on permafrost sediments. Dense and thick flocculation of Cyanobacteria and diatoms covered the bottom and edges of the ponds.



Sample with ovigerous females and males of *Boeckella poppei*



The studied ovigerous females have depigmented, transparent body with red to dark orange egg sacs.



In contrast, adult males demonstrate highly pigmented bodies.

Conclusions

- Accumulation of carotenoid pigments in oval sacs of mature females is likely a strategy for avoiding the teratogenic effects of UVR and for protection of offspring.
- Such adaptation would assist the spreading out of *B. poppei* in Antarctica through colonisation and survival in freshwater habitats, newly formed after the retreat of permanent ice or snow cover.
- The above makes *B. poppei* a suitable model organism for exploring environmental changes in Antarctica.

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