

PolQua Project

ZEBRA MUSSEL OR QUAGGA MUSSEL, GENETIC IDENTIFICATION AND COMPARISON OF BIOLOGICAL RESPONSES TO STRESS: WHAT'S UP FOR ECOTOXICOLOGY? ?

Biomonitoring programs rely on sentinel species and it is essential to precisely determine specific features (basic levels, seasonal variability of parameters) in order to efficiently interpret results. A commonly used model is the freshwater zebra mussel *Dreissena polymorpha*, for which numerous data are available and contribute to this knowledge. Yet, populations of *D. polymorpha* currently tend to be replaced by another invasive species of freshwater mussel, the quagga mussel *Dreissena rostriformis bugensis*. Most studies explain this replacement by ecophysiological differences including a differential tolerance to environmental parameters. Then it appears necessary to efficiently discriminate the two species with a view to ecological risk assessment. Firstly, the present project aims to develop new nuclear specific markers through a comparative transcriptomic approach. Those markers should allow to quickly identifying each individual species as well as potential hybrids. This approach will also provide new molecular tools for candidate gene expression studies in both species. Secondly, markers will be applied in a field study. Four sites will be sampled and relative proportion of each species will be evaluated. A comparative ecotoxicological study will be conducted through the monitoring of molecular (obtained from prior transcriptomic approach) and biochemical biomarkers associated to energy metabolism, xenobiotics detoxification and antioxidant systems. Comparisons of species sensitivity to genotoxic stress and proteomic profiles will be made. Finally, the same ecotoxicological approach will be conducted during experimental exposure of both species from a same location to a medicinal contaminant. The whole project should allow us to acquire better knowledge of species from *Dreissena* genus for further wide range environmental biomonitoring studies.

PARTNERS



UMR-I 02 Stress Environnementaux et Biosurveillance des milieux aquatiques

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PAPERS

Potet, et al., **Environmental Pollution** 2016, 218 : 39-49.



Kerambrun et al., **Ecotoxicology and Environmental Safety** 2016,134 (1) : 53-63.



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