



Conference Abstract

Why are so many Northern European aquatic invertebrates missing in red-listing and how can we improve assessments for those?

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Abstract

The biodiversity crisis is advancing rapidly. One tool to measure extinction risk is the Red List of Threatened Species which follows the IUCN evaluation criteria (International Union for Conservation of Nature). Many aquatic invertebrates in Northern Europe are completely missing a red listing process and are evaluated as *Data Deficient* (DD) or *Not Evaluated* (NE). In our project, we focus on marine crustaceans and freshwater molluscs (Bivalvia). A systematic survey of more than 440 crustacean and 44 molluscan species in 12 Northern European countries shows that while many freshwater bivalve molluscs and marine crustaceans have existing molecular barcodes as well as digital occurrence records in databases (e.g. in GBIF, the Global Biodiversity Information Facility), there exists no evaluation process or regular monitoring for those species and their population status. With such a high level of non-evaluation of species status, species action plans (for single species or multi-taxon approaches) are far away from reality.

In general, traditional monitoring methods based on observational surveys are known to be inefficient, costly and time consuming. e-DNA allows us to detect species with a high level of sensitivity as long as those assays are well validated. Molecular occurrence records can be used to detect rare species and to collect population information. In our Swedish project, we are metabarcoding sediment and plankton samples using metazoan and taxon-

specific primers to detect threatened aquatic species. During 2019 and 2020, we collected samples at 15 localities in two marine protected areas for marine crustaceans and at 15 different localities for freshwater molluscs at the Swedish west coast. At each location plankton, sediment and traditional aquatic monitoring samples were taken. The idea is to compare how the methods perform in finding rare species, which could improve the data for those groups so they can be evaluated in the next round of red listing (2025) in Sweden. During the entire project, there is an on-going dialogue with stakeholders and experts from the Swedish Species Information Centre, responsible for the red listing process in the country.

Keywords

biodiversity crisis, crustaceans, data deficiency, dialogue with stakeholders, metabarcoding, mollusks, Northern Europe, red-listing

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