

**Analysing the marine fauna of the North Sea:
A molecular approach using various methods**

Michael J. Raupach

Senckenberg am Meer, Deutsches Zentrum für Marine Biodiversitätsforschung
AG Molekulare Taxonomie mariner Organismen
Südstrand 44, 26382 Wilhelmshaven

In times of climate change and massive habitat destruction, the reliable identification of marine species represents a pivotal component for biodiversity studies and conservation planning. However, most marine biodiversity studies were conducted in highly diverse hotspots like the coral reefs or the nearly unexplored deep sea. In contrast to this, the biodiversity of “well-studied” habitats, for example the North Sea, are nearly neglected. In this context, the aim of the new established research group “Molecular Taxonomy of Marine Organisms” of the German Centre of Marine Biodiversity Research (DZMB, Wilhelmshaven, Germany), funded by the Federal Ministry of Education and Research (BMBF) and the Land Niedersachsen, is to test and develop molecular methods for the identification of the marine metazoan fauna of the North Sea, aiding efforts to monitor biodiversity patterns and seasonal changes.

In this context we use DNA barcodes and supplementary nuclear markers to identify a broad range of species of various marine animals. First results reveal the effectiveness of DNA barcodes for a valid determination of the analyzed taxa, including fish, crustaceans and echinoderms. We also analyze environmental samples, in particular zooplankton with a special emphasis on meroplankton larvae, using “next generation” sequencing methods to generate a large sequence library for following comparative and monitoring studies. Next to this, we develop molecular methods (e.g. FISH) for the rapid identification of eggs and/or larvae of selected commercially important invertebrate and vertebrate species, e.g. various fish species. Moreover, all DNA samples and specimen vouchers will be long-term stored and managed by a self-governing data base.