

Hydrozoa are poorly known invertebrates belonging to the class Cnidaria. In their life cycle, they can have a sessile form (polyp) and a free-swimming medusa. More than half of the species occur only in sessile form. Despite their small size, they constitute an important component in the oceans. Very often, these are the first organisms colonizing free surfaces. They are filter feeders and play a very important role in transferring energy from the water column to the bottom by capturing small organisms and suspended matter and transferring them to higher trophic levels in the benthic zone. They usually grow on hard substrates, both on rocky bottoms and on the surfaces of living organisms. Species that reach larger sizes provide a substrate for many other organisms (epibionts), and their larger concentration creates underwater meadows, which increases the complexity of habitats and enriches benthic communities both in relation to the diversity and abundance. This aspect of their biology will be the subject of research in the presented HYDMEA project. The main goal of the project is to understand the role of hydroids as habitat formers in the polar regions (Arctic and Antarctic) by describing the extraordinary wealth of organisms associated with their colonies, the relationship between morphometric features and biomass, and the species composition and abundance of the epibiont community. Then, the next step will be to investigate the impact of environmental factors, especially those related to the warming of the Arctic (due to the influx of warmer Atlantic waters), on the functioning of Hydrozoa meadows.

The project will use existing collections of hydroids from Spitsbergen (Arctic) and the Weddell Sea (Antarctica), deposited in museums and expedition collections. New research material necessary to carry out the tasks will be collected in Spitsbergen after mapping the bottom using a remotely controlled ROV equipped with a camera in order to locate places where hydroid meadows occur.

The obtained results will enable the preliminary determination of the areas where underwater meadows occur and the assessment of the species richness of Hydrozoa and associated organisms inhabiting them. Such data are essential when assessing environmental values and planning protected areas. This is extremely important in the era of global warming and ongoing changes, because hydroids, as sedentary organisms, will not have a chance to avoid unfavorable environmental conditions, and thus will be particularly vulnerable to extinction.