



Project acronym: BIP

Project title: Benthic filter-feeding Invertebrates from the Arctic as accumulators of Pollutants and tolerant bacterial communities

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Discipline: Earth Sciences & Environment: Other - Environment

Station(s): NIBIO Svanhovd Research Station (Norway)

The communities of benthic filter-feeders, especially if they are sessile, can remain stable for long time periods, also in the Arctic, thus potentially accumulating contaminants from the environment. It is believed that filter feeders are able to discern between nutritive particles and symbiotic microorganisms, which are expected to cope with the presence of contaminants in the host tissues. The main objective of the BIP proposal will be putting in relation the amounts of the selected pollutants detected in benthic filter feeders (e.g. sponges and bivalves), surrounding water and sediment, to the occurrence of heavy metal-tolerant, polychlorobiphenyl/polycyclic aromatic hydrocarbons-degrading, and antibiotic resistant bacteria. A preliminary survey will be done to determine the occurrence of micro(nano)plastics in the analysed matrices, and adsorbed contaminants and bacteria (including pathogens). These bacteria could be exploited for bioremediation purposes in cold areas or could allow us to understand physiological and molecular mechanisms of tolerance to contaminants. All matrices will be chemically analyzed for contaminant concentrations and occurrence of micro(nano)plastics. The phylogenetic composition of the prokaryotic communities associated with analyzed matrices will be determined by the NGS approach. Enrichment cultures will be set up with contaminants for bacterial isolation and selected isolates will be tested for biodegradative efficiency at low temperature and characterized by standard phenotypic assays and biomolecular methods. Bacteria isolated from micro(nano)plastics will be also screened for susceptibility to main antibiotics and plastic utilization. Results will be compared to those previously obtained from the same area (Pasvik area, Norway; NIBIO Svanhovd Research Station) to achieve advanced knowledge.