



Diversity of sponges and sponge microbes on cold-water coral reefs: Interactions between macro- and microbial diversity

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Biodiversity hotspots on continental margins like cold-water coral reefs harbor a high diversity of associated sponges. Sponges are evolutionary ancient marine organisms which may host high amounts of associated microbes ("bacteriosponge"), and can thus be viewed as specialized microbial habitats through evolutionary times. Within the framework of the EU project HERMES, the sponge fauna of three cold-water coral reefs off Northern Norway was investigated. Eighty sponge species have been identified so far, covering 29 families and 11 orders within the 3 classes of Porifera: Demospongiae, Hexactinellida and Calcarea. In addition, the microbial community structure of 14 sponge species (3-7 specimens/species) common on the reefs was investigated using the high-resolution molecular technique ARISA. Microbial communities of all sponges were different from sediment microbial communities. Some sponge species were found to harbor well defined species-specific microbial communities, while in other species they were less distinct and showed more overlap. Microbial communities of five species of the family Geodiidae were very similar, suggesting a first phylogenetic trend. There was no obvious geographical trend; sponges of the same species collected on different reefs seemed to host similar microbial communities. In conclusion, different sponge species may represent as many specialized microbial habitats on cold-water coral reefs. Being abundant on cold-water coral reefs over a large geographical and temporal range, they may interconnect microbial ecosystems

on cold-water coral reefs over time and space