

Nematode communities from a natural oil seep off Svalbard

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Cold-seep sediments, where active fluid seepage rich is observed, have been associated with the presence of endemic nematode communities. Under the scope of the AKMA project, a seep site located offshore Svalbard was sampled for the first time to investigate the Nematoda assemblages associated with methane and crude oil seepage. Replicated samples were collected by means of the blade- and push-cores, on a bacterial mat where active gas and oil seepage was observed, as well as in sediments nearby without evident seepage activity, as reference. Sediments collected were used to characterize the community structure and diversity of the meiofauna taxa, particularly the nematode assemblages, as well as key environmental parameters (i.e, sediment and pore-water geochemistry, organic content, grain size). Preliminary observations showed no major differences in total meiofauna density between microhabitats, with a predominance of nematodes (>90%), followed by harpacticoid copepods and nauplii larvae, as typically seen in other deep-sea environments. However, an in-depth investigation into the nematode assemblages, revealed a low nematode diversity in the bacterial mats sediments, by comparison, to the reference. Bacterial mat-associated assemblages were predominantly composed of *Halomonhystera* sp.1 (39%), followed by a single Chromadoridae species (32%). Evidence of morphological and reproductive adaptations were observed in several of the species present and could be indicative of how these organisms are able to survive the toxic environmental conditions at this seep site, namely high concentrations of hydrogen sulphide and crude oil. These observations contribute to a large gap in the understanding of how infauna thrive in extreme environments in the Arctic.