The role of meiobenthos on ecosystem function

Structure and taxonomic composition of subtidal macro- and meiobenthic assemblages in the Northeast Sakhalin shelf (the Sea of Okhotsk) P71

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In this study, the distribution pattern of macro- and meiofauna from ten stations of Chayvo Bay along Sakhalin coast between 52.2 and 53.6 °N was studied in summer period. The stations were situated on soft sediments (predominance of sandy fractions) at water depths of 10 to 29 m. All benthos samples were obtained using a van Veen bottom grab sampler (grab area 0.2 m2). Three replicate samples were taken at each station. We observed changes in the composition, structure and seasonal succession patterns in the benthic community over a period of 3 years. The density of macrobenthos ranged between 85 ind/m^2 and 6627 ind/m^2 (mean density 1423 ind/m^2); biomass ranged between 10.3 to 4269.13 mkg/m^2 (197.5 mkg/m^2). The density of the total meiofauna assemblages ranged between 75.5 x 103 ind/m^2 and 50 x 106 ind/m^2 (mean density 20456 x 102 ind/m^2). Considerable inter-year fluctuations of species abundances as well as species richness, diversity, trophic and size structure were recorded. Patterns observed for quantitative distribution of meiofauna were compared with those from larger-sized benthic fauna. The data showed an increase in total macrobenthos biomass with depth throughout the studying area. Common traits among the main structural/functional benthic changes observed and their causes are discussed.

Co-occurrence of cryptic nematode species: true coexistence or mediated by differential microhabitat preferences? P72

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Research on 'cryptic species', i.e. species which are morphologically indistinguishable but genetically distinct, has increased exponentially over the past decades. The frequency of uncovering 'cryptic species' complexes with DNA sequence data calls into question estimates of the existing number of species and has implications for our understanding of biodiversity−ecosystem functioning relations. Such cryptic diversity is, for instance, prominent in free-living marine nematodes. At least 10 cryptic lineages have already been discovered in the bacterivore *Litoditis marina* complex (a.k.a. *Rhabditis* or *Pellioditis marina*) associated with decomposing macro-algae in the littoral zone of coastal and estuarine environments. Four of them (Pm I, Pm II, Pm III and Pm IV) apparently co-occur in the field, along the south-western coast of The Netherlands. Coexistence of ecologically highly similar species is at odds with non-neutral ecological theory of competition between closely related species, where real coexistence requires stabilizing mechanisms such as differences in ecological niche. We aim to investigate whether these four species truly co-occur or show temporal and/or spatial niche differentiation in their natural environment. The lack of easily distinguishable morphological characters prohibits classical identification approaches, but we use a rapid qPCR-based detection and relative quantification of the four co-occurring cryptic species. We collect different macroalgae (i.e. *Fucus* spp. and *Ulva* sp.) and separate parts of the algae (i.e. thallus, receptacula and bladders) from the intertidal, at different times, to examine preferences for, and short-term temporal variability in microhabitats. Results demonstrate to what extent the distributions of the four cryptic species overlap spatially and temporally and highlight differences in their microhabitat preferences.

Meiofaunal communities of the US Arctic shelf and slope: insights from morphological and environmental DNA sequencing approaches

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Rapid change is occurring in the Arctic concurrently with increased human activity, yet our knowledge of the structure and function of high-Arctic sediment communities is still rudimentary. The Beaufort Sea is particularly poorly sampled, and largely unexplored at slope depths, providing little information with which to assess the impacts of petroleum exploration activities now beginning in this area. We are investigating diversity and community structure of meiobenthic communities on the continental shelf and slope of the Chukchi and Beaufort seas across a range of depths (50 to 1000 m) using traditional taxonomic and environmental DNA sequencing approaches. The shallow Chukchi shelf experiences tight benthic-pelagic coupling and influx of nutrient-rich Pacific waters, which sustain areas of elevated benthic productivity. The Beaufort slope is topographically complex and characterized by an east-west gradient in benthic habitat characteristics, with heavy input