

**Epibenthic megafauna in the Northern Bering and Chukchi Seas:
Environmental influences on community structure**

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Epibenthic megafaunal invertebrate communities were sampled quantitatively in the Northern Bering and Chukchi Seas at 29 stations in 2004 and 2007. Abundance and biomass estimates ranged from 370 to 73,000 individuals per 1000 m² and from 1.6 to 73 kg wet weight per 1000 m², respectively. Biomass was particularly high in Herald Canyon and in the Bering Strait area. Overall, biomass was dominated by echinoderms, including ophiuroids (*Ophiura sarsi*), sea stars (*Leptasterias* spp.), and urchins (*Strongylocentrotus droebachiensis*). Species richness ranged from 16 to 53 across stations, with maximum values found in Mollusca; gastropods were particularly speciose. Crustaceans, especially crabs (*Chionoecetes opilio* and *Hyas coarctatus*) and shrimps (*Argis lar* and others) dominated in terms of abundance at many stations. Multi-dimensional scaling techniques, based on species relative biomass, grouped the stations primarily by substrate type rather than by water masses. Areas of high megafaunal biomass did not align well with regions of high infaunal biomass, suggesting different environmental factors affecting each size class. Multi-variate analysis suggests latitude, substrate, and grain size are the chief contributors to variations in epifaunal community structure. Several northern range extensions were recorded during the 2004 expedition.