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Using biological traits and environmental variables to characterize two Arctic epibenthic invertebrate communities in and adjacent to Barrow Canyon

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ABSTRACT

The Arctic's Barrow Canyon, located in the northeastern Chukchi and western Beaufort seas, supports a rich and diverse benthic ecosystem and is often termed an ecological "hotspot" of productivity. Within and adjacent to Barrow Canyon, the epibenthic invertebrate communities vary, with biomass and taxonomic distributions related to habitat variation. Here we asked if the patterns observed are due to Barrow Canyon's variation in near-seafloor physical hydrography, and whether differences in taxonomic distribution also reflect differences in functional properties of the epibenthic invertebrate community. Data were collected using a standardized 83-112 bottom trawl during two surveys in and adjacent to Barrow Canyon: the northeast Chukchi Sea survey in 2013 and the western Beaufort Sea survey in 2008. A portion of the Beaufort Sea survey also used a liner to retain smaller organisms. A suite of nine environmental variables were examined, that included depth, bottom water temperature, bottom hardness as measured by acoustics, and circulation model hindcast current speed. They explained 18-

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