INTERANNUAL VARIABILITY IN SEABIRD COMMUNITIES WITH RESPECT TO PREY AND OCEANOGRAPHIC CONDITIONS IN THE NORTHERN BERING AND CHUKCHI SEAS.

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The ongoing loss of sea ice in the Arctic is predicted to lead to environmental changes in the region, including increased human activities. Managers need a baseline understanding of the ecosystem to assess the potential impacts of such changes. The Arctic Ecosystem Integrated Survey project surveyed the physical and chemical water (oceanographic) properties, plankton, fish, and seabirds of the northern Bering and Chukchi seas in late summer of 2012 and 2013. Winter Pacific Arctic sea ice cover was less extensive in 2012 than in 2013, but its spring retreat was earlier and more uniform in 2013. Because the extent and melt-back pattern of sea ice influence water mass properties and stratification, we investigated bottom up effects on ecosystem structure. In 2012, the study area was characterized by cooler and saltier water, higher nutrient and chlorophyll-a concentrations, higher zooplankton biomass, and lower forage fish biomass compared with 2013. Seabird communities also appeared to change; for example, in 2012, auklets were more northerly and more abundant, while shearwaters were more offshore and less abundant compared with 2013. We investigated the prey and environmental factors that influenced seabird community structure from year to year. First, we defined seabird communities and their prey-habitat associations using a nonmetric multidimensional ordination, which produced a two dimensional result that represented two distinct habitats. The strongest correlations were with latitude, longitude, depth, salinity, and chlorophyll-a. A multi-response permutation procedure analysis of the seabird data, grouped by year and geographic region revealed significant interannual differences in community structure. These results suggest that seabird communities are structured by ecotones that change location interannually, with oceanographic properties being more important drivers than prey abundance.