Seabird Diversity Along a Latitudinal Gradient Within the Drake Passage

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Though seabirds constitute only a small portion of all bird species, several studies have noted their relevance as indicators for the health of the marine habitats on which they rely. This is especially true of the seabirds that inhabit the Southern Ocean and Antarctic Peninsula. The seabird groups native to this area that were the focus of this study include penguins, gulls, petrels, and albatrosses. The study of indicator species such as these makes it feasible to track changes in ecosystems that are complex or otherwise difficult to study. Without data on these indicator species, ecologically vital but difficult to access ecosystems like those in the Southern Ocean cannot be studied easily. In order to collect data on current Antarctic seabird numbers and distributions, we sampled along a latitudinal transect from 60°S to 64°S, from just south of Cape Horn to the northern part of the Antarctic Peninsula. This was accomplished during travel across the Drake Passage by sighting and keying all seabirds visible from the bridge of the vessel four times each day, beginning at 0700, 1230, 1830 and 2200 for 15 minutes each. Observed seabirds and the latitude at which were they were sighted were recorded along with additional data such as wind speed, sea surface temperature and precipitation. Data were collected on 19 seabird species with varying distributions and abundances. In order to achieve a comprehensive analysis, we used a linear regression to determine the correlation between latitude and species diversity, calculated using the Simpson diversity index. The Simpson diversity index is regarded as the simplest measure of diversity and represents the probability that any sampled pair of individuals will be members the same species. This index was chosen over others for its independence from any specific theory on biodiversity. Although the result was not statistically significant, most likely due to a small sample size, these data still provide valuable reference points by which to track future changes in the marine ecosystems of the Southern Ocean.