



Connecting recruitment of Antarctic krill and sea ice

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ABSTRACT: We develop an age-structured model for two krill populations near the Antarctic Peninsula and estimate the relative recruitment events that reproduce observed trends in krill abundance and age structure. Estimates of recruitment in both regions show a nonlinear relationship between recruitment and sea ice area in the combined Bellingshausen and Amundsen Seas from the previous winter and spring, with large recruitment events occurring over a narrow range of ice area, and minimal recruitment otherwise. This finding may allow for an adaptive approach in which future catch limits are adjusted based on predictions of biomass. This result also suggests that the ecosystem may change dramatically once average ice area drops below the recruitment threshold.

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