

Ringed seals and climate change: early predictions versus recent observations in Alaska

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Arctic sea ice has changed dramatically in recent decades and continued declines in extent and thickness, as well as later ice formation and earlier retreat are expected. Changing ice conditions have been predicted to negatively alter conditions for ice-associated marine mammals. Using ringed seals, the most ice adapted Arctic marine mammal, as a specific example, we will explore how recent observations compare with predictions. Prediction #1: a decrease in snow on ice is expected to reduce pup survival with the overall effect of a decrease in ringed seals. Prediction #2: a decrease in ice will decrease important prey resulting in lower body condition and productivity. Prediction #3: a longer open-water season with higher ocean temperatures will allow diseases novel to the Arctic to affect ringed seal survival. Our understanding of ringed seals and their relationship with sea ice and snow comes from studies conducted with ice and snow present. Unfortunately, we want to know how seals will cope with less ice and snow, but the tools for this research are limited. We can examine how ringed seals behave at the southern limit of their range where there is currently less ice and snow and we can examine past responses to environmental variability to understand their resiliency. It may be too early to see some effects of climate change on ringed seals, due to lag effects or minimum ice thresholds; to date, observations have not matched predictions in Alaska.