Sea ice phenology and primary productivity pulses shape breeding success in Arctic seabirds.

https://arctichealth.org/en/permalink/ahliterature283810

Author: F. Ramírez
A. Tarroux
J. Hovinen
J. Navarro
I. Afán
MG Forero
S. Descamps

Source: Sci Rep. 2017 Jul 03;7(1):4500
Date: Jul-03-2017
Language: English
Publication Type: Article

Abstract: Spring sea ice phenology regulates the timing of the two consecutive pulses of marine autotrophs that form the base of the Arctic marine food webs. This timing has been suggested to be the single most essential driver of secondary production and the efficiency with which biomass and energy are transferred to higher trophic levels. We investigated the chronological sequence of productivity pulses and its potential cascading impacts on the reproductive performance of the High Arctic seabird community from Svalbard, Norway. We provide evidence that interannual changes in the seasonal patterns of marine productivity may impact the breeding performance of little auks and Brünnich's guillemots. These results may be of particular interest given that current global warming trends in the Barents Sea region predict one of the highest rates of sea ice loss within the circumpolar Arctic. However, local- to regional-scale heterogeneity in sea ice melting phenology may add uncertainty to predictions of climate-driven environmental impacts on seabirds. Indeed, our fine-scale analysis reveals that the inshore Brünnich's guillemots are facing a slower advancement in the timing of ice melt compared to the offshore-foraging little auks. We provide a suitable framework for analyzing the effects of climate-driven sea ice disappearance on seabird fitness.

PubMed ID: 28674385 View in PubMed