

# Arctic conditions may become critical for polar bears by end of 21st century

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A photo of an Arctic polar bear. Shifts in the timing and duration of ice cover, especially the possible lengthening of ice-free periods, may impact polar bears under projected warming before the end of the 21st century, according to a study published Nov. 26, 2014 in the open-access journal *PLOS ONE* by Stephen Hamilton from University of Alberta and colleagues. Credit: Andrew Derocher

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Sea ice across the Arctic is declining and altering physical characteristics of marine ecosystems, and polar bears are vulnerable to these changes in [sea ice](#) conditions. The authors of this study used sea ice projections for the Canadian Arctic Archipelago from 2006-2100 and metrics developed from polar bear energetics modeling to gain insight into the conservation challenges for polar bears facing habitat loss.

Shifts away from multiyear ice to annual ice cover throughout the region, as well as lengthening ice-free periods, may become critical for polar bears before the end of the [21st century](#) with projected warming. Each polar bear population in the Archipelago may undergo 2-5 months of ice-free conditions, where no such conditions exist presently. Under business-as-usual climate projections, polar bears may face starvation and reproductive failure across the entire Archipelago by the year 2100. "We predict that nearly one-tenth of the world's [polar bear](#) habitat, as much as one-quarter of their global population, may undergo significant habitat loss under business-as-usual climate projections," said Stephen Hamilton.

**More information:** Hamilton SG, Castro de la Guardia L, Derocher AE, Sahanatien V, Tremblay B, et al. (2014) Projected Polar Bear Sea Ice Habitat in the Canadian Arctic Archipelago. *PLoS ONE* 9(11): e113746. [DOI: 10.1371/journal.pone.0113746](https://doi.org/10.1371/journal.pone.0113746)

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