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TITLE: Assessment of global polar bear abundance and vulnerability

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ABSTRACT:

Abstract Estimates of abundance and trend are central to assessing population status; yet, are often challenging to obtain or unavailable, suffer from wide confidence intervals and may be collected at irregular intervals. Polar bears Ursus maritimus have become an iconic species for climate change, yet information on abundance and status for significant parts of their range is unknown. We examine the existing information on subpopulation abundance of polar bears across their range to assess past monitoring. We model the relationship between subpopulation densities and ecological parameters including latitude, continental shelf habitat, prey diversity, sea ice extent and the length of the ice?free season. Of the 19 subpopulations across the circumpolar Arctic, 14 have estimates (range: 161?2826 bears). Excluding three subpopulations that were regularly monitored, the mean interval between consecutive estimates was 10.9 years (range: 1?36 years), with only six subpopulations having estimates <10 years old. Subpopulation density estimates ranged from 0.57 to 9.30 bears per km 2 with a mean of 2.36 bears per 1000 km 2 and a median of 1.71 bears per 1000 km 2 . Our regression analysis found prey diversity as the only significant correlate with polar bear density. Based on this relationship, we estimate the global population at 23 315 bears (range: 15 972?31 212). An assessment of each subpopulation's vulnerability to climate change based on subpopulation size, amount of continental shelf habitat, prey diversity and changing ice conditions indicates that the Southern Beaufort Sea, Northern Beaufort Sea and Arctic Basin subpopulations are the most vulnerable followed by the Laptev Sea and Viscount Melville Sound subpopulations. With ongoing Arctic warming and the deleterious effects of sea ice loss on polar bears, we recommend that subpopulation assessments be conducted with greater frequency and in subpopulations lacking abundance estimates such that meaningful subpopulation monitoring can proceed.

SOURCE: Animal conservation

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