

Polar Bear Metabolism Less Resilient to Summer Ice Melt Than Expected

When polar bears' feeding opportunities are limited during the summer ice melt, the animals can reduce their energy expenditure a little, but not enough to make up for the associated food shortages, a new study shows. The study suggests that increasing sea ice loss represents a significant threat to these carnivorous bears. Polar bears walk ice sheet surfaces looking for food. In summer, when the ice melts, their hunting territories dwindle and they may move on shore, where food is less plentiful, to forage. Some scientists have suggested that polar bears forced ashore can compensate by entering a low-energy state called "walking hibernation," and that this strategy could help the animals survive despite the loss of on-ice foraging opportunities caused by climate change, but recent research suggests polar bears actually expend significant energy, characteristic of regular metabolism, in hot months. To evaluate the extent to which their metabolic rates decline in summer, John Whiteman and colleagues used satellite collars and surgically implanted loggers to continuously monitor polar bear's summertime movements and core body temperatures on ice and shore. Bears in both habitats reduced their body temperatures and activity levels below those of bears actively hunting and feeding, but not to levels as low as those observed during energy-saving hibernation. Instead, the observed declines mirrored those of a fasting mammal, the response of which doesn't offer significant energy savings. The work suggests polar bears cannot use reduced metabolic rates to prolong their reliance on fat stores when food is less abundant. Thus, say the authors, the animals have limited metabolic options to respond to declining sea ice.

Article #12: "Summer declines in activity and body temperature offer polar bears limited energy savings," by J.P. Whiteman; H.J. Harlow; R. Anderson-Sprecher; S.E. Albeke; M. Ben-David at University of Wyoming in Laramie, WY; G.M. Durner at U.S. Geological Survey in Anchorage, AK; E.V. Regehr at U.S. Fish and Wildlife Service in Anchorage, AK; S.C. Amstrup at Polar Bears International in Bozeman, MT.

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