



HUDSON BAY POLAR BEAR © ANDY MURCH / TOM STACK & ASSOCIATES

# Conservation Fiasco

*The truth about polar bears. By Susan J. Crockford, Ph.D. & Valerius Geist, Ph.D.*

**A**sk a schoolteacher to guess how many polar bears are left in the world and most would say a few hundred to a few thousand. But they would be wrong—and so would every student who believed them. These teachers and their students would likely be astonished to learn that the latest population estimate for polar bears in 2015 was about 28,500.

This huge disconnect between perception and reality exists because the polar bear was the first species to be classified as threatened with extinction based on predictions of future survival rather than current conditions of living populations.

In 2008, the U.S. Fish & Wildlife Service (FWS) listed polar bears as threatened under the Endangered Species Act (ESA) based on

computer models of future polar bear survival and profound summer sea-ice loss. (Fig.1) These models expected the global polar bear population to decline 67 percent by midcentury, with 10 subpopulations out of 19 worldwide predicted to be extirpated in response to summer sea ice falling well below 2005 levels on a regular basis. (Fig. 2)

However, ice levels expected to have

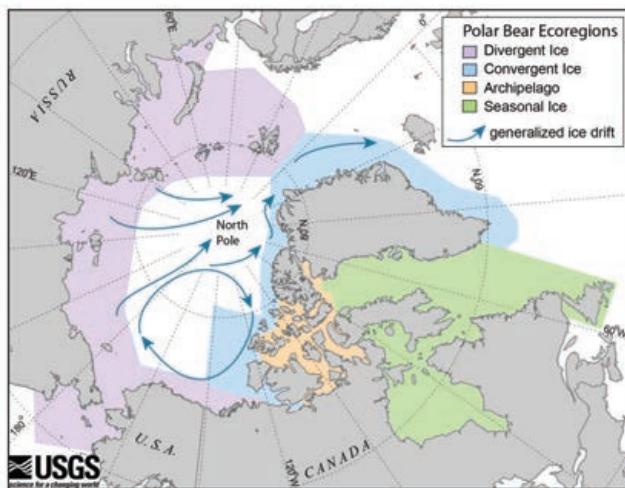


Figure 1. Boundaries of polar bear “ecoregions” defined by the U.S. Geological Survey to support the 2008 ESA decision, where all polar bears in Green and Purple areas (Seasonal and Divergent sea ice) were predicted by models to be extirpated (wiped out) when summer sea-ice extent routinely fell below 2005 levels, as shown in Figure 2 (Amstrup et al. 2007, USGS Report). IMAGE CREDIT: USGS.

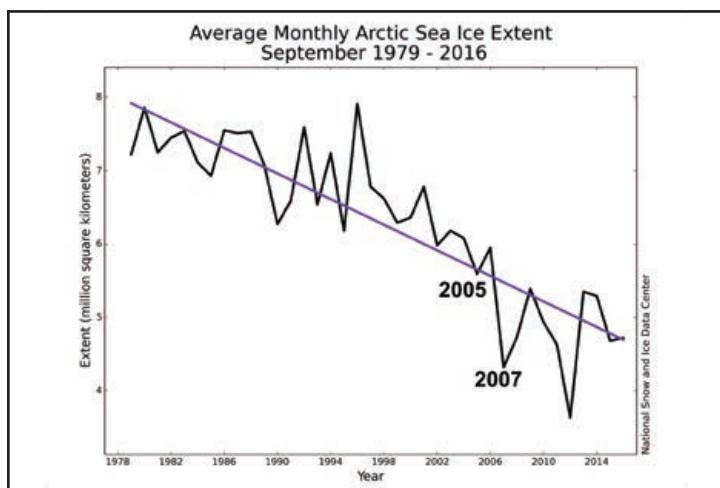


Figure 2. Summer sea-ice extent in September for 1979-2016 shows that between 2007 and 2016, sea ice declined well below 2005 levels (an average of 38 percent compared to 1979). Meanwhile, contrary to predictions, the global population size of polar bears increased about 16 percent between 2005 and 2015—which is perhaps not statistically significant but definitely not a decline. (Crockford 2017, 10.7287/peerj.preprints.2737v3) IMAGE CREDIT: US NSIDC, labels for 2005 and 2007 added by S.J. Crockford.

devastating effects by 2050 have occurred regularly since 2007, and results of studies conducted between 2007 and 2015 confirm that polar bear numbers did not decline as predicted, and not a single subpopulation was wiped out. Most subpopulations expected to be at high risk of decline remained stable in size or increased, while another showed marked improvement in body condition, cub production, and cub survival.

The only subpopulation that has declined resides in the southern Beaufort Sea off Alaska, a region known to develop thick spring sea-ice conditions that temporarily reduce polar bear numbers. Thick spring ice drives seals away before females can give birth, causing food shortages for bears. Especially severe thick ice conditions were documented in 1974-1976 and 2004-2006. However, a 2001-2006 U.S. Geological Survey population count used for the FWS's ESA decision failed to mention that severe thick ice conditions in spring prevailed for the last half of the study and instead blamed the documented starvation and poor survival of polar bears on summer sea-ice loss caused by global warming.

It is now apparent that American biologists were quite wrong about how polar bears would respond to abrupt summer sea-ice losses. They ignored a known winter/spring survival hazard in their predictive models. The FWS failed its mandate when it allowed untested computer-modeled survival predictions to count as evidence on par with data collected from living populations for a critical ESA decision. Is it ethical or fair to the many citizens impacted directly and indirectly by the 2008 polar bear ruling for the FWS to allow polar bears to remain on the Endangered Species List? ■

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