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Brief Analysis

Polar Bears on Thin Ice, Not Really! Redux

by H. Sterling Burnett

In early March, the polar bear could become the first species officially recognized by the U.S. government as threatened by global warming. The U.S. Fish and Wildlife Service (FWS) has proposed to list the polar bear as "threatened" under the Endangered Species Act (ESA) — even though U.S. polar bear populations aren't declining.

Interior Secretary Dirk Kempthorne, who oversees the FWS, says, "we are concerned that the polar bears' habitat may literally be melting." Indeed, the environmental groups that proposed listing the bear claim that human activities are warming the global climate and will melt most of the summer ice at the North Pole within 50 years. Without Arctic ice, they argue, polar bears will be unable to hunt seals, and their population will collapse. To avert this "unbearable" disaster, the U.S. government must act to halt human-caused global warming. Thus, their push to list the polar bear as threatened is really just a veiled attempt to force the Bush Administration to limit greenhouse gas emissions.

Fortunately, there are good reasons for optimism regarding the future of the world's polar bears.

Are Polar Bears in Decline? Greenpeace and the Natural Resources Defense Council initially presented only one academic study that found polar bears are currently in jeopardy. The study examined one population of polar bears in Canada's Western Hudson Bay, where the average weight of female polar bears fell, leading to reduced cub survival. It linked the early break up of seasonal ice in the bay to a 21 percent decline in that polar bear population.

However, Alaska's polar bear population is stable, and research by Mitchell Taylor, a biologist with the Nunavut Territory government in Canada, shows that the Canadian polar bear population has increased 25 percent during the past decade, from 12,000 to 15,000. Where polar bear weight and numbers are declining, Taylor thinks that it is due to too many bears competing for food rather than Arctic warming.

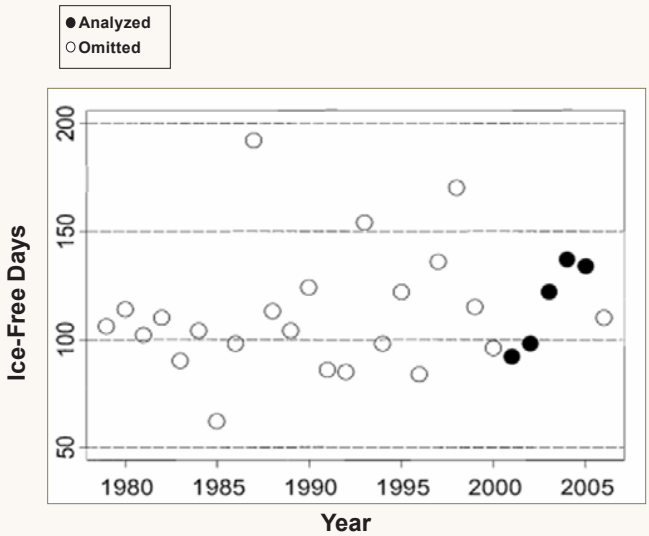
During the FWS's review of the listing decision, it requested nine administrative reports from government agencies to bolster its case for listing the bears. Because they are based on the same climate models, these reports share a number of common assumptions concerning sea ice levels during the 21st century. The models predict that the area of the Arctic covered by sea ice in the summer will decline by more than two-thirds. As a result, the studies predict, seal populations will decline. Seals currently constitute a majority of the polar bears' diet; therefore, the reports predict that bear populations will collapse. No ice, no seals; no seals, no bears — case closed.

However, the two administrative reports that focused specifically on predicting future polar bear populations do not present compelling evidence of the threat to polar bears, much less the need to list them as endangered.

Bad Forecast by Scientists, Good News for Bears. As an aid to better decision-making, forecasting researchers have compiled 140 principles that can be applied to improve the accuracy of predictions across a broad range of disciplines, including science, sociology, economics and politics.

A team led by J. Scott Armstrong, a professor at the Wharton School of the University of Pennsylvania and

Ice-Free Days in the Southern Beaufort Sea Used to Support Polar Bear Listing



Source: J. Scott Armstrong, "Testimony to the Senate Committee on Environment and Public Works," January 30, 2008.

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an expert in the field of scientific forecasting, audited the methods used in the two reports from the U.S. Geological Survey Alaska Science Center, that focused on predicting future polar bear populations. S.C. Amstrup was the lead author of one report and S.C. Hunter was the lead on the other. At a recent hearing of the Senate Environment and Public Works Committee, Armstrong testified that the methods used in both reports to arrive at predictions of future polar bear populations violated a majority of the forecasting principles that applied to their research. Amstrong found:

- The Amstrup report clearly violated 41 principles and the Hunter study violated 61.
- Amstrup appeared to violate an additional 32 principles and Hunter, 19.
- Amstrup properly applied 17 principles and Hunter, only 10.

On average, the reports properly applied only 12 percent of relevant principles.

The Amstrup report, for example, simply accepted the projections made by selected general circulation models concerning the number of future ice-free days in the Arctic. But these projections themselves violate forecasting principles and ignore significant evidence to the contrary. For instance, climate scientist David Legates has noted that the decline in snow and ice pack in the Arctic region has not been uniform. In Greenland, he notes, recorded coastal temperatures show cooling and the average summer air temperature at the summit of the Greenland Ice Sheet has decreased by 4° F per decade since measurements began in 1987.

In addition, records from Russian coastal stations show that the extent and thickness of sea ice has varied greatly over 60- to 80-year periods during the past 125 years. Moreover, the warmest air temperature they report for the past century was in 1938, when it was nearly 0.4° F warmer than in 2000. Finally, a study commissioned by Canada's Department of Fisheries and Oceans examining the relationship between air temperature and sea ice coverage concluded that "the possible impact of global warming appears to play a minor role in changes to Arctic sea ice."

The Hunter study went beyond climate models to estimate the effect of sea ice losses on polar bears using data from another study commissioned by the FWS. That study provided data on sea ice from the late seventies through 2006. However, rather than using the entire 27 years' worth of measurements of ice-free days, Hunter selectively used only five years of data — omitting the most recent year. [See the figure.] Thus, the basic forecasting principles the Hunter paper violated include using all relevant data and the most recent data.

History and Bear Biology Show Warmer Temperatures Aren't a Threat. Fortunately, comprehensive research demonstrates that since the 1970s — while much of the world was warming — polar bear numbers increased dramatically to approximately 25,000 today (higher than at any time in the 20th century). Research conducted by the World Wildlife Fund shows that of the 20 distinct polar bear populations worldwide only two — accounting for about 16.4 percent of the total number of bears — are decreasing. Those populations are in areas where air temperatures have actually fallen, such as the Baffin Bay region. By contrast, another two populations — about 13.6 percent of the total — are growing, and they live in areas were air temperatures have risen.

Evolutionary biologist and paleozoologist Susan Crockford, of Canada's University of Victoria, points out that polar bears have historically thrived when temperatures were warmer than today's — during the medieval warming 1,000 years ago and during the Holocene Climate Optimum 5,000 to 9,000 years ago.

Polar bears thrive during warmer climates because they are omnivores, like brown and black bears. Though seals are currently their primary food source, research shows that they have a varied diet and take advantage of other foods when those are available. Their diets can include fish, kelp, caribou, ducks, sea birds, the occasional beluga whale and musk ox and scavenged whale and walrus carcasses.

Mitchell Taylor also testified to the FWS that a modest warming may be beneficial to bears. It creates a better habitat for seals and would dramatically increase the growth of blueberries on which the bears like to gorge.

Conclusion. Studies submitted to the FWS in support of listing the polar bear are based on flawed forecasting methods and incomplete data. Environmental lobbyists regularly say that environmental policy should be driven by the science, not politics. Based on this standard, there is no justification for listing the polar bear as threatened under the Endangered Species Act at this time. To the contrary, the best available science shows that polar bears have flourished and their population has increased dramatically during the past century of warming.

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