UNBEARABLE FUTURE

One of the more spectacular signs of the onset of climate change is the decline of the polar bear population. But is it really in decline? **Etienne Benson** traces the long and controversial history of modeling the future population of polar bears.

Flyger and Schein had first proposed capturing and tagging polar bears a year earlier, when biologists from the United States, Canada, Denmark, Norway, and the Soviet Union met in Fairbanks for the first international scientific meeting on the polar bear. The meeting was motivated primarily by alarming claims that fewer than 8,000 bears remained worldwide, as well as by the rise of airplane-based trophy hunting of polar bears in Alaska. The goal of the meeting, as Alaskan Senator E.L. Bartlett told the assembled scientists in his opening statement, was to produce a "machinery to gather, evaluate, and distribute information for the future" (Bartlett 1966: 3-4) The meeting's main result, however, was to solidify the consensus that existing estimates of polar bear populations were, as the delegation from Alaska put it, "based on tenuous assumptions and extrapolation of fragmentary data," with global estimates ranging from a low of 5,000 to a high of more than 20,000 (Delegation of the United States, 1966: 45). It was for this reason that a representative of the Arctic Institute of North America told the scientists gathered in Fairbanks that it was planning to fund Flyger and Schein's highly experimental efforts to capture and tag polar bears, with the ultimate goal of attaching radio-collars and tracking the animals' movements by satellite (Arctic Institute of North

America, 1966: 59). The data that resulted, they hoped, would put solid ground under scientists' speculations.

Flyger and Schein's proposal was one of the most ambitious to be presented at the Fairbanks meeting, and its failure the following year illustrated some of the risks of such work both for bears and for the scientists who studied them. As their experience revealed, the effort to track and document polar bear populations faced severe logistical and political challenges and brought scientists under intense scrutiny from conservationists, politicians, regulators, animal welfare activists, trophy hunters, indigenous communities, and their fellow scientists. For the Tundra Times, an Alaskan newspaper that had begun publishing in the early 1960s and would serve as a crucial source of information for the state's indigenous people in the contentious land rights struggles to come, Flyger and Schein's deadly experiment was seen as one of many unwelcome and disruptive attempts by outsiders to reshape Alaska Natives' relationships to the animals they hunted. The New York Times was more forgiving in its coverage, emphasizing the exotic locale, the lessons learned, and plans for future experiments using satellites, but the very fact that a scientific misadventure in the distant Alaskan Arctic had reached its pages indicated the high stakes of this new type of research. Flyger, meanwhile, did his best to frame the deaths of the bears as a small misstep in a well-justified effort to expand the frontiers of knowledge and prevent the species' extinction using cutting-edge, and therefore risky, techniques (Godbout, 1966; Flyger, 1967: 53). Despite scientists' efforts to redeem these early efforts, widespread criticism stuck, funding dried up, and Alaskan authorities refused to issue further research permits. Frozen out of polar bear research, Flyger shifted his focus to tamer game, soon becoming one of the world's leading experts on squirrels.1

Although Flyger and Schein left the field, other biologists subsequently improved on their efforts as part of a massive campaign to collect data and develop population models that would ensure the polar bear's survival in the face of a rapidly industrializing Arctic. Coordinating their efforts through the Polar Bear Specialist Group of the International Union for the Conservation of Nature, they eventually met with success in both the political and scientific realms (Fikkan et al. 2010) Nonetheless, the outrage sparked by Flyger and Schein's research was only one of many controversies that have flared up around research on polar bears since the initial push for a new "machinery" of surveillance and prediction in the 1960s. Some of these contro-

[&]quot;TWO RESEARCH SCIENTISTS KILL FIVE BEARS" was the sensationalistic headline splashed across the front page of the Tundra Times on April 8, 1966. The perpetrators were Vagn Flyger and Martin Schein, biologists from Maryland who had just spent three weeks on Alaska's North Slope trying to tranquilize and tag polar bears. The study was meant to be the first phase in a long-term project exploring the species' population ecology, but it also turned out to be one of the last. According to Flyger and Schein's later report, the researchers had in fact accidentally killed only four bears (Flyger 1967: 53). Of the thirty-eight they had pursued by aircraft over the sea ice near Barrow, Alaska, they had managed to hit seven with darts laden with a powerful muscle relaxant, of which four died of overdoses and two were unaffected. The only specimen of Ursus maritimus they managed to successfully tranquilize, tag and release was killed soon after by an Inuit hunter who complained that the dye the scientists had used had spoiled the skin. Arctic science, Flyger and Schein had discovered, was a difficult and dangerous game. Seeking to build a scientific sensor that could detect threats to the species' survival, they had proven only that research itself could be a threat.

Flyger and Schein are described as "persona[e] non grata[e]" in Alaska a letter from H. Francis (1967). On Flyger's turn to squirrels, see (Bernstein, 2006).

versies have centered on the methods scientists use to gather data on polar bear numbers and movements, particularly the use of tranquilizers, tags, and other invasive techniques disdained by many animal rights activists, wilderness activists, and indigenous hunters, albeit for different reasons. Other controversies have centered on the models and simulations biologists have developed to estimate past, present, and future polar bear populations, which conservationists and hunters have disputed as producing population estimates that are either too high or too low.

By the 1980s, however, on the basis of tagging data collected since the late 1960s, most biologists and conservationists had concluded that the polar bear was under no threat of extinction. The models they used to interpret those data provided the basis for management decisions, i.e., the setting of annual hunting quotas that would not threaten the survival of a particular subpopulation. According to these models, certain populations in Canada, which was home to the vast majority of the world's polar bears, were robust enough to sustain not just indigenous hunting but also a commercial trophy hunt. In 1994, the U.S. Congress, responding to pressure from sport-hunters and Canadian provincial governments and to assurances from scientists that Canada's bears were being sustainably managed, re-opened American borders to polar bear trophies. This amendment of the 1972 Marine Mammal Protection Act allowed the importation of nearly 1,000 trophies from Canada in the decade after 1997, when the first permits were issued. The machinery of monitoring that polar bear biologists had been building since the 1960s was apparently functioning smoothly.²

As anyone who has followed the ins and out of climate change politics knows, this situation was not to last. At the very moment when the problem of determining how many polar bears could be harvested each year without threatening the species' survival seemed to have been solved, biologists began to worry about another, quite different threat. In 2007, responding to a petition and lawsuit from the Center for Biological Diversity, the U.S. Fish and Wildlife Service commissioned a series of reports by climate scientists and a leading American polar bear biologist to determine whether the warming of the Arctic climate might threaten the bear's long-term survival.3 These reports represented a pathbreaking attempt, with relevance well beyond the case of the polar bear, to merge the techniques of population modeling that wildlife biologists had been developing for decades with climate scientists' global circulation models. The reports concluded that there was a high probability of drastic declines in the global population by mid-century because of shrinking Arctic summer sea ice. This conclusion served as the basis for the Fish and Wildlife Service's controversial decision in 2008 to designate the polar bear as "threatened" under the Endangered Species Act-that is, not immediately at risk of extinction, but likely to become so in the "foreseeable future." The decision was and has remained the target of attacks by climate skeptics, trophy hunters, and some of Canada's First Nations communities, who lost a significant source of revenue when the listing put an end to the trophy import program begun in the mid-1990s and who often could see no evidence themselves of polar bear population declines (Freeman and Wenzel, 2006).

Is there anything to be learned from the tortuous history of polar bear biology? However charismatic the polar bear may be, it is easy to wonder whether all of the attention paid to the species is justified. Many conservation biologists have criticized the popular focus on certain high-profile species to the neglect of broader ecosystems, even as they have cannily deployed pandas, polar bears, and other large, exotic creatures to raise funds and advance their cause. Moreover, seen through the lens of the climate wars, the question of polar bear extinction can seem like a minor skirmish that simply replicates, in miniature, grander battles over climate change models, economic impacts, and the fate of the entire planet. Viewed through the lens of scientific research on polar bears, however, it is the controversies over climate change that can seem like old news. For polar bear scientists, disputes over "tenuous assumptions and extrapolation of fragmentary data" predate An Inconvenient Truth by decades. Determining safe and effective doses of tranquilizing drugs may have been replaced by fine-tuning the parameters of climate models, but narratives about the risks of modernity, the limits of certainty, and the hope of staving off unwelcome change remain largely unchanged.

Since the 1960s, even when incontrovertible evidence has been lacking, the polar bear has been seen as under threat-then primarily because of hunting, now primarily because of climate change. Conservation was and remains an effort to ensure that the future will resemble the past, or at least that it will retain particularly valued aspects of the past, in the face of forces that seem to be driving relentlessly toward change. Conservation in this sense is a quintessentially modern project, although there have recently been suggestions that the extent of human impact on the Earth demands a novel, perhaps postmodern or amodern conservation ethic-one less beholden to old divisions between nature and culture, wilderness and civilization (Marris, 1989) From now on, the argument



² A list of all applications for polar bear trophy import permits can be found at http://polarbearfeed.etiennebenson.com/visualizations.

³ These reports are available from the U.S. Geological Survey: http://www.usgs.gov/newsroom/special/polar_bears/.

"[...] these models remain highly disputable—dim and flickering lights in the face of an obscure future."

goes, humanity must take control of the fate of the Earth, which it has unintentionally driven into a new geological epoch, the Anthropocene. Meanwhile some sport-hunters hoping to maintain access to hunting opportunities in the Arctic have argued that the science of climate change is fundamentally different from the wildlife biology with which they are familiar-more speculative, more dependent on ungrounded assumptions, more likely to spark what they see as alarmist overreactions.⁴ Like Sarah Palin, the former governor of Alaska, who wrote about polar bears in an Op-Ed for the New York Times in 2008, they argue that the designation of the species as threatened with extinction is unjustified because it is based "on uncertain modeling of possible effects" (Palin, 2008)

Both of these claims for the radical newness of climate change-one ontological, one epistemological-are debatable. Human domination of the Earth remains limited, and human pretensions to planetary management remain just that: pretensions, regularly belied by natural disasters and other forms of nonhuman unruliness. And uncertainty is nothing new. Now as before, fragmentary data and speculative models are the basis upon which controversial conservation decisions are made. Even the incorporation of local, indigenous forms of knowledge into Canada's policy-setting process has not fundamentally changed the centrality of quantitative scientific measures to polar bear management. At the same time, despite strenuous efforts by scientists to shore them up with more data and more robust models, these models remain highly disputable-dim and flickering lights in the face of an obscure future. There is no reason not to believe that climate change poses real threats of a novel nature, but there is nothing especially new about the uncertainty it brings, or about the fear that what that uncertainty hides is an unbearable (and potentially bearless) future. Now as before, fragmentary data and speculative models are the basis upon which controversial conservation decisions are made (Edwards 2010). 🔳

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⁴ See, for example, http://www.polarbearfacts.org/.