

Polar bears no longer on 'thin ice': researchers say polar bears could face brighter future

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Wildlife biologist Bruce Marcot is placing a radio collar on a cub. Credit: Bruce Marcot, USDA Forest Service

In the snowy spring of 2009, Portland-based Marcot traveled with several colleagues onto the frozen Arctic Ocean north of Alaska to study and survey polar bear populations. These findings may have implications for citizens and natural resource managers in the Pacific Northwest working to manage resources for a warming climate, particularly in high mountain areas.

"When I first picked up the cub, she was biting my hand," explains wildlife biologist Bruce Marcot. He was trying to calm the squirming cub while its sedated mother slept nearby.

In the snowy spring of 2009, Portland-based Marcot traveled with several colleagues onto the frozen Arctic Ocean north of Alaska to study and survey polar bear populations. From their base of operations at the settlements of Deadhorse, next to Prudhoe Bay, Alaska, they ventured by small plane and helicopter over a wide area of the [Beaufort Sea](#) in a study to determine the bears' health and to learn the impact of warming Arctic temperatures on their population.

"From the helicopter, we located radio-collared polar bears by their signals. Then, swooping in like a cowboy after a bull, our lead scientist would dart the bear with a tranquilizer dart," explains Marcot. "We then landed, corralled any cubs, and made the sleeping mother comfortable on the sea ice while we studied her health, weighed her, took measurements, and changed her radio collar so she could be further tracked."

Marcot, a scientist at the Forest Service's Pacific Northwest Research Station, is a co-author on the recently published paper about the impact of climate change on polar bears, in the journal *Nature*. He was invited to be a member of the study team because of his expertise in the analysis and modeling of wildlife population viability. The study's lead scientist, Steven Amstrup, of the U.S. Geological Survey's Alaska Science Center, had asked Marcot several years earlier to join a polar bear science team organized to advise the U.S. Fish and Wildlife Service. That team examined and analyzed global polar bear populations, habitats, and climate change. They presented their results in 2007 before several federal agencies and the U.S. Department of the Interior, in Washington, D.C., and in 2008 the Federal government designated the polar bear as a globally threatened species.

The 2007 study projected that about two-thirds of the roughly 25,000 polar bears in the world would disappear by mid-century because of the effects of climate change and the ice melting in the Arctic. Now, in the

December 2010 Nature study, Marcot and his colleagues learned that decline of the bear could be mitigated if greenhouse gas emissions are significantly reduced.

These findings may have implications for citizens and natural resource managers in the Pacific Northwest working to manage resources for a warming climate, particularly in high mountain areas.

For the past several years Marcot has collaborated with the U.S. Geological Survey's Alaska Science Center, the National Park Service, the U.S. Fish and Wildlife Service, and others on studies examining the impacts of climate change on wildlife and the environment.

The most recent study published in *Nature*, "Greenhouse Gas Mitigation Can Reduce Sea-ice Loss and Increase Polar Bear Persistence," was coauthored by Amstrup; Eric DeWeaver, National Science Foundation; David Douglas, U.S. Geological Survey, Alaska Science Center; Marcot; George Durner, U.S. Geological Survey; Cecilia Bitz, University of Washington; and David Bailey, National Center for Atmospheric Research, issue of *Nature*. It appears online at [www](http://www.nature.com/nature/journal/v468/n7326/full/nature09653.html)
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The study's key findings says Marcot are:

- The results of modeling regional polar bear populations indicate a potentially brighter future for the species if global greenhouse gas concentrations can be kept under control at levels less than those expected under current conditions.
- Sea ice habitat for polar bears will likely not face a "tipping point" of sudden catastrophic loss over the 21st century,

particularly under a mitigation scenario to reduce global greenhouse gas emissions.

- Even under relatively stringent mitigation reductions in future greenhouse gas concentration, [polar bears](#) in two of the four eco-regions, constituting about 2/3 of all current polar bear numbers, will still incur at least reductions in numbers and distribution. However, the best future outcome for these populations would result from a combination of mitigation control of greenhouse gas concentration with best on-the-ground management practices to control hunting and human activities such as levels of shipping, oil and gas activities, etc.
- There will still be significant uncertainty as to the future of polar bear populations from the combination of all sources of stressors from climate change, direct human disruption, and other biological factors.

The team's study is significant. "It demonstrates for the first time that—and how—a combination of greenhouse gas mitigation and control of adverse human activities in the Arctic can lead to a more promising future for polar bear populations and their sea ice habitat," says Marcot. "It also provides specific predictions of the future, couched in terms of probabilities of polar bear [population](#) response that decision-makers could use in risk management."

Provided by USDA Forest Service

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