Love in the time of climate change: Grizzlies and polar bears are now mating

By Adam Popescu

May 23, 2016

www.washingtonpost.com/news/animalia/wp/2016/05/23/love-in-the-time-of-climate-change-grizzlies-and-polar-bears-are-now-mating/?utm_term=.4514707b106d

This bear, which was three-fourths grizzly and one-fourth polar bear, can be seen at the Ulukhaktok Community Hall in Ulukhaktok, in Canada's Northwest Territories. (A.E. Derocher/University of Alberta)

BARROW, Alaska — Most Alaskans and Canadians have a bear story — tales of fearsome grizzlies, even polar bears. But a mix of the two? They're known as pizzlies or grolars, and they're a fusion of the Arctic white bear and their brown cousins. It's a blend that's been turning up more and more in parts of Alaska and Western Canada. Last week, a strange-looking bear was shot by a hunter in Nunavut, a remote territory that curves around Canada's Hudson Bay. Its head was large, like a grizzly's, but its fur was white. The bear's genetics were not tested, but Arctic researchers seem unified in their analysis: It's a polar-grizzly mix. A hybrid.

Textbooks say these two species aren't supposed to inhabit the same environments. Polar bears are marine mammals; grizzlies are terrestrial. But as the Arctic warms, sea ice is shrinking and the tundra is expanding. And the bears' disparate populations are meeting, mating and creating a new breed that's capable of reproducing. Bears sharing both species' DNA have been recorded several times over the past decade. So why are these two species linking up?

It's called flexible mate choice: The bears are mating with the best possible partners as opposed to not mating at all, and they're mating because they share relatively close territories and the same branches of the same evolutionary tree. Intraspecies mixing between the two happened thousands of years ago, thanks to the advance and retreat of glaciers, and of late, it has been boosted by climate change. Scientists say it's also probably been assisted by policies that protect both bears from culling and hunting, affording further opportunities for mingling.

The crossbreeds found in Alaska and Canada are not genetic anomalies. Scientists have found the mix in the islands off Southeast Alaska, where bears resemble grizzlies but contain polar bear DNA. That indicates decades of sporadic interbreeding, said Steven Amstrup, chief scientist at Polar Bears International.

The polar-grizzly cocktail is also far from the only recent animal hybrid. The coywolf — a coyote-dog-wolf amalgamation — and a lynx-bobcat mix have been popping up along the northern Atlantic coast. The more scientists analyze species' genomes, the more they realize that animals we label as "pure breeds" actually share DNA — and that includes us.

Many humans carry traces of DNA from Neanderthals, which means we're all hybrids. It also means there's no such thing as genetic purity. The concept is a romantic construct, an anthropomorphized take on nature. And what may be most surprising about this, researchers say, is the role interbreeding plays in the futures of endangered species — or, as the case may be with polar bears, accelerating their end.

Amstrup has studied bears in the Arctic since the 1970s and was instrumental in helping list the polar bear as a threatened species in 2008. He, like other experts, characterizes this "new" bear relationship as more beneficial to grizzlies than polar bears. That's because there are more grizzlies than polar bears and because grizzly territory is expanding while polar bear territory is contracting. What that adds up to is a good chance grizzlies could essentially dilute the polar bear population until it doesn't exist at all, they say.

Polar bears are getting the short end of the stick in this relationship, not "gaining any genetic diversity," said Geoff York, who led research on polar bears at the World Wildlife Fund for almost a decade before joining Amstrup at PBI. Andrew Derocher, a professor of biological studies at the University of Alberta, has spent three decades studying bears throughout the Arctic. He, too, has a sobering view about where the hybridization is heading.

"I hate to say it, but from a genetic perspective, it's quite likely grizzly bears will eat polar bears up, genetically," he told me. And he says the changes are already at play. All hybrids that have been analyzed had grizzly fathers, because grizzly males roam to establish territory and come in contact with receptive female polar bears. Female grizzlies tend not to stray far from their home ranges, and male polar bears don't usually creep into grizzly habitats.

Polar bears need the ice — that's where the seals and walruses they eat live. They don't hibernate, and they don't travel south of the tundra. Grizzlies, historically, rarely ventured north of the treeline. Permafrost is too cold for their liking, and they sink into the snow easily. (Polar bears have padded paws that act as snowshoes). Hunting is more challenging in the north, where prey is scarce. They're not really swimmers.

But shifts are afoot. "What we're starting to see in the Canadian Arctic is three-fourth grizzlies," Derocher said, referring to the offspring of 50-50 hybrids that then mated with grizzlies. "How do they act? Probably more like grizzly bears, living on land. As climate change continues, terrestrial habitat is going to increase, and the likelihood is the habitat for grizzlies, a terrestrial bear, is going to get better. That means a longer warming period and greater food potential."

Derocher said it will not be long before we start seeing female grizzlies bump into male polar bears, further straining the polar bear's genetic variation. "I suspect at the same time that that's occurring, we'll start to see polar bears on their way out."

When will that be? Impossible to say, but some experts think that as the Arctic continues warming, it may be only a few decades, perhaps a century. There are about 20,000 to 25,000 polar bears in the Circumpolar Arctic, and "an order of magnitude higher for grizzlies in that area" and other brown bears, Derocher said. "It shouldn't be a big surprise that grizzlies are moving north — everything is."

Right now, polar bears are also threatened by polychlorinated biphenyls, or PCBs, and other toxic pollution — primarily from eating seals and other animals affected by these carcinogens — that has been linked to brain damage, even causing some bears' baculums, or penis bones, to break off.

And those outcomes could affect polar-grizzly hybrids as badly as pure breeds. No matter what bear ends up as the Arctic's future apex predator, scientists say, if the issues up north aren't solved, it won't matter what bears are there.

Hybrids are "a normal part of the evolutionary process," Derocher said. But if the ice disappears, "we won't have grizzlies or polar bears in this area. If you roll the clock ahead another number of decades or a century, quite clearly it's going to be no bears eventually."

Adam Popescu is a Los Angeles-based freelance writer. Find him on Twitter at @adampopescu.