

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

By Adam Popescu, Washington Post on 06.09.16

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Three grizzly bears cross a meadow in Montana in this undated file photo. Grizzly bears, the West's largest and most fearsome predators, are back in a big way in the Northern Rockies. Due to climate change Grizzly bears are moving into areas that were too cold for them in the past, and are mating with polar bears. Chuck Bartlebaugh, Associated Press

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.

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 said 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.

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."

Quiz

- 1 The crossbreeding of polar bears and grizzlies will have long-term effects on bear populations. Which excerpt from the article BEST supports the central idea above?
- (A) 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.
 - (B) 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.
 - (C) 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."
 - (D) 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."
- 2 Which of the following excerpts would be MOST important to include in a summary of the article?
- (A) Bears sharing both species' DNA have been recorded several times over the past decade.
 - (B) The more scientists analyze species' genomes, the more they realize that animals we label as "pure breeds" actually share DNA -- and that includes us.
 - (C) 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.
 - (D) 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.
- 3 How does the author develop the idea that some crossbreeding has always been a part of nature?
- (A) by discussing animal hybrids such as the coywolf as well as human genetic history
 - (B) by describing how the new breed of Arctic bears is adapting to various changes in their habitat
 - (C) by highlighting the effects of the evolutionary process and climate changes on bear behavior
 - (D) by identifying mating territories and movements of the polar and grizzly bears

- 4 Why do scientists Steven Amstrup and Andrew Derocher believe that polar bears could die out?
- (A) The DNA of grizzlies is stronger than in polar bears, so the new breed is taking on more grizzly characteristics.
 - (B) Polar bears are facing more territorial changes than grizzlies and are more vulnerable to disease as the climate warms.
 - (C) Male polar bears are less likely to pass on their DNA as they begin to compete with grizzly males for access to female polar bears.
 - (D) From a genetic perspective, there are no pure breeds, so the polar bear will not "die out" but simply evolve.