

Risk of interbreeding due to climate change lower than expected

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Satellite image of ship tracks, clouds created by the exhaust of ship smokestacks.
Image: NASA

One of the questions raised by climate change has been whether it could cause more species of animals to interbreed. Two species of flying squirrel have already produced mixed offspring because of climate change, and there have been reports of a hybrid polar bear and grizzly bear cub (known as a grolar bear, or a pizzly).

"Climate change is causing species' ranges to shift, and that could bring a lot of closely [related species](#) into contact," said Meade Krosby, a research scientist in the University of Washington's Climate Impacts Group.

She is the lead author of a study published July 6 in *Nature Climate Change* that tallies the potential number of such pairings. Looking across North and South America, it finds that only about 6 percent of closely related species whose ranges do not currently overlap are likely to come into contact by the end of this century.

"People have been concerned that [climate change](#) would be bringing all these species into contact, and that this could unleash a wave of interbreeding," Krosby said. "What we found is, not so much."

A 2010 editorial in the journal *Nature* suggested that northern species may begin to interbreed and create a so-called "Arctic melting pot," and even prompted one artist's rendition of what those new offspring would look like.

The idea also worried [land managers](#) looking at how to prepare for climate change. At a workshop, land managers told Krosby they worked with very closely related species separated by small distances. What if managers linked the two areas with a wildlife corridor, and as the climate changed the species started to mix?

This study is an attempt to see how much that should be a concern. It looked at 9,577 pairs of closely related species of birds, mammals and amphibians in North and South America. For the 4,796 pairs whose ranges currently do not overlap, computer models show that only 6.4 percent of them will come into contact due to climate change by the year 2100.

The most overlap among species occurred in the tropics, and among birds, likely because more species live in the tropics and birds cover wider ranges, Krosby said.

While the study suggests that climate change is unlikely to result in

widespread interbreeding, wildlife biologists still need to consider their particular region and animals of interest to best protect specific populations.

"Managers still need to look case-by-case at species at a local scale, but at a global scale, the big picture is that it's probably not going to be a huge problem," Krosby said.

The study likely overestimates how many species could be at risk of interbreeding because it assumes that all species will be able to access new habitats that become available due to climate change. In fact, natural barriers prevent animals from reaching all potential new habitats, and humans have created new barriers such as highways, farms, and cities that can block migrations to more hospitable places.

"The number one strategy for helping biodiversity respond to climate change is to increase connectivity, to link up habitats that have been fragmented by human activity, so species can move, and track climate as it shifts to stay comfortable," Krosby said.

"If people are worried that wildlife corridors and other ways to increase connectivity could bring these species into contact, we're saying: That's probably not going to happen, and allowing species to move is far more important."

Krosby did her doctoral work looking at how historic climate changes affected species in the past, including how the end of the last ice age led to interbreeding among West Coast songbirds. Now she focuses on contemporary climate change, to see how [species](#) are responding and how land managers can best protect biodiversity under faster, human-driven changes to Earth's climate.

More information: Climate-induced range overlap among closely

related species, [DOI: 10.1038/nclimate2699](https://doi.org/10.1038/nclimate2699)

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