

Polar Bears Have Irish Lineage

Some 50,000 years ago, modern polar bears split from a population of Irish brown bears.

By [Emily Sohn](#) | Thu Jul 7, 2011 12:01 PM ET

Today, polar bears live only on the northernmost stretches of ice and snow, but their roots may lie farther south -- in an area that is now Ireland.

Sometime within the last 50,000 years, suggests a new genetic study, modern polar bears split from a population of Irish brown bears. The finding both clarifies and complicates how well scientists understand polar bear evolution.

Scientists already knew, for example, that the giant white bears first evolved at least 110,000 years ago, with origins most likely in coastal Siberia. Based on the new results, though, it looks like polar bears then proceeded to interbreed with brown bears multiple times after they first diverged -- usually during periods when climate cooling or warming allowed the ranges of the two species to overlap.

NEWS: Cavemen, Cave Bears Battled Over Turf

Taking in new genes during these periods may have helped polar bears survive changing environmental conditions. Now, as climate warming pushes polar bears and brown bears closer together again, the study may offer some hope for the threatened polar bear's future.

"The results suggest that what is likely to happen in the future is exactly what has been observed: Their ranges are beginning to overlap, and they are hybridizing" said lead author Beth Shapiro, an evolutionary biologist at The Pennsylvania State University in University Park. "As long as polar bear habitat remains, there is a chance that the polar bear will survive."

At first, Shapiro simply wanted to investigate how climate change during the last glacial period affected where bears lived and how diverse they were. To do that, she and colleagues analyzed mitochondrial DNA, which is passed down from mothers to daughters.

The researchers looked at 242 maternal lines of both polar bears and brown bears. Their data set reached back 120,000 years and covered the animals' entire geographic range. It also included newly extracted DNA from bear bones found in Irish cave sites, where many animal species may have taken refuge from advancing glaciers.

Their results, published today in the journal *Current Biology*, revealed a few surprises. Not only did modern polar bears appear to descend directly from a population of Irish brown bears that went extinct some 9,000 years ago. The split happened far later than other lines of evidence have suggested.

Some time between 50,000 and 20,000 years ago, it now appears, environmental conditions brought polar bears and brown bears together. As they mated, polar bears picked up genes from the other species.

The study offers a fairly new way of thinking about



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evolution, said Andrew Derocher, a polar bear **could have fewer cubs.** ecologist at the University of Alberta. Rather than acting like neat branches coming off a tree, evolving species may repeatedly entwine and separate from each other like vines.

NEWS: The Polar Bear's Last Stand

But what this new picture of history means for the future of polar bears is still unclear. In some ways, the study offers hope by showing that polar bears have been able to survive climate change events in the past, said Michael Hofreiter, who studies population genetics at the University of York.

"We thought that hybridizations, which seem to have become more common because of climate warming, would be threatening polar bears as a species," he said. "However, now it seems that this view could be too simplistic, and limited hybridization during times of climatic change could even help species survive such times."

On the other hand, ancient polar bears didn't face the same pressures that modern bears do from hunting, oil drilling and habitat destruction. It's also not clear if a hybridized polar bear will still qualify as a polar bear, added Derocher, who suspects that our understanding of polar bear history is far from complete. .

As new fossils and DNA evidence turn up, he said, a clearer picture of the polar bear's history should emerge.

"I just sent in page proofs for a book on polar bears, but having looked at this paper, I will probably rewrite the section on polar bear evolution," Derocher said. "I think we're going to rewrite this history again and again and again."
