ClimateWire

ENVIRONMENT

Penguin Populations Are Changing Dramatically

Rapid warming on the Antarctic Peninsula is killing some species but helping others

By Niina Heikkinen, ClimateWire on April 25, 2016

Adélie penguins. *Credit: Eli Duke/Flickr, CC BY-SA 2.0*

Animal species around the world are beginning to feel the effects of warming temperatures, but few are seeing their habitats change as quickly as the Adélie, chinstrap and gentoo penguins on the Antarctic Peninsula.

Jutting out into the Scotia Sea toward the southernmost tips of Chile and Argentina, the 800-mile-long peninsula is warming at five times the rate of the planet. Since the mid-

20th century, temperatures have risen on average by 6 to 7 degrees Celsius. The warmer weather has had a significant impact on the amount of sea ice, with the ice-forming period in the winter months now about 90 days shorter than it used to be.

“This is important because the advance and retreat of sea ice acts as a sort of engine that drives more Antarctic marine ecosystem processes, not the least of which are the aspects of ecology of the three penguin species,” said Bill Fraser, a penguin expert and ecologist who has been studying the seabirds from Antarctica’s Palmer Station’s Long-Term Ecological Research (LTER) area since 1974.

“It’s fair to say these species are the canaries in the coal mine of Antarctic climate change, super-sensitive to even subtle changes in the system because their life histories play out in a finely tuned balance between the availability of sea ice and open water,” he said.

As penguin species face rapid warming on the southern pole, the impacts of the environmental changes vary from region to region and from species to species. While it’s clear that climate change is leading to less sea ice near the peninsula and more open water, what’s less certain is how these changes are directly linked to the region’s changing penguin populations, scientists say.

In recent years, Fraser has seen more snow and rain affect the sea-ice-dependent Adélie penguins in the southern area of the peninsula. Rainfall used to be a rare occurrence; now eggs and chicks are drowning from the precipitation, he said.

The decreases in sea ice are also making feeding harder for these seabirds.

“The penguins use the sea ice as a platform from which to forage. The sea ice brings the Adélies to the most productive areas. When you have less sea ice, it decouples them from

being able to feed effectively," Fraser said.

ICELESS BIRDS BOOM

At the same time, the chinstrap and gentoo penguins that prefer ice-free habitats have experienced population booms in the southern part of the Antarctic Peninsula as sea ice has declined.

Farther north on the peninsula's tip, researchers and environmental groups are concerned about how less sea ice coupled with fishing pressure could affect krill, the main source of food for the Adélie and chinstrap penguins.

The 2.5-inch-long, shrimp-like crustaceans are dependent on sea ice. Young krill are protected from harsh winters under the ice, and the crustaceans eat the single-celled algae called diatoms that grow there.

Andrea Kavanagh, director of the Pew Charitable Trusts' Global Penguin Conservation Campaign, said the combined environmental and human pressures spell trouble for the penguins, whose populations in that region have declined by 30 percent over the last 30 years.

"Even though there is a huge biomass of krill in the Southern Ocean, that amount of localized fishing is very bad for the predators in that region, particularly the penguins who can't go very far away from land when they are nesting and breeding. They have to be able to get in and out pretty quickly to bring back food for their chicks," said Kavanagh.

FISHING VS. WARMING

As temperatures continue to rise, there are concerns that without stricter protections on krill fishing, the industry could expand and put more pressure on the penguins. Krill fishing is highly concentrated in one specific area at the northwestern tip of the peninsula. Pew is campaigning to push fishing farther away from shore and to establish a marine-protected area.

“People are saying, ‘Look at the penguin populations on the peninsula; we don’t know why that’s happening, and even if it is just climate change, we have to not fish there because of the effect of climate change.’ That is the thing we can eliminate while we try to figure out this whole climate thing,” Kavanagh said.

Fraser, however, cautioned that the link between krill abundance and penguin populations wasn’t consistent.

“All three of the penguin species we study have diets dominated by krill, so with decreased ice and presumably less krill, how could Adélies be decreasing while chinstraps and gentoos are increasing?” he said. “One would think that if krill were decreasing, all these penguins would also be decreasing, but this is clearly not the case in our study area, nor anywhere else on the Antarctic Peninsula where these three species co-occur.”

Currently, the fishing companies that operate in the Antarctic are fishing well below the “trigger” level established by the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR), which governs fishing around the continent. CCAMLR regulates catches to stay within 620,000 metric tons, or 1 percent of the 60 million tons of krill in the region. The annual catch is about 0.3 percent of that total, according to the commission.

Cilia Indahl, sustainability director for Norwegian krill fishing company Aker BioMarine

AS, said it would fully support efforts to limit fishing near the shoreline if researchers showed that fishing was directly hurting wildlife.

“There is no research as of today that shows krill fishing has any impact on whales, penguins or seals,” Indahl said.

“Actually, the impact of climate change is much more important to address,” she added.

Reprinted from Climatewire with permission from Environment & Energy Publishing, LLC. www.eenews.net, 202-628-6500

ABOUT THE AUTHOR(S)