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February 23, 2007

Mercury could cause ivory gull's decline

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The ivory gull was assessed as an endangered species by the Committee on the Status of Endangered Wildlife in Canada last year, after population counts from 2002 to 2006 by Canadian Wildlife Services only found several hundred birds – a drop of 80 per cent since the 1980s, when some 2,400 birds were counted.



High mercury levels have been found in the eggs of the ivory gull, which may explain why the bird's numbers have plummeted in Canada's Arctic since the 1980s.



Ivory gulls nest atop rocky peaks surrounded by glaciers, known as nunataks, shown above. Decreasing amounts of ice in the Arctic could be another reason for the bird's decline. (PHOTOS COURTESY OF MARK MALLORY / CWS)

The ivory gull has more mercury in its eggs than any other seabird in the Arctic, researchers have found – a fact that could explain why numbers of the boisterous seabird have plummeted dramatically over the last 20 years.

Population counts done during the early 1980s found about 2,400 birds, while a survey done from 2002 to 2006 by Canadian Wildlife Services only found several hundred birds – a drop of 80 per cent.

This decline prompted the Committee on the Status of Endangered Wildlife in Canada to assess the ivory gull as an endangered species last year.

Climate change and excessive hunting in Greenland are both possible reasons why the ivory gull's populations have nose-dived.

But another possibility has been discovered by Birgit Braune, a research scientist with Environment Canada who studies toxic chemicals in Arctic wildlife, specializing in seabirds.

She examined ivory gull eggs collected from Seymour Island, a tiny island just north of Bathurst Island, in 1976, 1987 and 2004, using the tissue bank at the National Wildlife Research Centre in Ottawa, and ran a series of tests to look for persistent organic pollutants, such as PCBs and DDT, as well as flame retardants.

Most tests bore no surprises. But when she tested for mercury, a heavy metal that interferes with the nervous systems of animals, she found “the highest mercury levels in eggs of seabirds in the Arctic.”

“That certainly was an attention getter,” she said during an interview last week.

Some eggs contained enough mercury to prevent other birds from reproducing – although whether this would hold for ivory gulls is not yet clear.

High mercury levels could also affect the behavior of birds, during the crucial period when a chick needs to be fed and kept warm.

But just how high mercury levels affect the ivory gull is unknown, she stresses. Some animals, particularly marine mammals, are able to cope with high mercury levels because their bodies contain another chemical, called selenium, which combines with mercury and renders it harmless.

“The bottom line is, it's high. We don't know what that means,” she said of the test results. “To me, it's one piece of the puzzle.”

Braun suspects the high mercury levels are the result of the ivory gull's metabolism, which is higher than other gulls in the Arctic. “It means it needs to eat more, and by default, it needs to take in more mercury,” she said.

And because the bird is a scavenger, it eats at the top of the food chain, where chemicals such as mercury accumulate.

Researchers already know mercury levels aren't preventing ivory gulls from laying eggs, says Mark Mallory, who helped conduct the CWS survey of ivory gull populations. During the summer surveys, researchers saw healthy clutches of eggs in the birds' nests.

So the next step will be to study ivory gulls in the wild during the summer nesting months, to see whether they behave irrationally with their young chicks, Mallory says.

As of yet, there are no plans to do this. But this summer CWS researchers will study another factor that could affect ivory gulls: traffic to and from the Diamondex mineral exploration site, west of Arctic Bay.

Arctic Bay residents have expressed concern that helicopter traffic to the site may scare wildlife. So this year, CWS researchers, with the cooperation of Diamondex staff, will study how the nearby population of ivory gulls on Brodeur Peninsula react to air traffic.

But first they will need to find ivory gulls. During the 1980s, researchers counted between 500 to 700 birds on the Brodeur Peninsula, which is an area about the size of Prince Edward Island.

But "last year, we saw one gull," Mallory said last week. "One year we saw no gulls."

"We were probably missing a few birds, but most seabirds do return to the same spots," he said.

That could be explained by late snowfall, which may have encouraged the birds to simply skip nesting that year.

There is some good news from the CWS survey of ivory gulls: researchers discovered an unknown colony last summer on eastern Ellesmere Island of about 600 birds. "That was a really big coup for us," Mallory said.

"That represents the main heart of the breeding range in Canada."

Evidence suggests this colony is permanent, and not merely ivory gulls who relocated from a previously known location.

That's because new nesting grounds are usually barren, without much vegetation, while permanent nesting grounds are distinguished by bright orange lichen, sedges and other vegetation, fertilized by the birds' guano.

The bad news: there's every reason to believe declines have occurred everywhere else in the country.

Other than mercury, researchers have a few other theories why the ivory gull's population has declined so abruptly. One is that an unsustainable number of gulls were hunted in Greenland during the 1980s, where migratory seabirds are eaten more often.

The ivory gull isn't actively hunted in Nunavut, although some hunters have expressed affection towards the bird for its brash behavior. It's been known to swoop in after a polar bear or whale kill to plunder some of the fat, right in front of a hunter's eyes. Global warming could also play a role. Ivory gulls nest on top of narrow peaks surrounded by glaciers, and spend their winters floating through the icy waters of Davis Strait on multi-year sea ice. Shrinking ice levels could threaten this habitat.