

Warmer summers could create challenges for nesting Arctic seabirds

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Warmer, wetter weather in the Canadian Arctic could create problems for nesting seabirds, say a team of Canadian scientists who, between them, have spent over 7,000 days observing birds in the North.

Arctic birds are uniquely adapted to survive in the cold, dry summers that mark the high [Arctic](#). However, warmer temperatures are bringing more storm events, including incidents of heavy fog, rain, freezing rain, wet snow and stronger winds.

"It's not really a surprise," says Mark Mallory, a biologist with the Canadian Wildlife Service in Iqaluit. "If a bird is adapted to cold conditions and you make things warmer, predictably they'll find things harder."

Mortality studies in seabirds typically focus on birds in tropical or temperate regions where 'normal' causes of death include population declines due to fishery collapse, ecto-parasites like ticks, introduced predators such as rats, and storms at sea.

Mallory and two other Canadian scientists decided to combine 33 years of observation into a paper that was released in *Arctic*, the journal of the Arctic Institute of North America. In it, the trio track the unusual ways Arctic seabirds die and they predict that a warming climate could have serious consequences for these birds. The study is based on observations of six species of birds on 11 different seabird colonies in the eastern Arctic ranging from northern Hudson Bay to Devon Island.

Typical causes of death include crashing into each other or cliffs during heavy fog, being slammed into the ocean by Katabatic winds or, perhaps most grizzly of all, dying from a combination of [heat stress](#) and blood loss due to mosquito attacks.

"I was working at a fulmar colony and after a couple of days of fog we'd see fulmars on the sea ice, alive but with their wings broken. These birds are phenomenal flyers, but you take away their visibility to a meter or two and maybe that causes problems. In talking to my Inuit guides, they told me that they had seen this a lot, and thought that the birds flew into each other in low visibility," says Mallory.

Few birds winter in the Arctic because of the harsh climate conditions. But in the spring, there is a veritable explosion as millions of birds return to nest. Seabirds in Mallory's study area tend to spend the winter months floating in the North Atlantic ocean. When they return in the spring, conditions are often still very harsh. Mallory has seen fulmars and thick-billed murrelets incubate eggs with only their heads visible above the snow.

The preferred nesting sites of many seabirds are cliffs, which often prove to be very dangerous. Falling rocks and chunks of ice, as well as slides kill great numbers of birds. In fact, the authors cite one incident in which over 800 murrelets and kittiwakes died almost instantly when the ledges on which they were nesting collapsed. Mallory suspects cliffs could become unstable as temperatures rise, with more freeze-thaw action of ice.

And not all cliffs provide a safe haven from predators. Cliff-dwelling birds are, of course, easily accessible by other predatory birds. But Arctic foxes and even polar bears have been observed on cliff sides eating eggs, chicks or adult nesting birds.

"It's always shocking to see a polar bear on a cliff," says Mallory adding,

"I saw Arctic foxes down what appeared to be effectively a vertical wall. And the Inuit report seeing more polar bears on cliffs. So these birds think they are safe, but they are not."

The Arctic has been getting warmer and increased temperatures create stronger storm fronts and bring more precipitation to what is essentially a desert region. For birds adapted to a cold, dry climate, these changes could be very challenging.

"Arctic seabirds don't do well in really heavy, wet snowfall. Chicks hatch in early August and they expect it to be dry and cool. They can't handle soaking wet for very long, even if it is warmer," says Mallory.

These [birds](#) have adapted to past climate shifts, but the changes occurred over long periods of time. It might be difficult for them to adjust to the rapid changes now underway.

"They can deal with cold and wind and storms, but within the range of what has occurred over the past decades or centuries. If you suddenly change that range, make things warmer and wetter with a different type of precipitation, that's a scenario these populations aren't adapted to."

Provided by Arctic Institute of North America

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