Will lemmings fall off climate change cliff?

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A new study by the Wildlife Conservation Society will examine how lemmings and the many predators that rely on them may be affected by climate change. Credit: Don Reid/Wildlife Conservation Society

Contrary to popular belief, lemmings do not commit mass suicide by leaping off of cliffs into the sea. In fact, they are quite fond of staying alive. A bigger threat to the rodents is climate change, which could deprive them of the snow they need for homes and lock up their food in ice, according to the Wildlife Conservation Society, which is launching a study to examine how these tiny but important players in the ecological health of the far North will fare in the age of global warming.

"We need to know how climate change will affect a variety of resident and migratory predators that rely in large part on these small arctic rodents," said WCS Canada researcher Dr. Don Reid. "The ability of lemmings to adapt to these changes will have a significant impact on the

entire food web, so we need to understand more about lemming ecology within the context of climate change."

Lemmings serve as an important prey species for a number of predators, including arctic foxes, red foxes, rough-legged hawks, peregrine falcons, snowy and short-eared owls, jaegers, gulls, weasels, wolverines, and grizzly bears. In fact, the population of many predators fluctuates in response to dips in lemming numbers. One of the key ingredients for lemming abundance and productivity is likely snow. Sufficient snow depth insulates the rodents from frigid temperatures, allowing them to devote more energy to breeding and less to avoiding predators. Later arrival of autumn snows, and earlier spring melts, could subject lemmings to longer periods of sub-freezing temperatures. Also, the tundra is experiencing unusual warm periods in winter, including freezing rain and episodes of thawing and freezing, which can coat much of the lemmings' foods (sedges and dwarf shrubs) in ice.

Lemming predators also have to adapt to these changes. Predators that specialize on eating lemmings, such as snowy owls and arctic foxes, may suffer if lemmings are no longer so productive. Other predators may benefit. For example, there is evidence that red foxes have usurped considerable areas from arctic foxes in recent decades. Warmer temperatures may have increased the productivity of the red foxes' diverse prey (ground squirrels, birds and lemmings), and improved their ability to survive the tundra winters. Researchers will investigate these possibilities, and track the productivity of foxes and raptors for comparison to historic data.

The study, due to begin next month, will be one component of a large Canadian International Polar Year (IPY) project called the Arctic Wildlife Observatories Linking Vulnerable Ecosystems (ArcticWOLVES), based at Laval University in Quebec. Funded by the Canadian IPY program, this project will involve a number of academic,

government, and non-governmental players in an effort to assess the status of food webs across Arctic ecosystems. The project will undertake detailed studies on lemmings and their predators at several sites through the arctic, including the northern Yukon and Bylot Island, Nunavut, and will run until 2010.

Source: Wildlife Conservation Society

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