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What Is The Future for Wolves and Caribou on Michipicoten Island?

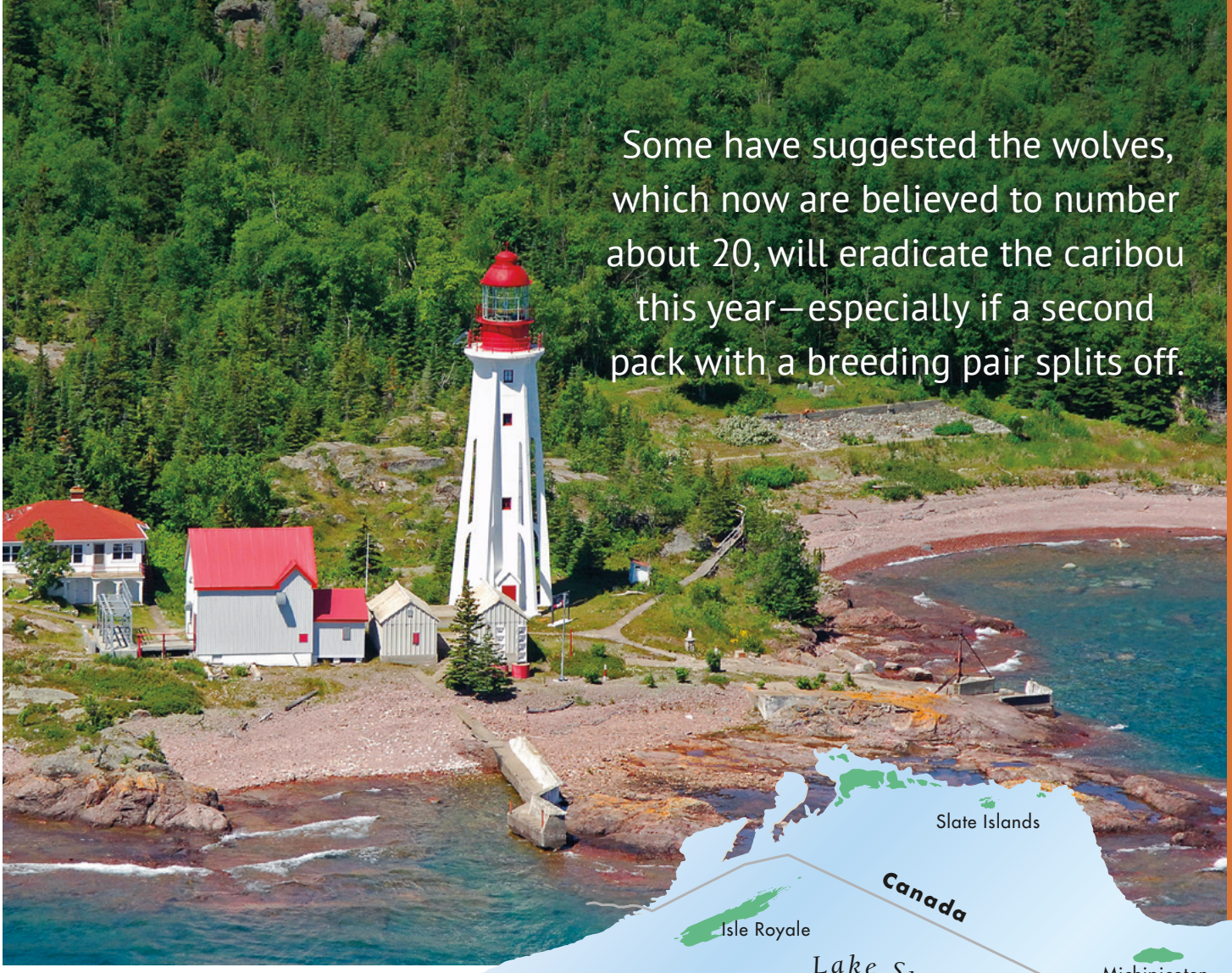
By TRACY O'CONNELL

The Isle Royale ecosystem has been a focus of research for several years as the wolf population declined, and as a result, the number of moose on the island rebounded. Now, a new drama is playing out on another Lake Superior island and gaining attention from conservationists and researchers.

Michipicoten Island lies just 10 miles (16 kilometers) offshore within the Canadian province of Ontario, and has been under the jurisdiction of Ontario Parks since the mid-1980s. The 71-square-mile (183-square-km) island's native caribou population died out from over-hunting in the mid-1800s. In 1981, a single bull caribou was observed on the island, presumably crossing on a winter ice bridge. The following year, in an effort to repopulate Michipicoten's historic stock of the species, the Ontario Ministry of Natural Resources relocated seven caribou there from the Slate Islands, an archipelago of small islands in northern Lake Superior that had been home to Ontario's largest herd of these ungulates. The new herd grew—at times reflecting the largest growth rate seen anywhere for these animals—and reached an estimated 680 members by 2011 .

In 2014, four wolves crossed an ice bridge from the mainland onto Michipicoten Island and bred in this isolated environment perfect for a predator-prey study similar to that on Isle Royale. Some have suggested the wolves will eradicate the caribou this year—especially if a second pack with a breeding pair splits off. Six of the Michipicoten

Brent Patterson



wolves were collared in 2015 by Brent Patterson, a research scientist for the Ontario Ministry of Natural Resources and Forestry, but only three collars are still sending data. Patterson that year found the caribou population to be down to approximately 300, roughly half of its highest estimate, according to an article on *National Geographic's* website.

Michipicoten Island and the Ecological Significance of the Study

Michipicoten is the third-largest island in Lake Superior (after Isle Royale and St. Ignace), which itself is the largest of the five Great Lakes lying between the United States and Canada. The island is in the northeastern part of the lake. It is 16.8 miles (27 kilometers) long and 6.2 miles (10 kilometers) wide at its widest point.

The name is an adaptation of Mishipikwadina, the term for "big bluffs" used by the Ojibwe, native peoples living in Canada and the northern United States. Their name for the island refers to the geography bordering the mouth of the Michipicoten River on the nearby mainland. Made up of ancient lava bedrock and heavily forested with several inland lakes, Michipicoten has been termed a "floating island" in the lore of the Ojibwe people because a frequent fog layer affects one's experience of the island's apparent size, location and other features. Shrouded in mystery, it was believed to be a place of malevolent spirits and giants.

The island was once a source of copper for Ontario, recognized on French maps as early as 1647 with accounts of malleable surface copper. Serious mining attempts were made for about 50 years starting in the mid-1800s. A lighthouse was established in 1912 on the eastern end of the island and staffed until 1988.

During the spring, summer and fall, sea kayakers visit the island, some as part of commercial tourism ventures, for stays of up to a week. Other visitors are owners of small, private landholdings, and commercial fishers. Charter boat and float plane are the typical ways to access the island, where abandoned mines and ramshackle buildings are scattered across the interior, and a couple of shipwrecks litter the waters near shore. In winter it is usually uninhabited.

Ontario Ministry of Natural Resources & Forestry

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USFWS / Courtney Celley

The caribou of Michipicoten are considered ecologically important because they are, along with those of the Slate Islands all that "conclusively and verifiably remain" of a population once found throughout the federally-recognized ON6 Lake Superior caribou range, according to a 2012 report by the Canadian Wildlife Service. The 2016 caribou survey by the Ontario Ministry of Natural Resources and Forestry/Parks Canada failed to conclusively observe any caribou remaining along the north shore of Lake Superior, meaning that possibly, the region's only surviving animals are on these islands.

Other Factors Complicate the Scenario

There is a third player in the wolf-caribou drama on Michipicoten—the beaver. With as many as 1,300 active lodges in autumn 2015, beaver numbers are higher on Michipicoten than researcher Patterson has seen anywhere else in North America. The animals provide a dietary mainstay for the wolves on Michipicoten during much of the year while still keeping their numbers strong. During the winter, when beavers are locked under the ice, caribou become the main menu option for the wolves.

It might seem this narrow window of vulnerability would not be so hard

Pat Gaines

on the caribou, but the beaver presence upsets the balance between caribou and wolves. If the caribou were the only food source for the wolves, their declining numbers would result in a lower wolf population. The secondary food source, however, keeps the wolf numbers strong while the caribou struggle to repopulate in the presence of the predators. (See the effects of this phenomenon elsewhere in North America, page 9.)

A similar situation seems to be playing out to the north. While the Slate Islands once had the larger caribou population, perhaps as high as 650, today far fewer of the ungulates survive on the Slates, according to Steve Kingston, a biologist at Ontario Parks. Winter ice bridges in 1994, 2014 and 2015 brought wolves to the Slates but by autumn 2017 there was no sign of continued wolf presence. A 1999 study of the stomach contents of one wolf that died in 1996 on the Slates showed it had recently fed on beaver, not caribou.

Last fall the Canadian Broadcasting Corporation (CBC) reported several voices calling on the ministry to relocate the wolves from Michipicoten to protect the caribou that remain. One location that has been suggested: Isle Royale, which lies across Lake Superior in United States waters off Minnesota. Others urge that instead, the caribou should be moved to save them. Possible destinations include the Slate islands, and Leach and Montreal Islands in Lake Superior, where populations of caribou were killed off when winter ice bridges brought wolves.

In December 2017 the Minister of Natural Resources announced that some caribou would be moved from Michipicoten to the now predator-free Slates in January 2018 to help ensure the persistence of coastal caribou. Research scientist Patterson, who also teaches part-time in the graduate Environmental and Life Sciences program at Ontario's Trent University, will continue to lead the ministry's study of wolves on both Michipicoten and the Slate Islands as part of a team that will investigate this interplay of species.

These are not the first studies of caribou and their predators in this region. Canadian caribou expert Arthur

Ontario Ministry of Natural Resources & Forestry

T. Bergerud decades ago proposed a test to assess the viability of "the range hypothesis versus the predation hypothesis" for explaining caribou population declines. Bergerud, a population ecologist researching caribou in North America since 1955, is considered the world's foremost authority on the woodland caribou. His 30-year study (1974 to 2004) of two caribou populations, one in Ontario's Pukaskwa National Park and the other on the Slates and neighboring islands, is considered the most comprehensive ever done on the animals.

"Range" in Bergerud's hypothesis refers to the ability of the caribou population to increase despite the lack of lichen on the Lake Superior islands. Lichen had long been believed to be a mainstay of the woodland caribou's winter diet, but this was disproven with Bergerud's research, which saw caribou numbers increasing on the relatively lichen-free islands. The predation hypothesis stated that with the appearance of wolves, the caribou numbers should decline. Due to the lack of predators on the Slates and neighboring islands when the study was developed, Bergerud used a comparable setting—a national park on the Canadian mainland—to see how wolves affected the caribou. Caribou numbers did decline in the presence of wolves—not only in the initial Ontario park setting, but in each instance where wolves subsequently arrived via ice bridge on islands populated by caribou.

Bergerud and his research colleagues, writing in 2007, said, "These studies strongly support the idea that ecosystems without predators are limited bottom-up by food, and those with wolves top-down by predation; however, the proposed crucial test that has been initiated on Michipicoten Island remains to be completed, and population numbers offer a limited window of opportunity for unequivocal results." ■

Additional Reading

- Bergerud, et. al, *Woodland caribou persistence and extirpation in relic populations on Lake Superior, Rangifer,* Special Issue No. 17: pp. 57-78, 2007.
- Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population in Canada. *Species at Risk Act* Recovery Strategy Series.

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