



Ontario's Vanishing Caribou: Are Wolves Truly the Culprits?

by CHERYL LYN DYBAS

The summer sun slides behind a fir-tipped ridge in the deep, dark boreal forest in Ontario, Canada. It's 10 p.m.—twilight in June in the far north.

Biologists John Fryxell of Ontario's University of Guelph and Jim Baker of the Ontario Ministry of Natural Resources and Forestry (MNRF) are in a car heading five hours north of Thunder Bay on Ontario Route 11. They skirt cliffs that resemble the sheer rock faces of Yosemite, then bank left onto Route 584 toward the railroad hamlet of Nakina, end of the line. Nakina is a First Nations word meaning "land covered with moss"—a clue to the researchers' quarry.

And so continues the search for a mysterious creature of the north woods. The gray ghost, it's called, this pale being that passes almost without a trace through the black spruce and jack pines of the boreal forest, as this northern spruce-fir forest is known. Scientists have dedicated their professional lives to it, yet many have never glimpsed it.

Caribou is its name.

In search of caribou

As part of the hunt for a forest wraith, Fryxell and others at the University of Guelph, Trent University, the Canadian Forest Service and Ontario MNR set out on a four-year study (2010–14) of woodland caribou (*Rangifer tarandus caribou*), a species listed as threatened under Ontario's Endangered Species Act and Canada's Species at Risk Act.

An important step toward protection came in December 2014. Fryxell and his colleagues published research results in the Ontario document *State of the Woodland Caribou Resource Report*. It lists 14 caribou ranges across Ontario, from the Swan Range in the northwest to the Kesagami Range in the southeast.

Threats to woodland caribou are primarily habitat loss, degradation and fragmentation due to forestry and mining. The reasons for the caribou's decline, the scientists found, trace back to us.

A recent Canadian Parks and Wilderness Society report, *2015 Update: Boreal Woodland Caribou Conservation in Canada*, states, "There is sufficient knowledge now about the high-risk situations facing caribou in at least six ranges in Ontario that there should be no expansion of the industrial footprint here until... peer-reviewed science demonstrates positive trends in population... and improved range conditions."

In particular, "...the elevated levels of human-caused disturbance in the Missisa Range [location of the 'Ring of Fire' mining development] start to tell a story of the cumulative impact that mineral exploration alone can have on one range even before a single mine is built."

Human-caused climate change may be another factor. Black spruce, jack pine and other coniferous trees—hallmarks of the boreal forest—are beginning to move north, with caribou following.

Aspens and birches are filling in behind the conifers. Moose prefer such deciduous or mixed-deciduous/coniferous forests; they're in turn trailing the birches north. As moose hoof it poleward, wolves are right behind.

Wolves may also be hot on the heels of caribou, but, according to International Wolf Center founder Dave Mech of the U.S. Geological Survey, co-author of

the 2015 book *Wolves on the Hunt: The Behavior of Wolves Hunting Wild Prey*, "Woodland caribou tend to 'space away' from wolves. Even in winter, caribou locations averaged 9.3 miles (15 kilometers) from wolves in Ontario." When wolves are closer, it's often because roads cut through the forest have allowed them to get there.

"The stage is set for a 'perfect storm' of factors to collide, changing the relationship among habitat, predator and prey," says wolf biologist Brent Patterson of the Ontario MNR and Trent University. "Caribou, moose and wolves are in a complex dance in the northern forest."

Where will they be when the music stops?

Where are all the caribou?

Woodland caribou are medium-sized members of the deer family. In Ontario, two caribou ecotypes roam the woods. The forest-tundra woodland caribou is found on the tundra during spring and summer, and moves into the boreal forest for the remainder of the year. The non-migratory, forest-dwelling woodland caribou lives year-round in the boreal forest—including some Lake Superior islands. Only the non-migratory woodland caribou is listed as an Ontario species at risk.

The Ontario MNR estimates the province's non-migratory woodland caribou population at 5,000 animals. As caribou are difficult to find, no one knows exactly how many there were in the past—or is sure how many there are today.

Since the late 1800s, more than 40 percent of Ontario caribou range has been lost; scientists have found it's retreating northward by about 21 miles per decade. If that rate continues, woodland caribou may be extinct in Ontario by 2100.

The lichen Cladina stellaris is a favorite food of the woodland caribou.



Philip Wiebe

Lake Superior's coast: last rites, or final refuge for caribou?

Of the 14 woodland caribou ranges identified in Ontario's 2014 report, only one—the Coastal Range along Lake Superior—shows what scientists call a discontinuous distribution: few to no caribou.

It wasn't always so, according to biologists Peter Gogan of the U.S. Geological Survey's Northern Rocky Mountain Science Center, and Jean Fitts Cochrane, now retired from the U.S. Fish and Wildlife Service. Gogan and Cochrane first wrote of the caribou's decline along Lake Superior in 1994.

Woodland caribou gradually retreated northward from Lake Superior, vanishing from the western shore between 1905 and 1912. Farther east, as recently



Philip Wiebe

In the boreal forest of northern Ontario, the stage is set for a 'perfect storm' of factors to collide, changing the relationship among habitat, predator and prey. Caribou, moose and wolves are in a complex dance in the northern forest. Where will they be when the music stops?

as the 1960s, woodland caribou range was continuous south to Lake Superior, extending to what is now Pukaskwa National Park.

"With several small populations of woodland caribou persisting, it might appear that these populations are viable," offered Gogan and Cochrane in their 1994 report. But "...the prognosis for most of the existing Lake Superior herds is actually bleak." The researchers predicted extinction for the Pukaskwa National Park herd within 25 years.

Going, going...gone?

That estimate is very close to correct, according to Pukaskwa National Park biologist Christine Drake. In the late 1970s, 40 caribou roamed within the park boundary, says Drake. By 2009, that number was down to five, and in 2011, to three. They're probably Pukaskwa's last caribou.

There is better news elsewhere. On the Slate Islands (along Lake Superior's north-central shore), says Ontario MNR biologist Steve Kingston, today there are some 100 caribou. That number may once have been as high as 650.

The islands offer good caribou habitat with plenty of vegetation, including lichen, a caribou favorite. Another boost may be the lack of predators such as wolves. "Then an ice bridge formed in the winter of 1994," Kingston says, "and again in 2014 and 2015, opening a wolf passage each time." To date, however, caribou apparently aren't enticing wolves to stay on the Slates. When wolves venture out to the islands, it's for relatively short visits.

On 71-square-mile (84-square-kilometer) Michipicoten Island, five times the size of the Slates, a new story may be developing.

Wolves probably made their way to Michipicoten across 2014's ice bridge. A

camper spotted two wolves on the island in mid-summer 2014, says Patterson. Then a naturalist photographed the tracks of three wolves on a Michipicoten beach in October 2014.

Patterson and other scientists mounted an expedition to the island in February, 2015. They located and radio-collared a pack of three wolves—one male and two females. "We're currently genetically profiling all three wolves to find out if there are any parent-offspring relationships," says Patterson. "For now, we don't know exactly where the wolves came from."

The researchers also found some 250 to 300 woodland caribou, perhaps the most of any location along Lake Superior—despite the wolves' presence. "Michipicoten has an abundant beaver population," says Patterson, "which provides another food source for wolves."



Pat Gaines

Why are caribou seemingly flourishing, in relative terms, on Michipicoten and not in other places?

Scientists are in the early months of figuring that out, but the presence of beavers may mean that wolf-caribou dynamics will play out very differently there than in places without beavers.

Into the boreal forest

To know caribou, one must first learn to know the boreal forest, scientists like Patterson have found. The best place for that may lie due north of Lake Superior.

Over the past 80 years, human activities have changed the character of Ontario's boreal forest. Timber harvesting has altered the mix of tree species, and fire suppression has made the forest older in some places than would naturally be the case.

In response, researchers have been comparing variables, including forest

fire frequency, in three Ontario boreal forest regions: the Pickle Lake area, the environs around Cochrane, and Auden, near which Nakina lies.

Balance may lie in human landscape use

It's 6 a.m. in mid-June, broad daylight in this northern locale. The researchers are about to arrive at the Auden site.

A few hundred yards into the forest, a thick carpet of what looks like pine needles covers an area the size of a suburban yard. But it's not pine needles. It's hair from a small, probably young, moose long-gone: a wolf kill. Across their study area, the scientists would find wolves most often taking moose rather than caribou.

Research in Alberta's oil sands region by Samuel Wasser of the University of Washington and other scientists reveals that 10 percent of wolves' diet there is caribou. The rest is deer and moose.

To halt the drop in caribou numbers, some groups have proposed culling wolves. But scientists say that wildlife managers would end up trading one problem for another. Without wolves, deer would soon overtake the landscape. "Modifying landscape-level human-use patterns," Wasser believes, "may be more effective at managing the ecosystem for caribou than intentional removal of wolves." In other words, humans need to clear out of many sections of the forest.

Crossings of the ways

Lucy Lake near Auden is lands' end for a caribou-wolf research day in the field. Not a caribou is stirring, however, and early the next morning, the scientists return to Thunder Bay.

Their drive takes them through the boreal forest and then they head south on Route 11 into stands of mixed coniferous and deciduous trees. Suddenly, something darts across Route 11. It stops ever-so-briefly to glance at the researchers' car before vanishing into a birch forest.

Here, where fir trees are few, it's not a caribou that's come to send off the biologists. Far south of mainland caribou range, loping among the moose—it's a wolf. ■



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