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# DISPATCH

Alaska  
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## THE LAST STAND: Protecting Alaska's Boreal Forest

by David McCormick

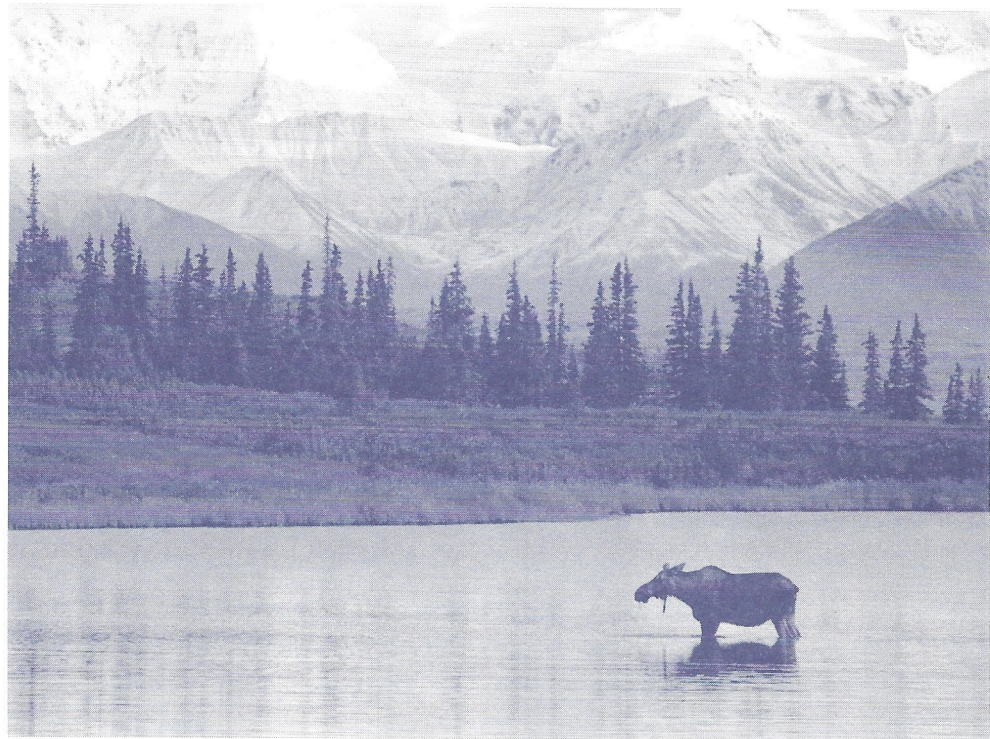
Alaska's vast boreal forests of spruce and birch are among the most environmentally significant ecosystems in the world. Constituting about 17 percent of the planet's land area, the boreal zone contains 40 percent of the global reservoir of stored forest carbon, playing a key role in regulating levels of carbon dioxide in the atmosphere.

The boreal forest is also shelter to Alaska's moose, bears, wolves and caribou, and serves as nesting grounds for almost one third of America's waterfowl. "It's one of the last great habitats in the world," said Glenn Juday, professor of forest ecology at the University of Alaska Fairbanks.

Indeed, Alaska now has one of the largest intact boreal forests remaining. The North woods of Scandinavia, Iceland and Siberia have been subject to heavy logging, making the remaining stands in Alaska an increasingly important global resource.

"Unfortunately there are mounting stresses upon Alaska's boreal landscape" notes Deborah Williams, Executive Director of the Alaska Conservation Foundation (ACF). The State of Alaska is attempting to increase timber harvests, and construction of large new mining operations will be accompanied by further logging and habitat fragmentation. Meanwhile, the rapid climate change of the past decade has stunted the forest's growth at the same time that a beetle infestation has killed more than 3 million acres of spruce.

"ACF is working with our grantees to support the immediate and long term protection of the Great Land's boreal forests," adds Williams. "Most Americans know very little about Alaska's



Moose cow in Wonder Lake, Denali National Park

boreal ecosystems – it is time to change that."

### A Special Ecosystem

Forests cover about one third of Alaska. Of this, about 10 percent is coastal temperate rainforest. The remaining 90 percent is boreal forest, covering an estimated 114 to 137 million acres. Permafrost is a primary characteristic of this landscape. Alaska's boreal forest is dominated by conifers, mainly spruce, pine, fir and larch. Deciduous trees include birch, willow, poplar and aspen. Most common is the black spruce, whose ability to thrive in shallow, wet ground has allowed it to occupy more than half of the forest cover. Its dark green spires, set against snow-white

mountaintops and the ever-changing palette of the tundra, complete one of the most stunning landscapes on earth.

Richard Nelson wrote in his book, *Interior Alaska, a Journey Through Time*, "The North woods have a special and indefinable quality that has taken the hearts of many who have lived or traveled here."

### Destination Alaska

The permafrost beneath the boreal forest contributes to a landscape bejeweled with small ponds that attract millions of ducks, geese and other migratory birds each summer from South America, Central America, Asia and the Lower 48.

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## OUR MISSION

*Alaska Conservation Foundation works to protect the integrity of Alaska's ecosystems and to promote sustainable livelihoods among Alaska's communities and peoples.*

## THE LAST STAND

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"There are more than 200 species that regularly migrate here," said Anna-Marie Benson, senior biologist at the Alaska Bird Observatory in Fairbanks. "This habitat is of international importance. These birds spend half to three quarters of their lives in other places."

Alaska's mid-night sun and an abundance of food combine into a 24-hour buffet that sustains the birds through the nesting season and builds the fat stores needed for their return flight.

"It takes a lot of energy to migrate thousands of miles like that," Benson said. "The reason they do it is because they have increased reproductive success in the Northern forests."

But studies by the U.S. Fish and Wildlife Service have found population declines among several bird species in the boreal region. In 1999 the sandhill crane index was 23 percent below the 10-year average, while the Pacific loon index was down 21 percent. Populations of "miscellaneous waterfowl" were down 6 percent from the 10-year average.

The Alaska Bird Observatory, (a grantee of ACF's) is among the groups collecting data in an effort to track and understand these population changes.

"Our work is geared toward making informed management decisions that protect bird populations," Benson said.

### "Carbon Sink"

"The boreal forest is a nationally and globally significant resource for many reasons. One of the most important is that it absorbs and stores so much carbon dioxide, which is particularly crucial for the control of global warming," observes Deborah Williams.

When spring arrives in the North, notes Dr. Juday, the enormous plant growth causes a measurable decrease in worldwide carbon dioxide levels. Those levels increase again in the fall when

freezing temperatures send the forest into dormancy.

"The boreal forest excels at storing of CO<sub>2</sub> in the soil," Juday said. "Because the soils are so cold, plant material doesn't decompose very readily. And permafrost doesn't decompose at all. So the boreal forest soil stores a tremendous amount of carbon."

But what is stored here now could also be released back into the atmosphere if conditions change. In many countries within the boreal region, large-scale deforestation has already occurred or is under way. Increased size and frequency of fires

are predicted, as is continued warming of the arctic climate. All of these could reduce the region's future effectiveness as a carbon sink.

### Feeling the Heat

By far the greatest blow to Alaska's boreal forest has been the outbreak of spruce bark beetles that began in the mid 1990s and spread rapidly throughout the Southcentral region, killing more than 3 million acres to become the largest forest insect epidemic in North America. Many experts believe the beetle outbreak is directly related to the warming climate.

"It's really hard to prove," said Juday. "But we do know several things. We know that the major limitation of the beetle normally is temperature. It generally requires two years to complete its life cycle. In warm years, it can complete that life cycle in one year. It has essentially doubled its reproductive output."



*Spruce bark beetle damage*

*"The boreal forest is a nationally and globally significant resource for many reasons..." observes Deborah Williams.*



GARY ROSENBERG

Northern Hawk Owl

Average temperatures in Alaska have risen by about 5 degrees since the 1960s. Precipitation has decreased 17 percent in the past century, Juday's research shows.

While warmer temperatures might seem to predict faster growth rates for the boreal forest, Juday said his research on black spruce has found just the opposite.

"It came as a bit of surprise," he said. "The warming is not making them grow more, it's making them grow less."

The combination of warmer and dryer weather has stressed the spruce, he said, making them less able to survive beetle infestation that otherwise might not be fatal.

The changing climate is expected to eventually change the range of the boreal forest and its composition, expanding it northward and replacing conifers with less ecologically productive hardwoods such as quaking aspens. Thawing of the permafrost will also allow precipitation to enter the ground much more readily. This could lead to a decrease in the amount of standing water, potentially altering the migration of waterfowl.

"The forest is in transition, and the biggest change is the climate," said Janice Dawe, executive director of the Alaska Boreal Forest Council.

### Logging

Approximately 12 percent of Alaska's boreal forest meets the definition of

commercial forest. This amounts to roughly 13 million acres. So far, a combination of market forces has kept logging at relatively low levels. But the state and industry groups are looking at ways to increase the timber harvests.

Most boreal logging is conducted by the state and the Doyon Regional Native Corporation. About 1,000 to 1,500 acres of timber are harvested annually on lands managed by the state Department of Natural Resources. Most of the timber harvested

comes from the 1.8 million-acre Tanana State Forest. The Tanana Chiefs Conference, a subsidiary of the Doyon Corporation, participates in the annual harvest of less than 1,000 acres, approximately 1 million board feet.

So far, demand for Alaska timber is suppressed by market price. Industrial timber interests in Canada, Russia and other countries within the circumpolar zone generate wood products at relatively low cost. The investment required to

compete in Alaska with these countries is uneconomic given the present return. But the Tanana Chiefs Conference is building its capacity in expectation that the market will grow. And a new chipping facility planned for Point McKenzie is designed to use an estimated 12 million board feet annually.

"A large part of the reason there isn't more logging pressure here is because of low prices, but that kind of thing can change quickly," said Nancy Fresco, boreal forest coordinator for the Northern Alaska Environmental Center. "If it does, we need to be prepared with science and with public opinion about what we want from our forests."

Apart from the volume of timber harvested is the issue of which trees are taken. The most valuable are the large

white spruce, which comprise only about 2 percent of the Tanana Valley State Forest and typically grow along rivers and south-facing slopes.

"It's just not a very common habitat," said Benson at the Alaska Bird Observatory, which is studying the importance of the white spruce stands for birds and other wildlife.

With global warming, another critical question arises: When white spruce is cut, will it return or will it be replaced with less ecologically productive species of trees? Without doubt, this is one of the habitats in Alaska at greatest risk.

"Furthermore, the boreal forest is not just trees," said Fresco. "It's a mixture of forest and wetlands that is very susceptible to fragmentation. Some of the species that live here need enormous ranges. Black bears and grizzly bears are good examples."

### Mining

In Interior Alaska, gold is generally more profitable than timber, and it is mining that poses one of the most direct human threats to the boreal forest.

In the next 20 years, many new mines could be in Alaska. According to Dr. Juday, "the biggest threat to the forest from man is infrastructure: mines, roads and power lines."

At the Fort Knox gold mine near Fairbanks, the mine pit measures about a mile wide and a mile long, while the tailings impoundment covers 1,100 acres, said Mara Bacsujlaky, assistant director and mining coordinator for the Northern Alaska Environmental Center. The mine is now processing ore from smaller mines in the area, accelerating the pace of development.

"It's enabling the mining of deposits that otherwise would never have been economical," Bacsujlaky said.

Meanwhile, Tek Resources Inc. is planning a major underground gold mine



ROBERT GLENN KETCHUM

on state land near Delta Junction. While underground mines have a smaller surface footprint, plans for the Pogo mine include construction of a haul road and power line stretching 45 to 50 miles. One alternative route for the road would require crossing the Tanana State Forest.

Northern Alaska Environmental Center is working for a provision that any road would be closed at the end of the mine's life. Bacsujlaky said the company is willing to post a bond to close the road, but the State of Alaska is so far unwilling to commit to closing it.



Paper birch trees

The Pogo claim is within the southwestern range of the forty-mile caribou herd. Once the largest herd in Alaska, its population had crashed from more than 500,000 in 1920 to 6,500 in 1973. A recovery plan was applied in the early 1990s, and the herd's current population has risen to about 22,000.

The Healy Lake Tribe recently asked several environmental groups for their support in stopping the state from approving any road to the Pogo mine. Healy Lake Traditional Council Chief Patrick Saylor said the road might affect the herd, and thus the tribe's traditional subsistence lifestyle.

The anticipated size of the Pogo deposits has increased prospecting activity in recent years, Bacsujlaky said.

"You get a lot of damage from exploration," she said. "You have all these guys out there doing exploration. It's mostly small operators, and they usually don't have good environmental practices. This is something that really has not been documented. It doesn't get the same level of scrutiny as an actual mine permitting process."

## Protection Efforts

In order to effectively conserve Alaska's boreal forest, ACF and its grantees are working to raise public awareness of its significance.

"We're stressing the importance of the boreal forest in a global context," said Fresco, the forest coordinator at Northern Alaska Environmental Center. "In Canada, Russia and much of Northern Europe, the logging pressure has been really enormous. Logging has gone ahead before sound science has determined what the long-term effects would be."

An issue for conservationists, she said, is that the logging and mining projects in Alaska tend to be relatively small in comparison to the total forest acreage.

"The threats are incremental" Fresco said. "But the most insidious development is incremental encroachment. It can be hard to rally people against it. But you turn around and in 20 years what was a pristine forest is full of roads, mines and power lines, to the point where you can't even remember what it was like before. And it all happened one little project at a time."

With funding assistance from ACF, the groups working on behalf of the boreal forest employ a variety of public awareness projects. At the Alaska Bird Observatory, projects include a week-long Bird Camp for children, a new sandhill crane festival, an International Migratory Bird Day event and a beginning birdwatchers program. "We try to have a real hands-on program," Benson said.

The Alaska Boreal Forest Council sponsors a program called Tapping Into Spring, which involves students at three schools in tapping birch sap and turning it into syrup.

"It's a great way to get kids thinking about the forest," Dawe said. "And once you get the kids involved, that means you've got the parents involved. What we're finding is that kids are great ambassadors."

## Next Steps

"Unquestionably, Alaska's boreal forests require more respect and attention" notes ACF's Deborah Williams.

## ACF Grants that Benefit the Boreal Forest Since July 2000

### Alaska Bird Observatory

\$3,600 • Sponsorship of a conservation internship

\$3,000 • Common Feeder Birds of Alaska poster

\$1,250 • Bird Conservation Connections Project

### Alaska Boreal Forest Council

\$10,000 • Forest Use Survey

\$1,550 • Travel support to the National Watershed Forum

\$2,000 • Technical support

### Cultural Heritage and Education Center

\$3,700 • Phase Two: Implementation of Yo-Kah'—Sharing and Learning Athabaskan Culture and Traditional Knowledge in Old Minto, Alaska

### Neighborhood Mine Watch

\$5,000 • Stop development of the Kinross Gold Corporation's proposed Satellite Mine

\$3,000 • Support the Multiple Mine Plan Campaign

### Northern Alaska Environmental Center

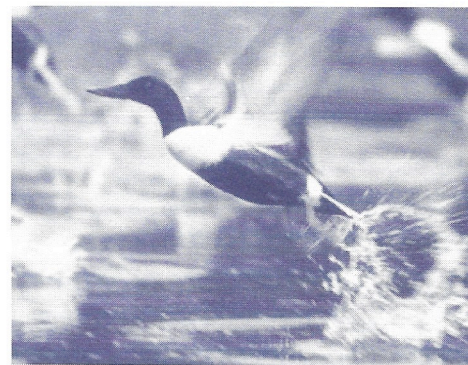
\$17,498 • Support for the Boreal Forest Project

\$9,000 • Denali Watch

\$3,600 • Sponsorship of a conservation internship

\$3,000 • Media campaign relating to the Northern Intertie Project

"We need to prudently manage and protect this vital ecological treasure, because boreal forests are so important to climate, migrating birds and other globally significant resources. With the excellent work of our grantees, and with the support of extraordinary foundations and individuals we will be able to do so," concludes Williams.



Shovellers taking off