

NEWS RELEASE

USDA Forest Service -- Northern Region



Date: October 24, 2000
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FOR IMMEDIATE RELEASE

Lynx: Is Fire the Missing Link?

The 6th in a special series by Deborah Richie Oberbillig

As snow deepens in the high-elevation forests of the Northern Rockies, the elusive lynx will be in its element. If you could watch a lynx chase a snowshoe hare, you would notice a striking resemblance between predator and prey. Big furry feet enable both to stay on top of the snow. Both are light-boned and fast. Not so noticeably, the two species count on fire to create ideal habitat.

"Lynx are inextricably tied to snowshoe hares," stressed Bill Ruediger, endangered species program leader for the Forest Service Northern Region.

The more limited an animal's choices are for food or habitat, the more that species becomes vulnerable to stress and extinction, he said. The lynx was recently listed as threatened under the Endangered Species Act.

Officially called the Canada lynx, this species and its favored prey are much more common in the extensive, fire-sculpted boreal forests in Alaska and northern Canada. Biologists doubt the lynx has ever prospered in its southern range, the states bordering Canada, but trapping records point to a marked decrease in numbers.

"The more we learn, the more scarce they appear to be," Ruediger said. "Some biologists in southern Canada believe that fire suppression may be a major factor in declines."

"We know that fire is a necessity in maintaining the forest structure that lynx need, which are young stands mixed with old stands," he said.

This year, biologists followed a lone radio-collared lynx kitten living within the perimeter of the 27,500 Monture/Spread Ridge fire that included the southern edge of the Bob Marshall Wilderness in Montana. The kitten simply moved out of the fire's way, according to John Squires, research scientist for the Rocky Mountain Research Station in Missoula.

The lynx kitten may not benefit directly from this year's high-elevation fires, but future generations of lynx should enjoy good hunting there, Ruediger said. Some of the best habitat results from large, stand-replacing fires from burns of 15-30 years ago. New burns

in the subalpine zones are soon blanketed with lodgepole pine seedlings, a favorite food for snowshoe hares. However, it's dangerous for them to browse in the open. Dense forests with trees at least 15-feet-tall allow the hares to browse on twigs even when snows are six-feet deep and still take cover from predators.

About an hour north of Missoula, the mountainous country above the Seeley-Swan valley harbors both lynx and snowshoe hares. Here on the Lolo and Flathead National Forests field crews currently are tracking 20 radio-collared lynx, while other research teams also use radio telemetry to follow 90 snowshoe hares.

Research takes place in a landscape where lightning storms target the high peaks of the Mission Mountain Wilderness to the west and the Bob Marshall Wilderness to the east. Those strikes start fires when fuels build up and dry out enough to burn well. That means fire tends to be an infrequent visitor. Historically, some of these subalpine fir and lodgepole pine forests burned to the ground every 200 years or so and set the stage for a new generation of seedlings. Lightning ignited nearby groves every 45-100 years, resulting either in a stand-replacing fire or what ecologists term "mixed severity," leaving some trees almost unscathed.

Today, fire suppression may have altered some of those natural fire patterns on the high mountain landscape, said Jane Kapler Smith, ecologist for Forest Service's Fire Science Laboratory in Missoula. She explained that fire suppression can lead to more uniformity and less of a forest mosaic. First, putting out fires can result in smaller burns than might have naturally occurred, leaving miles of older lodgepole and subalpine firs. However, eventually fires driven by high fuels, drought and winds will be too hot to contain and will burn very large expanses at once.

Dr. Scott Mills, University of Montana, oversees the snowshoe hare study, a four-year National Science Foundation grant that began in 1997. He's investigating how habitat patchiness affects population dynamics. In other words, Mills hopes to find out what kind of forest mix and size contributes to success for snowshoe hares.

He's testing a theory that snowshoe hares reach higher numbers in the far north, because it's safer there to breed and disperse without being eaten by predators. What's safe for snowshoe hares? Forests, whether 15 years or 100 years old, must offer plenty of cover and be large enough for hares to hide from lynx, bobcats and coyotes.

If that theory proves true, it may explain why the classic ecology lesson of lynx and snowshoe hare cycles is not as noticeable in the southern part of their range, said Mills. That lesson neatly illustrates a principle called dynamic equilibrium. First, favorable conditions lead to a rapid rise in snowshoe hares (one female may have four litters per year with one to four young). Then, lynx populations increase in response to easy hunting and good conditions for reproducing. The hares reach a point where there are too many for the available food sources and their numbers fall. Lynx declines soon follow. In Canada, this cycle is repeated every 8-10 years.

Preliminary findings from the lynx research in the Seeley-Swan area that started in 1998 suggest the animals have fairly large travel distances, covering a couple miles of forest each day. Occasionally, males explored as much as 12-18 miles, according to John Squires. In contrast, snowshoe hares typically hop about a quarter mile a day within a 12-25 acre home range, except when dispersing into new areas.

"The overlapping study areas make this a remarkable effort in studying lynx and snowshoe hares at the same time," Mills said. "We have pretty high lynx and hare densities with relatively easy access."

Early results from Mills' work indicate that radio-collared hares in winter often move from young, dense forests into older stands where they nibble the twigs of lodgepole pine and spruce. Field crews often track hares to snug hiding places under the snow, crouched in the safety of downed trees and branches.

Older forests with plenty of downfall also are important to lynx. They make their maternal dens under root wads of fallen trees or beneath piles of fallen branches. Fires that burn with mixed severity in an older stand retain living trees, add downfall, and open up small clearings that give hares more places to browse.

"Late winter and spring are key for female lynx since they must have a good diet for production and rearing of young," said Jim Claar, carnivore program leader for the Northern Region Forest Service. He explained that without plentiful snowshoe hares, females will not have enough energy reserves to bear, raise and feed kittens.

"Lynx are one of the few carnivores tied to a specific prey species," Claar said. "When snowshoe hares decline, lynx starve."

That reliance differs from its more common relative, the bobcat. Easily confused with lynx, bobcats are slightly smaller and stockier, without a solid, black tail tip or the pronounced furry feet. Lynx outcompete bobcats when chasing snowshoe hares across deep snow, but lose their advantage in other conditions. While known to hunt red squirrels and several other small animals, lynx cannot make it in the long run without snowshoe hares.

Somewhere this winter, a lynx will bound over drifted snows in hot pursuit of a white snowshoe hare. Like fire in the mountains, that scene has been repeated again and again. As research continues, more light may be shed on the link between fire in subalpine fir forests and the recovery of the threatened lynx.