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# The Return of the Wild

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# THE RETURN OF THE WILD

BY JOHN C. JAHODA

**THE RETURN OF THE MOOSE**  
Perhaps the most spectacular species recovery in the northern forest has been the resurgence of the American Moose, *Alces alces*. When I was a boy spending my summer at my grandfather's farm in Pittsburg, moose were only memories. Local names like "Moose Pond" and "Moose Falls" were the only reminders of the days when moose had been plentiful, but no one had seen a moose in the area in many years. Prior to European settlement, moose were more common than deer in New Hampshire and their range extended from the Canadian border to the sea-coast. By the mid-1800's fewer than 15 moose remained in the state. In the 1970's the moose population began to grow in the area and I can recall some of the local residents lamenting that the "moose were driving out the deer."

The New Hampshire moose population today is estimated at 4,500 and occurs throughout the state, with the highest densities in the northern region. Today, moose are common in the Northern Forest and certain locations like "Moose Alley" in Pittsburg and a section of Route 145 in Errol vie for supremacy as the "Moose Watching

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Capital of the World." A popular tourist activity is to drive along Route 3 in Pittsburg looking for moose. The moose concentrate along the road in several locations, most commonly in the section of Route 3 between Big Brook and Coon Brook known as "Moose Alley." The moose come to eat the mud along the side of the road that has accumulated the salt of years of heavy winter use. This man-made salt lick can now look like the parking lot at the mall, with cars lined up on either side of the road while eager children

**S**hortly after midnight a car is traveling just south of the Canadian border along Route 3 in northern New Hampshire. The night is cool and rainy and a gentle mist produces a surreal cast in the landscape. The surrounding forest looks particularly foreboding. Suddenly an animal materializes briefly in the glow of the headlights and then melts into the forest. It is too small for a moose, the wrong color for a deer and not bulky enough for a bear. The traveler knows he has seen something unusual, but what?

This driver is a witness to ecological history. In the far northern parts of New England a number of species of large mammals are making comebacks. In the case of the moose the comeback is assured, while in the case of the wolf and mountain lion the situation is a lot less certain. Enough recent incidents like the one described above have occurred to open the possibility that these large animals may also be returning to the north woods. Thus, northern New England provides an interesting opportunity to learn from ecological history, a history which is tightly linked to human land use patterns during the

last two centuries. As we enter the next century we can look at this history to understand how wise and unwise use of the land affect the wildlife with which we share the planet. If we look only at the large mammals we will see only part of the picture. A better understanding comes with a more comprehensive look at the ecosystem.

My current research project in the northern New Hampshire town of Pittsburg, which was supported this summer by a CART grant, involves looking at the entire ecosystem to form a better understanding of the northern forest today and the changes that have occurred in the last two hundred years. Some species have vanished, new species have been added, and some previously absent species have returned or may be returning to the region. There has been dynamic change over the last 200 years. Much of this change can be regarded as negative. However, there are some recent developments that are more positive and hopeful. One of these has been the return of a number of previously rare or extirpated species.



and adults delight in watching the moose eating the mud. A more natural view of the moose can be found in any of the local bogs or bog ponds, such as Big Brook Bog, Coon Brook Bog, Scott's Bog, or East Inlet. Here the moose can be seen up to their necks in water, feeding on aquatic vegetation.

The cold weather of fall and winter brings a die-back in the nutrient rich aquatic vegetation and the moose leave the ponds to subsist on their winter diet of browse.

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The disappearance of the moose from the region during the nineteenth century was due in part to extensive hunting. However, of equal or greater importance was the reduction of the critical moose habitat. Forests were cut and converted to pasture and open fields. And the forest was extensively logged. Large tracts were clear-cut and the logs shipped down river in the historic log drives. The first log drive on the Connecticut River was in 1868 and the last long log drive occurred in 1915. The lumbering practices of the late 1800's and early 1900's not only affected the forest, but were devastating for wetland habitat as well. The common method of getting the logs out of the woods was to build temporary dams called "drivers dams" on the brooks to hold back the water from the spring snow melt. The logs were cut during the winter and hauled to the banks of the brooks by horses. Once the snows melted and the waters backed up behind the dams, the dams were broken

open and the resulting flash flood carried the logs down to the rivers where the logs collected behind large booms made of logs chained together across the river. Once all the logs were collected they were driven down the rivers to the mills. This practice wreaked havoc on the brooks and streams and the aquatic vegetation that moose depended on. The flooding and draining of the drivers' ponds prevented these areas from growing stable vegetation.

In addition, during the nineteenth century the beaver was trapped extensively for its fur and the loss of the beaver resulted in fewer beaver dams and, thus, less moose habitat. All of these factors led to the decline and disappearance of the moose from the region. The loss of forests deprived the animal of the winter browse it required to survive the winter and the degradation of wetland habitat reduced its summer food resources. The disappearance of moose from northern New Hampshire was directly tied to these land use practices, just as its recent resurgence is tied to significant changes in these practices.

Since 1960, things have changed in northern New Hampshire. Forestry practices have improved. Log drives no longer occur. Logs are now hauled out of the woods by trucks along established roads. Many farmers have given up farming and their land has returned to forest. Permanent dams have replaced many of the old driver dams to create ponds and bog ponds for fishing. These dams are maintained by the state and provide habitat for a variety of wildlife, including moose. And the beaver is enjoying a population surge due to the soft market for beaver pelts. These recent changes have increased the amount of available moose habitat in northern New Hampshire, and the moose has responded with a spectacular comeback.

When I was a child in northern New Hampshire, land use patterns were already beginning to change. Farming as a way of life was in strong decline. The discovery of superior farmlands to the west had triggered a migration of American farmers west in the late 1800's. By the early part of this century many farms had already been abandoned and had returned to forest. In



*Photograph by John Jahoda*



the 1950's and early 1960's the town of Pittsburg had only about a dozen active farms. Today there are only two. As the forest returned, so did the moose. The bogs, wetlands and forest habitat required by moose is now relatively unbroken in northern New Hampshire. It is not the primeval virgin forest of the pioneers in which the moose was first encountered. Today the majority of this forest is a working forest of managed timberlands, with clear-cuts a common practice. The result is that both deer and moose are able to find suitable habitat and viable populations of both species exist within the forest. The moose have not driven the deer out. But the deer population has had to adjust to the new land use pattern for the area. No longer are farms the primary source of the "edge" that the deer need. Today deer rely on forest roads, clear-cuts and storm damage to provide the open spaces they require.

The moose is back because its habitat is back. Research indicates that areas that provide a large amount of nutritious browse benefit moose. Forest fires induce significantly more nutritious regrowth than lumbering. In the absence of fire, clear-cuts provide abundant browse. Large clear-cuts (more than 100 acres) do not benefit the moose as much as smaller dispersed cuts. When islands of uncut softwood and hardwoods are left within large clear-cuts the moose utilize the islands during the winter. Moose can use clear-cuts until the plants grow beyond their reach, which takes anywhere from ten to thirty years. Dense clear-cuts that restrict movement and visibility are avoided. Moose make frequent use of beaver flowages, especially during the summer months. Thus a mixture of upland mature mixed woods, regenerating clear-cuts or burned areas, and wetlands makes for good moose habitat.



#### THE RETURN OF THE COYOTE

A major ecological consequence of the colonial period in New England was the extermination of the wolf. Wolves were relentlessly persecuted, with the last wolves being killed in New England in the late 1800's, due in large part to the fear that they would kill livestock, primarily sheep. Wolves were also known to kill moose and deer, and thus seen as competitors for the game that the settlers wanted for their own consumption. The extermination of the wolf and the other top carnivore, the mountain lion, left the large carnivore niche vacant. By the 1940's there were rumors that this niche was being filled. A new animal had made its appearance in the northern forest. The eastern coyote, which is darker and one-fourth again as large

as the western coyote, is considered a subspecies. It has become so abundant that it has appeared in suburban areas of New England, New York, New Jersey, and Pennsylvania.

A number of theories have been proposed to explain the eastern expansion of the coyote. One theory is that eastern coyotes were once natives of the region and that they reemerged from remote wilderness areas after the reforestation of the eastern states. Another theory is that the animals arose from the western coyote, which migrated east, interbred with small wolves, and produced a larger subspecies.

Even though we will never know the exact sequence of events in this story, the following appears to be the most reasonable scenario. Animals from the west began to move east, appearing in upstate New York and then spreading east into northern New England. Along the way they may have interbred with wolves, creating a hybrid. The interbreeding with wolves may have been the source of some genetic change leading to larger size and behavioral alterations. Thus was born the "New England Coyote." The New England Coyote, *Canis latrans*, is a recognized "race" or "subspecies" of the coyote. It is not a hybrid. It breeds true and thus retains the character of its species.

Although they are abundant, coyotes are elusive. In all the time I have spent in northern New Hampshire I have seen coyotes in the wild only three times. The first time, which may have been one of the first observations of

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coyote in northern New Hampshire, occurred at dusk on a farm road. This was in the late 1950's and we were not sure what the animals were. The second



sighting took place three years ago on the Boundary Pond road near the Maine border. I encountered two animals during the middle of the day. The animals ran down the road in front of me for a short distance and then melted into the forest. The third observation took place last year on the Indian stream road where a solitary animal appeared just before dusk.

*Coyotes have survived and flourished because they are opportunistic generalists.*

The reason for this elusiveness is that coyotes continue to be heavily persecuted by man. It is estimated that over 400,000 coyotes are killed annually in the United States. Although the persecution in northern New Hampshire is not as intensive and organized as in the west, where over \$ 20 million a year in taxpayer money is spent in a vain attempt to eradicate the coyote, it does exist. Many deer and moose hunters and other "sportsmen" will shoot a coyote on sight. In spite of this, coyotes have proven to be a highly resistant species and continue to thrive. Coyotes are now found nationwide from the suburbs of Los Angeles to the streets of New York City. Coyotes occur in 49 states (all except Hawaii) and every Canadian province. There may be twice as many coyotes now as in 1850, although even a rough estimate of their numbers is impossible to come up with. There is evidence that coyotes respond to hunting, either by wolves or humans, by increasing the number of pups that survive.

The spread of the coyote into the northeast is perhaps a classic example of the phenomenon ecologists call "niche expansion." An animal's role, or niche, in nature is determined by its genetic ability, which we call the "fundamental niche," and the presence of competitors, which restrict it to a smaller subset of the fundamental niche, is called the "realized niche." With the wolf gone, the coyote has been able to expand its food niche to

include food items previously taken by wolves. A reflection of this expansion is the somewhat larger size of the eastern coyote in comparison to its western counterparts.

Coyotes have survived and flourished because they are opportunistic generalists. They eat a wide variety of prey and make use of a variety of practices to acquire their prey. Usually they hunt singly or in relays with others rather than in packs. Their food includes carrion, birds, large insects, and rodents. Coyotes can reach speeds of more than 40 mph when running down animals such as rabbits. In New England coyotes feed upon deer and will cooperate to kill deer, especially during the winter, when other forms of prey are difficult to obtain. Females come into heat once a year, from late January to early March; following a two-month gestation period, they bear 2 to 12 pups. Both parents tend the pups, and by autumn they weigh 20 pounds and can fend for themselves. Evidence suggests that coyotes mate for life and are strongly supportive of their mates.



**THE RETURN OF THE WOLF AND MOUNTAIN LION**

The final two animals in this saga are still in the very early stages of recovery, and may or may not make it back. Their story is really a tale for the next millennium. However there is evidence, much of it unsupported and circumstantial, that suggests that the two animals that were historically the top carnivores in the Northern Forest may be staging a comeback. There are rumors, which have become more frequent and more reliable in recent years, that both the wolf and the mountain lion may be back. There are reports of both wolves and mountain lions in Pittsburg. I have spoken to people who have seen wolves or mountain lions and believe in the authenticity of their stories. Most of these witnesses remain secretive about what they have seen. They fear ridicule in the press and by their peers if they go public, so the stories are told in confidence within their circle of friends.

The loss of the wolf from New England is due to the encroachment on their territory by humans, who have long regarded wolves as competitors for prey and as dangerous to livestock, pets, and people. However, few if any healthy wolves have ever attacked humans. Wolves usually try to avoid us. The tales of wolves chasing sleds across the steppes of Russia are pure fiction. However, the wolf is a social hunter, and about the same size as early humans, and was therefore a strong competitor for early man. We have never been particularly fond of competition, especially for food. Thus the persecution and disappearance of the wolf from New England forests.

Today we realize that wolves are valuable predators in the food web. The loss of the wolf has had ecological consequences. Their decimation has led to the overpopulation of certain other animal species. Most notably the high numbers of deer in certain areas is due in part to the loss of the wolf.



Reports of the final recovery of the mountain lion are equally obscure and fragmentary. About ten years ago reports of mountain lions began to circulate in the New Hampshire towns just north of the White Mountains. The mountain lion was the top New England carnivore. A specialist at ambush, its primary food was the deer. Mountain lions, like wolves, were persecuted by the early settlers and wiped out in the 1800's. The Mountain lion's scientific name is *Felis concolor*. Numbers have been slowly increasing and there are now 10,000 to 50,000 mountain lions in the United States. The wide variation in the estimated numbers reflects how elusive these animals are. In the west, where the numbers of mountain lions have increased dramatically, there have been recent human fatalities involving lions. Mountain lions are viewed as both precious and dangerous and thus there are major differences of opinion regarding their return to the Northern Forest.

Mountain lions are known by various local names, including "puma," "panther," "catamount," and "cougar." There have been reports, scattered and unsubstantiated, of mountain lions, suggesting that the cat had not been totally wiped out but managed to survive in very small numbers in the remotest of locations. In the last ten years these reports have become more frequent and better substantiated, suggesting that the same shift in habitat that has encouraged the recovery of the moose may also be making living in New England better for mountain lions as well. Most reports are of animals observed crossing roads, usually at night and often under less than ideal viewing circumstances.

Other species also may be enjoying a recovery, including the Canada Lynx and birds such as the Fisher and Pine Martin. The changes in the wildlife that share the planet with us can have nega-

tive consequences for humans living with them. Aside from the rare attack of a mountain lion, there are other problems living with wildlife. "Urban wildlife" problems include raccoons that carry diseases like rabies and the involvement of deer and deer mice in the life cycle of the organism that causes Lyme disease. One of the major environmental challenges will be developing ways to successfully coexist with wildlife. There are often interesting conflicts involved. In another research project I am involved in, piping plovers, which are an endangered species, are being preyed upon by foxes. Control of the foxes is difficult because the foxes have their supporters among people who believe them to be a "natural" part of the system.

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There is also a paradox of sorts in this. Most biologists would agree that we are in the midst of an extinction crisis. By some estimates, a quarter of all species on the earth may become extinct in the first 25 years of the new century. Yet in the northern forest some species may be returning and species diversity may be increasing. The paradox reflects human land use practices and how the human population is distributed. John Terborgh has estimated that 95 % percent of the land in the United States is committed to human use and only 5 % is devoted to nature. Terborgh's estimate involves only lands set aside in parks and preserves and shows the imbalance of the current situation. With the inevitable growth of the human population the situation will only get worse. There is a global extinction crisis, but it is uneven upon the surface of the earth. Most extinctions are occurring in the tropics, where the rate of human population increase is greatest. There are pockets where human population is not increasing. The northern forest of New Hampshire

is one of these. New England as a region is losing population while the south and southwest are gaining. Within New England the picture varies from state to state, and within the states there are also finer-grained patterns. New Hampshire south of the White Mountains is gaining population, while New Hampshire north of the mountains is losing. This decrease in population is reflected in the changing land use practices that form the basis for the ecological history described here.

The area is experiencing a different type of "population impact." As the population of southern New Hampshire and nearby Massachusetts grows, many of these people seek open space for recreational activities. Some of these have lower impact on wildlife (photography, mountain biking and hiking). Others are a greater threat. Of these, hunting has the most direct impact. The interaction of the human population and wildlife over the next century will determine how many species will actually be able to coexist with us. The future is uncertain. Moose seem assured of a place in the next century. Will the wolf and mountain lion be able to become reestablished in northern New England? Or will the reports remain few and fragmentary? The next 10 to 20 years in the Northern Forest will be interesting.

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