

Evidence of Range Expansion of Eastern Coyotes, *Canis latrans*, in Labrador

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Eastern Coyotes were first documented in central Labrador in 1995 and have recently been recorded in coastal Labrador and at three additional locations in central and western Labrador. Here we document additional records indicating range expansion and the possibility of an established population. We also examine the future management of the species in Labrador and its possible effect on this northern ecosystem.

Key Words: Coyote, *Canis latrans*, range, distribution, management, Labrador.

During the middle of the nineteenth century, Coyotes (*Canis latrans*) expanded their distribution northward and eastward in North America (Nowak 1979; Pekins and Mautz 1988; Thurber and Peterson 1991; Lehman et al. 1991; Parker 1995). Coyotes were first recorded in western Québec in 1944, the Gaspé Peninsula of southeastern Québec in 1974 (Georges 1976; Crête and Desrosiers 1995), insular Newfoundland in 1985 (Larivière and Crête 1993; Parker 1995) and finally into Labrador in 1995 (Chubbs and Phillips 2002). Being adapted to a variety of food items and forest types and tolerant of human settlements has allowed the Coyote to expand its range. Here, we report on additional sightings, provide evidence for an established population and examine the consequences of future management of the species in Labrador and its possible effect on this northern ecosystem.

The large canid and ungulate predator-prey system in Labrador is occupied by Wolves (*Canis lupus*), Caribou (*Rangifer tarandus*) and Moose (*Alces alces*). Black Bears (*Ursus americanus*) are also significant predators of these ungulates. This species complement separates northeastern Canada from most other regions in North America which support Coyote populations, including insular Newfoundland, where Wolves are absent. The expansion of Coyotes in eastern North America has been attributed to the clearing of forests for agriculture and timber that increased prey densities and the elimination of Wolves as major competitors (Larivière and Crête 1993; Parker 1995). Hybridization of Coyotes with Wolves has resulted in eastern Coyotes being larger than western conspecifics (Crête and Desrosiers 1995) and recent information on expanding Coyote populations in eastern Québec also indicates that Coyotes appear to be larger in the eastern portion of their range (Thurber and Peterson 1991; Larivière and Crête 1993; Peterson and Thurber 1993). Their larger size and the availability of White-tailed

Deer (*Odocoileus virginianus*) were likely important in the successful colonization of Coyotes throughout northeastern North America (Larivière and Crête 1993). Coyotes prey on Woodland Caribou calves in Québec (Crête and Desrosiers 1995). In insular Newfoundland, Woodland Caribou appear to be the keystone ungulate prey species, which has enabled Coyotes to rapidly colonize much of the island (Wildlife Division, unpublished data). In Labrador, both woodland and migratory Caribou (George River Caribou Herd) may be important seasonal food sources (Chubbs and Phillips 2002). Although the northern forests are recognized as sub-optimal habitat for Coyotes (Tremblay et al. 1998), they may persist at low densities, largely depending on the availability of Snowshoe Hare (*Lepus americanus*), mice and voles (Crête and Desrosiers 1995; Samson and Crête 1997; Patterson et al. 2000; Crête et al. 2001).

Study Area and Methods

Central Labrador lies within the Lake Melville-High Boreal Forest ecoregion and is dominated by Black Spruce (*Picea mariana*) with lesser amounts of Trembling Aspen (*Populus tremuloides*), White Birch (*Betula papyrifera*), Balsam Fir (*Abies balsamea*) and White Spruce (*P. glauca*) in river valleys (Meades 1990*). This region has the most favourable climate in Labrador with mean average daily temperatures ranging from -14 to -18°C in February and 13°C in July. Average annual precipitation is 1100 mm with an average snowfall accumulation of 4 m (Meades 1990*).

Coastal Labrador including Red Bay lies in the Foul Bay Barrens ecoregion and is primarily barrens vegetated with Labrador Tea (*Ledum groenlandicum*) and Sheep Laurel (*Kalmia angustifolia*) with sparsely forested river valleys (Meades 1990*). This region has a high boreal climate with mean average daily temperatures ranging from -9 to -12.5°C in February and

12°C in July. Average annual precipitation is 1250 mm with an average snowfall accumulation of 3.5 to 4.5 m (Meades 1990*).

We interviewed trappers in remote communities throughout Labrador and fur buyers to assess the occurrence of Coyotes in the annual fur harvests. We also collected three carcasses, one harvested by trappers; the other killed on the highway. Local Conservation Officers reported one sighting near Goose Bay, Labrador. We found no other records of Coyotes harvested in other areas of Labrador.

Results

The first record of a Coyote in Labrador is that of an adult male, caught by a trapper on 14 January 1995, along the Churchill River (53°17'N, 60°15'W) approximately 2 km south east of Happy Valley – Goose Bay (Chubbs and Phillips 2002). This specimen was caught during a period of low trapping effort and which continues in Labrador today (Figure 1, Record I).

Around 20 February 2003, an adult male Coyote was trapped near a landfill site (51°44.30'N, 56°25.00'W) just outside the town of Red Bay (Figure 1, Record IV). The skin (NFM MA-82.1) and skull (NFM MA-82.2) of this specimen were collected and positively identified as an adult male and are currently deposited in the Newfoundland Museum of Natural History, St. John's, Newfoundland and Labrador.

On 19 January 2004 another adult male Coyote was picked up by Conservation Officers along the Trans Labrador Highway (53°02.22'N, 61°17.88'W) approximately 200 m west of Pena's River and 75 km southwest of Goose Bay (Figure 1, Record II). The animal had apparently been killed by a vehicle. The carcass was largely intact although it had been partially scavenged.

On 4 February 2004 on Lake Melville near Rabbit Island (53°23'N, 60°06'W), two Conservation Officers on snowmobiles during daylight hours approached to within 10 m of a Coyote crossing the frozen lake (Figure 1, Record III). The officers, familiar with both Wolves and Coyotes, observed the animal for several minutes and confirmed that it was a Coyote. The Coyote was probably scavenging on fish offal left by ice-fishers in the area.

In early December 2005, an adult male Coyote (M. Pritchett personal communication) was trapped near the landfill site 52°56.07'N, 66°51.24'W approximately 3 km east of the town of Wabush in western Labrador (Figure 1, Record V). The whole animal weight on a 50 lb scale was recorded at 45 lb (20.4 kg) and the pelt was graded as XXL at the Northern American Fur Auction (J. Shouse, personal communication).

Discussion

The expansion of Coyotes in Labrador may have been influenced by the recent southern extension of the winter range of the George River Caribou Herd

during the last two decades. Caribou of the George River Herd have been recorded as far south as 52°10'N in central regions and 54°00'N near Cartwright along the coast of Labrador. Increased Moose densities in southern Labrador (Chubbs and Schaefer 1997) may provide additional food to support Coyotes through the winter. Coyotes are a highly adaptable species (Pilgrim et al. 1998) and are capable of surviving with a seasonally reduced prey base and harsh weather (Patterson et al. 1999). Coyotes are very efficient scavengers and they may have expanded their range along a coastal route, scavenging on remains of abundant herds of Harp Seals (*Pagophilus groenlandicus*) and the less abundant Ringed (*Pusa hispida*) and Hooded seals (*Cystophora cristata*), and various fish and marine birds. Since 1992 the Trans Labrador Highway has provided an interior travel corridor between eastern Québec, Wabush, and Goose Bay. More recently a coastal highway from Québec to Red Bay and Cartwright may provide an additional route for Coyotes to reach southeastern Labrador.

The additional records reported here support the possibility of an established population in Labrador, as Coyotes are excellent colonists (Pilgrim et al. 1998) and coexist, thought at low densities, with Wolves in Alaska (Thurber and Peterson 1991), Alberta, British Columbia, Yukon and more recently Idaho (Pilgrim et al. 1998). No geographic barriers exist to discourage Coyotes from extending their range northward into Labrador. Delineation of Coyote range expansion in Labrador may have been delayed due to the absence of systematic surveys for carnivore species and because low fur prices in the last decade decreased trapping effort (only three trapped specimens over a ten-year period). It has been known for some time (Lehman et al. 1991; Pilgrim et al. 1998) that hybridization of Wolf and Coyote genotypes has occurred in Québec due to the rapid northeast progression of Coyotes. More recently it has also been shown that eastern Coyotes share a common evolutionary ancestry with the North American eastern Wolf (Wilson et al. 2000; Wilson et al. 2003). The larger size of eastern Coyotes may have contributed to their success in range expansion into Labrador. Eastern Coyotes make use of snow packed by human activities, especially snowmobile trails, facilitating their travel and dispersal (Crête and Larivière 2003). Coyotes possibly maintain viable populations in northern forests, due to their high adaptability, great mobility, and low trapping effort (Trembley et al. 1998).

Although a breeding record or incidence of an adult female Coyote has not yet been recorded in Labrador, the five records reported here, four of which were adult males, provide evidence of an established population. Labrador's healthy Wolf population may be a controlling mechanism, preventing a rapid population increase that has been observed in insular Newfoundland and elsewhere where Wolves are absent. Wolves are intolerant of Coyotes, killing them where both species overlap, permitting Coyotes to exist at low densities on the edge

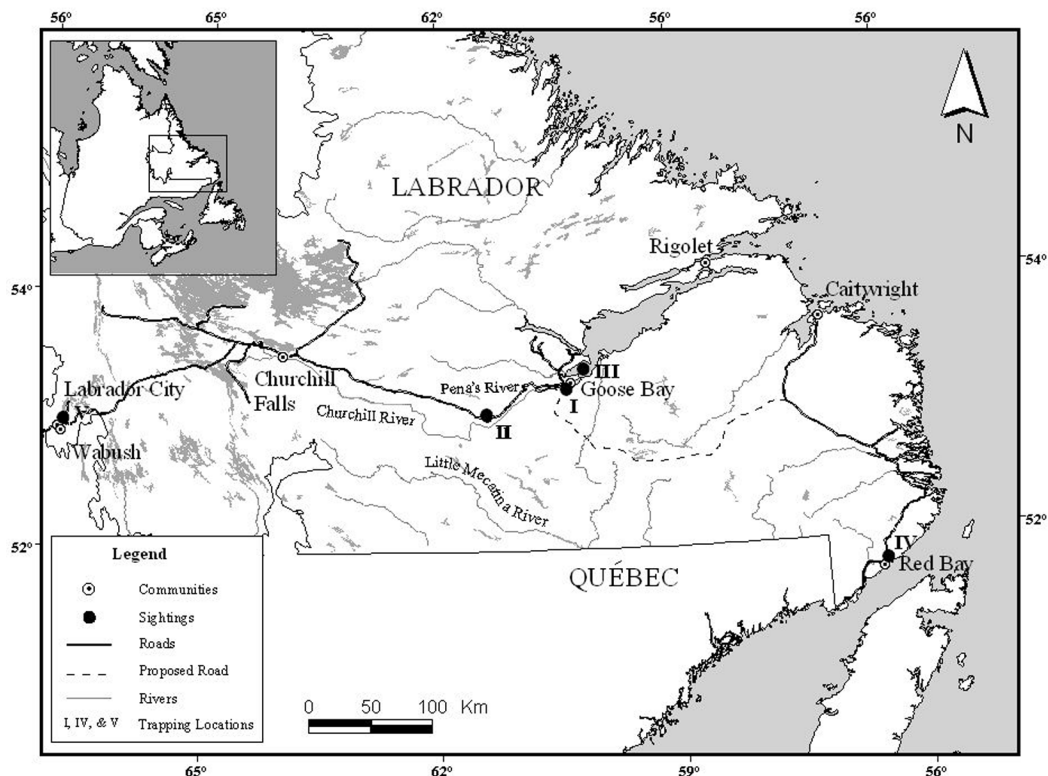


FIGURE 1. Location of Coyote (*Canis latrans*) records in Labrador. Sites I, IV, and V are trapping locations. Site II is the road-killed specimen and Site III is an observation of a live Coyote.

of established Wolf territories or within urban areas where Wolves rarely frequent (Parker 1995).

Management Implications

Since the time of European settlement of North America, Coyotes have been considered a predator that must be controlled. The Coyote reached the island of Newfoundland in 1985 and a trapping season was established in 1986. A trapping season for Coyotes was established in Labrador in 1995 shortly after the first confirmed record of the species in February of that year (Chubbs and Phillips 2002). Both regions allowed hunting in 2002. In areas where Coyotes and Wolves coexist they do so at reduced densities through spatial avoidance and changes in behaviour (Arjo and Pletscher 1999; Switalski 2003). We speculate that although Coyotes may not exist at high densities in Labrador due to the presence of Wolves, they may hinder the recovery of threatened Woodland Caribou populations in the area and we encourage studies to evaluate impacts.

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Documents Cited (marked * in text)

Meades, S. J. 1990. Natural regions of Newfoundland and Labrador. Protected Areas Association, St. John's, Newfoundland and Labrador. 103 pages.

Literature Cited

- Arjo, W. M., and D. H. Pletcher.** 1999. Behavioral responses of coyotes to wolf recolonization in northwestern Montana. *Canadian Journal of Zoology* 77: 1919-1927.
- Chubbs, T. E., and F. R. Phillips.** 2002. First record of an eastern Coyote, *Canis latrans*, in Labrador. *Canadian Field-Naturalist* 116: 127-129.
- Chubbs, T. E., and J. A. Schaefer.** 1997. Population growth of Moose, *Alces alces*, in Labrador. *Canadian Field-Naturalist* 111: 238-242.

- Crête, M., and A. Desrosiers.** 1995. Range expansion of coyotes (*Canis latrans*), threatens a remnant herd of caribou (*Rangifer tarandus*), in southeastern Québec. *Canadian Field-Naturalist* 109: 227-235.
- Crête, M., and S. Larivière.** 2003. Estimating the costs of locomotion in snow for coyotes. *Canadian Journal of Zoology* 81: 1808-1814.
- Crête, M., J.-P. Ouellet, J. P. Tremblay, and R. Arsenault.** 2001. Suitability of the forest landscape for coyotes in northeastern North America and its implications for co-existence with other carnivores. *Écoscience* 8: 311-319.
- Georges, S.** 1976. A range extension of the Coyote in Quebec. *Canadian Field-Naturalist* 90: 78-79.
- Larivière, S., and M. Crête.** 1993. The size of the eastern Coyotes (*Canis latrans*): a comment. *Journal of Mammology* 74: 1072-1074.
- Lehman, N., A. Eisenhawer, K. Hansen, L. D. Mech, R. O. Peterson, P. J. P. Gogan, and R. K. Wayne.** 1991. Introgression of coyote mitochondrial DNA into sympatric North American Gray Wolf populations. *Evolution* 45: 104-119.
- Nowak, R. M.** 1979. North American Quaternary *Canis*. Museum of the Museum of Natural History, The University of Kansas, Monograph 6. 154 pages.
- Parker, G. R.** 1995. Eastern Coyote: The Story of its Success. Nimbus Publishing Ltd., Halifax, Nova Scotia. 256 pages.
- Patterson, B. R., S. B. Nielsen, and F. Messier.** 1999. Activity patterns and daily movements of the Eastern Coyote, *Canis latrans*, in Nova Scotia. *Canadian Field-Naturalist* 113: 251-257.
- Patterson, B. R., L. K. Benjamin, and F. Messier.** 2000. Winter nutritional condition of eastern coyotes in relation to prey density. *Canadian Journal of Zoology* 78: 420-427.
- Pekins, P. J., and W. W. Mautz.** 1988. Energy requirements of eastern coyotes. *Canadian Journal of Zoology* 68: 656-659.
- Peterson, R. O., and J. M. Thurber.** 1993. The size of Eastern Coyotes (*Canis latrans*): A rebuttal. *Journal of Mammology* 74: 1075-1076.
- Pilgrim, K. L., D. K. Boyd, and S. H. Forbes.** 1998. Testing for wolf-coyote hybridization in the Rocky Mountains using mitochondrial DNA. *Journal of Wildlife Management* 62: 683-689.
- Samson, C., and M. Crête.** 1997. Summer food habits and population density of coyotes, (*Canis latrans*), in boreal forests of southeastern Québec. *Canadian Field-Naturalist* 111: 227-233.
- Switalski, T. A.** 2003. Coyote foraging ecology and vigilance in response to gray wolf reintroduction in Yellowstone National Park. *Canadian Journal of Zoology* 81: 985-993.
- Thurber, J. M., and R. O. Peterson.** 1991. Changes in body size associated with range expansion in the Coyote (*Canis latrans*). *Journal of Mammology* 72: 750-755.
- Tremblay, J. P., M. Crête, and J. Huot.** 1998. Summer foraging behaviour of eastern coyotes in rural *versus* forest landscape: A possible mechanism of source-sink dynamics. *Écoscience* 5: 172-182.
- Wilson, P. J., S. Grenwal, I. D. Lawford, J. N. M. Heal, A. G. Granacki, D. Pennock, J. B. Theberge, M. T. Theberge, D. Voigt, W. Waddell, R. E. Chambers, P. C. Paquet, G. Goulet, D. Cluff, and B. N. White.** 2000. DNA profiles of the eastern Canadian wolf and the red wolf provide evidence for a common evolutionary history independent of the grey wolf. *Canadian Journal of Zoology* 78: 2156-2166.
- Wilson, P. J., S. Grenwal, T. McFadden, R. C. Chambers and B. N. White.** 2003. Mitochondrial DNA extracted from eastern North American wolves killed in the 1800s is not of grey wolf origin. *Canadian Journal of Zoology* 81: 936-940.

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