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FALL AND WINTER FOOD HABITS OF THE EASTERN COYOTE CANIS LATRANS IN SOUTHEASTERN NEW BRUNSWICK

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Food habits of coyotes in southeastern New Brunswick were investigated during the fall and winter trapping seasons from 1979 to 1982. Based on analyses of 128 specimens, snowshoe hare, white-tailed deer and rodents accounted for 37.5, 27.9 and 27.3% of stomach contents respectively. These data indicate that the coyote shares a common food base with the red fox and the bobcat in the study area.

Les habitudes alimentaires des coyotes du sud-est du Nouveau Brunswick furent étudiées pendant les saison de piégeage d'automne et d' hiver de 1979 à 1982. Des analyses portant sur 128 spécimens ont montré que le lièvre, le chereuil et les songeurs représentaient respectivement 37.5, 27.9 et 27.3% des contenus stomacaux. Ces données indiquent que le coyote partage, avec le renard roux et le lynx une base alimentaire commune dans la région étudiée.

Introduction

Since the late nineteenth century, coyotes (*Canis latrans*) have extended their range throughout the eastern United States and the greater part of eastern Canada (Hilton 1978). They first appeared in New Brunswick in 1966 and have since spread rapidly through the Maritimes.

Previous studies by Knowlton (1964) and Clark (1972) have shown that the coyote's food choices tend to reflect the relative availability of suitable prey. All of these studies were conducted in the western United States, and they were mainly concerned with predators on livestock or big game. In contrast there is little ecological information on coyotes in the mainly forested habitats of eastern Canada, and as a result, there is disagreement among professional biologists and sportsmen as to the role of the coyote within this region. One possibility is that the coyote could compete for prey with other valuable furbearers including the red fox, *Vulpes vulpes rubricosa*, and the bobcat, *Lynx rufus rufus*. A knowledge of the relationship between coyotes and their prey is necessary if we are to predict the impacts the coyote might exert on these predators.

The objective of this study was to examine the food habits of the coyote during the fall and winter seasons within selected counties of southeastern New Brunswick, in order to gather information on its food base.

The study area was located in southeastern New Brunswick and included the counties of Kings, Albert, Westmorland, Kent, Northumberland and Queens. According to Loucks (1968), 70% of the area consists of forested stands dominated by white spruce, *Picea glauca*, tamarack, *Larix laricina* and aspen. The remainder consists of smaller tracts of white pine, *Pinus strobus*, jack pine, *Pinus banksiana*, red maple, *Acer rubrum*, and hemlock, *Tsuga canadensis*. The 30% of non-forested land is mainly farmland, marsh, open water and residential lands.

Methods and Materials

Stomachs were removed from 128 recently shot animals, wrapped in cheesecloth and stored in a 10% formalin solution. Animals were collected from 1979 to 1982.

Stomach contents were analysed following the procedures described by Martin (1949). Hair keys developed by Adorjan and Kolinosh (1969), along with reference collections of skeletons, were used for identification of prey items. Questionable identification of mammal remains or feathers were classified under miscellaneous items.

The data were analysed on the basis of frequency of occurrence and percentage of total weight.

Results

Remains of identifiable food items were found in all of the 128 stomachs examined. Snowshoe hare was the predominant food item, occurring in 51.4% of the stomachs and comprising 37.5% of the total weight of identifiable food items. White-tailed deer remains were found in 31.4% of the stomachs and comprised 27.9% of the total weight. Rodents, while found in 61% of the stomachs, comprised only 14% of the total weight. Livestock (including sheep and cattle) appeared in only 4% of the stomachs and composed less than 1% of the total weight. Ruffed grouse appeared in 8.7% of the stomachs, with an average weight of 2.3%.

Together, snowshoe hare, white-tailed deer, *Microtus* and *Clethrionomys* were the major food items consumed, and they comprised 77.2% of the total stomach content during the fall and winter seasons.

The plant material that appeared in 20.7% and accounted for less than 8.7% of the total weight of all stomach analysis was not identified, as few investigators have considered wild fruit and plants to be important in the coyote's diet (Knowlton 1964)

Discussion

Snowshoe hares were also the most utilized prey in studies conducted by Korschgen (1957), comprising 19 to 61% of the animals diet.

Hawthorne (1972) found rodents to be a staple food item, especially *Microtus*. Clark (1972) has also indicated that when populations are high, *Microtus* could be an important element of the coyote diet.

A survey of the literature indicates that the red fox is also an opportunistic feeder with some marked seasonal variations. Coman (1973) states that there is little doubt that the red fox is primarily a carnivore which preys on snowshoe hare and small mammals. Studies by Besadny (1966) and Johnston (1970) indicate that snowshoe hare and small rodents make up over 56% of the fall and winter diet of the red fox.

Previous studies by Richens and Hugie (1974) and Hilton (1978) have shown that the diet of the coyote is diversified as it seems to consume most available food items. Remains of white-tailed deer were found to be included in all the food studies within the northeastern United States (Hilton 1978). However, Hamilton (1974) concluded that most of these remains were carrion resulting from hunter-killed and winter-killed deer.

A study by Jones and Smith (1979) indicated that bobcats are not strictly opportunistic predators. They seem to maintain their diet even when prey populations fluctuate.

Studies by Stevens (1967) and Pollock (1951) have indicated that the bobcat relies on snowshoe hare, white-tailed deer and small rodents for the greater part of his diet.

A survey of the fur exporting permits for New Brunswick from 1973 to 1979 indicated that a yearly average of 4,322 red foxes and 941 bobcats were trapped. Overall they ranked fourth and fifth amongst the furbearing mammals of New Brunswick.

Table I Percentage occurrence and weight of food items in coyote stomachs from southeastern New Brunswick, 1980-1982

Food Items	Fall and winter samples[1] % occ.	% wt.
Deer		
Odocoileous virginianus	31.4	25.1
Rodents		
Microtus pennsylvanicus (Meadow vole)	43.5	13.0
Clethryionomys gapperi (Red-backed vole)	23.7	8.8
Castor canadensis (Beaver)	7.5	3.4
Ondatra zibethica (Muskrat)	3.5	0.6
Erethizon dorsatus (Porcupine)	15.5	2.8
Hare		
Lepus americanus (Snowshoe hare)	51.5	34.5
Livestock		
Ovis sp. (Sheep)	1.4	0.3
Bos sp. (Cattle)	2.6	0.2
Birds		
Bonasa umbellus (Ruffed grouse)	8.7	2.3
Canachites canadensis (Spruce grouse)	3.5	0.8
Gallus sp. (Poultry)	6.4	1.8
Procyon lotor (Racoon)	6.3	1.4
Miscellaneous (Meat)	9.0	5.0
Plant material	20.7	

[1] Sample size = 128, in total.

The results obtained from this study, along with a review of the results published by Ozoga and Harger (1966), indicate that the bobcat and the red fox share a common food base with the eastern coyote. At the present time, we have few indications of the interspecies relationships which could occur as the coyote increases its population and the major food base enters a downward cycle.

Owing to the relative importance of the red fox and the bobcat as fur bearing animals in New Brunswick, it would seem appropriate that a long term food habit

study of the three species would be helpful in fostering a better understanding of the ecological interactions between these major predators.

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