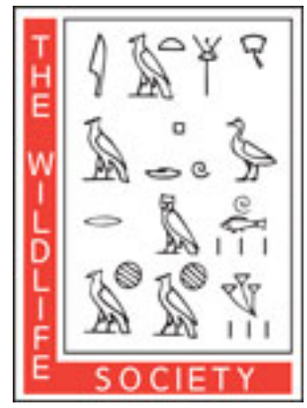

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FALL AND WINTER FOOD HABITS OF VERMONT BOBCATS

W. J. Hamilton, Jr. and Russell P. Hunter

The bobcat (*Lynx r. rufus*) has a wide distribution in Vermont. Bounty claims indicate that the animal is well represented in the sparsely wooded farm sections of the southern part of the state as well as in the rugged forested slopes of the Green Mountains. Because of its supposed destruction to game species, a bounty has been maintained on the wildcat for a number of years. From 1927 to 1937 inclusive, bounties were paid on 2,415 bobcats, at an expense to the state of $20,095. During the years 1927 and 1928 an $8 bounty was paid; from 1929 to 1932 the bounty was increased to $10. This apparently focused attention on the profit to be derived from bobcat hunting and the numbers taken increased yearly until 1932, when 550 animals were offered for bounty. In 1933 the bounty was reduced to $5. This change was reflected in a marked decrease in the number of bounty claims, there being but 82 in 1933. The number of bounty claims has been increasing steadily, however, since then and has now risen to 160.

Since little was known of the dietary habits of the bobcat in the northeast, it seemed desirable to gather such data as the opportunity afforded. Accordingly, in the fall of 1935, Hunter began collecting stomachs, taking weights and measurements, and enlisting the aid of game wardens in securing bobcats. Specimens were collected through succeeding years until April 1938. The stomachs were shipped to Hamilton, who examined them. A total of 143 animals were studied. Of this number, 2 were collected in October, 25 in November, 63 in December, 26 in January, 16 in February, 9 in March and 4 in April. Three stomachs were quite empty, leaving 140 specimens satisfactory for analysis.

A brief review of the status of game animals on which the bobcat feeds may aid understanding of the findings. During the past five years, both hare and rabbit populations have been low, but are making slight gains and grouse have been fairly common. Deer were practically exterminated in Vermont in 1870. A few were introduced later and after a period of protection, their hunting was permitted. In 1937, 2,446 deer were killed; the average for the past ten years has been 1,824.

In examining the stomachs, it was usually noted that a single item of food was represented. Many exceptions to this were recorded, however, some of the most interesting being given below. A 12-pound bobcat shot in the city of Bennington, on December 9, had eaten a gray squirrel, flying squirrel, and deer mouse. A 23-pound specimen taken at Coventry on December 26, had red squirrel, mink, muskrat, and fish remains in its stomach. A 32-pound animal, killed by a car on November 4 at Royalton, had last eaten a single chipmunk, red squirrel, and deer mouse, three field mice, and a small unidentified bird.

DISCUSSION OF FOOD ITEMS

Deer. Hair and flesh of deer were evident in 22.9 per cent of the stomachs. In several only a few hairs were found, while others were greatly distended with deer flesh. The stomach of a 19-pound cat contained 895 grams (nearly two pounds) of deer flesh and hair. We do not know what proportion of the deer eaten was carrion. During the open season on deer, many are fatally shot but not recovered by hunters. These might conceivably provide a major share of the deer meat that is eaten by bobcats. Several of the animals whose stomachs were well filled with deer meat did not exceed 9 pounds in weight; it is incredible that such a small bobcat could subdue a deer in good health. On the other hand, there is considerable evidence that adult bobcats are capable of killing deer. A bobcat attacked a yearling Colorado deer, hung on and floundered through the snow with it for a distance of fifty feet before the deer went down. After eating part of the hind quarters, the cat completely covered the carcass with snow, except for the head (Young, 1928). Grinnell, Dixon and Linsdale (1937) present evidence that the California bobcat kills deer upon occasion, and Newsom (1930) records two Maine deer being killed in a few minutes by a bobcat. We can well believe that some of the cats examined for this study, that weighed from 30 to 36 pounds, would have little difficulty in tearing the throat of a deer, especially if it were overtaken in deep snow.

TABLE 1

FREQUENCY OF OCCURRENCE AND BULK PERCENTAGE OF FOOD ITEMS IN 140 BOBCATS TAKEN IN VERMONT FROM FALL TO LATE WINTER, 1935–1938

Food	Frequency of Occurrence	Percentage by Bulk
Deer[1]	32	19.32
Mice	35	18.57
Hares and rabbits	31	16.43
Porcupine	12	7.07
Squirrels	13	6.46
Grouse	12	5.50
Skunk	7	4.36
Shrews	5	2.46
Muskrat	5	2.36
Carrion	3	2.01
Bluejay	4	1.00
Red Fox	1	.82
Gray Fox	1	.70
Poultry	1	.65
Green grasses	3	.43
Fish	1	.28
Mink	1	.21
Insects	1	.21
Extraneous	17	11.16

[1] Some deer meat probably taken as carrion.

Mice. Exactly 25 per cent of the bobcats which we studied had eaten mice. Field mice (*Microtus*) were represented in 18 stomachs, deer mice (*Peromyscus*) in 13, red-backed mice (*Clethrionomys*) in 3, and the pine mouse (*Pitymys*) and lemming mouse (*Synaptomys*) in one each. It appears that wildcats may spend considerable time hunting mice. Several stomachs contained two or three field mice, and one cat had eaten 5 of these voles. After being bitten in several places, the mice are usually bolted entire.

Hare and Rabbit. Of the 31 cats which had eaten leporids, 23 contained remains of the varying hare (*Lepus*) and 8 those of cottontails. Other investigators have stressed the importance of these lagomorphs to the bobcat, and Seton (1929) has a long discussion of the dependence of the lynx on the snowshoe rabbit.

Porcupine. Represented in 12 stom-

achs (8.6 per cent of the animals examined), the porcupine appears to be an important food species of the bobcat. The cats which had eaten porcupines weighed from 7 to 19 pounds—not fully mature animals. In most instances they had suffered no visible effects from the encounter with this prickly prey, but one record suggests that the cat may pay with its life for a meal of porcupine flesh. Mr. Stygles of Jericho, Vermont, killed a bobcat in his dooryard on April 21, 1937, that was in a hopelessly weakened condition, its head and forequarters filled with porcupine quills. A 9-pound cat was stuck up badly, the mouth, lips, walls of stomach, duodenum, and omentum all had numerous quills, while many were working through the walls of the thorax. Another small cat had numerous softened quills in the muscles of the hind leg and abdominal wall, while numerous fresh quills were imbedded in the neck. The stomach contained a quantity of quills, fur and flesh. In these cases the porcupine quills did not seem to affect the cats adversely, even when working outward from the intestine. Parts of porcupines are occasionally utilized for bait by wildcat trappers, but we possess positive evidence that a number of these animals whose stomachs contained porcupine remains had been shot. Dearborn (1932) found merely a trace of porcupine in the droppings of 300 Michigan bobcats.

Squirrels. Squirrels had been taken by 9.3 per cent of the cats: gray squirrels six times, red squirrels five times, and flying squirrels and chipmunks each twice. The entire remains of a gray squirrel removed from the stomach of a 20-pound cat weighed 21 ounces. Usually the limbs appear to be torn from a squirrel, and the carcass then bitten into two or three pieces. Four of the gray squirrels had been caught during the late fall of 1935, when these rodents were unusually numerous in New England. Several stomachs contained the remains of more than one squirrel.

Grouse. Twelve bobcats had eaten grouse, and in almost every instance the feet, in a good state of preservation, were recovered from the stomach, together with an occasional bill, and feathers and flesh. It is evident the bobcat has little trouble in catching grouse, although Dearborn (*loc. cit.*) found "no evidence of grouse remains in more than 300 feces, although grouse were abundant around the swamps where the wildcats live."

Skunk. Of the bobcats examined, 5 per cent had eaten skunks. All the cats which had eaten skunks were taken during the open season for this furbearer, so it is not improbable that trapped skunks were, at least in some instances, the victims. Dearborn (*loc. cit.*) notes a trace of skunk in the droppings of wild cats, and Barton (1878) records a skunk having been eaten by a lynx.

Shrews. Five bobcats had eaten shrews, the stomachs all containing the ubiquitous Blarina except one, that held the little masked shrew, *Sorex cinereus.* This tiny mammal weighs scarcely more than a penny, and was the only food in the stomach of a 10-pound wildcat. House cats have little taste for shrews. Although many are caught, they are usually discarded. Their wild cousins seem not averse to

these abundant little creatures, and eat them as opportunity affords.

Muskrat. The stomachs of five bobcats contained muskrat remains. All of these cats were taken during the trapping season for muskrat, so it is possible in some instances, that the cats had come upon trapped animals.

Carrion. Flesh from the rhinarium, hair, and skin of cattle were found in 3 stomachs. This possibly represents offal from fall butchering. Carrion undoubtedly plays a more important part in the dietary of Vermont wildcats than is here indicated. It seems more than likely that a good share of the deer remains in the stomachs represents animals that were found in the woods, dead from shooting or natural causes which the rigorous northern winter promotes.

Blue Jay. Remains of this bird were taken from 2.8 per cent of the stomachs. It is useless to conjecture how these birds were caught but the observations of Grinnell *et al.* (*loc. cit.* p. 620) are suggestive. They state that wildcats when hunting in the daytime are often discovered by jays, which "mob" them and thus warn other animals of their approach. When the cats are thus mobbed, they hide until the birds quiet down. Possibly an incautious jay, in a frenzy of excitement, occasionally comes within reach of a lightning stroke of the cat's paw. Red foxes are adept at catching blue Jays, the remains of these birds often being found in the stomachs or about the dens (Hamilton 1935).

Foxes. A 30-pound bobcat taken at Glover, Vermont on February 28, 1938, had a quantity of fur, and toes and flesh of a red fox in its stomach. The stomach of a 21½-pound cat, shot at Brighton, Vermont on April 4, 1938, contained a mass of flesh and fur of a gray fox. We know of no previous record of bobcats preying on foxes, but Seton (*loc. cit.*) gives much testimony that the Canada lynx kills the red fox.

Miscellaneous Food Items. The feathers of a white leghorn chicken were taken from one stomach. It is possible this represents carrion, as many farmers throw out dead fowls with manure during the winter months, and foxes, skunks, and crows are known to feed on the dead poultry. Green grasses were found in three stomachs in sufficient quantity to preclude the possibility of accidental ingestion. Several fragments of the vertebrae of a large fish were found in another stomach. They appear to match samples from the common white sucker.

Sizeable fragments of a mink skull, together with its feet, tail, and much flesh were found in a bobcat shot in December. In the same stomach were parts of the tail and some fur of a muskrat. The mink is known to be a mortal enemy of the muskrat, killing large numbers during the winter. It seems possible that this mink may have been feeding on the carcass of a muskrat when surprised and killed by the bobcat. One wildcat had eaten nothing other than the big cocoon of a Polyphemus moth.

Many of the stomachs contained small green twigs and bark. As most of these were of trapped animals, it seems likely that this woody debris had been chewed from the trap stake or from brush within reach. Some of the animals that had been shot, however, contained similar debris, together with bits of flesh and deer hairs, which suggests

they may have taken some of the paunch contents of the deer.

More than half of the stomachs had heavy infestations of roundworms (*Physaloptera* sp.).

SUMMARY

Stomachs of 140 bobcats taken in Vermont from fall to late winter over a three-year period were analyzed. The results indicate that the chief food of the bobcat consists of deer (probably much of it carrion), mice, chiefly *Microtus* and *Peromyscus*, varying hares and cottontails, porcupines, squirrels, and grouse. Shrews, muskrats, carrion, and blue Jays, were eaten less frequently. Such items as red and gray foxes, grass, poultry, fish, mink, and insects also are included in the winter dietary of the bobcat. Because we know practically nothing of the ecologic relationship that exists between the bobcat and its prey, much of which is game, we draw no conclusions. It does seem significant, however, that in spite of the abundance of the bobcat, the general population level of all wild game remains satisfactory except as it is affected by man, epizootics, or adverse climatic conditions.

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