Allegheny Woodrat

Allegheny Woodrat
Neotoma magister

New York Status: **Endangered**

Federal Status: Not Listed

Description

Although the name woodrat is branded with negative connotations, this species is indeed an interesting and handsome animal, looking more like an oversized version of its close cousin the white-footed mouse than the European animal that haunts our cities and refuse areas. It is the second largest member of the native North American rats and mice (subfamily Sigmodontinae) and weighs up to a pound, roughly the size of a grey squirrel. Allegheny woodrats measure approximately 16 inches long, half of which is tail. The majority of its body is brownish-grey in color, while the undersides and feet are white. Woodrats have large eyes, naked ears and long vibrissie (whiskers) which when pulled back will reach the shoulder. The most visible characteristic which sets the Allegheny woodrat apart from Old World rats is its tail. The tails of European rats are naked or slightly hairy with the skin clearly visible beneath. The tail of the Allegheny woodrat is completely covered with hairs approximately one-third of an inch long and is prominently bicolored; nearly black above and white below.

Confusion over the identity of the animal can be resolved on closer inspection. The molars of the woodrat are shaped in prismatic folds while those of the norway rat are tuberculate. Norway rats also have 12 mammae that extend from between the hind legs to the forelegs. Woodrats have just four mammae, which are located between the hind legs.

Allegheny woodrats have an agreeable disposition around people and are generally docile when handled, and easily captured in live traps. When captured they are usually calm, and often thump their hind feet in response to perceived threats. Woodrats are remarkably unafraid when free ranging and are often in no hurry to head for cover once released. We once watched a woodrat take bait containers from our trapping pack, and have heard of animals trying to remove buttons from a person's shirt and drag away the blanket of a sleeping camper.

Woodrats can be very fierce around their own kind. Many sport battle scars from unwelcome encounters and can be killed if escape is not possible.

Life History

Woodrats are generally nocturnal. They scurry about in sparsely vegetated areas of boulders and crevices making use of bare travel ways and labyrinths to travel silently and securely throughout their domain. They are predominantly vegetarians feeding on a wide variety of fruits, nuts, berries, and green plant material. They lay in stores of dried green vegetation under protective cover of ledges, folding or cutting long stemmed herbaceous growth into convenient lengths for carrying. Allegheny woodrats accumulate substantial amounts of hard mast within the rocks for winter use both in piles and scattered about the nest site. The acorns of red oak seem particularly desirable when they are available. In the course of normal activity woodrats rarely travel more than a few hundred feet from the center of their territory, although dispersing animals can travel miles before finding a new home. They appear to patrol the borders of their territories regularly and are well aware of the activities of their neighbors. Compared to other rodents, woodrats are not prolific breeders averaging one to three young per litter. Under ideal conditions they can produce three litters annually. The young are born after a gestation period of 30 to 37 days and are weaned within a month. Woodrats have been known to survive for nearly three years in the wild and considerably longer in captivity.

The nests of Allegheny woodrats are made of finely shredded bark and similar materials. They are roughly 10 inches in diameter and generally open topped. Quick retreat appears to be the preferred defensive strategy as they tend to build nests in well protected sites with multiple avenues of escape. In some instances researchers have found dried leaves placed around the nest on likely approach routes that appear to act as alarms to warn the residents of approaching danger. Nest are usually associated with an accumulation of sticks. We have seen active sites containing so few sticks that they could nearly be discounted as debris that filtered down through the boulders. Some sites in more exposed locations have accumulations of a bushel or more.

Like their western counterparts, which are often called pack rats, the Allegheny woodrat often collects environmental oddities of all descriptions to decorate their nest site and middens. It is not unusual to find bits of bones, human rubbish, or even animal feces within and around the nest site.

Distribution and Habitat

Although it is the northern limit of the species range the Allegheny woodrat has a long history in New York. Researchers have found woodrat bones over 20,000 years old as far

north in the Hudson river valley as Albany. In historical times records of woodrats have been restricted to accumulations of large talus boulders throughout the Hudson Highlands and Shawangunk mountains of southeastern New York, east to the Hudson River and south to the New Jersey border.

As recently as the mid 1960's the woodrat could be found wherever these large boulders accumulated in layers deep enough to form complex systems of passageways. By the mid 1970's naturalist Dan Smiley of Mohonk, New York was the first to notice that the Allegheny woodrat was in decline in the state. By 1980 biologist knew of only 5 extant sites, the last of which became extirpated in 1987.

Efforts to understand the cause of the decline began in 1990 when DEC biologists captured thirty woodrats that had been captured in West Virginia, radio collared and released each near Mohonk, New York at two formerly occupied sites. Within six months all of the animals at one site had perished; within a year the remaining animals were gone. Including offspring, biologists monitored 52 animals of which just twelve carcasses were recovered in good condition for examination. In 11 of 12 cases the animal had been killed by a parasite of the raccoon called the raccoon roundworm (*Balyisascaris procyonis*). The eggs of the parasite are contained within raccoon feces and contaminate the soil when the feces decompose. Woodrats walking across raccoon latrines are probably infected when they groom or when they carry intact feces to their nest sites. Because raccoons are often attracted to the same rocky sites preferred by woodrats an increase in raccoon numbers puts woodrats at great risk of infection. When coupled with the woodrat's "pack rat" behavior of collecting feces, the increase in raccoon numbers that we have experienced in recent decades has spelled doom for the woodrat in New York.

Status

The existence of woodrats is easily confirmed by the presence of latrines. Latrines are comprised of woodrat feces each of which is roughly .5 inches or slightly less in length and .2 inches in diameter. There may be as few as a handful or enough to fill several quart containers at a single site. When looking for latrines it is most productive to search the largest boulders in a talus field for the most spacious, room-like settings that are protected from the elements. Look on flat, level, surfaces. Latrines in protected sites can exist long after the woodrats are gone. Some we have examined still contain many feces nearly 20 years after the animals have disappeared.

Management and Research Needs

For perhaps the first time in thousands of years the Allegheny woodrat no longer haunts the cliffs of southeastern New York. Their chance of returning appears bleak at this time as it would seem to require a substantial and long term decline in raccoon numbers.

Given the ability of raccoons to thrive near human development, our endless inroads into rural landscapes and trends away from raccoon hunting and trapping, we have unintentionally stacked the deck against this harmless resident of the rocks. Research in areas where the animals still exist, or perhaps further experimental research in New York, might shed additional light on the woodrat's problems but we do not now see solutions on the horizon.

American Marten

Scientific name: Martes americana

The American marten (Martes americana), or marten, often incorrectly called the pine marten because of their close resemblance to their European relative, is a member of the mustelid family. The name mustelid came from the fact that members of this family have developed anal scent glands which produce a strong repellent smell that are often used to mark territories. Other members of this family that can be found in New York include fisher, ermine, weasel, mink, and the river otter.

Description

Marten are a small, slender bodied mammal with a long bushy tail that measure about one-third of their overall length. They have a pointed snout and large round ears in comparison to their head. Generally, the females are smaller than the males. They also have claws that are semi- retractable, just like a cat. The adult female will measure only 18-22 inches in length and weigh 1.5-1.8 pounds while the adult male will be around 20-25 inches in length and 1.6-2.8 pounds. Their fur is made up of long soft hairs. Fur coloring varies greatly between individuals from a pale buff- yellowish color to a reddish brown, with paler head and underparts and darker legs and a light colored throat patch . Marten are often confused

with fisher, another member of the weasel family. The fisher can be found through out New York's marten range, is similar appearance and tracks, but the fisher is much large in size than the marten.

Habits

Marten are solitary mammals, avoiding their own kind except during mating season. Most active during the dusk and dawn hours, they are an arboreal species, spend the majority of their lives in and around mature spruce - fir coniferous forest, or a mixed hardwood, especially beech tree - coniferous forest. This type of environment provides ideal sites for them to den and also great habitat for their primary prey species the red squirrel. Here in New York, the vast majority of marten will be found in the High Peaks region of the Central Adirondacks and surrounding areas. Although they are very shy, marten are extremely curious creatures as well. The sighting reports that we receive from the public are usually encounters with marten staring in a window at them or siting on their seasonal cabin's porch.

Diet

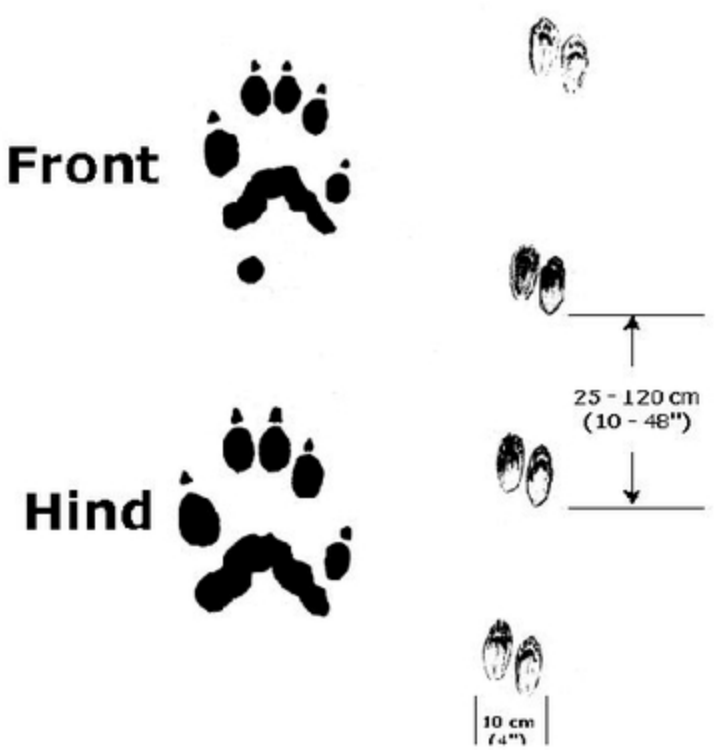
The American Marten are omnivores. They do prey heavily on small mammals, especially red squirrels, but they are known to eat just about anything- birds, fish, frogs, insects, and carrion. Their diet also includes seasonal fruit, seed, and nuts crops like berries, and especially beech nuts.

Breeding Biology

Marten have polygynous mating habits, usually breeding with more than one partner. The male establishes his territory and defends it against all other male incursion. Marten breeding season occurs mid summer but the young are not born until late March to early April. This is because marten are part of a group of mammals that have the ability to delay the implantation of fertilized eggs. Even though the female's eggs are fertilized almost right away, the eggs will not become attach to the uterus wall and begin to develop until sometime in February. This is known as delayed implantation. Gestation is actually 42 days. The young or kits as they are correctly called, are born in late March to early April. Both blind and naked at birth, the kits grow rapidly and by about 3 months old they are fully grown. Shortly after that, their mother will leave them to fend for themselves and she will get ready to breed all over again. Marten normally reach sexual maturity around two years of age when they will undergo their first breeding season.

Tracks and Sign

The marten's foot has very large foot pads in relation to their body weight. This gives them a big advantage of being able to walk on deep snow that is very common in the Central Adirondacks. They grow longer hair between their foot pads in the winter which aids in keeping their feet warm. This hair often distorts the marten's track size. When snow tracking, you may find where a marten will travel "subnevean" or below the surface of the snow, in order to hunt small prey that have taken winter refuge in downed trees It is often difficult to tell the difference between a marten track and their close relative the fisher, especially in poor snow conditions.



Beaver

Scientific Name: Castor canadensis

Description

New York State's official mammal, the beaver is unmistakable due to its large body size (26-65 pounds, 25-35 inches) and broad flattened tail (9-10 inches long, 6 inches wide), not to mention the characteristically

altered habitat in which it resides. Characteristics unique to the beaver include a nictitating membrane, or a secondary internal, opaque inner eyelid, valvular ears and nose, and lips that close behind the incisors, thereby allowing a beaver to gnaw underwater. Large incisors are continuously growing and are kept at a manageable length by the gnawing action beaver use to procure food. Their rich, dense fur ranges in color from yellow-brown to almost black. Webbed hind feet serve to compliment the extraordinary swimming ability of the beaver, and the second hind toe has a split nail, purportedly for grooming purposes. Although the beaver's tail is flat, primarily to aid in swimming and to navigate aquatic habitats, it serves other purposes as well. The tissue beneath the scaly outer layer, which is actually compressed, aggregated hairs, is highly vascularized at its base, and serves as a thermoregulatory tool. Blood is shunted from the surface of the tail, thereby minimizing heat loss. It also serves as a means for fat storage.

Habitat

Beaver rarely leave the water for any extended duration of time and can be found inhabiting wooded streams, the margins of lakes, ponds, and reservoirs, swamps and marshes, and many other sources of year-round water. Ideally, waterways will be of low gradient with an abundance of aspen, willow or alder, and a diversity of other woody and herbaceous vegetation.

Food and Feeding

The beaver's diet consists almost entirely of cellulose in the form of woody plant material. Woody plants are nearly indigestible to mammals, so digestion is aided by microorganisms inhabiting the small intestine. Beavers eat the leaves, bark and twigs of trees such as aspen, willow and red maple and a variety of herbaceous plants. During summer months, their dietary preferences may shift to aquatic vegetation including water lilies and rhizomes from shoreline ferns.

As winter draws near, beaver may collect and store or cache food items underwater near the entrance to their lodge in what is termed a 'raft' or 'feedpile' for use throughout the winter. This food store is imperative for survival when thick ice prevents access to fresh food during New York's long winters.

Behavior

Reproduction in beaver leads to the formation of their basic social unit, the family or colony. Beaver mate for life, but if one member of a pair dies, the remaining member will readily

accept a new mate. These colonies usually consist of the parents, the present year's offspring, and often times there will be a representative from the previous year's litter. Infrequently an 'extra' adult will be found within a colony. As a colony grows, members may undoubtedly expand their breeding and foraging territories, building dams and lodges to support shelter requirements and expand home ranges. A typical number of beaver per colony is between four and six, but up to a dozen is possible.

Home ranges or colonial territories are established and passively defended by means of scent-mounding, where an adult beaver piles up muddy debris and mark the top with castoreum, which is washed out of the castor glands with urine. Active defense includes potentially violent encounters, as many beaver have been shown to bear the scars of territorial disputes, but such encounters seldom end in death.

Other forms of communication include vocalizations, postures and tail-slapping. Tail-slapping is thought to be a means for one beaver in a colony to warn other beaver of a potential threat. Another function may be to frighten would-be predators away.

Ecology

Like most rodents, beaver construct an elaborate den or lodge with multiple entrances. Beaver differ from other rodents not only in size, but the fact that beaver alter their surroundings to suit their needs. Possessing the unique ability to fell trees, they use this talent to not only get food, but also as a source of construction material for their lodges and the watertight dams they build to impound the area that they intend to inhabit. Cued to begin construction at the sound and motion of running water, beaver impound an area not only for a place to live and rear their young, but it also adds protection from certain predators.

Depending upon the type of habitat they colonize, they may create a home in a stream bank, or a lodge out in open water. These have two or more underwater entrances and the 'living quarters' of their lodge will be above the level of the surrounding water, and in the wintertime will maintain a temperature significantly higher than that of the surrounding air.

Dubbed "nature's finest wetland engineer", beaver activity has both disruptive and beneficial impacts on any body of water they colonize. Beaver impound a variety of wetland types and streams with different forest types and gradients. This colonization converts the existing habitat to open water and provides a valuable resource for a variety of furbearer and waterfowl species. However, it can eliminate the existing natural diversity of certain groups of organisms such as reptiles and some fish species that may require cooler water than is

provided by a beaver impoundment. Subsequent inundations of surrounding landscapes may impede or halt natural succession or destroy actual forest stands of trees not adapted for prolonged submersion of their roots.

As their dam-building activity can cause widespread flooding of forest and agricultural lands, nuisance complaints regarding beaver activity are widespread across New York State. Flooding not only has the potential to change the ecology of a colonized area, it can also cause hazards to human habitation with the plugging of culverts and flooding of roads, railroad tracks, economically important agricultural lands and other general property damage concerns.

Reproduction

Beaver reproduce once a year and form lifelong breeding pairs. Breeding occurs in January or February and young are born in May or June after an average gestation time of 107 days. Litter size may range from 2 to 7 kits. The number of offspring may be attributed to the quantity and quality of available food and habitat in any given year.

Kits are fully furred, teeth are erupted, eyes are open at birth and they may enter the water within a few hours following birth. For the first few weeks of life a kit's fur is not water-repellent, as their anal glands, which beaver use to 'grease up' their fur, are not functional until the third or fourth week of life.

Predators, Parasites, and Diseases

Beaver are more susceptible to predation by animals such as coyote, fisher, bear and bobcat when traveling extended distances from water in search of food. Kits may fall prey to mink, otter and fox and great-horned owl. Studies in the Adirondack Park suggest that beaver are heavily relied upon by coyotes, and rank second to white-tailed deer as a preferred food source. Humans are one of the major sources of beaver mortality through trapping and automobile collisions.

Beaver harbor a variety of parasites, both internal and external. Internally, one would expect to find different varieties of nematode, a form of intestinal roundworm, in different parts of the intestinal tracts. There are also cestodes or tapeworms that inhabit large portions of the small intestine, and apparently cause little to no harm to the host. *Giardia lambdia*, a two-celled flagellate that inhabits parts of the intestines and causes "beaver fever" in humans, is known to be found in close association with the beaver, but has not been identified as the definitive host of this rather uncomfortable parasite.

In terms of external or ectoparasites, there are multiple species of mite that dwell in their dense fur. There can be as many as 10 species of mite living on a single beaver, and each species is specialized for life in a distinct part of the animal's body. For instance, the mites living around the head are not the same species of mite that one would find in the hindquarters.

Fisher

Scientific Name: Martes pennant

Description

The fisher, also known as the 'fisher cat', is a large, dark, long-haired member of the weasel family. Their stature is relatively low to the ground, with short legs, small ears and a well-furred tail. The color of their fur varies from dark brown to nearly black. Females and juveniles usually have a more uniform color, and males will have a blonde or grizzled appearance due to multi colored guard hairs around the neck, upper back and shoulders.

There is considerable evidence of dimorphism between the sexes, with males weighing between 7 and 13 pounds, and females between 3 and 7 pounds. Total lengths for males range from 35-47 inches, and females, 30-37 inches.

Fisher have large, wide feet with five toes on each foot and semi-retractable claws. This makes them well adapted for walking on snow, climbing trees and grasping and killing prey. They are capable of rotating their hind feet nearly 180º, which allows for a headfirst descent from trees. As with all members of the weasel family, both sexes have large anal scent glands which may be used to mark territories or attract potential mates.

Distribution and Habitat

Found exclusively in North America, fisher inhabit a band of forested and semi-forested land from coast to coast, and prefer extensive closed canopy forests. In the east, they range from Virginia north to Quebec and the maritime provinces of Canada. They use deciduous, coniferous and mixed forests. Historically, their numbers experienced a severe decline during the late 1800s and early 1900s due to over-exploitation and loss of forested habitat due to unregulated logging and the clearing of land for farms. Reintroduction programs have

proven to be effective in restoring populations, along with regulation of trapping opportunities and the initiation of reforestation programs.

In New York State, fisher can be found throughout approximately 26,000 square miles of forested habitat within the northern, eastern and southeastern parts of the state. Recently they have begun to return to the southern tier of central and western New York, as some sightings and road kills have been reported from that region.

Food and Feeding

Fisher are a dietary generalist. They eat a wide variety of small to medium sized mammals and birds, and a variety of hard and soft mast such as beechnuts, acorns, apples and berries. However, they have been considered a specialist in that they are the only known North American mammal that succeeds in killing and consuming porcupines. They will consume the entire animal, leaving nothing but a quilled hide and a few of the larger bones.

Other prey items include rabbits, squirrels, mice, shrews, and carrion from large mammals such as whitetailed deer. Carnivores such as bobcat, coyote, red and grey fox and some raptors serve as competition for prey items, and fisher have been documented to travel over a hundred miles over the course of a few weeks in order to meet the demands of their dietary requirements.

Reproduction

Fisher reach sexual maturity in their first year of life, and females may be receptive at that time. Implantation of the fertilized embryo may be delayed until the following season, thus accounting for their first litter being born in their second year. Reproduction peaks in late March, and breeding may occur as late as May. Average litter size is 2-3 young, and kits are born partially furred with closed eyes and ears, essentially helpless at birth. Weaning occurs within 8-10 weeks, and dispersal of young may occur by their fifth month, as interfamilial aggression begins by the onset of autumn.

Behavior

Fisher use a variety of structures for year-round denning purposes such as the natural cavities found in older trees, hollow logs, cavities in rocky outcrops, brush piles and underground burrows. Dens used for birthing of young are usually found in hollow sections of trees, high above the ground.

Fisher lead a solitary lifestyle except for brief periods during the breeding season. They have been found to be active at any time during the day or night. Males generally have larger home ranges than females, and their territories seldom overlap that of other males, suggesting territoriality between the sexes.

Predators and Disease

Fisher have no natural enemies, save humans, and natural mortality remains largely undocumented. Trapper harvest and automobile collisions likely account for the majority of fisher deaths across their range. A few species of tapeworm, intestinal roundworm, and flatworm have been identified in fisher, and their effects on health are minimal. Rabies and distemper have been described in fisher in New York State, but are a minor source of mortality in the wild.

Long-tailed Weasel

Scientific Name: Mustela frenata

Description

Easily distinguished as a member of the weasel family by the long, thin, tube-like body, short legs and a long tail, the long-tailed weasel is the largest of our native weasels whose fur color is dictated by the season. Snow white with a black tipped tail by mid-November, the molt begins with a gradual replacement of summer coat beginning on the belly that progresses over the back, taking about a month to complete. Between mid-February and mid-march, depending on regional duration of winter conditions, their fur changes back to dark brown on their back with a lighter color on the belly. They maintain the black tail tip year-round, an important feature to pay attention to, as the least weasel can be identified by not having that black tail tip.

This species of weasel is similar in size to a young gray squirrel. Males are considerably larger than females, and may weigh over a half of a pound, while females are noticeably smaller, tipping the scales at just over a quarter of a pound. Total length for males and females ranges from about 13.5 - 17 and 11 - 17 inches, respectively. Tail length proportions are similar and range from about 4 - 6 inches for males and 3 - 5 for females.

The long-tailed weasel is of economic importance, as many are taken by trappers each year.

Habitat

Long-tailed weasels can be considered a habitat generalist, using open woodlands, brushlands and hedgerows with a high prey density and ample cover. Such habitat characteristics can be found in lands that have been recently cut over where increased sunlight provides for seed-bearing grasses and herbaceous plants which would in turn attract a diversity of small mammals using the newly accumulated slash on the forest floor. It is also theorized that a high diversity in prey species contributes to overall habitat suitability for this species.

Food and Feeding

Notably voracious, long-tailed weasels are reported to consume up to 1/3 of their body weight every day. They will hunt night and day for a wide variety of small mammals, and being a generalist affords the opportunity to make shifts in prey consumption based on availability. Tracks in the snow may lead followers to assume that their movements and motive are erratic and without purpose, but they are highly observant and with their keen senses of hearing and smell, investigate every possible rodent hole, hollow tree or rock crevice in which a meal might be found. This species of weasel will forage above and below ground, and has been reported to pursue prey into the canopy.

In New York State, rodents such as white-footed and deer mice along with meadow voles may make up the majority of prey consumed, but they have been documented to consume cottontail rabbits, chipmunks and squirrels, bats and a variety of birds and bird eggs as well. Their efficiency in foraging often lands the long-tailed weasel in trouble, as they have been known to raid some farmer's hen houses, leading to the unfortunate reputation of being an agricultural pest; however, their ability to control rodent populations in barnyards and crop fields likely outweighs the occasional loss of a chicken.

Reproduction

Long-tailed weasels breed in July and August and following mating, females undergo a period of delayed implantation which will last between 200 to 250 days; however, the majority of fetal development occurs within the last 27 days or so of the cycle. Litters of 4 - 5 kits are born in the den the following April or May. They are helpless at birth and being blind and naked they rely upon their parents for warmth and nutrition. Most parental care is provided by the female, but the males have been known to retrieve some food for the developing kits. Weaning occurs at about 35 days, as they develop pelage, their eyes open

and are they beginning to eat meat. Females are reproductively mature and may breed in their first summer, while males generally do not breed until their second year.

Behavior

Active year-round, day or night, long-tailed weasels are seldom inhibited from leaving their den. They lead a solitary life outside of the breeding season. As they have considerably large home ranges of 75 to 100 acres, long-tailed weasels may have multiple den sites for daily activities such as seeking cover, foraging, or mating. Once foraging opportunities dwindle or the pursued female leaves the area, the den may be abandoned.

Predators, Parasites and Disease

There is a considerable variety of external parasites that make their homes in the fur of the long-tailed weasel. Multiple species of fleas, ticks and chiggers can be found and the species encountered will vary with geographic location. Predators of long-tailed weasels are primarily red and gray fox and raptors such as the great-horned and barred owls, along with goshawks. Other predators include the suite of New York State carnivores such as coyotes, bobca,t and domestic cats and dogs

Mink

Scientific Name: Mustela vison

Description

Photo by Brady Dillsworth

Mink have a long, thin body and neck, short legs, and a 6-8 inch bushy tail. Male mink generally are larger than females and may exceed two feet in length. The fur is dark brown on the back, blending into a slightly lighter shade on the belly. A distinguishing mink characteristic is the small white patch of fur on the chin of all animals. Mink fur is very soft and lustrous. The dense underfur is protected by oily guard hairs that tend to waterproof the coat.

Like other members of the weasel family, such as weasels and skunks, mink possess a pair of anal scent glands. The liquid in these glands has a strong smell and probably is used for communication or defense purposes.

Distribution and Habitat

Mink are distributed throughout all of New York State and most of the United States and Canada. They occupy a wide variety of wetland habitat types including streams, rivers, lakes, freshwater and saltwater marshes and coastlines. Their population levels are generally higher in those areas of New York with an abundance of these habitat types.

As part of a mink study in the late 1980's, central and western New York trappers were surveyed to determine the types of habitat where mink were caught. The results are: 62% stream, 9% marsh, 10% lake, and 12% beaver ponds. Nearly three-quarters of the mink were harvested from either stream or beaver pond habitat.

Also, as part of this study, wildlife biologists and technicians surveyed streams in central and western New York to determine the presence of mink. Mink tracks were more abundant in the Southern Tier of New York than in the Lake Plains. The reason for this is uncertain and needs further study.

Mink usually are found in sparsely populated rural areas. However, they occasionally live in suburban settings. Two mink carcasses were submitted from a densely populated area in the Town of Amherst, a growing suburb of Buffalo, during the central and western New York mink study.

Biology and Behavior

Mink generally are solitary animals, with males and females associating only during the late winter breeding season. Female mink are sexually mature at one year of age. Pregnant female mink may establish den sites in cavities of tree roots, rock piles, brush piles and log jams or beaver lodges. Research in North America shows that the most widely used den sites are bank burrows of other animals, particularly muskrats.

Following a gestation period of about 51 days, the female gives birth to 1-8 young (4 average). Mink kits are born between April and June. Their eyes are closed, they are hairless, and they weigh about 1/4 ounce at birth. They develop rapidly and can eat meat within 5 weeks. Female mink reach their adult weight by the fall of their first year.

Mink are primarily nocturnal with most activity spent feeding. Their list of prey species is varied. Food items include small mammals, fish, birds and amphibians. Mammals such as muskrats, rabbits and small rodents lead the list as the most important food for mink.

Waterfowl, small marsh-nesting birds, and crayfish also are important summer foods, while fish are a common food item of mink during the winter months.

Mink are very active and curious creatures. Their presence is seen easily along streams and creeks the day after a light snow. Their characteristic loping gait leaves double print or paired tracks. Tracks often show how they travel from one stream bank to the other, investigating nearly every hole, crack, crevice and overhang that may hide a potential meal.

Mink are equally at home in water or on land. It often is possible to find areas along a stream where they have come up through a hole in the ice to begin their foraging activities along the stream.

Mortality

Unlike many small mammals, mink generally are not preyed on by larger predators. They occasionally fall victim to red and gray fox, bobcat, or great horned owls.

While mink are hosts for parasites such as mites, fleas and lice, these do not cause significant mortality in mink populations. Diseases such as salmonella, distemper and tularemia have been diagnosed in ranch mink, but are not believed to be a serious mortality factor of wild mink populations.

Environmental contaminants are known to affect captive mink. Residues of pollutants such as mercury, pesticides (DDT, DDE and dieldrin) and polychlorinted biphenyls (PCBs) can cause weight loss and reproductive problems in ranch mink that are fed contaminated fish. The effect of these contaminants on wild mink populations is uncertain. However, mink from several areas of New York have been found with high levels of some of these substances in their bodies.

Management

The demand for mink pelts and fur has an interesting history. The prestige of owning a mink coat has been associated with high society, or individuals with the financial resources to afford such a garment. During the first half of this century, most mink coats were made with pelts of wild caught mink. Ranch mink production in North America increased ten-fold from 1953 to 1966. This large number of ranch mink tended to stabilize the market by providing a constant supply of fur at a more reasonable price than wild caught mink. The large supply and reasonable price of mink fur created a secondary market for stoles, jackets, and

garments trimmed with mink fur. This enabled individuals of moderate income to become buyers of mink.

North American mink farm production declined by 65 percent between 1967 and 1974 due to the increase in the world supply of ranch mink produced primarily in Europe. An increase in the demand for fur garments during the mid-1970's reversed this downward trend in North American ranch mink production. There was an increase in the prices paid for all fur. This was followed by a decline in the demand for fur garments in the mid-80's. This most recent decline has reduced and stabilized the price of all hides, including wild caught mink.

Mink trapping seasons coincide with the periods when mink can be trapped without stressing the population, when pelts are of high quality, and when trappers feel the season is most productive. Seasons open at different times around the state because New York contains many types of land use and habitat. The best and most practical period for mink trapping, biologically and socially, vary with land use and habitat across the state.

The Department of Environmental Conservation annually conducts a statewide survey of trapper. They are asked if they trapped, the counties and wildlife management units where they trapped, species trapped, and numbers taken. The purpose of the survey is to monitor furbearer populations and harvest.

The depressed fur market of today discourages many who trapped during the 70's, when fur prices were at some of the highest levels of the century. However, while the number of trappers has declined over the past few years, interest in mink trapping has not.

The mink population in New York State is secure and able to sustain current harvest levels. Despite the uncertainty of the fur market, the interest in mink remains a high priority among trappers.

Muskrat

Scientific Name: Ondatra zibethicus

Description

Muskrats (*Ondatra zibethicus*) are easily recognized by their moderate size, their blunt head, and small non-descript ears and eyes. Adult muskrat weigh between 2.5 and 4 pounds, and total length may range from 23-26 inches, with a tail length of 8-11 inches. A scaly, laterally compressed tail with a fringe of coarse hair along the underside of the tail is a feature muskrats share with no other New York State mammal. They possess large hind feet with partial webbing in between their toes with a row of coarse hairs along the outer edge of each foot. Their fur can vary in shades of brown and in some cases black and consists of a soft, dense undercoat with an interspersion of longer, coarse guard hairs.

Habitat

Found throughout New York State, muskrats occupy a variety of aquatic habitats including ponds, lakes, marshes and streams, and can also occur in brackish habitats. They prefer marshlands, but are found to occupy wetlands and waterways that are heavily vegetated, particularly with cattails, bur-reeds, and bulrushes.

Food and Feeding

The roots and stems of aquatic vegetation are the muskrats' dietary staple. Animal matter is also consumed in times of vegetation shortages or peaks in abundance of invertebrate species. They have been known to eat mollusks, fish, various invertebrates and even turtles. Classic signs of the presence of muskrat are well-matted resting and feeding platforms such as the bare edges of stream banks, the tops of tussock grass clumps, or nestled within aquatic plants. These are often littered with piles of vegetative debris and occasionally crayfish or mussel remains, as well as droppings. Muskrat foods will vary with the type of habitat. Marsh dwellers may eat aquatic plants such as cattails almost exclusively, whereas animals in large bodies of water such as lakes and ponds may be more opportunistic, thus accounting for a more omnivorous diet.

Behavior

Primarily nocturnal, muskrats may also be active during daylight hours and remain active year round, as they do not hibernate. Muskrat will defend their territory vigorously from other muskrat and potential predators, especially prior to and during the breeding season. Territory holders are usually older adults, while younger animals remain subordinate and are more likely to fall victim to predators as they are forced into sub-optimal habitats by territorial adults.

Ecology

Den construction is dependent upon the type of habitat occupied. When in a stream habitat, muskrat burrow into the banks to create dens. One or more entrances are hidden underwater and lead to chambers located above the waterline. They excavate channels or runways in shallow water leading from den entrances for ease of mobility. In marshy habitats, a dome-shaped hut is constructed on a firm substrate using emergent vegetation in the immediate area. Regardless of den type, muskrat activity may be destructive to the banks of waterways and plant communities in the immediate area of a den site.

During winter months, another type of structure created by muskrats is referred to as 'push-ups' or 'breathers'. These are masses of vegetation collected from underwater and pushed up through cracks or holes in the ice. Ultimately, these freeze solid and serve as resting places and are maintained as breathing holes.

When muskrats manipulate vegetation during feeding or while constructing dens, they impact many other species that share these habitats. Some species, such as turtles, use muskrat houses as winter hibernacula. Canada geese and mallards will nest on top of muskrat huts. A unique ecological situation occurs in western New York that includes muskrat, bur-reed, and the state endangered black tern. As muskrat consume the bur-reed, a primary food item, they create open matted areas on the water surface that black terns can use as courtship and nesting areas, thereby increasing tern reproductive success.

Reproduction

The breeding season starts in April, with the first litter born in early May. After a gestation period of 25-30 days, muskrats give birth to 4-8 young or kits, and can have up to three litters a year.

Nearly hairless at birth, kits are blind for about the first two weeks of their lives, after which they venture out of the den for their first swim. Females born in early spring may mate in autumn of the same year; however, muskrat in the northern parts of the species range do not reach sexual maturity or adulthood until the April following birth.

Predators, Parasites, and Diseases

Automobile collisions and trapping are two major sources of muskrat mortality. In addition, muskrats are a valuable food source for a wide variety of predatory wildlife. Raccoon and mink are their primary predators and other carnivores such as fox, coyote, red-tailed hawks and great horned owls readily prey on muskrat.

Historically, muskrat are susceptible to and have been ravaged by a variety of diseases such as tularemia, leptospira, salmonella, and hemorrhagic fever, but these diseases have not been extensively reported in New York State. As with most wildlife, muskrats can act as hosts to a wide variety of endoparasites such as intestinal roundworms and tapeworms that do not necessarily have a negative impact on the animal's overall condition. External parasites such as fleas, mites and ticks, which inhabit the soft underfur, also take up residence in the warm, dry interior of muskrat houses.

Raccoon

Scientific Name: Procyon lotor

Description

Raccoons are "well-rounded," often plump, with reddish brown to grey fur. Adults weigh an average of 15 pounds, and are readily identified by alternating rings on the tail and characteristic black "mask." Raccoons are important furbearers, providing income and recreation to hunters and trappers in New York State. Many people enjoy watching or photographing raccoons. Some people feed them, but this is unnecessary and unwise. Keeping raccoons as pets may be harmful to both humans and raccoons, and is illegal.

Distribution and Habitat

Raccoons are among the most widespread mammals in New York State. The adaptable raccoon can be found everywhere, from the most remote forest to the crowded inner city.

Raccoon populations often are more dense in large cities than in the wild, but abundance varies widely in different types of habitat and different parts of the State.

Behavior

Raccoons feed mainly at night. They eat fruit, nuts, berries, small animals and insects, and also will feed on pet food, garbage, and garden crops.

Female raccoons look for den sites in late winter. Litters of one to seven young are born in April and May. Young raccoons open their eyes about three weeks after birth, and often announce their presence with mewing, twittering or crying sounds. They nurse for about six weeks, then leave the den to follow the mother until September or early October when they disperse and establish their own territories.

Mortality and Disease Factors

Canine Distemper

Canine distemper is a common disease and is usually fatal. Raccoons with distemper act tame or confused, and eventually lose coordination, become unconscious and die. Distemper cannot be transmitted to humans or immunized pets.

Raccoon Rabies

Raccoon rabies reached New York in 1990 and has become widespread. Rabies is a viral disease with symptoms similar to distemper. Rabid raccoons may behave aggressively, salivate heavily, or have paralyzed hind legs. Rabies can be transmitted to humans and other animals by the bite of an infected animal. If you suspect a raccoon is rabid, avoid or destroy the animal and contact local health officials.

Roundworm

Roundworm infects most raccoons in New York at some time in their lives. The roundworm rarely causes the raccoon any problems, but the animals pass large numbers of eggs to the environment. Eggs ingested by another animal may hatch and cause nerve damage. Cases of human infection have been documented, including two fatal cases caused by accidental infections from captive raccoons.

They are also thought by some ecologists to be ecologically important as carriers of diseases like canine and feline distemper, which can impact populations of other valuable furbearer species.

Management

Raccoons are protected by law. No one may possess a raccoon without a license, and licenses are not issued for pet wildlife. Hunting or trapping raccoons requires a license. The law allows unlicensed homeowners and farmers to destroy raccoons that damage property. However, property owners should try eliminating food and shelter before killing the animal.

Except where temporarily reduced by rabies or distemper, raccoon numbers may be very high. While densities in rural areas may be 20 - 40 raccoons per square mile, raccoon densities in some developed parts of the State (e.g. Long Island) may exceed 100 per square mile.

Raccoons can become a nuisance if people unknowingly supply food or shelter for them. They can be attracted by food available in gardens, fish ponds, pet feeders or garbage, or by cavities that might offer shelter.

Here are some ways to prevent raccoons from becoming a nuisance:

- Do not leave pet food outside. Feed pets only as much as they will eat at once, and remove all leftovers. If necessary, place pet feeders in an enclosed area such as a porch, garage, or barn.
- Keep garbage bags in an entry-way or garage, and in a metal can. Run a rubber strap, rope or soft wire through the lid and attach to the can handles. To make it hard for raccoons to remove lids, hang the can one foot above the ground, or use a rack and secure the cans upright.
- Surround gardens with an electric fence made up of two wires attached to an insulated post, one wire four inches and the other eight inches above the ground. Install the fence before vegetables ripen.
- Block the openings raccoons are using to get into your attic, porch or other location. Place a temporary cover when the raccoons leave on their nightly search for food, and make a permanent seal later. To check if the raccoons have really left, sprinkle twigs, grass or flour in the opening and watch for tracks. Caution: do not permanently seal entrances without first verifying that all animals are out of the den. Especially in the spring, look and listen for animal noises.
- Nuisance wildlife control persons licensed by New York State can be hired to deal with problem raccoons. Injured and "orphaned" raccoons should be left alone. Animals

actually in need of assistance may be cared for by licensed wildlife rehabilitators. The DEC regional office can refer you to these individuals.

River Otter

Scientific Name: Lontra canadensis

Description

The North American river otter is a member of the mustelid or weasel family that can be easily identified by a stout body, short legs, noticeably tapered tail and dense, short, glossy fur. Their streamlined body, fully webbed feet, broad and flattened head and stout, muscular tail, and closeable nostrils and ears all serve to assist in swimming and foraging. Their eyes, ears, and nose are located on the top of the head so they can see, hear, and smell while most of their body remains in the water. Fur color can range from light brown to black, with a lighter, grayish colored chin and throat. Males are generally larger than females, 44 inches and 38 inches total length, respectively. Body weight ranges from 10 - 30 pounds, and is likely dependent on age and dietary limitations.

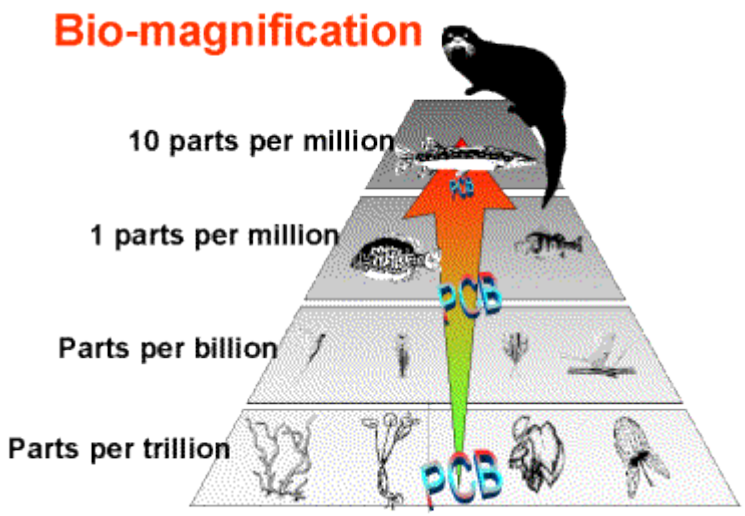
Distribution and Habitat

Historically, river otter could be found in all watersheds of New York, and declines were attributed to unregulated harvest, habitat destruction, and water pollution. Legal protection was first established in 1936, with a nine-year moratorium on otter harvest. After this lengthy season closure, trapping seasons were reopened with more rigorous restrictions and bag limits. As recent as the early 1990s, the river otter was only found in the eastern half of New York State, while the western regions were devoid of otter except for the occasional individual that happened to be passing through.

In the late 1990s, the New York River Otter Project aimed to restore river otter to the watersheds of western New York. Volunteers and DEC staff live-trapped otter primarily in the Adirondacks (DEC Regions 5 and 6), but some otter from the Catskills and Hudson Valley (DEC Regions 3 and 4) were included as well. From 1995 through 2000, 279 river otter were captured in eastern New York and released at 16 different sites across the western part of the state. Some of the release sites in western New York had been devoid

of otter populations for longer than many local residents could remember, and the public was very excited about the project and the return of the otter to these watersheds.
Life history studies have shown that otter are dependent upon permanent watersheds, and otter may be found in rivers, lakes ponds, small streams, marshes and other inland wetlands. Suitable habitat will exhibit a high percentage of emergent vegetation, or in the case of natural waterways, expansive riparian corridors. Throughout most of their range, there is a close relationship between beaver and river otter populations, indicated by a positive relationship between annual trapper harvests of the two species.

Food and Feeding



River otter could be considered somewhat of an aquatic generalist, as they consume almost anything they encounter and can catch. Primarily visual predators, their eyes are shaped in a way that facilitates underwater vision and acuity. In situations where murky water occurs, they are further enabled to forage by 'motion sensitive' whiskers that help them cue in on prey location and movement.
Although fish comprise the majority of their diet, amphibians and crustaceans and other aquatic invertebrates are also taken when available. Opportunistic endeavors may net small mammals and birds (e.g., muskrat and waterfowl), reptiles, and even fruit. Two such examples of opportunistic foraging include the near exclusive consumption of hibernating turtles, wood and snapping turtles within individual territories. These instances have detrimental effects on local populations of turtles, and may in effect extirpate said populations.

Being that river otter are at the top of the food chain, they have a greater chance of being exposed to elevated levels of environmental contaminants such as PCBs, DDT and its associated metabolites, and heavy metals such as cadmium and mercury. This means of exposure is referred to as bio-magnification. As contaminants accumulate in the organic materials and sediments on the bottom of a waterway, they become ingested by aquatic invertebrates such as snails, mussels, and insects. These are in turn consumed by fish,

which may then be eaten by larger fish, all of which are consumed by river otter. This accumulating effect results in elevated levels of pollutants in river otter due to the ingestion of contaminated food items. At such high levels, some of these contaminants can have negative impacts on otter ranging from poor survivorship to sterility or infertility.

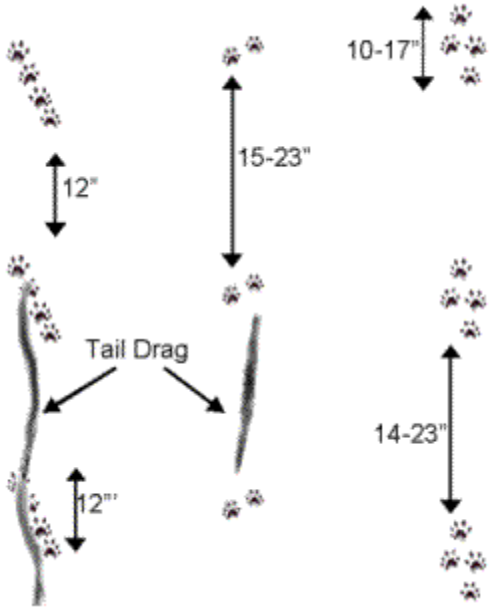
Reproduction

Adult river otters breed with more than one mate in their lifetime, and the breeding season may span from December to May, depending on geographic location. Females delay implantation of sperm, and this may result in fertilization occurring from 10-12 months after initial copulation. Gestation of embryos lasts from 61-63 days, and young are born in April or May, fully furred yet blind and toothless. Litters usually range from 1-3, but 5 kits may occur. Eyes open after 30-40 days, and solid food is taken after 9-10 weeks. Adult otters will provide food for their offspring for up to 40 weeks. Juvenile dispersal usually occurs between 12 - 13 months of age, and distances of over 100 miles may be traveled before a suitable home range is found. Males and females are reproductively mature in their second year, but occasionally one-year-olds have been found to have given birth.

Behavior

The main social unit is the family, or an adult female and her young. Otter do maintain home ranges, but little in the way of documented territorial disputes exists, as family groups have been noted to avoid one another. One such method of maintaining a home range would be the classic latrine sites, or toilet areas that they will both defecate and urinate at repeatedly. They will choose almost any object or piece of land that protrudes from the water or the

bank including large conifers, points of land, beaver lodges or exposed root systems.



Otters are nocturnal by nature, but they can be seen by day foraging or playing, and daytime activity increases during the winter months. There is no hibernation period, they are active year round. Like all true members of the weasel family, they travel overland in a loping or bounding manner, and prints may vary considerably with terrain, ground surface and stride. Prints are often paired, grouped, or laid out in angled strings. One key feature to look for is the tail drag marks (see track pattern diagram to the right). Due to their large, thick tail, it is often seen scraping over and between print sets, especially in snow. Another feature indicative of otter sign will be their slides (see photo below). They will move along the ground or down a slope on their belly. These slides can be found on flat ground with snow or grass cover, or snowy or muddy slopes into the water. This method of locomotion is used as a means of transport and play.

Ecology

Although the accepted, common name is the river otter, it might be suitable to rename it the swamp or inland wetland otter, due to its strong association with aquatic, emergent vegetation, and their affinity to freshwater wetlands. Beaver ponds are often inhibited with both otter and beaver, and there have been reports of both species inhabiting the same lodges with little in the way of reported, antagonistic encounters. The creation of dams and lodges provide structure for the eventual inhabitation of these wetlands, while the damming of waterways or inland wetlands increases the surface area and depth of open water, thereby creating more habitats suitable for the denning and foraging behavior of otter.

A diversity of structure along occupied water bodies appears to be of considerable importance, not just for foraging opportunities, but in regards to suitable den sites as well. Steep banks, with ample structure above and below the water allow for habitation of winter retreats, and ensure that unrestricted access to both terrestrial and submerged habitat are available. They do not excavate their own dwellings, but rely on beaver and other mammal burrows for their den sites. In rivers, log jams with abundant woody material may be used extensively for denning and latrine sites. During dry seasons, otter will move from their inland wetland habitats to more permanent bodies of water, in order to adapt to drought conditions and for ease in finding food.

Predators, Parasites and Disease

Other than the annual harvest of river otter by trappers for their pelt and the occasional road mortality, there is little in the way of natural predators in New York; however, overland travel makes otter more vulnerable to attack by animals such as bobcat, coyote and domestic dogs.

Like all mustelids, the viscera or internal organs of otter do serve as habitat for a variety of intestinal nematodes, trematodes, acanthocephalans, and cestodes. Externally, ticks, fleas, and lice can be found.

Susceptible to both rabies and distemper, since 1998 there have been 3 documented cases of rabies in New York State otter. Although actual numbers are not available, distemper may play a role in wild otter mortality.

Striped Skunk

Scientific name: Mephitis mephitis

This delicate member of the weasel family has a potent musk that often overshadows the beauty of its glossy and durable fur.

Description

The striped skunk is an interesting component of New York's wildlife assortment. It is a house cat-sized member of the weasel family. Like the more glamorous members of the weasel family (mink, otter, fisher and marten), the skunk also has glossy and durable fur that can be dyed uniformly black for exquisite garment trimming.

The skunk's best known feature is its ability to squirt an extremely potent and disagreeable secretion at potential attackers. The Latin name for skunk, Mephitis mephitis, means "double foul odor."

Distribution and Habitat

The skunk lives in a variety of habitats but prefers open areas. Its numbers usually decline as abandoned fields and pastures become forested. However, roadside and lawn mowing, or any maintenance practice which prevents the development of a forest canopy, favors the continued existence of skunks. Residential areas that have both lawns and large, mast producing shade trees often provide optimal habitat for skunks.

Biology and Behavior

Striped skunks mate in February and early March. Females give birth in May, often in woodchuck burrows, to an average litter of six. It is not unusual to see a female skunk with a line of little black and white copies following her across a damp pasture or lawn on an early July morning.

Skunks forage at night or at dawn for a variety of foods including berries, grasses, nuts and other vegetable material, as well as worms, insects, grubs and the nestlings of birds, mice and cottontail rabbits. They also prey on woodchucks and other young animals in burrows. Skunks often leave holes in the ground where they forage for insects or tear apart ground nests of small animals.

Although skunks in New York retreat to winter dens and remain inactive for extended periods, they do not hibernate. Males in particular are likely to be active aboveground periodically. They may be active even during cold weather, especially during the breeding season.

Skunks are vulnerable to a variety of internal and external parasites. They also can get and spread rabies and other wildlife diseases. Skunks have been the most commonly confirmed rabies species, other than raccoons, during the spread of raccoon rabies throughout Southern New York. Coyotes, foxes, owls, bobcat and fisher will prey on skunks, and collisions with cars are a common cause of skunk deaths.

Preventing Conflicts

The striped skunk can be a difficult neighbor because of its fearlessness and effective weaponry. One of the most common skunk complaints, a strong odor of skunk essence

during the nights of early fall, often is the result of inadequate home maintenance and of allowing dogs to roam free at night.

This happens in early fall because skunks search for cubby holes to spend the winter. Damaged building foundations and spaces underneath porches serve this purpose well. A free roaming dog often aggravates the situation by chasing the prowling skunk. The resultant "dog training lesson" can offend a whole neighborhood. The remedy is to close or screen all holes and crawl spaces, and to keep dogs confined.

An interesting side note is that house cats tolerate the presence of skunks. In the days of small dairy farms, several dozen barn cats often ate from the same pan of milk after each milking. Many a farmer arrived to pour the dregs of the milk strainer into the cat dish and found that one of the cats had a broad tail and a characteristic white "V" across its back. For this reason, it is not wise to feed a house cat outside your home after dark.

Handling Trapped Skunks

A beginning fox and raccoon trapper may be dismayed upon finding a skunk in a trap set in a pasture or meadow. Likewise for a homeowner or nuisance wildlife control agent who finds a skunk in the box trap set in the backyard. Surprisingly, a skunk seldom sprays when caught in a foothold or box trap. Moving a skunk in a box trap is easy if you cover the trap with a dark blanket so the animal can't see you. Transport the covered trap without too much jostling, and the animal will not spray.

Management

The striped skunk has been protected under the Environmental Conservation Law since the late 1800s. Perhaps the value of skunk musk to the perfume industry, combined with the commercial use of their pelts, caused early legislators to give skunks special consideration.

You may have heard that pelts of the striped skunk once were more valuable than they are in the current fur market. A strong market for fur-trimmed cloth coats developed in the late 1930s as our country recovered from the Great Depression. Striped skunk is ideally suited for this purpose because the white hairs of the pelt become a uniform, glossy black when dyed. Skunk pelt prices may have doubled from about 1939 through the early 1940s, but they were never as valuable as red fox. Although a market still exists, it is not as vigorous as it once was.

Protection and promoting general public awareness of a species is a good way to secure its status. Each year the New York State hunting and trapping regulation guides remind hunters and trappers that the striped skunk is a valuable furbearing resource. The regulations allow only a limited, open harvest season. This type of regulatory protection has been successful. The striped skunk is abundant in New York and its populations are secure.