

## Furbearer, What's That?

We all know that mammals are furbearers, after all, isn't having fur or hair one of the criteria by which a mammal is classified as a mammal? Although, technically, that's true, professionals in the field of wildlife management don't use the term furbearer to refer to all mammals. Instead, they narrow the scope and consider furbearers to be those mammals that have traditionally been trapped or hunted primarily for their fur.

Furbearers include a wide variety of species that cannot be grouped as being of any one type. For example, furbearers are not just voracious predators that are found in a specific habitat. Instead they include members of the weasel, cat, dog and rodent families; some are fierce and fast carnivores, while some are more slow-moving herbivores, and some are omnivores, ready to eat just about anything that comes their way. Just as they represent a wide range of families, they are found in a wide-range of habitats, including a variety of forests, fields and wetlands. In the northeastern United States and eastern Canada, the animals considered to be furbearers are beaver, bobcat, coyote, fisher, gray fox, marten, mink, muskrat, opossum, otter, raccoon, red fox, skunk and weasel. Although there are two species of weasels in the northeast, both the long-tail and short-tail weasel (often referred to as ermine), they will be treated as one throughout this curriculum. Most of these furbearers are located throughout the northeast, but a few may have a more limited range, like the fisher and marten are found only in the more northern areas.

Why have the furbearers been traditionally sought for their furs rather than other species? Most furbearers have two layers of fur. A dense, soft underfur provides insulation and water-repellent qualities. An outer layer of longer, glossy guardhairs grows through the underfur and protects it from matting and abrasion. A fur is considered to be prime when the guardhairs are at their maximum length and the underfur is at its maximum thickness. Fur is normally prime in mid-winter when the animals need its protection from the cold and wet the most.

Fur is a renewable resource that has traditionally been used by humans throughout time. It is valued for its natural beauty, durability and insulative qualities. Furbearers have been an important resource throughout the development of our country. Native Americans were dependent on furbearers to provide food for sustenance and furs for clothing, bedding and shelter. Early European colonists found furs so valuable they used them as a primary currency of trade. As the fur resource was depleted in the northeast, trappers pushed west in search of furbearers to meet the demands of the fur trade. Trappers were responsible for opening the west to further exploration and settlers. Furbearers continue to be an invaluable resource and play an important role in our lives today.

Furbearers continue to have value and impact our society today. While many people benefit economically from the use of furs and other furbearer products, others suffer economic loss from damage caused by furbearers. Furbearers help keep ecosystems in balance, as they function as both predator and prey. However, when an ecosystem is

unbalanced and furbearer populations are too high, they can be damaging by preying on populations of endangered species. Some species, like beaver and muskrat can create valuable wildlife habitat, yet when the population is too high, they degrade the very habitat they created. Trapping furbearers is a part of our cultural heritage. Its traditional skills, including respect for and knowledge of the outdoors, are passed along in many families from generation to generation. Some families still use furbearers and their products for food and to supplement meager incomes. Furbearers can help scientists understand human health problems, such as effects of environmental pollutants, while at the same time, they can pose risks to humans through exposure to diseases and parasites. Perhaps the most readily recognizable value of furbearers today, is the enjoyment so many of us get when we have an opportunity to observe them in the wild.



## **Furbearer Curriculum Learning Objectives**

1. Students will be able to identify at least six furbearers of the northeast from their skulls, pelts, tracks, scat and habitat.
  - Read introduction to Lifestyles of the Furry and Diverse section; Habitat subsection
  - Notebook activity: Mission Possible
  - Research: Working in pairs, research, prepare and present to class a report about the natural history of one of the northeast furbearers. Project may include dioramas, posters, PowerPoint, puppet show, etc.
  - NatureScope activity: Habitats for Sale (use northeast furbearers)
2. Students will be able to trace the history of three furbearer species populations from pre-colonial times to the present.
  - Read introduction to A Window to the Past section; The Changing Land subsection
  - Study historic population graphs of bobcat, beaver and fisher and discuss; have students make suppositions about what they think happened to the other furbearer populations during the same time period, based on what students have already learned about habitat requirements, unregulated harvesting, etc.
3. Students will be able to describe three ways in which wildlife have been, and continue to be, part of our culture.
  - Read the introduction, Furbearer, What's That?
  - Project WILD activity: Pros and Cons: Consumptive and Non-consumptive Uses of Wildlife
  - Notebook Activity: Where Do You Stand on Trapping?
  - Video: Fur: Fabric of a Nation
4. Students will be able to list three products derived from furbearers historically, explain how they were used, and list three products that are currently derived and used.
  - Video: Fur: Fabric of a Nation
  - Project WILD activity: What You Wear is What They Were
  - Students bring a product from home made from a furbearer; compare and discuss in class.

5. Students will be able to define wildlife management and give three examples of techniques used to manage wildlife.
  - Read introduction to Nuts and Bolts of Furbearer Management section
  - Project WILD activity: Oh Deer (use a furbearer species instead of deer)
  - Project WILD activity: History of Wildlife Management
  - Project WILD activity: Checks and Balances (use a furbearer species)
  - Video: Regulated Trapping and Furbearer Management in the United States
  
6. Students will be able to state at least two reasons why furbearers are trapped.
  - Read introduction to Nuts and Bolts of Furbearer Management section
  - Video: Regulated Trapping and Furbearer Management in the United States
  - Notebook activity: Where Do You Stand on Trapping?
  
7. Students will be able to discuss the importance of habitat, land-use practices and clean water to furbearer populations.
  - Project WILD activity: Habitat Lap Sit
  - Project WILD activity: Changing the land
  - Project WILD activity: Oh Deer (use a northeast furbearer instead of deer)
  - Project WILD Aquatic activity: Dragon Fly Pond



## **Furbearer Curriculum: 3 Thematic Subsections**

### **Lifestyles of the Furry and Diverse (natural history)**

- Read introduction to section
- Notebook activity: Mission Possible
- Research: Working in pairs, research, prepare and present to class a report about the natural history of one of the northeast furbearers
- Project WILD activity: Habitat Lap Sit
- NatureScope activity: Habitats for Sale (use northeast furbearers)
- Project WILD activity: Changing the Land
- Project WILD Aquatic activity: Dragon Fly Pond

### **A Window to the Past**

- Read introduction to section
- Discussion of historic populations of bobcat, fisher and beaver
- Project WILD activity: Pros and Cons: Consumptive and Non-consumptive Uses of Wildlife
- Students bring a product from home made from a furbearer; compare and discuss in class
- Video: Fur: Fabric of a Nation
- Project WILD activity: What You Wear is What They Were

### **Nuts and Bolts of Furbearer Management**

- Read introduction to section
- Project WILD activity: Oh Deer (use a furbearer species instead of deer)
- Project WILD activity: History of Wildlife Management
- Project WILD activity: Checks and Balances (use a furbearer species)
- Video: Regulated Trapping and Furbearer Management in the United States
- Notebook activity: Where Do You Stand on Trapping?

## Mission Possible

### Objective

Students will be able to identify at least six furbearers of the northeast from their skulls, pelts, tracks and scat by using keys and guides.

### Method

Students match the appropriate skulls, pelts, tracks and scat with the northeastern furbearer species to which they belong.

### Materials

14 skulls, furs, rubber scat, rubber track sets and track pattern sheets of northeastern furbearers; set of 14 furbearer photographs; Peterson Field Guide to Animal Tracks, Peterson Field Guide to Mammals, Scats and Tracks of the Northeast and two copies of A Key-Guide to Mammal Skulls and Lower Jaws; rulers

### Duration

Two to four 45-minute sessions, depending on whether students work individually, in pairs or in small groups.

### Background

Furbearers include a wide variety of species that cannot be grouped into any one category. That variety of species is evidenced in the differences found in the skulls, furs, tracks and even scat of the furbearers. Each species occupies a specific niche or has a special function within the community in which it lives. For instance, on a very basic level, some of the furbearers are carnivores, some are herbivores and some omnivores. Based on its function, each species has adaptations, which are special physical or behavioral characteristics, that enable it to be successful in its lifestyle. Predatory mammals, for example, have skulls designed for power and teeth designed for both capturing and tearing apart prey. Herbivorous mammals have teeth designed more for grinding. Beaver spend a great deal of time in the water. Not only do they have wide, webbed rear feet that are a benefit when swimming, they have especially dense fur and an oil gland that provides water repellency to the fur. These adaptations the beaver has that make it well-suited to its lifestyle can be evidenced in its tracks and the feel of its fur.

Aside from the very basic carnivore versus herbivore distinction, the northeast furbearers can be classified by the order or family they represent. Each classification has at least one identifying characteristic that can be readily evidenced by looking at its skull, pelt, or tracks. Beaver and muskrat are rodents and are of the order Rodentia. They have two incisors or gnawing teeth on their upper and lower jaws. Weasels, mink, otter, fisher, marten and skunk are all members of the weasel family (Mustelidae), which usually have long, slender bodies, short legs and anal scent glands. Red fox, gray fox and coyotes are in the dog family (Canidae) and are doglike in appearance. The bobcat is the only member of the cat family (Felidae). It has a catlike appearance, with a short face and retractable claws. The raccoon is the only member of the family Procyonidae, of which all are medium size with distinct yellowish-white tail rings. The opossum is the only

marsupial (pouched) mammal in North America and is of the family Didelphiidae. It has a prehensile, scaly tail that is rat-like in appearance.

### **Procedure**

Start by introducing students to the various guides, the types of information they can find in each and how to use them. The skull key will require more time. It will be necessary to go over some of the terms and to demonstrate how to take specific measurements.

Have the tracks and the matching track pattern sheets set in one area of the room, skulls in another area, furs in another and scat in another. Set out the various field guides and keys so they are available. (Depending on the size of the class, you may want to borrow additional copies of the guides from the school and public libraries.)

Explain to students that the classroom represents the Abnacki Museum of Natural History. Tell them that vandals have recently broken in and wreaked havoc with many of the wildlife exhibits. They have taken the furbearer exhibits apart and spread the various parts all around. As the museum staff is short-handed, they have called in a team of experts to help put the exhibits back together again. You (the students) are the team of “experts.” It is your mission, if you choose to accept, to put the exhibits back together.

Give each of the students a Mission Possible work sheet on which they can write the numbers of the tracks, scat, skull and fur that matches the appropriate furbearer. Let them know that each scat, track, skull and fur has a number on it that they are to write on the answer grid when they know to which animal it belongs. Numbers on the rubber tracks and the track sheets match. Although, the skull of one species has a specific number does not mean that the fur, tracks and scat of that same animal will have that same number. Students may work alone, in pairs or groups of three or four.

When students have finished, check their work sheets individually and note which ones are wrong. Give them time to find and rectify their mistakes. If students are puzzling over one part, have them check another guide, where they may find another clue that will help them decide. After they have had time to see where they went wrong, write the answer key on the board and have them check their own answers to see if they were able to make all the correct identifications by the second try. Allow time for class discussion as they try again to right any remaining mistakes

### **Extension**

Have the “experts” group the animals as carnivore, herbivore or omnivore based on skull and dental characteristics. Students can make implications about different adaptations they may discover and how they relate to the specific niche the animal fills in the community in which it lives.

### **Evaluation**

Using guides and keys have students identify six furbearers from their skull, tracks, fur and scat.

## Nuts and Bolts of Furbearer Management

### **Population Dynamics**

Furbearer populations, like all wildlife populations, are always changing. The constant flux of populations is dependent upon a variety of factors, including habitat health, climatic variations, predation and disease. As survival of a population requires that the number of births must equal or exceed the number of deaths, all species have evolved to produce a surplus of young during each generation. Furbearers are no exception; in fact some are capable of doubling their population in just one year. Because they produce a surplus of young, it seems that populations should grow continuously. The reason they do not is because as populations grow, various limiting factors come into play that limit their growth. Commonly, it is one of the basic components of habitat, food, water, shelter or space, that becomes a limiting factor for a given population. It is easy to see that the amount of food would limit the size of a population, but perhaps, not as readily recognizable, is that the lack of appropriate shelter can be just as limiting to the size of a population. Also, what may be a limiting factor for a given population at one time may not be at another time. An outbreak of a disease, such as rabies, or the growth of a predator population may serve as the limiting factor at another time.

Based on the food, water, shelter and space available, each habitat can support a given number of individuals of each species that lives there without adverse effects. The limit of individuals that can live in a particular habitat without damaging it is referred to as its carrying capacity. A healthy population of beavers, for example, is beneficial by creating and maintaining productive wetland habitats. However, if the number of beavers exceeds the carrying capacity, then too much vegetation is killed by over-browsing and banks are worn down by too much traffic, both resulting in erosion and flooding. In addition, individuals in a population that has exceeded the carrying capacity of the habitat face starvation, stress and a much greater threat of disease.

### **Management**

Today, wildlife biologists work to maintain populations of furbearers at levels that are considered healthy for both the population and for the habitat. Furbearer populations and the habitats in which they live are closely monitored by biologists who are trained to assess their health. Biologists then “manage” the furbearer populations based on their findings and the goals they hope to achieve. Usually, the goal is to maintain stable populations over time. There are situations, however, when the goal is to increase or decrease a population. Throughout much of its range in the northeast, marten populations, for example are very low or even non-existent. The goal in that case would be to increase the population. Beavers, on the other hand, are so abundant in some areas that roads and agricultural lands are being flooded. The goal in that case might be to reduce the population.

When managing a population, biologists employ any number of tools or techniques that are designed to cause an increase, decrease or stabilization of the population. Frequently, to increase a population, the habitat is enhanced to increase the carrying capacity. Apple trees, overgrown with vines, may be “released” or the area around them cleared to

enhance apple production for deer and turkey. Sections of a forest can be cleared or burned to encourage new growth, which translate to food for many species, such as moose. A forest management plan may include the leaving of large tracts of undisturbed-forest which would benefit marten and lynx; and the leaving of old trees with cavities that would benefit the many species of wildlife that rely on them for nest and den sites. Maintaining a mix of fields and forests, enhances the habitat for those species that use both, such as coyote and red fox, and those species, such as weasels, that favor the dense, thick growth at the edges of the fields.

The primary tool wildlife managers use to reduce, stabilize or even increase a furbearer population is regulated trapping. Harvest regulations and restrictions are set according to the management goals. Generally, furbearers, like most living things, reproduce more young than the habitat can support and more than will survive. Each year some would die of starvation, disease or old age. In a sense, there is a surplus produced. It is that surplus that wildlife managers normally target when they set trapping regulations designed to keep populations constant. Furbearers are considered to be a renewable natural resource. Like forests, a carefully calculated portion of each furbearer species can be harvested and used for human benefit, without negatively impacting the overall population.

There are times when the reduction of a furbearer population may be desirable. That is apt to be the case when a population begins to cause problems for people. A common example is when the dam building of beavers causes damaging flooding of roads or farmland. Another situation where a population reduction may be desired is when a coyote population is so high in an area, that their taking of farm animals becomes excessive. In those two situations, wildlife managers may recommend an increase in the harvest allowed for each of those species in the areas where they are causing problems for people. Another example when a reduction would be warranted, is at those times when an endangered species is impacted by predation or competition by an abundant species. Endangered piping plovers and their eggs, for example, are frequently preyed upon by raccoons. Wildlife managers may choose to reduce the population of raccoons in coastal nesting areas to increase the plover population. On the other hand, there are times when the goal is to increase a population. An example is the marten population in the northeast, where an increase of the population is desired. As a result, the trapping of martens is currently prohibited throughout much of its range in the northeast.

There are many things to keep in mind, or that we may not be aware of, when we consider trapping as a viable management tool.

- Trapping is strictly regulated and enforced by each state's department of fish and wildlife, which is staffed by professional wildlife biologists and conservation officers.
- Only abundant species of wildlife can be legally trapped. Since the inception of modern wildlife management in the 1940s, no animal populations in the United States have become endangered or extinct from regulated trapping.

- Each state restricts what species can be trapped and what kinds of traps can be used.
- Only licensed trappers are allowed to participate during a trapping season, which lasts only a few months of the year; seldom during spring or summer when animals are busy caring for their young.
- Trapping is used to relocate wildlife to areas where they once lived, but may no longer be found. For example, the restoration of fishers to Vermont was made possible through the use of trapping.
- Regulated trapping is an important way for biologists to collect important ecological information about wildlife, especially wildlife diseases like rabies and Lyme Disease that also affect people.
- Threatened and endangered species also benefit from regulated trapping. Sea turtles, whooping cranes, black-footed ferrets, piping plovers and other rare species are protected from predation and habitat damage caused by fox and coyote.
- Regulated trapping is supported by all fifty state wildlife agencies, the International Association of Fish and Wildlife Agencies, U.S. Department of Agriculture, The Wildlife Society, Wildlife Management Institute and many other conservation organizations that recognize the important role trapping plays in wildlife management.

## Lifestyles and Habitats of the Furry and Diverse

### **Identification**

One of the few things the furbearers have in common is that they are all mammals with fur. Other than that similarity they are a very diverse group, living very different lifestyles in a variety of different habitats. Each animal has adaptations that make it specially suited for the life it leads. A beaver, for example has two big front teeth that are well suited for gnawing on wood and wide, webbed feet that enhance its swimming ability. It is often these specific types of adaptations that provide us the means to distinguish one from another. Animals' skulls provide clues as to not only what type of animal it is, but also clues as to its size, what it eats and, ultimately, to its lifestyle. Carnivores or meat eaters, for example, have very different dental patterns and skull shapes than herbivores or plant eaters do.

As much as most of us love to watch wildlife, it is most likely that all we get is a glimpse, as the animal high-tails it away from us as fast as it can or dashes across the road in front of our car. There's rarely enough time to form a clear enough picture of the animal in our minds to identify it with confidence. And that's if we're lucky. More often than not, all we get are signs or clues that an animal has passed our way. We see bits of fur rubbed on the side of a tree, tracks left in fresh snow or wet sand, scat left here and there, and occasionally the bones of an animal strewn about. In all of those instances there is usually enough evidence left behind for us to figure out what went there before us. Even when we've just had a glimpse, we have often registered enough information to make a pretty confident deduction about which animal we saw. We could tell the approximate size of the animal, its gait, perhaps color, and another very critical clue we may be apt to overlook, the habitat it was in.

Our selection of possible animals to choose from is greatly reduced when we think about the habitat the sign is found in and which animals are likely to be found in that type of habitat. A long, narrow animals bounding in front of the car as you're riding through a northern forest, with no wetlands about, is far more likely to be a fisher, than the similar looking otter, which spends most of its time in a wetland. Tracks give us an approximation of the size of the animal, its gait, what it was doing, what direction it was traveling and often, what family it belongs to. If the gait is waddling, then we know the animal moves fairly slowly and therefore doesn't have to worry too much about predators because it must have something other than speed to rely on for its safety. Skunks, porcupines and bear are all waddlers, and sure enough, they have other forms of defense besides speed. Scat not only gives us clues about the animal's size, but also about what it eats.

## **Habitat**

It is important to consider habitat when referring to and identifying wildlife. Habitat is an animal's home; that area in which it finds all that it needs to survive. Food, water, shelter and space, all suitably arranged, are critical components of an animal's habitat. Many animals use a variety of habitats to meet all their survival needs, while some use only one; others have different habitat requirements at different times of the year. White-tailed deer, for example, prefer open hardwood forests and forest/field edges during the summer and fall, but in the winter, require dense conifers to meet their shelter needs.

Habitats do not remain the same, but are always changing. Some changes occur naturally, by way of catastrophic events such as hurricanes, floods and fire, and more slowly through the process of succession. Other changes are the result of human impact, of the way humans use the land. Forests are cleared for timber and agriculture, fields may become dotted with new homes and crisscrossed with roads, wetlands may be filled and paved to provide parking for new shopping malls, and farms may be abandoned and fields allowed to revert to forest. All of the changes to the land affect the plants and animals that live there.

One of the most serious threats to furbearers today is the loss and degradation of habitat. As thousands of acres of wetlands are filled for development each year, the habitat required by furbearers such as otters, beaver and muskrats is dwindling. Other furbearers, such as fishers, martens and bobcats, that require large tracts of unbroken forest land, are being negatively impacted by fragmentation of their habitat. Fragmentation occurs when large continuous natural areas or ecosystems are broken up by human development such as housing complexes, shopping malls and roads.

In addition to fragmentation, habitat can become degraded by pollution. Run-off from farms, containing fertilizers and pesticides, can create problems for downstream habitats. Pesticides spread in wetlands and human communities to reduce the number of pesky, biting insects, and over areas of forest to limit insect damage, eventually work its way through watersheds into water supplies and wetlands. Contaminated water, anywhere in the watershed, may directly and indirectly affect populations of wildlife, including furbearers. For example, there are many water bodies in the northeast contaminated with mercury. Consequently, some fish populations are so contaminated with mercury that people are advised to limit the numbers they eat and pregnant and nursing women should not eat any at all. Imagine how much mercury must accumulate in the bodies of otters that subsist almost solely on fish.

To protect furbearers and all wildlife, we need to balance human needs with conservation of habitats by taking actions in our daily lives that make a difference. By making decisions to recycle, reuse and conserving our natural resources; and by making responsible land-use decisions within our communities we can take an active role in conserving habitat for wildlife.

## Student Page

### Furbearer, What's That?

**Key Terms:** furbearer, wildlife manager, carnivore, herbivore, omnivore, habitat, renewable resource, wetlands, heritage

We all know that mammals are furbearers. Having hair or fur is one of the characteristics we use to separate mammals from other animals, such as birds or reptiles. Wildlife managers, people that work to conserve wildlife, have added an extra meaning to the term furbearer. Instead of just using the word furbearer to mean any mammal, they use the word to mean those mammals that have been hunted and trapped through the years mostly for their fur. Beaver, for example, are considered to be furbearers. Even though they are occasionally trapped for food, they are usually trapped for their fur. Deer are not considered to be furbearers. Although their hides have historically been used to make clothes and shelter, the primary purpose for hunting them has been for food.

Furbearers include a variety of mammals. They include members of the weasel, cat, dog and rodent families. Some are fierce and fast carnivores that catch and eat other animals; some are more slow-moving herbivores, that eat plants; and some are omnivores, ready to eat just about anything that comes their way. Just as they represent a wide range of families, furbearers are found in a wide-range of habitats, including fields, forests and wetlands. The furbearers that are found in the northeastern United States and eastern Canada are beaver, bobcat, coyote, fisher, gray fox, marten, mink, muskrat, opossum, otter, raccoon, red fox, skunk and weasel.

Why have the furbearers been traditionally trapped for their fur rather than other species? Most furbearers have two layers of fur. A dense, soft underfur provides insulation for warmth and is water repellent. An outer layer of longer, glossy guardhairs grows through the underfur and protects it from matting and other damage. Fur is prime, or most valuable, in winter when animals need its protection from the cold and wet the most.

Fur is a renewable resource that has traditionally been used by humans throughout time. It is valued for its beauty, durability and the warmth it provides. Furbearers have been important throughout the development of our country. Native Americans depended on furbearers for food and furs

that they used for clothing, bedding and shelter. Early colonists used furs as a basis for trade, in the same way we use money today. As furbearers became scarce in the northeast from over trapping, trappers had to head west to find more. It was those trappers that were the first white men to explore the west and opened the way to other explorers and finally, to settlers.

Furbearers continue to be a valuable resource and play an important role in our lives today. As some furbearers are predators and some prey, they help keep other populations of wildlife in balance. They provide food for some, while keeping populations of others from getting too big. Beavers create and maintain wetlands that provide valuable habitat for many other species of wildlife. Trapping furbearers is part of our heritage. The traditional skills of tracking and knowing animal habits, and a keen knowledge and love of the outdoors, are passed along in many families from generation to generation. Some families still use furbearers for food and sell furs to provide the necessities for their families. Certainly one of the values of furbearers, is the enjoyment we get when we have the chance to see them in the wild.

## A Teachers Note

Furbearer *Fundamentals* is a teacher resource notebook that contains a three-week, multi-disciplinary curriculum that focuses on the furbearers found in the northeast. It can be used in its entirety or broken into parts that can be used individually as supplemental educational materials and activities. The informational materials and activities are designed for middle school students, but can be modified to reach both younger and older students. Following the introduction is a sample curriculum plan for how the unit could be presented.

The furbearer curriculum notebook can be divided into three sections, each based on a specific theme. The first section, *Lifestyles of the Furry and Diverse*, relates to the natural history of the furbearers. Students are introduced to the individual furbearers and their specific characteristics, including appearance, life history and habitat requirements; and to the importance of habitat conservation. The second section, *A Window to the Past*, focuses on the importance of furbearers to our nation historically, and how changing landscapes affected furbearer populations. In the third section, *Nuts and Bolts of Furbearer Management*, students are introduced to population dynamics and the concept of wildlife management. They are also introduced to different techniques used to ensure that healthy furbearer populations are achieved and maintained.

When preparing to introduce the activities to a class, teachers should read the three theme introductions and the background sections, where they are available, for each of the activities. They will help foster an adequate understanding of the three themes and the facts and concepts needed to lead the activities and guide discussion. In some instances, students are expected to research specific furbearer topics on their own or in small groups. Included in the notebook are fact sheets about the individual furbearers and various other information sheets and brochures. In addition, the many field guides, keys, manuals and booklets provided in the accompanying kit are available to address their research needs. Additional information can be gleaned from visiting some of the websites identified in a later resources section. A glossary of relevant terms is included in the back of the Project WILD manual.

The introductions to each of the sections may be copied and used as a handout to introduce the section and prepare students for discussion. Included in each of the section introductions is a list of key terms that may be referenced during the study of that section. You are encouraged to extend the activities with further discussions, additional research and by using some of the activities listed in the extension section at the end of most of the activities. You are welcome to copy any of the activity sections to use as handouts.

## **A Window to the Past**

### **In Pursuit of Furbearers**

Furs have been important to humans throughout history. Clothing and bedding made of fur were necessary to protect early humans from the cold and wet; and it is believed that many prehistoric people traded furs with others for the necessities of life. When Europeans first came to North America they found an abundance of natural resources, one of which was fur. The lure of profit from the fur led to the expansion and settlement of much of the North American colonies. French, English and Dutch fur trappers and traders established a fur trade with Europe which soon thrived. Wealthy Europeans paid top dollar for clothing made of beaver, mink and other furs. In addition to their fur, furbearers were sought for food, medicines, perfumes and oils used to make clothing water-repellent.

The French explorer, Samuel Champlain, set up the first fur trading post in Quebec, Canada in 1608 to exchange goods for furs supplied from trappers and Native Americans. Other trading posts were established as the demand for furs grew. The Hudson Bay Company and other fur-trading companies had been established by 1670. They hired trappers and traders to provide for their fur needs. They were to seek new sources for furs and set up new fur trading centers. Some of the fur trading centers grew into major centers, such as New York, Chicago and St. Louis. By the nineteenth century the John Jacob Astor fur companies were the largest industries in the nation.

Trappers were always searching for new sources of fur, particularly beaver, which was used to make beaver felt hats which were considered very stylish in Europe. Trappers explored deeper and deeper into the wilderness to find and trap beaver. They discovered many major rivers and lakes and were the first Europeans to cross many of the great western mountain passes. Hunter-trappers, such as Daniel Boone, Jim Bridger and Kit Carson opened the west for future settlers. Their trails became the routes pioneers followed when they traveled west in covered wagons.

By the 1830s the demand for furs declined. European fashion dictated that silk be worn rather than fur. As trappers had to find new ways to make a living, many became guides for the settlers traveling west. The decline in the demand for furs came just in time for the continued existence of some of the furbearers in the northeast. As human settlements and the demand for food grew, much of the forests and many of the wetlands were converted to agricultural lands. Habitat loss had begun to impact furbearer populations. Coupled with the intense, unrestricted trapping, furbearer populations were at a critically low level.

## **The Changing Land**

By the mid 1850s nearly 85% of the land in the northeast had been cleared for agriculture. Northern Maine was one of the few exceptions. The changing landscape greatly impacted the wildlife that had traditionally lived there. Many species that had been abundant when Europeans first arrived became scarce or were extirpated from much of their range. Beavers, once plentiful, were nearly extirpated from the northeast. Some populations survived in northern Maine, the Adirondacks of New York and remote areas of eastern Canada. Wolves were extirpated from the northeast, hurried along that path by human persecution. Bobcat, fisher, marten, and gray fox were greatly impacted by the loss of the forests. Mink, otter and muskrats were not only impacted by the loss of the wetlands, but by the loss of the beaver, which played an important role creating critical wetland habitat. Red fox populations benefited from the clearing of the land. There is some question as to whether red fox were initially found in the northeast or if they were brought in by the British for their ever popular fox hunts. Most biologists agree that if red fox were here when Europeans first arrived, it is likely they were not plentiful, certainly not as plentiful as they are today.

By the 1920s many of the farms in the northeast were abandoned. It was much easier to raise crops in the south and midwest, where the soils and climate were more favorable. Abandoned farm land reverted back to forest through the natural process of succession. The land cover once again favored those furbearers of the forest. With new hunting and trapping regulations in place some furbearers populations increased on their own. Others, such as the fisher and beaver had help. Fishers were reintroduced into some states, such as Vermont. Biologists, recognizing the value of beaver in the creation of critical wetland habitat, reintroduced them in much of their range. Being prolific as most rodents are, healthy beaver populations were readily established. Wolves and mountain lions, extirpated from the northeast since European settlement, have not returned. Although much of the northeast is now 85% forested, fragmentation of the forest is impacting furbearer populations. Marten and bobcat, for example, require continuous, unbroken forest habitat. As the human population continues to increase and spread out from the cities, large, unbroken forest tracts are becoming increasingly rare. On the other hand, garbage from the growing human population is a boon to raccoon and skunk populations.

### Mission Possible Answer Key

|          | Fur | Tracks | Scat | Skull |
|----------|-----|--------|------|-------|
| muskrat  | 7   | 8      | 6    | 2     |
| beaver   | 13  | 1      | 9    | 5     |
| otter    | 2   | 10     | 2    | 3     |
| mink     | 8   | 7      | 4    | 7     |
| weasel   | 9   | 6      | 12   | 9     |
| fisher   | 12  | 4      | 14   | 4     |
| raccoon  | 3   | 11     | 1    | 8     |
| marten   | 14  | 13     | 11   | 14    |
| skunk    | 6   | 14     | 13   | 12    |
| opossum  | 4   | 9      | 10   | 6     |
| red fox  | 11  | 12     | 5    | 1     |
| gray fox | 10  | 5      | 3    | 13    |
| bobcat   | 5   | 2      | 8    | 10    |
| coyote   | 1   | 3      | 7    | 11    |

## Mission Possible Work Sheet

Fur

Tracks

Scat

Skull

muskrat

beaver

otter

mink

weasel

fisher

raccoon

skunk

opossum

red fox

gray fox

bobcat

coyote

marten

## Furbearer Curriculum Kit - Contents

### Curriculum/Activity Guides

- Project WILD
- Project WILD Aquatic
- NatureScope: Amazing Mammals Part 1
- Curriculum notebook

### Books and Field Guides

- Peterson Field Guide to Animal Tracks
- Peterson Field Guide to the Mammals
- National Trappers Association Trapping Handbook
- Get Set to Trap: A Trapper Education Handbook
- Scats and Tracks of the Northeast (Halfpenny) (?)
- (2) A Key-Guide to Mammal Skulls and Lower Jaws (Aryan I. Roest)

### Brochures/pamphlets/information sheets

- Instructor Information Sheet (8 ½ x 14) from Trapper Education Program
- Furbearer Management: Myth and Facts (NTA)
- The Role of Regulated Trapping and the Management of Furbearers in VT
- Trapping in the 21<sup>st</sup> Century (IAFWA)
- Assorted fact sheets of 14 furbearers
- Conservewildlife.org furbearer information pages in notebook
- Trapping and Furbearer Mgt. in North American Wildlife Conservation

### Videos

- Fur: Fabric of a Nation (Fur Council of Canada)
- Regulated Trapping and Furbearer Mgt in the U.S. (IAFWA)

### Tracks

- Track cards
- Track and track pattern pages; one for each of 14 furbearers\*
- Track cards and guide (as distributed at WILD workshops) (?)
- Set of 14 furbearer\* rubber track molds

### Scat

- Rubber scat of 14 furbearers\*

### Skulls

- Skulls of 14 furbearers\*

### Furs

- Pelts of 14 furbearers\*

### Photographs

- 8x10 photograph of each of 14 furbearers; fast facts on back of each

### Thematic unit (3 weeks)

\* 14 furbearers of the northeast include: beaver, bobcat, coyote, fisher, gray fox, marten, mink, muskrat, opossum, otter, raccoon, red fox, skunk, weasel (short-tail and long-tail)