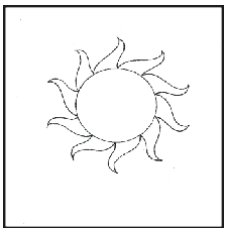
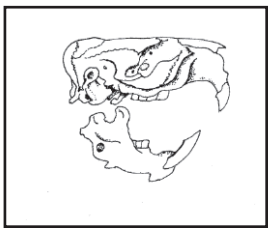
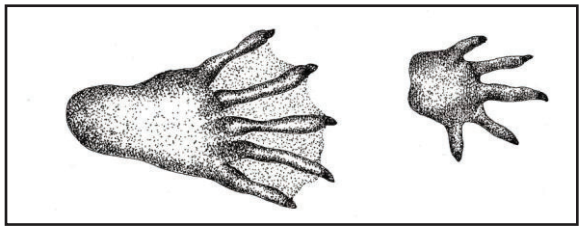
Beaver

Family Castoridae

Castor canadensis



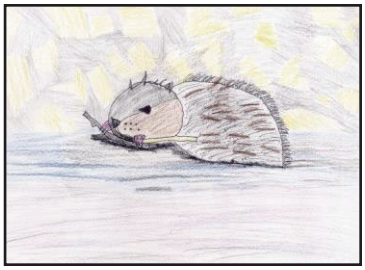




The beaver is the largest rodent in Pennsylvania and in North America. Best-known for its enormous front teeth and ability to cut down trees, the beaver has a unique set of physical and behavioral characteristics allowing it to thrive in a semi-aquatic habitat.

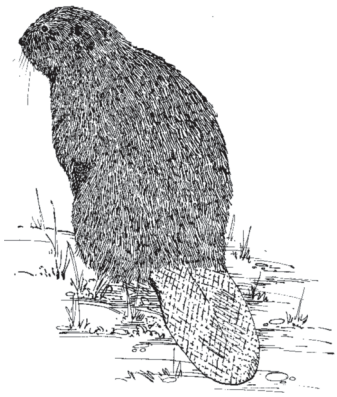
Beavers were plentiful when European colonists first arrived and quickly became a source of income. Their thick pelts were used to make top hats and clothing trims. Beaver fur was so in demand that new trapping expeditions helped propel the expansion of American by initiating the exploration of the West.

But by the end of the late 1800s, uncontrolled trapping had all but eliminated beavers in Pennsylvania and elsewhere. The good news is that an active PA Game Commission wildlife management plan has helped the beaver return to its original territory, and their populations are stable once again. Stable, that is, where beaver habitat is still found in our state.



Like all rodents, the beaver's front teeth never stop growing. They must chew wood and other vegetation to keep their incisors in check. Beavers are **herbivores.**

In addition to wood, beavers eat a variety of soft plant material like grasses, ferns, mushrooms, even algae. They'll take leaves, stems and roots of aquatic plants such as cattails and water lilies. And the bark, twigs and buds of many trees are favored too, especially aspens, alders, cherries, maples, willows and birches.



If there is plenty of soft food available, beavers usually only cut down trees for their dams or lodge repair. **They'll cut and carry branches or small logs to the bottom of their home ponds** and anchor them in the mud. This gives them access to food when the pond freezes over in the winter. Beavers can also create air space under the ice by removing sticks from the dam to lower the water level, if necessary.

A beaver can close its lips behind its large orange-stained incisors. This enables them to carry wood underwater or even gnaw on wood while swimming.

Adult beavers weigh up to 60 pounds. Their stocky bodies can be 40 inches in length, with rounded head, short neck and legs. Their highly-valued coat is glossy brown above and pale beneath with a dense underfur covered with longer guard hairs. The pelt is thick and has a great deal of body fat to insulate the beaver, permitting it to stay in cold water for long periods.

Beaver tails are scaled, wide and flat. Nearly a foot long and six inches wide, the tail is used as a propeller and a rudder when the beaver swims. It also serves as support when the beaver is sitting upright gnawing on a tree or as a signal. When alarmed, the beaver will slap its tail loudly on the surface of the water.

The front feet and long claws help beavers dig and work on dams. But they can easily manipulate food with a small "finger" that acts like a thumb. The broad hind feet are webbed between the toes, which also helps them swim. **Beavers even have a split claw used for grooming on the outside of each hind foot.**

Most food is located by smell, and their sense of hearing is acute. While beavers are powerful in the water and can stay submerged up to 15 minutes, they amble slowly on land. When submerged, **membrane valves seal their ears and nostrils to keep water out**. Their eyesight is weak, but like many aquatic animals, their eyes are placed toward the tops of their heads, enabling them to see above the water while most of their body is hidden underwater.

Even though beavers are well-known for their ability to cut and fell a tree, they cannot make the tree fall in a particular direction. They cut trees within a few hundred feet of their water supply, dragging saplings to their dam or even digging small canals from their pond to the cut tree in order to float logs back to the dam.

Once the tree is down the beaver will feed on fresh greens, buds and twigs growing on the branch tips. The remaining branches are gnawed into pieces used in building dams or lodges. **The dome-shaped stick and log lodges are used for shelter**. The den, which has a small hole at the top to allow fresh air in, can be five feet tall. In winter when the mud-plastered lodge freezes, it is almost impossible for a predator to invade.

The entrance to the lodge is in the middle of a pond and is always below water. But the den itself is dry and located above water. Beavers that live in fast-moving streams or rivers may build their lodge at the water's edge or burrow into the bank to avoid fighting the strong currents. Most beaver lodges are found in remote areas with a water source.

Beavers need water for their own habitat, and their habit of dam building creates a new habitat which benefits many other species. Once a dam is created, an open pond is formed behind the dam. Any trees standing in the wooded valley the beavers occupy may have their roots flooded, eventually killing those trees. Within a few years the dead tree "snags" provide homes for many cavity-nesting mammals and birds (like the pileated woodpecker, below).

The pond the beavers create can be as large as several acres, effectively beginning a chain of events in a thriving, constantly changing wildlife habitat, even long after the beaver has left the area. A variety of birds, reptiles, amphibians, insects, mammals and fish will create diversity as they immigrate to the new pond (great blue heron and painted turtles, below).

In time the beavers will use up their own food supply of timber and move on, but the pond will continue to evolve. Like all ponds, silt begins to accumulate, along with leaves and other plant material, slowly filling in the pond. Once the pond becomes shallow enough, grass will start to grow in the rich, fertile soil.

The pond will succeed into a meadow. Then the meadow will be replaced by small bushes, shrubs and eventually trees. At each stage of **succession** different animals will take up residence to take advantage of the plant life for food and nesting purposes. Insects and small rodents that thrived in the meadow give way to deer, bear, grouse, turkeys and woodland songbirds when the meadow eventually becomes a woodland. Over time **this ever-changing habitat will become a wooded valley again for another beaver to find and change.**

Because beavers play such an important role in creating new habitats, they are considered a **Keystone Species.** They can also be considered a pest especially when their dams cause pastures or roads to flood, or they cut down trees we find important or create unwanted channels leading to erosion problems. But **beavers are important species in their ecosystem, creating important wetland habitat for a variety of other species** that are completely dependent on an aquatic way of life. Like all keystone species, if that one species is removed, the habitat it supports is often drastically changed, sometimes even destroyed. **This makes keystone species vital to certain ecosystems.**

A Simple Review of Beavers

The beaver is our largest rodent—almost four feet long—including their flat, leathery and wide tail. Most weigh between 45 and 60 pounds. That's big! Beavers are called aquatic mammals because they spend so much time in the water. That special tail of theirs helps them swim; they move it back and forth like a boat rudder. They can also use their tail for balance while eating upright or as an alarm. If danger is near, beavers will loudly slap the water with their tail.

Beavers have feet that help them swim. Their big hind feet have five webbed toes that propel them through the water. Their much smaller front feet are used to hold sticks for gnawing and to help them carry stones and sticks to construct their dams. Their fur is long and glossy. They groom their fur with special claws on the hind feet. And they even have **special glands that produce oils to help make their fur waterproof.** Did you know that top hats used to be made from beaver fur? When men wanted to dress in formal black-tie, they often wore a beaver fur top hat.

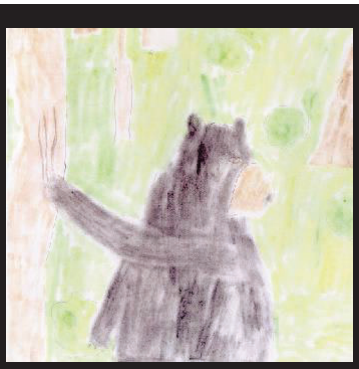
Like all rodents, **beavers have large, sharp, front teeth called incisors**. Beaver incisors are an orangy-yellow color. The big incisors can easily gnaw on wood for food and chopping up twigs for their dams. Beavers have ears and nostrils that are so small they can be closed when the beaver swims underwater.

Tree bark stripped off tree trunks near the ground might mean a beaver is near. They love twigs from aspens, poplars and alders. But **beavers will eat all kinds of plants**, especially water grasses and the roots of water lilies. In the fall, beavers begin to store branches and logs in the water near their lodge or bank burrow so they have food throughout the winter.

When beavers build their large lodges, they dam up small streams and create ponds. All around the pond are canals and runways for carrying food and building materials back to their lodge. The stick and mud dam can be as wide as 15 feet and as high as five feet tall. The dams do more than help beavers. Many other wildlife species like otter, mink, muskrats, deer, bear, waterfowl, waterbirds and grouse benefit from the flooded habitats. But sometimes people think the dams are a problem because of the flooding they may cause.

Beavers live in colonies made up of a family of five to a dozen beavers. Many biologists believe that beavers mate for life. After breeding in the winter, four or five kits are born in May or June. The **kits are born fully furred with their eyes open and their front teeth showing.** Though they only weigh about one pound at birth, beaver kits grow quickly. They will stay in their family colony until about two years old, when they leave home to start their own colony.

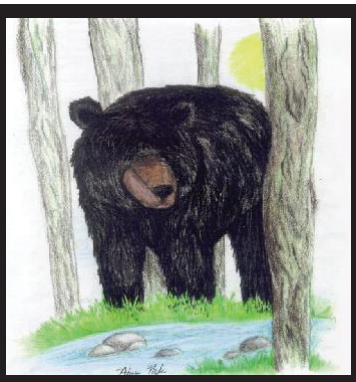
Most rodents don't live very long, but beavers do. **Some beavers may live to be as old as ten to twenty years old!**

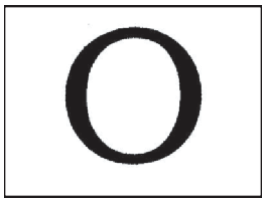


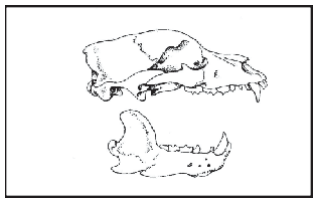
Black Bear

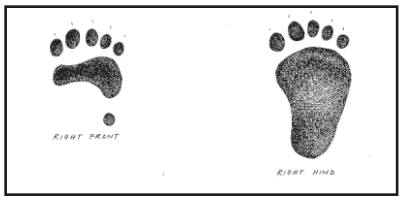
Family Ursidae

Ursus americanus









Like wolves, **Black Bears** have roamed our state since the days before the earliest human settlements. But unlike wolves, the big bruins are still here. Our bear population has actually been growing for decades along with our state's residential development, meaning bears and people are coming into contact with one another more than ever before.

Many encounters occur when bears associate people and their cabins, campsites or backporches **with food.** Learning about bear behavior is an important safety measure, not only for people who live near bears, but for the survival of bears too.

Fortunately, bear encounters in the commonwealth are almost always harmless. However, even if they appear docile, **black bears are large animals capable of amazing bursts of speed and tremendous strength**. At the very least, they need some respect.

THE BEAR FACTS

***Ursus americanus* is the black bear's scientific name; it means "American bear."** Three species of bears inhabit North America, but only the black bear is found in Pennsylvania. The PA Game Commission estimates our black bear population around 15,000 animals.

Black bears appear heavy, but they **are surprisingly agile**; they can run up to 35 mph, climb trees and swim well. They may live up to 25 years. Black bears are intelligent and curious.

Adults usually weigh around 200 pounds. Males are heavier than females, often weighing more than twice as much. Some weigh up to 600 or more pounds, and rare individuals up to 900 have been found. **Pennsylvania is known for its large black bears.**

Males are called boars; females, sows. Their young are called cubs. Black bears measure about three feet high when on all fours or about five to seven feet tall when standing upright.

Bears may be on the move at any time, but they're usually **most active at dusk and dawn**.

MORE BEAR FACTS

Adult black bears make a variety of sounds that include woofs, growls and jaw-popping when they are especially disturbed. Sows communicate with their cubs by using low grunts or huffs. Cubs whimper, chuckle and bawl.

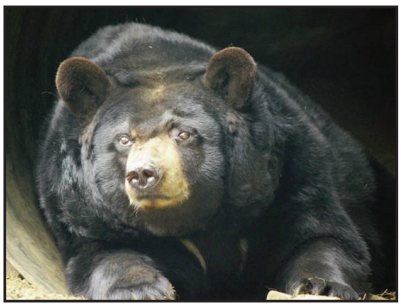
Physically adapted to be predators, their diet actually indicates they are **mostly omnivorous**, eating almost anything from berries, corn, acorns, beechnuts and even grass, to table scraps, carrion, honey and insects. During late summer and fall, **black bears fatten up for winter hibernation** by feeding for up to 20 hours a day, ingesting up to 20,000 calories.

Black bears will also consume almost anything people and their pets eat. **The best way to prevent bears from getting too close is to remove that food source for at least a month or more.** This protects both the bears and us.

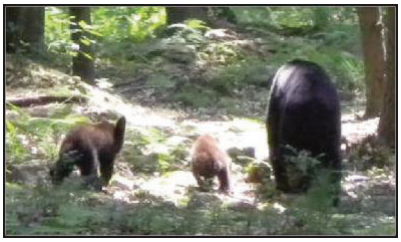
Curiosity, not aggression, makes a bear stand up. Biologists believe that bears can see colors, but their sense of smell is even keener than their eyesight. When something has caught their attention, bears will stand up for a better look around or a better whiff of the scent coming from the direction of that sight, sound or smell.

Despite their name, **black bears are not always black**. They may be cinnamon-colored or even blond, though that is quite rare.

Sows give birth in January with litters of one to five cubs born in the middle of her winter sleep. **But it is not a true hibernation.** The newborns are blind, toothless and covered with short, fine hair. The sow's rich milk enables them to grow quickly, and they are ready to leave the den with the sow in early April. Males do not help rear young.



Most cubs stay with the sow for a little more than a year, learning what to eat and how to hunt by imitating their mother. Very protective, she **will send the cubs up trees if danger threatens.** One of the greatest threats to the cubs is adult male bears who occasionally kill and eat them. When the cubs are about a year and a half old, the sow is again ready to breed and will send the cubs out on their own while she prepares to raise a new family.



Imagine the wintry landscape of a snow-covered woodland.Grouse and nuthatches search for seeds and winter berries while elk and hares gently bed down in sheltered coverts between meals. It's a pretty scene, but you'll rarely see a bear ambling through it. **Bears do not fully hibernate like a groundhog,** but they are usually dormant throughout the winter.

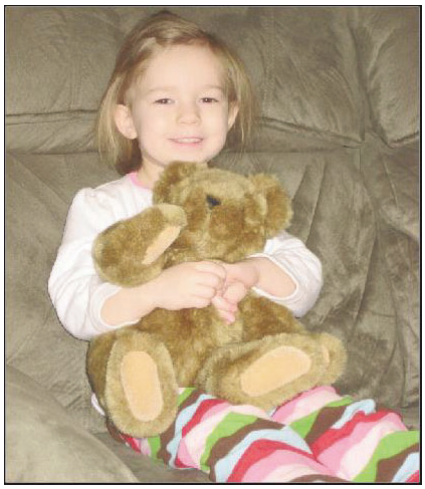
Despite a full thick coat of fur that seems perfectly designed to withstand cold weather, bears succeed by **spending the coldest part of the year in a deep sleep.** Dens could be rock caverns, excavated holes beneath trees or dead falls, in hollow trees or in brushy thickets.

During this extended sleep, a bear's heart rate and breathing slow, and its body temperature drops slightly. They don't eat or pass body wastes. Stored fat helps them make it through the winter.

Amazingly, bear sows usually give birth during this dormancy. Her body is still able to provide milk for her nursing cubs while she sleeps.

Winter is also the time when biologists enter bear dens to check on the health of the sow, adjust radio collars if necessary, and record vital statistics on her newborn cubs.

Ever wonder how the teddy bear got its name? From **Theodore Roosevelt**, our 26th president. Roosevelt was an avid hunter and naturalist. One version of the often-changed story says he was helping to settle an argument between Louisiana and Mississippi in 1902 to determine where the state border was located. During a local bear hunt, a fellow hunter captured and tied a bear to a tree and asked Roosevelt to shoot it. **Roosevelt said killing the animal in such a manner was unsportsmanlike.**



Within days ***The Washington Post*** ran a political cartoon depicting the event. Soon after, some store owners in New York made a few small stuffed bears to sell in their store. One of the store owners wrote to the president asking his permission to call them "Teddy Bears." President Roosevelt granted them permission, but didn't think the bears would sell. Little did he know.

President Roosevelt's daughter Alice was reported to be the first child to ever receive an "official" Teddy Bear, but she wouldn't be the last. Since then, children around the world have enjoyed cuddling a stuffed bear.

How do you study a bear (or any other mammal) if you cannot see it? **Biologists have a variety of methods for tracking bears**. Bear tracks are relatively easy to recognize. Each footprint has five toes and claws that may or may not be visible in the track. **The hind foot is almost twice as large as the front foot.** The hind foot is long and narrow like a human footprint. This similarity and the tendency of a bear to stand up on its hind feet led Native Americans to call bears their "brothers."

Bears create and repeatedly use trails just as people do, leaving behind evidence of their passing. Biologists search for tracks in soft earth or around mud puddles. **They look for claw marks (at right) on smooth-bark trees** or rotten logs that have been ripped apart when bears hunted for insects.

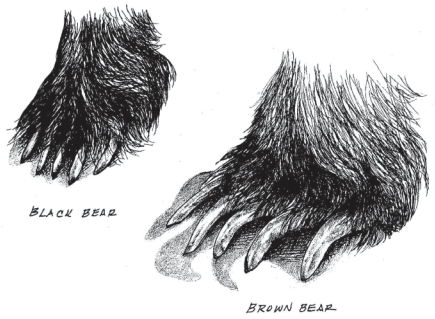
Bear scat is an important method of tracking bears. The scat, droppings of bears, is large and usually has partially digested remains in it such as berry seeds, plant stems or the fur or bones of animals they fed on. Putting a radio collar on a bear to follow it electronically is also a popular method that biologists use to keep track of Pennsylvania's bruin population.

When in bear country, common sense says to make noise. Bears do not like to be surprised. **Whistling, talking loudly and clapping your hands may be enough noise to make a black bear turn in another direction**. *What about grizzly bears?* We don't have grizzly bears (left) in the eastern United States. But if you were traveling out west,wildlife biologists suggest wearing bells around your neck, using a whistle and taking pepper spray with you, just in case a grizzly is near.

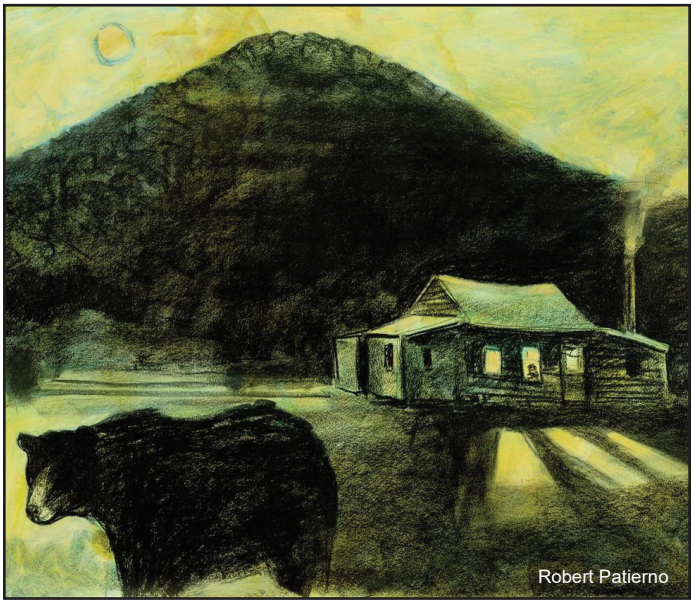
How can you tell black bear scat from grizzly scat if you happen to be out west? A bear expert in Yellowstone National Park once told this funny story around a campfire to convince park visitors to be really, really careful around bears.
"Black bear scat is often filled with berries and seeds, since black bears often feed on fruits and nuts. Grizzly scat can be identified by the smell of pepper spray, and the small pieces of bells and whistles in it!!!"

Different species of bears use their various-shaped claws for different purposes. The shorter, curved claws of the **black bear (right)** are designed for climbing trees where they seek shelter when alarmed.

The larger claws of the **brown bear (far right)** are ideal for digging into prairie dog burrows or shredding tree bark to find insects underneath.



Today **the status of black bears in Pennsylvania is good**. In 1980 the state's bear population was estimated at approximately 4,500. Over twenty-five years later those numbers have tripled to about 15,000 animals. **Because the population is considered stable, there is an annual bear season** lasting on average one to several days, depending on the number of bears taken during the previous season. In recent years, an average of 3,000 bears have been killed. According to the PA Game Commission **"Pennsylvania is home to world-class trophy bears,** providing hunters with the possibility of taking a bruin that weighs 700 to 800 pounds."



A Simple Review of Bears

Maybe you grew up watching *Yogi Bear* cartoons. Maybe you went to sleep at night having *Goldilocks and the Three Bears* read aloud to you. Maybe you still have a Teddy Bear tucked into your bed. **We have all grown up with an image of bears,** but few of those images of bears are like the real bears.

Only one bear lives in Pennsylvania—the Black Bear. They are our largest mammal. We probably have the largest black bears in the country. Black bears are covered with thick black fur and have a brown muzzle. Some black bears come in different shades of brown, too. **Bears may look warm and cuddly, but they are strong and really fast, faster than any person.**

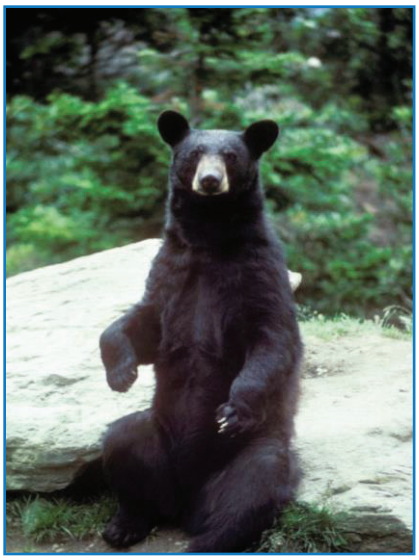
They are big predators designed to kill. **Fortunately, most black bears are only interested in killing insects and fish or eating berries, insects and honey**. They will also eat carrion (dead animals).

Bears walk on the soles of all four feet. This is called being a **plantigrade**. They can also stand up on their hind feet. They do this to get a better idea of what's going on around them. Their footprints and their posture reminded native Americans of humans, so **many tribes refered to bears as their "brothers."**

Bears are very intelligent. They may seem very shy, but they just prefer to be secretive. **Black bears climb trees when they feel threatened.** Their shorter, curved claws are well-adapted for pulling them up into the branches. They are also good swimmers.

Bears are omnivores. They belong to the **Order Carnivore** and have large canine teeth like most carnivores. Bears also have flattened back teeth called molars that help them grind up plant matter. Bears eat both plants and animals. A true carnivore like a wolf has sharp molars for tearing meat. Because bears are so big, they spend a lot of their time rooting for food.

Black bears (below center) belong to the **family Ursidae**, which includes polar bears (below left) and grizzly bears (below right). Black bears may be the smallest of these three bears, but some bears in our state have reached nearly 800 pounds. They are only considered small compared to something the size of a polar bear.



Bears all have a **stocky build** with a short, stubby tail. They have very large skulls with a long nose and a **superb sense of smell**. Their eyes are small for their large heads and their ears are small and rounded. Their eyesight and hearing are not their best senses.

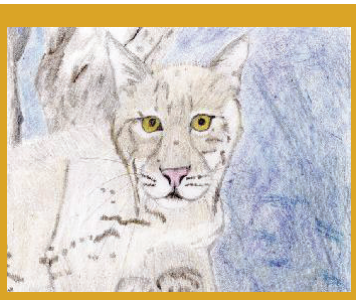
Bear cubs are born in a den. They are almost naked, very tiny and their eyes are closed. The cubs nurse their mother's milk for up to one year. Then they begin eating small amounts of the same foods their mother eats. They may not leave the den until they are two to three months old. **They always travel with their mother who protects them fiercely.** You never want to get between a sow and her cubs. These normally quiet animals might become aggressive, and you could be hurt.

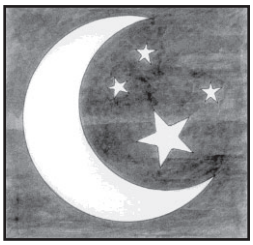
Bears usually live alone unless the mother bear (sow) is raising cubs. Black bears sleep a lot in a den like a hollow tree or small rock cave. **Most of their winter is spent sleeping. This helps them save energy when food supplies are low.** They do not hibernate. We call their deep sleep a torpor. The cubs are born when the sows are in a tupor sleep. **Even during the warmer months of the year, bears spend a great deal of time resting.**

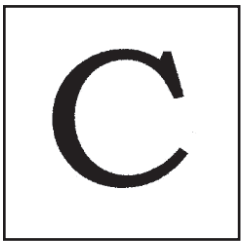
Bobcat

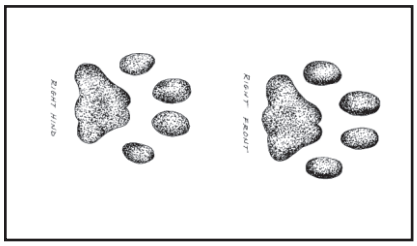
Family Felidae

Felis rufus

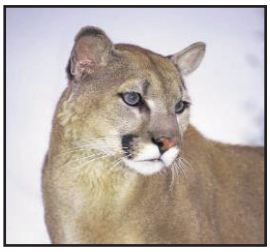








Of America's three wild cats, **only the <u>Bobcat</u> (*<u>Lynx rufus</u>*) is officially listed as a resident of Pennsylvania.** Bobcats (top right) are considered **rare**.



Sightings of **<u>Mountain Lions</u>** (*<u>Felis concolor</u>*) abound throughout the state, but mountain lions (center) are still considered **an extant species**. That means they used to live in our state but are no longer found here. As efforts continue to protect and restore our state's pristine forests, perhaps the big puma will once again stalk our woodlands on a regular basis.

Our bobcat is similar to Canada's **<u>Lynx</u>** (*<u>Lynx canadensis</u>*), (below right). But **the bobcat is smaller with less prominent facial and ear tufts.** Sometimes the bobcat is called a bay lynx or red lynx.

Despite their smaller size, bobcats possess the same predatory behavior of all cats: **very sharp senses of sight, smell and hearing.** Bobcats are true **carnivores.** Their four large canine teeth are capable of piercing their prey, and their sharp molars enable them to further cut their food before gulping it down.

At maturity, a bobcat averages 36 inches in length and weighs 15–20 pounds, with large individuals as heavy as 35 pounds.

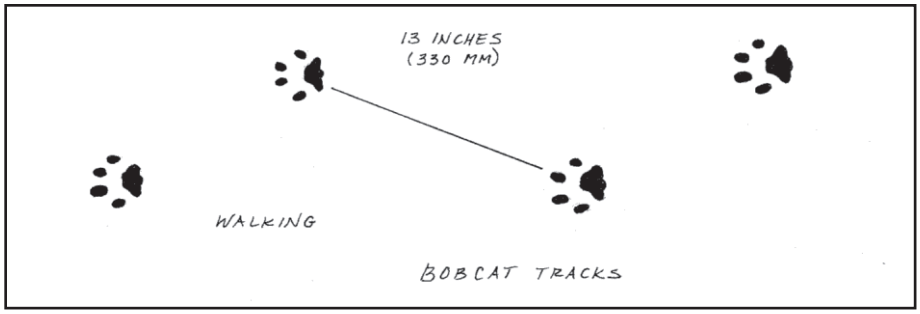
Does it roar or purr? Most small cats like bobcats or house cats belong to the genus *Felis.* They purr because the cartilage at the base of their tongue does not move. Big cats like lions belong to the genus *Panthera.* They have a flexible cartilage that allows them to roar. The exception? The cheetah, a big cat that only purrs. But bobcats do make noise. **Bobcats can wail, howl and have an ear-piercing scream,** especially during breeding season.

Bobcats have large eyes that are well-adapted to see in the dark. Like most **nocturnal** creatures, their pupils are slit-shaped or elliptically shaped in bright light. But in low light (at dusk, dark and dawn) they can open wide to admit what little light is available. Most animals that are **diurnal** (active during the day) have round pupils that stay round, no matter the lighting conditions. Bobcats could also be considered **crepuscular** creatures, active during dawn and dusk, too.

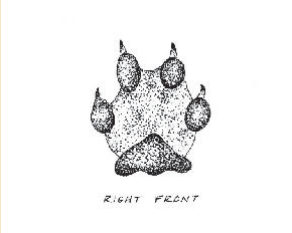
Nocturnal or elliptical pupil

Two other eye adaptations help bobcats see at night. Lots of **rod cells** in their eyes allow them to pick up any available light at night, such as moonlight. Diurnal creatures have more cone cells. Those help us and other diurnal animals see color. It is believed that bobcats are only able to see in shades of gray. A **reflecting layer** within their eye helps them separate their prey from its surroundings, helping bobcats pinpoint their attack.

Diurnal or round pupil



Bobcat tracks



Fox tracks

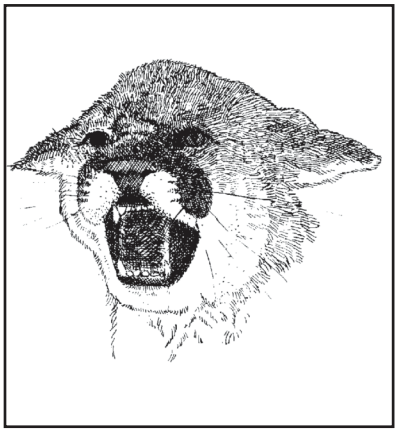
Cats are the only carnivore with retractable, hooked claws. They have four clawed toes on each of their four feet. Their claws stay retracted to keep sharp for catching prey. This physical adaptation demands a change in hunting tactics from other carnivores. Hunters like wolves and coyotes use their claws for traction as they run down their prey. Bears use their claws for digging prey, like ground squirrels, out of burrows. But **cats stalk their prey**. When they pounce for the kill they, extend their very sharp claws to grab hold of their prey, then quickly dispatch it with a suffocating bite to its throat.

Because the claws of cats are retracted within their paws, their **tracks should not show any claw marks.** This helps distinguish bobcat tracks from other predators in Pennsylvania such as the coyote or fox, both of whom should have short claw marks showing in a clear track impression.

Bobcats are gray-brown with dark spots and bars that are especially noticeable on the legs. The underside of the neck, belly, lips and chin are white, and the ears are tipped with black. The bobcat's distinguishing "ruff" of longish hair extends out and downward from the cheeks.

Their hindlegs are muscular and longer than their front legs, giving them a **bobbing gait** when running. That bobbing gate **is one of the ways it got its name**. Another is their short or bobbed tail. They are excellent swimmers and equally agile jumpers, often choosing to leap across creeks or use fallen logs to walk across them. Bobcats can easily climb trees and will extend and use their claws to secure grip.

If you need to **design an efficient predator,** you might want to use a cat as your model. They have **large eyes placed forward** on their face, just like people. This eye placement gives them **binocular vision** and depth perception. This is extremely helpful when they are trying to judge distance. For example, how far does the bobcat have to pounce in order to land on and catch the rabbit it sees?



Their senses of **eyesight and smell are superb**, allowing them to quietly search for prey and stalk it from a safe distance before closing in for the kill. Not only are they equipped for night vision, but their long **stiff whiskers** help them "feel" their way around in the dark, giving them another advantage over their prey.

They have large, impressive **canine teeth** for biting and killing. Their **molars are sharp** and designed for shearing meat from bones. Even their **tongue,** covered with raspy, pointed papillae, is designed to help scrape meat from bone.

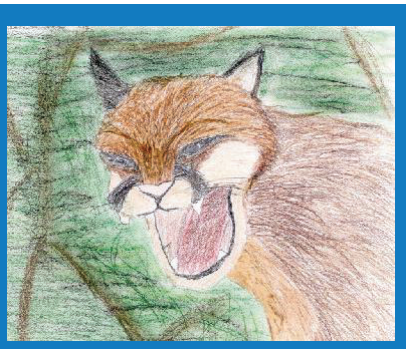
As discussed earlier, their **claws** are retractable and kept pulled up within their paws to keep them sharp until they are needed to grasp prey.

Bobcats breed from late February to early March. After a 50–60 day gestation, up to four fully-furred kittens are born in a leaf and moss-lined den (rock crevice, cave, hollow log). Blind and helpless at birth, the kittens will spend several months with their mother while she teaches them to hunt and kill prey. Adult male bobcats or great horned owls may pose a threat to the kittens, but once bobcats reach adulthood their only real enemies are human.

Bobcats hunt mostly small animals like rodents, birds, rabbits and hares, but they are capable of taking larger prey like a skunk or even a porcupine. Like all predators, they will take anything if it is available and easy—fish, insects or crippled deer or carrion. They will often cover the remains of larger food items with leaves to cache it for another meal. They **mark their territory** with their feces, urine and scrape marks, using odor to notify other bobcats of their presence.

Bobcats are generally found in our northcentral and northeastern counties, preferring deep forests, swamps and our most mountainous areas. According to the PA Game Commission, their numbers have increased during the past 20 years, and they are continually expanding their range. But their status is considered vulnerable.

A Simple Review of Bobcats & Wild Felines



Bobcats are wild felines that belong to the **order Carnivora.** They are true **carnivores**. Other carnivores like coyotes and bears eat meat, but they also eat fruits, seeds, nuts and berries. Not wild felines. The wild cats rarely eat anything except other animals. **The bobcat is the only wild cat left in Pennsylvania**. Mountain lions (top right) disappeared long ago due to over-hunting and loss of habitat. The Canada Lynx (top left) lives north of us and looks like our bobcat, but it is bigger with larger ear tufts.

Wild cats quietly stalk their prey, thanks to furred feet with large, soft pads. They have four toes on each foot and sharp, curved, retractable claws, retracted to keep sharp for grabbing their prey. Sometimes bobcats will pull their claws out to scratch tree trunks or other rough objects, just like your pet cat.

Bobcats are muscular with **hind end taller than their front end.** This gives them a bobbing gait when they run. This and their short, bobbed tail gave the bobcat its name! Like all cats, they are very agile climbers and are capable of extreme bursts of speed.

Scent glands located on the feet and base of a cat's tail help them mark their territory and announce their arrival to other cats that may be around. They can travel far in search of another cat, up to 20 miles, especially during breeding season.

Cat skulls are flat-faced due to their short, blunt nose. They have **large eyes facing forward, great for binocular vision.** The eyes are well-suited for nocturnal hunts, and their large, stiff whiskers help them "feel" in the dark. Large, powerful canines and sharp molars are used for tearing at prey. They even have a raspy tongue for licking meat off the bones.

Cat ears are upright, and bobcat and lynx have **black tufts** of hair rising off the ear tips. They also have thick ruffs of fur on their cheeks. Like most cats, they are considered very intelligent.

Wild cats are shy and secretive. Most of the year they are solitary animals, except when the male seeks out a female to mate. One litter of kittens is born each year, and the female will remain with the young until they are able to hunt on their own. After that, all family members split, and the cats remain alone until the following year during breeding season.

Coyote

Canis latrans

The coyote is currently Pennsylvania's largest canine and is bold and curious. Wolves were unfairly portrayed as menacing, though to be fair, generalizations are usually rooted in reality and the elusiveness of wolves created an illusion of danger. In contrast, the coyote seems well-adapted to human activity. They are found in every county in Pennsylvania. Our coyotes are big, too. Biologists believe eastern coyotes are hybrids with Canadian wolves.

So what does a 50 lb. coyote eat? *Anything it wants*. The coyote is an opportunist, feeding on anything from deer to mice to vegetation. Deer figure heavily in their diet, but much of that food comes from carrion (already dead). Rabbits, woodchucks, birds, insects, fruits and seeds make up the remainder of their food. They are still considered carnivores and have teeth like a carnivore, but they sometimes eat more like an omnivore. Like all canines, coyotes have 42 teeth.

Coyotes are now found in every county in Pennsylvania. Our adult males typically weigh from 45 to 62 pounds. Females are smaller, 35 to 40 pounds. Total body length ranges from 48 to 60 inches, with pelage colors ranging from light blond, reddish blond, gray to dark brown washed with black, and black with black markings or lines down the front of the front legs. Their ears are erect, and their bushy tail is usually held down.

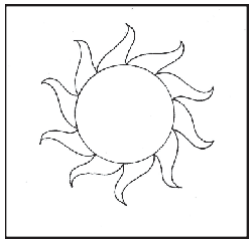
Coyote habitat is heavy brush cover, such as clearcuts, and they often live along edges between forest and agricultural areas where prey is abundant. Hunting may be done in pairs or alone. They are primarily nocturnal but will hunt during daylight hours, especially in the morning. Like all predators, they will hunt for food whenever their prey is available.

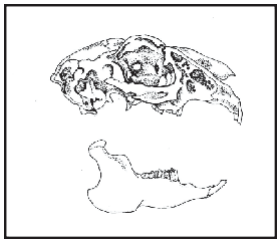
Coyotes bond in pairs for several years. **The eastern coyote does *not* live in organized packs like the wolf,** but rather with just a mated pair and their offspring. They do occasionally live in extended family relationships for a year or more if older pups have not moved on. If the territory can support them, a larger social group may sometimes include a pair of adults, sub-adults (usually less than a year old) and non-breeding individuals that are more than one year old. In this case, coyotes other than the mated pair may help provide food to a growing litter, which are born from mid-April to early May.

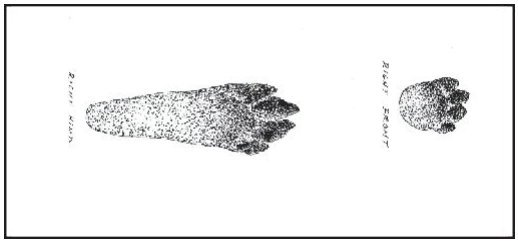
Coyotes yip, bark and howl like wolves, but since they do not live in large packs, rarely sustain long communicating howls like wolves . **They will howl at human noises.** The sound of neighborhood fire engines sometimes sends them into a chorus of howls in response to the sounding alarms.

Rabbits & Hares

Order Lagomorpha







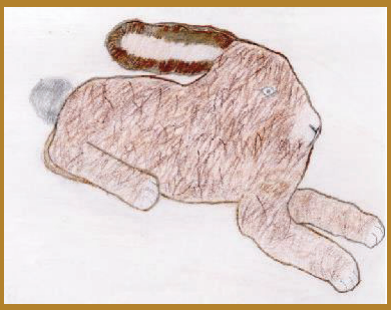
A lot of animals want to feed on **rabbits & hares**. It's an unfortunate place to be in the food chain. But all is not lost, for both rabbits and hares are well-adapted to this constant threat from predators. In fact their populations are genetically stronger, thanks to the evolution of their species in response to the constant assault on their populations.

One of the ways they ensure the survival of their species is to **produce lots of young.** Most will not survive. But if adults can produce enough young, chances are some bunnies *will* survive to adulthood and produce their own young. Constantly replenishing their populations is a successful survival strategy for rabbits and many other small mammals, like mice and squirrels.

Other survival tools are specific **physical adaptations**. Large, movable ears give rabbits a sharp sense of hearing from every direction. Their large eyes enable them to see well. But perhaps more important than the size of the eyes is the location of the eyes on the head. Like most prey species, rabbit eyes are located on the sides of their head. This gives them a wide field of vision which helps them see predators approaching from any direction.

The **ability to run—and hop—in every direction . . . is a survival tool.** Long hind legs paired with short front legs may not seem like a recipe for speed, but they give rabbits short bursts of speed when needed and a zigzag running pattern. This doesn't allow them to run long distances, but it is very effective for evading predators. And believe it or not, rabbits can even swim if they have to.

Rabbits and hares are **well-camouflaged**. Their natural cream, buff and brown fur helps them blend into their surroundings. They are also adept at staying perfectly still, which helps because camouflage only works if they are motionless.



Eastern Cottontail

Sylvilagus floridanus

The **Eastern Cottontail Rabbit** is probably the second most recognized mammal in our state, after the white-tailed deer. Found in both suburban backyards and wild thickets and hedgerows, rabbits are popular with homeowners and sportsmen alike. Upright ears, large eyes and explosive speed give clues to how rabbits survive in a world full of predators.

Please don't call me a rodent! It's true that I have teeth designed for gnawing, but I am not related to mice, rats or other rodents. I have more incisors than a rodent does, and **I have a digestive system similar to a deer.**

Cottontails can be up to 18 inches long and weigh two to three pounds. Female rabbits are slightly heavier than male rabbits.

Cottontail litters are usually born from March through September. Litters range from two to nine bunnies who are born blind and furless after a gestation of about 28 days. The **doe or female** averages four litters per year. She lines her nest with dried grasses and fur that she plucks from her chest and belly. The nest is a cup-shaped depression about five inches across and four to six inches deep.

Once the eyes of the bunny are open they are able to fend for themselves, no matter how helpless they may seem. They might still spend a good bit of time in the nest with their littermates, but if you find small bunnies out and about, leave them alone. They are okay and are much safer on their own. **Do not touch or hold them.** Your body scent will lead a dog or cat right to them, and that could lead to their injury or death.

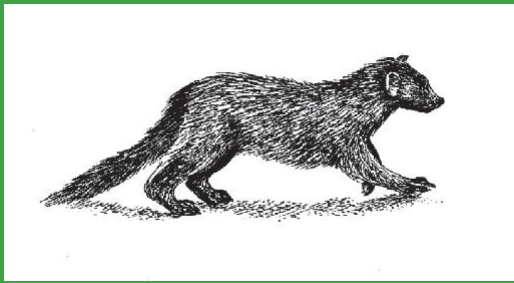
Rabbits inhabit patches of briars, overgrown fields, hedgerows and suburban neighborhoods. In summer they feed on grasses, clover, leaves, fallen fruit and twig buds. **And let's face it–they also love to feed in your garden and the farmer's fields!** But whatever they feed on, there is usually cover nearby to ensure protection from predators.

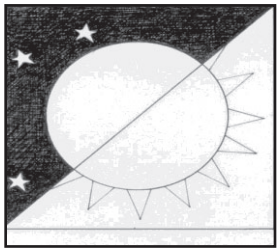
In winter, rabbits will switch their diet to items like the canes of wild bramble bushes (raspberries, blackberries and wineberries), tree buds, soft twigs and vines. And rabbits love to eat tree bark off young saplings in the winter. This can lead to **tree girdling**, a circle of bark chewed off the tree. Deer will do the same thing. Girdling can kill a tree, but you can try to protect newly-planted trees in your yard by wrapping the tree bark at about rabbit (or deer) height.

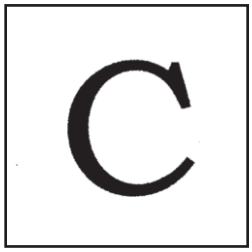
Fisher

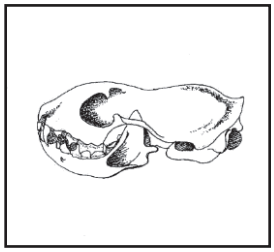
Family Mustelidae

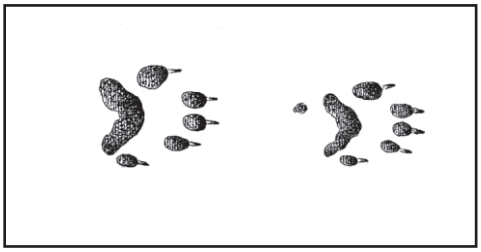
Martes pennanti











A Fisher looks a lot like a mink overall, but larger. They weigh about the same as a red fox, but their legs are much shorter. Males can weigh twice as much as females. Their fur may appear black and shiny from a distance, but up close the fisher has a grizzled dark brown coat with black on the rump and tail. Not that any of these field marks will help you. **Only recently has the fisher has been reintroduced into Pennsylvania.** Finding a fisher would be really hard to do. They are considered rare.

Once widely distributed throughout Pennsylvania, fishers were essentially eliminated from the state by the early 1900s as a result of unlimited trapping and timber harvesting. Wildlife management plans to preserve and restore some of the state's forestland had led to a slight increase in fisher populations. The **Pennsylvania Fisher Reintroduction Project**, established in 1994 by the PA Game Commission and the Pennsylvania State University, combined with restoration efforts in neighboring states to help to re-establish their population. They are not yet considered a common sight, but they have made a comeback and will continue to do so if we continue to restore our native mixed forests.

At home in trees, fishers are agile and active predators capable of quickly climbing trees. They are comfortable enough among the treetops to sometimes just hang out in an old owl or hawk nest. They nest in tree cavities high above the forest floor and even hunt squirrels and porcupines among the branches, but most of their hunting takes place on the ground.

Despite their name, fishers rarely eat fish. They are **carnivores** and like to hunt snowshoe hare or rodents. **Fishers are one of the few predators willing to take on porcupines**. They have learned to flip the porcupine onto its back. Once in that vulnerable position, the fisher bites the porcupine's soft throat and belly while trying to avoid the long sharp quills. Fishers will also eat insects and berries, and during hunting season will feast on leftover offal from a deer kill. As a matter of fact, they are great scavengers.

Fishers need large older timber stands of unbroken deciduous or coniferous forest. They are rarely seen in open areas. As wildlife management plans in the state encourage the return to large tracts of forests, the fisher may be able to recover.

Fishers are active any time of day or night over a habitat range of up to 10 miles. They are **solitary animals**, except during the breeding season or when the female is raising her pups. One litter is produced each year with one to three **kits born in April in a tree cavity.** The young pups stay with their mother until about six months of age, in early fall, when they move on to find their own home territory.

Fishers are having some luck with reintroduction efforts. Other animals related to fishers used to live in Pennsylvania and are no longer found here. The **Marten** (*Martes americana)* is pictured below left, **Badger** (*Taxidea taxus*), below center, and **Wolverine** (Gulo gulo), below right.

All three are now considered **extirpated species of uncertain historical occurrence** in Pennsylvania. *Wow, that's a mouthful.* What exactly does it mean? In short, they probably once lived in our state. All have been seen on very rare occasions during the past century. There has been discussion to reintroduce the marten, but not the badger or wolverine.

A Simple Review of Fishers

Like the weasels they are related to, **fishers have a long body with short legs**, rounded ears, thick coat and a bushy tail. They have five toes on each foot. Their **small, sharp claws make them excellent climbers,** which is good because they spend a lot of time in the trees. They even hunt animals like squirrels and porcupines up in the trees. Not too many predators can take on a porcupine, but a fisher will. For their size, fishers are very powerful little animals.

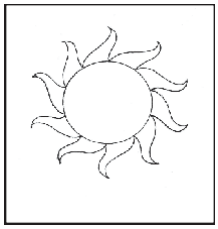
Fishers are secretive and rarely seen in the wild. Here in Pennsylvania they had all but disappeared when we cut down our forests to make room for our towns and cities. Now our state is reintroducing the fisher into protected wild forests. Fishers are still very hard to find and will only live in woodlands with little-to-no human activity.

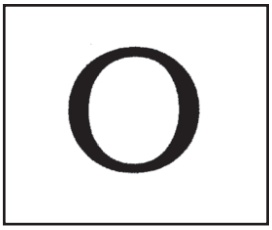
Young fisher kits are raised in dens in rotting logs or tree cavities (hollow trees). If a predator tries to disturb them, the mother will sometimes move her young, several times if necessary. Male fishers do not help raise their young. Litters are small with just a few kits each year.

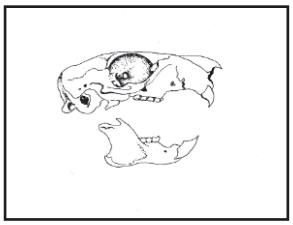
Fishers communicate with each other by scent marking, just like your pet dog. Even though they are not much bigger than a house cat, they are rather fierce predators. Their hearing, sight and sense of smell are all very good. While these carnivores hunt for prey in the treetops, they scavenge for other food on the ground. In addition to squirrels and porcupines, fishers will eat any small mammal it can kill. Occasionally they will eat wild fruits and berries, too.

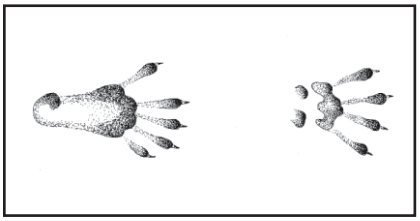
In addition to their **natural climbing ability**, fishers can also swim. As adults they have few predators. Their only real threat is from habitat destruction.

The Squirrels
Family Sciuridae









According to the PA Game Commission, in the year 1749, colonial farmers were so fed up with the abundance of gray squirrels that over 600,000 bounties were paid on their heads. That's a lot of squirrels, and those numbers don't consider the many thousands that were undoubtably hunted for the dinner table. Despite the loss of much of the state's forests, **two and a half centuries later, squirrels still dominate much of the commonwealth's wildlife habitats.**

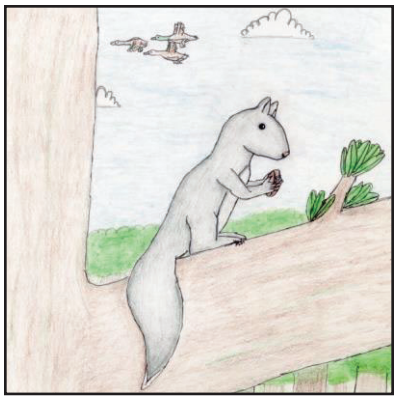
Although squirrel populations have decreased, they are still Pennsylvania's most popular small game mammal. The gray squirrel is our most common squirrel, but **we have four species native to our state: gray, fox, red and flying squirrels.**

Whichever species may live on your property, squirrel behavior is familiar to almost everyone. They can leap from tree branch to tree branch with great agility or quickly scurry up and down tree trunks. A large, bushy tail helps keep them balanced them during their acrobatics.

Enabling this agile lifestyle are keen senses of sight, smell and hearing. All except the flying squirrel are diurnal, active most in the early mornings and late afternoons. The flying squirrel is entirely nocturnal, escaping much notice from residents because of its secretive nighttime behavior.

Woodlands are essential to all squirrel populations. The type and amount of vegetation determine which squirrels are found there. Gray squirrels prefer the oak-hickory-maple forest's more diverse food supply of mixed maples, oaks, hickories. Fox squirrels prefer a wooded edge near a corn crop. But it's not just the mast they are looking for; it is the diversity of hollow dens and tree cavities a woodland provides.

Mast is a crucial part of a squirrel's diet. The amount of acorns, hickory nuts, walnuts and beechnuts produced by mature trees each fall is a key factor in that year's squirrel population. At other times of the year they will feed on berries, mushrooms, pine seeds and dogwood, wild cherry and black gum fruits. Corn is a favorite treat, but they only eat the germ at the base of the kernel. The buds and flowers of red and sugar maples become an important source of energy in early spring.



<u>Gray squirrels</u> (*<u>Sciurus carolinensis</u>*) **are Pennsylvania's most plentiful squirrels.** With their silver-gray coat, creamy belly and broad, bushy tail, grays are fairly large at one and a half pounds; only the fox squirrel is larger. Adults are about 20 inches long, including a ten inch tail. Some grays can be rusty or brown and melanistic gray squirrels (black) are not uncommon.

Gray squirrels **build leafy nests in the crotch of tree branches** close to their food supplies. They also use tree cavities, but leaf nests are cooler in summer while cavities are used during the remainder of the year.

Breeding season is usually in late winter or early spring. First litters can be born as early as late February with second litters born in July or August. Four to five young are born blind and helpless in each litter. The tree cavity is usually where the young are raised and nurtured for up to several months.

The **<u>Red Squirrel</u>** (*<u>Tamiasciurus hudsonicus</u>*) is only half the size of a gray. They are less than half a pound and only 12 inches long, including its tail. The red squirrel has a reddish coat with off-white undersides in summer, but in winter the coat grows a bit grayer with reddish highlights. **Red Squirrels also grow ear tufts in winter.**

Sometimes called pine squirrels because of their preference for nesting in conifer or evergreen trees, reds usually nest in cavities at the base of a tree near the ground, as opposed to the 40–60 foot height of a gray squirrel's nest. Otherwise their behavior is similar to gray and fox squirrels.

Their diet is similar to other squirrels except **reds like to eat the immature, green cones of the white pine.** They also tend to bury nuts in large groups or caches instead of one at a time. Rather than underground, they will store their food in a hollow log if one is available.

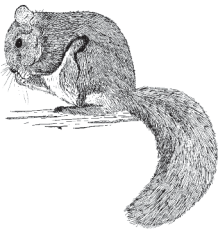
The breeding season is similar to grays, but **red squirrels seem more tenacious** and despite their size will aggressively drive gray squirrels away from their territory.

<u>Fox Squirrels</u> (*<u>Sciurus niger</u>*) **are the largest squirrels** in Pennsylvania and are considered **uncommon.** They are especially fond of open, groomed settings, like parks with some wooded areas found mostly in our southern and western counties.

They look like big gray squirrels but weigh almost two pounds. Their coats are gray to reddish-gray with pale, buff-colored undersides.

Fox squirrels mate in January, with **only one litter each year** and just two-four young born in late February or early March**.**

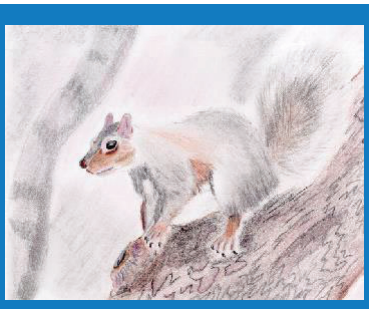
Flying Squirrels (*Glaucomys volans* & *Glaucomys sabrinus*) are the most physically distinct of our four squirrels. Our **smallest and only nocturnal squirrel**, flying squirrels are about eight inches long with a three-inch tail and huge black eyes adapted for night vision. The large surface area of the eye allows more light to be absorbed. They have an abundance of rod cells, which enables them to take advantage of whatever low-light conditions they encounter.



Their fur is a plush and soft grayish-tan with a loose flap of fur-covered skin between their legs. **This "membrane" is what enables them to glide from treetop to treetop.** Flying squirrels cannot really fly. But when they extend their legs and stretch their skin membrane tight, they can soar, gliding downwards up to 40 yards. They use their broad, flat tail as a rudder when airborne.

Flying squirrels are hard to observe. In addition to being nocturnal, **they are almost completely arboreal**, rarely coming down out of the trees. They nest in hollow tree limbs or abandoned woodpecker cavities, bearing two-six young in a spring litter. Occasionally a second litter arrives mid-summer. Their food preferences and eating habits are similar to our other squirrels.

A Simple Review of Squirrels



All of our squirrels live in or near leafy forests and eat a lot of mast. Mast means nuts: hickory nuts, acorns, walnuts, maple seeds, beechnuts and such. Those foods they don't eat right away are stored for winter food by being buried. Of course the squirrels can't really remember where they left every nut they buried. The mast left behind, in time, grows into trees, the squirrel's preferred food trees. **Without knowing it, squirrels replant their own food supply.**

Like other rodents, squirrels have four front teeth that never stop growing. This way their teeth won't be worn down from their constant gnawing. Those incisors are perfectly suited for eating plant materials, but squirrels are really **omnivores**. They will sometimes eat small animals like insects, bird eggs, even baby birds.

Three of our squirrels are diurnal, most active during the day. But one, **the flying squirrel, is nocturnal**. The gray squirrel is most commonly seen during the day. It has grown comfortable around our homes and the often plentiful source of bird seed so many homeowners place outside.

All have long, bushy tails and scamper when they move on the ground or among the tree tops. Their plush coats vary from the familiar gray squirrel to the reddish gray of the fox and red squirrel, and the velvety gray and white of the flying squirrel.

Most squirrels are noisy and energetic. The largest of Pennsylvania's squirrels is the fox squirrel. It looks like a bigger gray squirrel with a bit more rusty coloring to it. The red squirrel (right) is a smaller, reddish version of the gray squirrel. In the winter, red squirrels grow ear tufts. **Everyone knows the gray squirrel** (bottom left)**.**

Flying squirrels (at top left) **are harder to find**. They usually only come out at night and they live like birds, up in the tree tops in nests or in tree cavities. They are really good at hiding if they happen to be out during the day. They can glide from tree to tree, but they cannot fly.

Flying squirrels glide by extending their arms and legs with flaps of skin between, which provides a winglike surface. The furry skin membranes are called patagia. These squirrels can glide as far as 150 feet. Their tails are furry but kind of flat, acting like a rudder to steer their flight. They have black bulging eyes, bigger than the larger squirrels but perfect for a nocturnal life. They also have something called "feelers" which are big, sensitive whiskers to help them move about at night. Flying squirrels also mark their travels by using scent glands in their cheeks.

Those big leafy clusters you see high up in tree forks in winter when the leaves are off the trees **are squirrel nests**. But winter is not the time the squirrels use them. During cold weather, squirrels prefer a protected tree cavity for warmth or for their earliest litters in late winter. The leafy nests may be used to raise their young in summer.

Two to eight young may be born in several litters each year. The babies are dependent on their mother for several months before they head out on their own.

Gray, red and flying squirrels are common throughout the state. **Fox squirrels are uncommon** and found only in the western and southwestern part of our state. They are called fox squirrels because their fur looks like a red fox.

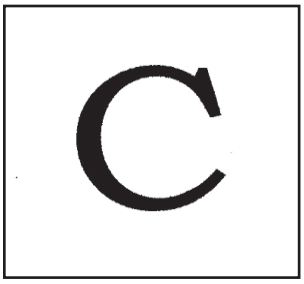
Grays like mature deciduous forests with large trees that provide lots of nuts. **Red squirrels love coniferous forests** with evergreens like white pine and hemlock trees and eat the seeds found in the cones.

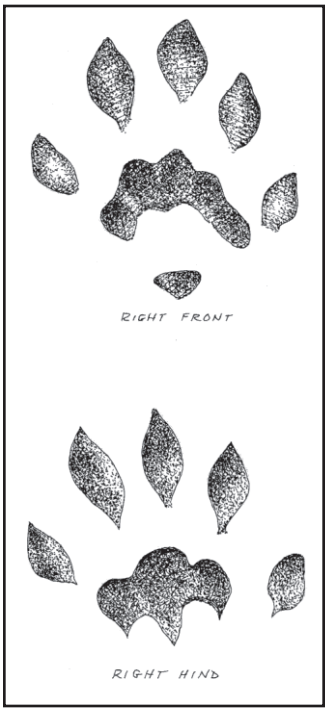
Red squirrels even eat the sugar from maple trees. They'll bite into the bark to let the tree sap ooze out, then return later when the sap has thickened. Despite their smaller size, reds can easily defend themselves against the larger grays and have even been known to kill baby gray squirrels. They normally live together peacefully.

River Otter

Family Mustelidae

Lutra canadensis





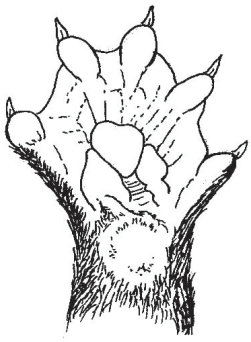
Otters are aquatic mammals that find most of their food in or near water. They love fish, frogs, crayfish, snakes and turtles (and their eggs), worms, insects, and the occasional muskrat. Otters can easily crunch through the shells of snails and mussels. Though they are considered **carnivorous**, they will eat aquatic plants.

Fast, acrobatic swimmers that can propel themselves underwater for up to a quarter-mile and stay submerged up to four minutes without surfacing for air, otters can dive to 50 feet with the help of **valve-like structures that seal their ears and nose to keep out water.** Body flexing in an up and down motion pushes them through water while their feet and tail help them steer.

Otters have **excellent hearing and superb eyesight underwater** and fair eyesight on land. They have a keen sense of smell and long, stiff, sensitive whiskers just behind and below the nose. These whiskers are sense organs to help otters search for food in turbulent or murky water.

Consider yourself lucky if you ever see a river otter in the wilds of Pennsylvania. **Otters are secretive members of the mustelid family** that do not tolerate a lot of human activity. Good otter habitat requires clean water that supports the fish and other aquatic creatures the otters depend upon for their survival. Otters could be **considered a keystone species,** a species whose habitat provides for the needs of many other species besides itself. Lose the keystone species and other species suffer as well.

Otter dens can be found on the edges of lakes, rivers or streams, or on high ground in marshes. Otters may take over an abandoned beaver or muskrat lodge or excavate their own under tree roots or rock piles. Dens have an underwater entrance hole, a living space above the water level and both air holes and escape holes to nearby dry ground.



Otters are sleek, streamlined mustelids, perfect for moving swiftly through water. They are also muscular and solidly built, with short, stocky legs and a long, tapered tail that is covered with fur its entire length. Their face is broad, with small rounded ears and eyes that slightly protrude.

Although only about 10 inches in height, their bodies are over three feet long, with a tail that adds another 12–15 inches to their total length. A mature male otter can weigh up to 25 pounds. Adult females are slightly smaller.

Like minks and beaver, **otters have fur well-suited for aquatic habitats.** The oily underfur is covered by longer guard hairs to form two layers that repel water. Combined with a subcutaneous layer of fat, they are well-insulated against both cold air and water. As added protection against the cold, otter coats grow even thicker in autumn.

Their pelage is a rich dark brown with lighter underparts and a grayish throat and chin. Their nose is black and bare, and their whiskers, as discussed earlier, are stiff and prominent.

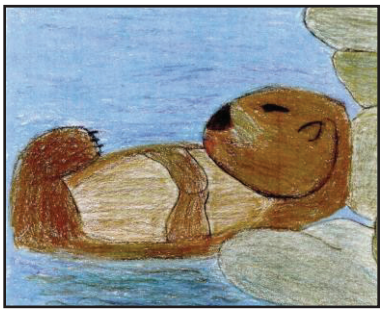
All four feet are wide and webbed between the toes, although the hind pair are larger and provide more propulsion through water than the front pair. They have five clawed toes on each foot.

Even the otter's head shape is designed for a life in water. Their eyes are placed high on the head so when partially submerged an otter can discreetly take a look at what is happening above the surface, much like a frog or an alligator.

Otters have more teeth than any other mustelid in Pennsylvania—36. **They are also the only carnivore in our state with five molars on each side of both the upper and lower jaws**, perfect for crushing shells.

Otters breed in the water between January and May. They too have delayed implantation so the young may not begin to develop in the female until the following December, January or February. So although there is only a two month gestation, the pups may not be born until a year or more after mating has occurred.

One to five pups are born blind and toothless. They do not open their eyes for five weeks, and their mother keeps them in the den until they are three or four months old. Once the pups are ready to emerge from the den, **their mother teaches them to swim.** She will carry or push each pup into the water while she submerges nearby, watching. When the pup tires, she will allow it to climb onto her back. The **swimming lessons are repeated until the pups can enter the water on their own and eventually play, hunt and feed in it.**



A Simple Review of River Otters

Otters are the largest member of the weasel or mustelid family. In Pennsylvania they live along secluded streams, rivers and marshes. They are **sleek, dark brown animals with a long, tapered, muscular body and long, tapered tail.** They have a broad head and small facial features. They are sometimes confused with minks and muskrats, but they are much bigger than either, up to four feet long, including their tail.

Otters are designed for life in the water. They have webbed feet for swimming, special nose and ear flaps that close to keep water out when they swim, and long, stiff whiskers that help them "see" underwater. They like to play. Biologists say their wrestling and playing help them be good hunters. Otters even like to slide down snow and mud banks.

Otters hunt in the water. They are **carnivores** who swim underwater for fish, crayfish and frogs. They'll also eat birds and even aquatic plants. Clean water is very important to otters.

Rare in Pennsylvania, otters once suffered from **strip mine runoff and other toxic waste pollution in our rivers and streams.** Fortunately, today otters are benefiting from our efforts to reduce pollution.

Otters are secretive, so it's difficult to know populations in the state. They are not allowed to be hunted, and since 1980 the PA Game Commission and the Wild Resource Conservation Fund and other partners have been restocking otters throughout the commonwealth.

Continuing these restocking efforts and keeping our rivers and streams clean should really help river otters in our state. Maybe, with a little luck, you will see a family of otters playing by a riverbank soon.

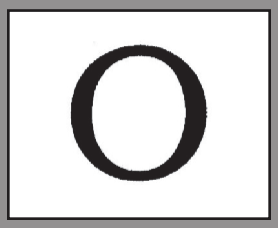
Otters can communicate by making sounds. They can chirp like a bird or grunt when playing or grooming. If they are fighting, they may scream. If you ever surprised one, you might make it snort.

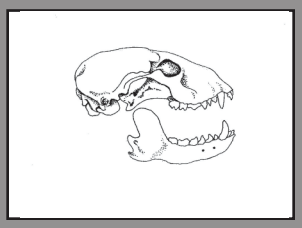
Dens are used to raise 2–4 pups which are born in April or May. Dens could be hollow logs, brush piles, or abandoned beaver lodges. The pups are furry when born, but their eyes are closed for about a month. Pups are weaned at 8–10 weeks when they learn to swim. We know they are excellent swimmers, but did you know otters can stay underwater for up to four minutes? They've been known to dive down as far as 40 feet.

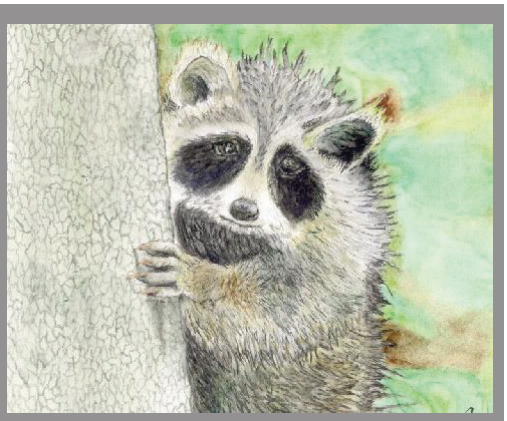
Otters are active all winter and will even swim under the ice of a frozen river or pond in search of food.

Raccoon

Family Procyonidae







Who doesn't recognize the photogenic raccoon? The trademark black mask, bushy, ringed tail, and quirky way of eating after dipping its food in water. This "masked bandit" is found in woodlands, farms, even in suburban neighborhoods. And always near water.

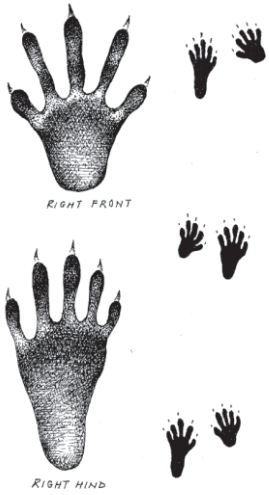
They are very adept at adapting to human activity. Even if you've never seen a raccoon, had one raid your trash can or scraps left behind in an outdoor pet dish, you can be sure one is denning in a cavity somewhere near you.

The raccoon's scientific name is *Procyon lotor.* ***"lotor"*** **refers to the their habit of dunking food in water** before eating it. The common name "raccoon" is an Anglicized version of the Indian word "arakun."

Raccoons amble or waddle like bears when they walk. And like bears, they easily stand on their hind legs. Both are considered **plantigrades**, meaning they can walk partly or wholly on the soles of their feet with the heel touching the ground.

They're relatively slow runners but can put up a fierce fight when confronted, especially females with young. **Raccoons are very strong swimmers** and have been known to drown dogs that chase them into water.

Raccoons can also be very vocal, making a variety of barks, hisses or wails. When they are alarmed they can produce a piercing scream.



Wash your hands please!

Raccoons can see, hear and smell very well. They also possess an acute sense of touch in their forefeet, enabling them to catch fish and other small, quick prey. Their long, sharp claws help grasp the slippery food items.

No one is really sure why a raccoon sometimes appears to "wash" its food underwater before eating it. Perhaps to decide whether or not they will accept or reject the prey item they just grabbed.

Raccoons in the Neighborhood

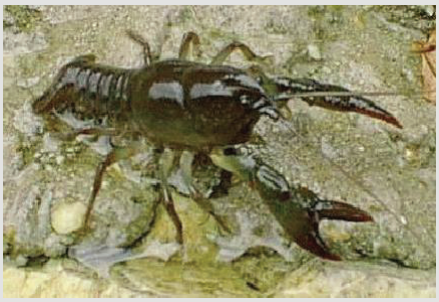
We know they can adapt, but what do raccoons need in order to live comfortably? There are many types of landscapes which provide suitable areas for raccoons, but **they prefer woodlands that offer plenty of den sites**. Hardwoods are favored over coniferous forests because of the availability of food like nuts and fruits. Hardwood forests are also where raccoons are more likely to find the cavities and hollow limbs necessary for their shelter.

Water is essential to the raccoon. Swamps, streams and ponds all provide good hunting opportunities for them to find crayfish (below left), aquatic insects, minnows and other food. **Raccoons are omnivores.** This means they eat both vegetable and animal matter, including wild cherries and grapes, raspberries, elderberries (below right), persimmons, apples, beechnuts, acorns, melons, corn, grass, leaves, earthworms, crickets, grasshoppers, beetles, grubs, fish, frogs, crayfish, mice, carrion, eggs, etc. Raccoons can also be pests, raiding cornfields and gardens (below center).

Variety in their habitats is important, as is diversity in their foods. Trees of different ages and types, low brush and grassy openings help provide food throughout the year.

Raccoons benefit from management plans that improve habitat for other animals like turkeys, squirrels and deer. They also benefit from beaver dams which provide excellent habitat for the aquatic creatures the raccoons like to feed on.

Raccoons are considered a **common species**, found state-wide in Pennsylvania.



Raccoons are **superb climbers** that are generally **nocturnal**. Not surprisingly, they spend most of the day holed up in a tree cavity. On occasion, they may even sun themselves while stretched out on horizontal limbs, in squirrel leaf nests or curled up in a crotch of tree branches.

At night they begin their hunt almost exclusively on the ground, although they will sometimes eat bird eggs or nestlings. **Most raccoons have one home den** but may have a few others scattered about their feeding ranges, which is about a mile in diameter. **An ideal den or nesting site is a hollow in a large tree trunk or limb**, but raccoons will also use old groundhog burrows, caves, rock crevices or abandoned farm buildings.

Raccoons are not true hibernators. Instead they just den up and sleep through much of the winter. If they have an ample supply of food in the summer, they will fatten up enough to sustain them from late fall until early spring. **During winter they will sleep in dens when the air temperature falls below about 25 degrees F.** But they will awake and search for food throughout the winter during warm spells. By spring much of their body fat will be gone. The thinner raccoons will make hunting for food an important part of their behavior.

Because they do not hibernate, raccoons are able to **breed** in January or February. Their cubs are born in March and April with a litter of 3–5 young. Cubs weigh about three ounces at birth. Covered with yellow-gray fur and faintly banded tails, their eyes open after about 19 days. At four weeks they begin to accompany the female on short feeding forays. By the time they are three or four months old, cub raccoons are large and independent enough to be on their own. The male may help raise the young, but leaves once they are mature.

Most family groups, mother and offspring, stay together through the young raccoons' first winter. In spring, juveniles disperse from the areas in which they were born. Young raccoons may move only a mile or two or may travel long distances.

Raccoons & Rabies: What You Should Know

Rabies is a serious disease caused by a virus that attacks the central nervous system. Any mammal can get rabies, and raccoons have a high incidence of the disease among their populations. Only mammals can get rabies. Birds, snakes, and fish do not generally carry rabies.

The rabies virus is spread through saliva, usually from the bite of an animal that has the disease. Rabies is not spread from blood.

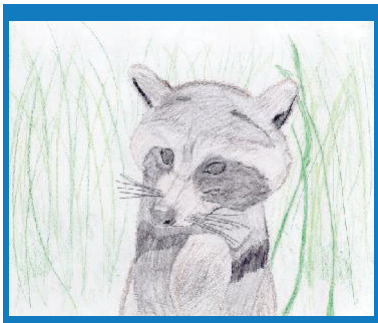
How do you know if an animal has rabies? Rabid animals usually act differently from healthy animals. Wild animals may move slowly or may act as if they are tame. A pet that is usually friendly may snap at you or may try to bite.

Some signs of rabies in mammals are:

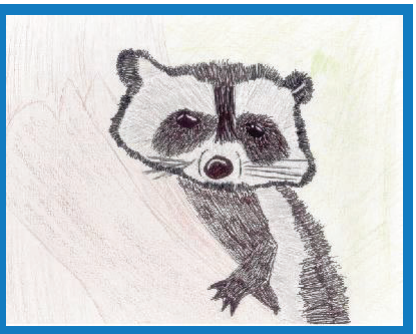
- changes in the animal's normal behavior
- signs of tameness (or a dumbness) in a wild animal
- signs of aggression in a pet or wild animal that is not being threatened
- general sickness
- problems swallowing
- increased drooling

If you are bitten, rabies can be prevented by immediate cleansing of the wound and getting a series of rabies shots in your arm. **You must see a doctor right away** to start the painless treatment.

The best way to avoid rabies is to avoid direct contact with wild animals. Never handle a wild animal. It is also extremely important to vaccinate your pets and livestock to stop the spread of rabies. Be sure to get rid of any pet dishes that you keep outside. Raccoons and many other animals become accustomed to outside food dishes as a source of easy food. This behavior puts them in close contact with you and your pets and eliminates their fear of people, a dangerous combination should they become rabid.



A Simple Review of Raccoons



Raccoons are very intelligent mammals and can be found almost anywhere in our state. They especially love woods with lots of tree cavities. With their black face mask and ringed tail, raccoons are one of our most easily recognized mammals. Native Americans first named them "arakun," which means "scratches with his hand."

Raccoons have a stocky build and are not much bigger than a large cat or a small dog, but they are very strong. They have short front legs and larger hind legs which help them stand upright. When they do stand, they are about a foot high.

Most raccoons weigh about 20 pounds, but a big male or **boar** may reach 40 pounds and over 3 feet in length. Females are called **sows** and the young are called kittens or **cubs**. The male, female and young of bears are also known as boars, sows and cubs.

When a raccoon walks it ambles from side to side, like a bear. As a matter of fact, bears (bottom right) and raccoons also have similar footprints, skulls, and both have the ability to stand up on their hind legs.

Their front paws look like tiny hands, and they can grab and turn objects in their hands just like you can. Raccoons often hold their food underwater, turning and feeling it before they eat it. Some biologists think they are washing their food.

The hind paws are bigger than the front and look something like your feet. All paws have five toes, each with a short, curved, non-retractable claw.

Raccoons have large canine teeth for eating meat and flattened molars for grinding plant matter, just like all **omnivores.** They eat just about anything they can find.

In winter a raccoon will search out a hollow tree, an abandoned beaver lodge or muskrat house, even an old woodchuck burrow or house chimney for a den site. Really anything that resembles a den might be used. The sow gives birth in the spring. The cubs stay with their mother in and around the den until about 3–4 months old. They still may travel in family groups as the mother teaches her bundle of cubs how to find food and avoid danger.

Trees or hollows are where raccoons den and escape danger. Their short, curved claws help them climb trees really well. When snow starts to fall or if temperatures drop below freezing, raccoons climb into their winter dens. During cold spells they will curl up in a ball or lay on their backs, covering their eyes with their front paws and sleeping for days at a time. But if the cold weather snaps, it is not unusual for the **nocturnal** raccoons to come out in search of food.

Red Fox

Vulpes vulpes

Gray Fox

Urocyon cinereoargenteus

Both red and gray foxes are found throughout Pennsylvania. While the gray is historically native, the red is an example of an introduced species that prospered in new territory. **The red fox is more frequently seen now, but the gray fox is the true native.** In the mid-1700s, wealthy landowners wanted to continue the popular English tradition of foxhunting. The problem? The gray fox climbs trees, effectively ending any real chase. But the red fox is known for toying with the hounds and giving "good sport." So for the purpose of entertaining the likes of superb horsemen like George Washington, red foxes were imported from their native England. As settlers cleared the woodlands where the gray fox lived, the red fox population grew, preferring the fields, hedgerows and overgrown meadows that overtook the landscape.

Foxes are intelligent predators with sharp senses of sight, smell and hearing. Most foxes are no heavier than a large house cat. The red weighs about 8–12 pounds, slightly larger than the gray.

Red foxes (at right) have long, reddish-orange fur with black ears, legs and feet, and **a long, bushy, *white-tipped*** tail. **Gray foxes** (below right) have a grizzled gray coat, buff-colored underfur and **a tail with a black streak running down its length and a *black tip*.** But dramatic color variations can occur in both species, so it's best to look at the tip of the tail to be sure.

Foxes are "opportunists" when it comes to feeding. They'll eat anything including mice, squirrels, game birds, eggs, fruits, even grasses. Their diet is really omnivorous, but **they are classified as carnivores and have the teeth to prove it.**

Foxes are also scavengers. They will feed on road-killed animals and winter kills (carrion). Diets of both reds and grays are essentially the same, and both species may cache uneaten food by burying it underground for a later meal.

The red fox is held in high esteem in the traditional sport of foxhunting. In the United States, foxes are rarely killed during a hunt. Instead the emphasis is on the chase.

Great effort goes into protecting the fox and conserving the open countryside that the horses, the hounds and the fox all require. **After all, there is no hunt without the fox and its habitat.**

Male foxes are called "dogs" and females "vixens." On late **winter nights they use a hoarse bark to call a mate.** Breeding usually takes place in February and the pups are born about two months later. Gestation (length of pregnancy) is slightly longer for grays than reds. **Litters range from 4–10 young**, with six the average. Young are born in dens. The red fox usually enlarges a woodchuck burrow or dens in a hollow log; the gray may also den beneath the ground or in crevices in rocky ledges. **Underground dens for both** usually have several entrances.

Fox pups weigh about eight ounces at birth, and their eyes are closed for the first 8–10 days. They are nursed by the female in the den for around a month. When the pups emerge, both mother and father keep them supplied with solid food until they are completely **weaned after two or three months.** Pups leave the den area in mid-July or August and may forage with their parents for another month until the family disbands. A life span of 10–12 years is possible, however.

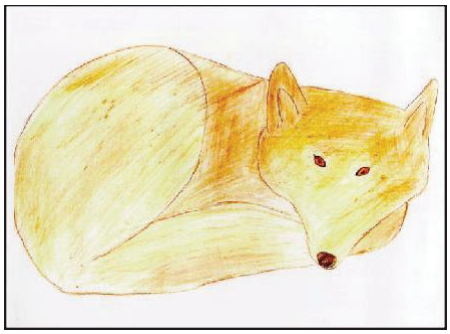
Red foxes seldom seek shelter in holes or dens during winter, preferring to sleep in the open with their bushy, well-insulated tails curled over their noses to keep them warm (below center). **Grays often hole up for three or four days at a time during severe weather.**

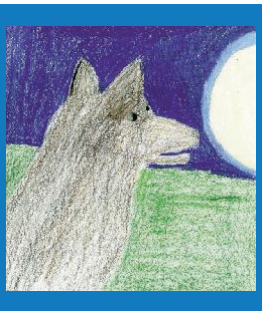
Fox populations rise and fall. When foxes overpopulate, they become susceptible to many kinds of parasites or diseases like mange or rabies. If that happens, their population will drop. Nature has its own effective way of maintaining a healthy balance within an ecosystem.

Red and gray foxes generally favor different types of habitat. The **red prefers sparsely settled, rolling farm areas** with some woodlands, marshes and streams. The **gray fox is more commonly found in denser woods**, swampy lands and rugged, mountainous terrain. But both species are very adaptable and can be found throughout the state.

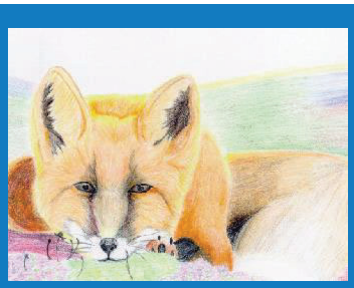
Red foxes tolerate people more than grays and often inhabit heavily populated areas, although they are rarely seen due to their **nocturnal** habits. They have elliptical pupils (below left) to help them see at night. If an area can provide food and shelter, foxes will consider it, even a doghouse (below right). If foxes are hungry enough, they are common sights during the day.

Over the past two centuries, when the forested habitats of Pennsylvania gave way to cleared fields and meadows, **the native gray fox was pushed out by the red fox.** Now the **returning coyotes are having a similar impact on the red fox population,** but not because of habitat change. The coyotes are simply more aggressive. No doubt the ever-changing populations of canines in our state will continue to fluctuate as long as these wild dogs live here.





A Simple Review of Coyotes & Foxes



If you *think* you have seen a wolf in our state, you probably saw a coyote. **We grow coyotes big here!** Some biologists think our coyote is a cross with the gray wolf. The coyotes out West are definitely smaller. **Coyotes and foxes** are all wild canines (wild dogs). They all have large canine teeth and are considered **carnivores** (meat eaters). Their skulls and noses are long and their pointed ears stand upright. **Coyotes and foxes are common and are classified as furbearers.**

All wild canines have four feet with blunt claws. Their claws cannot be retracted like a cat. Canine claws are used to help them run down their prey. Their claws give them traction when they turn quickly. **Canines have thick bushy coats and long bushy tails.** The coyote has a grizzled grayish-black coat and is much bigger than a fox, but foxes can be confusing to tell apart.

Gray foxes are not always gray and red foxes are not always red. The gray fox has a black tip on his tail (bottom right) and prefers to live in the woods. Gray foxes can even climb trees. Red foxes like overgrown fields and have a white tip called a brush or flag on their tails (above right).

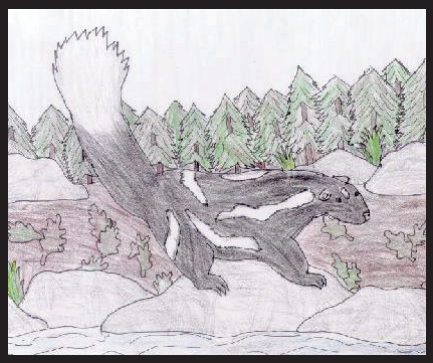
All wild canines have one litter each year. Their young are **called pups**, which is no surprise since they are related to our pet dogs. They raise their pups in underground dens like abandoned groundhog burrows that they dig larger. They are all smart, secretive and shy.

Even though they are related to wolves, foxes do not live in packs. Coyotes may live in small family groups. Foxes communicate by a loud hoarse bark. Coyotes will yip and howl to one another.

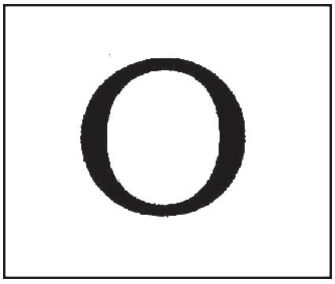
Coyotes and foxes eat just about any small animal they can find. They will also eat carrion (dead animals) because it's easier than hunting down live prey. **Sometimes they eat plants, too.** Foxes really like fruits and berries. Coyotes may prey on deer, but usually only the sick or injured. Now that coyotes live just about everywhere in our state, they have also learned to hunt small pet dogs and cats. You should never leave your pets outside at night. All wild canines are **nocturnal,** but **seeing a fox or coyote during the day is perfectly normal.**

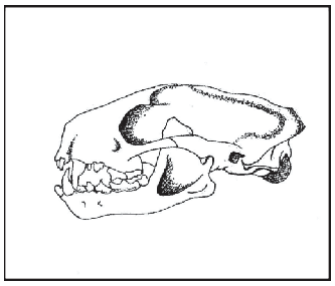
Wild fox track or pet dog track?

Wild canines don't know where their next meal is coming from. When they hunt, their tracks follow an energy-efficient straight line (below). Pet dogs wander everywhere. They are not hunting; they are just exploring. Their tracks are much sloppier.



Skunks
Family Mustelidae





Let's face it. Skunks can stink. Other mustelids have similar musk glands. The tiny least weasel can spray its musk, but you would probably never know it. Not so the skunk. The only creature not aware that a skunk has sprayed its musk is one without a sense of smell.

Not only is skunk spray an effective weapon to ward off a predator, but it is a weapon with staying power. Few animals ever forget the noxious odor. That **"odor memory" helps the slow-moving skunk** avoid continuous contact with predators. Most animals remember the sight and smell and detour around the skunk. **The skunk's bold black and white coat serves as a warning as well**.

Whooo cares if skunks stink? Not a great horned owl. Like most birds, owls have no sense of smell. These large owls are more than capable killing a large skunk which weighs a lot more than the owl weighs. Great horned owls are one of the few predators that can tolerate getting sprayed by a skunk and get close enough to a skunk to kill it.

Skunks discharge their musky scent from nozzle-like ducts found in scent glands located on either side of their rectum. The oily liquid has an active sulphide ingredient called mercaptan. No matter the name; it's awful. If sprayed into the eyes, it can temporarily cause blindness.

Skunks can spray up to twelve feet by twisting their hind end toward their target. First they warn their enemy by drumming their forefeet on the ground and snarling. Only as a last resort they will arch their back and raise their tail to spray. Just so you know . . . skunks can still discharge their musk when held by their tail. So don't do that!

Striped skunks are easy to identify by their **black coat and bold white stripe** running the length of their body. Sometimes they have a V-shaped mark over their shoulders with two stripes instead of one. Stripes can also vary in length and width. The black, bushy tail is usually tipped white. Males, females and young are all marked alike.

An adult may be **two feet long, including a 10-inch tail, and weigh up to 12 pounds,** depending on the time of year. The head is small and triangular with a stocky body and short legs. Their eyes are small and dark, the ears small and rounded.

Skunks are plantigrades like raccoons and bears, and the bottoms of their feet are hairless. They are superb diggers, aided by **long, sharp claws on their small forefeet**. The hind feet have shorter claws. Each foot has five toes. Even though skunks are not aquatic or even semi-aquatic, they have **slightly webbed toes** and can swim.

Skunks are slow movers and poor climbers with only a fair sense of sight, smell and hearing. But they do have a superb sense of touch, and of course, an ability to drive off predators with their offensive spray. They can make a variety of sounds, including hisses, growls, squeals, soft cooings and churrings depending on their circumstances.

The **striped skunk** (*Mephistis mephistis)* is the species most commonly found in Pennsylvania. Like many of our animals, its name comes from Native American culture. Algonquins called the animal “seganku.” Polecat is another common name.

Spotted skunks (*Spilogale putorius*) are only found in the southwestern portion of our state. They are smaller than the striped, weighing in at only about 2 pounds. Their black coat has a checkering pattern of white markings, and a triangular white spot on their forehead.

Like the striped skunk, the spotted skunk will issue a litanty of warnings before it sprays, including performing a “handstand” on its forefeet. If that doesn’t work, it will resort to whipping its body into a “U-shape” with both head and tail pointed at the threat before unleashing a well-aimed oily squirt.

Skunks are nocturnal omnivores. During summer nights, they feed heavily on insects, both adult and larval forms, including pests like grasshoppers, wasps, bees, potato bugs and even Japanese beetle grubs.

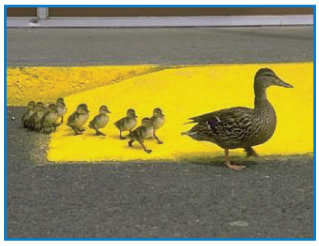
Their claws help them dig out their food. If you find small cone-shaped holes in your yard, you probably have a skunk feeding on soil grubs. They’ll also prey on spiders, toads, frogs, lizards, snakes, mice, chipmunks and the eggs of turtles and ground-nesting birds. During fall and winter, skunks will eat wild grapes and cherries, grasses, leaves, buds and mast (such as acorns). They will also take carrion when they find it.

Skunks den in abandoned groundhog burrows or find burrows in hollow wood or rock piles. They will also burrow beneath porches or outbuildings, to the dismay of many homeowners.

Skunks do not hibernate. Instead, they live off accumulated body fat to get them through the winter. However, they will den up and sleep for extended periods in the worst of winter weather. Males will wander from den to den to **breed** with as many females as possible in **late February to early March**. They only breed once each year, bearing 5–7 kits on average. Although blind and naked at birth, the pattern of their future black-and-white markings is visible on their pinkish, wrinkled skin. Their scent glands are functional at only three weeks of age, and they are able to leave the den with their mother at two months. By autumn the family starts to disperse, although some kits will remain with the mother until the following spring.

A Simple Review of Skunks

I'll bet you didn't know that skunks and ducks have something in common, but they do. **Skunk kits follow their mother in a single file, waddling after her just like ducklings follow their mother**. That cute trait is about all they share.



Skunks are famous for their powerful, awful-smelling spray. That spray is an oily liquid produced by glands under its large tail. To release this scent bomb, a skunk will turn around to discharge the foul mist.

Don't startle a skunk. They can spray up to 12 feet. If it stamps its feet, does a handstand or bends its body into a "horseshoe" shape, get away! You are being warned that something awful is on its way.

Skunks live in a variety of habitats: woods, fields, farms, even neighborhoods. They rest during the day. **They will hunt at night eating just about anything edible:** insects, small animals, eggs, corn, fruits, fish and even dead animals.

Most skunks are the size of a large house cat. Some are striped, spotted or have a swirled pattern. But they all have bold black-and-white markings that make them easy to remember, especially a predator that has been at the wrong end of a skunk.

Skunks will sleep off and on all winter, but they do not hibernate. Food may be hard to find in winter so before it gets really cold, skunks try to fatten up to be well-prepared. They will use dens for periods of winter sleep and raising their kits. Dens may be in burrows built by other animals or in hollow logs or even abandoned buildings.

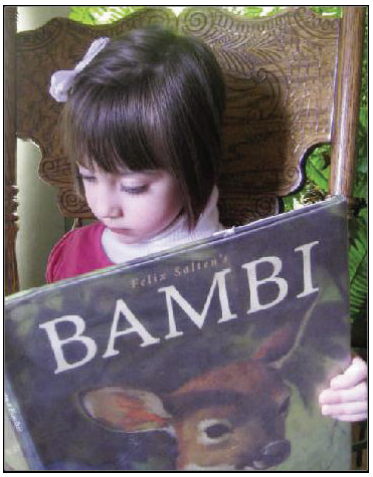
Females give birth to about 5–7 young kits each year within the dens. Even after the kits leave the nest with their mother they will stay close to her, sometimes until the following spring, when she gives birth to another brood.

White-tailed Deer

Odocoileus virginianus

In Pennsylvania, we love our deer. We love them to death. Whether you drive down a country road at night to spotlight deer, toss corn cobs across your yard to entice deer or make the annual trek to your hunting cabin each fall to hunt deer, there is no question the whitetailed deer is the most recognized and best-loved animal in the state. Unfortunately, it is also one of the most misunderstood.

The deer is our poster child for wildlife management. But ask anyone who works in the field of wildlife management and they will tell you it is not really a wildlife management issue. It is a people management issue, or at least it should be.



Blame it on our childhood. Take an extremely appealing animal and create an impossibly endearing character. Then watch the world alter its outlook on the animal kingdom forever.

Anthropomorphism is when you attribute human characteristics to animals. We do it all the time. With wolves, we created monsters. With deer, we created helpless doe-eyed creatures peacefully communing with all the creatures of the forest. Unfortunately this sympathetic view created a monster, too, a management monster.

Deer are beautiful animals that most of us appreciate living near. But our association with deer is unbalanced. Historically, wolves and mountain lions were the natural predators of Pennsylvania's deer, helping to keep their populations in check. But people wiped out those predators long ago, leaving us with the challenge of maintaining both a healthy deer population and protecting our diverse native botany. It is a subject of ongoing debate: how to protect deer *and* protect the vegetation they eat!

Ideal deer habitat is brushy forests, forest edges and thickets mixed among open fields. But deer can tolerate a lot of human activity and are comfortable on farms with wooded patches, and even in busy suburbs. In both areas, deer can wreak havoc on the farmers' crops or the homeowner's carefully landscaped properties.

Whitetails are named for the white hairs on the underside of their tail. When alarmed, the white "flag" flashes up as a warning for other members of the herd to follow. Biologists have identified nearly 30 subspecies of whitetails throughout North and Central America. Common throughout Pennsylvania, **our state is home to the largest** of the subspecies, the northern woodland white-tail.

Our bucks average about 140 pounds and stand about 34 inches at the shoulder. Adult weight varies depending on the time of year. **Bucks often weigh as much as 25 percent more in September, at the beginning of the breeding season.** Does are generally smaller overall.

Both bucks and does are colored alike. The fur on the belly, throat, around the eyes, inside the ears and the underside of the tail are white all year long. The summer coat is short, straight and reddish. Winter coats are grayish brown due to longer, thicker, crimped hairs. **Hollow winter hairs provide excellent insulation against the cold.**

Black (melanistic) and albino deer rarely occur. **Partial albinos, known as "piebalds" are more frequent**, but they are often a sign of inbreeding within a local population. They are interesting to see, but piebalds could mean an unhealthy population.

The PA Game Commission estimates that **our deer population is stable and sustainable**. Population numbers vary, and some people find it hard to believe the state has a huge deer population. They think if they don't see a deer, the animals must be declining. That's why **it helps to be a botanist if you are going to study deer.**

Why? Because botanists study plants. Being able to correctly identify native plants allows us to see the impact our deer have on native forests. **Deer eat a variety of herbaceous and woody plants** between the ground and the deer's upper browse line. The browse line means the highest level into the forest canopy the deer can reach. Our deer are overbrowsing our forests. When deer over-browse a forest, not only are deer affected, but virtually all other species dependent upon that habitat.

As the quality of the deer habitat declines, so does nutritional intake, which has an effect on the health of the entire population.

Ample, diverse supplies of natural foods throughout the year are essential to a healthy deer population. How do biologists make that happen? Education and controlling our state's deer population through annual hunting seasons (harvests) are two ways research botanists and the Game Commission are working together to save our forests and help protect our most popular mammal.

I'm guessing you know the white-tailed deer is our state mammal.
Do you know our other state symbols?
State Bird: The ruffed grouse; State Insect: The firefly; State Fish: The brook trout;
State Tree: The eastern hemlock; State Flower: The mountain laurel;
State Fossil: The trilobite; State Beverage: Milk and believe it or not, we even have a
State Dog: The great Dane!

The buck's first set of antlers begins to grow at about 10 months of age. **The buck should grow and shed a new set of antlers every year.** Beginning in March, a velvety-layer of soft hair, skin and blood vessels feeds the growing bone. This "velvet" supplies important nutrients to the antler. By August or early September the antlers stop growing and the **velvet is shed or rubbed off by the buck as he rubs his antlers against saplings** (below left) **during the rut.**

The polished-looking antlers (top right) are believed to be an important part of the breeding season and remain on the bucks sometimes into late February when they are shed. In spring a new set begins to grow again.

Antlers can easily be damaged in velvet. They are soft and still growing at that point, and accidents can result in bent or twisted antlers. Although they are hard and made of bone, finished antlers can also break during fighting with other males.

Both food quality and genetics play a role in the size of the antlers. First-year bucks usually only produce "spikes" their first season since antler growth begins while the young buck is experiencing a growth spurt. Spikes are antlers with just a single main beam. Since antler growth is affected by nutrition, older bucks with a poor food supply may also carry spikes. With good food during the prime of a buck's lifespan, between the ages of five and ten, antlers should get larger in each successive year. Most deer taken during hunting season are three to five years old, and we may never know the true potential of their antlers. **You cannot age a buck by the size of its antlers.**

During rut season each fall, the buck's testosterone levels rise and he works off aggression by creating "buck rubs" to strengthen shoulder and neck muscles. **Bucks that tolerated one another during the summer quickly become rivals over territory or the opportunity to mate with a doe.**

Bucks usually only approach a doe during breeding season. When the season comes to an end in January, small groups of bucks may stay together throughout the winter and summer until the rut begins again in September.


Joe Kosack/PGC Photo

The rut can really take a toll on bucks. Some will lose substantial body weight. Fighting between bucks can lead to injury and death. On rare occasions two sparring bucks may get their antlers hopelessly entangled, causing one or both animals to die.

Bucks in rut sometimes pay less attention to their surroundings. Because it's breeding season, bucks often charge across roadways in pursuit of a doe or to challenge another buck. In Pennsylvania, autumn is a time of increased dangerous collisions between deer and vehicles.

Can you hide behind polka-dots? The next time you are standing in the woods on a sunny day, look at the sun shining through the leaves and branches from above. It creates dappled streaks and spots of light on the forest floor. **The white stripes and dots on a fawn's coat look the same, perfect camouflage.**

Soon after birth, **the doe directs the fawn to lie down while she wanders away to eat.** This moves her body scent away from the fawn. Born almost scentless, the quiet fawn instinctively knows to stay still (remember, camouflage doesn't work if you move).

Always leave a fawn curled up on the ground. Do not assume it has been abandoned. It is doing exactly what it was designed to do and is perfectly safe. **Never touch a fawn**. If you do, the fawn will have YOUR scent on it. That can lead a predator, including pet dogs, directly to the fawn. This can lead to the fawn's death.

Fawns bleat like a lamb when they need their mother. Does whine back to the fawn. Otherwise, deer are usually quiet. But when alarmed, all deer, including the buck, will stamp their feet and loudly blow air through their nostrils, making a surprisingly loud "whewooff" sound.

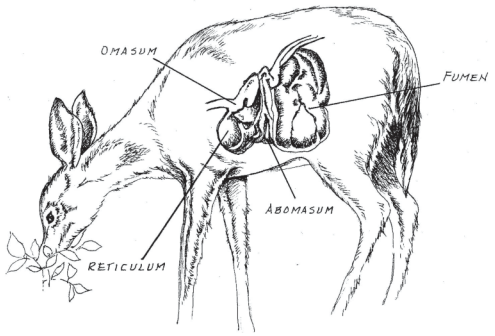
A healthy doe usually **gives birth to twin fawns.** Triplets are not uncommon. Young does seem to give birth to more males than females, though no one is quite sure why. **Because they produce twins almost every year, the deer population quickly rebounds despite our state's very popular hunting season**. We also lose many deer each year to car collisions, predation by pet dogs, diseases and numerous other causes. Yet Pennsylvania is still home to an enormous whitetailed deer population.

Deer herds are mostly **matriarchal**. That means several generations of related does and their fawns make up a herd. In late May, does usually leave the herd to bear and rear their fawns. Yearling siblings are then on their own for the summer until the young bucks leave the group as the rut approaches. The yearling bucks permanently leave, but yearling does rejoin their mother and her new fawns in the fall.

It's rare, but did you know that **a doe may grow small, irregular antlers**? This is probably the result of a hormone imbalance.

Have you ever found a shed antler? Even though antlers are made of a hard bone, it's really hard to find one. What happens to all those antlers each winter? Rodents. **Rodents love to gnaw on shed antlers.** It keeps their big incisors gnawed to a perfect length. The bone provides calcium and other important minerals to them at a time of year when other food may be scarce. The big antler pictured at left is an elk antler.

Deer are herbivores. They'll often feed on plants that other mammals cannot digest. They are called **ruminants** because they have a four-chambered stomach, similar to a cow. This allows them to get nutrients from "complex" foods like woody plants. Grazed food is swallowed into the rumen. Enzymes in the reticulum form a "cud" of the partially digested plant materials. The cud is then regurgitated for the deer to chew on or ruminate. When swallowed for a second time, the cud enters the omasum chamber followed by the abomasum, the true stomach, for final digestion. Ruminants can eat quickly in the open and then retreat to a sheltered area to chew their cud, **an adaptative strategy for avoiding predators.**

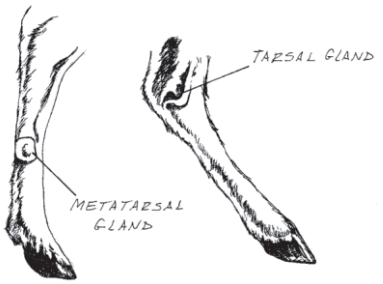


Deer eat a lot of mast and change their diet with the seasons. Spring and summer browse is green leaves and plants and new growth on woody plants. By late summer they may turn to mast and fruits. Mid-winter foods are whatever mast is still available, evergreen leaves and dried leaves. Mast can be either soft or hard.

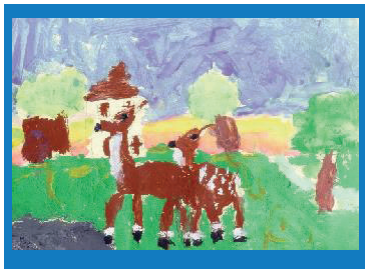
Hard mast like acorns, hickory nuts and beechnuts are long-lasting, hard-shelled seeds. They are high in fat, carbohydrates and protein. This provides high energy food in winter when other high energy foods are scarce. **Soft mast** is fleshy fruit high in sugar, vitamins, and carbohydrates. The fruits do not last long and are not available in great quantities in winter months. But during drought, soft mast is an important source of moisture for deer. Soft mast could include black cherries, persimmons, apples, pears, pawpaws, and blackberries.

Deer have flat molars for grinding tough, chewy plant materials, but only have incisors on the bottom jaw. Because there are no incisors on their top jaw, **deer pull or tear off parts of the plant rather than cleanly snipping off a leaf or stem like a rabbit might.** Maybe you have seen this in your backyard garden. A plant stem that has been sharply bitten off was probably snacked on by a rabbit or groundhog, a mammal with sharp upper incisors. A plant stem that looks like it was torn off was probably nibbled by a deer.

Deer have scent glands to help establish territory, allow a deer to retrace its steps, help a buck find a doe or reunite a doe and fawn. The glands are found near their eyes (left), on the inside and outside of each hind leg (below), and between the toes on all four feet. The glands produce an oily, musky secretion that is spread on plant foliage.



Deer are ungulates, and ungulates are mammals that walk on hooves. The sole and heel of the foot are actually raised off the ground. This even-toed stance is designed for running speed.



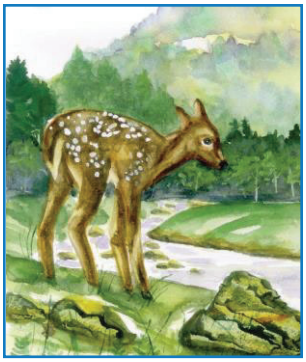
A Simple Review of White-tailed Deer

The white-tailed deer is our state mammal and our largest and most popular game animal. Found almost anywhere, they prefer woodlands and farms because of the food and shelter these areas provide. Deer are called ungulates. That means they have split-hoofed feet. They have brownish-red coats, slender bodies and long, thin legs. They may look fragile, but they aren't. Deer can run up to 40 miles per hour and jump over nine-foot fences. They can even swim.

Male deer are called bucks. They are easy to identify in the summer and fall because they grow a set of antlers called a rack. Each spring they grow antlers and each winter they shed antlers. The rack is made of bone, and each point on the rack is called a tine. A buck with a lot of tines on its antlers is probably very healthy and lives in a good habitat, but you cannot tell how old a buck is by counting the tines on the antlers.

Female deer are called does. Does give birth to fawns in May or June. A doe may give birth to one, two, or three fawns, usually twins. A fawn's white-spotted, reddish coat helps it camouflage on the forest floor. The spots will disappear when the fawn molts into its winter coat at about five months old.

Deer are herbivores. They graze or browse on tree leaves, ground vegetation, acorns, evergreen twigs, nuts, fruits and farm crops. They love corn, wheat and alfalfa. They can eat quickly and then move to a safe, quiet place to rest and **ruminate their food**. That's because they have a four-chambered stomach that allows them to digest these plants later by coughing up and re-chewing their food, just like a cow.



How old is that deer? Biologists can age a deer by looking at its teeth! Deer are born with a set of baby teeth just like you. They are born with four teeth but in a few months grow baby incisors and premolars. By about 18 months old, permanent teeth replace the baby teeth.

Biologists can look at the teeth to tell whether the deer is a fawn, youth or an adult. They look for signs of wear on the molars (the flat, hind teeth). Because of all that plant grinding, the molars lose a bit of height each year. Age is decided by the height of the molar above the gum line.

Deer tracks are heart-shaped. The pointed end of the track points in the direction the deer moves. When deer travel, they create narrow paths called trails. **Deer trails** usually connect where the deer eats and rests. Deer regularly rest in the same area. These are called **deer beds**. Beds are often surrounded by thick plant cover for protection from weather and predators.

Bucks mark their territory in the fall by tearing bark from trees with their antlers. This is called a **"buck rub."** Buck rubs are usually one to two feet above the ground. Because deer do not have upper teeth in the front of their mouth, they can't snip off a piece of plant. **They twist the plant off, leaving a ragged stem**.