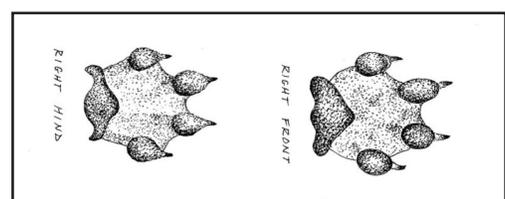
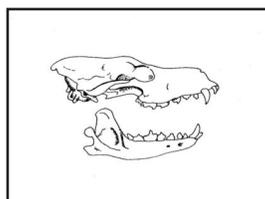
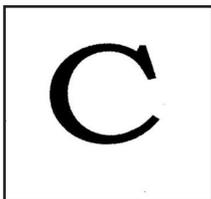
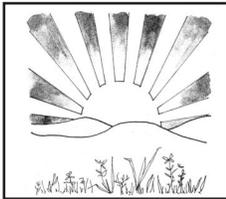




Wolves, Coyotes & Foxes

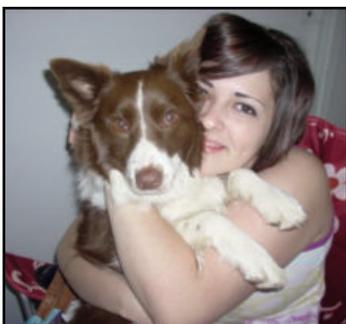
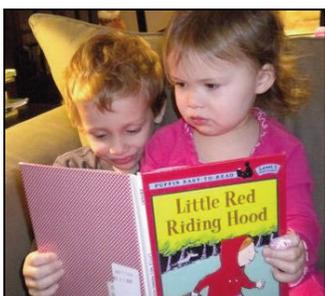
Order Carnivora
Family Canidae



Wolves and their descendants have played a prominent role in our lives for centuries. We highly regard their intelligence & cleverness - native people often incorporated their personalities into stories of creation. The Lakota Sioux believed the first wolf created the stars in the heavens. According to the Idaho Kalispel, the coyote was once the moon, until his curiosity and penchant for gossip caused him to be removed from the lofty position.

But we also exploited a dark side we mistakenly believed these animals possessed. From children's fables to nerve-tingling horror movies, our bedtime rituals were often filled with ominous images of the sinister nature of these creatures. Despite this, wild dogs have always been among our closest companions. And for centuries some sort of beneficial relationship has existed between us.

It is believed that wild dogs were first domesticated by man about 15,000 years ago, but European cave paintings depicting a wolf-like animal hunting with men can be dated back 50,000 years ago. Such prehistoric artwork suggests that wild dogs were at least circling our encampments for leftover scraps. Or perhaps had already joined us as we hunted and gathered.



Would You Open Your Door to "The Big Bad Wolf?"

Well, if you share your home with a dog, you probably already have. **Every dog living today from the regal German Shepherd to the cuddly cocker spaniel can claim a wolf as its ancestor.**

Once we tamed a few of these animals, we began breeding them for some self-serving behaviors like guarding our villages & herding our sheep.

But over time, breeding a dog for a job became less important than breeding one for companionship. At some point long ago, on a cold windswept night, a herding dog was probably invited onto the warm stone beside a fiery hearth...just to share his master's home.

Although we don't know exactly *how* this kinship between wild canines & humans developed, it is safe to say **our lives would never be the same without them.**

Identifying Wild Canines

The physical daptation that most defines all wild canines is the **ability to run fast and with a great deal of endurance**. Wolves, coyotes and foxes all run on their toes. This gives them the ability to turn quickly. **Their claws** (which do not retract like cat claws), **give them traction** as they maneuver over the ground after their prey.

This ability to run fast over great distances has helped determine what canines eat and how they catch their prey. Wild felines (cats) rely on their ability to stalk their prey and mount a surprise attack. Bears have mostly given up a carnivorous life to preserve their energy while eating carrion and wild plants. But **the wild canine depends on speed and the stamina to chase down its food.**

Most carnivores eat some vegetation at times, but the canines have stayed fairly true to their carnivorous, meat-eating lifestyle. They have large canine teeth and sharp molars and incisors. **All their teeth are best adapted to grabbing and tearing their prey**, instead of chewing and grinding. Because they gulp down large pieces of food, they require a strong gastric system to break down the meat and digest it. This process takes time and explains why wild dogs can go days without the need to hunt and eat.

Running long distances means your body builds up body heat, which must be eliminated. Humans lose body heat through their pores, but pores are of little use if your body is covered by thick fur. **Canines cool their bodies by passing air over their tongues and through the mouth and respiratory system.** In other words, **canines cool down by panting.**

Biologists tell us wolves & coyotes howl:

- * To reinforce social bonds within their pack.
- * To announce the beginning or end of a hunt.
- * To sound an alarm, or locate pack members.
- * To warn other packs to stay our of their territory.
- * Because they enjoy it!



“Oh Grandma, what a very long nose you have,” said Little Red Riding Hood.
“Why, the better to smell you my dear,” replied the Big Bad Wolf.



Little Red Riding Hood really was on to something. Animals with very large noses have an excellent sense of smell. Those with large ears hear sounds from far away. And creatures with large eyes usually have superb eyesight.

The canine sense of smell is acute and among some species it is their primary hunting tool. Some biologists believe that wild canines not only determine by scent which species has passed them, but even which individual it was, and what mood it was in.



GRAY WOLF

Canis lupus



Although **wolves are extant in Pennsylvania** (extinct in our state), learning about wolf biology helps us appreciate their local cousins, the coyote and foxes. Also known as the timber wolf because it often lives in forest habitats, the gray wolf is the largest of the wild dogs. **Adult males weigh about 70 - 90 pounds & females about 55 - 75 pounds.**

Wolves are carnivores (meat eaters). They are predators at the top of the food chain. This means they hunt and eat other animals, usually hunting in packs for deer, moose or other large ungulates (hooved animals). Despite their hunting prowess, their priority is to find sick, young, or older animals in an effort to secure food without being injured by their own prey.

Wolves live in packs, generally with an alpha or breeding pair, their offspring, and other non-breeding adults. Wolves mate by age two or three and sometimes form a lifelong bond during a lifespan, which may last over ten years. Normally five pups are born in early spring and are cared for by the entire pack. For the first six weeks, pups are reared in dens. Dens are often used year after year, but wolves may also dig new dens or use shelter like a cave. Pups depend on their mother's milk for the first month, then are gradually weaned and fed regurgitated meat brought by pack members. At seven to eight months of age, when they are almost fully grown, pups begin traveling with the adults. After a year or two, young wolves may leave and try to find a mate and form their own pack. These lone wolves may have travel as far as 600 miles to establish new territory, and are at their most vulnerable at this stage in their lives.

Wolf packs require large territories, which they defend from other wolves. When wolves did live in Pennsylvania, one pack may have required a single territory as large as York County. They may travel as far as 30 miles in a day while hunting, usually trotting about five miles per hour, though they can run as fast as 40 miles per hour for short distances.

Wolves are considered a keystone species - meaning they support a wide variety of other animals and have helped shaped the behavior of other animals within their ecosystems. For example, in Yellowstone Park, ravens, foxes, wolverines, coyotes, bald eagles and even bears all depend on the carcasses of animals killed by wolves.

Predators like wolves help strengthen the populations of their prey. As a result of the long term effects of wolf predation, animals such as antelope, elk and mountain goats have developed great speed, alertness, and the ability to climb steep cliffs. Wolves also help sustain the balance between these ungulates and their own diet of vegetation, making room for other plant-eaters such as beavers and small rodents.

Estimates vary, but **the last wolf in the Commonwealth was probably killed sometime around the mid-1800s.** Our eastern Coyote, however, is believed to be a hybrid of the Canadian or gray wolf. In that respect, we may still have a little "wolf" left in Pennsylvania.

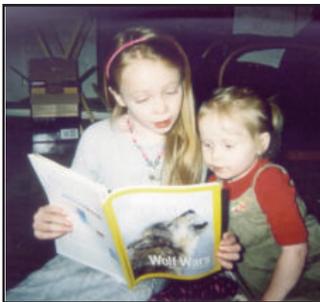
What Happened to Wolves in Pennsylvania?

We did. In the early to mid-nineteenth century, large populations of **settlers** began moving westward from Philadelphia, New Jersey and New York City. They **depleted most populations of bison, deer, elk, and moose – animals that were key to the wolves' survival.** In time the wolves began to prey on the settler's sheep and cattle as a replacement for their natural prey. **In competition with the wolves, people eventually came to believe that all predators should be destroyed.**

In an effort to protect both our livestock and ourselves, ranchers and government agencies began an eradication campaign. Bounty programs were initiated and wolves were trapped, shot, dug from their dens, and hunted with dogs. Poisoned animal carcasses were set to attract wolves, a practice which in turn also killed eagles, ravens, foxes, bears, and other animals that fed on the tainted carrion. The killing continued for over a century until the wolf had been removed not only from Pennsylvania, but from most of the lower 48 states.

By the time wolves were protected by the Endangered Species Act of 1973, only a few hundred remained in extreme northeastern Minnesota and a small number on Isle Royale, Michigan. One of the few wolf populations not affected was Alaska, which still has the strongest wolf population in North America.

The wolf's comeback nationwide is due to its listing under the Endangered Species Act, which resulted in increased scientific research and protection from unregulated killing, along with reintroduction and management programs, and education efforts that increased public understanding of factual wolf biology and behavior.



**"I've always said that the best wolf habitat resides in the human heart.
You have to leave a little space for them to live."**

– Ed Bangs,
Wolf Recovery Coordinator, U.S. Fish and Wildlife Service

Thanks to recovery efforts in Yellowstone National Park and other parts of the country, wolves are slowly being re-introduced to some of their traditional territories. Biologists who are studying these wolf recovery projects are learning how important the wolves are to these ecosystems.

When do you think wolves might be re-introduced in Pennsylvania?



A Simple Review of Wolves



Have you ever heard a wolf howl in the wild? Not many people have. **The haunting sound of wolves once echoed throughout the northeast, including Pennsylvania.** Today, wild wolves are not longer found in our state.

But you might have a wolf in your home. With their big teeth, long noses and long bushy tails, wolves look like many of the dogs people have as pets. Wolves act like pet dogs too. They bark and howl. They are carnivores and eat meat. They communicate by making faces and wagging their tails. And they guard their territory just like your own dog would guard your house. **All dogs have descended from wolves.**



Wolves live together in family groups called packs. Each wolf pack needs a large to find their water, food, shelter and raise their young. **Wolves defend these territories from other wolves by scent marking and by howling.** Just like some people mark the edges of their property with signs and fenceposts, wild animals mark their territory too. But they do it with urine and scat.



A long time ago, the forests of Pennsylvania provided wolves with the exact kind of habitat they needed. But beginning in the 1830's, **people started to change the landscape.** We cleared land for carriage paths, villages and farms. We also hunted deer, elk and bison, until most of the wolves' prey was gone.

Wildlife respond in different ways to habitat changes. Animals like rabbits and deer are able to adapt to the new habitats created by people. Their numbers grew. But wolves, and other predators don't adapt as well to changes. They started to disappear.

Wolves also suffered from an image problem. Settlers believed in folk stories and fairy tales that described wolves as big, bad and ferocious. They also thought wolves would kill all the deer, leaving none to feed their families. And they were afraid that wolves would kill all their livestock.

Once there were bounties on wolves. This meant people could kill all the wolves they wanted to. And they were paid money to do so. Bounty laws were eventually changed, but by then it was too late. All the wolves were gone.

Today, the wolf is a popular symbol of our country's efforts to restore and protect our nation's wilderness areas. Wolves are now being reintroduced to some of their old habitats - Like Yellowstone National Park in Wyoming.



Coyote

Canis latrans



The coyote is currently Pennsylvania's largest canine and is bold and curious. While wolves were unfairly portrayed as menacing - though to be fair - generalizations are usually rooted in reality and the elusiveness of wolves created an elusion of danger. While 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 and fruits & 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 between 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 with black markings or lines down the front of the front legs. Their ears are erect and their brushy tail is usually held down.

Coyote habitat is heavy brushy cover, such as clearcuts, and 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. And 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 & 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.





Red Fox

Vulpes vulpes

Gray Fox

Urocyon cinereoargenteus



Both red & 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 horseman 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 & 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 its 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 & conserving the open countryside that the horses, the hounds & 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). And 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 everchanging 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 gray-ish-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. But 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 on their tails called a brush or flag (above right).



All wild canines have one litter each year. Their young are **called pups.** No surprise since they are all 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 & howl to one another.

Coyotes and foxes eat just about any small animal they can find. But 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. So 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.

