Living with Wildlife

Coyotes

In pioneer days, coyotes *(Canis latrans)* were restricted primarily to the sagebrush lands, brushy mountains, and open prairies of the American West. Wolves occupied the forests. Coyotes have since taken advantage of human activities (including the reduction of gray wolf populations) to expand their range throughout North and Central America.

In Washington, these intelligent and adaptable animals now manage to occupy almost every conceivable habitat type, from open ranch country to densely forested areas to downtown waterfront. Despite ever-increasing human encroachment and past efforts to eliminate coyotes, the species maintains its numbers and is increasing in some areas. The coyote's tenacity tries some people's patience and inspires others' admiration.

At first glance, the coyote resembles a small German shepherd dog, yet its color can vary from animal to animal (Fig. 1). Shades include black, brown, gray, yellow, rust, and tan. Coyotes also have shorter, bushier tails that are carried low, almost dragging the ground, and longer, narrower muzzles than their dog cousins. Adult coyotes weigh 20 to 35 pounds, with males being slightly larger than females. At the shoulder, an adult male coyote is about 25 inches tall.

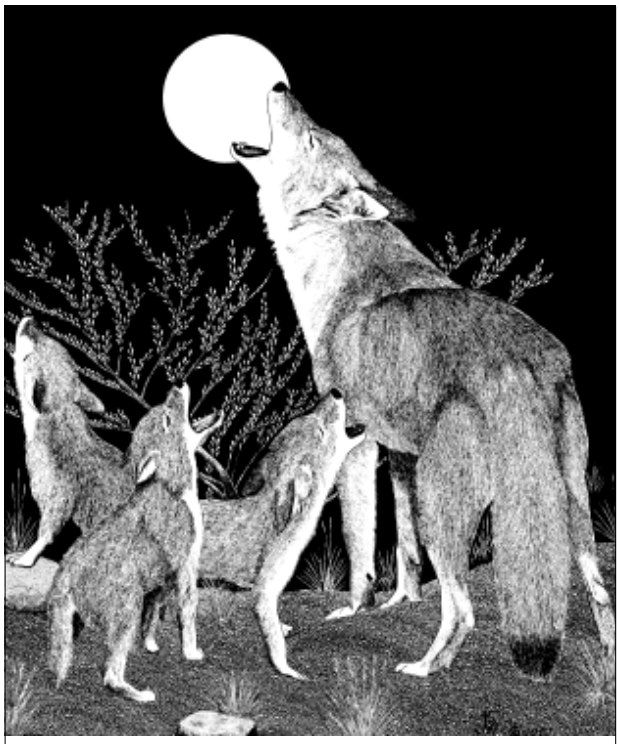


Figure 1. *The so called "bands" or "packs" of coyotes are almost always family groups composed of a mother and her young. (During the mating period, a group may include a female and several males.)*

(From Christensen and Larrison, *Mammals of the Pacific Northwest: A Pictorial Introduction*.)

Facts about Washington Coyotes

Food and Feeding Habits

- Coyotes are opportunists, both as hunters and as scavengers. They eat any small animal they can capture, including mice, rats, gophers, mountain beavers, rabbits, and squirrels, also snakes, lizards, frogs, fish, birds, and carrion (animal carcasses). Grass, fruits, and berries are eaten during summer and fall.
- Grasshoppers and other insects are important to juvenile coyotes learning the stalk-and pounce method of hunting.
- Pairs of coyotes or family groups using the relay method pursue small deer and antelope. These mammals are important food in winter; fawns may be eaten in spring.
- Coyotes eat wild species, but they are known to eat pet food, garbage, garden crops, livestock, poultry, and pets (mostly cats).
- Coyotes occasionally kill domestic dogs (and foxes) that they consider territorial intruders. Coyotes are also very protective of their young and will attack dogs that get too close to their den and pups. ***Note:*** The list of killers of domestic cats and dogs includes other dogs and cats, vehicles, bears, cougars, bobcats, foxes, disease, and furious neighbors!
- Most hunting activity takes place at night. Undisturbed and hungry coyotes will hunt during daylight hours, and may be seen following farm machinery, catching voles and other small prey.

Den Sites

- The female coyote digs her own den under an uprooted tree, log, or thicket; may use a cave, hollow log, or storm drain; or take over and enlarge another mammal's burrow.

- The den will have an entrance 1 to 2 feet across, be dug 5 to 15 feet long, and terminate in an enlarged nesting chamber.
- Coyotes usually have several dens and move from one to the other, minimizing the risk that a den containing young will be detected. These moves also help to prevent an accumulation of fleas and other parasites, as well as urine, droppings, and food refuse.
- Coyotes use the same dens yearly or make new dens in the same area.

Reproduction and Family Structure

- Occasionally, a mated pair of coyotes will live, hunt, and raise pups together for many years, sometimes for life.
- Breeding occurs in late winter. After a gestation (pregnancy) of 63 days, an average of four pups are born from early April to late May. (Litter size can be affected by population density and food availability.)
- The young are principally cared for by the female; occasionally a nonbreeding sibling will assist with raising the litter. The male provides some food for the mother and the young.
- Pups emerge from the den in two to three weeks and begin to eat regurgitated food. Because food requirements increase dramatically during pup rearing, this is a period when conflicts between humans and coyotes are common.
- Juvenile coyotes usually disperse alone or sometimes in groups at six to eight months of age. A few may stay nearby, while others seek new territory up to 50 miles away. The greater the amount of food available in a given area, the closer the juveniles will stay to their den.
- Coyotes can interbreed with domestic dogs; however, such crosses are rare.

Mortality and Longevity

- Coyote numbers are controlled by social stress, diseases, parasites, competition for food, and predators.
- Predators include humans, cougars, bears, and other coyotes. Eagles, dogs, and adult coyotes kill some coyote pups.
- Where coyotes are hunted and trapped, females produce more pups per litter than in areas where they are protected.
- Coyotes in captivity live as long as 18 years. In the wild, few coyotes live more than four years; the majority of pups die during their first year.

Viewing Coyotes

Coyotes are extremely wary. Their sense of smell is remarkable, and their senses of sight and hearing are exceptionally well developed.

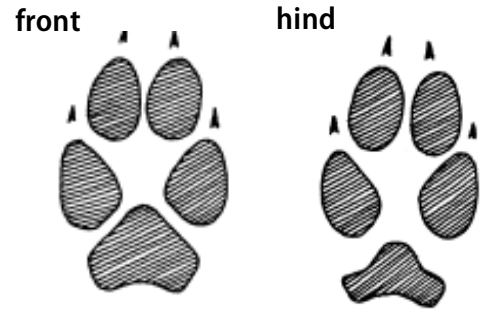


Figure 2. *Coyote tracks are more oblong-shaped than dog tracks. The normal track is about 2 inches wide and 2½ inches long, with the hind track slightly smaller than the front. The toenails nearly always leave imprints.*
(Drawing by Kim A. Cabrera.)

Sightings of coyotes are most likely during the hours just after sunset and before sunrise. To view a coyote, locate a well-used trail and wait patiently from an area overlooking a canyon, ravine, or other area. A coyote will often come down the trail the same time every morning or evening. Also, you could watch a coyote's feeding area, such as a livestock or big game carcass.

By six months of age, pups have permanent teeth and are nearly fully grown. At about this time, female coyotes train their offspring to search for food, so it is not unusual to observe a family group.

Never approach an occupied coyote den. A mother's protective instincts can make her dangerous if she has young in or nearby the den. Den sites, and coyote activity, should be observed with binoculars or a spotting scope from a distance that does not visibly disturb the animals. Unfamiliar or new human activity close to the

den, especially within one-quarter mile, will often cause coyotes to move, particularly if the pups are older, if the adults see you, or if the den is in an open area with little protective cover.

Tracks, Trails, and other Signs

Look for coyote tracks in mud, sand, dust, or snow (Fig. 2). Their trails are often found along draws, fence lines, game and livestock trails, next to roads, in the middle of dirt roads, and on ridge tops.

When a tree falls across a trail, coyotes have to either go over or under it, depending on their size. Those that go over tend to rub the bark off the top of the log; those that go under sometimes leave their hairs on the underside. Also look for coyote hairs on a wire fence where a trail runs next to or under the fence.

Droppings

Coyote droppings are found in conspicuous places and on or near their trails. The droppings are extremely variable in size, shape, and composition. Individual droppings average 3 to 4 inches long with a diameter of 1 inch. Droppings consisting of a lot of hair may be larger. The residue from pure meat is likely to be semiliquid and black. Those resulting from a diet of cherries, apples, blackberries, huckleberries, elderberries, or other fruits tend to crumble.

Figure 3. *Juvenile coyotes are often heard in summer, trying out their voices.*
(Washington Department of Fish and Wildlife.)

Feeding and Hunting Sites

When small mammals such as rabbits are eaten, the head, feet, and hide will have been eaten, leaving a scattering of fur at the feeding site. Bones, feathers, and fur can be seen next to den entries. Signs of digging occur where coyotes follow promising scents and excavate prey, including moles, voles, and gophers.

Calls

Coyotes create a variety of vocalizations. Woofs and growls are short-distance threat and alarm calls; barks and bark-howls are long-distance threat and alarm calls; whines are used in greetings; lone and group howls are given between separated group members when food has been found; and a yip-howl is often done after a group reunites. Juvenile coyotes are often heard in summer, trying out their voices (Fig. 3).

Coyotes Too Close for Comfort

Coyotes are curious but timid animals and will generally run away if challenged. However, remember that any wild animal will protect itself or its young. Never instigate a close encounter.

If a coyote ever approaches too closely, pick up small children immediately and act aggressively toward the animal. Wave your arms, throw stones, and shout at the coyote. If necessary, make yourself appear larger by standing up (if sitting) or stepping up onto a rock, stump, or stair. The idea is to convince the coyote that you are not prey, but a potential danger.

Where coyote encounters occur regularly, keep noisemaking and other scare devices nearby. A starter pistol can be effective; so can a vinegar-filled super soaker or a powerful spray of water from a hose. Where pyrotechnics are out of the question, construct a "clapper" (Fig. 4). A solid walking stick, pepper spray, or paintball gun are powerful deterrents at close range.

If a coyote continues to act in an aggressive or unusual way, call your local wildlife office or state patrol.

Figure 4. *Construct a clapper by hinging together two, 24-inch 2 x 4s. Smack the two sides together.*
(Drawing by Jenifer Rees.)

Preventing Conflicts

To date, there have been no documented coyote attacks on humans in Washington. Prior to 1981, coyote attacks on humans throughout North America were also rare.

However, in the 1990s more than 50 coyote-related human health and safety incidents were reported nationally to the U.S. Department of Agriculture. From 1988 to 1997 in the West's most densely populated area—southern California—53 coyote attacks on humans, resulting in 21 injuries, were documented by a University of California Wildlife Extension Specialist. A study of those incidents indicates that attacks on pets may precede and even predict more serious coyote-human conflicts, and that human behavior is contributing to the problem.

Humans help to create the conditions for conflicts with coyotes by deliberately or inadvertently providing the animals with food, such as carcasses of farm animals or handouts. When humans provide food, young coyotes quickly learn not to fear humans; this makes them bold. They will also become dependent on the easy food source humans have come to represent. Once a coyote stops hunting on its own and loses its fear of people, it becomes dangerous and could attack without warning.

Outwitting coyotes begins with prevention. Once a coyote causes damage for the first time, it gets easier for the coyote to do it again. To prevent conflicts with coyotes, use the following management strategies around your property and, if possible, encourage your neighbors to do the same.

Don't leave small children unattended where coyotes are frequently seen or heard. If there are coyote sightings in your area, prepare your children for a possible encounter. Explain the reasons why coyotes live there (habitat/food source/ species adaptability) and what they should do if one approaches them **(don't run, be as big, mean, and loud as possible).** By shouting a set phrase such as "go away coyote" when they encounter one, children will inform nearby adults of the coyote's presence as opposed to a general scream. Demonstrate and rehearse encounter behavior with the children.

Never feed coyotes. Coyotes that are fed by people often lose their fear of humans and develop a territorial attitude that may lead to aggressive behavior. Try to educate your friends and neighbors about the problems associated with feeding coyotes. If you belong to a homeowner's association or neighborhood watch, bring up the subject during one of the meetings.

Don't give coyotes access to garbage. Keep garbage can lids on tight by securing them with rope, chain, bungee cords, or weights. Better yet, buy quality garbage cans with clamps or other mechanisms that hold lids on. To prevent tipping, secure the side handles to metal or wooden stakes driven into the ground. Or keep your cans in tight-fitting bins, a shed, or a garage.

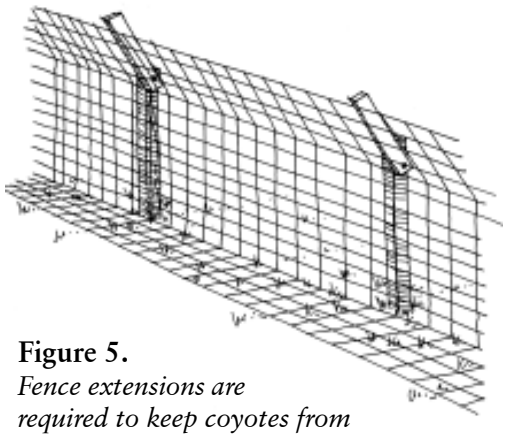


Figure 5.
Fence extensions are required to keep coyotes from jumping over a 5-foot fence. Angle the top of a woven-wire fence out about 15 inches and completely around the fence. An effective fence extends below the surface, or has a wire apron in front of it to prevent digging.
(Drawing by Jenifer Rees.)

Prevent access to fruit and compost. Keep fruit trees fenced, or pick up fruit that falls to the ground. Keep compost piles within a fenced area or securely covered. Cover new compost material with soil or lime to prevent it from smelling. Never include animal matter in your compost; it attracts coyotes. If burying food scraps, cover them with at least 12 inches of soil, and don't leave any garbage above ground in the area—including the stinky shovel.

Feed dogs and cats indoors. If you must feed your pets outside, do so in the morning or at midday, and pick up food, water bowls, leftovers, and spilled food well before dark every day.

Don't feed feral cats (domestic cats gone wild). Coyotes prey on these cats as well as any feed you leave out for the feral cats.

Prevent the buildup of feeder foods under bird feeders. Coyotes will eat bird food and are attracted to the many birds and rodents that come to feeders. (See the handout, "Preventing Problems at Bird Feeders" for information on feeder management.)

Keep dogs and cats indoors, especially from dusk to dawn. If left outside at night in an unprotected area, cats and small to mid-size dogs may be killed by coyotes. Pets can be easy prey for coyotes. Being

raised by humans leaves them unsuspecting once they leave the safety of your home. If you suspect losing a dog or cat to a coyote, notify your neighbors. Once a coyote finds easy prey it will continually hunt in the area.

Modify the landscape around children's play areas. Shrubs and trees should be pruned several feet above ground level so coyotes can't hide in them. Keep deterrents nearby in times of increased sightings. An old hockey stick, broom, or a pile of stones near the play area can help prepare children for an encounter and will remind them of effective encounter behavior.

Build a coyote-proof fence. Coyotes don't leap fences in a single bound but, like domestic dogs, they grip the top with their front paws and kick themselves upward and over with the back legs. Their tendency to climb will depend on the individual animal and its motivation. A 5-foot woven-wire fence with extenders facing outward at the top of each post should prevent coyotes from climbing over (Fig. 5).

However, all coyotes are excellent diggers, and an effective fence needs to extend at least 8 inches below the surface, or have a galvanized-wire apron that extends out from the fence at least 15 inches (Fig. 5).

Electric fences can also keep coyotes out of an enclosed area (Figs. 6 and 7). Such a fence doesn't need to be as high as a woven-wire fence because a coyote's first instinct will be to pass through the wires instead of jumping over them. Digging under electric fences usually doesn't occur if the bottom wire is electrified.

Alternatively, install a commercial device, such as the Coyote Roller™, to prevent coyotes from being able to get the foothold necessary to hoist them over a fence (Fig. 8). (See "Internet Resources" for additional Information.)

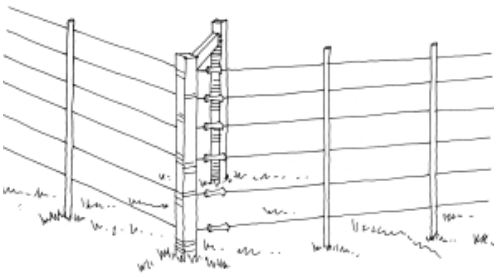


Figure 6. *A six-wire electric fence can keep coyotes out of an enclosed area.*

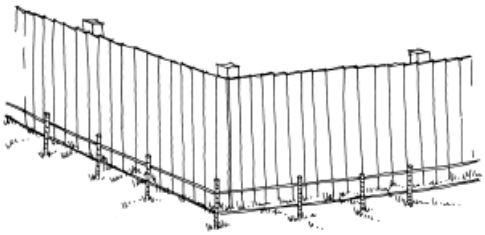


Figure 7. *Two electrified wires, 8 and 15 inches above ground and offset from an existing wood fence by 12 inches will prevent coyotes from accessing the fence. A single strand may be sufficient, but two electrified wires will provide added insurance.*

(Drawings by Jenifer Rees.)

Enclose poultry (chickens, ducks, and turkeys) in a secure outdoor pen and house. Coyotes will eat poultry and their eggs if they can get to them. ***Note:*** Other killers of poultry include foxes, skunks, raccoons, feral cats, dogs, bobcats, opossums, weasels, hawks, and owls.

To prevent coyotes from accessing birds in their night roosts, equip poultry houses with well-fitted doors and secure locking mechanisms. To prevent them from trying to go under the fence, stake the bottom of the fence flush to the ground, or line the bottom of the fence with bricks, fence posts, or similar items. For ways to prevent coyotes from digging under a fence or structure see Figure 9.

To prevent coyotes and other animals from accessing poultry during the day, completely enclose outdoor pens with 1-inch chicken wire placed over a sturdy wooden framework.

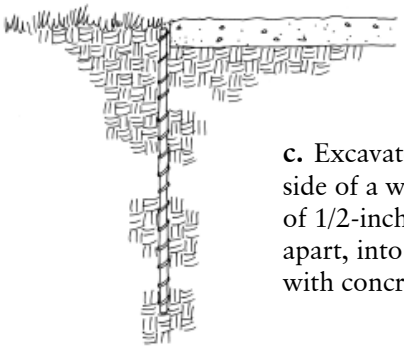
Keep livestock and small animals that live outdoors confined in secure pens during periods of vulnerability. All animals should be confined from dusk to dawn. (Temporary or portable fencing keeps livestock together so that

Figure 8. *The Coyote Roller™ prevents coyotes from being able to get the foothold necessary to hoist them over a fence.*

Figure 9. *Various ways to install a barrier to prevent coyotes from digging under chicken coops and similar places. To add to the life of the barrier, spray on two coats of rustproof paint before installation. Always check for utility lines before digging in an area.* *(Drawings by Jenifer Rees.)*

a. Lay large flat stones, concrete patio pavers, or 1/4-inch hardware cloth (held in place with stakes) on the surface of the soil next to a wall. The barrier forces coyotes to begin digging farther out and they will most likely give up in the process.

b. Bend hardware cloth into an "L" shape and lay it in a trench so that the wire goes at least 1 foot below ground and 1 foot out from the wall.



c. Excavate a 3 x 3 inch trench along the side of a wall, and hammer 2-foot lengths of 1/2-inch rebar, spaced a few inches apart, into the ground. Cover the tops with concrete or dirt.

they can be guarded more effectively.) During birthing season, keep young and vulnerable animals confined at all times. Do not use remote pastures or holding areas, especially when there has been a recent coyote attack. Remove any sick and injured animals immediately. Ensure that young animals have a healthy diet so that they are strong and less vulnerable to predators.

Livestock producers have discovered that scare devices, such as motion detectors, radios, and other noice makers, will deter coyotes—until they realize that they aren't dangerous.

Note: Many ranchers now attempt to kill coyotes only when damage has occurred. If your property is the home territory of coyotes that don't harm livestock, they will keep away other coyotes that are potential livestock killers. Coyotes also benefit ranchers and other property owners by helping control populations of mice, rats, voles, moles, gophers, rabbits, and hares.

Remove or bury dead livestock. Coyotes, with their keen sense of smell, quickly find dead animals. Cover the carcass with a minimum of 2 feet of soil.

For a large property with livestock, consider using a guard animal. There are specialty breeds of dogs that can defend livestock. Donkeys and llamas have also successfully been used as guard animals. As with any guard animal, pros and cons exist. Purchase a guard animal from a reputable breeder who knows the animal he or she sells. Some breeders offer various guarantees on their guard animals, including a replacement if an animal fails to perform as expected.

Lethal Control

If all efforts to dissuade a problem coyote fail and it continues to be a threat to humans, or animals in their care, the animal may have to be killed.

In suburban areas of southern California, trapping and euthanizing coyotes has been shown not only to remove the individual problem animal, but also to modify the behavior of the local coyote population. When humans remove a few coyotes, the local population may regain its fear of humans in areas where large numbers of humans are found. It's neither necessary nor possible to eliminate the entire population of coyotes in a given area. Contact your local wildlife office for additional information.

Public Health Concerns

Coyote diseases or parasites are rarely a risk to humans, but could be a risk to domestic dogs in Washington. Anyone handling a coyote should wear rubber gloves, and wash their hands well when finished.

Canine distemper, a disease that affects domestic dogs, is found in our coyote populations. Have your dogs vaccinated for canine distemper to prevent them from contracting the disease.

Canine parvovirus, or **"parvo"** is another disease that affects domestic dogs and is found in our coyote populations. Parvo vaccinations have helped to control the spread of this disease. Despite being vaccinated, some dogs—especially puppies and older domestic dogs—still contract and die from parvo.

Parvo is usually spread to coyotes and domestic dogs by direct or indirect contact with infected droppings. Exposure to domestic dogs occurs where dogs assemble, such as parks, dog shows, kennels, pet shops, and where they have contact with coyotes. Contact your veterinarian for vaccination information if your dog is ill.

Mange occurs in coyote and red fox populations in the Washington. Mange is caused by a parasitic mite that causes extreme irritation when it burrows into the outer layer of the animal's skin. The mite causing mange is fairly species-specific, and thus it would be difficult for a human to contract mange from an infected wild animal.

If a person is bitten or scratched by a coyote, immediately scrub the wound with soap and water. Flush the wound liberally with tap water. In other parts of North America coyotes can carry **rabies.** Contact your physician and the local health department immediately. If your pet is bitten, follow the same cleansing procedure and contact your veterinarian.

Legal Status

Coyotes are unclassified wildlife; however, a license and an open season are required to hunt or trap them. A property owner or the owner's immediate family, employee, or tenant may kill or trap a coyote on that property if it is damaging crops or domestic animals (RCW 77.36.030). A license is not required in such cases.

Except for bona fide public or private zoological parks, persons and entities are prohibited from importing a coyote into Washington State without a permit from the U.S. Department of Agriculture and written permission from the Department of Health. Persons and entities are also prohibited from acquiring, selling, bartering, exchanging, giving, purchasing, or trapping a live coyote for a pet or export (WAC 246-100-191).

Because legal status, trapping restrictions, and other information on coyotes changes, contact your WDFW Regional Office for updates.

Additional Information

Books

Conover, Michael. *Resolving Human-Wildlife Conflicts: The Science of Wildlife Damage Management*. Boca Raton, FL: Lewis Publishers, 2002.

Hygnstrom, Scott E., et al. *Prevention and Control of Wildlife Damage*. Lincoln, NE: University of Nebraska-Lincoln, Institute of Agriculture and Natural Resources, 1994. (Available from: University of Nebraska Cooperative Extension, 202 Natural Resources Hall, Lincoln, NE 68583-0819; phone: 402-472-2188)

Maser, Chris. *Mammals of the Pacific Northwest: From the Coast to the High Cascades*. Corvalis: Oregon State University Press, 1998.

Trout, John. *Solving Coyote Problems: How to Outsmart North America's Most Persistent Predator*. New York: Lyons Press, 2001.

Verts, B. J., and Leslie N. Carraway. *Land Mammals of Oregon*. Los Angeles: University of California Press, 1998.

Internet Resources

Burke Museum's Mammals of Washington
http://www.washington.edu/burkemuseum/collections/mammalogy/mamwash/index.html

Cat Containment Systems:
www.feralcat.com/fence.html
www.corporatevideo.com/klips/
www.friendlyfence.com

Roll Guard, Inc. (Coyote Roller™)
http://www.coyoteroller.com/Products/index.html

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Written by: Russell Link, WDFW Urban Wildlife Biologist, Linkrel@dfw.wa.gov

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