

Mammalian Carnivores of Florida ¹

Raoul Boughton, Bethany Wight, Elizabeth Pienaar, and Martin B. Main²

Florida's diverse wildlife includes a group of mammals that are carnivorous (meat-eating). These mammalian predators belong to the animal order Carnivora, which are characterized by having teeth adapted for tearing and consuming flesh. However, it should not be thought that all members of this animal order eat *only* meat; several, including Florida black bears and coyotes, are omnivorous and will eat both animal and plant materials. This document provides an overview of Florida's mammalian carnivores from large to small. Although other animals in Florida also consume meat (opossums, for instance, members of Order Marsupialia, or pouched mammals), this document focuses only on Florida mammals in Order Carnivora.

Although ecologists and wildlife enthusiasts consider the existence of Florida's carnivores both important and fortunate in a world where many large carnivores are rapidly disappearing, there are people who fear and dislike carnivores. There are also people who kill carnivores on sight. Fear and persecution of carnivores, combined with intensive human population growth and habitat destruction, is threatening the continued existence of carnivores worldwide.

When European settlers first arrived on North American shores, they brought with them a prejudice against predators. The first wildlife legislation enacted in the British colonies was a bounty upon wolves. This policy of killing predators dominated wildlife policy until the ecologist Aldo

Leopold demonstrated the important role of predator-prey relationships in the 1950s. Aldo Leopold documented that while the removal of predators initially increased the deer population, the deer population ultimately collapsed. Predation, and particularly predation by top-level carnivores, is a critical ecosystem function. Numerous studies have demonstrated that the loss of top-level predators can have negative effects on ecosystems, including declines in biodiversity.

Predator-prey relationships are complex. The removal of large predators has been shown in some cases to lead to an increase in deer and other herbivore populations that damage and eventually modify habitats. When gray wolves were nearly extirpated from Yellowstone National Park, the elk population increased, but abundance of woody and herbaceous plants decreased, which in turn affected other herbivores. After wolves were reintroduced, elk populations decreased, but abundance of other herbivores like beavers and bison increased, possibly due to an increase in woody or herbaceous vegetation. Elimination of large predators also may result in an increase in "mesopredators," small to middle-sized animals like raccoons and opossums, which may in turn increase predation pressure on ground-nesting birds such as turkey and quail, as well as other small game and non-game species. In California, a study suggested that the decrease in coyote populations allowed for an increase in mesopredators such as raccoons, skunks, foxes, and domestic cats, which in turn resulted in higher mortality of

1. This document is WEC419, one of a series of the Department of Wildlife Ecology and Conservation, UF/IFAS Extension. Original publication date January 2020. Visit the EDIS website at <https://edis.ifas.ufl.edu> for the currently supported version of this publication.
2. Raoul Boughton, assistant professor, Department of Wildlife Ecology and Conservation and research biologist, UF/IFAS Range Cattle Research and Education Center; Bethany Wight, research biologist, UF/IFAS Range Cattle Research and Education Center; Elizabeth Pienaar, assistant professor, Department of Wildlife Ecology and Conservation; and Martin B. Main, professor Department of Wildlife Ecology and Conservation and associate dean for Extension, Environmental and Natural Resources; UF/IFAS Extension, Gainesville, FL 32611.

bird populations. Analogous results were found in a study of duck nesting success in the Prairie Pothole Region of North America, where nest predation by foxes was much greater in areas where coyotes were actively controlled whereas nesting success was greater where coyotes were not controlled. As our understanding of the complex interplay between predators and prey has increased, so has our acknowledgment that these relationships are important for both general ecosystem function and the continued existence of diverse species within the food web.

Florida’s carnivorous mammals are remarkable, and some of Florida’s mammals can be found nowhere else. This document provides information for each of Florida’s 13 land-based carnivore species. Our beliefs and actions as humans will be critical for their continued survival in Florida.

Large Mammalian Carnivores

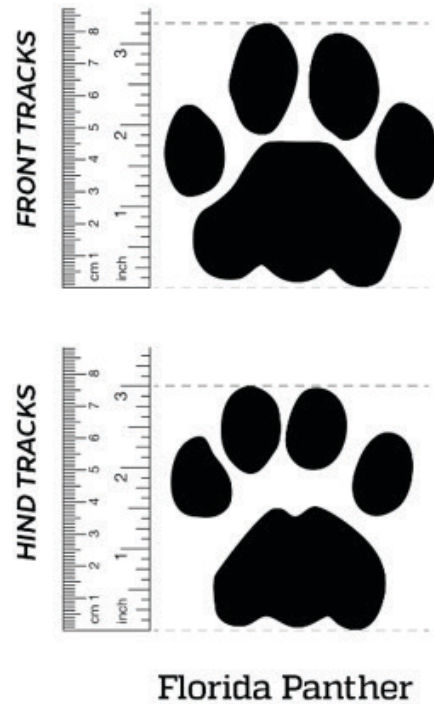
Florida Panther (*Puma concolor coryi*)



Figure 1. A Florida panther.
Credits: Jay Staton Photography



Figure 2. Florida panther skull.
Credits: Florida Natural History Museum, Kristen Grace



Florida Panther

Figure 3. Florida panther tracks.
Credits: UF/IFAS

PHYSICAL DESCRIPTION

The Florida panther is tan with a lighter buff or white underbelly but may be darker brown to rust colored along the mid-line of the back. The tips of their long tails, sides of their muzzles, and backs of their ears are blackish. Panther kittens are brown to gray with darker brown to black spots that fade as they become adults. Adult male Florida panthers weigh 85–155 pounds and are approximately seven feet long from the nose to the tip of the tail. Females are smaller, weighing 50–100 pounds and measuring around six feet long.

First described in 1896 by naturalist and hunter Charles Barney Cory, the Florida panther is one of 15 subspecies of puma that occur in North America. Also known as cougars and mountain lions, pumas are one of the most widely distributed carnivores in the Americas, ranging from North America to South America. However, the Florida panther, which is smaller, has longer legs, smaller feet, and a shorter, darker coat than western species of puma, now occurs only in the southeastern United States. Around the 1900s, Florida panthers ranged throughout most of the southeast, but their distribution was reduced due to hunting and habitat loss. In 1967, the Florida panther was listed as a federally endangered species, and soon the Florida Fish and Wildlife Conservation Commission (FWC) began conducting field observations and telemetry research. In the 1990s the Florida panther population was estimated at 20–25 individuals. These panthers had several physical signs of

inbreeding and reduced genetic variation associated with their small population size, such as kinked tails, increased susceptibility to infectious diseases and parasites, and undescended testicles and low sperm count in males. The effects of inbreeding also were believed to be responsible for low pregnancy rates and low kitten survival. To improve the genetic health of the Florida panther, eight female pumas from Texas were captured and translocated to Florida. Five of these females successfully bred with male Florida panthers before they were recaptured and returned to Texas. As a result, the genetic health of the Florida panther population improved, kitten survival increased, and the panther population eventually tripled.

Today the Florida panther population is estimated at 120–230 adult and sub-adult panthers. However, the remaining breeding population is restricted to southwest and south-central Florida, where large tracts of habitat still exist on public conservation areas and privately owned cattle ranches. Because the overall breeding population size is so small, suitable habitat is limited, and panthers' need for large range areas (Table 1) are unmet, the Florida panther is still considered in danger of extinction and is listed as an endangered species at both the federal and state levels. Florida panthers mate throughout the year with a peak in winter and spring. Average litter size is 2–3 kittens; however, rarely do all kittens survive. Panther kittens will stay with their mothers for up to two years.

Despite conservation efforts, continued habitat loss and fragmentation associated with development and road construction threaten the continued survival of this large cat. To survive, panthers require suitable habitat, prey, and space. Panthers are territorial, which means they defend their home ranges against unrelated panthers. Confrontations between panthers may end in injury or death. (A home range is an area in which an animal or group of animals spends most of its time searching for food and mates. These may overlap and are not always defended. Home ranges that are defended are called territories. Territories typically do not overlap.)

Like all cats, the Florida panther eats only flesh. Because it cannot survive on other food, each panther requires a large area to support sufficient prey populations to meet its energy requirements. Depending on the quality of the habitat, the home range of an adult male panther may be as much as 200 square miles and overlap the home ranges of several females with which he mates. Females have smaller home ranges of about 75 square miles. Because panthers use such large areas, they traverse, hunt, and shelter in many different habitat types, but they prefer mature upland

forests such as hardwood hammocks and pinelands, where they hunt for their preferred prey, white-tailed deer and feral hogs. To learn more about Florida panthers and the FWC management plan, visit <https://myfwc.com/wildlifehabitats/wildlife/panther/>.

Florida Black Bear (*Ursus americanus floridanus*)



Figure 4. Florida black bear caught on game camera.
Credits: Carlton Ward Jr.



Figure 5. Florida black bear skull.
Credits: Kon Studio

PHYSICAL DESCRIPTION

The Florida black bear is one of 16 subspecies of black bear that occur in North America. Although this subspecies does not look much different from black bears in other parts of North America, the Florida black bear does have some distinct physical characteristics. For example, Florida bears have a highly arched forehead and a long, narrow skull. Florida black bears also have shiny black fur, a brown nose,

and a short tail. In Florida, male black bears weigh 250–450 pounds, and the smaller females weigh 125–250 pounds.

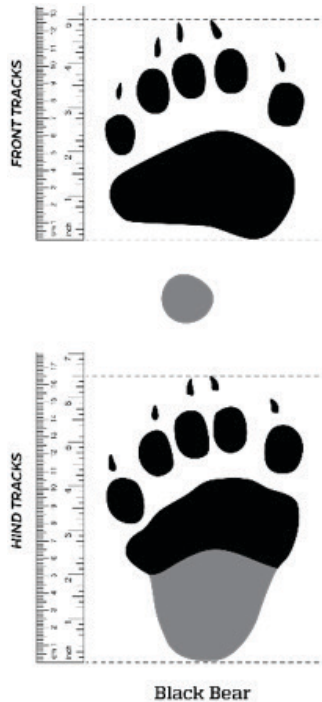


Figure 6. Florida black bear tracks. The black area represents the part of the paw that typically makes contact with the ground, whereas the gray represents a part of the paw that may or may not make contact with the ground and be apparent in a track.

Credits: UF/IFAS

There are seven geographically separated breeding subpopulations of black bears in the state from the panhandle to the southwest peninsula (Table 1). Historically, the Florida black bear subspecies was found from southern Georgia and Alabama through most of Florida. It was listed as threatened from 1974 to 2012, with an estimated population of 300–500 bears in the 1970s due to unregulated hunting and habitat loss. Through conservation efforts by the FWC and other agencies that enforced hunting regulations and preserved habitat, the populations have rebounded, and the Florida black bear was delisted in 2011, with populations increasing almost 90% from 2002 to 2015. The FWC initiated the Florida Black Bear Management Plan in 2012 to conserve the bear population through the creation of bear management units (BMU). Today the population is estimated to consist of about 4,046 individuals, and in June of 2015 the FWC approved a limited bear hunt in four of the seven BMUs as a means to stabilize subpopulation bears. A total of 304 bears were harvested during the 2015 effort. To learn more about Florida black bears and the FWC management plan, visit <http://myfwc.com/bear/>.

Black bears breed from June to August. Bears have an unusual breeding adaptation called delayed implantation,

in which the egg is fertilized during the summer but does not implant into the uterine wall until early winter. Average litter size is 2–3 cubs, and these cubs typically stay with their mother for 2 years. Florida black bears have reduced durations of hibernation, often called denning, compared to northern black bears in colder climates. Denning occurs from mid to late winter through mid-April, with an average denning period of 100–113 days.

The Florida black bear has an omnivorous (plant and animal) diet and uses a wide range of food items and habitats. Although bears are often predatory when opportunity allows, diet studies typically report that fruit and other plant materials constitute most of their diet. Because diet requirements that include plants are more easily met, black bear home ranges are smaller than those of panthers, averaging about 60 square miles for adult males and 12 square miles for adult females. Home range overlap is common for male black bears. Cores of female home ranges, however, do not usually overlap. Male black bears will defend a food source or mate when present, and males will often fight for these resources. In addition, smaller, less dominant bears will avoid encounters with more dominant individuals.

Red Wolf (*Canis rufus*)



Figure 7. Captive red wolf at Species Survival Plan facility, Point Defiance Zoo and Aquarium (Tacoma, WA).

Credits: B. Bartel/USFWS (<https://creativecommons.org/licenses/by/2.0/legalcode>)

PHYSICAL DESCRIPTION

Red wolves are medium-sized, between the size of a coyote and a gray wolf. Adults weigh 45–80 pounds, with males averaging 10% larger than females. They are brown and buff colored with black along their backs and the tips of their tails and reddish ears, heads, and legs. Red wolves have wide heads, broad muzzles, pointed ears, and long, thin legs.



Figure 8. Red wolf skull.
Credits: The Wolves of North America VII, Edward A. Goldman

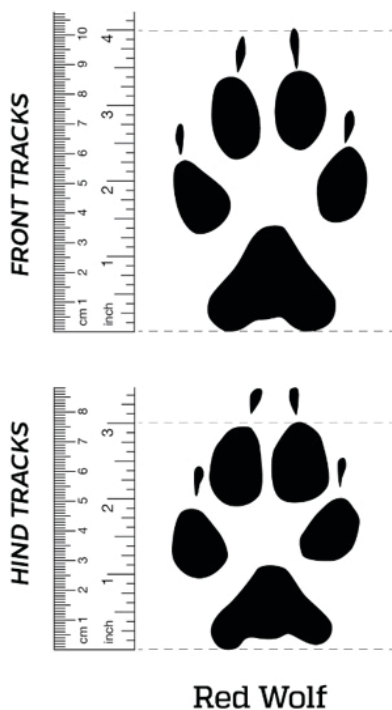


Figure 9. Red wolf tracks.
Credits: UF/IFAS

Historically, the red wolf was common throughout the eastern and south-central United States, including Florida. Today there are no wild populations of red wolves in Florida. They were trapped and killed almost to extinction by the early 20th century. By the middle of the 20th century, the few remaining red wolf populations were at risk of hybridization with coyotes, potentially resulting in hybrids that were more coyote than wolf. Today, the red wolf is one

of the most endangered wolves. In Florida, habitat loss and intense predator control efforts to protect livestock resulted in the extinction of the subspecies *Canis rufus floridanus* in 1920. In 1967, the red wolf was listed as federally endangered and the US Fish and Wildlife Service began conservation efforts to protect the species. As extinction of this species in remaining habitats became imminent, a captive breeding program began in 1973 with 17 red wolves captured. In 1980, the red wolf was listed as extinct in the wild.

Red wolves were social animals that lived in familial packs, typically consisting of a breeding pair and their offspring. Red wolf packs were territorial and defended their territories from other canids and wolves. The last wild red wolves were found in moist, densely vegetated habitats such as hardwood forest, coastal prairie, and marsh habitats. Research has indicated that wolf pack territory size varied greatly depending on pack size, available resources, and habitat and ranged from 25–500 or more square miles. The alpha male and female within a pack mated in late winter and averaged 2–8 pups. Other adults in the pack helped care for the young. Prior to extinction, red wolves preyed mostly on rabbits, rodents, and other small prey. Released red wolves today, however, rely more on white-tailed deer, raccoon, and rabbits.

Although the red wolf is extinct in the wild, there remain a couple of very small groups of red wolves living outside zoos. Starting in 1990, St. Vincent National Wildlife Refuge in northwestern Florida has been used as an island propagation site for red wolf recovery. One breeding pair and up to two resulting annual litters have been allowed to roam freely on the island. These red wolves are equipped with radio telemetry collars so staff and researchers can track them. At about 18 months, the wolves are relocated to the 1.2-million acre red wolf recovery area in eastern North Carolina. Today more than 40 red wolves live in native habitats in eastern North Carolina as part of an experimental population, and more than 200 red wolves are living in captive breeding facilities throughout the United States. There remains concern about the experimental populations of North Carolina, because coyotes have expanded into the area and continue to hybridize with red wolves, threatening their already small gene pool. To learn more about the red wolf recovery program, visit <https://www.fws.gov/redwolf/>.

Medium Mammalian Carnivores

Coyote (*Canis latrans*)



Figure 10. An eastern coyote.

Credits: Matt Knoth (<https://creativecommons.org/licenses/by/2.0/legalcode>)



Figure 11. Coyote skull.

Credits: Pereszlenyi Á. (2015) Skull Base—Online Skull Collection (<http://skullbase.info/>)

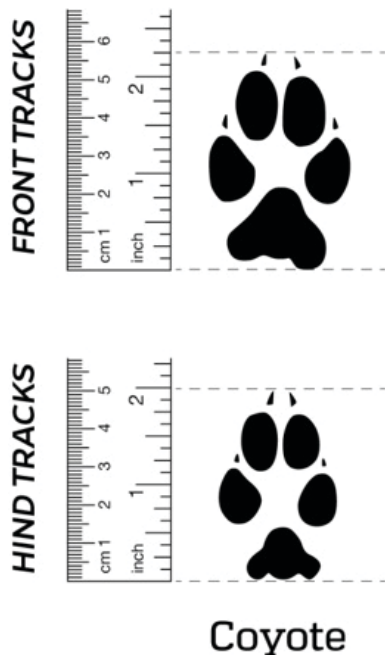


Figure 12. Coyote tracks.

Credits: UF/IFAS

PHYSICAL DESCRIPTION

Coyotes are smaller than wolves and larger than foxes, with adults weighing 20–40 pounds and males typically larger than females. Their fur color is a mixture of browns, grays, whites, and even black, and they have large triangular ears, a long slender muzzle, and a bushy tail.

The coyote is a relatively recent addition to Florida’s list of carnivores. Following the elimination of wolves throughout most of the continental United States during the last century and increased habitat alteration, the geographic range of coyotes expanded across the country to include the eastern states. Coyotes were documented in the Florida Panhandle during the 1970s and expanded their range into south Florida by the 1990s. Although 16 subspecies of coyotes are documented in North America, it is not clear which subspecies have contributed to Florida populations. Because coyotes arrived in Florida primarily by way of range expansion (although intentional introductions of small numbers by hunters have been documented), they technically are not an exotic species, nor are they historically native to Florida. Therefore the status of the species is difficult to define.

Coyotes are skilled hunters. Although coyotes prefer open habitats such as rangelands, they can use a diversity of habitats (including suburbs and large cities) and are opportunistic in their diets. Coyotes primarily prey upon small mammals such as rabbits and rodents but also large mammals such as white-tailed deer, particularly fawns. Coyotes also consume insects, large amounts of fruit, and even grass at certain times of the year. Coyotes will scavenge and eat carrion. Coyotes occasionally kill livestock and small pets, creating conflict with humans. Females reproduce annually and average 6 pups to a litter. Pups typically disperse at 8–10 months of age. Like other carnivores, coyotes are territorial and establish home ranges that typically cover 5–20 square miles. Little research has been done to estimate population size, but based on home range studies, it appears that densities in rural areas are approximately one breeding pair per 10–15 square miles. These ranges are occupied by a breeding male and female, which is the basic social unit for coyotes. Although not much is known about coyotes in Florida, it seems clear that coyotes are here to stay. (For more information refer to *Wildlife of Florida Factsheets: Coyote*, <http://edis.ifas.ufl.edu/uw443>).

Bobcat (*Lynx rufus floridanus*)



Figure 13. Florida Bobcat.

Credits: Krystal Hamlin (<https://creativecommons.org/licenses/by/2.0/legalcode>)



Figure 14. Digital representation of bobcat skull.

Credits: Dr. Pamela Owen, 2002, "Lynx rufus" (On-line), Digital Morphology. Accessed October 22, 2018 at http://digimorph.org/specimens/Lynx_rufus/male/

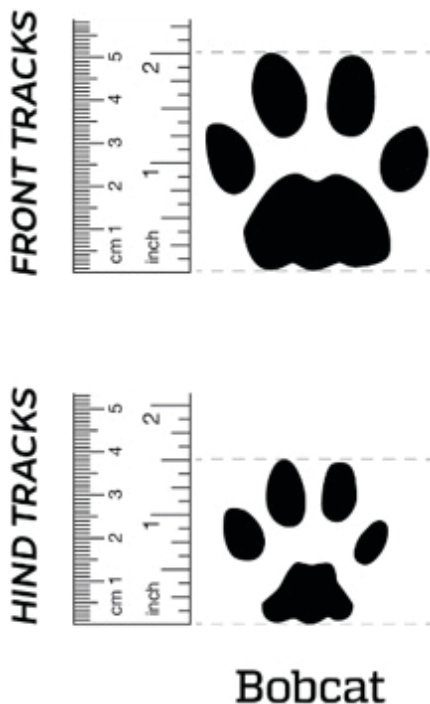


Figure 15. Bobcat tracks.

Credits: UF/IFAS

PHYSICAL DESCRIPTION

Bobcats are at least twice as large as a domestic cat, averaging 15–35 lbs, with males typically larger than females (Table 1). They have brown/tan fur covered with small black markings that are especially prominent when young. The tail is short and bobbed with a black tip. The backs of their ears are black with a white spot (also very prominent on young, fading with age), and they often have a “ruff” around their neck.

The bobcat is Florida’s smaller and only “spotted” wild cat. Wild cats that have spotted coats are sometimes melanistic, which means their fur (or pelage) may be very dark or even black. This occurs in leopards and jaguars in other regions of the world, where they may be referred to as black panthers. Melanism also has been documented in bobcats in Florida but has never been documented in Florida panthers. Like the panther, the Florida bobcat is a distinct subspecies, of which there are 12 in North America. Also like the panther, bobcats are entirely carnivorous, preying upon small animals such as rabbits, rodents, and birds but much less frequently on large animals such as white-tailed deer. Bobcats are easy to distinguish from Florida panthers by their much smaller size and short tails. For more information on visual comparisons between bobcats and panthers, refer to *Did I See a Panther?* (<http://edis.ifas.ufl.edu/uw144>).

Bobcats are solitary except during their breeding season (Aug–Mar). Females average 1–4 kittens per litter that disperse at about 8 months of age. Bobcats are territorial, but because they are smaller and hunt prey that is more abundant, they require less land area than do larger carnivores. Home ranges vary from 5–6 square miles in rural, undeveloped habitat and 1–2 square miles in urban areas. Male home ranges are larger and overlap the home ranges of several females. Bobcats are found throughout Florida, and they use a variety of habitats, ranging from forests to prairies to, occasionally, urban areas. Bobcat populations are not listed at the state or federal level as threatened or endangered. There is little to no data estimating population size, however, a survey of wildlife agencies suggests they were recently increasing everywhere except for Florida, where they were reported as decreasing, although still fairly common. For more information, refer to *Wildlife of Florida Factsheets: Bobcat*, <http://edis.ifas.ufl.edu/uw444>.

Gray Fox (*Urocyon cinereoargenteus floridanus*)



Figure 16. Gray fox.
Credits: Gary Robertson (<https://creativecommons.org/licenses/by/2.0/legalcode>)



Figure 17. Gray fox skull.
Credits: Pereszlenyi Á. (2015) Skull Base—Online Skull Collection (<http://skullbase.info/>)

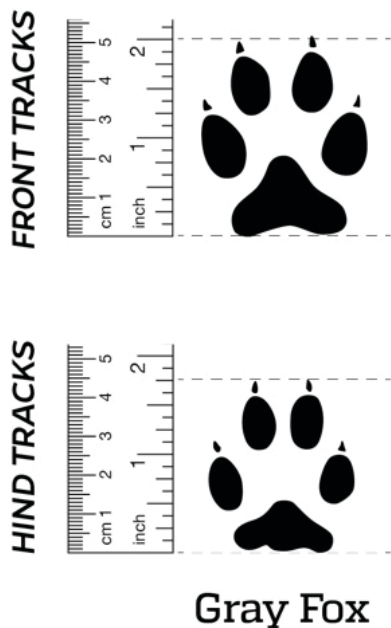


Figure 18. Gray fox tracks.
Credits: UF/IFAS

PHYSICAL DESCRIPTION

Gray foxes are typically grey on their faces, sides, backs, and tails with a black stripe down the back and tail. The underbelly is white, and the neck and underside of the tail is a rusty-yellow color. Some grey foxes can actually have more red or brown or a mix of these colors and are often confused with red foxes. However, the gray fox has a distinct, “cat-like” face with a smaller and shorter muzzle. Adult gray foxes weigh about 7–13 pounds and are typically around 40 inches long including a foot-long tail.

The gray fox is Florida’s smallest wild canid. This species is native to Florida and one of 7 subspecies to occur north of Mexico. The Florida subspecies inhabits Gulf States from southern South Carolina to Florida, west to eastern Texas and along the Gulf Coast, except for Louisiana. Breeding occurs in the spring with females averaging 3–5 pups that will stay with their parents until late summer or fall. Home range sizes have been estimated at 0.2–2.6 square miles. Gray foxes prefer to feed on mice, rats, and rabbits but will also eat fish, fruits, insects, and some carrion. Gray foxes have been known to prey on domestic fowl such as chickens, but this behavior has been described as rare. This may be because the gray fox is very reclusive and prefers dense forested habitat during the day and more open fields and wooded areas at night. The gray fox is capable of climbing trees and is often called the “tree fox,” which is an important survival strategy because gray foxes are preyed upon by larger predators, including domestic dogs and coyotes. Historically, hunting of the gray fox for sport and fur caused populations to decline, and the species was listed as threatened in some areas. Today, gray fox populations are thought to be stable but there are little data available, possibly due to the foxes’ secretive habits.

Red Fox (*Vulpes vulpes*)

PHYSICAL DESCRIPTION

Red foxes are orange/red over most of their bodies, except for a white tipped tail, underbelly, and neck or muzzle. They also have black ear tips and legs. This coloration differs from the gray fox, which is mostly gray with red around the neck, shoulders, and legs. Red foxes are also slightly larger than gray foxes and resemble a small dog. They weigh 10–15 pounds and are about 3 feet long including their tails.

The red fox is not native to Florida (except perhaps in the Panhandle) and is thought to have become established through introduction by hunting clubs. However, a recent study showed that red foxes in the southeastern United States originated from range expansion from eastern Canada and the northeastern United States, similar to coyotes,

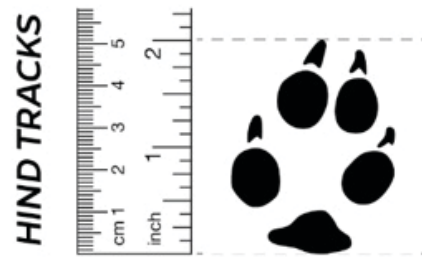
and are now found throughout the state. Breeding occurs in late fall or early winter, females average 5 pups, and these pups stay with their parents for about 6 months. The red fox can live in a variety of habitats but typically prefers uplands mixed with fields and pastures and edges. Unlike the gray fox, they avoid dense forested habitat. They can also live in suburban areas, such as parks or golf courses. The home range size of red foxes varies with habitat, climate, and food resources, but they generally travel 1–5 miles from their den. Red foxes are mainly carnivorous, eating rabbits, mice, rats, and other small animals. Red foxes will also eat fish, insects, birds, eggs, frogs, reptiles, worms, and fruits. They are solitary hunters, and when food is abundant, they will cache food in the ground. Red foxes have acute hearing, allowing them to detect prey in tall grass. They are known to jump into the air and pounce on their prey. Red foxes are highly adaptable and have adapted to human-converted open habitat—including farms. They are often reported to attack small livestock like chickens.



Figure 19. Young red fox.
Credits: Hal Trachtenberg, (<https://creativecommons.org/licenses/by/2.0/legalcode>)



Figure 20. Red fox skull.
Credits: Pereszlenyi Á. (2015) Skull Base—Online Skull Collection (<http://skullbase.info/>)



Red Fox

Figure 21. Red fox tracks.
Credits: UF/IFAS

North American River Otter (*Lontra canadensis*)



Figure 22. American river otter.
Credits: Jon Nelson (<https://creativecommons.org/licenses/by/2.0/legalcode>)

PHYSICAL DESCRIPTION

The North American river otter has thick, protective dark brown fur with a lighter brown underbelly and face. As Florida’s only semi-aquatic carnivore, otters can live on land and water. Their narrow bodies, flat heads, short legs, webbed feet, and strong tails allow for streamlined movement in water. They have long whiskers to detect prey under water, clawed feet to grasp slippery prey, and a full set of teeth to tear flesh. Adult otters weigh between 11–30

pounds and can grow to be up to 3–4 feet including their tail.

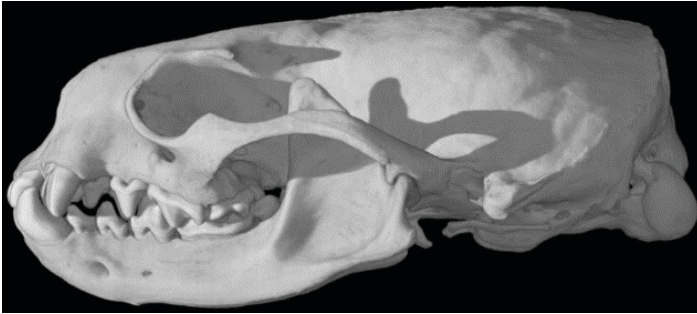
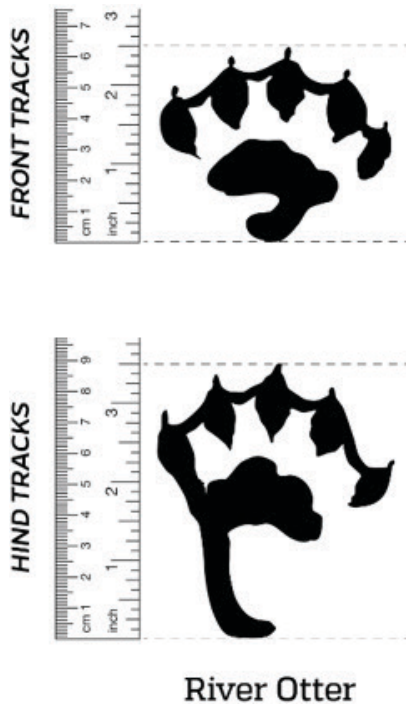


Figure 23. Digital representation of a North American river otter skull. Credits: Mr. Eric Ekdale, 2006, "Lontra canadensis" (On-line), Digital Morphology. Accessed October 22, 2018 at http://digimorph.org/specimens/Lontra_canadensis/female/



River Otter

Figure 24. North American river otter tracks. Credits: UF/IFAS

The North American river otter occurs in Canada and most of the United States. In Florida, they are found everywhere except for the Keys and live in freshwater swamps, ponds, rivers, and creeks. They have also been observed in coastal estuaries but are more common in freshwater environments. There is also mention of two subspecies, *L. c. lataxina* and *L. c. vaga*, that have been found in Florida, although there is little to no information on these subspecies. Breeding occurs in late winter to early spring. Otters have a unique breeding adaptation called delayed implantation in which the egg is fertilized during the summer but does not implant into the uterine wall until early winter. Females average 1–3 pups, and these pups may disperse or remain in familial/social groups. Home range size is

typically 3–15 square miles, with male home ranges overlapping multiple female home ranges. River otters are a top predator within aquatic habitats and prefer to eat aquatic prey such as fish, crawfish, frogs, and crabs but will also eat birds, eggs, reptiles, and other small mammals. Otters are social, living in small family groups typically consisting of a mother and her young. However, adult males and juveniles are often more solitary. Once hunted for their fur almost to extinction, today river otter populations are abundant.

Raccoon (*Procyon lotor*)



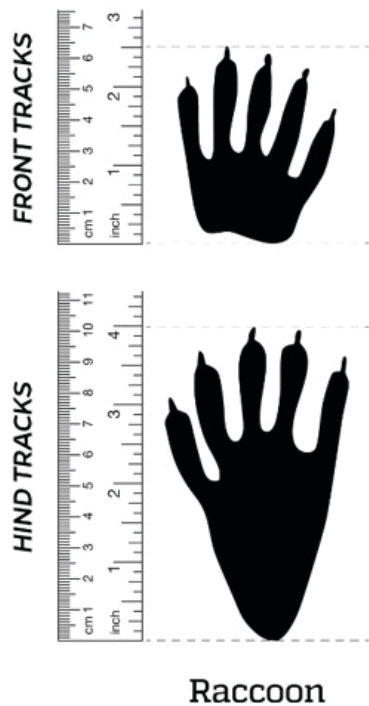
Figure 25. Northern raccoon. Credits: Kenneth Cole Schneider <https://creativecommons.org/licenses/by/2.0/legalcode>



Figure 26. Northern raccoon skull. Credits: Pereszlenyi Á. (2015) Skull Base—Online Skull Collection (<http://skullbase.info/>)

PHYSICAL DESCRIPTION

The northern raccoon is one of the most recognized mammals in North America. Their small furry bodies, black face masks, and ringed tails make them highly distinctive. Adult raccoons weigh between 10–30 pounds and are about 2–3 feet long including their tails.



Raccoon

Figure 27. Northern raccoon tracks.
Credits: UF/IFAS

Raccoons are classified as carnivores but consume a varied diet, including plants, fruits, seeds, carrion, and almost anything out of residential garbage cans. Raccoons are known to prey on small pets and livestock such as rabbits and chickens. This adaptability has allowed them to thrive in almost all habitats, including urban and residential areas. In Florida, breeding typically occurs from March–April, females average 3–4 young, and young usually disperse by 10 months of age. Males are somewhat territorial, and home ranges average 1–3 square miles, but they will travel more than a mile from their home range to access an abundant food resource. In areas where food is plentiful, raccoon densities have been 100 per square mile. Historically, panthers and red wolves would have preyed on raccoons, but today they have few natural predators in Florida. Recent studies have shown a dramatic decrease in raccoon populations near Everglades National Park, which coincides with an increase in populations of invasive Burmese pythons. Although raccoons are killed by alligators, dogs, coyotes, bobcats, and great horned owls, most raccoon fatalities are from vehicle collisions. One of the major concerns with raccoons is the potential for transmitting disease and parasites to people and pets, particularly rabies. Rabies is always a concern, and studies have reported up to 1 of 200 wild raccoons have been exposed to rabies. Do not handle wild animals, especially if they are acting strangely, wandering aimlessly, approaching without fear, or behaving aggressively. For more information on raccoons or rabies, refer to *Northern Raccoon* (<http://edis.ifas.ufl.edu/pdffiles/UW/UW03300.pdf>) and *Facts about Wildlife Diseases:*

Rabies (<https://edis.ifas.ufl.edu/uw282>). Raccoon roundworm (*Baylisascaris procyonis*) is an intestinal parasite of raccoons that occurs throughout Florida but is low in prevalence. This roundworm can infect humans that come in contact with raccoon feces. Be sure to wash your hands after working outside, monitor small children in areas with common raccoon latrines, and do not allow pets to roam unsupervised outside where they could be exposed to raccoon feces.

Small Carnivores of Florida

Striped Skunk (*Mephitis mephitis*)



Figure 28. Striped skunk.
Credits: Clyde Nishimura/Smithsonian's National Zoo (<https://creativecommons.org/licenses/by/2.0/legalcode>)

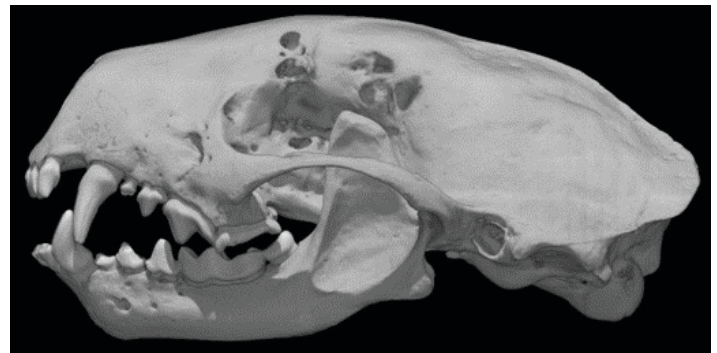
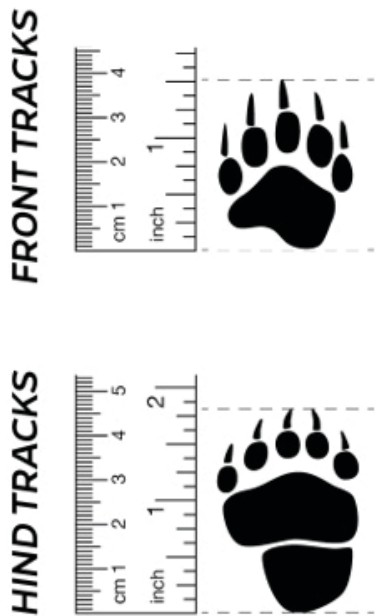


Figure 29. Digital representation of a striped skunk skull.
Credits: Dr. Blaire Van Valkenburgh, 2008, "Mephitis mephitis" (On-line), Digital Morphology. Accessed October 22, 2018 at http://digimorph.org/specimens/Mephitis_mephitis/female/

PHYSICAL DESCRIPTION

The striped skunk has thick black fur with a white stripe that starts from the nose and splits at the neck to form two stripes that end at the base of the tail. Striped skunks have small heads and ears, short legs, and large, bushy tails. Adult striped skunks weigh between 6–8 pounds and measure up to 32 inches including their tails.



Striped Skunk

Figure 30. Striped skunk tracks.
Credits: UF/IFAS

The eastern striped skunk is the larger of two species of skunks that occur in Florida. Skunks are most commonly known for their ability to spray. When threatened, they spray a strong-smelling and quite unpleasant oily musk from scent glands near their anuses. The oily musk may carry up to 15 feet, and skunks store about a tablespoonful of the stuff in their glands, which is enough to spray 5–6 times in a row. Their main predators are great horned owls; other potential predators such as bobcats and coyotes are typically deterred by their smelly defense strategy. Striped skunks feed mostly on insects, but they will eat mice, rats, eggs, chicks, frogs, crayfish, and fruits. They have also been known to raid garbage cans in residential areas. Skunks have a breeding adaptation called delayed implantation, in which the egg is fertilized but implants at a later date. Females average 4–7 young during the spring that disperse within a couple months. Striped skunks are typically solitary unless breeding. They are crepuscular, meaning they are very active at dawn and dusk, however they do hunt throughout the night. The striped skunk prefers open areas, but they can live in a variety of habitats such as wooded areas, deserts, and even urban environments. Skunks make dens in hollow trees or logs, brush piles, or abandoned animal burrows, but they will occasionally dig their own burrows. Typical home ranges are 0.5–1.5 miles from their den. While skunks may be viewed as pests, they may help control mice and insect populations.

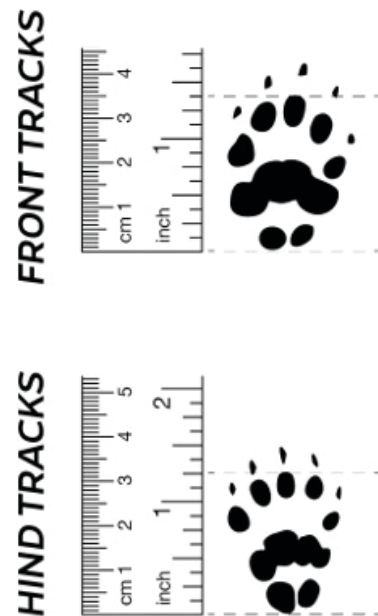
Eastern Spotted Skunk (*Spilogale putorius*)



Figure 31. Spotted skunk.
Credits: Kim Cabrera, www.bear-tracker.com



Figure 32. Spotted skunk skull.
Credits: Phil Myers, Museum of Zoology, University of Michigan-Ann Arbor. (<https://creativecommons.org/licenses/by-nc-sa/3.0/>)



Spotted Skunk

Figure 33. Spotted skunk tracks.
Credits: UF/IFAS

PHYSICAL DESCRIPTION

Eastern spotted skunks are easily distinguishable from striped skunks by the spotted pattern of their fur. Spotted skunks have thick black fur, white spots on their faces,

horizontal white stripes on their necks and shoulders, and irregular vertical stripes along their backs. Spotted skunks are smaller than striped skunks, weighing about 2 pounds. They are about 20 inches long, including their tails.

Like the striped skunk, the spotted skunk can spray a smelly musk from its anal scent glands, but rather than just lifting its tail, it does a handstand and then sprays. Spotted skunks are typically faster than striped skunks, and they are the only skunks able to climb trees. Unlike striped skunks, spotted skunks are typically more social and may share a den with several individuals. Females average five young during the spring, and these kits are capable of foraging on their own at four months. Spotted skunks are also more carnivorous than striped skunks, eating mostly small mammals. However, they will also eat insects, fruits, vegetables, and food scraps or garbage. Spotted skunks prefer closed-canopy forests or dense underbrush likely to reduce the risk of predation. Den sites are typically found in hollow logs, rock piles, and brush piles. However, they will often claim a burrow of another species as a den and have on several occasions been observed occupying the burrows of Florida burrowing owls, maybe even eating the owls' eggs. Home ranges of the spotted skunk are similar in size to those of the striped skunk, but males have been observed increasing home range size up to 3 square miles during the spring, most likely as a result of searching for a mate.

American Mink (*Neovison sp.*)



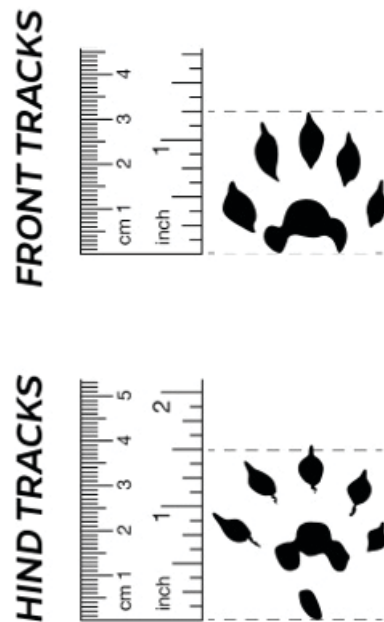
Figure 34. Everglades mink (*Neovison vison evergladensis*).
Credits: Jay Staton Photography

PHYSICAL DESCRIPTION

Mink are part of the weasel family and are semi-aquatic. They have sleek, thick, dark brown fur, sometimes with white spots on their chins and chests, flattened heads with small whiskers, and small, rounded ears. Mink also have five partially webbed toes to help them swim. They are small, weighing about 14–28 ounces, and can grow up to 25 inches long.



Figure 35. American mink skull.
Credits: The Acorn Naturalists, <https://www.acorn-naturalists.com/>



American Mink

Figure 36. American mink tracks.
Credits: UF/IFAS

Mink are typically solitary except when with young. Breeding typically occurs in the fall during the wet season. Females give birth to an average of 4 young, which are weaned 4–6 weeks after birth. Like black bears and eastern striped skunks, mink have delayed implantation as a breeding adaptation. Mink feed on small mammals, snakes, and insects. They are typically nocturnal feeders and are known to be fierce fighters, often attacking prey much larger than themselves. When startled, mink will hiss or snarl. Also, they are capable of releasing an unpleasant-smelling liquid when stressed. Mink are extremely cryptic, or difficult to find. There are little to no data on the three geographically distinct subspecies of mink in Florida. The Atlantic salt marsh mink (*N. v. lutensis*) is found along the upper northeastern Atlantic coast in Nassau, Duval, and St. Johns counties; the Gulf salt marsh mink (*N. v. halilimnetes*) is

found along the gulf coast from Franklin to Pasco County; and the Everglades mink (*N. v. evergladensis*) is restricted to southern Florida, specifically the freshwater marshes and swamps of Everglades National Park, Big Cypress National Preserve, and the Fakahatchee Strand. Historically, the Everglades mink's range stretched into the northern Everglades and Lake Okeechobee, but the last record of an Everglades mink is from 2011 when mink hair was found in the stomach of an alligator captured on the southwestern coast of Everglades National Park. The Everglades mink is listed as threatened at the state level. Mink populations face threats of habitat loss and degradation as human development encroaches on their already isolated and small range. Canine distemper is also deadly to mink. The FWC started conducting surveys on mink populations in 2013, and data are currently being analyzed.

Long-Tailed Weasels (*Mustela* sp.)



Figure 37. Long-tailed weasel.

Credits: Robin Agarwal, (<https://creativecommons.org/licenses/by/2.0/legalcode>)

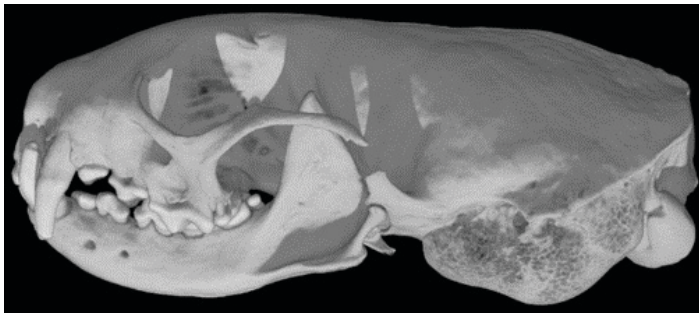


Figure 38. Digital representation of long-tailed weasel skull.

Credits: Dr. Blaire Van Valkenburgh, 2007, "Mustela frenata" (Online), Digital Morphology. Accessed October 22, 2018 at http://digimorph.org/specimens/Mustela_frenata/male/

PHYSICAL DESCRIPTION

Long-tailed weasels are long and slender with short legs and long tails. They are typically brown with lighter underbellies. They resemble mink, but they are smaller, weighing about 300–450 grams, and they favor dry upland habitats.



Long-tailed Weasel

Figure 39. Long-tailed weasel tracks. On the hind track, the black area represents the part of the paw that typically makes contact with the ground, whereas the outline represents a part of the paw that may or may not make contact with the ground and appear in a track.

Credits: UF/IFAS

The long-tailed weasel is the smallest carnivore in Florida. It is a widely distributed species, ranging from southern Canada to parts of South America. In Florida there are two subspecies, the Florida long-tailed weasel (*Mustela frenata peninsulae*), which is slightly larger with coarser fur and is found in south-central Florida, and the southeastern long-tailed weasel (*Mustela frenata olivacea*), which is more chestnut brown with a black-tipped tail and is found in northern Florida and the Panhandle. Long-tailed weasels are strict carnivores, feeding on mice, rats, rabbits, birds, eggs, reptiles, and amphibians. Like the mink, they are known to attack prey much larger than themselves. When food is abundant, they will stash food for later. Long-tailed weasels are solitary, except during mating season. Weasels have delayed implantation and average 3–9 young that will disperse at about 3 months of age. Males can be very territorial but may overlap ranges of multiple females.

Disease among Florida's Carnivores

Interactions among carnivores can increase risk of disease transmission. Rabies can only be transmitted by mammals, and carnivorous mammals are the most commonly infected. Rabies is a virus that attacks the central nervous system, and although there is a vaccine, untreated individuals become seriously ill and can die.

Rabies is most commonly spread through saliva when an infected individual bites a non-infected individual, but it also can be spread through other bodily secretions. In the United States, 90% of reported rabies cases were in wildlife and domestic animals, and the virus is most common in animals like raccoons, bats, cats, dogs, bobcats, fox, skunks, otters, and even horses. Bats and raccoons are known to act as reservoirs for rabies in Florida, meaning the virus is maintained and circulates within these populations. Other species like otters, bobcats, and skunks are not known to be reservoirs of rabies but can still transmit the virus if they become infected and bite or scratch another animal before death. If reservoir animal populations become abundant, there may be an epizootic event in which a rabies outbreak occurs in the population with many individuals infected at once. This in turn poses more risk to other wildlife, domestic livestock or pets, and people. For more information on rabies in wildlife, refer to *Facts about Wildlife Diseases: Rabies* (<http://edis.ifas.ufl.edu/uw282>).

Pseudorabies (PrV) is a virus that causes rabies-like symptoms but that is not rabies. Humans are not affected by PrV. It is most commonly found in swine but can affect other mammals such as cattle, sheep, goats, cats, dogs, and raccoons. It is sometimes referred to as “mad itch” because cattle or other livestock will rub against objects to relieve skin irritation. Although PrV is most commonly found in feral swine, other animals that prey on or interact with swine are at risk for infection. In Florida, PrV has been reported in domestic dogs and cats, coyotes, and panthers. In a 1986 study, it was reported present in one 10-month-old black bear cub who most likely had fed on an infected feral swine. Florida panthers commonly prey on feral swine, and to date eight panthers are known to have died from PrV. For more information refer to *Facts about Wildlife Diseases: Pseudorabies* <http://edis.ifas.ufl.edu/uw388>.

Canine distemper (CDV), another virus of wild and domestic carnivores, has symptoms similar to pneumonia. It is spread from bodily secretions by direct contact or indirectly through airborne “droplets,” or it can be transferred via contaminated inanimate objects. In Florida, there have been reports of CDV infection in coyotes, raccoons, foxes, otters, skunks, black bears, and even the Everglades mink. CDV is most commonly found in domestic dogs and can be a problem in close-proximity areas such as animal shelters, where it spreads easily. Epizootic events as a result of CDV have been reported for gray fox and raccoon populations, with many individuals dying and populations declining. In 2004, the virus was found in four free-ranging Everglades mink in the Fakahatchee Strand Preserve State Park and

was suggested to have caused an epizootic event that led to a decline in the population. In the mid-1990s, a study found that 8% of 66 bears were positive for CDV antibodies, meaning they had once been infected but recovered. While all carnivores are at risk for CDV, it is most commonly found in raccoons, otters, and mink.

Conservation and Management of Florida’s Carnivores

Differences in behavioral patterns, habitat preferences, and diets enable Florida’s carnivores to fill unique ecological roles. Although many of these species may compete for prey or even prey upon each other, these differences allow carnivores to partition resources efficiently, which reduces competition for needed resources and enables these different species to survive and even co-exist in the same areas.

The principal threats to Florida’s carnivores are habitat loss and fragmentation. These two factors work in tandem through the reduction of suitable habitat that can support species and by isolating populations and preventing the exchange of genetic information and maintenance of a healthy gene pool. Other threats also exist, such as mortality on roadways, disease transmission, and impacts from invasive species, but the continued loss of natural areas and important wildlife corridors is the greatest threat, especially for larger carnivores such as the Florida panther and black bear. For example, the continued urbanization of southwest Florida, including the construction of new and larger roads to support this growth, may continue to constrict and confine the Florida panther population into ever-smaller areas. Road mortality, which currently is reported to constitute about half of all documented sources of death of panthers that have been tagged or radio collared, also will undoubtedly increase. The future of the Florida panther, therefore, is dependent upon conservation action ensuring that enough space and suitable wildlife corridors connecting large tracts of natural areas are preserved to enable these large cats to continue to survive in Florida. For more information, refer to *Habitat Requirements of the Florida Panther* <https://edis.ifas.ufl.edu/uw390>.

Florida black bears face similar problems because of their need for large areas of suitable habitat and wildlife corridors to connect populations. Although management actions have enabled black bear populations to increase, bears continue to be killed in vehicle collisions. Nuisance activity from bears attracted to garbage and other sources of food provided by humans is becoming an increasingly serious problem. These nuisance bears can become dependent

on human food sources, which ultimately increases their exposure and danger to humans. Relocation of nuisance bears is typically not effective, and repeat offenders must sometimes be euthanized. Keeping garbage and other food resources securely locked away can reduce nuisance bear activity. For more information refer to <https://edis.ifas.ufl.edu/uw389>, <https://edis.ifas.ufl.edu/uw429>, <https://edis.ifas.ufl.edu/uw430>, <https://edis.ifas.ufl.edu/uw437>.

The examples provided with the Florida panther and black bear are probably the most problematic because of the large habitat requirements needed for viable populations of these two species. However, by protecting the habitat needs of large-ranging or “umbrella” species such as these, the habitat needs of many other species and the ecological roles they perform can be protected. In summary, the loss of predators in ecosystems can have unpredictable results and the conservation of Florida’s carnivores helps maintain the complex ecological relationships that exist among predators and prey and between herbivores and plant communities. By conserving large tracts of habitat required by carnivores and maintaining connectivity among natural areas across the landscape, we ensure that sufficient habitat is preserved to support carnivores and the many other species of plants and animals that constitute Florida’s natural environment.

Sources and Additional Information

Bateman, P. W., and P. A. Fleming. 2012. “Big city life: carnivores in urban environments.” *Journal of Zoology* 287 (1): 1–23.

Brady, J. R., and D. S. Maehr. 1985. “Distribution of black bears in Florida.” *Florida Field Naturalist* 13 (1): 1–24.

Brown, L. N. 1997. *Mammals of Florida*. Windward Publishing, Inc.

Brown, M. A., M. W. Cunningham, A. L. Roca, J. L. Troyer, W. E. Johnson, and S. J. O’Brien. 2008. “Genetic characterization of feline leukemia virus from Florida panthers.” *Emerging infectious diseases* 14 (2): 252.

Bunnell, F. L., and D. E. N. Tait. 1981. “Population dynamics of bears—implications.” *Dynamics of large mammal populations*, 75–98. New York: John Wiley and Sons.

Carey, A. B. 1982. “The ecology of red foxes, gray foxes, and rabies in the eastern United States.” *Wildlife Society Bulletin*: 18–26.

Conner, M. C., R. F. Labisky, and D. R. Progulske. 1983. “Scent-station indices as measures of population abundance for bobcats, raccoons, gray foxes, and opossums.” *Wildlife Society Bulletin (1973–2006)* 11 (2): 146–152.

Crooks, K. R., and M. E. Soulé. 1999. “Mesopredator release and avifaunal extinctions in a fragmented system.” *Nature* 400(6744): 563.

Cunningham, M. W., D. B. Shindle, A. B. Allison, S. P. Terrell, D. G. Mead, and M. Owen. 2009. “Canine distemper epizootic in Everglades mink.” *Journal of wildlife diseases* 45 (4): 1150–1157.

Forrester, D. J. 1992. *Parasites and diseases of wild mammals in Florida*. Gainesville, Florida: University Press of Florida.

Gipson, P. S. 1978. “Coyotes and related *Canis* in the southeastern United States with a comment on Mexican and Central American *Canis*.” In *Coyotes: biology, behavior, and management*, edited by M. Bekoff, 191–208. New York: Academic Press.

Giuliano, W. M., H. K. Ober, L. Watine, R. Boughton, E. Hellgren, D. Land, and M. Lotz. 2018. *Managing Conflicts with Wildlife: Living with Panthers*. WEC354. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/uw399>

Giuliano, W. M., H. K. Ober, L. Watine, E. Hellgren, R. Boughton, and D. Telesco. *Managing Conflicts with Wildlife: Living with Bears*. WEC351. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/uw396>

Hall, E. R. 1981. *The mammals of North America*. 2nd edition. New York: John Wiley & Sons.

Hoff, G. L., W. J. Bigler, S. J. Proctor, and L. P. Stallings. 1974. “Epizootic of canine distemper virus infection among urban raccoons and gray foxes.” *Journal of Wildlife Diseases* 10 (4): 423–428.

Johnson, W. E., D. P. Onorato, M. E. Roelke, E. D. Land, M. Cunningham, R. C. Belden, R. McBride et al. 2010. “Genetic restoration of the Florida panther.” *Science* 329 (5999): 1641–1645.

Kern, W. H. Jr. 2019. *Northern Raccoon*. WEC34. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <http://edis.ifas.ufl.edu/uw033>.

- Land, D. "Florida Panther Population Dynamics in Southwest Florida." 1994a. In *Proceedings of the Florida Panther Conference*, edited by Dennis Jordan. U.S. Fish and Wildlife Service.
- Land, D. "Panther use of the Southern Florida landscape." 1994b. In *Proceedings of the Florida Panther Conference*, edited by Dennis Jordan. U.S. Fish and Wildlife Service.
- Leopold, Aldo. 1987. *Game management*. Madison, WI: University of Wisconsin Press.
- Maehr, D. S., and J. R. Brady. 1984. "Food habits of Florida black bears." *The Journal of Wildlife Management* 48 (1): 230–235.
- Maehr, D. S., and J. R. Brady. 1986. "Food habits of bobcats in Florida." *Journal of Mammalogy* 67 (1): 133–138.
- Maehr, D. S., R. T. McBride, and J. J. Mullahey. 1996. "Status of coyotes in south Florida." *Florida Field Naturalist* 24: 101–107.
- Maehr, D. S., J. S. Smith, M. W. Cunningham, M. E. Barnwell, J. L. Larkin, and M. A. Orlando. 2003. "Spatial characteristics of an isolated Florida black bear population." *Southeastern Naturalist* 2 (3): 433–447.
- Main, M. B. 2001. *Monitoring coyote populations in Florida: Annual update of the statewide scent station survey 1997–2000*. WEC149. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://ufdcimages.uflib.ufl.edu/IR/00/00/24/28/00001/UW14500.pdf>
- Main, M. B. 2011. *Visual guide to interpreting physical evidence of coyote predation on domestic livestock*. WEC158. Gainesville: University of Florida Institute of Food and Agricultural Sciences.
- Main, M. B., S. F. Coates, and G. M. Allen. 2001. *Coyotes expand their range into South Florida*. WEC150. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://ufdc.ufl.edu/IR00002429/00001>.
- McClintock, B. T., D. P. Onorato, and J. Martin. 2015. "Endangered Florida panther population size determined from public reports of motor vehicle collision mortalities." *Journal of Applied Ecology* 52 (4): 893–901.
- Mech, L. David, and Luigi Boitani, eds. 2010. *Wolves: behavior, ecology, and conservation*. Chicago: University of Chicago Press.
- Melquist, W. E., and M. G. Hornocker. 1983. "Ecology of river otters in west central Idaho." *Wildlife monographs*: 3–60.
- Myers, R. A., J. K. Baum, T. D. Shepherd, S. P. Powers, and C. H. Peterson. 2007. "Cascading effects of the loss of apex predatory sharks from a coastal ocean." *Science* 315 (5820): 1846–1850.
- Paradiso, J. L., and R. M. Nowak. 1972. "*Canis rufus*." *Mammalian species* 22: 1–4.
- Phillips, M. K., V. G. Henry, and B. T. Kelly. 2003. "Restoration of the red wolf." In: *Wolves: Behavior, Ecology, and Conservation*, edited by L. David Mech and Luigi Boitani. Chicago & London: University of Chicago Press.
- Pienaar, E. F. *Conflicts between people and the Florida black bear*. WEC344. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/uw389>
- Pienaar, E. F. 2017. *Habitat requirements of the Florida panther*. WEC345. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/uw390>
- Progulske, D. R. 1982. "Spatial distributions of bobcats and gray foxes in eastern Florida." PhD diss., University of Florida.
- Prugh, L. R., C. J. Stoner, C. W. Epps, W. T. Bean, W. J. Ripple, A. S. Laliberte, and J. S. Brashares. 2009. "The rise of the mesopredator." *Bioscience* 59 (9): 779–791.
- Ripple, W. J., and R. L. Beschta. 2012. "Trophic cascades in Yellowstone: the first 15 years after wolf reintroduction." *Biological Conservation* 145 (1): 205–213.
- Roberts, N. M., and S. M. Crimmins. 2010. "Bobcat population status and management in North America: evidence of large-scale population increase." *Journal of Fish and Wildlife Management* 1 (2): 169–174.
- Schortemeyer, J. L. 1994. "Habitat management for panthers in South Florida." In *Proceedings of the Florida Panther Conference*: 460–466.
- Statham, M. J., B. N. Sacks, K. B. Aubry, J. D. Perrine, and S. M. Wisely. 2012. "The origin of recently established red fox populations in the United States: translocations or natural range expansions?" *Journal of Mammalogy* 93 (1): 52–65.

Sunquist, M., and F. Sunquist. 2017. *Wild cats of the world*. Chicago: University of Chicago press.

Thornton, D. H., M. E. Sunquist, and M. B. Main. 2004. "Ecological separation within newly sympatric populations of coyotes and bobcats in south-central Florida." *Journal of Mammalogy* 85 (5): 973–982.

Trani, M. K., and B. R. Chapman. 2007. "Red wolf, *Canis rufus*." In *The land manager's guide to mammals of the South*, edited by Margaret K. Trani, W. Mark Ford, and Brian R. Chapman. Durham, NC: The Nature Conservancy and Atlanta, GA: US Forest Service, 441–445.

van de Kerk, M., D. P. Onorato, and M. K. Oli. 2018. *The Florida panther: Past, present, and future*. WEC357. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <https://edis.ifas.ufl.edu/uw402>

Whitaker, J. O., and W. J. Hamilton. 1998. *Mammals of the eastern United States*. Ithaca, NY: Cornell University Press.

Wisely, S., and H. Ober. 2019. *Facts about wildlife diseases: Rabies*. WEC239. Gainesville: University of Florida Institute of Food and Agricultural Sciences. <http://edis.ifas.ufl.edu/uw282>.

Wood, J. E. 1958. "Age structure and productivity of a gray fox population." *Journal of Mammalogy* 39 (1): 74–86.

Wooding, J. B., and J. R. Brady. 1987. "Black bear roadkills in Florida." *Proceedings of the Annual Conference of Southeast Association of Fish and Wildlife Agencies* 41: 438–442.

Wooding, J. B., and T. S. Hardisky. 1994. "Home range, habitat use, and mortality of black bears in north-central Florida." *Bears: Their Biology and Management* A Selection of Papers from the Ninth International Conference on Bear Research and Management, Missoula, Montana, Vol. 9, Part 1: 349–356.

Table 1. Ecological and biological parameters of Florida's mammalian carnivores. (DI = delayed implantation, NC= North Carolina)

	Species Status	Population size (est.)	Florida Distribution	Adult Body Size (lbs)	Preferred Habitat	Average Home Range (mi ²)	Principal diet	Sexual Maturity	Gestation Period	Breeding Season	Average Litter Size
PANTHER	Endangered	120–230	Southwest	85–155 M 50–100 F	Hardwood hammocks, swamps, flatwoods	200 M 75 F	Large mammals	3 yrs M 1.5–2.5 yrs F	88–98 days	All year; peak in winter/spring	2–3 kittens
BLACK BEAR	Not listed	4,046	7 populations	250–450 M 125–250 F	Hardwood hammocks, flatwoods, swamps	110 M 20 F	Plants/berries, insects, small mammals	4–5 yrs M 3–5 yrs F	200–240 days DI	June–Aug Alternate year	2–3 cubs
RED WOLF	Endangered	Extinct in wild 40 NC 200 in captivity	Extinct	45–80, M larger	Historically found in moist, densely vegetated habitat	Varies greatly, 25–500	Large to small mammals	3 yrs	60 days	Late winter–early spring	2–6 pups
COYOTE	Not listed	Estimate of 1 breeding pair/10–15 mi ²	Throughout state	20–35, M larger	Diverse, prefer open, uplands	5–20	Small to large mammals, insects, fruit	1 yr	60 days	Winter–spring	6 pups
BOBCAT	Not listed	Little to no data, recently reported as decreasing, but still common	Throughout state	15–25 M 8–20 F	Diverse, forest to prairies	5–6 rural 1–2 urban	Small mammals	2 yrs M 1 yr F	50–60 days	Fall, winter, spring	1–4 kittens
GRAY FOX	Not listed	Little data, estimate of 1/km ² (1980)	Throughout state	7–13, M larger	Dense forests, open fields	0.2–2.6	Small mammals, insects, fruit	1 yr	60 days	Spring	3–5 pups
RED FOX	Not listed	No data	Throughout state	10–15, M larger	Uplands mixed with fields and pastures	1–5	Small mammals, insects, birds, fruit	1 yr	51–53 days	Fall–early winter	5 pups
OTTER	Not listed	No data, thought to be abundant	Throughout state	11–13, M larger	Freshwater swamps, ponds, rivers, and creek	3–15	Fish, crustaceans, amphibians/reptiles, birds, small animals	2 yrs	60 days	Late winter–early spring DI	2–4 pups
RACCOON	Not listed	Abundant	Throughout state	10–30, M larger	All, including residential/urban	1–3	Small mammals, birds, plants/berries, fish, crustaceans	2 yrs M 9–10 mths F	60 days	Late winter–early spring	3–4 kits
STRIPED SKUNK	Not listed	Abundant	Throughout state	6–8	All, including residential/urban	0.5–1.5	Insect, small mammals, amphibians, fruit	9 mths	66 days	Spring DI	4–7 kits

	Species Status	Population size (est.)	Florida Distribution	Adult Body Size (lbs)	Preferred Habitat	Average Home Range (mi ²)	Principal diet	Sexual Maturity	Gestation Period	Breeding Season	Average Litter Size
SPOTTED SKUNK	Not listed	Abundant	Throughout state	2	All, including residential/urban	0.5–1.5	Insect, small mammals, amphibians, fruit	9 mnths	66 days	Spring DI	4–7 kits
MINK	State threatened	Unknown	South, Everglades Area	0.75–1.75	Freshwater marshes and swamps	Unknown	Small mammals, snakes, insects	1 yr	51 days	Fall DI	4 kits
WEASELS	Not listed	Abundant	Throughout state	0.5	Forests, grasslands, swamps and marshes	0.02–0.5	Small mammals, rodents, birds, reptiles and amphibians	1.5 yr M 1 yr F	280 days DI	Summer DI	3–9 kits