

## The Coyote (*Canis latrans*): Florida's Newest Predator <sup>1</sup>

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*This publication examines the current status of the coyote, Florida's newest fur-bearing predator.*

### Background

The coyote (*Canis latrans*) is becoming a common occurrence on Florida's landscape. Traditionally associated with the American West, the coyote has become an established species in the eastern U.S., including Florida (Hill et al. 1987). Range expansion can be attributed to the coyote's nonspecific needs in habitat and food; large litter size and short generation time; decreased competition across its range from other predators--the gray wolf (*Canis lupus*) and red wolf, (*Canis rufus*), grizzly bear (*Ursus arctos*) and puma (*Felis concolor*); and the coyote's ability to adapt to and benefit from human activities (Moore & Parker 1992, USFWS 1978, Gier 1975).

### Description

Coyotes are members of the dog family, and are one of eight species of Canidae in the U.S. Physical

variations in coyotes occur in their size, sex, and pelage (coat). Body length is usually 39.4 to 59.8 inches with a 15.7-inch tail (Bekoff 1982). Size varies across geographic range and between subspecies. Adult coyotes weigh 24 to 37 lbs. and adult males are heavier and larger than females. Compared to other canids, coyotes are larger than foxes but smaller than wolves. Tracks of dogs and coyote differ in that coyote tracks tend to be longer and narrower (Plate 1), (Appendix A).

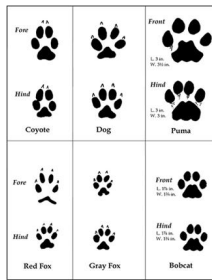


**Plate 1.**

According to Wade and Bowns (1984), "the average coyote's stride at a trot is 16 to 18 inches and the hind tracks tend to follow directly in line with or on top of front tracks." Toenails or claws of cat species such as bobcats (*Felis rufus*), are retracted

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**Appendix A.**

when walking and do not show in tracks. Coyote pelage varies from mixtures of gray to rusty brown (Plate 2).



**Plate 2.**

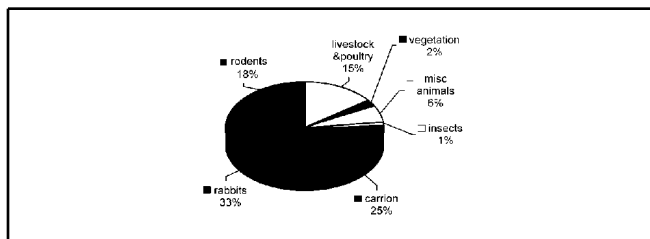
Vocalizations can differ from traditional howls to yip and barks. A combination of sharp eyesight, keen hearing, and a sensitive sense of smell help the coyote to hunt and survive (Plate 3).



**Plate 3.**

**Habitat and Food**

Coyotes will use virtually all terrestrial and marsh habitats. They are known to thrive adjacent to urban/- suburban building developments in the western U.S. This adaptability is related to their opportunistic food habits (Figure 1).

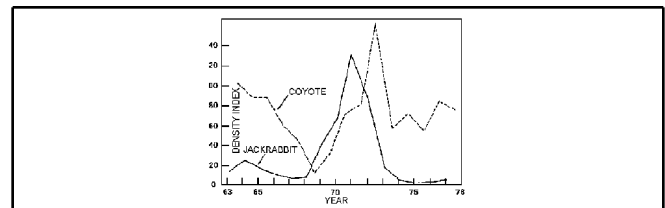


**Figure 2.**

Coyotes are known to feed on rodents, rabbits, lizards, snakes, insects, grasses, fruit (watermelon, persimmons, and wild berries), grains, fish, and carrion (Bekoff 1982, Gier 1975). They can be a major predator on deer fawns and turkey poults: turkey hunters often attract coyotes when calling turkeys.

**Reproduction and Development**

Female coyotes come into "heat" once a year in late winter (Bekoff 1983). Active sperm production in male coyotes coincides with this time. A mating pair might breed from year to year but not necessarily for life. Coyote gestation is approximately two months with potential litter size ranging from two to 12-- but usually averaging six pups (Sterner & Shumake 1978, Gier 1975). The sex ratio of litters is around 1:1. The number of female coyotes breeding and litter size in any year is mostly dependent on food supply (Figure 2).



**Figure 4.**

When food resources are plentiful, the number of breeding females and litter size increase. Both parents care for young with occasional assistance from some yearlings. Some dens may even have two litters from different females.

Den sites are typically found in hollow logs, abandoned burrows, dense vegetation (e.g., saw palmetto cover), or brush-covered slopes. Dens are abandoned when pups are eight to 10 weeks of age. Juveniles disperse or move into unoccupied areas and establish new territories typically when they are nine to 10 months old. The average life span of coyotes is five to six years in the wild--with mortality being greatest during the first year (Bekoff 1982).

Coyotes, red wolves, and dogs are capable of interbreeding and producing fertile offspring.

## Ecology and Behavior

Coyotes are elusive. They are more active at dawn and dusk (crepuscular), but can be seen almost anytime during the day or night. Home-range size depends on geographic and seasonal factors. In a south-central Georgia study, coyote home ranges measured approximately 3,063 acres (Holzman *et al.* 1992). Coyotes may travel individually or in groups of two or three. Food is an important factor in coyote population densities (Figure 2). In Texas, coyote densities in the fall varied from 0.6 to 0.9 individuals per square mile (Knowlton 1972). Being social animals, coyotes often vocalize excitedly, with yips and barks, when encountering others. Vocalizations from two or three individuals often give the impression that many more animals are involved..

Of the dozens of diseases documented in coyotes several, such as rabies, eastern equine encephalitis, and salmonellosis, can be transmitted to humans and/or livestock. Coyotes are hosts to at least 11 species of parasites such as lice, ticks, heart worms, whipworms, and lungworms (Bekoff 1982).

Coyotes are both carnivores and omnivores and feed on a diverse range of food items and are potential competitors or direct predators on many indigenous species, like bobcats and foxes (Litvaitis 1992).

Although little is known, as yet, about coyote ecology in Florida, it is most likely that many of the same behaviors in other parts of its geographic range, such as feeding habits and predation, will remain the same. However, it is not known if predation on deer and other species important to the Florida panther (*Felis concolor coryi*) will effect efforts to recover this endangered species. Further, loss of livestock could be a problem to livestock operations, particularly the large ones in south Florida. If this happens, ranchers may have to allocate some resources towards coyote control.

## Damage and Control

Coyote predation on livestock throughout their range is a concern of ranchers. The sheep industry has been impacted by coyotes more than any other livestock commodity. Coyotes will kill or injure

calves, poultry, hogs, and goats as well as feed on horticultural crops such as watermelon. Domestic pets, as dogs and cats, have been killed by coyotes.

Livestock damage from coyotes can be recognized by bite marks, bruises, and/or bleeding around the head and neck (Plate 4). This area is usually the target of an attack because coyotes generally kill prey by suffocation (Wade & Bowns 1984).



Plate 4.

Other signs of attack may be found on the hind legs and tail of livestock (Plate 5).



Plate 5.

Coyote canines are about 1 1/4 inches apart and are clues in identifying a coyote attack--as are the elongated tracks, hair and fecal droppings possibly found at the site (Plate 6).



Plate 6.

Like turkey vultures (*Cathartes aura*), coyotes are often seen scavenging on carcasses, but may not be the cause of the death. Livestock attacks usually happen in the late spring and early summer when pups are being cared for. This time coincides with the presence of beef calves nursing and foraging on pasture (Wade 1978).

Coyote damage to watermelon crops can be identified by tracks near the site as well as tooth marks in the rind of the fruit.

### Legal Control: Strategy and Devices

Controlling coyote damage in Florida can be accomplished through integrated management strategies. Preventative methods such as exclusion fencing, guard dogs and even llamas have been used successfully by sheep and goat producers. An effective fence design requires a height of at least 66 inches with a 38-inch outward overhang to prevent coyotes from jumping over. Fence meshing should be no larger than a 6- x 4- inch weave (Sterner and Shumake 1978, Thompson 1976). Realistically, the high cost of fencing makes this an impractical method of protecting large areas. Guard-dogs can be a less costly deterrent.

Legal means of coyote control include shooting and trapping. Both measures may be conducted throughout the year because of the coyote's non-protected status. The use of guns and bows are allowed during daylight hours and at night with a special permit from the Florida Game and Freshwater Fish Commission (FGC).

Commercially available predator calls are commonly used to attract coyotes into shooting range. The use of steel traps and snares are allowed with a special permit from FGC. A Number 3 trap with padded jaws helps to reduce coyote and non-target animal injuries. Snares are an alternative to jaw traps. Cable snares should have 3/16 in. cable with a locking slide and swivel for best results. Both capture techniques, when used correctly, can be effective. But keep in mind that coyotes are difficult to trap. **Note: The use of poisons to control coyotes or any animal except rats is illegal in Florida.**

### The Future

Over the last 20 years, coyote numbers and distribution have increased in Florida. Surveys indicate that coyotes occur throughout Florida (Maehr *et al.* 1996, Coates *et al.* 1995, Wooding *et al.* 1990, Brady & Campbell 1983).

Coyotes were introduced in Florida for pursuit by hunting dogs as early as the 1920s. Regardless of these introductions and escapes, the coyote's natural range expansion into Florida was inevitable. As coyote numbers increase, their influence on Florida's indigenous prey species, competing predators, livestock and vegetables will become a concern. Coyote impact on native wildlife has already been seen in northern Florida where predation on endangered sea turtle eggs is a considerable problem. Much is still unknown, including whether the coyote will have negative effects on recovery of the Florida panther-- or if it will fill the panther's niche in areas where habitat is not suitable for this endangered species.

### The Present

The University of Florida is conducting research on coyotes in south Florida. Information regarding biology such as reproduction and mortality as well as ecology and impacts on cattle operations are being collected. For more information on coyotes contact your county extension office and/or visit the "South Florida Coyote Study" Website at

<http://www.wec.ufl.edu/range/coyotes/>

References and additional readings ( Appendix B ) follow this paragraph.

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Figure 1 photo: *Texas Agricultural Extension Service*

Figure 4 graph: *Texas Agricultural Extension Service*

Figure 5 graph: *Stoddart 1977*

Figure 6 photo: *Schaefer*

Figure 7 photo: *Texas Agricultural Extension Service*

Figure 8 photo: *Wade and Bowns 1984 .*

Appendix A chart: *Henderson 1995.*