

## **Biology of the Eastern Coyote in Maine**

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**Distribution** Coyotes are not native to Maine or to the Northeast. Into the vacuum created by the disappearance of gray wolves, coyotes began to migrate across the northern tier of Midwestern states and adjacent parts of Canada during the 1920's. Along the way, they evidently interbred with remnant populations of wolves. Hence, Eastern coyotes are mostly coyote and part wolf, genetically, physically, and behaviorally. Compared to their western cousins, Eastern coyotes are larger (25 to 45 lbs.; rarely to 60 lbs.), their family groups tend to stay together longer over the course of the year, and they are more efficient deer predators. Mainers began encountering coyotes in the 1950s, and coyotes were distributed statewide at peak numbers by the late 1970s. Southeastern Quebec got coyotes slightly earlier, while New Brunswick and Nova Scotia were colonized somewhat later (mid to late 1980s). Today, coyotes occur in every town in Maine.

**Food Habits** Coyotes and hunters have one thing in common -- they both love venison! But unlike the much larger gray wolf (70 lbs. to 120 lbs.), coyotes can readily thrive on smaller prey during most of the year in Maine. The Eastern coyote has been described as the ultimate opportunist, but that really describes all predators. No hungry carnivore will pass up an easy meal! The coyote's advantage is in its size. As a mid-sized carnivore, the Eastern coyote can efficiently prey on mice, songbirds, turkeys, snowshoe hares, raccoons, beaver, fawn and adult deer, and even your pet cat and dog, when the opportunity presents itself. To round out their diet, coyotes are not averse to dining on fruits and carrion, both from the wild and from agricultural sources. Such flexibility in acquiring its groceries enables the coyote to thrive almost anywhere in the Northeast.

**Social Organization** Coyote society centers around the family group or pack. Coyote packs typically consist of the breeding pair of adults, their current offspring, and occasionally a yearling or two from the previous year. Coyotes that frequently feed on deer, tend to hunt together as a pack, while those that feed on small prey often travel alone. In any given area as much as one third of the coyote population are solitary individuals consisting of juveniles and yearlings who have not established their own territory, or older displaced adults.

**Territory Size** Mated pairs and packs establish and defend a territory from other coyotes. A coyote's home range, or territory size can be large or small, depending on food availability. Where food is abundant year round, coyote home ranges can be as little as 7 sq. mi. (4,500 acres). At the other extreme, coyotes may need to range over an area of 30 sq. mi. (20,000 acres) to stay well fed. More typically, coyote territories average closer to 15 sq. mi. (10,000 acres) in Maine.

**Population Size** Coyote populations are at their peak in spring, just after pups are born. By early winter, the population has typically been reduced substantially by natural and man-caused mortality. Coyote populations can vary a lot in different locations, and between years. Ballpark estimates of coyote abundance in Maine are about 18,000 coyotes in early May and 12,000 coyotes in December. A typical 10 mile by 10 mile area would contain about 40 coyotes during December. The average Maine town harbors around 15 coyotes by early winter.

**Mortality** Coyotes die from a variety of natural and man-related causes. Pups are vulnerable to disease, malnutrition, and injury while in the den and while learning to forage on their own. Adult coyotes can become injured and die from fights or from trying to kill deer or livestock. Rabies, canine distemper, and sarcoptic mange can cause or contribute to coyote mortality. Man-related mortality commonly includes road-kill, trapping, and shooting. Most coyotes die young. Losses are typically higher during a coyote's first year (60% or more), than for older coyotes (40% or less per year). Maximum longevity for coyotes in the wild is 10 to 12 years, but the overwhelming majority of coyotes never see their 5<sup>th</sup> birthday.

**Reproduction** Eastern coyotes come into heat and breed only once per year. The breeding season spans mid-January to mid-March, but most breeding takes place during February in Maine. When a female coyote comes into heat, she attracts and may mate with many male coyotes. However, she ultimately selects a mate, and the breeding pair often remain together for life. Coyotes must be in top condition to come into estrus, which is not always possible in early winter here in the north. In Maine, few females less than a year old breed (20-25% or less), while 60 to 80% of adult females breed in a typical year.

After a gestation period of 63 days, coyote pups are born during April or early May. Coyotes use one or more dens to shelter their pups for the first 4 to 8 weeks. Most dens are tunnels in the ground, but they may also be natural rock crevices, hollow logs, or brush piles.

Litter size depends on a coyote's nutritional state at breeding time, and her age. Well-fed coyotes usually have larger litters, and older mature coyotes are more likely well-fed. In Maine, coyote litters average 5 or 6 pups but can range from as few as one to 10 or 12.

Pups are fed milk exclusively for their first 3 or four weeks, after which they are weaned and fed solid foods. Providing food for growing pups is demanding work. Both breeding adults hunt extensively to provision dens. If a yearling from the previous year remains with the pack, that individual hunts to provide food for the pups too.

Sometime in late June, coyote pups leave denning areas, to begin travelling with the pack. They assemble in rendezvous sites, areas that offer protection and concealment as well as prey. As they gain size, young coyotes begin to hunt with the adults, ranging progressively farther from rendezvous sites. By September, the pack is fully mobile and able to traverse its entire home range territory.

**Dispersal** Coyote pups do not remain with the family group indefinitely. Some disperse during October, while others move on during late winter or into the summer. Dispersal ensures that the breeding pair and their current offspring have adequate food, while the wandering young coyote may chance upon a vacant area where it can establish its own breeding territory. Dispersing coyotes may travel extensively, leaving one area to go to another seemingly at random. Dispersing coyotes are subject to higher natural and man-caused mortality. While dispersing, a coyote may travel anywhere from a few miles to 300 miles from its birthplace.

**Population Control** It is often stated that coyotes can withstand 70% annual mortality without diminishing their annual peak population size. Based on a population model from the western US, this mortality rate would be too high for Eastern coyotes. Because so few young of the year Eastern coyotes come into breeding condition, the maximum mortality our Eastern coyotes can withstand under the best circumstances is more like 55 to 60%. This is one trait our coyotes picked up when they interbred with wolves, and it can be used to our advantage to manage coyote density here in Maine.