Predators of the whitetail

White-tailed deer have long been important prey for large predators. Before Europeans colonized North America, deer roaming the forested region east of the Great Plains and areas along the Gulf of Mexico were hunted by wolves and mountain lions, and by Native Americans for food and clothing materials.

Today, wolves and mountain lions are largely gone from the white-tailed deer range of the eastern United States. Deer still face the threat of wolves in northern Minnesota, Michigan, and Wisconsin, and of mountain lions, to a limited extent, in Texas and south Florida. Relatively small populations of whitetails have expanded westward, showing up in the Great Plains and several areas west of the Continental Divide such as northwestern Montana, northern Idaho, and eastern Washington. More than half the prey killed by recolonizing wolves in northwestern Montana are white-tailed deer. Although it has not been well documented, these western whitetails undoubtedly also are preyed on by mountain lions.

Wolves and mountain lions have evolved as effective killers of deer but with very different physical characteristics and hunting behaviors. Of course, for their part, whitetails have found ways to protect themselves.

Mountain Lions

A mountain lion is a solitary predator that stalks and ambushes its prey. The powerful cat usually creeps undetected to within about 15 meters (50 feet) of a deer, then overwhelms it with a rapid charge, either pouncing directly onto the deer's back or knocking it down and then leaping on top. The lion sinks its claws into the shoulders and flanks of the deer and bites the back of its neck. Death usually comes quickly from the onslaught of the lion, with its relatively heavy body, greater strength, and arsenal of claws and teeth.

Most of the scientific studies on mountain lion attacks have been on mule deer, not whitetails, but the patterns of preying are not believed to be markedly different for the two species. Most lion-killed mule deer were in poor health or were fawns, yearling females, or old deer. One study found, contrary to popular myth, that lions also will scavenge dead deer they find during cool weather, when spoilage is minimal. Going after weaker deer helps lions minimize their own injuries during attacks—a serious consideration for these solitary cats who must be fully functional to provide for themselves. There also are many documented cases of mountain lions killing the largest, fittest mule deer, including bucks in their prime, usually during winter following their exhaustion from the demands of mating.

Mountain lions are almost completely carnivorous, and deer make up most of their diet, 60 to 80 percent of it for lions in the western United States. Historical accounts indicate that whitetails were the main food for mountain lions before the big cats were

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Aquila chrysaetos
golden eagle

Ursus americanus
black bear

Ursus arctos
brown (grizzly) bear

Felis concolor
mountain lion

virtually eliminated from the eastern states. A lion needs to kill a deer every four to sixteen days. How long an animal can go between kills depends on how soon the current deer carcass spoils, what other prey is available, and how great the energy demands are on the lion. For example, a mountain lion that is raising kittens needs more energy and therefore must kill more often.

Wolves

Wolves chase their prey in packs, a hunting technique far different from that of the individual, stalking mountain lion. When not sleeping, a pack of wolves spends most of its time hunting or eating. A wolf pack travels extensively, often following a direct scent or, less frequently, fresh tracks before sighting a deer. The wolves then approach more closely. As soon as the deer detects them and begins to flee, they give chase. Cooperation between pack members increases the chances of running down and killing the faster deer, though most deer still get away.

Throughout much of their North American range, wolves rely upon white-tailed

Haliaetus leucocephalus
bald eagle

Felis lynx
lynx

Canis lupus
red wolf

Canis latrans
coyote

Alligator mississipiensis
alligator

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deer as the staple of their diet. An adult wolf can consume twenty or more deer per year, half of them usually fawns. In addition to fawns, wolves typically prey on deer older than five years and those that are sick or wounded. It remains unclear whether the wolves are actually able to identify the older or less healthy deer or whether they merely have better luck in bringing down these weaker animals among all the deer they chase. If the wolves can actually identify the weaker animals, it makes sense for them to prey on these individuals, minimizing the pack's effort and risk of injury.

Winter can make the hunt easier for wolves. Deep or crusted snow hampers the speed of white-tailed deer more than that of wolves, so healthy deer often can be killed as easily as weaker ones. Then it is easier for a wolf pack to kill a new deer than to return to a nearly consumed carcass and gnaw on the remains. Indeed, Pimlott and workers found that wolves ate less from each deer killed when severe winters made it easier to capture deer than during mild winters. Thus, the common assertion that wolves, and preda-

To take down a healthy buck would be too big an undertaking for a single coyote—a predator that usually preys on fawns. This buck, however, was unable to outrun its pursuer.

tors in general, cull only the weaker members among a group of possible targets must be carefully considered for each case.

Research indicates that the size of a wolf pack is important in determining how successful wolves are in getting enough food: too large a pack and the food benefit of a kill to each wolf dips to a marginal level; too small a pack and the chances for making successful kills decline. In areas with only a single wolf or a pair of wolves, the prey is much more likely to be smaller animals such as beavers or rabbits. A single wolf can probably kill a deer without help—but it's unlikely the wolf would be able to chase down the deer in the first place.

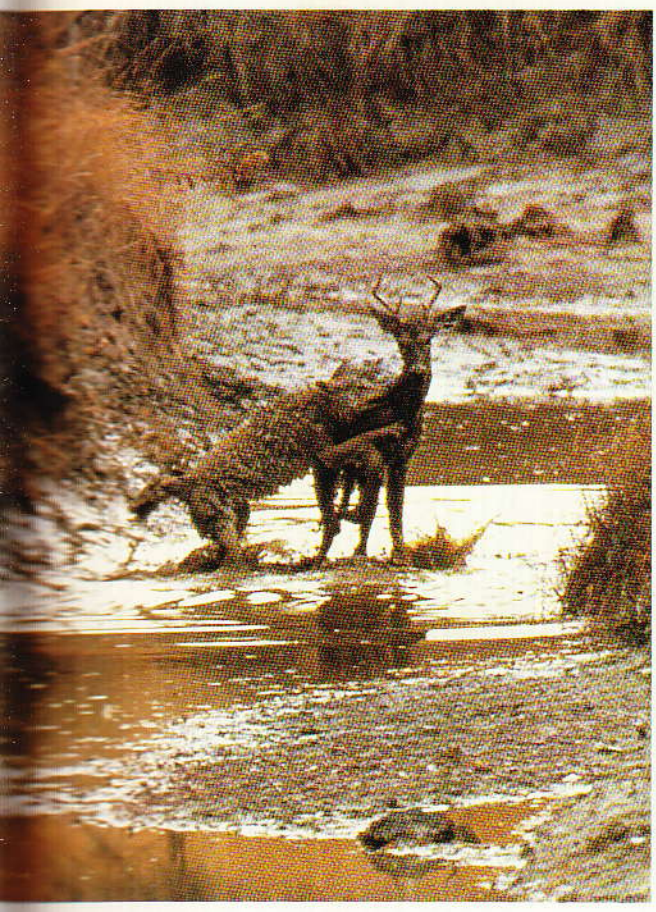
Other Predators

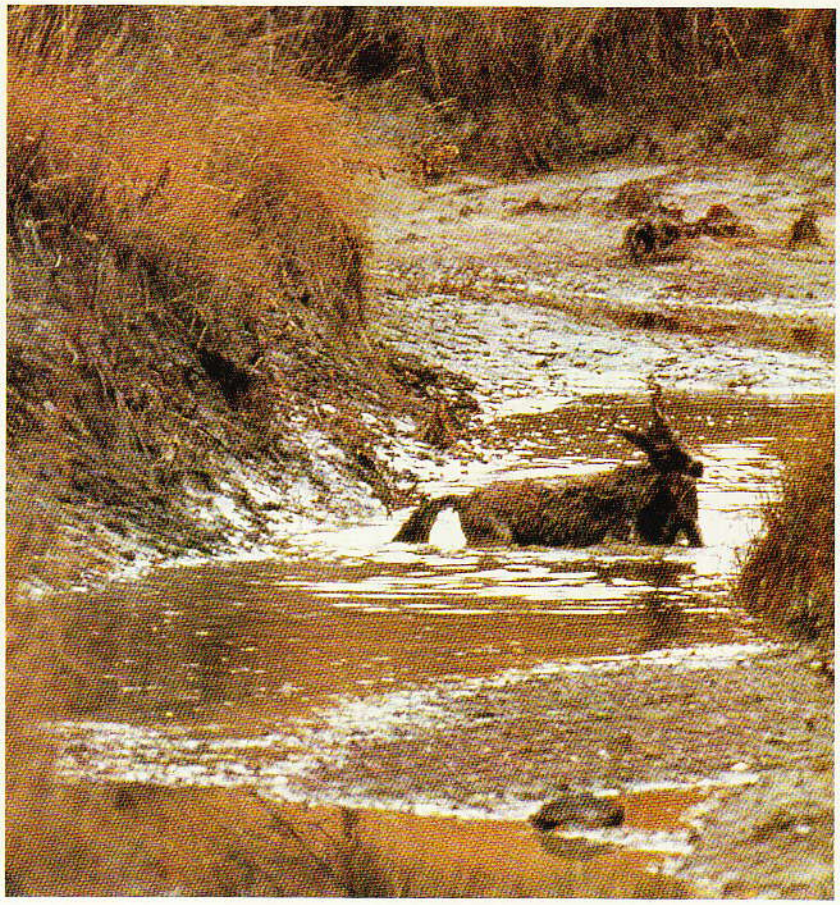
Hunting singly, in pairs, and occasionally in packs, coyotes are flexible predators that regularly prey on white-tailed deer, especially fawns. They generally do not seek out mature deer, but when they encounter one, coyotes will chase it with short bursts, testing its fitness. During spring, coyotes search for hidden but vulnerable fawns, focusing their efforts on areas near nervous does. Researchers have found that of fawns who fail to live to adulthood, up to 80 percent are the victims of coyotes. Studies indicate that adult whitetails usually fall prey to coyotes only if they are unhealthy or are under unusual circumstances, such as being hampered by deep or crusted snow. Adult deer are also vulnerable when on ice, where they sometimes congregate in the winter. Field work in Texas suggests that coyotes can kill bucks during the post-rut period, when the bucks are physically spent.

A variety of other predators will kill whitetail fawns and, less frequently, adults if they have the opportunity. These predators include bobcats, red foxes, feral hogs, raccoons, golden and bald eagles, ravens, brown and black bears, wolverines, and alligators, but they don't have any significant impact on deer populations.

Self-Protection

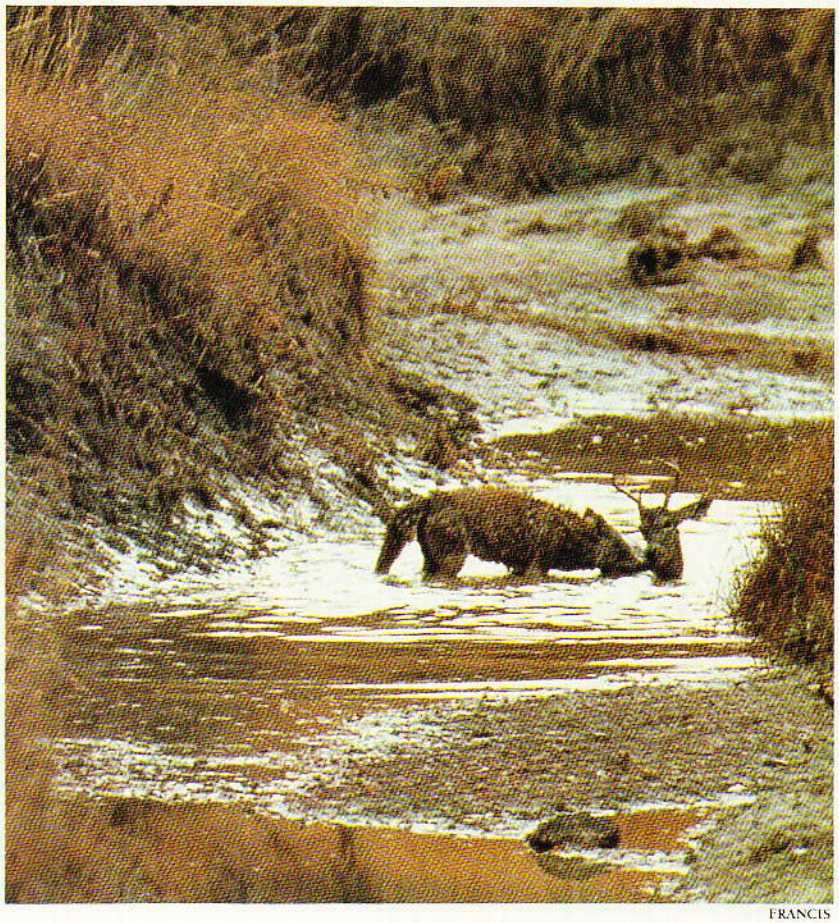
Alertness and speed are among a deer's principal defenses against predators. A mountain lion can travel great distances in





search of prey, but it can't carry out a sustained chase. It relies instead on hiding and then taking the deer by surprise at close range. White-tailed deer, then, can limit lion attacks by being alert to their presence and fleeing. In all but the shortest of chases, the deer will outdistance the lion. Wolves, on the other hand, give chase—but if the pack doesn't bring down the deer after a short run, usually less than a mile, the wolves give up and the deer, with its superior speed and stamina, escapes.

Deer have also developed other antipredator techniques. If there is a body of water nearby, they can escape from wolves by swimming. Herding limits wolf predation during the vulnerable winter months: the greater number of eyes, ears, and noses more effectively detect danger, the many moving bodies better distract attackers, the numerous hooves wear trails that improve mobility in deep snow, and the chance of being killed is decreased for each deer as it is spread among more animals. Does may protect their hidden fawns by distracting predators or by directly confronting them. Careless



FRANCIS

SMITH

With their wide paws, timber wolves have the advantage when a crust on the snow allows them to run on the surface while the deer, on its sharp hooves, breaks through. The wolf brings down the prey, then consumes the internal organs.

wolves and coyotes have been killed by slashing deer hooves; others have been backed down by displays of forefoot stamping and snorting. When a fawn remains completely motionless, its speckled coat and lack of odor during the first weeks of life help it to escape detection. Does with young fawns take up a brief solitary life with their newborns, presumably to make it harder for predators to find them than if they were in a group. Only when young deer are fleet enough to outrun predators is it safer to be in a group.

Effects on Deer Populations

Wolves and mountain lions once killed significant numbers of white-tailed deer, but as most researchers now believe, without limiting deer populations appreciably. Then began the historical decline of the wolf and lion in the eastern United States, where the deer are most abundant. During the twentieth century, neither predator has much influenced the overall whitetail population. The main limitations today are the extent of good habitat and death from recreational hunting, disease, severe winters, and vehicle collisions on highways.

There are still occasional instances in which predators have a major impact, though. In 1977 Mech and Karns reported that wolves had drastically reduced the number of whitetails in northeastern Minnesota. But this happened only after severe weather had resulted in the deaths of many deer and few, if any, wolves, skewing the normal predator-to-prey ratio. Wolves kill white-tailed deer during every season in northeastern Minnesota, yet they do not often contribute to a serious drop in the deer population.

—Daniel B. Fagre