

## Virginia Tech study shows adaptability of coyotes

A study finds that the state's coyotes respond to population control efforts by ramping up reproduction.

**Tonia Moxley**

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Virginia Tech doctoral student Dana Morin collects information on coyotes for a two-year, \$300,000 state-funded grant project. Photo courtesy of the Virginia Department of Game and Inland Fisheries

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**B**LACKSBURG — The more coyotes you kill, the more you have.

This biological quirk sets these relatively new Virginia residents apart from most other animals in the commonwealth's forests, fields and even cities, according to Virginia Tech wildlife professor Marcella Kelly.

But it's a tough fact to accept for some white-tailed deer hunters concerned that coyote depredation may be driving deer numbers down in some areas of the state. The economic impact of deer hunting in Virginia is estimated at more than \$250 million annually, according to the state's deer management plan. That makes the deer populations particularly important.

To find out how big an appetite coyotes have for venison, the Virginia Department of Game and Inland Fisheries commissioned a two-year, \$300,000 study of coyote food habits and populations in Bath and Rockingham counties, overseen by Kelly, who specializes in studying predators.

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The project is meant to lend more scientific insight into the ecology of the study areas, their support of white-tailed deer populations and estimates of the number of carnivores that affect them, according to Mike Fies, DGIF wildlife biologist and furbearer project leader for the state.

Deer hunters have complained for years that deer herds in the heavily forested mountains of Bath and Rockingham are declining, Fies said. Many suspect coyote are the culprit.

There are no reliable population estimates for coyotes in Virginia, according to Fies. Harvest numbers, which are a major component of wildlife population estimates, are self-reported through surveys every two years. Conservatively, there may be 50,000 coyote in Virginia. “But we don’t know,” Fies said.

The study — conducted by Tech doctoral student Dana Morin and a team that includes a graduate student and some undergraduates — gathered data from camera traps, GPS tracking devices and DNA analysis of scat samples to determine food habits and population estimates for the three major predators: coyotes, bobcats and bears. Morin is writing her dissertation on the project.

Results are still being analyzed, but there is one particularly surprising finding: Bobcats eat a lot of deer, and there may be more bobcats in the woods than biologists thought, Morin said.

Coyotes definitely eat deer, too, the scat samples show. But Morin and Kelly say it’s likely that they — and the bobcats — are scavenging hunters’ leftovers or deer killed in some other way, and taking the occasional fawn. Unlike wolves, which are considerably larger and hunt in packs, coyotes and bobcats pose little to no threat to adult deer.

Coyotes look for the easiest meal available, Morin said. Much of the time that translates to rodents, especially near and on agricultural lands.

Kelly said that when a deer herd is already in decline, it’s possible that predator pressure, such as coyotes taking fawns, could have an effect. But coyote typically do not cause the population declines. Those are governed by larger factors, like food availability.

Biologists are not worried that deer will go extinct, even in the study areas, Morin said. Their numbers “are just lower than hunters prefer.”

In fact, trees may be more of a problem for deer hunters than predators. Much of the woodlands of Western Virginia have matured over the past century or so, pushing deer herds to find better food sources elsewhere, Kelly said.

Deer would need necks as long as giraffe to feed among the mature canopy trees that cover much of the study area, Kelly said. And those trees tend to shade out other food sources that would grow near the ground in younger forests.

And killing more coyotes is unlikely to help deer populations, she said. Instead, it will boost coyote populations.

**‘We are the predators’**

Coyotes arose 108 million years ago and tend to fill niches left by the decline of larger, more specialized predators such as wolves and mountain lions, Kelly said.

Virginia's wolves and mountain lions were extirpated more than 100 years ago. Coyotes came to the state in the 1970s and 1980s, as two populations met on a cross-continent migration, one from the south, and another from the north, giving Virginia coyotes a high degree of genetic diversity, Morin said.

Coyotes are the "most adaptable mammal in the world," Fies said. They can live in the cold of Canada, in the deserts of the southwestern U.S., and in Chicago. One was photographed recently on the roof of a building in New York City.

But they have few friends.

People and even governments have been trying to kill off coyote since Colonial days, Morin said. In that time, the animals have spread from six states to 49. It's already open season on coyote in Virginia, where they are classified as a nuisance species. That means they can be hunted, trapped or taken at any time of the year, and there are no bag limits.

In 2013-14, 2,898 coyote were reported taken by trappers, and 22,705 were reported taken by hunters. But the harvest totals may be overstated, Fies said. The figures are based on biannual surveys done by mail.

About 17 Virginia counties have coyote bounty programs on the books, although fewer than a dozen were funded in 2014, Fies said. They don't work, though, as 150 years of failure in the Western states has shown.

"Logically, it seems like a good idea," he said. "But it doesn't work that way."

Coyotes are not just adaptable, they respond to high mortality rates by increasing their reproduction, Kelly said. Hunting and trapping stimulates this, causing coyote females to breed earlier, birth larger litters and keep juveniles in their family groups longer before forcing them out their own.

Conversely, when coyote survival rates increase, the females breed later, birth smaller litters and push juveniles out of family groups sooner.

"We are the predators. They are responding to us," Kelly said.

Out of 15 studies nationwide of coyotes' impact on deer populations, Morin said only two have shown any negative effects.

### **'They're just coyotes'**

That's not to say coyotes never cause problems. Damage to livestock operations does happen, and it can be significant.

"A farmer that loses a whole crop of lambs in one night, that's significant," Fies said. However, those kinds of issues can be managed on the farm level. The U.S. Department of Agriculture's wildlife services program traps and shoots problem coyotes to reduce agricultural losses, he said.

But “the vast majority of coyotes don’t cause anybody any problems whatsoever,” Fies said. “They are rarely seen.”

Morin describes them as shy and submissive. After catching them in the field in foot-hold traps, Morin said she was most often able to subdue them with just a bed sheet, taking measurements and samples and fitting the coyotes with GPS collars without a struggle.

And anyway, on an ecological level, it’s impossible to get rid of them. Biologists have not been able to identify a level of hunting or trapping that will reduce coyote populations, Kelly said.

Coyotes aren’t all bad, even for hunters. Fies said they prey on groundhog and raccoon, keeping their populations in check. This helps protect homeowner gardens and ground-nesting game birds like turkey, grouse and ducks. Game bird populations tend to be higher in areas where coyote are known to be present, he said.

By the same token, deer aren’t all good. As the “largest wild herbivore ... in the Commonwealth, deer have a profound impact on forest ecosystems. Deer also inflict millions of dollars in damage to crops, trees, and gardens and are a safety risk on our highways,” according to the state’s deer management plan.

Are coyotes good or bad for the forests? Morin bristles a little at the question.

People who dislike coyote project sinister human characteristics on them, often describing them as “wily” and “sneaky,” Morin said. Meanwhile, people who love them go too far the other way, sometimes feeding them and causing confrontations.

In the wild, “coyotes aren’t good or bad,” Morin said. “They’re just coyotes.”

## Coyote

**Scientific name:** *Canis latrans*

**Size:** Males weigh 18 to 45 pounds; females weigh 15 to 40 pounds; body length of about 3 feet.

**Reproduction:** Breed in January or February; litters of 5 to 7 pups are born in April or May. Litter size and age of reproduction are determined by overall population and food availability. High mortality - including from hunting and trapping - stimulates higher reproduction and pup survival rates.

**Food:** Largely opportunistic feeder; diet highly reliant on rodents, rabbits, berries, fruits and carrion. Also will take fawns and feed on gut piles left by hunters.

**Population:** No reliable estimates.

**Distribution:** Believed to be resident in every county in the commonwealth.

**Regulations:** Classified as a nuisance species; can be hunted, trapped or taken at any time of the year. No bag limits. Are trapped for pelts.

**More information:** [http://www.dgif.virginia.gov/wildlife/habitat\\_partners/infosheets/coyote.pdf](http://www.dgif.virginia.gov/wildlife/habitat_partners/infosheets/coyote.pdf)

**SOURCE:** *Virginia Department of Game and Inland Fisheries and Virginia Tech College of Natural Resources and Environment*

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