Big-game jitters: Coyotes no match for wolves' hunting prowess

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Eastern wolves once roamed along the Atlantic coast, preying on moose, white-tailed deer and other ungulates. Credit: John Benson

It may have replaced the dwindling eastern wolf atop many food chains, but the eastern coyote lacks the chops to become the big-game hunter of an ecosystem, new research led by a University of Nebraska-Lincoln ecologist shows.

Eastern wolves once roamed forests along the Atlantic coast, preying on moose, white-tailed deer and other hooved mammals collectively known as ungulates. As the wolf population plummeted via the rifle and the trap, however, the eastern coyote inherited the status of apex predator in those habitats.

But a study from John Benson and colleagues provides evidence that the eastern coyote hunts moose and other large prey far less frequently than does the eastern wolf—instead preferring to attack smaller game or scavenge human leftovers.

The findings help resolve long-standing questions about whether eastern coyotes have filled the ecological niche left vacant when the eastern wolf became threatened, Benson said.

"Wolves rely on large prey to survive," said Benson, assistant professor of vertebrate ecology who conducted the research as a doctoral student at Trent University. "But the smaller size of coyotes appears to give them dietary flexibility to survive on a wider variety of food and prey sizes, making them less predictable predators of large prey.

"Having a top predator that preys consistently on large animals like deer and moose may be an important part of maintaining stable predator-prey dynamics and healthy, naturally functioning ecosystems."

After GPS-tracking 10 packs of eastern wolves and analyzing their kill sites in Ontario, the team estimated that the wolves consumed 54 percent of their ungulate meat from moose and 46 percent from white-tailed deer. By contrast, eight packs of eastern coyote ancestry that occupied separate but neighboring territories got just 11 percent of their ungulate meat from moose and 89 percent from deer.

The eastern wolf weighs between 50 and 65 pounds; the eastern coyote

typically hits 40 to 50. Though the extra weight gives eastern wolves a greater chance of killing a moose - or at least surviving the encounter - it also demands the greater caloric intake that moose and other meaty prey can provide.

Because wolves need to feed on large prey, their populations tend to rise and fall together, Benson said. Wolves may kill many moose during a winter, for instance, depleting their numbers. With fewer moose available, the wolf population declines, boosting the moose population, which in turn boosts the wolf population, and so on.

John Benson, assistant professor of vertebrate ecology, University of Nebraska-Lincoln Credit: John Benson

Yet the buffet-style menu of the eastern coyote means that its numbers can remain steady or even rise without large prey if alternative food is abundant. This opportunistic diet, Benson said, might also be driving erratic population swings among those lower on the food chain.

"It's important to understand the role that wolves play in ecosystems and to not assume that smaller predators ... perform the same ecological functions," Benson said. "If coyotes start hammering white-tailed deer, and deer start to decline, then (coyotes) can just eat rabbits or squirrels or garbage but continue to prey on deer, too. So we think that could be a destabilizing element.

"There are some areas where you've got way too many white-tailed deer in the east, and then you've got other areas where hunters are concerned because the deer are declining. That speaks to the fact that coyotes are an unpredictable predator."

The study is timely: Canada recently designated the eastern wolf as threatened, with the vast majority of eastern wolves living protected in Ontario's Algonquin Provincial Park.

Human-caused mortality has limited efforts to expand the population beyond Algonquin Park, Benson said, which is made worse by the fact that wolves there are likely naïve to the dangers posed by humans. Another issue: Eastern wolves readily breed with eastern coyotes in the wild, making it difficult to maintain a pure lineage.

"Is there a way to get them to expand numerically and geographically outside of the park? We're not sure at this point," said Benson, who provides advice to a team now developing a recovery plan. "One thing that can be managed is human-caused mortality, so if we can provide additional protection, that should put them on equal demographic footing.

"It's an incredibly challenging situation that is complicated by the interactions of these wolves with coyotes and humans. If the park stays the same, there's no immediate reason that they would go extinct. However, we wouldn't want to go forward with that as our only plan because it offers little chance for expansion."

Though large-scale reintroduction across eastern North America will probably not occur soon, Benson said the study emphasizes the value of preserving delicate predator-prey balances that ecosystems have calibrated over millennia.

"Our work suggests that there's an ecological role that wolves play that won't be played by other animals," he said. "That's probably a role that's worth conserving on landscapes, even outside protected areas. If we're interested in restoring landscapes to a more natural, functioning ecosystem, this would be an important part of that."

The team's paper was featured in the journal *Ecological Applications*.

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