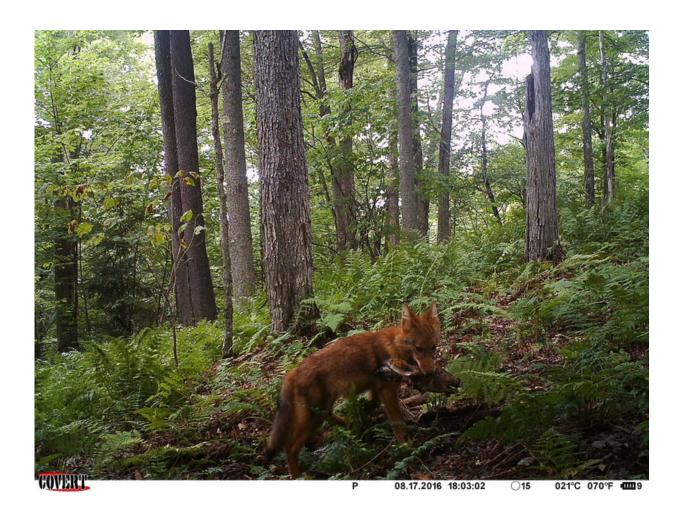# Trail cams used to monitor predators of deer fawns

March 27 2017, by Jeff Muhollem

It is generally accepted by wildlife managers that coyotes kill relatively few adult deer. However, this one is carrying an adult deer head. The coyote may not have been involved in killing the deer—it may have scavenged the skull. Credit: Penn State

Deer fawns in Pennsylvania face a cruel reality—only half of them survive until their first birthday, and much of that mortality results from predation.

Gaining a better understanding of fawn survival and predators was part of the motivation for research that began in 2015. As a part of that study, a researcher in Penn State's College of Agricultural Sciences is deploying cameras, called trail cams, in Penn's Woods, using a novel technique called camera trapping to gauge numbers and distribution of predators.

Collaborating with colleagues in the Penn State-based Pennsylvania Cooperative Fish and Wildlife Research Unit and the Pennsylvania Game Commission, doctoral degree candidate Asia Murphy is in the midst of a two-year study using trail cams to monitor bears, coyotes, bobcats, fishers and foxes in parts of three state forests—Bald Eagle, Rothrock and Susquehannock.

At any given time during the warm-weather months, she has 88 trail cams in operation, overlooking sites baited with scent attractants. Those attractants include bobcat urine, plaster-of-paris tablets impregnated with fatty acids, and a special attractant made from skunk glands. Murphy noted that each of these scents has a different appeal to the predator species she is studying. Last year, her trail cams collected thousands of photos, with many "captures" of predators.

Camera traps are being used more and more by scientists to study the space use of species and the interaction among species. Credit: Penn State

"I'm interested in looking at just how these fawns are using the landscape and surviving in this space where all these predators are out to get them," said Murphy, who earned her undergraduate degree in fisheries and wildlife science from North Carolina State University and a master's degree in fish and wildlife conservation from Virginia Tech University. "The photos show how are they using the habitat, and at what times, and how they are co-occurring with predators in these big forests."

The first question the researchers hope to answer is whether there is a

relationship between where predators are found and where fawns survive, explained Duane Diefenbach, adjunct professor of wildlife ecology, who is Murphy's adviser. For example, he noted, there is evidence to suggest that fawn predation is greater in forested habitats compared to agricultural lands. If so, this study will be able to measure the variation in the distribution of predators.

Second, camera traps record not only where we find predators but where we don't, added Diefenbach, who is leader of the Pennsylvania Cooperative Fish and Wildlife Research Unit. This may be important to fawn survival in certain forest habitats, such as areas with denser understory vegetation.

obcats, like the one shown, may avoid areas with coyotes. And, researchers say, they are less efficient predators of fawns than coyotes. Credit: Penn State

"Third, [camera traps](#) are being used more and more by scientists to study the space use of species and the interaction among species," he said. "The multi-[predator](#) system that exists in Pennsylvania means that these predators have to share space and prey. We're hoping that Asia's work will provide a greater understanding of the interrelationships of these predators."

After a season of camera trapping in Pennsylvania, Murphy—who came to Penn State solely to conduct this research, in part, because "the project sounded cool"—has perhaps more questions than answers about predators.

The research might show whether the predators are avoiding each other, she pointed out. For instance, it is known that coyotes kill bobcats, so her results might show that coyotes and bobcats are not using the same habitat areas. "If they are avoiding each other, then it might be safer for fawns to be in areas both predators aren't using," she said.

The research is looking at just how fawns are using the landscape and surviving in a space where so many predators are out to get them. The photos show how fawns are using the habitat, and at what times, and how they are co-occurring with predators in Pennsylvania's expansive forests. Credit: Penn State

"Predators differ, in time and space, in how dangerous they are to fawns. We know bobcats are not as efficient as coyotes at preying on very young fawns. So if bobcats are avoiding an area because there are coyotes there, it might be a better area for older fawns."

A native of Sacramento, California, Murphy is uniquely qualified to conduct the research in Pennsylvania. Before arriving at Penn State, she

participated for two years in a Virginia Tech camera-trapping project focused on carnivores in Madagascar's Makira National Park. She started camera trapping in 2011 when she was an undergraduate using trail cams to study carnivore distribution in southwest Virginia.

"With wildlife, cameras can teach us a lot that we can't learn with traditional research methods," she said. "But they still can't tell us everything."

Provided by Pennsylvania State University