

Shining a Spotlight on Spotted Skunks

COMMISSION
BIOLOGISTS LEAD A
LONG-TERM STUDY
OF THIS ELUSIVE
AND ENDANGERED
SPECIES

Written by
Dan DeWitt

In three hours of checking game cameras in the western North Carolina mountains, N.C. Wildlife Resources Commission biologists Casey Dukes and Colleen Olfenbittel had reviewed images of mice, squirrels, a coyote and several old frames of a hoodie-clad Dukes approaching cameras to remove them from their mounts.

Now Olfenbittel called out the list of subjects photographed at the morning's last site, in a forest overlooking the muddy expanse of an empty reservoir near Murphy.

"We have pig and deer," she said, clicking through the frames. "And a person."

That the cameras had failed to photograph the biologists' target species, the Eastern spotted skunk, was really no surprise. Four years ago, the Commission embarked on this long-term study of the spotted skunk precisely because of the qualities that make it hard to capture on film: Its population has mysteriously plunged since World War II and it has long proven to be an elusive subject. Before a big bump in the number of spotted skunk images the researchers captured this year during this study, the grand total had stood at an even dozen from 2014 through 2017.

"It's a very cryptic species," Olfenbittel said. "The knowledge gap is huge."

That is true among members of the public, most of whom picture skunks only as the larger, more common striped variety. "I've rarely talked to anybody who was even aware we have a second skunk species in North Carolina," said Olfenbittel, the Commission's black bear and furbearer biologist.

The knowledge gap also extends throughout the range of the Eastern spotted skunk, which includes the Great Plains, the Appalachian Mountains and Florida. Awareness of just how little was known about the skunks—commonly known as "spotteds"—began to spread around 2011, when state furbearer biologists in the Southeast started talking about the lack of observations and detections of the skunk at their annual meeting. Over the next few years, states began updating their wildlife action plans (WAP) needed to qualify for federal funding, which included gathering subject-matter expertise from state biologists and researchers.

In North Carolina, the updated 2015 WAP identified that the Eastern spotted skunk lacked information on distribution,

abundance, and factors affecting its population size, making it a priority species for surveys, monitoring and research. In addition, a golden eagle survey across the Appalachian states started capturing incidental spotteds on camera. All of this led to such a surge of interest in spotteds that Olfenbittel was inspired to help found the Eastern Spotted Skunk Cooperative Study Group in 2015, which allows researchers and state biologists to share methods and findings.

Her action, along with the comprehensive research project the state is conducting with Clemson University, has put North Carolina "kind of at the epicenter of the groundswell," Olfenbittel said.

A STEADY DECLINE. Spotteds' disappearance from our landscape and consciousness is all the more striking because they used to be so prominent in both. Common skunk nicknames such as civet cat and polecat refer not to striped, but to spotteds. And in the 1940s, trappers across the country typically harvested tens of thousands of spotted-skunk pelts a year, Olfenbittel said.

By the late 1950s, she said, "that number was literally down in the hundreds." Most of the scanty available evidence points to continued decline. A 2017 sighting of a spotted skunk in South Carolina, for example, was the first in the state in 16 years, said David Jachowski, an assistant professor of wildlife ecology at Clemson and the chairman of the cooperative study group.

Researchers have identified several possible causes of the range-wide population decline that started in the 1940s: diseases; industrial agricultural operations that displaced the bushrows and other natural areas common on smaller farms; widespread use of pesticides that reduced prey availability; and unregulated overharvest of the spotteds' distinctive pelts. Current factors that could be suppressing populations include diseases, such as rabies or canine distemper, growing or spreading populations



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These two photos of Eastern spotted skunks were taken with the use of trail cameras, or camera traps. Spotted skunk populations are low in western North Carolina with several factors contributing to their decline.



of aerial and terrestrial predators such as owls and coyotes; loss of early and mid-successional forests, which provide dense woody cover and forage; increased habitat fragmentation, resulting in isolated populations; and encroaching development on a creature that may be less adaptable to human presence than its striped sister species.

Which one is likely the main culprit?

“We don’t know,” Olfenbittel said, a response she repeated to a whole series of questions during the camera-checking expedition near Murphy in February.

Were spotted skunks always confined to their current range in the North Carolina mountains or did they once roam the entire state? Does the species prefer high elevations or is that just the location of the dense understory that is its preferred habitat? Is the low number of sightings due mostly to the skunks’ secretive nature, or are they rare enough to justify protective status as Threatened or Endangered?

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NOT YOUR AVERAGE SKUNK. Olfenbittel does know enough to believe that, with broader awareness, the public would embrace the species. Spotted skunks are reluctant to release their spray, which requires about a week to replenish, and therefore give elaborate warnings beforehand; they not only stomp their rear feet but raise their hindquarters in a handstand, sometimes peering over a shoulder to gauge the reaction of potential threats.

Spotted skunks are smaller than striped skunks, about the size of fox squirrels, with facial features suited for a stuffed toy—button noses, small ears, round eyes and foreheads marked by an inverted triangle of white fur. “Cute is a word a lot of people use to describe them,” Olfenbittel said. And

when she displays pelts during public presentations, she said, “people really zero in on the spotted skunks.” Their coats are marked not so much by spots as by networks of meandering stripes, and are finer and thicker than the notably coarse fur of the striped skunk.

“This is not a very scientific term,” Olfenbittel said, “but they’re fluffier.”

Scientists also know enough about spotted skunks to develop research strategies. Spotted skunks, which produce litters of between one and five young in the spring, are most active—and most likely to be captured on film and in traps—during their late-winter and early-spring breeding season. And though they are primarily insectivores, they will consume almost any available food, from berries to carrion, meaning they can be attracted by a wide variety of lures.

This was proven in a long-running study of golden eagles in the Appalachians, during which cameras photographed several spotted skunks raiding the caches of fresh roadkill used as bait. These unexpected cameos not only confirmed the feasibility of a camera study for spotted skunks but helped spark the current wave of interest in studying them.

“That was good encouragement to rediscover a species that had largely been forgotten,” said Jachowski.

He developed the camera protocol while working as a post-doctoral researcher at Virginia Tech. At Clemson, he supervises the undergraduate students who analyze the photographs: a master’s candidate, Robin Eng, who has built her thesis around a camera study that includes North Carolina, and a Ph.D student, James Hody, who will continue to use the camera study, as well as capture and track skunks in North Carolina.

Dukes, the Commission’s surveys and research biologist, is the staff biologist responsible for coordinating the camera study. Earlier this year, she and staff from the Commission’s Land and Water Access program, along with several cooperating agencies, set up 51 camera sites at elevations ranging from about 1,000 to 4,000 feet. The bait employed is sardines, a can of which—accompanied by a long-handled hammer—rattled around in the blue plastic Lowe’s bucket Dukes carried to each site near Murphy.

While Olfenbittel talked about the species and the study, Dukes pried the old cans from their tree trunks. She secured each new



JOHN MACGREGOR



WEST VIRGINIA DEPARTMENT OF NATURAL RESOURCES

A baited camera site in the Appalachian Mountains captured an Eastern spotted skunk threatening to spray a bobcat. Spotted skunks do a handstand on their two front legs and can move toward a threat, directing their anal glands at the perceived danger.

Spot the Difference

Did you know that two species of skunks can be found in North Carolina? While most people are familiar with the common striped skunk, the endangered Eastern spotted skunk is not only more difficult to find, but it is also smaller and fluffier than its fellow skunk. Here are a few tips on how to identify each species of skunk.

Eastern Spotted Skunk

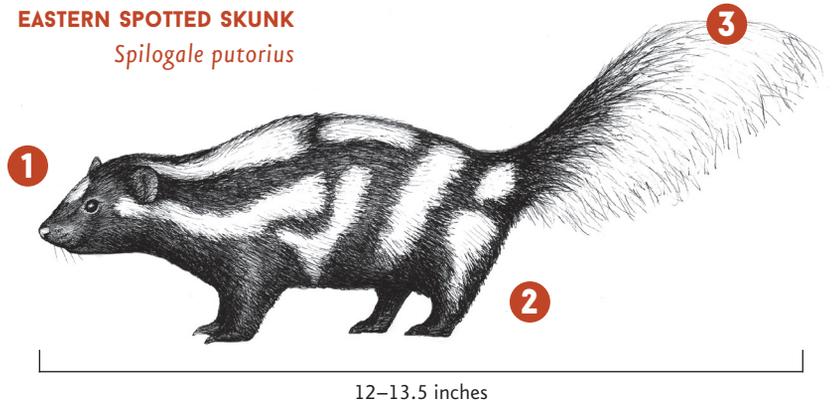
1. Upside-down triangle on forehead and narrow white stripe beneath the eye.
2. Two stripes run diagonally across each hip; a few white spots on the rear end.
3. Bushy tail is white underneath and at the tip.

Striped Skunk

1. Narrow white stripe down the center of the face.
2. Usually two white stripes down the back.
3. Long fluffy black tail.

To learn more or to report observations please visit ncwildlife.org/spottedskunk.

EASTERN SPOTTED SKUNK
Spilogale putorius



STRIPED SKUNK
Mephitis mephitis

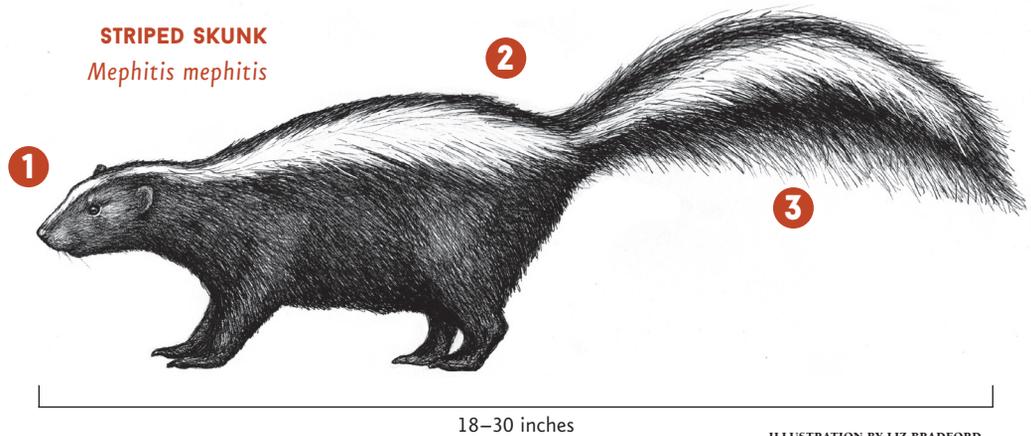


ILLUSTRATION BY LIZ BRADFORD

can with three large nails that she worked back and forth to widen the nail holes, allowing the oil to flow and the smell to spread. She then unlocked the cable that secures each metal camera case to a tree trunk opposite the bait, then released the padlock that keeps the case closed.

Thanks to these measures, no camera in the previous three years of the study had been damaged by either curious bears or thieving humans, she said. “To get to one of these cameras you’d pretty much have to cut down the tree.” And though the main reason for checking cameras is to ensure that adequate space remains on their digital cards, she and Olfenbittel couldn’t resist taking a peek at the recorded images. “If you’re a biologist and you don’t like looking at game pictures, you need to get a different job,” Dukes said.

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CAMERA-SHY CRITTERS. In the first two years of the study, the scans of these frames almost always ended in disappointment.

The cameras netted one picture of a skunk in 2015 and two images the following year. The brand of the first batch of 50 cameras—purchased by Olfenbittel with revenue from a federal firearms and ammunition

tax (the Pittman-Robertson Act)—was partly to blame. In 2017, after replacing the cameras with a cheaper but more sensitive model, researchers photographed spottedts nine times.

That number jumped to 45 this year, a breakthrough that might be due to researchers’ use of two cameras at some sites, or to the decision to cut out additional scents that had previously been used along with the sardines. But until researchers can study the results more thoroughly, the reasons for “the improvement in detections is mostly theoretical for now,” Olfenbittel wrote in an email.

“What we do know, is that with the progression of this research and using the right tools and technology to improve data collection, our detections—so far—have continued to increase.”

The most telling data will come in the second phase of the study, conducted by Hody, the Clemson doctoral candidate, who has trapped a total of 15 skunks near Morganton. Once he captures skunks, he weighs them, measures their height and length, takes blood and hair samples, and attaches tiny radio collars.

The samples allow him to study the species’ genetic makeup and search for diseases. The collars allow him to track the animals as they dig burrows and mate and raise young. Once Hody’s work is complete, in about five years, researchers will have a far clearer picture of the threats to spottedts and their population status. The knowledge gap should close considerably, and scientists expect to face far fewer questions they cannot answer.

“North Carolina is right there with the other [states] studies and has stepped up the bar,” Jachowski said. “The level of information we learn about the species should be pretty much unprecedented.”

Dan DeWitt is a former newspaper reporter and columnist in Florida who recently relocated to North Carolina. This is his first article for Wildlife in North Carolina.