THE [GOLDEN] EAGLE HAS LANDED

RESEARCH PARTNERS STUDY THIS SECRETIVE BIRD THAT MAKES ITS WINTER HOME IN THE NORTH CAROLINA MOUNTAINS

WRITTEN BY
CHRISTINE A. KELLY

As you walk through the woods do you ever wonder what animals are watching you? I do. I think about deer bedded down in the snow, a skunk peeking out of a hollow log, a bobcat ducking silently out of sight at the sound of my footsteps. Here's another one to add to my list: golden eagle.

The golden eagle is remarkably secretive for such a large bird and therefore rarely seen. It will not dally more than a few minutes in close proximity to humans. This eagle spends the winter in dense forests at high elevations. So says the research coming out of the Eastern Golden Eagle Working Group. West Virginia University's Dr. Todd Katzner and his team track golden eagles with GPS transmitters. His particular interest is the migration and over-wintering of the Eastern golden eagle, and threats it encounters along the way. This is a small geographically disjunct population comprising an estimated 3,000 to 5,000 individuals that nest in eastern Canada (Ontario, Quebec and Labrador). The eagles venture south starting in October. Their destination? The Appalachian Mountains.

Golden eagles nest in Canada (Ontario, Quebec and Labrador) during the summer months and migrate south in the winter. Some find a winter home in the mountains of North Carolina.

As it turns out, they're here, but are so secretive and shy you might never know it while hiking through the woods. Early telemetry results showed the eagles wandering long distances, often venturing into the Southern Appalachians. While initial efforts focused on the Central Appalachians, the maps of flight paths and stop-over sites generated by Katzner's lab captured the attention of partners in the Southern Appalachians who began to wonder about the importance of our mountains to the golden eagle in winter. The tracked birds spent over half the year in the Appalachians and tended to stick to forests, often in remote areas … two things in good supply in the North Carolina mountains. With these new data in hand, the Eastern Golden Eagle Working Group invited the N.C. Wildlife Resources Commission to join the study.

In the winter of 2012–13, NCWRC biologists and volunteers joined partners from 14 other states in a golden eagle monitoring project intended to fill in winter distribution gaps. First, we selected sites meeting some basic characteristics of golden eagle overwintering hangouts: small openings in remote forests at high elevations. Next, we posted trail cameras aimed at road-killed deer carcasses. A camera station set early in the season (November 2012) by volunteer Mark Hopey of Southern Appalachian Raptor Research generated some captivating shots of a bobcat seemingly poised for the camera. As interest grew, so did participation. We expanded to 11 camera stations run by staff and eager volunteers.

Soon we were all scanning road shoulders for dead deer. Every week to 10 days, NCWRC Conservation Technician Joe Tomcho navigated steep snow-covered mountain roads to replace deer carcasses and check cameras, while his counterparts Wes Duncan, Jim Keepfer and Michael Greene managed sites in the foothills and northern mountains. As we approached a camera station to change batteries and refresh the deer, we instinctively grew quiet and tiptoed over the snow, examining the myriad wildlife tracks. "Look over here!" someone would exclaim. There were tracks of coyote, bobcat, fox, raccoon, and mice. Those were our initial visitors and they rapidly consumed the deer meat. I received regular emails from veteran volunteer Alan Cameron operating a camera station in Transylvania County pleading, "Help! I need deer!" For a while, we all waited, feeling a mix of anticipation, hope, and doubt, wondering if we'd document at least one golden eagle here in our mountains.

On January 14th, Joe reported back from a camera check announcing, "The eagle has landed." There it was, this big, elusive, beautiful bird of prey, pictured next to a deer carcass, its talons gripping the deer hide, at 4:07 p.m. on Jan. 5, 2013. Judging by its medium brown plumage and absence of white on the base of the tail, our first "capture" was an adult bird. And this wasn't the only one: a golden eagle was documented at another mountain site on the afternoon of Jan. 13th. Between November and March, cameras documented golden eagles at five mountain stations in Alleghany, Mitchell, Wilkes and Yancey counties at elevations ranging from 2,981 to 5,388 feet and in habitats consisting of grassy balds or small openings on ridgetops surrounded by extensive forest.

While the majority of golden eagle pictures showed one eagle at a carcass, many pictures showed two goldens together at a carcass. Because these eagles were not banded, we used plumage characteristics to distinguish between individual birds. In all, we conservatively estimate eight individual golden eagles, up to as many as 11. They consisted of a mix of adult-plumaged birds and sub-adult birds with their white rumps and dark chocolate plumage. All donned honey-colored feathers on the head and nape of the neck for which the golden eagle gets its name. Someday soon, we may be able to confidently identify individual eagles using a type of eagle facial recognition software being developed by Katzner's lab. After all that anticipation, we enjoyed a sudden new appreciation of the importance of western North Carolina's high mountain forests to the over-wintering golden eagle.

The eagle was the obvious star of the show, but this project gave us a glimpse into the secret lives of many other species. In all, we documented 24 species visiting deer carcasses, including black bear, bobcat, coyote, red fox, gray fox, raccoon, opossum, Eastern spotted skunk, striped skunk, white-tailed deer, Eastern fox squirrel, mice, domestic dog, domestic cat, dark-eyed junco,


ANDY ASTBURY / 123RF.COM


NORTH CAROLINA DIVISION OF TOURISM

NATURE'S WAYS

Why do Golden Eagles Have "Fingers" on the Ends of Their Wings? See Nature's Ways, page 43.

[THREATS TO EAGLES]

Eagles will readily scavenge a carcass. Unfortunately, an eagle may also ingest lead bullet fragments found in discarded gut piles of hunted game. Lead toxicity can be lethal or sub-lethal, the latter predisposing the bird to other threats such as collisions. The severity of our bird's lead exposure indicated chronic exposure to lead over the course of its seven-plus year life and across its breeding, migration, and wintering range. Birds are more sensitive to lead than mammals. Lead also poses a human health hazard.

Golden eagles are known to walk long distances through fields and woods. In other states, biologists have followed tracks in snow for several hundred yards through forests.When this occurs, eagles are vulnerable to foot-hold traps used for furbearers. Because of this, neighboring states have instituted requirements about minimum distances between exposed bait and traps.

Many ridge-top locations having superior wind energy resources fall along the flight path of golden eagles. The birds are especially at risk of collision when flying at slow speeds and low altitudes to hunt. Fortunately there are no documented cases of golden eagles killed by turbines in the East. In the West, where the golden eagle population is much larger, turbines represent one of the most consequential threats to this species, and mortality resulting from strikes is on the rise.

DIRKR / 123RF.COM

[TAX CHECK-OFF]

Taxpayers can help North Carolina wildlife, such as golden eagles, with donations on their state tax forms each year.

Because donations can be matched with federal and other grants, the Wildlife Commission can double those donations. For example, if you make a $50 donation, it can allow the commission to access $50 in matching grant money, resulting in nongame and endangered wildlife in North Carolina benefiting from $100 of support.

North Carolina's income tax donations have helped fund success stories, such as peregrine falcons and bald eagles, which were once endangered but now soar high in our skies.

The Nongame and Endangered Wildlife Fund's tax check-off donations provide the largest and most significant source of non-federal funding for conservation projects to help these species. Every dollar of tax check-off donations the commission receives goes to the fund, where it matches federal and other grants, or is used to pay for educational activities and wildlife-watching projects like the North Carolina Birding Trail.


WHITETAG / 123RF.COM

A golden eagle can soar in flight at 35 miles per hour and dive close to 100 miles per hour. The "fingers" formed by the emarginated primary feathers (shown pointing down in the picture above) aid in lift and decrease drag.

blue jay, common raven, American crow, black vulture, turkey vulture, red-tailed hawk, red-shouldered hawk, bald eagle and, of course, golden eagle. In the camera's eye, dramatic scenes played out between the scavengers, the predators, the hungry, the brawny, the wily and the "fragrant." We observed interesting dynamics between top predators. For example, a bobcat fiercely held off a single coyote, but not a pack of coyotes. Bobcats buried the carcass in leaf litter, making it necessary to rake leaves off the site. Golden eagles ruled as alpha bird of prey. One picture showed a standoff between a golden eagle and a bald eagle, each strutting on opposite sides of the deer carcass. Flocks of dozens of feasting ravens scattered whenever a golden eagle arrived to feed. Slowly, the bravest ravens crept back to the carcass, carefully eyeing the eagle. In fact, the ravens inadvertently help the eagles locate the carcass, as the racket of a flock of Corvids draws the attention of a wandering eagle. One particularly intriguing non-eagle visitor to the deer carcass was an Eastern spotted skunk appearing at a site in Caldwell County. This lesser known and seldom seen skunk rivals our star golden eagle in beauty, sporting a luxurious white-spotted black coat, white patch on its head, and plumed black and white tail.

In February 2013, the NCWRC joined forces with Tennessee Wildlife Resources Agency and Katzner's lab to capture, band and transmitter a golden eagle at one of our North Carolina camera stations. We scrambled to set up blinds, refresh the deer carcasses and deploy a custom-designed rocket net at one of the sites that was frequently visited by eagles. Then we sat down, shivering in the cold, to wait. On the afternoon of the second bitterly cold day, my radio crackled with bander Trish Miller's voice saying, "Hey Chris, we got one!" Trish walked up the trail, bundled up in winter gear, happily cradling a hooded and booted golden eagle in her arms. She and her husband, fellow bander Mike Lanzone, set to work taking extensive morphological measurements, blood and feather samples that would contribute to studies on the genetics of the eastern population, contaminants (e.g., lead) and the bird's origin.

Just how big is a golden eagle? The adult male we captured weighed 8.7 pounds (remember, birds have hollow bones). To measure the length of the eagle's folded wing (23.8 inches), Trish and Mike had to use a yard stick rather than the conventional wing chord ruler used by other raptor and passerine banders. Even the banding toolbox was oversized, and not your usual fisherman's tackle box. The aluminum U.S. Fish and Wildlife Service leg band was of the pop-rivet variety used on larger raptors and is stamped with a unique band number that identifies this bird. Finally, Mike and Trish attached the GPS-GSM transmitter. The bird wears the transmitter like a backpack, with the harness tucked gently beneath its feathers. The transmitter measured about 4 inches long and weighed less than 3 percent of the bird's body weight, a rule of thumb biologists use to ensure that the added weight is not overtaxing to the bird. Powered by a lithium ion cellphone battery with a solar panel, this transmitter was programmed to collect locations from satellites every 15 minutes during daylight hours. It transmits data once daily when in contact with a cellular communications tower. When outside of the range of a cell tower, data are stored until the bird flies within range again.

While this bird was pictured by the trail camera, feasting on a deer carcass nine days after capture, we received no communication from the transmitter. At first we suspected the problem was a weak cell signal; much of this part of the mountains is in a "dead zone" for a cellular tower signal. More weeks passed with no data transmission, and then we received the results of the contaminants test. The level of lead in the blood was disturbingly high, at 30–33 µg/dL (micrograms per deciliter). This level indicates chronic exposure to lead. Furthermore, if sustained, this level would kill an eagle. Given this high lead level, there is a chance the eagle perished somewhere in the vicinity, within the no-signal zone for the transmitter.

Meanwhile, other golden eagles captured by Miller and Lanzone in the Southern Appalachians have provided some insight on late winter-early spring dispersal and, of particular note, their affinity to forested travel ways. A fifth-year male golden eagle captured in northern Alabama in February 2013 traveled an impressive 180 miles north from Kentucky into Indiana in just 30 hours, then further north into Michigan before turning south again toward Tennessee. Surprisingly, the bird made this trip three times before moving on to the breeding grounds in April. On each trip it closely followed forested areas, forested riparian corridors and reservoirs, moving quickly past open landscapes to the next forest patch.

Despite the lack of dispersal data on the North Carolina bird, we've still learned a lot about golden eagles wintering in the Carolinas, including their affinity for remote forested tracts and occurrence at surprisingly low elevations where forest cover is sufficient. Now when I walk through the winter woods, I like to think I know approximately where I might be passing a secretive golden eagle that is watching me. ◆

Christine Kelly is a biologist with the NCWRC's Wildlife Diversity Program.