

A Note from the Editor



Wildlife biologists frequently get calls and questions from landowners asking for advice about improving habitat for one or more wildlife species. Some of these folks are pursuing what biologists refer to as “magic beans”—a quick and easy path to wildlife habitat improvement. Unfortunately, true wildlife habitat management almost always involves a significant investment of effort, financial resources and sweat equity.

Providing for the needs of wildlife species must go beyond simple food plots and easy fixes and include comprehensive management to really make a difference. As the old saying goes: “If it were easy, everyone would do it.” Simply put, good wildlife habitat management is often very hard.

Articles in this issue address some excellent examples of families “going the extra mile” to create unique wildlife habitat on lands owned by those families for generations. The Palmers of Haywood County in our Mountain Region and the McKays in Scotland County along our southern border are living proof that if you want something bad enough, and are willing to work hard, you can accomplish your goals.

In today’s North Carolina, there are many challenges facing landowners who attempt to put wildlife at the top of their list of priorities. However, families like the Palmers, McKays and others too numerous to mention here, give us all hope for a future where private lands continue to provide some of the best areas for our state’s diverse wildlife resources.

Even if you don’t have large acreages or huge financial resources, there may be things we can do to help you meet your land management objectives. If you are a private landowner with a desire to go that extra mile, our agency has staff and resources ready and willing to give you advice and help you meet your objectives.

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THE Upland GAZETTE

WILDLIFE CONSERVATION AND HABITAT MANAGEMENT



Margaret Palmer (middle) with son David and daughter Lynne Leatherwood. The Palmer family has lived on their Haywood County lands for seven generations and developed some of the best wildlife habitat found on private lands anywhere in North Carolina.

CONSERVATION CHRONICLES

A Family Tradition

By Mark D. Jones, supervising wildlife biologist and Upland Gazette editor, NCWRC
& photographed by Melissa McGaw, NCWRC

Many North Carolinians have strong ties to lands that have been in their family for generations, but fewer families can match the story of the Palmers of Haywood County in our western mountains. Seven generations of the Palmer family have lived on family land, and this land encompasses some of the best wildlife habitat to be found on private lands anywhere in our state. I had the opportunity to visit with the Palmers this past spring to observe firsthand the efforts of the family to make their lands a home to iconic wildlife species, including elk, black bear, ruffed grouse and many songbirds.

I pulled into the driveway of the family home place on a cool and cloudy May day to be greeted by the family matriarch, Margaret Palmer, and her daughter, Lynne Leatherwood. Shortly, Palmer’s son, David Palmer, pulled into the driveway. We spent several minutes with country greetings and discussions about everything from the weather to the family history of land stewardship. I could not help but smile inside at how the Palmers seemed to genuinely love the lands around their home and revel in the opportunity to show it to someone else.

We had scheduled this visit following the awarding of the Wildlife Commission’s Lawrence Diedrick Small Game Award to the family a month earlier at our April 2016 Wildlife Commission meeting. The award is given annually, or when appropriate, to individuals and organizations whose actions significantly and positively impact any of North Carolina’s small game populations (bobwhite quail, ruffed grouse, squirrel or

rabbit). The Palmers were nominated by one of our technical assistance biologists from the Mountain Region who had given advice and witnessed firsthand the efforts of the family to improve and maintain their habitat for not just small game, but for a wide variety of species, including big game and high priority nongame animals. As I learned more and more about the family and their seven generations of effort, I had to see their lands for myself.

Both siblings are very humble and credit the other for the success of the family's wildlife management efforts. Lynne appears to be the handler of paperwork, logistics and computer efforts related to management while David handles most of the day-to-day field work and management. They have developed a true team approach. The Palmer family has owned their land since 1913. The property lies at high elevation (some above 5,000 feet) and contains a variety of habitat types, including hardwood forests, mountain meadows, wetlands and high mountain balds. Balds are mountain summits or crests covered primarily by thick native grasses or shrubs occurring in areas where forest growth would be expected. They were historically common in western North Carolina and maintained by lightning fires, fires set by Native Americans and the grazing of large ungulates such as bison and elk. Unfortunately, balds have decreased in area across North Carolina over the last century as fire has decreased and bison and elk have disappeared from the landscape. Recreating the unique habitat provided by balds is something quite special and important for wildlife in our mountains.

The property was grazed by cattle and sheep until the late 1980s when the family removed livestock and began a management regime that maintained early successional habitat for wildlife. Management practices include setting back succession in forested stands by cutting trees, spraying herbicides on stumps to stop tree sprouting and using prescribed burning to maintain and enhance critical grass and shrub habitat for declining and high priority species. Essentially, the Palmers



The Palmers' unique early successional habitat (top) provides for diverse species, including Rocky Mountain elk and golden-winged warblers. David Palmer (lower left) and Wildlife Resources Commission Biologist Patrick Farrell discuss management options on the family's Haywood County properties.

are reinventing the habitat conditions that were common in the southern Appalachians prior to European colonization over 200 years ago. The creation of this unusual early successional habitat has proven very important for a wide variety of wildlife species.

Two high priority species that benefit from the Palmer's habitat management include the golden-winged warbler and the Rocky Mountain elk. Golden-winged warblers are listed as a special concern species because populations have declined over 90 percent throughout the Appalachian Mountains, and wildlife officials fear the species might become threatened or endangered under federal law. Golden-wings love the open and shrubby areas and meadows created by the Palmers' management efforts. Additionally, the property provides important habitat for elk leaving the Great Smoky Mountain National Park. While often thought of as a forest-dwelling animal, elk are classic grazing animals more

at home in a grassland. The habitat provided by the Palmers attracts a number of resident elk the family sees on a regular basis. Other species that have been seen on the property include black bears, cotton-tailed rabbits, white-tailed deer, wild turkeys, ruffed grouse, bobwhite quail, mourning doves, indigo buntings, hooded warblers and dozens of other songbirds.

In addition to their wildlife habitat conservation efforts, the Palmers give back to the community in other ways. They have participated in the North Carolina Forest Service's Community Protection Program (designed to protect communities from destructive wildfires), and they have allowed students from Haywood Community College's Forestry and Wildlife Program to assist with land management in order to obtain field training. The Palmers have managed their land for over 100 years and currently provide critical and unique early successional habitat in an area of the state where such habitat is quite limited. Their story represents a true North Carolina success story. 🌿



A recently thinned stand of pines provides a backdrop for family members to gather around Duncan McKay. Active management has improved wildlife habitat and timber revenue for each generation of the McKay family.

CONSERVATION CHRONICLES

The Real McKay

This Scotland County family is the genuine article when it comes to conservation management

By John Isenhour, technical assistance biologist, NCWRC & photographed by Melissa McGaw, NCWRC

The origin of the phrase “Real McCoy” is difficult to verify. A quick online search reveals references to a distiller, a boxer, an industrial inventor and a Scottish leader. No matter where it started, today we know it means “the original” or “genuine article.”

When it comes to managing their property to balance production and wildlife habitat, the descendants of the late John L. McKay (pronounced “Mick-Coy”) are indeed “The Real McKays.” This family, deeply rooted in the Scotland County community of Wagram, has cooperated across generations to implement a true multiple resource management program.

The transition of land from one generation to the next is often a challenge for families. Each passing generation is not necessarily tied to the land like the previous. Even if there is an interest in holding the family property together, high land values, differing man-

agement objectives and simple day-to-day responsibilities often tarnish the glimmer of the land ownership tradition.

The McKay family has navigated this labyrinth since its ancestors arrived in Scotland County in the late 1700s. Currently, Duncan McKay fills the role of family elder. Under Duncan’s watchful eyes, his son Jeff, and nephews John McKay and Vince Nelson, guide the management of the property. These three cousins share information with their siblings and circulate thoughts, ideas and suggestions to arrive at a consensus on how to balance row crop production, timber management and habitat enhancement.

The McKays, like many conservation-minded families, have two requirements for their property. First, it must be profitable. Property ownership can become burdensome when facing taxes, insurance and maintenance costs. For most owners, the only way to

reduce this burden is by generating income through farming, forest production and possibly hunting leases. The second requirement of the land is that it must offer an intrinsic value. For many landowners, less concrete elements influence their management decisions. Nostalgia, solitude, recreation, legacy and esthetics are a few emotion-based factors that are difficult to calculate in the ledger book.

“Much of our tie to the land comes from summer days spent exploring the Lumber River,” Vince and John reminisce. “We would canoe, fish and camp on the banks that are now part of Lumber River State Park.”

Making More Memories

Fall and winter visits to the farm often revolved around hunting adventures involving family and friends from the surrounding community. Today, each of the McKay cousins



Top: Vince Nelson(right) and Commission biologist John Isenhour discuss species diversity and the benefits of prescribed burning in the pine ecosystem. **Inset:** Emily McKay shows off the rewards of habitat management. This is one of four deer harvested by family members over the 2016 Thanksgiving holiday weekend. **Bottom:** Targeted management is needed to balance monetary and intrinsic values. Identifying significant blocks and corridors in which to focus habitat efforts result in the most benefits on the smallest acreage.

finds their own reasons to visit the farm. Jeff enjoys hunting the property and floating the Lumber River. John regularly visits to work his bees that produce “Knapdale” honey. Vince, along with his dog Trouble, looks for any excuse to load up for a visit to the farm.

With so much emotion tied to land ownership, it is often easy to forget that conservation is expensive because of foregone income, opportunity costs or implementation expenses. It is up to each landowner to determine how to balance monetary value and intrinsic value to meet unique ownership objectives. While some of these costs can be offset with financial assistance from programs under the U.S. Department of Agriculture’s Farm Bill, “cost share” generally does not cover all of the financial investment. The McKays have received guidance from their forester and North Carolina Wildlife Resources Commission staff to carefully get

the most bang for their conservation buck. These conservation methods include:

- A prescribed burning program has been in place on the property for the last 15 years. Burning has enhanced wildlife habitat and protected forest resources by reducing wildfire fuel loads.
- Timber harvests have been strategically managed to heavily thin field edges, create forest openings and daylight forest roads. Thinning at variable densities has resulted in a system of scattered early successional habitat areas connected by travel corridors.
- Stands of residual mature longleaf pine have been heavily thinned to promote native ground cover and natural longleaf regeneration. These stands will provide a glance into the ecosystem which once covered much of eastern North Carolina.
- Selective herbicides have been applied to reduce mid-story tree species and promote

groundcover. Herbicide treatments have varied in application method, formulation and intensity to limit impact on non-target species.

• The McKay family recently enrolled their property in the Sandhills Safe Harbor program (see related story in this issue). This program provides assurances to landowners that they will not incur new restrictions if their management actions result in red-cockaded woodpeckers taking up residence on their property.

In today’s fast paced world, managing property at a higher conservation level is often lost in the shuffle. If you equate balancing a piece of property’s intrinsic value and monetary value to walking a tight rope, family dynamics can be thought of as a crosswind which may gust to 30 mph. The John L. McKay family is striving to manage their ancestral home to provide for future generations. Their cooperative efforts ensure that the financial and emotional needs of those yet to come will be met. More importantly, it provides a place to anchor this family and a place where siblings and cousins are greeted with smiles, handshakes and hugs no matter how far they ventured from home. Wise use of their natural resources over the generations clearly makes this family a conservation Real McKay. 🌿

Prince of the Pines

A turkey hunter and his longtime obsession face off in a familiar chess match

By Walter “Deet” James Jr., hunting heritage biologist, NCWRC & photographed by Melissa McGaw, NCWRC

It was May 1997; the sky clear, the air cool and damp. The sun, although still hidden beneath the horizon, wanted desperately to regenerate all that was lost over the previous winter. Rain was not in the forecast for this spring gobbler season hunt, yet an eerie stillness enveloped the area similar to that of an impending low pressure system.

All seemed perfect as I eased closer to where the Prince lived. The Prince dared not gobble on the roost for past experience demonstrated that if he did, an army of camouflage-clad hunters would attempt to surround his white pine sanctuary with intent on harvesting the old monarch. However, the Prince didn't need to echo lusty gobblers from his lofty perch because he often spent mornings and evenings accompanied by his harem of hens.

This was the third and last week I had to hunt the old monarch. The season was coming to a close, and I became obsessed with this one bird. Many times in the past when encountering a “hard to work” gobbler, I often had several “back-up” gobblers as

alternatives. But this time was different. The Prince was different. And I was unable to let go. This was something only a dedicated turkey hunter could understand. The Prince would not even let me get close—his hens would shield him like the Secret Service to the President. He was special to them and now to me as well. I knew where he lived, where he displayed for his hens in a small pasture near the pines, and where he liked to loaf in an adjacent patch of hardwoods when the morning sun created a subtle mottling pattern on the forest floor. This day was different, I thought, and I would finally go home with the monarch slung over my weary shoulder—a season ending with the harvest of this elusive and noble game bird.

Right Where I Want Him . . . Maybe

My anticipation soared as spectacular crimson began to fill the eastern morning horizon. I was surely within 150 yards of the Prince for I knew his exact perch. It wasn't long before soft but nearly inaudible hen yelps

began to emanate from my right, somewhat off in the distance.

“Had I misjudged the Prince's location?” I wondered to myself. “Did he relocate in response to my intrusions?”

I had always been careful not to be detected when setting up weeks earlier. Just then, as a million contradicting thoughts raced through my mind, the Prince let out a resounding, throaty gobble exactly where I had expected him to be. At that moment, my adrenaline surged like never before. I was clearly within 75 yards of him; a perfect location, I thought. I had only one problem now though. The Prince was between his harem of real hens, of whom he intimately knew, and me, a poor imitation at best.

One gobble was all he needed to let his ladies know exactly where he was, and they would fly from their hardwood perch joining him for the spring ritual: perpetuation of the species. I had to think fast before all this took place. The game would surely be over for me as soon as those hens appeared to him on the ground. As well-known turkey



hunter Ray Eye from Missouri once declared: “No gobbler will leave a sure thing for a blind date in the bush.”

I yelped with a mouth diaphragm call as softly, and as seductively, as I knew how. Almost immediately, the Prince sounded off with a double gobble. Wow! He responded to my mediocre calling. “Today is the day! The Prince is finally mine!” All at once, and in an unending chorus of sounds, the hens began to yelp, cluck and purr incessantly. The Prince, unable to control his vocal chords due to the mating urge, let out with some double and triple gobbles. He was indeed hot, and I heard the telltale crashing of limbs as the flock of hens descended to the forest floor. He also alighted from his lofty perch to greet them.

“He knows I’m here. He responded to my calling. I had to convince him to come my way instead.” In an effort to get his attention, I began to use multiple calls at once with the intent of sounding like a flock of hens myself, only even more seductive and aggressive than that of the opposing “real” hens, with which I now competed for the Prince’s affections.

Shortly thereafter, all became quiet. There was no turkey calling, no crashing sounds, no scratching in the leaves. It was driving me crazy. Where was the Prince at this very moment? I was in the shooting position, adrenaline surging, a nervous wreck, already thinking of the many meals that the Prince would provide over the coming summer and fall. How honored I would be to hang his long beard among other great gobblers; reminiscent tokens of past hunts. I heard nothing, not a sight or sound of turkeys for the next half-hour. At least I was entertained somewhat by the many tropical migrant songbirds now invading the spring woods surrounding me. Although not wanting to admit it, I was indeed duped by the hens, for they would again not allow me to take their master and mate.

Battle of the Sexes

The tool of giving up, however, was not something I carried in my turkey vest, so I was

quickly off to intercept the flock before they entered their pasture and strutting grounds nearby. I soon discovered I was too late, and there in the center of the pasture, was the Prince in all his glory with his hens. I was no stranger to this scenario as it happened to me many times before, and I knew just what I had to do. I would slowly ease as close to the field’s edge as possible without being noticed and pretend to be an intruding gobbler with intent to steal the Prince’s harem.

I already created the scenario in my mind of the Prince’s reaction. Upon hearing my pseudo gobbles, he would come rushing to fight in an attempt to run off the alien competitor. A mere 10 yards from the pasture was all I dared approach, for I knew any closer and I might spook the flock into oblivion, ending the hunt yet another time. I began my

The Prince would not even let me get close—his hens would shield him like the Secret Service to the President.

plan of attack with a series of aggressive hen yelps and cuts (calls that often have the ability to fire up even the most reluctant, or distracted toms). I followed by a triple gobble from a gobbler shaker call. Immediately all eyes of the approximately 70-yard distant flock were fixed in my direction. The Prince went out of his hen-displaying strutting position and began to move, uncharacteristically, toward my position with hens in tow. My heart began to move my entire body in a rhythmic shaking motion that I feared would be seen by the flock as it came within range.

I decided not to make another call but instead have them search for the new interloper on their own. The lead hen saw something she didn’t like and let out a sharp “putt.” It’s the sound turkey hunters dread; the telltale “game over” of what might have been a filled spring tag. The Prince, in response to the alarm call, appeared more alert with his neck stretched out like a periscope. He was seeking



an excuse to vanish in the understory. The birds, to my surprise, did not flush. Instead, they skirted to the left of my position. “I still might be in the game,” I thought. “It’s not over yet!”

I couldn’t call or move, but only wait and hope that the Prince still wanted to do battle with the invisible phantom I created. As often happens though, when hens become skittish over what they foresee as a potential threat, they decided to distance themselves from it. To my dismay, the Prince followed the hens, further lengthening the distance between us. The mating ritual at that point took precedence over the pecking order. I looked at my watch, and the hands indicated 11:55 a.m. Competing interests allowed me to hunt only until noon on this final day of my season, and all I could do was watch the Prince, and his harem of hens, move off further into the sun-soaked field.

For the past three weeks I had hunted the Prince, and he finally beat me. Yet, as I began to walk slowly out of the woods toward the truck, I couldn’t help but smile when I thought about his craftiness in avoiding the gun. Turkey hunting is a food-gathering chess game, and despite our array of equipment and techniques, we are woefully inadequate in nature’s arena. Moreover, I like to think that some gobblers are un-killable and too crafty for human hunters, and they remain alive through legends passed down over generations. I’m glad those kind of gobblers exist.

There are no experts in turkey hunting. The turkey will always be the teacher, and we will be the student learning little from gobblers that run to the call but becoming turkey hunters from gobblers that don’t. I miss the Prince of the Pines but have encountered many of his descendants since. I only hope that down the road, perhaps in the next life, we will duel again. 🦃

Recording Turkey Gobbles

New technology helps biologists understand turkey behavior, better manage the spring hunting season

By Chris Kreh, upland game bird biologist, and Allison Medford, wildlife diversity biologist, NCWRC

Wild turkeys are beloved by hunters and non-hunters alike, and there is no question we all love to hear them gobble. They are an infinitely valuable public trust resource in North Carolina. In recent years, more than 60,000 hunters pursued turkeys each spring and annually harvested more than 15,000 birds.

The Wildlife Resources Commission's management emphasizes spring gobbler hunting while allowing the population to grow in numbers and distribution to satisfy the desires of turkey hunters to the fullest extent possible. Good turkey management requires a thorough understanding of their reproductive ecology, and a key factor is knowing when and why turkeys gobble.

Male turkeys (called toms) gobble to attract females (called hens) for mating in the spring. In late winter and early spring, we expect to hear a lot of gobbling when the males are trying, unsuccessfully, to attract hens for mating. A few weeks later, the gobbling activity will taper off as the hens begin breeding. At this point, the toms spend less time gobbling (since they've already attracted a potential mate) and more time strutting and drumming to show off for nearby hens. Over the course of a few more weeks, most of the hens will have bred, laid a clutch of eggs and begun incubation. At this point, we expect a second peak in gobbling activity when the toms are on their own again and gobbling many times throughout the morning as they unsuccessfully try to find an interested hen.

A second key factor of turkey ecology is that hens must nest successfully and raise lots of poults to keep populations as high as possible. Male turkeys only contribute to the reproductive process by breeding. Males do not build nests, incubate eggs or rear the young poults in any way (in many other species of birds, males do play a more active role—but not turkeys). The second peak in gobbling after hens are bred identifies the time when toms can be safely taken from the population without impacting the reproductive

process. Understanding and correctly identifying the pattern in gobbling activity is therefore crucial to good turkey management. Hunters like to hear lots of gobbles when they are afield, and they also want to have plenty of turkeys to hunt the following year.

All of these factors make the second peak in the gobbling the ideal time for a spring turkey hunting season. The restoration of North Carolina's wild turkey population was a tremendous success story, taking place over more than five decades and involving the trapping and transferring of more than 6,000 wild turkeys. A fundamentally critical piece of this success story was closing fall hunting seasons and allowing spring hunting during the second peak of gobbling activity. Regulatory changes in that era were absolutely correct—though they were unpopular at the time—to only allow hunting in the spring, but identifying patterns of gobbling activity was difficult. Manpower and funding limited the amount of data that could be collected. Today, we are fortunate that new technologies allow us the opportunity to better understand the pattern of gobbling activity and identify the second peak of gobbling across North Carolina. We made tremendous progress in this regard during the spring of 2016.

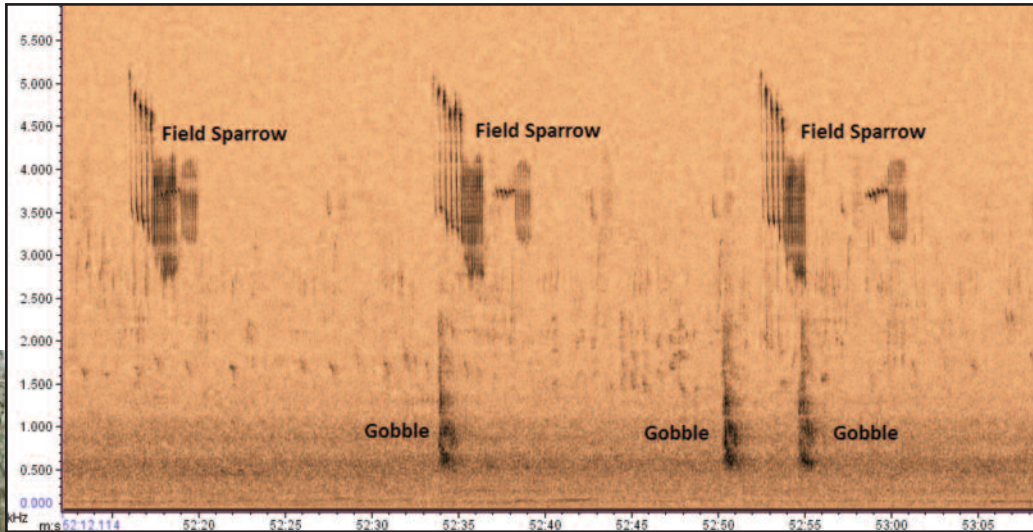
Financial support was graciously provided by the North Carolina State Chapter of the National Wild Turkey Federation. Their support, combined with Pittman-Robertson funds (which come from excise taxes on sporting arms, ammunition and archery equipment), allowed the Commission to purchase and deploy 50 acoustic recorders. In many ways, acoustic recorders are very similar to trail cameras. They are attached to a tree, remain there the entire season and collect data without animals reacting to a person's presence. The chief difference is that they record a digital sound file rather than taking a picture. You might say they "listen" instead of "look." We can review the files they record and identify the sounds of turkeys, songbirds or any other animal that makes a recognizable call.



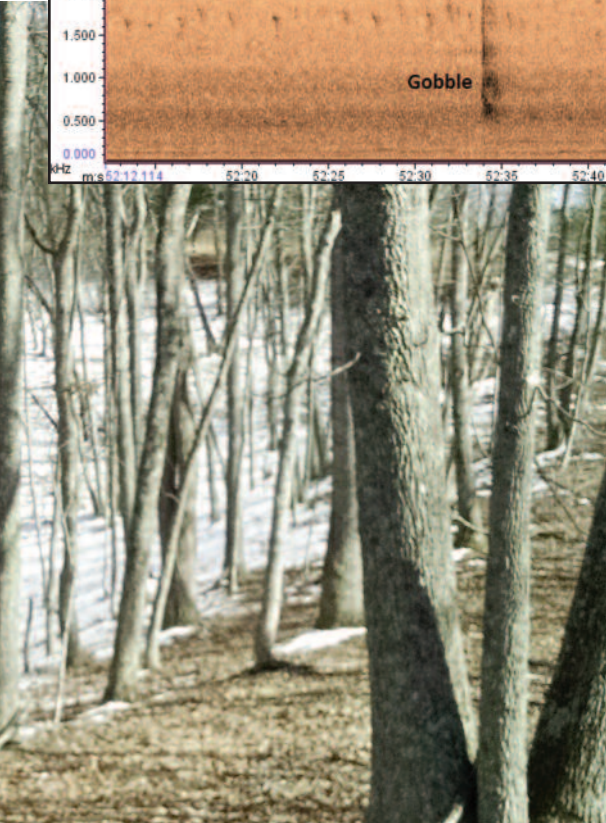
Picking Our Spots

For our turkey project, we had to consider several things in deciding where to deploy the recorders. Most importantly, we want to get a true picture of gobbling activity. We did not want the picture to be influenced by hunting pressure, so we deployed the recorders on state parks and other private properties that had no hunting. We are very appreciative of the willingness of these partners in this project. Turkeys were present on all the properties, and in most cases they were abundant.

We also wanted to know if the timing of gobbling activity is different across North Carolina. It is possible that turkeys in the Coastal Plain, where spring green-up is relatively early, begin gobbling and breeding earlier than in other parts of the state. We deployed half of our units in the southeastern Coastal Plain and the other half in



This spectrogram picture shows approximately 1 minute of recording time and allows bird calls to be quickly and easily identified. Text has been added to show field sparrow songs at approximately 4 kHz, while turkey gobbles are evident lower in the frequency band at 1 kHz.



CHRIS KREH

This acoustic recorder (contained inside a locked security box) is deployed and operational on New River State Park in Alleghany County. Note snow on the ground when this unit was deployed in February. This unit detected 988 gobbles in the spring of 2016.

the northwestern mountains. This allowed us to evaluate gobbling in what should be the most different regions of our state and get a picture of both ends of the gobbling spectrum. This type of equipment is relatively new, and the sophisticated software it requires has a very steep learning curve. The field work was carried out by a small handful of biologists in our Division of Wildlife Management, and we also hired three full-time, temporary employees to run the software and process the recordings.

We deployed the recorders in February and left them out until June. This ensured that we recorded data through all of March, April and May. Each unit was programmed to record five hours each day beginning one hour before sunrise, so all together we recorded more than 22,000 hours of data. An avid turkey hunter would have to chase turkeys for more than

200 years to have the same amount of listening time.

We could not have analyzed the many thousands of hours of recordings without the aid of specialized computer software. With it, our three temporary employees were able to process all the data during the summer of 2016. In addition to being able to hear the gobbles, the software provided a spectrogram picture of how various sounds “look.” The spectrogram made it possible for the software to identify gobbles automatically. The software was not perfect, and it missed some of the gobbles in the recordings, but it greatly reduced the amount of processing time required.

Tallying the Gobbles

In total we identified 15,535 gobbles in 2016. Our best individual recorder, located on New River State Park in Ashe County, detected 1,862 gobbles. A few of the recorders were placed on properties where turkeys were present but not abundant. Not surprisingly, these units recorded few gobbles. On average, recorders detected 310 gobbles each. The 25 recorders in the southeastern Coastal Plain accounted for 10,872 of the gobbles while the 25 recorders in the northwestern mountains

accounted for 4,663. This regional difference was due to the fact that the individual properties we used in the southeastern Coastal Plain simply had more turkeys than the properties we used in the mountains. The equipment, and the turkeys themselves, operate the same in both regions.

We have been very encouraged by our results in the first year of this project. We detected gobbling activity nearly every day through the spring and found the equipment and software to be efficient for this type of research. In 2017, we plan to spread our recorders across all nine of our wildlife districts in North Carolina. We expect, that over the next few years, our efforts will give a complete picture of gobbling activity across the entire state. This will allow us to ensure that we open our spring hunting season at the ideal time to maximize hunter satisfaction and turkey reproduction.

Once we know the gobbling activity patterns, we would also like to study the effects of weather and hunting pressure on gobbling activity. While readers should expect to hear more about our research using this technology in the future, a detailed report about our recent efforts, including charts of the gobbling patterns, can be found at ncwildlife.org/Learning/Species/Birds/Wild-Turkey. 🦃

Safe Harbor for Red-Cockaded Woodpeckers

Restoring an endangered species, respecting landowners' rights.

By John Carpenter, wildlife diversity biologist, NCWRC



MELISSA MCGAW/NCWRC

David H. Allen, Eastern wildlife diversity program supervisor, installs an artificial cavity insert in Bladen County. Allen is credited with developing this technique in the early 1990s.

There is a fact that I have seen reprinted in many publications, and yet I still have a hard time believing it: Just 3 percent of the original 99 million acres of longleaf pine forest in the Southeast exists today. What is equally shocking and troubling is that this loss took just 200 years to occur. Geologically speaking, this is actually a brief period of time, which explains why so many plant and animal species have suffered from this misfortune. One such species is the red-cockaded woodpecker.

The red-cockaded woodpecker is one of eight woodpecker species that breed in the Southeast. In addition to its rarity, there are two key characteristics that distinguish the red-cockaded woodpecker from its woodpecker relatives: its social system and its use of living pine trees. Red-cockaded woodpeckers live in family groups that consist of a male and female and up to several offspring from previous summers. These offspring are known as “helpers” who assist with territory defense and raising younger brother and sister nestlings. Helpers are typically males; young females will leave their birthplace to search for a mate in the hopes of starting a new family.

Red-cockaded woodpeckers prefer to excavate their cavities in longleaf pines for several reasons, including a high volume of pine sap that protects the cavity from snakes and other predatory animals. The red-cockaded woodpecker was listed as a Federally Endangered species on Oct. 13, 1970 due to its sharply declining populations throughout its entire range. This decline is the result of many factors. However, the two most pervasive threats to their recovery are the suppression of fire and the lack of mature longleaf pine trees.

The very first Safe Harbor Program was initiated by the U.S. Fish and Wildlife Service (USFWS) in the North Carolina Sandhills in 1995. It came in response to private landowners' reluctance to use prescribed fire and grow mature pine trees because of fear that this management would encourage red-cockaded woodpeckers to move onto their property. The basic concept behind the

program is that people who do good deeds for wildlife shouldn't be punished by obligating them to manage for a federally endangered species. A Safe Harbor agreement ensures that landowners who restore or enhance habitat won't incur any new restrictions if these actions result in a new or additional red-cockaded woodpecker taking up residence on their property. In 2006, the Commission signed an agreement with the USFWS enabling our agency to administer the program on properties outside of the Sandhills.

There are a few things a landowner needs to consider before enrolling in Safe Harbor. First, do they own property that currently is or has the potential to be an upland pine environment? Secondly, does the property occur within the red-cockaded woodpeckers' historical range (east of Interstate 85)? And finally, does the landowner want to contribute to the recovery of an endangered species and its ecosystem? If the answer to all three of these is yes, then the rest of the process is fairly straightforward. There is no fee to join Safe Harbor, and property owners can leave the program at any time.

How to Help

Once the Commission determines a landowner's baseline (the number of birds currently residing on the property), a Safe Harbor Management Agreement will be drafted. This agreement will vary from property to property but will generally consist of three major habitat management actions: thin, burn, grow.

THIN—Accounts of early settlers describe the extensive longleaf pine forest as park-like, through which they were able to easily maneuver their mule-drawn wagons for hundreds of miles. Thinning a pine stand will increase availability of nutrients, water and light, all of which will lead to healthier trees. The open canopy allows sunlight to reach the once-shaded forest floor where hundreds of sun-loving plants and wildflowers will have the opportunity to flourish. Once a stand has been thinned, the next step is to maintain

this openness. This can be accomplished a number of ways, but the most effective, affordable and natural way is through the use of prescribed burning.

BURN—Fire suppression peaked in the Southeast around 1910, and the negative impacts of this decision have been far reaching. Without repeated exposure to fire, a pine stand will be subjected to changes in species composition (longleaf pine seeds cannot adequately regenerate without access to bare soil) and forest structure. Without recurring fire, a southern pine forest will become an almost impenetrable fortress of shade-tolerant hardwoods, and red-cockaded woodpeckers will abandon a site where there is an overcrowded midstory. The regular use of fire will maintain the classic park-like conditions and produce a diverse plant community in the understory. The longleaf pine is especially adapted to withstand fire at an early age, and given the opportunity, into maturity.

GROW—Mature longleaf pines can sometimes be difficult to identify. Some trees can reach 3 feet in diameter and be over 100 feet tall while others will be much smaller if found on poorer soils. Nonetheless, one characteristic many older trees share is a ‘flat-top’ appearance. In addition, the older a longleaf becomes, the more susceptible it is to “red-heart” fungus, which softens the wood and makes it easier for a red-cockaded woodpecker to construct a nest cavity. Considering it can take 10 to 13 years to excavate a cavity in a longleaf pine, red-cockaded woodpeckers need all the help they can get!

‘Survive and Thrive’

There are currently over 20,000 acres of private property enrolled in the state-wide Safe Harbor Program, ranging from small-parcel landowners to large corporations. Dr. Riddick Ricks and his wife Alice, both residents of North Carolina for more than 50 years, enrolled in the program in 2008 with a goal to create diverse habitats so that family and friends can enjoy a variety of wildlife when they visit their forests. “As a



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Top:An adult red-cockaded woodpecker tends to its nest cavity in a living longleaf pine tree while another forages under an open pine stand. **Right:**This elderly longleaf pine has a “flat top,” an indication that this tree has weathered many storms. Red-cockaded woodpeckers are adapted to a landscape of open pine forests maintained by fire. Total acres of this type of habitat have declined dramatically across the Southeast over the last 200 years.

child, it was a natural understanding to respect and protect wildlife and provide habitat to allow them to survive and thrive,” Dr. Ricks said.

Since enrolling, they have noticed dramatic differences on their property including increases in the numbers of Northern bobwhite quail, wild turkey, butterflies and a variety of small mammals. The Ricks are especially hopeful that one day the red-cockaded woodpeckers will make their lands home, too.

Historical red-cockaded woodpeckers’ population estimates ranged from 1 to 1.6 million family groups throughout the Southeast, but at the time of their listing in the early 1970s, there were believed to be only 5,000 groups left. Despite this troubling trend, wildlife biologists continued to find innovative ways to help the red-cockaded woodpeckers recover. This included the invention of an artificial cavity that can be

installed in a large pine tree in just a few hours and used by a roosting red-cockaded woodpecker that very evening. These types of efforts have now helped grow the number of groups to over 6,000 throughout their entire range, but the vast majority of this work has occurred on public lands.

Only 13.8 percent of land in North Carolina is publicly owned, and much of the privately owned forests are heavily stocked with young trees and contain thick undergrowth that is never burned. For those North Carolinians who own habitat, the Safe Harbor Program provides a mechanism to restore an endangered species without the fear of being obligated to manage additional red-cockaded woodpeckers in perpetuity. This responsibility may rest on the shoulders of a few but will benefit many future generations of wildlife and people.

For more information about the program, visit ncwildlife.org/rcwsafeharbor. 🦉

New Disease for Wild Turkeys Has Little Impact on Turkey Populations

By Chris Kreh, upland game bird biologist, and Dr. Maria Palamar, wildlife veterinarian, NCWRC

In 2009, Lymphoproliferative Disease Virus (LPDV) was documented for the first time in wild turkeys in North America. Before then, the disease had been found only in domestic turkeys in Europe and Israel. Because of its apparent similarity to avian pox and the lack of appropriate laboratory testing, it is possible that LPDV went undiagnosed or misdiagnosed in wild turkeys prior to 2009.

LPDV can cause wild turkeys to develop tumors and skin lesions. Symptomatic turkeys can also become weak, listless, emaciated, and may eventually die from the infection. However, symptomatic cases appear to be very rare in wild turkeys. There have only been eight cases of LPDV diagnosed from symptomatic wild turkeys in North Carolina. Also, it is important to note that LPDV does not pose any known risks to humans who might consume, handle or be in close proximity to infected turkeys.

Although several studies have examined LPDV since 2009, there is still a considerable amount of basic information that remains unknown. We don't know how the disease is transmitted from one turkey to another, how the virus affects different ages of turkeys, or how persistent it is within wild turkey populations. While direct deaths seem to be rare, we don't know if there are any less obvious effects, such as impacts on reproductive output or poult survival. Given how much we don't know about the disease, North Carolina Wildlife Resources Commission (NCWRC) biologists saw an immediate need to collect baseline information throughout the state.

Therefore, the Commission undertook efforts in both 2013 and 2015 to collect tissue samples from hunter-killed wild turkeys to test for the virus. The 2013 work was part of a larger project carried out by researchers with the Southeastern Cooperative Wildlife Disease Study. We are very appreciative of their assistance, and their efforts have helped to understand LPDV across much of the United States. The objectives of our study were to determine the prevalence of LPDV in our wild turkey population and better understand its temporal and geographic variation. Basically, we wanted to know if this disease is a major concern for North Carolina's wild turkey populations.

During the 2013 and 2015 spring turkey seasons, our field staff contacted hunters in a variety of ways (phone, e-mail, press release, etc.) and asked them to submit samples from the turkeys they harvested. Hunters were asked to submit a lower leg (spurs could be removed if they wished) and fill out a data sheet with county, sex, beard length, kill date, spur length, weight and hunter's contact information. Hunters were encouraged to inform Commission biologists of their interest in this project, and samples were collected from those who were willing to help.

Overall, we collected and tested samples from 829 wild turkeys, and the vast majority came from hunter-killed male turkeys taken



CHRIS KREH

during the spring seasons. We also obtained samples from five hunter-killed bearded hens, four illegally poached hens and 20 hens that were killed by vehicles during the study period. A full project report is available on the Commission website at ncwildlife.org/Learning/Species/Birds/WildTurkey. Below are a few highlights from the project:

- We tested 829 wild turkeys to see if they were infected with LPDV. A positive test did not mean a wild turkey would develop tumors, lesions or other clinical symptoms. It simply means that the bird was exposed at some point, and the virus was detectable in the bone marrow.
- Symptomatic (turkeys with tumors, lesions or lethargic behavior) cases of LPDV appear to be very rare. We have documented just eight symptomatic cases of LPDV in North Carolina.
- We found LPDV to be common in wild turkeys across North Carolina with 46 percent of turkeys testing positive. These results were not totally unexpected as other studies have found similar results throughout the Southeastern United States. This may be the best news possible, as it seems to support the idea that exposure to LPDV is relatively common, but the disease results in few direct deaths of wild turkeys.
- LPDV prevalence is much higher in adult turkeys (49 percent) than in juveniles (30 percent). It may be that a turkey's likelihood of encountering LPDV is simply a function of their age.
- LPDV prevalence in adult turkeys is higher in the Mountain region (59 percent) than in the Piedmont (46 percent) or Coastal (46 percent) regions. This is interesting since other studies have shown LPDV prevalence to be higher in the Northeastern United States. Perhaps LPDV prevalence is being driven by the habitat or climatic conditions that are found in the mountains of North Carolina and Northeastern United States.
- We did not find any evidence to suggest that LPDV is impacting hunter harvest levels or turkey reproduction.

Our efforts, combined with the assistance of cooperating turkey hunters, have provided a great deal of insight into LPDV and wild turkeys in North Carolina. While there is still a lot we don't know about LPDV, our results support the theory that LPDV is likely not a major issue for our adult wild turkeys at the population level. Its effect may be limited to the occasional symptomatic individual. We will continue to monitor this disease, but for now, this is good news for turkey populations, hunters and wild turkey management. 🦃



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