A Note from the Editor

This year I’m writing the Editor’s note while on a November hunt for upland game birds in North Dakota. I’m blessed to be on my 30th western trip to hunt upland game or big game over the last 25 years. For me, these trips are cherished and anticipated from month to month over the course of the year and often involve my entire family.

A friend of my parents once asked, “Why do you go all the way out west to hunt birds? We have plenty right here in the Virginia mountains.” The kind lady was referring to ruffed grouse, which I first hunted at age 9 back in the 1970s. Sadly, despite her perception, my childhood grouse coverts no longer actually have “plenty” of grouse or any other upland game bird for that matter. Grouse are rare, and quail are practically extinct in the southwestern Virginia County where I grew up, and most counties in North Carolina show similar trends.

After moving to North Carolina, I first hunted wild quail in eastern North Carolina almost 30 years ago. At that time, quail could be found on most farms in the central Coastal Plain, and I had a good run of about 10 to 15 years of decent quail hunting. Today, there are vast areas of the entire state, and even the Coastal Plain, where quail no longer persist in huntable numbers. Most of my eastern North Carolina quail haunts are gone.

Many hunters have ideas regarding what has happened to our upland game birds. Answers include sunspots, fire ants, weather, predators, wild turkey predation, pesticides and many other factors. However, all these factors, or some combination of them, can be found across areas of the West. So, the question becomes “why are there still huntable numbers of upland game birds across vast areas of the West while most areas of North Carolina (and really almost the entire South) have seen dramatic declines?” Despite all the theories to the contrary, both my professional knowledge and personal experiences as a...
of the original Ritchie family, and his strong family connection to the property has been a driving force in this conservation effort. But Hannah sums up their reason for conserving and managing the Ritchie's Lake property very well.

“For years, Tom and I have seen how rapidly development has expanded throughout the Piedmont of North Carolina,” Hannah said. “Our goal is to preserve the natural beauty of Ritchie’s Lake while providing a safe home for wildlife.”

To address their concerns, the Hearnes have placed a permanent conservation easement on the property that greatly limits future development, and they have reached out for guidance to enhance wildlife habitat on the property. My first visit to the site with the Hearnes was to evaluate the property and provide input for a Forest Stewardship Plan. North Carolina Forest Service Forester Tom White and County Ranger Jeremy Callcott were the leads for developing this comprehensive management document and requested my involvement because of the Hearne's wildlife objectives. Our task was to clearly identify the landowner’s conservation objectives and use these objectives to develop a management plan which met the standards for the Forest Stewardship Program and North Carolina Tree Farm Program. Most importantly, this plan was meant to guide the landowners to successfully manage their property.

The mixture of crop fields, pine plantations and maturing hardwood stands provided numerous options for conservation-based management. The fact that this tract has many of the same soil types and hydrologic characteristics of the nearby Gold Hill Flatwoods natural heritage area added to the ecologic significance of the property. This made the Hearne’s initial broad goals of “doing what is best for wildlife,” or “doing what is right,” a bit difficult to clearly define.

With a bit of further conversation and suggestions of various management options, the decision was made to focus mostly on wildlife habitat enhancement on the parcel while managing the loblolly pine to preserve some revenue stream until the final harvest of the stands. In addition to the physical features of the property, restrictions tied to the conservation easement such as “no-cut zones” and no artificial reforestation of loblolly pine had to be considered in developing a detailed and useful plan.

With the Hearne’s objectives more clearly defined, five specific activities were identified to improve plant diversity on the property with additional emphasis on expanding native habitat types which are declining across the greater landscape. These five activities were: 1) conversion of agricultural fields to native herbaceous vegetation; 2) managing loblolly pine plantations to enhance wildlife habitat while sustaining future economic return; 3) allowing most hardwood stands to be shaped by natural influences; 4) converting a financially mature loblolly stand to shortleaf pine; 5) developing a small hardwood savanna.

**Field Conversion:** The crop fields on the property had been farmed in corn, wheat, soybeans and cotton for well over 30 years. The wildlife goal for these fields was to enhance early successional vegetation to benefit songbirds and pollinators. While the fields could have been allowed to go fallow, the Hearnes decided they would like to plant a mixture of native grasses and wildflowers so they could enjoy the esthetics of the property a bit sooner. The United States Department of Agriculture’s Conservation Reserve Program (CRP) was used to fund planting of native seeds and offset lost income with annual rental payments. In the first year of planting, 13 of 19 species of planted wildflowers were found to be growing on the property. While this is not a typical response, it did provide an opportunity to learn how various species responded to pre-emergent herbicides and no-till planting techniques. This information will be used to better develop future planting prescriptions.

**Commercial Thinning:** To generate income and improve understory plant diversity, a commercial thinning was conducted. This timber harvest removed approximately half of the loblolly pine trees growing in the 86-acre stand. To reach the prescribed density of trees, every fourth row of planted trees was harvested. By cutting these trees, the canopy was opened, but more importantly it allowed better access for the feller-buncher and skidder which cut and drag trees to the loading deck. Once the row thinning was complete, additional trees were removed from between the rows. Trees harvested between the rows were diseased, poorly formed, suppressed or crowded, and this management improved the overall health, quality and growth rate of the stand. Harvested trees went to various mills around the areas to be processed into forest products.
The timber harvest accomplished the goal reducing the stand density from a basal area of 120 square feet per acre to between 55 and 60 square feet. Reducing the basal area, a measurement of stand density which factors in both trees per acre and diameter of trees, opened the forest canopy to allow more sunlight to reach the forest floor. Further, it disturbed the thick layer of pine needles that was suppressing many species of herbaceous plants. Additional trees were removed along access roads and field edges to further enhance wildlife habitat. By clearcutting a 40- or 50-foot-wide swath along these existing openings, critical edges of brushy growth will be developed. "Daylighting" the roads also promotes faster drying, improves access and reduces road maintenance costs.

Conversion to Shortleaf Pine:
With a logging crew on the property, an opportunity presented itself to conduct smaller-scale and specialized timber harvests. One of these harvests was to clearcut 7 acres of financially mature loblolly pine so it could be converted to shortleaf pine. It is very unlikely that a harvest this small would have been possible as a standalone timber sale. These mature loblolly pines were growing very slowly, resulting in little financial return. Taking this opportunity to harvest the trees allowed for some monetary return, but it added to the habitat diversity on the property by creating a young pine forest.

Most of the forests on the property are either 18-year-old loblolly pine plantations, 40-year-old mixed hardwoods or 80-year-old oak dominated stands. Clearcutting this area and planting shortleaf pine resulted in a young forest which will be sold as a standalone timber sale. These mature loblolly pines were growing very slowly, resulting in little financial return. Taking this opportunity to harvest the trees allowed for some monetary return, but it added to the habitat diversity on the property by creating a young pine forest.

Most of the forests on the property are either 18-year-old loblolly pine plantations, 40-year-old mixed hardwoods or 80-year-old oak dominated stands. Clearcutting this area and planting shortleaf pine resulted in a young forest which diversified the entire property. The choice to plant shortleaf pine was primarily done to add a few acres of this declining tree species on the landscape. While it is nice to see shortleaf planted as part of a project, it is not a "magic habitat bullet." Shortleaf pines do not have more inherent wildlife benefit than any other pine species. If not managed appropriately, a closed canopy monoculture will result from this effort, reducing habitat quality. To provide long-term wildlife benefit, thinning and burning will be needed in the future to preserve understory plant diversity.

Hardwood Savanna: A second unique timber harvest was included in the larger commercial timber sale. Six acres of mature hardwood was heavily thinned to create an oak savanna. This stand started out as a mixture of various oak species, hickory, red maple, shortleaf pine, sweetgum, sourwood, red cedar and elm. The canopy of this stand was closed and heavily shaded the forest floor. With no sunlight and a thick layer of leaf litter, little groundcover and a marginal mid-story component existed in this stand. The only remnants of the diverse Gold Hill Flatwoods ecosystem that could be found were scattered sprigs of blueberry, greenbrier and native grasses growing where a tree had died leaving a gap in the canopy. With plenty of hardwood forest on this property and being surrounded by stands that would be burned on a regular basis, this was a perfect location to focus savanna management efforts.

Prior to allowing harvest equipment to enter the stand, individual trees to be left unharvested were marked with both flagging tape and spray paint. The trees to be left standing in the savanna included white oak, shortleaf pine, blackgum, willow oak, post oak and pignut hickory. Great care was taken to not only keep the desired stand density and a diverse species competition but also to select trees with good form and canopy development to stay in the savanna. By selecting well-formed trees with strong canopies, there will be less chance of storms damaging or toppling trees in the future. While the heavy thinning had to be halted halfway through due to a series of heavy rainstorms, eventually the harvest was completed on the project area.

Prescribed Burning: So, with native grasses established, the loblolly pine plantation thinned and a hardwood savanna in place, it was time to implement a prescribed burning program. The first burns were scheduled for February 2020. This initial burn would include about 60 acres of loblolly plantation and 20 acres of herbaceous vegetation. The weather in February did not meet burning specifications, so plans were made to complete the burns in March 2020. And then COVID-19 hit, shutting down the N.C. Forest Services burning program.

While postponing a prescribed burn is a very minor inconvenience compared to what many have faced due to the pandemic, burning is a key component to maximize the benefit to the habitats on the Hearne’s property. Hopefully, as you are reading this article in the Spring 2021 issue of the Upland Gazette, the postponed burns have been completed and many other aspects of our lives have gotten back to normal.

“The best laid plans of mice and men often go awry” is the first line of the Robert Burns, 1785 poem “To A Mouse.” Certainly 2020 has gone above and beyond proving this adage true. When faced with the challenges of a novel disease, or day to day life for that matter, it is easy to approach land management with a “laissez-faire” attitude. After all, why make a plan if we are in control of so little and our whole life can be turned upside down with one phone call, a single doctor visit or one of the most serious diseases since 1917?

To answer this question, look no further than Tom and Hannah Hearne. The Hearnes reached out for professional assistance, defined their objectives, developed a plan, researched what the plan would look like, went about implementation and have revised the plan as needed. This sometimes-tedious planning process has allowed Tom and Hannah to enjoy their property more fully and identify financial assistance opportunities to offset management costs. But most importantly, it has made a reality of their desire to protect their mysterious natural treasure for future generations. ☑
I grew up listening to old men talk about hunting on the steps of Olive Hill Hunting Club in Person County. It was like church, but a lot more interesting. A particularly salty topic was the conversations during deer season about the “proper” way to manage deer populations and how the expansion of “doe days” in North Carolina would wipe out all the deer. Not a single biologist in the group mind you.

I respected those men greatly, and as a young teenager I was not going to question their logic. Their hearts were in the right place and they were expressing their concerns from a place of ethics and preferences (which is entirely appropriate) not population biology. I often think back on those conversations as it helps me identify a real concern we have in wildlife management: a disconnect between human values and biological expertise when making wildlife-related decisions. This subject isn’t romantic and can be quite boring at times—trust me, I teach Conservation Decision Making to college students. However, this issue is paramount to efficient management of our upland resources, so please bear with me.

I recently saw a post from a conservation organization on social media that said something to the effect of “remove emotion from wildlife management decisions.” I could not disagree more. Human values, emotions and preferences are at the core of wildlife management decisions along with science and legal mandates. Successful management of upland wildlife species, or any wildlife species, requires the integration of all these things. It is my values and emotions that get me up early in the morning for a two-hour drive to bird hunt. It is science that informs the practices that got the birds there to hunt. It is the legal mandates that protect populations from overharvest and give the state wildlife management agencies jurisdiction in the first place. What is important is how do we integrate these key components to be successful!

Before we get there, I need to define some terms that are important. A “fundamental objective” is the most basic thing we value. For example, finding wild coveys of bobwhites with our pointing dogs may be something we value and ultimately want to achieve. Whereas a “means objective” is something we need to complete to achieve the fundamental objective. For example, to achieve finding wild coveys of birds we need to complete numerous things like create and maintain habitat and have good working dogs. We will not be satisfied until that habitat is full of birds and our dogs find them. We value the feelings stirred by the roar of a covey flush, the fellowship shared with family and friends, and the connection between us and the dogs. Those are all emotions! These emotions arise from our core value system that is engrained, and very rarely does science change these values.

So, what is the role of science? Science provides the framework to inform strategies to achieve our objectives. We have a century’s worth of knowledge about bobwhites that informs a set of actions (e.g., prescribed fire, timber thinning, etc.) that can produce birds for a hard-charging setter. But first we had to value them bad enough. The stakeholders inform us what is valued whereas science tells us how to achieve it. Don’t get this confused. An ailing patient goes to the doctor to reduce pain but shouldn’t tell the doctor how to ease said pain. Science will do that. The patient is not the expert. In wildlife related problems, hunters are typically the “patients” and biologists are the “doctors.”

Pretty simple so far. We want birds to hunt, we consult the science, complete some tasks, and boom, coveys galore! As Lee Corso of “College Game Day” would
say, “Not so fast!” A few problems arise: we have other fundamental objectives (i.e., we value multiple things), we likely have constraints and on public lands we have numerous stakeholders. I do not know a single person who has only one fundamental objective. We all have multiple fundamental objectives that compete for resources. Let’s say you own a property, you could want those wild coves, but you also likely want to minimize cost or maximize profit and maintain a certain aesthetic quality, among numerous other possibilities. These competing or conflicting objectives may prevent you from being successful in your endeavor to have those wild birds.

Similarly, you probably have some constraints. Constraints are inherent limitations that we likely cannot change to help achieve success. For example, if you are a small landowner, say 50 acres, you are limited in how much land you can manage. Similarly, if your property is adjacent to an urban area that makes it difficult to conduct prescribe fires, that is a constraint because you cannot move the town.

We have been operating under the assumption that your values are the only ones that matter. Maybe that is true on your own land. However, on public land there are a lot of stakeholders that separate into like-minded groups. For example, we may have a group that want wild bobwhites, a group that wants scenic longleaf pine forest, a group that wants to use the area for bike riding and a group that wants it to be a trophy deer area. The decisions just got way more complex! Now we have values for four different stakeholder groups, and they likely all have equal legal right to have a stake in the deciding how the area is managed.

1) Think hard and critically about what you really want. Ask yourself a lot of questions like these…Do I want to hunt wild quail? Do I only enjoy the shooting aspect of bird hunting? Do I enjoy the dog work? Do I enjoy the solitude? Am I willing to tradeoff some timber revenue for wild quail? A private land biologist can help you think through these questions, but only you can answer them.

2) Write down everything you wish for or are concerned about. For each one you write down, ask this question: Why do I want this or care about it? If your answer is, “This is what makes me happy,” you have arrived at a value.

3) Articulate these wishes and concerns into fundamental objectives. For example, are you concerned about the lack of seeing wild quail on your property? A fundamental objective would be to increase the number of wild quail on your property to the point they are common enough to flush or hear frequently. The more specific you make the fundamental objective the better; it will help your consulting biologist be more specific with science-based recommendations.

4) Be honest about other objectives you have. Don’t say you will do whatever it takes to have wild quail and not mention financial considerations that cause you to balk at the first mention of losing a few dollars per acre for timber revenue. There is no shame in wanting to make a buck, but the only way a biologist can help you is to know the cards on the table.

5) Listen to the experts regarding strategies to achieve your fundamental objectives. Notice that the word “experts” is plural. Managing for wild bobwhites is undoubtedly expensive and can be complex. Not every biologist understands the ins and outs of bobwhite management. Do your homework and find a few you trust. I would ask them, “Have you ever successfully managed for wild quail?” If they say “yes” then ask for some references to call. If they say “no,” then kindly end the conversation. Would you hire a housing contractor without inspecting their previous work?!

6) Acknowledge the tradeoffs. A good quail biologist should be able to tell you how many birds you can expect to have once the strategy is implemented. However, you may have to consult with a forester or crop consultant to see how much revenue you may forego to achieve that bird population. Once you have an estimate, you can decide if the tradeoff is worth it. Again, you decide, not the biologist of forester.

7) Last, once the strategy is decided upon, go at it will full force. Otherwise you are not being what we call an honest broker. A biologist’s credibility relies on the landowner pursing the strategy that was agreed upon. This requires transparency, trust, and patience.

Following these steps will help you arrive at optimal solutions for your objectives. As I mentioned in my previous The Upland Gazette article, wild bobwhites were once an accidental byproduct of the way the land was managed. However, now we must be very intentional to have wild bobwhites. The desire comes from the stakeholders. I urge you all to be a respectful vocal stakeholder and reach out to biologists and decision makers and discuss managing bobwhites with them. Be the ailing patient and not the doctor.
What Do You Know About Wasps?

Written by Gabriela Garrison, Eastern Piedmont habitat conservation coordinator, North Carolina Wildlife Resources Commission

What comes to mind when you think of wasps? Yellow jackets? Paper wasps? Asian giant hornets, known colloquially (and inaccurately!) as “murder hornets?” If any of these images sound familiar, this article is for you. Even if you conjured a different image, stick with me. I hope this article will expand your knowledge and appreciation of a group of very undervalued species.

So, let’s start with the basics: Wasps are in the order Hymenoptera, the same order as bees, ants and sawflies. With that in mind, we know that wasps and bees are related. Unlike bees, wasps have mostly smooth, slender bodies with relatively little hair and barbed legs. Without an abundance of hair on their body to catch pollen grains, they do not pollinate as efficiently as their distant relatives. Wasps will visit flowers for nectar, but they are predatory (or parasitic) and primarily hunt insects for themselves and their developing young. Bees also take nectar from flowers; however, instead of insects, they take nectar and pollen back to their nests for larval development.

Before we continue, let’s remember we are talking about the biological world. If there’s one thing we know, there is always an exception to the rule. In this case, there is a group of stingless bees in South America that are scavengers: they collect dead animal flesh to feed their young. On the flip side, there is a group of wasps in North America that feed pollen to their offspring. And to complicate matters, there are bees that can be mostly hairless, and wasps that can be hairy. That can make them hard to distinguish from one another without a close look. This illustrates perfectly that there is never a hard-and-fast rule for wasp biology and identification, but one thing is certain: Nature is diverse and amazing!
Ok, back to wasps 101: If you’ve ever come face-to-face with a wasp, you might know their sting packs a punch. Some wasps sting to immobilize prey so they can lay eggs in it for developing larvae. Having said that, they don’t always need their stinger because they have powerful mandibles to get the job done. Depending on the type of wasp, they might eat anything from flies to spiders to caterpillars. They are also scavengers and gather meat from dead animals. I have seen wasps collect smashed insects from a car’s grill—they don’t miss any opportunity. When it comes to insects that we consider pests (hello, house fly), we should extend more appreciation to our local wasp population. They do not discriminate and are responsible for consuming many types of nuisance insects. And since we’re talking about benefits, wasps are also common prey foods for some of our favorite birds and mammals.

We tend to associate all wasps as social insects because of our interactions with yellow jackets and paper wasps. In reality, most wasps are solitary, and females exist and breed independently of one another. Their life cycle is very similar to bees. They have a complete metamorphosis with four stages: egg, larva, pupa and adult. Like bees, male wasps cannot sting. Females have a modified ovipositor that is used for stinging. Yellow jackets and paper wasps are more prone to sting defensively since they have large nests they are protecting. Solitary wasps are less likely to expend the energy as they don’t have huge colonies to protect.

Let’s talk about one of my favorite wasps: the cicada killer. These are beautiful solitary wasps that are active in the summer. Rounding out at 1 1/2 to 2 inches long, it is one of the largest native wasps in North America. Its head is an orangish, rust color and it has black and yellow stripes on its abdomen. It also has orange legs, though its size is likely to be a good indicator of what you’re seeing. As we’ve discussed, most solitary wasps are less prone to stinging because they don’t have large nests to defend.

The cicada killer wasp is no exception, so don’t let their large size intimidate you. The female digs burrows for her offspring in well-drained soil. Each burrow has a handful of individual cells—like bees, each cell will have one egg. As you’ve likely inferred, these wasps feed on cicadas. This is a huge benefit as cicadas are quite numerous in summer and can be devastating to small trees. The female will use her stinger to paralyze a cicada and bring it back to her nest where she will lay an egg in it and seal it in a cell. The larva will feed on the cicada then pupate and remain underground until the following year. If you want to see some nice footage of these wasps digging their burrows, check out the YouTube page for “The Bees in your Backyard.” I’ve seen a female dragging a paralyzed cicada back to her nest—it’s quite an impressive feat.

I would be remiss if I didn’t mention the Asian giant hornet. This is a non-native species known to attack and destroy entire honeybee colonies. There have been no Asian giant hornets reported in
North Carolina. Not even close. There have been several sightings in Washington and southwestern Canada. The first nest (that we know of) was destroyed in a tree cavity near Blaine, Wash., in October 2020. This was a huge achievement as there had been many failed attempts to locate the nest. When reports of the Asian giant hornet made headline news last spring, there were valid concerns from biologists across the state that all wasps in North Carolina would come under attack, especially the magnificent cicada killer, whose size makes it an unfortunate target. If you want an excellent reference for comparison of Asian giant hornets and native insects, check out this great resource: entomology.ces.ncsu.edu/murder-hornet-comparison. Please take the time to study these images before targeting any of our native wasps.

I hope I have conveyed that wasps are fascinating insects that play a valuable role in our ecosystem. Much like bees, we know very little about their habits, particularly solitary wasps. There is a common belief that wasps are as ecologically important as bees: not only do they act as pollinators, but they decimate crop pests as well as insects that act as disease vectors. They are incredibly diverse in color, size, shape and function and are formidable predators. We need to reverse the negative perceptions of wasps and replace them with the positive associations we hold for our native bees. A world without wasps would suffer reverberations throughout the entire food chain that would be devastating to our economy, way of life and ecosystem.
Forest Improvements for Wildlife: Disturbance, Sunlight and Harnessing the Power of Change

Written & photographed by Clint Barden, wildlife conservation biologist, District 8, North Carolina Wildlife Resources Commission

Wooded acres in North Carolina come in many different forms. From the steep upland hardwoods of the Blue Ridge to the pine flatwoods of the Coastal Plain and everything in between, The Old North State boasts a wide variety of forestland. As different as they are, one thing these forests all have in common is change.

Forests are always changing. Sometimes this change is easy to see, but other times it occurs so slowly it is hardly noticeable. Some plant species become more common or dominant while others fall behind or even disappear. A lot of this change can be attributed to disturbances in the forest. Windstorms, fire, insect damage, timber harvest and ice damage are a few examples of disruption within a forest that are easy to recognize. The type, timing and severity of these disturbances can greatly influence the species composition in a forest.

The other side of the coin is a lack of disturbance. Forests left to grow without disturbance still change over time even if it occurs at a slower rate. In many cases, these trees form a completely closed canopy which casts heavy shade on the forest floor. Some native plant species thrive in this heavily shaded environment while others do not. Some species win, some species lose. Because each plant offers some unique combination of food and/or shelter opportunities to wildlife, changes in the plant community over time influence the value of the forest to different wildlife species.

Like wildlife, all plants have things they need to survive. The five basic requirements plants need to grow are light, air, water, nutrients and space to grow. What holds them back is the availability of sunlight. By actively choosing the plants we want to give more sunlight, we can help those chosen plants to grow faster or produce more food for wildlife. In many cases, the process of giving these plants more sunlight automatically gives them more space to grow as well. When land managers introduce intentional disturbance, the forest can be actively steered in a direction that is more beneficial to both wildlife and forest health.

While most plant species native to your area have their place and purpose, the species distribution can often become out of balance due to the type, timing, severity, or lack of previous disturbance events. We cannot change what happened in the past, but we do have the opportunity to introduce new disturbances which will benefit the forest moving forward. By observing the present composition of the forest community and considering the management objective for the area, decisions can be made to steer the ship in a direction which will provide increased benefit for wildlife.

Intentional disturbance is often a good way to help get the desired result, and one form of disturbance that is easy to introduce comes in the form of a chainsaw. Chainsaws can be used for a variety of forest stand improvements on a small or large scale. Below are some examples of chainsaw-based forest improvements which have the potential to improve your forest and can be done at your own pace.

Canopy Gap: Canopy gaps are created when most trees in a specific area within a forest are removed or killed. This typically results in an area of thick regrowth which provides good cover and food opportunities for many species. I like to call this edible housing for deer. Other species such as the Eastern wood-pewee are drawn to canopy gaps to feed on the higher numbers of insects found there. Creating canopy gaps is a great way to increase diversity in many younger to middle-aged forest stands where the canopy is uniform. Actively creating gaps in these forests mimics naturally occurring gaps found in older growth forests.

Crop Tree Release: Crop tree release is the process of choosing “leave” trees in a forest stand and cutting down those around them. Releasing the chosen trees results in faster growth and spreading crowns. In the case of oaks, this will result in more acorn production. Crop tree release will also help to develop understory and ground cover by increasing sunlight penetration. Choosing which crop trees to release should be influenced by the composition of your forest and your management objectives.

Edge Thinning: In many cases throughout our state, mature forest abruptly changes to cropland or pasture. This is what biologists call a “hard edge,” and it limits wildlife value and can be improved by cutting some trees. Edge thinning is the process of removing most trees from the field edge and fewer trees as distance increases from the field. This creates a gradual transition from field to forest. Not only does this provide a very important area for wildlife to use, but it will help get more sunlight on your crops or pasture grass.

Snags: Dead standing trees, known as snags, naturally occur in a forest when a tree dies from a lightning strike, insect damage or old age. Snags provide important foraging opportunities for woodpeckers and over time can be excavated to become cavity trees which provide shelter to many cavity nesting species. Many forests do not have enough snags. The number of snags in an area can be supplemented by intentionally creating them by girdling with a chainsaw. By severing a section of bark and cambium, the top of the tree is cut off from the roots which eventually top-kills the tree. Snag creation can easily be incorporated into crop tree release, edge thinning and canopy gap creation.
**Brush Piles:** Chainsaws can also be used to create brush piles. By arranging sections of felled trees into piles, important nesting and escape cover can be created for many wildlife species. Generally, it is best to place the larger sections at the bottom leaving about 6 inches between the logs, stack the smaller sections on top of the base in the opposite direction and cap it off with the small limbs. In the right scenario, living brush piles can be created by hinge-cutting trees towards a central area.

**Brush Management:** A thick forest understory is desirable for many wildlife species, but sometimes you can have too much of a good thing. Even some native plant species can dominate an area over time to the point where they limit habitat opportunities for wildlife by inhibiting the growth of other plants. If some areas of your forest are uniformly thick, they might be good candidates for controlling the amount of brush with the use of chainsaws or other means.

Forests are always changing in some manner. Sometimes the stars align and outside forces guide the forest in the direction that meets your objectives. Other times, actively selecting the winners and losers of the battle for sunlight is the best way to shape the plant community. These actions can result in creating a diverse mosaic of plant life which will provide habitat to a wide variety of wildlife species and a more resilient forest. If you have not previously done forest stand improvements, knowing when, where and how to begin can be overwhelming.

If you need assistance in developing a plan of action, Wildlife Commission biologists are available to provide guidance on habitat improvements. See the contact list on page 68.

An often-overlooked part of forest management is ensuring sunlight reaches the understory and forest floor. By creating canopy gaps or implementing other thinning activities, sunlight can reach these lower forest layers. This sunlight will help promote important species such as blueberry and blackberry to produce fruit for wildlife while also helping many herbaceous plant species to germinate. These herbaceous plants can be important nectar sources for pollinators and seed and fruit sources for other wildlife.

The sprouts from this red maple stump have been repeatedly browsed by deer since it was cut down. The trunk is now part of the next generation of downed logs in the forest and provides important habitat for insects, salamanders, and shrews.

This freshly girdled tree will become a snag within a couple of years.

This landowner significantly reduced the red maple in this forest which will promote both understory development and growth of oaks.

If you prefer a more personal interaction, smaller trees can easily be top-killed by using a hatchet or machete.
Say Cheese!

Written & photographed by Benjy Strope, CURE/SEFA management biologist, North Carolina Wildlife Resources Commission

A good way to track and monitor your land management progress is by using a camera. Almost everyone that has a cell phone has an ability to take pictures, or a point-and-shoot and some 35mm camera setups can be purchased for very reasonable prices. Trail cameras are great for not only capturing wildlife but have several other uses as well. Trail cameras can be used for monitoring wildlife or for security around property lines, buildings and other areas.

Documenting before-and-after pictures is a great way to start and keep a history of land management activity as well as monitor the vegetation response after management has occurred. Pictures are a great way to assist with plant identification, and cameras can also be important when contractors are working on your property.

If you are having timber removed, trail cameras can be used to monitor truckloads going out to make sure they match statements from the timber buyer. You could use most cellphones and cameras to take videos of the roads in and out of a harvested tract. Documentation will help you if any disputes arise with contractors over the timber volume or road conditions.

Biologists and other land managers will sometimes use photo points taken in the same timeframe once or twice a year (such as dormant and growing seasons) from the same spot and facing the same direction (some are done using the four cardinal directions). If the area does not have vehicle or equipment traffic, t-posts spaced 10 yards apart can be used to mark the photo stations as well as the photo targets. T-posts are nice because you do not have to worry about them burning or melting when a prescribed fire is conducted. A portable method can be developed by using either a section of PVC pipe or a board painted with measurements. Rename the photos so that you know the location with a date and any recent management activities.

Figures 1 and 2 show the same field border taken 11 years apart. If not for the border being managed by rotational disking and spot treatments, it would now be consumed by red maples, loblolly pine and shrubs. Figures 3 and 4 show the same area that was planted in longleaf in 2015. Notice how since the longleaf trees came out of the grass stage they really have grown in height! The only management in the block of longleaf after they were planted was brush cutting to control maples and loblollies, and the stand had one herbicide treatment of Oustar herbicide while the trees were in grass stage to control dog fennel and other broadleaf weeds.

Aerial photos and drone pictures can also be effective tools to monitor and influence decision-making when it comes to land management. The map that comes with your management plan should contain an aerial photo. While we may not all be shutterbugs, taking good pictures to document activities for historical and future purposes is a great way to monitor and improve land management progress on your land.
Figure 2. This photo shows the border in Figure 1 taken 11 years later in February 2020.

Figure 4. This photo shows the stand in Figure 3 taken three years later in February 2020.
Expanding the Wildlife Conservation Lands Program: How North Carolina Landowners Can Benefit

Written by John Isenhour, wildlife conservation biologist, District 6, North Carolina Wildlife Resources Commission

Unless you are in the legal field, a legislator or a law enforcement officer, you probably do not commit North Carolina’s general statutes to memory. Some laws only impact a few citizens due to a narrow scope and are passed with little fanfare. To some extent, this was the case when G.S. 105-277.15 became law on August 4, 2008. However, if you own at least 20 acres of property in North Carolina and manage the acreage primarily for wildlife habitat, you may want to become more familiar with this legislation.

This general statute established the Wildlife Conservation Lands Program (WCLP) which designated “wildlife conservation land” as a special class of property that must be assessed at a reduced tax value. The law took effect for the tax year starting July 1, 2010, and landowners were able to start applying for the program during the property tax listing period beginning January 1, 2010.

Prior to WCLP, landowners only had the Present Use Value Program (PUV) available to lower their annual property tax evaluation. PUV requires lands to be managed for commercial production of agriculture, horticulture or forestry products. There were few options for landowners who wanted to manage their property primarily for wildlife habitat enhancement. This is despite wildlife being a public trust resource and a significant revenue source for our state.

According to the most recently compiled data from the U.S. Bureau of Economic Analysis, consumers spent $28 billion in 2017 to participate in outdoor recreation in North Carolina. This translated to 260,000 direct jobs, $8.3 billion in salaries and $1.3 billion in state and local tax revenue. There is little doubt these figures were much higher during 2020 as social distancing helped many citizens rediscover the outdoors.

The initial 2008 WCLP Legislation targeted property occupied by a priority wildlife species and/or including one or more priority wildlife habitats. Qualifying wildlife species had to be designated as endangered, threatened or special concern by the North Carolina Wildlife Resources Commission (NCWRC). Priority wildlife habitats had to be managed according to NCWRC guidelines. Other program eligibility criteria included a minimum of 20 acres of contiguous qualifying habitats, a maximum of 100 acres enrolled per landowner per county and a requirement the land be managed under a Wildlife Habitat Conservation Agreement with NCWRC. These narrow criteria resulted in 6,953 acres enrolled in WCLP from January 2010 until January 2019. Most of these acres conserved priority habitat types such as riparian buffers, small wetlands and rock outcroppings. While the program was available to landowners across the state, lands west of Interstate 77 made up the largest portion of enrollment.

So, you may ask, “I enjoy wildlife on my property and already manage to improve my property for our wildlife resources, but I do not have a qualifying species or habitat type on my property. Can I enroll in WCLP?” Well, until June 25, 2018 the answer would have been, “sorry, we can only enroll acreage that has a qualifying species or habitat type.” However, on the June 25, Gov. Roy Cooper signed House Bill 320 which revised G.S. 105-277.15 to include a third qualifying land type, “Wildlife Reserve Land.” We typically refer to this qualification as “Criterion 3.”

Land that qualifies for WCLP under this criterion must be actively and regularly used as a reserve for hunting, fishing, shooting, wildlife observation, or wildlife activities; upon which wildlife management activities are conducted to ensure the propagation of a sustaining breeding, migrating or wintering population of indigenous wild animals. The following are some requirements to understand if you wish to consider WCLP as an option for your property:

• The land must be owned by an individual, a family business entity or a family trust.

• In most instances, the property must be owned by the applicant for at least five years before enrollment. There are exemptions for new owners of property previously enrolled in WCLP as well as some family trust and family business situations.

• The minimum acreage for WCLP enrollment is 20 acres of contiguous habitat.

• To qualify under WCLP “Criterion 1,” one or more priority wildlife species must live on the land, and the landowner must agree to manage the property to provide for the species.

• To qualify under WCLP “Criterion 2,” the landowner must conserve one or more qualifying priority wildlife habitats: longleaf pine forest,
early successional habitat, small wetland community, stream and riparian zone, rock outcrop and/or bat cave.

- To meet WCLP requirements for “Criterion 3,” the property must be used for hunting, fishing, shooting, wildlife observation or other wildlife activities. In addition, landowners must agree to follow a WHCA that includes at least three of the seven qualifying management activities: Supplemental Food, Supplemental Water, Supplemental Shelter, Predator Control, Habitat Control, Erosion Control, and Census of Animal Populations.

The expansion of WCLP through the 2018 revision of G.S. 105-277.15 made property tax deferment for wildlife enhancement available to many more North Carolina landowners. If the Present Use Value Program that defers property taxes for forestry, agriculture and horticulture production lands does not fit the wildlife-oriented objectives you have for your property, consider the expanded WCLP. However, make sure you know all the details and requirements before you enroll. Active management will be required as well as some basic recordkeeping. If you are found out of compliance with the WHCA, just like with the PUV Programs, there is a penalty based on three years back taxes and interest.


If you feel WCLP is a good fit for you and your property, contact your local NCWRC Private Lands Program Staff. Our biologists can help landowners determine if WCLP is right for them and their property. See page 68 for NCWRC Biologist contact information.
traveling hunter tell me that the problem is simple and can be explained in two words: QUALITY HABITAT!

When I look at the landscape of places that have game birds and places that don’t, I see a drastic difference. I see native plants making up early successional habitat in many (not all) places from Texas to Montana, yet I can dive from Manteo to Murphy and see almost no quality habitat for the quail and grouse that were once so prized by hunters in the Tar Heel State.

Before you accuse me of being too pessimistic, let me point out that we do have pockets of high populations of quail and grouse on some properties in North Carolina, but all these areas share the same characteristics—they contain extensive “quality habitat,” and most are managed very seriously and carefully. Sadly, this management can be quite costly and very labor-intensive in North Carolina because we are fighting massive landscape-scale trends that have become entrenched over decades.

So, my message is simple if you are a North Carolina game bird aficionado. Our western friends have landscape advantages that still allow quality upland game bird habitat to be a byproduct of normal land management or land use. Kick in a little “intentional” management or a U.S. Department of Agriculture Program like CRP (Conservation Reserve Program), and you have a perfect storm that can result in huntable populations of whatever game bird calls the area home. In the Southeast in 2020, we don’t have the landscape to have this advantage.

If you want to have huntable populations of grouse or quail on your property, it will take serious effort, time and money to create the QUALITY HABITAT needed for healthy populations. It isn’t easy, but it can be done here in North Carolina if you have enough acreage and determination. If you wish to manage for upland game birds, we have a staff of professionals ready and willing to give you advice and guidance, and contact information for these biologists is listed on this page.

Mark D. Jones
Statewide Wildlife Habitat Coordinator,
North Carolina Wildlife Resources Commission

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The Upland Gazette is published twice a year by the N.C. Wildlife Resources Commission, Division of Wildlife Management and Division of Wildlife Education.

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