



THE
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WILDLIFE CONSERVATION AND HABITAT MANAGEMENT

The Predator Problem

Written by Mark D. Jones

The quail articles I wrote for the January/February and March/April 2012 issues of *Wildlife in North Carolina* prompted numerous responses from quail hunters and enthusiasts. I was heartened that many people care about bobwhites despite declining populations and little good news in recent years. It was also encouraging that most of the letters and calls we received demonstrated our readers understand the overriding factors in the decline of quail are habitat quality and quantity.

However, there were a few readers still not convinced and promoting other reasons for the quail decline, and most of these folks identified predators as the culprit. One reader wrote, "But there is more to the issue than managing habitat. Nowhere did Jones mention depredation as a possible problem." Perhaps this reader missed the 768 words devoted to predation in the March/April issue. Given our readers' interest in predation, we thought it wise to further explore the issue.

There are many predators that eat bobwhites and their eggs. Depending how you count them, there are over 40 species ranging from ants to deer. However, these can be lumped by season, with mammalian predators being the primary bobwhite mortality source during the late spring and summer nesting season, and hawks and owls dominating during the winter and early spring. Biologists classify quail as an "r-selected species," which is a fancy way of saying they reproduce quickly to withstand heavy mortality.

This is normal and the way quail populations have always operated. This would be the opposite of "k-selected species," which reproduce slowly but live long lives (examples include bears and elephants). For r-selected animals, when reproduction, recruitment (influx of young into the population) and survival are high, the species is abundant. When one or more of these factors is low, the species fares poorly. It is normal for populations of these species to increase or decrease very quickly because they reproduce and die rapidly.

Declining habitat quality and quantity has resulted in a world where bobwhites cannot produce enough young, and recruit them into the adult population, to withstand the levels of natural mortality



Many species eat quail, but is there anything we can do about it?

(including predation, disease, weather, etc.) they experience. In some areas, predation can be the most important of these mortality factors and is typically habitat-induced. For example, closed canopy forests (pine and hardwood) with shaded-out ground-cover, exotic grass pastures such as fescue and Bermuda, and crop fields without fallow field borders will expose quail to excessive predation.

The commonly proposed solution to the perceived "predator problem" is to kill predators to offset the inability of bobwhites to produce the populations we desire. While predator control may have applications in very specific circumstances, it is not

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A Note from the Editor

I write this in February amid a flurry of information coming across my desk about the impacts of biofuels on the Nation's economy and energy reserves. A "biofuel" can be anything living (algae, crop, grass, tree, etc.) that humans can transform into energy to replace fuel from traditional sources like coal, natural gas, and oil. Whether you know it or not, you have probably used the biofuel

corn ethanol in your car at various times over the last few decades, but there are more and more living things being used to produce biofuels every day. Much of the time, these production costs are subsidized by the Federal Government and your tax dollars. There is a heated debate about the financial and environmental costs of biofuels and whether or not they are really better, in the long-term, than alternatives from fossil fuels. I'll leave that question for another time and place, but a little understood component of biofuels is what effects their production may have on wildlife and wildlife habitats.

There are no perfect energy sources whether petroleum or corn or anything else. For example, recent news coverage and scientific papers have demonstrated the severe impacts of corn ethanol production. Literally millions of acres of grassland habitats in the Midwest and Prairie Pot-hole regions of the United States have been plowed under in recent years to grow corn for ethanol subsidized by the Government. Is this better than traditional oil extraction methods for the economy, the environment, and wildlife? The jury seems to be out on this question.

You may wonder where the biofuels issue will most seriously impact North Carolina in the short-term: likely with the growing of switchgrass and Giant miscanthus as a source of biofuels in our southeastern counties. What effects will this have on wildlife habitats in the region? I

don't think we have the answer to this question right now. Furthermore, companies and individuals throughout America are calling for heavier use of forested resources as a source of energy. North Carolina has used wood chips from timbering operations for decades in some eastern counties to produce electricity, but what will the increased and often subsidized biofuels industry mean for the state's forests, timber industry, and wildlife habitat?

I don't have the answer to many of these questions, but I do know wildlife enthusiasts, wildlife agencies, and hunters have been noticeably absent from many of the discussions about biofuels in the United States. Our Society needs energy, and it has to come from somewhere, and there is no disputing this fact. However, it is time wildlife folks get involved in the debate before we are left without a seat at the table and decisions about biofuels are left entirely to others.

SUPERVISING WILDLIFE BIOLOGIST
PRIVATE LANDS WILDLIFE HABITAT GROUP

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an easy fix, and there are at least four considerations making it a challenging tool to use: 1) legal roadblocks to killing predators such as hawks and owls, 2) public backlash from large-scale predator control to increase quail populations, 3) practicality of killing enough predators to make a difference, and 4) the moral questions of whether or not we should kill predators and which predators to kill in order to maintain or increase quail. Let's discuss each of these.

Legal Roadblocks and Public Backlash:

As discussed in March-April, state wildlife agencies must address mammals and hawks and owls separately due to legal status. States have complete legal authority over resident mammal species and can pass laws and regulations at will. However, hawks, owls and other raptors are protected by federal law rooted in the Migratory Bird Treaty Act (an international treaty, the highest form of American law). For many reasons, it is highly unlikely the federal government would grant an exemption for killing raptors to increase quail populations. If an exemption were granted, quail enthusiasts and state wildlife agencies could harm relationships with conservation groups made up of hunters and non-hunters.

Many non-hunting members of these groups support hunting and share common habitat interests with hunters. Programs to kill raptors to increase quail numbers could jeopardize the support of many of these groups. Frankly, this could reduce support for all hunting and do damage from which we may never recover. All this would occur without the existence of solid data showing the control of birds of prey would even make a difference for bobwhites.

Killing Enough Predators:

For most people, the more acceptable form of control involves mammalian predators. Researchers in North Carolina and Virginia (see March/April issue) in the 1990s, carefully studied the removal of mammalian predators and the results for quail populations. This experiment was conducted over four years, employing eight full-time trappers. The statistically valid results were pub-

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The moral questions of whether or not we should kill predators, and which predators to kill, become very complicated.

Bobwhite quail chick.

MELISSA MCGAW/NCWRC

lished in peer-reviewed scientific journals and widely reviewed by national experts. The take-home message from this work is that habitat improvements alone increased quail in spring, summer and fall, while the intensive removal of mammalian predators alone had little effect on quail at any time. Additionally, most landowners could not match our full-scale predator removal efforts because of costs. The level of mammalian predator control that is financially feasible for the average landowner would have little effect on predator populations. If the maximum efforts we used could not increase quail, the limited efforts likely from most landowners would have even less of an impact.

Additionally, new research from Florida and Georgia shows the removal of eight species of nest predators did not reduce rates of quail nest predation. This work, recently published in the *Journal of Applied Ecology*, demonstrates that predator removal within one group of animals (mammals) may not translate to increases in quail nest success because of shifts in the types of predators responsible for nest failures.

The Moral Questions:

The moral questions of whether or not we should kill predators, and which predators to kill, becomes very complicated. Some people suggest we should kill everything that eats quail. Few hunters and wildlife profes-

sionals are willing to accept this moral position. Others view targeted predator control as a tool to add incremental increases to quail populations in well-managed habitats. This has been demonstrated effective on dozens of sites covering tens of thousands of acres in north Florida and south Georgia. These properties are well-managed habitats where mammalian nest predators are controlled during the nesting season. Predators are not eliminated despite intense effort, but predation is reduced during the quail nesting and brood rearing periods.

Research shows predator numbers are back at near-baseline levels the following year, so in order for quail populations to be increased through this form of predator control, the management must continue yearly. This is very expensive, logistically challenging and really not feasible for poor habitats or small landowners. It is important to understand this type of predator control only provides incremental increases to relatively abundant quail in already enhanced and well-managed habitats.

Some North Carolina landowners and quail hunters seem to put the proverbial “cart before the horse” and attempt to use predator control without first having adequate habitat. Without first addressing habitat, landowners chasing the predator control philosophy are distracted from the more significant quail habitat needs and

given false hope. Until we create and maintain larger and higher quality habitats on most of the North Carolina landscape, predator control is likely a distraction and waste of resources. There may be a place for it on some properties, but for most properties we should focus resources on building better quail habitats that provide for many additional wildlife species. This would build partnerships with habitat-based groups and enthusiasts to reach shared goals and objectives.

We know from examples here in North Carolina and other places in the South that significantly improving the quality and quantity of quail habitats will result in increased populations of quail and many other species. Our best example here in North Carolina — corporate landholdings highlighted in the March/April issue — contain some of the highest quail densities in the South and involve no predator removal of any type. The sooner we all come together and embrace a comprehensive habitat management concept, the sooner we will move toward real opportunities to have quail populations (and associated wildlife species) on well-managed properties across the state. Supplementing high-quality habitat management with targeted and legal predator control designed to enhance the effects of habitat management can then be the decision of the individual landowner. 🌱

The Other Man's Land

By Rupert H. Medford and Chris Turner, District Wildlife Biologists, NCWRC

As you sit with your back pressed against the twisted old chestnut oak, you accept that you are seeing another morning fade away into afternoon on the third day of turkey season. As far as you know, a single gobbling tom has not set foot on the property. The property you are hunting is only 100 acres, and judging by the intermittent gobbling that you have heard throughout the morning, there are plenty of turkeys in the area. It just so happens that they are behind posted signs. You don't fret because you know that your day is coming. You have something that the neighbors do not—prime nesting and brood habitat. You have hunted this property for several years, and you know that the early part of the season is just a warm-up. Come late season when hens are spending more time on and around nests, those old long-

owner it is easy to look at your maps and start making decisions about how to best manage your property for wildlife needs. However, if you don't consider what your neighbor is doing, you could potentially waste an opportunity and create an excess of one particular habitat need while ignoring a need that is missing in the area. Habitat includes food, water, and shelter interspersed throughout the landscape in a suitable manner. Because most landowners don't have enough acreage to provide what some wildlife species need through an entire year, it is imperative they consider what habitat components the surrounding lands are providing. The optimal management and wildlife use for your land often depends on what your neighbors' lands provide—or don't provide. Let's take a look at what it takes to manage for wildlife.

Wildlife management is certainly not for the faint of heart with defeatist attitudes. Even with lots of acreage, there are obstacles to overcome like invasive species, seasonal droughts or floods, a poor reproductive year, or crop failures. If these hurdles can't discourage a manager, why let small acreage keep you from pursuing your goals? It is important to understand wildlife needs throughout the entire year and then work to make sure that at least some of these habitat values are present on your land. This means setting management goals based on reality.

If you consider only how many acres it takes to manage for a given species of wildlife, you are dreaming of a closed population with no movement by animals. It amounts to a "fairytale" island of habitat, which is not a typical situation for most of us. The land that surrounds your own always plays into the habitat equation, particularly for highly adaptable species that use a variety of habitat types such as white-tailed deer. Most folks don't have the mentioned 3,000 acres, but don't worry. Smaller acreages offer hope for deer management. So, what do you do with a couple hundred acres or less? Even on very small properties, you can realize wonderful deer hunting potential while contributing to the biological needs of your local herd if you are willing to make considerations beyond property lines and follow some common sense guidelines. For example, let's talk about food and deer.

When people think "deer management", they quickly get sucked into the "plant a food plot" mentality. It is true that food plots can be good for deer management and especially for creating opportunities for harvesting deer. However, if a neighbor's property is a row crop farm that rotates corn, soybeans, and winter wheat, a food plot on your property may not be the best option to pursue. Deer are indeed slaves to their stomachs, so you might want to have some food sources on your property to help lure in deer, but nutritional needs and food sources change seasonally. In a case where the neighboring land is a farm that supplies more than adequate food resources, your land might serve greater purposes by concentrating your efforts on what seems to be lacking on other properties at certain times of the year. Old field and other early successional habitat makes for great fawning places in the summer as well as fall bedding cover. This can easily be achieved with a timber thinning followed by a native warm-season grass and wildflower planting. If neighboring land is a pine plantation, you might consider conserving or



MARK JONES/NCWRC

Diverse habitat containing flowers, grasses, shrubs, and weeds provides for many of the needs of a variety of wildlife species.

beards will be nearby. As always, you are starting slow, but they will be on this old hundred-acre farm before this season ends.

As the wind picks up and you listen, still hoping for another thunderous gobble from below, it occurs to you that this situation can't be uncommon for the modern wildlife management enthusiast. It takes a lot of land to manage for all the needs of an individual species of wildlife, and unless you have some large properties, the best bet is to look at what you do have and try to meet some of the needs for whatever species you desire. For owners of small parcels who want to implement land management practices that benefit wildlife, it is a good idea to take a look at "The Other Man's Land".

It is a fact, after all, that what lies beyond the posted signs is going to play into the overall scheme of things. As a land manager or property

Understanding what management practices are and are not feasible is the first step to success. A lot of white-tailed deer enthusiasts will tell you that you need 2,000-3,000 acres to effectively manage a deer population. A good quail guru is likely to say that you need to have 20 acres of high quality habitat for each covey of quail with no less than 500 acres total. For rabbits, you can expect densities approaching one per acre on good ground, but some biologists will tell you that 30 acres is a minimum amount of land for successful management. No matter which species you are after, it doesn't take a whole lot of figuring to get discouraged by the numbers. So what if you don't have enough acreage to meet the minimum home-range requirements of the species of interest? Does that mean that there is little that you can do to promote wildlife populations on your land? By no means!

It is important to understand wildlife needs throughout the entire year and then work to make sure that at least some of these habitat values are present on your land.

managing for mature mast-producing hardwoods. While it takes a long time to see nut production from planted oaks, they can be planted on a wide spacing (greater than ten foot centers) to encourage good ground cover below rich in forbs and grasses. There are other mast-producing trees, like persimmons or crab apples, where production is realized relatively quickly, often in less than five years.

When it comes to deer, sometimes the best options come by considering how existing habitat features can be enhanced and improved. In some urban environments, when the white oak acorns are dropping, there may only be one route that deer feel are safe for maneuvering during daylight hours. This may be a brushy creek bottom that offers cover between young pines where they bed and mature white-oaks where they feed. When you consider productive hunting scenarios such as this, it becomes evident that it is also a good idea to plan for connectivity across the landscape. “Travel corridor,” has become a buzz term in endangered species management, but it should be in the vocabulary of every land manager concerned with the greater movements of all wildlife species. Deer follow natural corridors in the form of topographic and vegetative features. While there is little that can be done on a practical level to affect topography, promoting key vegetative patterns is critical. Often, travel corridors are both vegetative and topographic in nature (examples include a wet, low-lying drain choked with wax myrtle and switchcane on the Coast, or a dense wooded saddle choked with laurel in the Mountains). Since deer are edge species, landowners can “force” deer to travel to and from large and small properties through active management that involves simple chainsaw work or planning timber harvests to leave or promote adequate understory cover in suitable places.

For some species, such as quail, the equation is more complex because quail are less adaptable and more closely tied to a very specific habitat type: early successional or “old field.” It seems that people have been searching for the silver bullet of quail management for years, when in truth, there is no silver bullet. If there is a dedicated habitat management plan

impacting enough acres, quail will likely persist at reasonable densities. However, the types of habitat in which quail thrive are not the same types that yield maximum board feet or maximum bushels per acre. One formula of quail management can be called the “formula of a third.” According to the “formula of a third,” quail habitat should be broken up into thirds of managed forest land, supplemental plantings, and early successional habitats. Components of high-quality quail habitat are cover types that allow for easy maneuverability and overhead protection from avian predators.

On many farmlands, edges are all that quail have, and this may be part of what leads to their demise. Don’t just focus your efforts on edges. While many species benefit from edge habitats, since terrestrial predators can cruise edges and depredate nests and prey on chicks, you will need more than simple field borders. By creating large blocks of native warm season grasses, shrubs, and forbs as opposed to narrow strips, quail productivity can be enhanced. Because most large acreages must incorporate some type of tree rotation for economic purposes, it is important to discuss the stages of pine plantings. When pines are young there is no impediment for sunlight reaching the ground, and grasses and forbs are thick. In much of the southeastern United States, productive quail habitat can be provided by properly managing pine stands. Quail-friendly pine understories must contain briars, legumes, and grasses. As pine trees grow they will shade out beneficial vegetation and develop a bare-ground, row pine state. At this point, quail and other small game species will almost definitely lose. To promote and retain wildlife benefits, pines can be planted or pre-commercially thinned on wider than normal spacing to encourage ground cover for quail. In considering what is on the neighbors’ properties, one might implement native warm-season grass plantings and establish connectors such as hedgerows through shrub plantings rather

than follow typical timber management regimes.

On farmland, part of the quail problem may be simple. To have maximum quail populations, manage as though money doesn’t matter! If you manage a piece of farmland for the maximum bushels of corn or beans per acre, quail will almost always lose. This may seem to be a conundrum when you want to flush a covey, pay college tuitions and taxes, and make a premium on timber production, but with specialist species such as quail, you simply can’t have it all. Bottom line: total acreage, clean-farming results in habitat loss. If you are willing to sacrifice something on the monetary end of things, you may have room for quail management. Sometimes, it is what you don’t do that becomes important. Sometimes managing for brushy, weedy quail and rabbit habitat can mean that annual farming costs can actually be reduced. Not mowing everything every year means lower fuel costs and fewer hours spent maintaining ditches and field edges. These savings result in habitat improvements for small game. If the neighbor’s land is all row-crop where quail can benefit from the growing season cover and food provided, we have to remember that after crop harvest it falls on us to replace the missing cover.

Overall, regardless of the wildlife species of interest, a good rule of thumb is to manage for habitat diversity. By managing for a diversity of vegetative features, you can manage for a diversity of annual needs. If you spend any amount of time watching wildlife, with a few exceptions, you will notice that they do not spend a great deal of time foraging. “Food everywhere” should not always be the primary focus of management. Since quail and other small game are a food source for a myriad of predators, habitat management that discourages predation is key. Thus, optimal winter cover becomes a key on many properties, regardless of acreage. If you factor in the diversity part of the habitat management equation with planning, the land itself provides food and cover over time. Through active management of native vegetation by mowing, disk-ing, and burning, we can continually promote a rotation of suitable habitat to meet year-round wildlife needs on the largest properties and specific seasonal needs on smaller tracts.

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Free advice on managing wildlife habitat is available from the North Carolina Wildlife Resources Commission 919-707-0050. Information about Upland Habitat Management and Restoration can be found at our web site: ncwildlife.org/CURE.

The Fire Bird:

Meet the Bird that is Most Dependent on Fire-managed Habitats in North Carolina

By Jeff Marcus, Wildlife Diversity Biologist, NCWRC



Bachman's sparrow.

JOHN CARPENTER/NCWRC

Like a small and drab “phoenix rising from the ashes”, the Bachman's sparrow follows close on the heels of fire. No other bird in North Carolina is as dependent on fire to maintain its preferred habitat, and the deliberate suppression of fire throughout much of the southeastern United States during the last 100+ years has taken a heavy toll on this and many other species.

Bachman's sparrows are more easily heard than seen. They are extremely secretive, spending much of their time on the ground in dense cover. If you are skillful and lucky enough to see one, you may be disappointed by its drab brown appearance, distinguished from other sparrows more by its lack of any notable field marks. The beauty of this bird is in its voice. Starting in mid-April, the males stake out their territories with a sweet whistle followed by a musical trill that resonates throughout the pine woods.

Bachman's sparrows share several traits with bobwhite quail. Like quail, Bachman's sparrows would rather run on the ground than fly and require “clump grasses” which give overhead cover from predators while providing ample spaces between the clumps at ground level to move around. Like quail, Bachman's sparrows build a dome-shaped nest out of grasses on the ground, tucked up underneath one of those grass clumps. Like quail, Bachman's sparrows feast on the abundant seeds and insects that are produced after a fire.

Where these two species diverge is that quail are more flexible in their habitat requirements: bobwhites can be found using dense shrubland, edges of swamps and pocosins, and certain crop fields. Bachman's sparrows are much more a bird of the upland ridges and in North Carolina are found predominantly in open canopy longleaf woodlands with wiregrass on the ground.

Apparently, it wasn't always this way. While most of the early accounts of the species were from southern pine forests, the bird expanded its range in the early 20th century as far north as Pennsylvania and as far west as Illinois. They were reported to be found in clearcuts, old fields, pastures, power line rights-of-way, and other habitats that had significant groundcover of grasses and

forbs. For some reason, this is no longer the case. Bachman's sparrows are no longer found in the northeast or Midwest, and North Carolina is now the northern limit of their range. Within North Carolina, Bachman's sparrows are now almost exclusively found in large, fire-managed longleaf pine forests with a wiregrass-dominated understory.

What are the reasons for these changes? How rare and vulnerable is this species now? What can be done to reverse its decline? Biologists with the North Carolina Wildlife Resources Commission are attempting to answer some of these questions. We have initiated a study to determine where populations are still found, what habitats and landscapes the bird is using, and strategies to recover the species.

We compiled observations of the species in North Carolina from as many sources as we could find. These sources reveal historic records along the fall line in the eastern Piedmont, throughout the Sandhills, and scattered across much of the southern Coastal Plain. Surveys conducted at these historic sites suggest the species is no longer found in the Piedmont or along the northern fall line and is predominantly found on large, fire-managed public lands in the Sandhills and southeastern Coastal Plain. Some notable areas include Sandhills Game Land, Fort Bragg, Holly Shelter Game Land, Camp Lejeune, and Croatan National Forest. Some areas where Bachman's sparrows have been found on private lands include heavily thinned pine stands of new residential developments; however, these habitats are ephemeral and will soon become unsuitable without active management. While potential habitat remains throughout its former range, most of this habitat is found in smaller or more isolated patches and is in sub-optimal condition.

So what can be done? Similar to quail restoration efforts, landscape context is critically important. Land conservation actions should focus on protecting large pine forest patches in the Sandhills, southeastern Coastal Plain, and the narrow band of longleaf that connects these areas. Land use planning policy should steer development away from remaining large longleaf forests and encourage

working lands adjacent to properties managed with prescribed fire.

Individual land managers can make a difference with their pine forest management decisions. In short, managing for Bachman's sparrows requires providing lush groundcover of clump-grasses and forbs in large patches with some sort of disturbance on a 2–5 year basis. Forestry operations should replant longleaf, avoid drum-chopping for site preparation of clearcuts, utilize frequent thinnings to maintain an open canopy, and plant grasses and forbs where necessary.

The most important action for the future of the species is to maintain and expand the use of prescribed burning on public and private lands. Fire controls woody vegetation in the mid-story and understory, thereby permitting sunlight and other resources to reach the grasses and forbs. Wiregrass and other plants used by Bachman's sparrows depend on fire to produce seed and reach their full growth potential. Bachman's sparrows benefit from fire applied in any season, but the greatest habitat benefits are realized from growing season fire. Sparrows are readily able to re-nest if a nest is lost to fire, and they will even re-occupy a stand in the same year as the burn once the grass sprouts back.

There are many programs and resources available to private landowners that can provide assistance with longleaf pine restora-

tion and maintenance. The North Carolina Prescribed Fire Council (www.ncprescribedfirecouncil.org) provides information and support for landowners interested in learning more about burning, and the USFWS's Partners for Fish and Wildlife Program and several U.S. Department of Agriculture Farm Bill programs supply financial and technical support to landowners who manage their land for wildlife. Although it targets another fire-dependent species, landowners that enroll in the North Carolina red-cockaded woodpecker Safe Harbor Agreement Program (www.ncwildlife.org/rcwsafeharbor) will receive incentives to manage their property in a way that also benefits Bachman's sparrows.

The Bachman's sparrow is currently listed as Special Concern in North Carolina and may be considered for federal endangered species listing if current trends continue. If we are able to take decisive conservation action now, we could preclude a more costly and more difficult recovery that is required once a species reaches the point of needing federal listing. As one of the quintessential longleaf pine forest specialists, conservation actions to protect Bachman's sparrows will help quail, southern hognose snakes, gopher frogs, and many other species that depend on longleaf pine habitat and fire. ♣

The most important action for the future of the species is to maintain and expand the use of prescribed burning on public and private lands.

MELISSA MCGAW/NCWRC



Dove and Woodcock Survey Results

By Joe Fuller, Migratory Game Bird Program Coordinator, NCWRC

In spring 2012, the North Carolina Wildlife Resources Commission conducted surveys of both dove and woodcock hunters. The primary purpose was to obtain demographic data and opinions on management and hunting seasons for both of the hunter groups. These were the first statewide surveys the Wildlife Commission has ever conducted exclusively of these hunters. We present a summary of findings here. If you're interested in the full report, check our website at ncwildlife.org.

DOVE HUNTER SURVEY

We randomly surveyed over 6,000 hunters that were registered through the Harvest Information Program (HIP) and had indicated that they had harvested doves the previous year. We received responses from over 3,500 hunters.

General Participation

- 54% of dove hunters started dove hunting before 1990, and 8% started after 2005.
- 45% of dove hunters considered dove hunting to be their most important or one of their most important recreational activities.
- When asked to identify all the areas they hunted doves, only 16% of dove hunters indicated they had hunted on NCWRC Game Lands sometime during the last five years.
- 13% of dove hunters in the Mountain region regularly hunt on NCWRC Game Lands; more often than dove hunters in other regions.
- 62% indicated that most of their dove hunting occurs on normal agricultural fields (mainly harvested commercial corn) while 17% indicated that most of their dove hunting occurs on areas where crops (such as millet and sunflower) are grown specifically to attract doves.

Barriers to Participation and Satisfaction

- 45% of dove hunters were satisfied with how the NCWRC manages doves in North Carolina, but 15% were dissatisfied.
- 45% of dove hunters indicated that a major barrier affecting their dove hunting experience and participation was that public dove hunting areas were too crowded. In addition, 32% indicated having no public dove hunting areas near their home was a major barrier.

- Difficulty finding areas to hunt doves on private land and overcrowding on public dove hunting areas appear to be major barriers affecting hunters in the northern Piedmont and Mountain region more than hunters in other areas.
- 34% of dove hunters indicated that the overall quality of their dove hunting had gotten worse over time compared to 13% that indicated that it had gotten better over time.

Seasonal Hunting Patterns and Opinions on the Dove Season Structure

- Of those respondents that hunted during the 2011–2012 season, 74% hunted less than 6 days.
- 70% of dove hunters did not hunt in either the second or third segments of the 2011–2012 dove season.
- Of those hunters that hunted during the first segment of the 2011–2012 season, 85% indicated that most of their dove hunting occurred during the first two weeks of the first segment.
- 55% of respondents agreed that the NCWRC should keep the current dove hunting season structure, and only 10% felt that the current dove season structure should be changed. There were no differences of opinion regarding changes to season structure based on region of hunting or on total number of days hunted.
- When asked specifically if shooting hours should begin one-half hour before sunrise on opening day, 58% of dove hunters agreed, 23% disagreed, 16% were neutral, and 2% were unsure.



MARK JONES/NCWRC

Management Considerations

- From both statewide and regional perspectives, hunters are supportive of all day shooting for doves on opening day.
- Migratory bird hunting, such as for dove, waterfowl, and woodcock, is subject to Federal input unlike hunting for resident game species which is managed at the discretion of the States. Given the Federal frameworks from which to select season dates, hunters are supportive of the current season structure. Of the alternative choices provided, there was no support for making changes to the dove season structure.
- It appears that additional managed dove fields on Game Lands would be utilized by dove hunters and may ease overcrowding concerns. Additional managed dove fields in the Piedmont and Mountain Regions should receive highest priority based on the results of this survey.
- The NCWRC should consider opportunities to create public dove hunting on private lands similar to many other southeastern states.

WOODCOCK HUNTER SURVEY

We randomly surveyed approximately 2,900 hunters that were registered through the Harvest Information Program (HIP) and had indicated that they had harvested woodcock the previous year. We received responses from nearly 1,400 hunters.

General Participation

- Only 21% of respondents indicated that during most of their woodcock hunting and harvest they were specifically pursuing woodcock.
- 57% of woodcock hunters started woodcock hunting before 1990 while 16% started after 2005.
- Only 16% of all respondents indicated that they considered woodcock hunting to be their most important or one of their most important hunting activities. However, of those respondents that indicated that they specifically pursued woodcock, 45% indicated that woodcock hunting was one of their most important or most important hunting activity
- 44% of respondents indicated hunting the most days in the Coastal Plain while 15% indicated hunting woodcock the most days in the Mountains.
- When asked to identify all the areas they hunted woodcock, 41% of woodcock hunters indicated they had hunted on NCWRC Game Lands sometime during the last five years.
- 22% of woodcock hunters indicated that they most often hunted on NCWRC Game Lands.
- 52% of woodcock hunters in the Mountain Region hunt on NCWRC Game Lands; more often than woodcock hunters in other regions.

Barriers to Participation and Satisfaction

- 28% of woodcock hunters were satisfied with how the NCWRC manages woodcock in North Carolina, and 16% were dissatisfied. 55% of respondents were neither dissatisfied nor satisfied or were unsure of their satisfaction with NCWRC woodcock management.

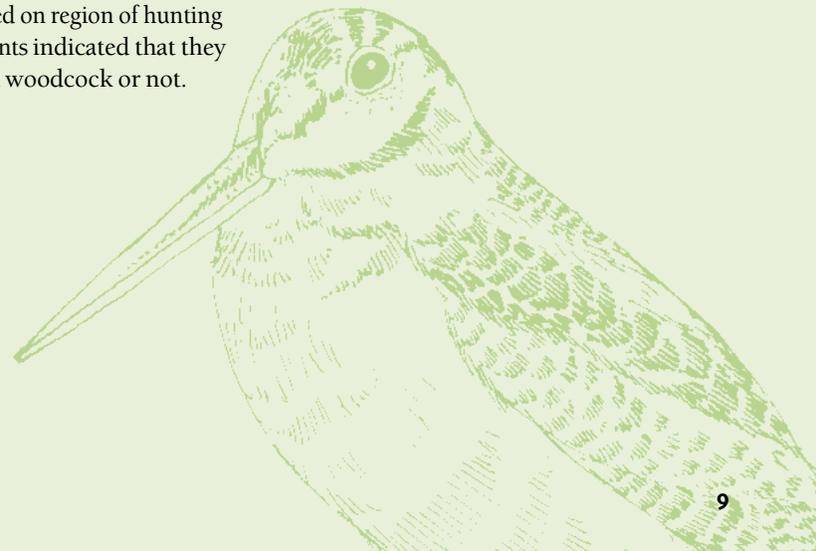
- 34% of woodcock hunters indicated that a major barrier affecting their woodcock hunting experience and participation was that it was difficult to find public lands that hold huntable numbers of woodcock.
- Difficulty finding areas to hunt woodcock on private land, difficulty finding public lands that hold huntable numbers of woodcock, and woodcock populations being too low appear to be major barriers affecting hunters in the Mountain region more than hunters in the Piedmont and Coastal Plain.
- 36% of woodcock hunters indicated that the overall quality of their woodcock hunting had gotten worse over time compared to 13% that indicated that it had gotten better over time.

Seasonal Hunting Patterns and Opinions on the Woodcock Season Structure

- Of those respondents that hunted during the 2011-2012 season, 57% hunted less than 6 days while 23% hunted more than 10 days.
- 78% of woodcock hunters harvested 5 or fewer woodcock during the 2011–2012 season while 3% harvested more than 20 woodcock.
- 53% of respondents agreed that the NCWRC should keep the current woodcock hunting season structure while only 13% felt that the current woodcock season structure should be changed. There were no differences of opinion regarding changes to season structure based on region of hunting or whether respondents indicated that they specifically pursued woodcock or not.

Management Considerations

- Of the alternative choices provided, there was no support for making changes to the woodcock season structure. Given the federal frameworks from which to select season dates, hunters are supportive of the current season structure.
- 22% of all woodcock hunters hunt woodcock most often on NCWRC Game Lands. It appears that woodcock hunters utilize Game Lands as their principal hunting area more so than other hunter groups (waterfowl, doves, and deer).
- Habitat management currently occurring on NCWRC Game Lands that targets quail and grouse likely benefits woodcock as well. However, we suggest that land managers more fully consider habitat management geared towards woodcock and determine if additional management practices are warranted.
- This survey sampled only those individuals that indicated that they harvested 1 or more woodcock the previous year according to Harvest Information Program (HIP) registrations. However, only 25% of respondents indicated that they actually hunted woodcock sometime during the previous 5 years. This discrepancy underscores the inefficiencies and inaccuracy of the HIP registration process in North Carolina.



What Has Happened to the “Whip-poor-will”?

By Christine A. Kelly, Wildlife Diversity Biologist, NCWRC

Most landowners know if the boisterous and emphatic Eastern whip-poor-will inhabits their property. If you're not sure, scout out suitable wooded areas when calling rates of this “name-sayer” are highest. The best time to listen for them is after dark, when the moon is at least half-full and risen above the horizon on a clear night between April and July, with peak calling in May and June. A territorial whip-poor-will wants to be the loudest bird in the neighborhood and will seek out places where the acoustics of the terrain or nearby buildings amplify his call. Concave bowls in hillsides, steep slopes, rocky domes, or banks along reservoirs are natural microphones. Houses or chimneys built into hillside embankments can serve as a stage and backdrop for a calling whip-poor-will. Except for those driven to chronic insomnia by the bird's incessant calling---“WHIP-poor-will! WHIP-poor-will! WHIP-poor-will!”, most people express wistful fondness for the bird. The call is a sound of yesteryear, conjuring memories of childhood nights, sitting around the campfire and chasing fireflies. And that usually leads them to a question, “I never hear whip-poor-wills any more. How are they doing?”

The North Carolina Wildlife Resources Commission's (NCWRC) Wildlife Diversity program

is attempting to answer that question. Whip-poor-wills are absent from some locations where they once occurred, but the rate and reason for decline is not clear. The whip-poor-will is poorly documented by traditional long-term bird monitoring programs, such as the Breeding Bird Survey, due to its nocturnal and cryptic nature. Biologists lack basic information about the current distribution, relative abundance, and population trends of the whip-poor-will. This is also true for North Carolina's other two members of the nightjar family, the chuck-will's-widow and common nighthawk.

NCWRC initiated a nightjar survey in western North Carolina in 2007 to address survey and monitoring needs of these species. Roadside listening counts are surveyed by volunteers each spring under optimal weather and lunar conditions that elevate calling and therefore, improve our ability to detect the birds. In six years, we have established routes in 22 western North Carolina counties and identified areas where “Whips” and “Chucks” occur on the same survey route. In fact, the two species can be heard at the same survey stop on some routes in Burke, Caldwell, Catawba, Polk,

Rutherford, and Wilkes Counties. Greatest overlap occurs in the North Carolina Foothills at such places as Brown Mountain Beach Road northwest of Morganton and rural roads between Valdese and Cooksville. The Mountains are dominated by whip-poor-wills with a few exceptions where chuck-will's-widows occur near Hot Spring and parts of Cherokee County. The whip-poor-will is more closely associated with upland forests than the chuck-will's-widow which favors more open landscapes. NCWRC is collaborating with the U.S. Nightjar Survey Network to explore these data for patterns of land cover and land use in the distribution of whip-

poor-wills. With sufficient survey data, we can eventually estimate population trends and answer basic questions about how this species is doing in North Carolina.

A next step is to determine “Best Management Practices” for the whip-poor-will. If your land management activities create openings in the canopy or forest understory to support game species, you may also attract the whip-poor-will to your woods. Within upland forests, the distribution of whip-poor-wills appears to be determined more by habitat structure than composition. Openings in the forest canopy and understory tend to attract whip-poor-wills to a variety of forest types compared to forests with closed canopies



A nocturnal whip-poor-will.

NCWRC

and dense ground cover. Increased light availability in a semi-open canopy may improve the bird's foraging success at night and provide dappled sunlight to camouflage nests in the daytime while bare ground in the understory may optimize the camouflaging effect of the bird's plumage or facilitate take-off and landing. Optimal conditions may be achieved using forest thinning or prescribed burning to mimic natural disturbances such as ice storms, insect damage, or wind throw. Although we are familiar with the whip-poor-will's affinity for a habitat mosaic featuring semi-open forests for nesting and adjacent openings for foraging, questions remain concerning the size of a forest plot and openings needed to sustain a pair and the influence of adjacent land use (forest, agriculture, or developed). Research is needed to determine the best management practices for creating fine-scale nest site characteristics such as partial shading by herbaceous plants, shrubs, or seedling trees that are favorable to the whip-poor-will. Ultimately, your stewardship efforts can be geared toward improved habitat for desired game species and the whip-poor-will. ♣



ATTENTION SPORTSMEN

The North Carolina Wildlife Resources Commission would like to encourage all sportsmen to get involved with the revision of the Nantahala and Pisgah National Forests Land and Resource Management Plan. It is crucial for sportsmen

to let their voices be heard during this process. The revised plan will guide management for the Nantahala and Pisgah National Forests for the next 15 years. Habitat is the basis for our wildlife populations, so it really is very important that sportsmen are at the table.

The Pisgah and Nantahala National Forests make up more than one million acres of Game Lands and are the most popular public areas used by sportsmen in North Carolina. **National forests play a very important role in providing sportsmen a place to hunt and fish both now and in the future.** Many of the habitats required by deer, small game and nongame populations require active management. Active management such as prescribed burning and timber harvest are needed to restore young forests that provide food and cover for many wildlife species. Active management is needed to help ensure that we have oak forests in the future that provide acorns for wildlife, and we need active management to restore fire to systems that are now overgrown. In addition to speaking up for the virtues of active management, it is also especially important for sportsmen to attend the U.S. Forest Services' public meetings to ensure that all uses receive equal consideration.

The U.S. Forest Service scheduled a series of public meetings between February 21 and March 19 to receive input for the Land Management Plan. By the time *Upland Gazette* readers see this article, these meetings will be over, but it will not be too late for sportsmen to voice their concerns about the future direction of the National Forests and to provide input on management that would benefit wildlife and sportsmen. **The U.S. Forest Service is urging participants to be involved with the entire process so that all important issues can be identified. Information on public involvement can be found at www.fs.usda.gov/goto/nfsnc/nprevision.**

Another way to stay involved with national forests activities is to sign up for Forest Service News Alerts. Sportsmen can sign up for news alerts at www.fs.usda.gov/nfsnc.

For additional information contact David Stewart with the North Carolina Wildlife Resources Commission at 828-648-0008 or david.stewart@ncwildlife.org. You can also follow events on Twitter or the North Carolina Wildlife Resources Commission Facebook page.



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No matter what species you wish to manage, it is important to know a little about its biology, life history, and seasonal needs. Overall, there are a multitude of game and non-game species that benefit from managing for habitat diversity. Management in forested lands focuses on constantly providing multiple age-classes of forest. Diversity management on farmland focuses on using annual disturbance to promote brushy, weedy old-field vegetation on field edges and ditch-banks. Successful managers should focus their management activities on providing year-round habitat needs where feasible. On small tracts, the focus more often should be on identifying and providing those seasonal requirements centered around critical winter and summer food, cover, and nesting/brooding habitat. Regardless of the acreage of your property, the habitat that lies beyond the property boundaries should always be a key consideration. There are resources available for management plans and professional assistance, and these should be used in order to streamline your efforts when managing for wildlife. While it is hard to control what happens beyond the boundary lines, to best benefit wildlife on your own property, the most effective management considerations should include "The Other Man's Land".