

the
Upland
G A Z E T T E

◆ North Carolina Small Game Notes ◆

What's **Inside...**

- ◆ Small Game Emphasis on Selected Game Lands 3
- ◆ Hunting on Young Pine Plantations 3
- ◆ Research Roundup. 4-6

Wildlife Commission Seeks the CURE

(NRCS) forester; Matt Flint, NRCS wildlife biologist; Tina Mabe and Mike Sigmond, Soil and Water Conservation District technicians; and Terry Sharpe, N.C. Wildlife Resources Commission agriculture liaison biologist.

The Anson County plantations had been planted to 622 tpa (7 ft. x 10 ft. spacing) between 1986 and 1988 and commercially thinned in 1999-2001. Stocking rates after thinning varied from 220 tpa to 527 tpa. In the stands we visited, logging damage was light, with only a few trees that had bark removed near the base. Few live limbs remained in the first 16 feet of the trunk, indicating that early thinning did not compromise economic quality of the first log. Rutting and soil compaction were evident on one site, and fusiform rust was quite evident on some sites.

The group's observations indicate that the following active management practices are necessary to provide wildlife habitat in pine plantations on old-field sites:

- Thin stands to less than 300 tpa as soon as economically feasible to develop a

diverse, abundant groundcover. Stands thinned to 500 tpa develop few understory plants beneficial to wildlife, and many low-quality and diseased trees remain until the second thinning.

- Best results will be achieved if stands to be thinned are marked by a forester or the landowner. Logging crews should be monitored to prevent damage to trees, soil and water quality. Loggers should be encouraged to select diseased and poorly formed trees while protecting well-formed trees from equipment damage.
- Second and subsequent thinning should be planned to occur upon canopy closure to benefit wildlife. Where bobwhites are a priority, thin more heavily, especially adjacent to agricultural fields and openings.
- Frequent fire should be a component of the management plan where early succession songbirds, bobwhite quail, deer or turkeys are important to the landowner. Even in stands thinned to 300 tpa or less, regenerating hardwoods will quickly develop into a midstory, and prescribed fire will be required to maintain

groundcover. Begin prescribed burning around age 10, when trees are 15-20 feet tall, and conduct late winter or spring burns at one- to three-year intervals.

- Install permanent bladed firelines at planting or during the first thinning to make burning easier, safer and cheaper. Firelines should be constructed to allow regular maintenance with a farm tractor.

A concentrated effort by the Natural Resources Conservation Service, the N.C. Wildlife Resources Commission, and the N.C. Forest Service is needed to ensure that re-enrolled CRP pine stands are frequently thinned and burned to produce both high quality saw timber and wildlife habitat. ◆

—Terry Sharpe, Agriculture Liaison Biologist, Division of Wildlife Management and Albert Coffey, Staff Forester, Natural Resources Conservation Service

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AS WE HAVE DISCUSSED IN PREVIOUS Upland Gazette articles, the bobwhite quail has seen significant and long-term population declines in North Carolina and throughout its range. Early pioneer settlements and agricultural expansion created ideal quail habitat throughout the Southeast during the 1800s and early 1900s, and quail populations generally re-



mained high through this period. As early as the 1930s, however, declines in quail populations were being documented throughout the species' range. Based on our best available data, quail populations in North Carolina declined by over 3.5 percent each year from the mid-1960s through 1980 and by over 6 percent each year between 1982 and 1991.

Because quail population declines continue, the Wildlife Resources Commission is initiating a new approach to small game man-

agement. This new program includes efforts on state-owned game lands, but much of it involves habitat management on private lands. We are calling the new private lands management program CURE—an acronym for Cooperative Upland-habitat Restoration and Enhancement. Our objective is to increase populations of quail and other wildlife that depend on brushy, weedy and grassy habitats. This can be accomplished in only one way—by restoring and enhancing habitats.

Focal Areas

The CURE program rests on some important concepts. First, addressing a problem as significant as declines in small game and their habitats must be targeted at those areas in our state where land use and other habitat conditions offer the greatest potential for successful habitat restoration and enhancement. Second, we acknowledge that changes in land use make it impractical to restore small game and their habitats in some areas of North Carolina. Therefore, our first step in implementing CURE involved defining focal areas where habitat restoration has the greatest chance for success.

To determine where the first three focal areas should be established, division staff used computer analyses to compare all habitat types across the entire landscape of North Carolina. In conducting these analyses, we defined five habitats— agricultural, pasture, woodland, shrubland and unsuitable. Then

we looked for areas where combinations of these habitats exist in proportions that indicate overall suitability as small game habitat. In the Coastal Plain, the best habitat conditions were found where open habitats, like row crops and pasture, comprise 60 to 70 percent of the landscape and where woodlands or shrublands comprise 30 to 40 percent of the landscape. In the Piedmont, the most favorable areas were found where open habitats comprise 50 to 60 percent of the landscape and woodlands or shrublands comprise 40 to 50 percent of the landscape. Based on our analyses, we have established three focal areas, two in the Coastal Plain and one in the Piedmont (Figure 1). It is within these focal areas that the CURE program will be implemented.

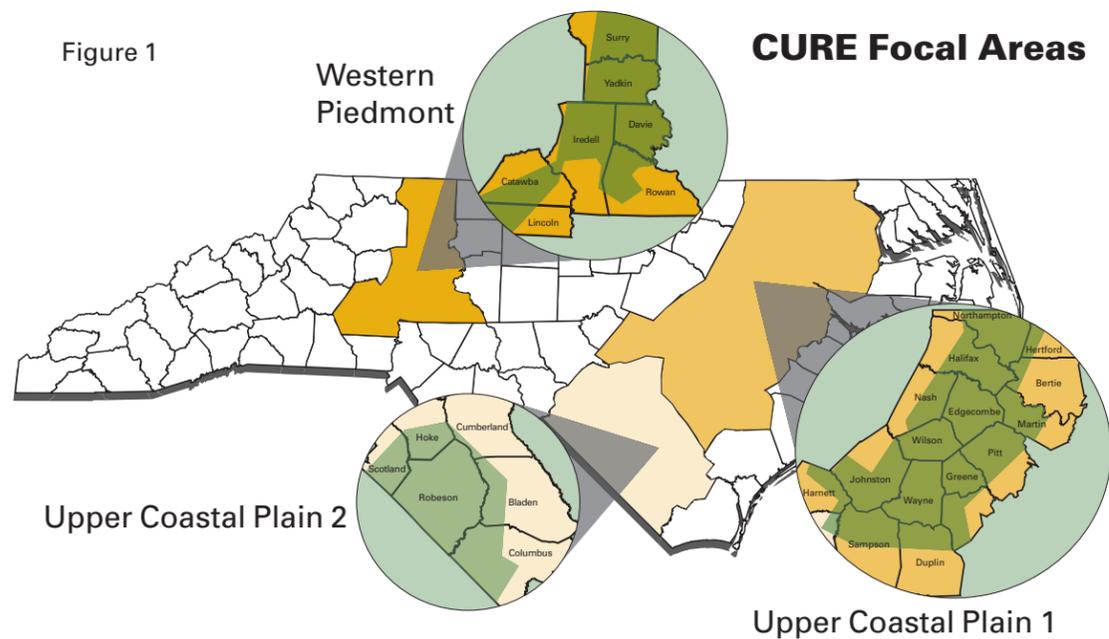
Cooperatives

Within these three focal areas, we will establish cooperatives, which are simply groups of landowners (and their farm managers) that collectively have at least 5,000 acres of land they wish to enroll in the program. Cooperatives of this size will provide large blocks of connected habitat to manage for quail and associated wildlife. Through the CURE program, Wildlife Resources Commission biologists will establish solid working relationships with private landowners to provide the following:

- **education about the need for this work,**
- **information about how to enhance and**

Continued on page 2

Figure 1



restore habitats, and assistance in implementing habitat management.

The first cooperative in the CURE program was established last spring in the Western Piedmont focal area near Turnersburg in Iredell county.

Incentives

Will the habitat management practices that enhance small game populations complement a landowner's current agricultural operation, and will they be financially positive? Most landowners or farmers will need to know the answers to these questions when they consider participating. The CURE program considers this from the outset: Once landowners enroll in a cooperative, they become eligible to receive incentives. These incentives include financial grants and technical assistance from commission biologists

in writing management plans and implementing habitat management practices.

Habitat management grants are available for land rental, vegetation control and management, forest management and fencing. All grant payment rates for these practices will be locally competitive. In addition, commission biologists will assist landowners in identifying other programs that provide funding for habitat management. In this way, the CURE program can complement other programs and provide the maximum wildlife management benefits while supplementing each landowner's current operations. In addition to providing grants and technical assistance for habitat establishment, the commission will also be monitoring the response of wildlife to habitat improvements on each cooperative.

The enrollment period for the CURE

program is five years, and each landowner must enroll by signing a memorandum of understanding with the commission. Based on feedback we have already had from landowners, we believe this program can fit into the types of agricultural operations we currently have in North Carolina. But will it be successful at restoring populations of small game and associated wildlife? That depends on how well we identify groups of landowners who see this program as feasible and have the desire to contribute toward our objectives.

The wildlife resources of North Carolina belong to all citizens, but individual landowners control most of the land on which small game populations can be improved. By involving private landowners, the CURE program is our attempt to refocus and intensify our efforts to address small game declines. The Wildlife Resources Commission approved this new approach last fall and made an initial funding allocation of \$1 million, with funding guaranteed for the first five years of the program. Ultimately, however, it will be the private landowners of our state who determine the program's success. ♦

To find out more about the CURE program, contact the commission's Division of Wildlife Management in Raleigh at (919) 733-7291.

—Dr. David T. Cobb
Chief, Division of Wildlife Management

Pass It Along...

We are working to expand our mailing list to include other interested landowners and sportsmen. Please pass along your copy to friends who may be interested. Send names of others who may find the information useful to The Upland Gazette, Division of Wildlife Management, N.C. Wildlife Resources Commission, 1722 Mail Service Center, Raleigh, NC 27699-1722

(Note: Hunters who participated in last season's Avid Quail and Grouse Hunter Survey will automatically be included in future mailings and do not need to reply.)

Name _____ Name _____
 Address _____ Address _____
 City _____ State ____ Zip ____ City _____ State ____ Zip ____



invertebrates (such as spiders, other insects and snails).

We tested the efficacy of four agricultural crops as brood habitat in terms of macro-invertebrate groups. Each set of fields contained one plot each of four field types: millet, sorghum, soybean and wheat. Macro-invertebrate biomass was determined by using human-imprinted chicks and a D-Vac vacuum sampler. Gut samples to date reveal that the greatest quantity and volume of insects eaten were in millet. Sorghum and soybean were intermediate in both respects, and wheat was poorest. ♦

—Denise Maidens, Randy Hudson and John Carroll, University of Georgia

Albany Quail Project Research: Intensively Managed Quail Plantations

THE ALBANY QUAIL PROJECT (AQP) began in 1992 on Pineland Plantation in southwest Georgia. Since then, the project has expanded in

both size and scope. Our research now involves five different plantations that make up more than 50,000 acres. The AQP is a unique combination of research, monitoring and management with two objectives: understanding bobwhite quail ecology in southwest Georgia and using this information to produce high-quality quail hunting. Our cumulative sample now includes more than 4,000 radio-tagged birds, with projects conducted on a wide range of topics—all pertaining to practical quail management and hunting.

Management and monitoring projects are ongoing in two different sites: a farming landscape and a pine woodland. We are monitoring how the quail population responds to intensive modification of the row-crop farm landscape and intensive hardwood cleanup in the woodland. The farm study area has shown a dramatic population increase over the last three years after field borders and terraces were established on all agricultural fields. Predator-trapping and supplemental feeding are also practiced on this site.

The pine woodland site has shown dramatic increases in quail populations as well after mechanical removal of hardwoods. This resulted in much better groundcover for the birds. We also believe that it has affected avian, mammalian and reptilian predators negatively. Our research experiments are currently focusing on nest predation and supplemental feeding. For more information, send us your name for

our newsletter mailing list or visit our Web site at www.quailmanagement.com. ♦

—D. Clay Sisson and H. Lee Stribling
School of Forestry and Wildlife Sciences
Auburn University

Maximize Wildlife Benefits from Loblolly Pine Plantations

MANY ACRES OF FARMLAND ACROSS the Southeast have been converted into loblolly pine plantations. While these plantations offer an economic bonanza to landowners, especially when combined with land retirement programs such as the Conservation Reserve Program (CRP) and Conservation Reserve Enhanced Program (CREP), they present a challenge to wildlife managers and landowners who want to promote healthy, diverse wildlife populations. Loblolly pine plantations quickly develop a closed canopy, and they smother low-growing plants with a dense layer of litter. This discourages the plant diversity needed to provide food and cover for wildlife.

Some pine plantations have been re-enrolled in CRP with the stipulation that they be thinned to either 300 or 500 trees per acre (tpa). During April 2001, a group of specialists visited several of these CRP pine plantations in the Piedmont to assess each plantation's health after thinning and its wildlife habitat potential: Albert Coffey, Natural Resources Conservation Services



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Avid Quail and Grouse Hunter Survey Participants Needed

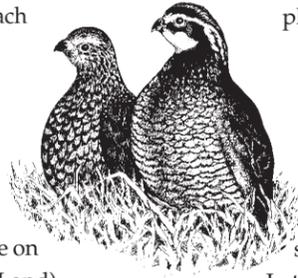
Hunters can provide us with some of our best estimates of game bird population trends. Grouse and quail hunters who may be interested in providing a short summary of their hunting efforts should contact Mike Seamster, Upland Game Bird Biologist, 791 Seamster Road, Providence, NC 27315.



Selected Game Lands to Feature Small Game Emphasis

A PORTION OF THE AUGUST 2000 Wildlife-Commission-approved Small Game Initiative proposed increased management for small game on state-owned game lands. Implementating this proposal will center around the objective of intensifying quail and small game management on selected portions of game lands owned by the N.C. Wildlife Resources Commission (as opposed to game lands managed under cooperative agreements and leases). Many of the same techniques that will be implemented on private land cooperatives enrolled in the Cooperative Upland-habitat Restoration and Enhancement program (CURE) will be used on game lands. Division staff have selected portions of four game lands to include in this management scenario: Caswell Game Land (Caswell County), Sandhills Game Land (Richmond and Scotland counties), Suggs

Mill Pond Game Land (Bladen and Cumberland counties) and South Mountains Game Land (Rutherford and Burke counties). Wildlife Resources Commission staff will select at least 5,000 acres on each of these game lands for the intensive small game work. Management plans will include forestry and field practices aimed at improving early-succession grassland habitat for quail (grouse on the South Mountains Game Land), rabbits and songbirds. This will be the same process used for managing CURE cooperatives, though the private land cooperatives will probably contain more field habitat and less woodland than game land areas. As a result, we anticipate that forestry practices will dominate small game management efforts on the game lands.



Wildlife populations and habitat changes on game land areas will be monitored with the same techniques as the CURE cooperatives. Private land cooperatives will be planned on a five-year schedule, and management practices will be implemented rapidly. Game land areas will not follow this schedule, as implementation of management practices will be spread over a longer period. In the final analysis, we will compare work done on private lands and game lands to help with our understanding of what is needed to restore populations of the wildlife that require early-succession grassland habitat. ♦

—Wib Owen, Section Manager
Division of Wildlife Management

Hunting on Young Pine Plantations

EACH FALL FOR THE PAST 25 YEARS, several friends and I have spent considerable time hunting young pine plantations in the southern Piedmont. The pine stands have always been a boom-or-bust system. As a site was harvested, we began to anticipate a short but productive period of hunting. The first fall after the site was prepared for replanting to pines by burning or disking (or both), pokeberry fruits and seeds or ragweed seed attracted doves for our annual opening-day hunt. Later, during the winter segment of dove season, a sunrise dove hunt often resulted in a limit of plump, mature birds. We regularly harvested deer from the young cuts and learned that gobblers are attracted to cuts for one or two springs to display for the hens. During the first winter, bobwhites and rabbits were usually restricted to moist soil areas where taller weeds, cane and shrubs provided cover.

By year two, the pokeberry plants were gone and the groundcover was more dense. Unless a crop field lay nearby, the dove hunting was over until the next cutting cycle. During that second winter, weed cover im-

proved on the hilltops, and a rabbit or covey of birds might show up most anywhere. My hunting buddies and I watched for clay outcrops and log landings—they often supported a volunteer stand of common lespedeza that held a covey of quail. During midday we often walked the thicker areas trying to get a shot at a deer.

The third winter found young pines peeking above the weeds, but the area was still good for quail. In many locations, the number of rabbits as well as frequency of deer use continued to increase. By year four, the bobwhites were hard to hunt because the trees made it difficult to keep up with the dog, and the turkeys tended to avoid the plantations because the cover was too dense. Although rabbit and deer use were still increasing, few openings remained that afforded a decent shot at them.

Year five was frustrating. We occasionally tried to hunt the plantations, but a log landing or bordering field edge offered the only chance for finding a covey, and the singles always disappeared into a jungle of pines and briars. Sometimes the pine stand offered another brief period of good rabbit hunting

around year 10 to 12 when the trees grew to a height that allowed us to hunt underneath them. Once the pines were too large to bird hunt and the canopy and litter smothered the rabbit cover, it was time to find a new hunting location.

So we kept moving, scouting new pine plantations for pokeberry dove hunts and young plantations with lots of natural food and cover for quail and rabbits, and places with good visibility to harvest deer or turkeys. As the years progressed, we began noticing changes in the way the plantations were prepared for planting. Site preparation with heavy disks and fire was abandoned for new technology. Herbicides, often in combination with fire, were used to control competition for the young pines. The combinations of herbicides used often still produced good pokeberry stands and dove hunts, particularly when burning was used in combination with the herbicides. The long vistas offered by the clear-cuts continued to be attractive for deer hunting, and the gobblers still used them to display for the hens each spring. But the weed and native

Continued on page 4

plant community that followed disking and burning and provided food and cover for the quail and rabbits suffered. In particular, plants in the bean family—beggar's-lice, lespedeza, and wild peas and beans—became scarce. Additionally, the new treatments failed to provide a dense, uniform weed cover, especially on poor upland soils. Where once we could count on good hunts for quail and rabbits, we now had to hunt harder to find our quarry.

Site preparation and management of young pine plantations continues to evolve based on research, availability of management tools and economics. Today, few plantations are burned or disked, so the bare ground that stimulated pokeberry and ragweed stands—and attracted doves—is gone. Many young plantations in the southern Piedmont are sprayed with herbicide the spring after planting to control herbaceous weeds. The weed development that provides food and a canopy of cover for bobwhites and rabbits is delayed. Young pines grow faster, and the weedy stage ends a year or two earlier.

Our pine plantation hunts have evolved with these changes in management. We still look forward to watching for deer in the young forest stands, chase wild turkeys around them in the spring and occasionally hear of some excellent rabbit hunting in plantations that are 3 to 6 years old. But for now, the areas we have traditionally hunted seldom offer the right environment for dove and quail hunts.

Current advances in forestry vegetation control are paralleling those that occurred during the 1970s in agriculture systems. Our young pine plantations are providing a less diverse plant community and less protective cover from weeds and grasses. As pine growth is enhanced, the productive period prior to crown closure or until the trees grow up too large for us to see our quarry becomes shorter. The lesson to be learned is this: Crude agriculture or forestry promotes plant communities that are highly favorable for wildlife. In contrast, as plant diversity declines and the cover provided by weeds and grasses is lost, some wildlife populations decline and hunting opportunities are lost as well. ♦

—Terry Sharpe
Agriculture Liaison Biologist
Division of Wildlife Management

Research Roundup

Southern Appalachian Ruffed Grouse Research

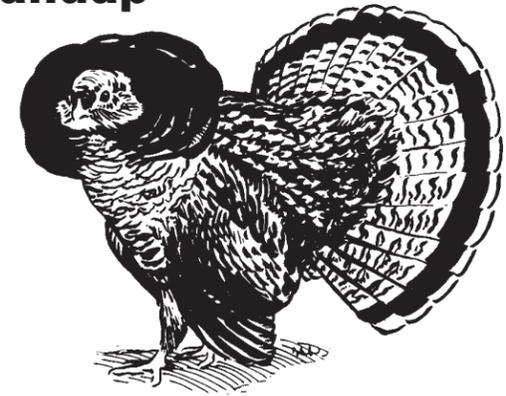
IN 1999, RESEARCHERS CRAIG HARPER AND Dave Beuhler at the University of Tennessee and Gordon Warburton with the N.C. Wildlife Resources Commission began the first comprehensive study of ruffed grouse ecology to be conducted in the mountains of western North Carolina. We designed the study to examine ruffed grouse habitat use, in particular how grouse respond to different methods of harvesting timber. Though the effect of forest management on ruffed grouse is our primary focus, we are also learning a great deal about population densities, nesting and brood ecology, drumming sites and mortality patterns.

Graduate students Carrie Schumacher and Jennifer Fettingier, along with technicians from the Wildlife Resources Commission's Andrews and Franklin crews, have captured and monitored birds for two field seasons. The following briefly describes our accomplishments through late winter 2001.

We conducted drumming surveys in the spring of 1999 and 2000 to provide estimates of population density and to locate drumming logs. The grad students found another 16 logs and took a variety of measurements associated with each log. The average drum log is located atop a ridge in an old timber stand with a dense mid-story. The key factor seems to be the laurel and rhododendron density. Favored drumming sites allow males to see horizontally while being protected from avian predators by the mid-story canopy.

We continued to catch birds for radio monitoring: 4 in the spring of 2000 and 76 in the fall. Our capture success rate was a little lower than in 1999, but we still ended up placing transmitters on 65 birds. We followed the birds on a schedule to ensure that we covered all periods of time and all radioed birds. As of January 2001, 27 of the birds with transmitters were either lost or dead.

We were able to monitor five hens that attempted to nest during the 2000 nesting season. Combined, they laid 49 eggs. Unfortunately, two of the hens were killed within a week of hatching. Of the three



remaining hens with broods, all chicks died within four weeks. Other researchers involved in the Appalachian Grouse Project, reported similar findings to us. Apparently the cold rainy weather during the period after the 2000 hatch caused low brood survival throughout the Appalachians.

Work is continuing during the 2001 field season. So far, the study has provided some valuable information that will help us manage this important game bird. We hope the final results will help us to identify in detail the important habitats of the ruffed grouse and to address the impacts of various cutting practices on these birds.

Thanks goes to the U.S. Forest Service (Coweeta Hydrologic Laboratory), the N.C. Wildlife Resources Commission, the Ruffed Grouse Society and the Department of Forestry, Fisheries and Wildlife at the University of Tennessee for providing financial and other assistance to the project. ♦

—Gordon Warburton
Supervising Wildlife Biologist
Division of Wildlife Management

Food Availability and Use by Bobwhite Quail Chicks: Four Agricultural Crops

BLOCKS OF AGRICULTURAL CROPS ARE often planted for quail management in the southeastern United States. Although usually planted for winter food and cover, some of these crops may be valuable as brood habitat. The most important feature of quality brood habitat is the abundance and availability of macro-

Continued on page 5