THE Upland GAZETTE

WILDLIFE CONSERVATION AND HABITAT MANAGEMENT

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The Value of Knowing Your Neighbors:

The Story of a Successful Quail Cooperative

By John Henry Harrelson, Technical Assistance Biologist, North Carolina Wildlife Resources Commission

JOHN HENRY HARRELSON

Ward (left) and Strickland (right) are two good friends who wanted their children to experience the thrill of the flush of a wild covey of bobwhite quail.

Countless people cut through the Columbus County back roads on their way to the beach each weekend during the summer. Most utilize Highway 410 or Highway 904 and have no idea they are driving through some of the best quail habitat in North Carolina. The habitat and quail did not end up there by mistake or without a lot of effort. And unbelievably, it all started with a $179 purchase split between two good friends.

Four years ago, Ricky Ward and Derek Strickland made the decision to do something for quail and quail habitat in the backwoods and fields where they had grown up between Whiteville and Fair Bluff. Both gentlemen were raised on the stories of countless coveys found in an afternoon and the easy limits of birds. And, like most hunters of the South, they had seen quail numbers dwindle down so low that even hearing the telltale call of a male bobwhite had become a rarity. But with that purchase of a $179 drip torch, they took a small step that turned into a giant leap for quail in the area.

The drip torch first saw action on the small farm where Derek was raised; a family farm that

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BONITA JONES

A Note from the Editor

I write these words during the heat and humidity of August while waiting expectantly for the upcoming hunting season. Cooler fall days and the best time of the year are just ahead. North Carolina is blessed with a wide variety of hunting opportunities in a variety of habitats. Starting with dove hunting in September, North Carolinians can pursue bear, deer, ducks, furbearers, geese, quail, rabbits, rails and marsh birds, squirrels, woodcock, and other species through the end of February. Then, after a month-long break, turkey hunting kicks off next April. Our state is also blessed with a wide variety of habitats. From the coastal marshes and swamps through the Piedmont hills and forests to the high mountains in the western part of the state, North Carolina has a diversity of landscapes matched by few states east of the Mississippi River.

All of this bounty results from a commitment by North Carolina sportsmen, landowners, and a variety of state and federal agencies to manage our state's wildlife resources. In today's world full of bad news, it is important to realize there is much to be happy about with our game populations. There are certainly exceptions, like bobwhite quail (and we are even making limited progress there), but many if not most of our game populations are thriving. Habitat is the key for any species, and there is still a lot of work to do to provide habitat for the declining numbers of quail and many non-game species. However, I think we should also take the time to appreciate the status of most of our hunted species and realize these are the good ole days for many of them. If you are a wildlife enthusiast in North Carolina, get out and enjoy what the state has to offer this fall and be thankful for that good news.

Mark D. Jones

Supervising Wildlife Biologist
Private Lands Wildlife Habitat Group

BENJY STROPE

The duo started talking and networking with surrounding landowners, farmers, loggers, and hunters spreading the word about how quail had responded to the recent heavy thinning and fire.

dates back to the late 1800s. The family farm, like most farms in the area, had once been home to multiple coveys of birds, but those had been reduced to a single covey by 2010 when their initial efforts began. The guys had been educating themselves on how to resurrect quail and found that prescribed fire was always recommended as a key management tool, especially in upland pine habitats. They decided to test the validity of the research and management recommendations on a recent, heavily-thinned loblolly pine stand. They were impressed by the vegetation response and more importantly by the quail which began using the stand the summer following their spring burn.

The duo started talking and networking with surrounding landowners, farmers, loggers, and hunters spreading the word about how quail had responded to the recent heavy thinning and fire. It wasn't long before the folks at Enzor farms were interested in having a prescribed burn on a small tract of plantation pines. Enzor farms is one of the larger farming operations in Columbus County. By the time burning season came around in 2011, the word had spread and some surrounding landowners were interested in thinning their pine stands and putting fire back on the landscape.

As local landowners and farmers became more interested in restoring quail and quail habitat, interest also increased from wildlife and forestry professionals. Gary Peters, Regional Wildlife Biologist with the National Wild Turkey Federation (NWTF), became involved offering technical guidance and wildlife/forestry management plans for those who were interested. Some of those plans led to federal and state cost share for tree planting, prescribed burning, and firebreak implementation projects. The Columbus County office of the North Carolina Forest Service (NCFS) became aware of landowner efforts and began providing technical guidance through management plans and assistance with implementing prescribed fire. NWTF and NCFS furthered implementing the efforts of Ward and Strickland, and a local landowner quail cooperative developed.

Fast forward through another two years of hard work, long hours, pinching pennies, and a lot of fire being placed on the ground. What started out on one small farm and one prescribed burn for a neighboring landowner has morphed into a 4,100 acre cooperative. The Wildlife Resource Commission even took notice by expanding the Southeastern Focal Area (SEFA, originally only Bladen, Cumberland, Duplin, and Sampson Counties) to include Columbus County. SEFA is our premier area for early successional habitat. We offer technical assistance for landowners regarding longleaf planting, prescribed burning, native grass planting, wildlife friendly timber thinning, and creating early successional habitat.

And now, it's about more than just quail. Ward and Strickland, along with a few other enthusiasts, formed Lumber River Outdoors which specializes in helping kids, Wounded Warriors, and the less-fortunate experience the outdoors. Deer hunts, where all the meat is donated to local food banks, youth turkey hunts, Wounded Warrior turkey hunts, youth deer hunts, and youth raccoon hunts have all taken place over the last year on cooperative farms. During the upcoming deer season, a county-wide deer donation drive is planned. Plans are to urge landowners and hunters to harvest deer and donate the meat to Hunters for the Hungry.

The work never ends for these guys. Today, after multiple successful prescribed fires on the Strickland farm, disking of fallow fields, planting food plots, and encouraging early successional habitat, the farm is now home to at least five coveys of quail. Continuing their efforts, Ward and Strickland just applied for enrollment in the Conservation Reserve Program (CRP) and are planning to plant longleaf pine along with a mix of native grasses and forbs that will serve as a critical link between two areas of existing habitat. Ward and Strickland are always trying to diversify habitat, increase their influence on surrounding farms, and see quail flourish in Columbus County. So the next time you are on your way to Myrtle Beach and are cutting through Chadbourn, Cerro Gordo, or Fair Bluff, roll your windows down and listen for that sound of summer, the whistle of the bobwhite quail. Two local guys have proven what can be done to improve bobwhite quail habitat through hard work, persistence, and working with your neighbors.

So, Coyotes Do Eat Deer

The Question is: Should We Panic?

M. Colter Chitwood and Marcus A. Lashley, Postdoctoral Research Scholars, and Christopher E. Moorman and Christopher S. DePerno, Professors

Fisheries, Wildlife, and Conservation Biology Program, North Carolina State University

We know coyotes eat deer in North Carolina, but we are less certain about the effects coyotes have on deer reproduction and population growth. Hunters and managers may be aware of recent studies identifying coyotes as important predators of white-tailed deer fawns, but the influence of coyotes on deer populations in North Carolina has not been studied. Therefore, we conducted a study on the causes of fawn mortality at Fort Bragg Military Installation in central North Carolina in 2011 and 2012. Fort Bragg's deer population has declined since the early 1990s, and this corresponds to the establishment of coyotes on the base. Given that deer are an important species for hunters, Fort Bragg wildlife managers were interested in the extent to which coyotes were contributing to the declining deer population. At a larger scale, our research was useful for examining the coyote-deer dynamic in an unstudied area of the Southeast. At a smaller scale, we were examining this issue in the largest contiguous tract of longleaf pine-wiregrass ecosystem remaining in North Carolina.

We captured pregnant adult deer in winter and spring. Each pregnant female received a radiocollar and vaginal-implant transmitter

Though deer hunters have long claimed that coyotes were killing adult deer, our study was the first to scientifically document its occurrence in the region.

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(VIT), so we could keep track of her location, as well as when and where she gave birth. The VITs are designed to send a signal that changes once it is expelled from a doe's body, presumably at a birth site. Extensive research has shown this technique poses no threat to the female's reproductive tract or to the newborn fawns. However, it is incredibly valuable for locating birth sites immediately after a female gives birth. Once at a birth site, we deployed expandable, breakaway radiocollars on the hours-old fawns. The collars are designed to allow for growth of the fawn's neck and ultimately break off 6–12 months later. We tracked the fawns through 16 weeks of age to measure their survival rate and identify causes of mortality. Using the motion-sensitive mortality switch on the collar, we were able to detect mortality events to determine cause of death. We used field evidence and DNA swabs of remains and collars to determine which predators caused mortalities. If you have ever watched CSI, then you have seen how investigators look for clues at the scene of the crime. Essentially, we did the same thing at fawn mortality sites. For more details, watch this interview conducted by the Quality Deer Management Association (http://www.qdma.com/videos/csi-what-killed-this-fawn).

COLTER CHITWOOD

Graduate student Colter Chitwood with one of the white-tailed deer fawns collared during his research study.

We radiocollared 65 fawns in May and June of 2011 and 2012. In 34 known births, we documented 23 twin sets and 10 singletons as well as one set of triplets. Though twins are common, triplets are rare unless deer density is balanced with habitat quality. The sex ratio from litters of known size was slightly biased toward males (53%). The average date of birth was 28 May in 2011 and 1 June in 2012. The earliest births were 12 and 15 May in 2011 and 2012, respectively. The latest births were 23 and 15 June in 2011 and 2012, respectively. Assuming a 200-day gestation period, our fawn births indicate peak breeding at Fort Bragg occurred the second week of November and ranged from as early as 24 October to as late as 5 December.

Overall 16-week survival for fawns at Fort Bragg was 14% which is the lowest survival rate reported in the southeastern United States. Nine of 65 fawns made it through the end of the study, and one fawn was removed from analyses due to collar failure. Of 55 mortalities, the leading cause of death was predation (35), followed by starvation (16), unknown (non-predatory, non-starvation; 3), and vehicle collision (1). Of the 35 predation events, coyotes were responsible for 30 (86%), and bobcats were responsible for five (14%). Considering all sources of mortality, coyotes were responsible for 55%. To state it another way, coyotes killed about one-half of all fawns born.

Survival was lowest in the first week of life (about 50%) but increased thereafter. All starvations occurred in the first week (usually the first 2–3 days) because that is when adult females might choose to abandon their young if milk production is poor or fawns are too weak to nurse. Conversely, predation occurred in every week through week seven. We detected a single predation, attributed to a bobcat, in week seven. Only one fawn was killed after week seven, and it was killed by a coyote during week 10.

During the course of monitoring our adult female deer with VITs in 2011, we detected four mortalities. Based on field and DNA evidence, we attributed all four to coyotes. Though deer hunters have long claimed that coyotes were killing adult deer, our study was the first to scientifically document its occurrence in the region. Because three of the females were pregnant at the times of their death in May, we speculate they represented vulnerable targets to coyotes. Though our observations are novel and of interest to deer hunters and managers, the extent to which coyote predation impacts adult deer survival in other areas of the Southeast is still unknown.

We already knew that coyotes eat deer, so we do not believe the substantial predation levels that we documented call for panic; at least in most places. In areas where deer are overabundant, and hunting cannot reduce numbers to low enough levels, coyotes will be a deer manager's and a farmer's best friend. However, low rates of fawn survival coupled with the potential for coyotes to kill adult females could be a cause for concern in other areas. For example, where deer populations are below target, coyote impacts on fawn survival and recruitment could make it difficult for managers to stabilize or increase the population through harvest management alone.

If coyotes become adept at killing adult deer, it is possible managers will need to seriously consider population-level effects. In the meantime, hunters and managers should act wisely when coyote predation appears to be impacting fawn recruitment. Reducing antlerless harvest is a logical first step compared to coyote trapping and removal which is costly, time-consuming, and unproven in its effectiveness. In fact, a recent three year coyote removal study in South Carolina demonstrated that benefits to fawn survival were highly variable across years. In one year, coyote removals failed to improve fawn survival at all, while in another fawn survival doubled. This means that wildlife managers can control the trigger-fingers of hunters much more easily and effectively than they can implement an aggressive coyote removal campaign. There are still many unanswered questions about the impacts of coyotes on deer, and it is important that additional research be implemented to continue to sort out the relationships between these species.

Prescribed Fire: Devastation and Renewal

By Mark D. Jones, Supervising Wildlife Biologist,
North Carolina Wildlife Resources Commission
Photos by the Author

The general public perceives fire on the landscape as scary and something to be avoided at all costs. However, the benefits of prescribed fire for many of our native plants and animals are becoming increasingly known. Despite this awareness, many people still have trepidation when the use of fire is mentioned as a habitat management tool. The following series of photos shows the awesome power of prescribed fire. But these photos also show how animals and plants can respond to fire and emerge better, stronger, and rejuvenated.

This Craven County fire was set early one February afternoon on 95 acres of previously burned woodlands and fields of native grass.

Unknowing observers commented on the destruction of acres of grass and cover.

Following the fire, very little cover was left standing. Fortunately, the native grasses and other plants managed on this area are well adapted to fire and sure to respond.

Four resident deer leave one forested stand ahead of the fire.

As the deer approach the photographer, they make a hard turn and exit the area being burned.

The athletic ability of a deer is one of nature's most awesome sights.

Native grasses, forbs, and wildflowers are well adapted to and thrive in a management regime of frequent prescribed fire.

Bobwhite quail and early successional songbirds require habitat comprised of native grasses, briars, shrubs, and forbs. To sustain this required habitat in a forested setting, approximately 50% of the forest understory should receive sunlight to allow these plants to grow. Most modern forestry management regimes do not reduce stand density enough to allow for quality early succession habitat. Optimal habitat requires thinning to basal areas below 50 square feet per acre in most circumstances. This thinning should be coupled with prescribed fire on a 2-3 year rotation.

Less than three months after the fire, deer and other wildlife are already benefiting from the effects of the fire which include lush regrowth of nutritious forage.

A Quail's Tale

Using Radio-transmitted Northern Bobwhites to Better Understand the Benefits of Habitat Management

By Andy Richardson, Graduate Research Assistant, and Chris Moorman, Professor, Fisheries, Wildlife, and Conservation Biology Program, North Carolina State University

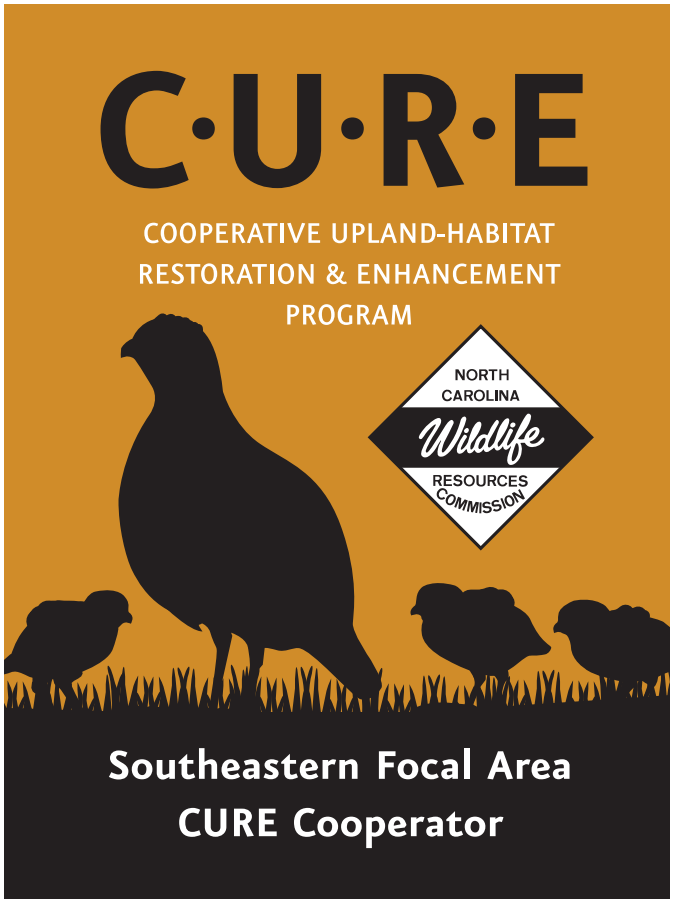
Benjy Strope, Technical Assistance Biologist, and Mark Jones, Supervising Wildlife Biologist, North Carolina Wildlife Resources Commission

In the northeast part of Bladen County, lies a 4,300-acre swine farm situated among other agribusinesses and timberland. This farm, known as the Ammon Complex or Holmes Farm, is owned by Murphy-Brown, LLC and is one of the shining stars of the CURE (Cooperative Upland habitat Restoration and Enhancement) Program. CURE is administered by the North Carolina Wildlife Resources Commission (NCWRC) with the goal of creating and managing early successional vegetation and protecting or improving water quality. Since 2008, because of its success on the Ammon Complex, the CURE Program has spread to several other farms in Bladen, Duplin, and Sampson counties. This program has provided an excellent opportunity for NCWRC biologists to learn how northern bobwhite populations differ in the managed, high-quality cover now found on these farms compared to unmanaged, low-quality cover commonly found on surrounding landscapes. To take advantage of this opportunity, NCWRC, the North Carolina Department of Justice, and North Carolina State University partnered to begin a 2-year investigation of how northern bobwhites are using CURE-managed land for movement, year-round foraging, predator avoidance, nesting, and brood rearing.

During the first year of the study (2014), we focused efforts on two CURE enrolled farms, the Ammon Complex and a smaller Duplin County farm. The Ammon Complex consists of row crops, pasture

Quail transmitters are about the size of a quarter and weigh only 1/5 of an ounce.

BRITT BROWN



land, timberland, and swine facilities. The farm has 136 acres of field borders on 1,500 acres of row crops plus 53 acres of fallow areas. In addition to borders and fallow areas, 44 acres of native warm-season grasses and forbs and 120 acres of longleaf pines have been planted. The CURE acres were established on the Ammon Complex in 2006 and managed intensively since then to maintain and improve the early successional cover. The Duplin County farm, which is also owned by Murphy-Brown, is a 420-acre farm consisting of 81 acres of row crops, 71 acres of pasture, and 191 acres of woodlands. This farm had seven acres of field borders which were installed in 2010, but overall the area is not considered quality habitat. This allowed comparisons to the better Ammon Complex.

Beginning in February 2014, we captured 118 wild bobwhites over the course of two months. We used wire funnel traps baited with soybeans to capture birds. Quail entered the traps through a wire funnel at one end that allows them easy access into the trap, but the funnel makes it difficult to exit the trap. Each newly captured quail was aged, sexed, weighed, banded with an aluminum numerical leg band, fitted with a small pendant radio transmitter, and then released at the capture site. The transmitters were roughly the size of a quarter with a very thin antenna that lies across the bird's back. Transmitters attach around the bird's neck with a woven string and are light enough, only 0.2 ounces, to allow the bird to both fly and move properly. Each transmitter has a specific radio frequency that emits a beeping signal for up to 11 months allowing us to follow and mark the location of each individual using a specially tuned receiver and GPS. If the bird does not move for 12 consecutive hours, the signal switches to "mortality" mode that beeps at double the rate of the normal signal allowing us to quickly determine when a bird is dead.

We gathered more than 3,600 telemetry locations by tracking individual bobwhites from March through July. During this time period, 74 of the original 118 birds died. Predation was the most common cause of death with raptors (i.e., hawks and owls) responsible for 41%, mammals responsible for 30%, and unknown predators responsible for 24% of the total mortality. These numbers may seem high, but it has been regularly documented throughout their range that the average life span of a bobwhite is only 8-9 months, and annual mortality rates often climb over 80%. Given these high mortality rates, bobwhites are able to keep their population stable in good habitat (appropriate nesting and brooding cover) by producing a large number of young.

We located 35 nests between late May and late July. We found 29 nests in CURE managed areas, 3 nests directly adjacent to CURE habitat areas, and 3 nests in wooded locations off of managed property. Nests were predominantly constructed from broomsedge, mully grass, pine straw, or thatch under blackberry plants. Nest clutch sizes ranged anywhere from 9 to 23 eggs. Of the 35 nests, 13 successfully hatched, 3 were abandoned prior to laying eggs, 5 failed due to the incubating adult being killed by predators, 10 failed due to nest depredation, and 4 were still being incubated at the time this article was written. The 13 successful nests produced 151 hatchlings. Bobwhites are somewhat unique in that both the male and female can assume the sole duty of incubating the nest allowing the other individual in the pair the opportunity to find another mate and immediately nest again. Of the 35 nests we located and monitored, 20 were incubated solely by the female, 13 were incubated solely by the male, and 2 were incubated by both sexes. Although the most intense period of field work ended in late July, we will continue to periodically monitor collared individuals through the fall to document any additional nest attempts as well as fall movements that occur as birds form coveys for the winter.

We will compile the telemetry data to create detailed home range maps for each individual bobwhite and to determine how and when bobwhites used the CURE managed areas (i.e., did they use them for winter cover, for moving across the landscape, for nesting, for brood rearing, for other purposes?). We will use statistical models to investigate how the CURE population differs from the population located in the lower quality landscape by looking at differences in survival, reproduction, and movement throughout the year. We hope to capture and monitor roughly the same number of birds again in 2015. All findings from both years will be compiled in a final report to NCWRC, and this should help guide management decisions on CURE properties in the future. There are many exciting things to learn from this work, and we hope to report back to *Upland Gazette* readers in the near future with more information.

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