TALL TIMBERS Quail Call

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Inside

Quail populations 2004-2005: hawks and hurricanes

Relative to 2003, bobwhite populations are down in the Red Hills area approximately 10 to 30%, depending on the area. We attribute the decline to a relatively poor nesting season in 2004 as a result of dry conditions after burning and then heavy rains and wet conditions related to the hurricanes during July and August. Rainfall amounts varied considerably across Tallahassee and Thomasville, which may have caused some local variation in bobwhite production. In addition to less than perfect weather for bobwhite chicks, adult bobwhites experienced heavy losses to hawks during the breeding season as compared to previous years. To contrast, survival of adults during April through September of 2002, when bobwhites had a bumper hatch, was 60%; the survival this year was roughly 30% or less. Typically, bobwhites experience a period of high mortality during early March through mid-April. However, this year high mortality continued through June. The poor habitat conditions, as a result of the dry spring combined with low cotton rat and cotton mice numbers, likely exacerbated predation of quail by hawks. Because of low survival during March through June, fewer hens were available during the late season to nest, and therefore, the late hatch we experienced did not produce enough chicks to avoid a decline.

Update on predation project: turning the corner

By Bill Palmer and Clay Sisson (Albany Quail Project)

Four years ago, we embarked on a cooperative six-year project to investigate effects of predation management on bobwhite populations. This project, now in its fifth year, is a joint project with Auburn University, Tall Timbers Research Station, University of Georgia (UGA), and USDA-Georgia Wildlife Services. This project was designed to determine if reducing abundance of nest predators, including raccoons, opossums, bobcats, armadillos, and coyotes, during the nesting season of bobwhites affected bobwhite populations on large areas of good habitat. For this project we chose two pairs of study areas, a pair near Albany and a pair between Thomasville and Tallahassee. It is important to note that based on previous telemetry studies and estimates of predator abundance, both of these pairs of study areas had a history of relatively high predator abundance. For the first three years of the study, only one study area from each pair received predator removal treatments (all trapping was conducted by Georgia-Wildlife Services personnel). Then, after three years (in 2004), we switched the predator removal treatments to the other study area of each pair. While the study remains incomplete (a graduate student at UGA will be fully analyzing the data from this project), the results provide some insights into how predation management, like supplemental feeding, helps to reduce annual variation in bobwhite populations. We would like to take this opportunity to thank all the owners, managers, field crews and cooperators that have worked hard to make this project possible.

Red Hills study sites

Pebble Hill Plantation and Tall Timbers Research Station served as the pair of study areas in the Red Hills. On these study sites, we have also included a supplemental feeding treatment. That is, on half of each of these sites, we spread supplemental feed year round. The reason we did this was to gain better understanding of how important, or not, each

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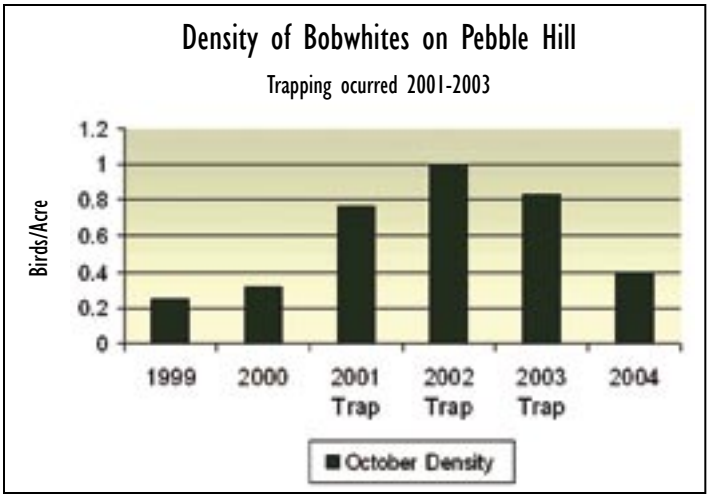
of these techniques were and if they had a synergistic effect on bobwhite populations. Before any predator removals occurred, bobwhites on Pebble Hill consistently had low chick production from a combination of low nesting, low nest success, and low adult survival. From 2001 and 2003, Wildlife Services personnel removed around 300 nest predators per year, mostly opossums, raccoons and armadillos, from this study area. This resulted in an increase in all the measured reproductive parameters. Nesting success nearly doubled from a pre-treatment average 36% to a 3-year average of 58%. The number of hatched nests per radio-tagged hen doubled from a pre-trapping average of 0.16 nests per hen to a 3-year average of 0.37 nests per hen. Most importantly, the fall population increased 3-fold. In 2004, trapping was stopped on Pebble Hill and switched to Tall Timbers. On Pebble Hill, reproductive output declined to nearly identical levels measured before the trapping occurred. The result of this poor production was that the quail population declined to about where it was before trapping occurred, or a 55% decline from 2003 to 2004 on both fed and unfed sites.

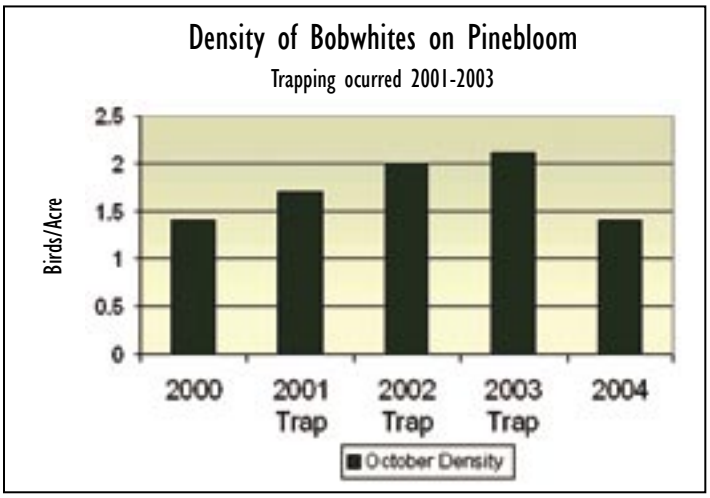


During 2001-2003, when Tall Timbers served as a control site, the quail population grew slightly (25% increase from 1999-2000 levels versus 3-fold on Pebble Hill during the same period) and populations varied considerably from year to year. In 2004, wildlife services personnel removed just under 600 nest predators from Tall Timbers. Our population declined 25% overall from 2004, but most of this decline occurred on the portion not receiving supplemental feed. On the portion with both predator removal and supplemental feeding occurred, the population remained the same as in 2003.

The important take home message is that despite multiple hurricanes and severe drought during the early nesting season, our quail population on Tall Timbers did not decline precipitously where habitat management, predation management, and supplemental feeding occurred simultaneously. On portions of Pebble Hill, where just supplemental feeding occurred, or portions of Tall Timbers, where just predation management occurred, we experienced population declines on the order of 30 to 50%! Therefore, you manage for the worst of times and hope for the best of times to maintain high (> 1.5 birds/acre) bobwhite populations.

Albany study sites

Pinebloom Plantation provided the study sites in the Albany area. Telemetry data and predator census prior to the beginning of the removal study had demonstrated this property to be experiencing low reproductive output from quail and as having high nest predator abundance. This property was large enough (12,000 acres) so that a pair of 5,000-acre study sites was established here with a buffer in between. These were named simply the "Front and Back sites". During the first three years of the study, about 400 potential nest predators were removed from the Front site each year. This reduced the predator index on this site by approximately 70% and resulted in an increase in all the measured reproductive parameters. Nests per hen increased from 0.55 to 0.89, nesting success increased from 41% to 59%, and broods hatched per hen increased from 0.25 to 0.50. The quail population increased on this site each of the three years it was trapped so that at the end of the three years there were 2.1 birds/acre on this Front site. The Back site received no trapping the first three years and showed very little change in the Predator Index or any of the reproductive parameters measured. At the end of the three years the quail density on the Back site was unchanged at approximately 0.8 birds/acre.



As the treatments were switched in 2004, things began to change. On the 5,000-acre Back site (which had not been trapped the previous three years) over 700 potential nest predators were removed! While this resulted in a significant decrease in the Predator Index, it was still not as low as the Front site had been during the three years it was trapped. We believe this is due to the large numbers of predators there

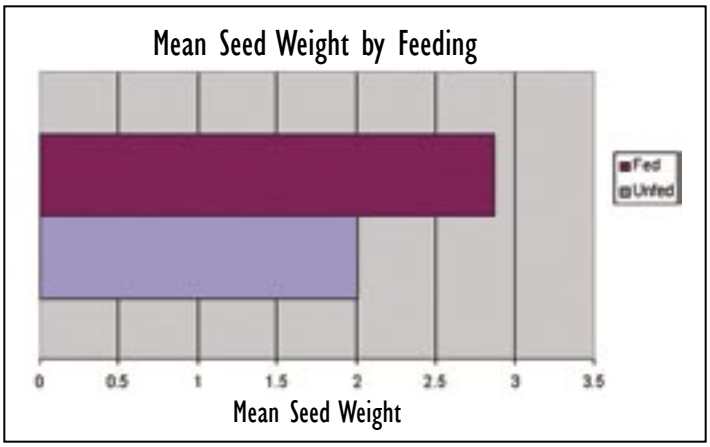
Albany study sites – continued on page 3

Supplemental feeding: what quail eat

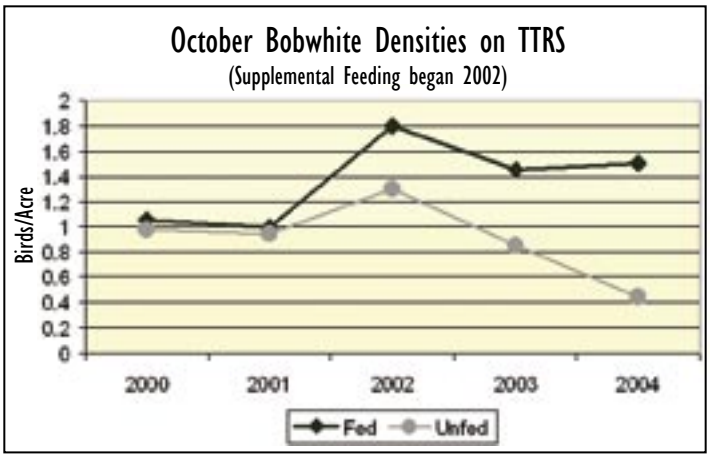
We collected quail crops on Tall Timbers and Pebble Hill to determine food habitats of birds on areas with a supplemental feeding program and those without. The two graphs below indicate the types and amount of feed bobwhites utilized on these areas. On our fed areas, we spread sorghum (milo) every two weeks, year round on feed trails through the open woods.

Not surprisingly milo was the most important food item on fed sites. Partridge pea was most important on unfed sites. This is an important distinction because partridge pea provides poor nutrition to bobwhites relative to grains. Other important foods were acorns, pine mast, butterfly pea (Centrosema), milk pea (Galactia), and lespedeza seeds.

Crop contents of birds on fed sites had about 50% more food (dry weight) than crops on unfed sites, and because of differences in digestibility between milo and native foods, the difference in energy available to the birds would be even greater. We cannot stress enough the importance of maintaining a quality feeding program year round. On Tall Timbers, our feeding program has made a noticeable difference in increasing nesting, survival, and populations. Notice on the graph below that since feeding began in 2001, the separation between the fed and unfed area has steadily increased. This was because the fed area has avoided large drops in populations whereas the unfed site has seen substantial declines the past two years.



On average, crop weights of bobwhites studied in January/February 2002 and 2003 were greater on fed versus unfed areas. (Crop analysis by Ryan Whitelaw, University of Georgia)



Bobwhite densities on Tall Timbers Research Station. The black line indicates bobwhite populations since 2000 on a 1000-acre area that is supplemented with sorghum every two weeks, year round. The gray line indicates bobwhite densities on a 1000-acre area that was not fed.

Albany study sites – continued from page 2

to begin with, the type of neighboring property on this site (mostly swamp and young planted pines), and the difficulty in reducing that large a number in only one year. On the Front site, after having a very low Index for three years, the nest predator population rebounded in only one year to be almost as high as it was before it was trapped for three years! This resulted in a sharp decline in the reproductive success on this site and a decline in the quail population from 2.1 down to 1.5 birds/acre. The Back of the place had improved reproductive performance in 2004 and actually out produced the Front for the first time in 6 years. This resulted in a population increase from 0.8 to 1.1 birds/acre. While this is early in the "cross over" portion of the study, it is certainly interesting and sheds some light onto how fast nest predators can repopulate an area after trapping is stopped. It will be interesting to see what happens on these sites during the last two years of the study.

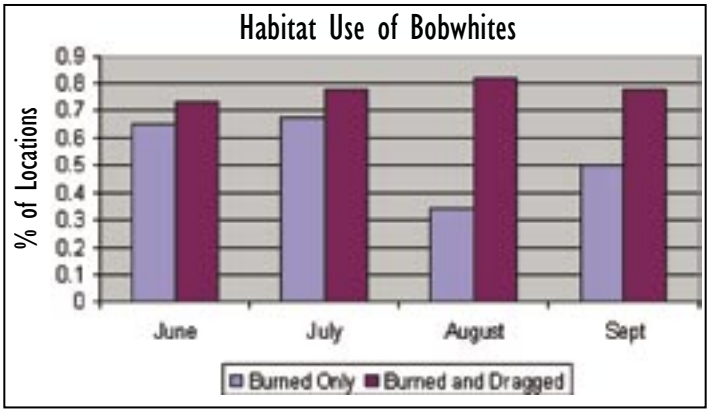
Summary

Sustaining quail populations in the Red Hills and Albany depends on maintaining large blocks of good habitat. By good habitat we mean maintenance of timber at appropriate densities, control of invasive hardwoods in the uplands, proper placement and management of fields as brood habitat, and burning at the appropriate frequency and scale. When everything is done correctly, bobwhite populations still fluctuate because of other factors, such as weather, food supplies and predation. This study continues for two more years and the results of the study may vary from the previous four. However at this point, the key take home message is habitat is necessary to have bobwhite populations in the first place, but it is not always sufficient to maintain high quail populations through time. This is where supplemental feeding and predation management, if necessary, are critically important to avoiding large declines. Collectively, these management techniques help maintain quail populations through bad years and help make bumper years all the better.

Herschel drag

On Sunny Hill Plantation, we monitored how bobwhite habitat use responded to areas burned normally versus areas burned and dragged. We were interested in simulating the soil disturbance achieved by a timber harvest, especially a hardwood harvest where trees are dragged to central locations for de-limbing and loading. Sunny Hill burned and dragged approximately one quarter of our long-term study area, where as other portions received live oak removal, and the remainder was burned as normal. This study was not replicated, but it provided an opportunity to observe if dragged areas were strongly used or avoided.

The early results are generally promising but additional study is needed to support these findings. Birds originally radio-tagged in the dragged areas, remained in those areas throughout the summer months, although they used unburned patches until the groundcover recovered. Other bobwhites, originally captured on the edges of the burned and dragged areas, moved onto this portion of the study area during late summer. During July – September, the dragged areas received proportionally more use than areas just burned. Finally, our broods were found in areas dragged and burned. The dragged areas had less debris and were less rank than areas just burned or not burned at all, and this may be why bobwhites were attracted to them. At this time, we don't recommend dragging too much area, but rather providing 3-5 acre patches scattered in areas where your management goal includes increasing weeds over grasses. In some soils, where broomsedge is very thick, more widespread use of dragging may be appropriate.



Percent of locations of radio-tagged birds on the study area using areas receiving a burn the previous spring, and areas both burned and dragged with the Herschel Drag.

A simple drag built from tracks and attached using a cable, and below, a drag fitted to a 3-point hitch.

More study needs to be completed on how the drag fits into management of quail habitats in the Red Hills, Albany, Alabama, and South Carolina, where it is currently being tested. The original design, while working well in burned areas, did not create the level of soil disturbance found in a hardwood removal. Innovative quail managers have begun to modify to original design of the drag, including adding spikes or cutting blades to the front of the bar to create more disturbance and attaching the drag to 3-point hitches to be able to lift the drag when needed.

Quail Research Initiative

Tall Timbers has a long and rich tradition of leadership in quail research. Beginning with Herbert Stoddard's first study of quail life history nearly 75 years ago, Tall Timbers has led the charge to gain new knowledge that can be used to improve quail management. In 1994, Tall Timbers embarked on an ambitious three-year initiative to help accelerate funding for the future of the Game Bird Program. Because of its overwhelming success in generating new interest and support for the Game Bird Program, the Quail Research Initiative (QRI) is now a long-term research and conservation program and serves as the nucleus for the funding of quail research at Tall Timbers. Since its inception, QRI has been able to leverage the amount of dollars raised with outside financial assistance. The Game Bird Program is able to match annual contributions to QRI with grants to increase the size and scope of quail research at Tall Timbers three-fold!

The Game Bird Program continues to be an innovative leader in the research and management of bobwhites, and serves as an important resource for those who value the future of sustainable populations of wild birds. Once again, our QRI fundraising goal is $250,000 for 2005. We hope you will consider making a contribution to QRI along with your annual membership gift. Contributions earmarked for QRI are used specifically for the Game Bird Program and the research projects contained within it. If you love these birds as much as we do, please take a moment to fill out the enclosed envelope and mail it today, or visit our website at www.talltimbers.org and make your QRI gift online.

Thank you for your continued support of Tall Timbers and quail research!

2004-2005 Game Bird Research Team

William E. Palmer, PhD, Robert C. Balfour, Jr. Game Bird Management Research Fellow
Shane Wellendorf, MS, Biologist
Ronald E. Masters, PhD, Director of Research
Eric Staller, MS, Natural Resources Coordinator

Research Associates

L. Wes Burger, PhD, Tall Timbers Board of Trustees, Mississippi State University
John Carroll, PhD, University of Georgia

Graduate Students

Dave Butler, PhD Candidate, John Moores University, Liverpool, UK
Brant Faircloth, PhD Candidate, University of Georgia
James Martin, PhD Candidate, University of Georgia
Tina Hannon, University of Georgia
Mike Juhan, University of Georgia
Ian Little, University of Cape Town, Cape Town, South Africa
Kim Sash, University of Georgia
Seth Stapleton, University of Georgia
Teresa Valentine, University of Georgia

Research Technicians

Mike Blondin
Randy Cass
Rob Olson
Shane Roethle

Research Interns

Travis Bowman
Sara Fritts
Bob Hromaek
Aidan Keane
Vanessa Logsdon
Jessica Murdock
Jessica Norton
Sara Ruane
Andy Rush

Volunteers

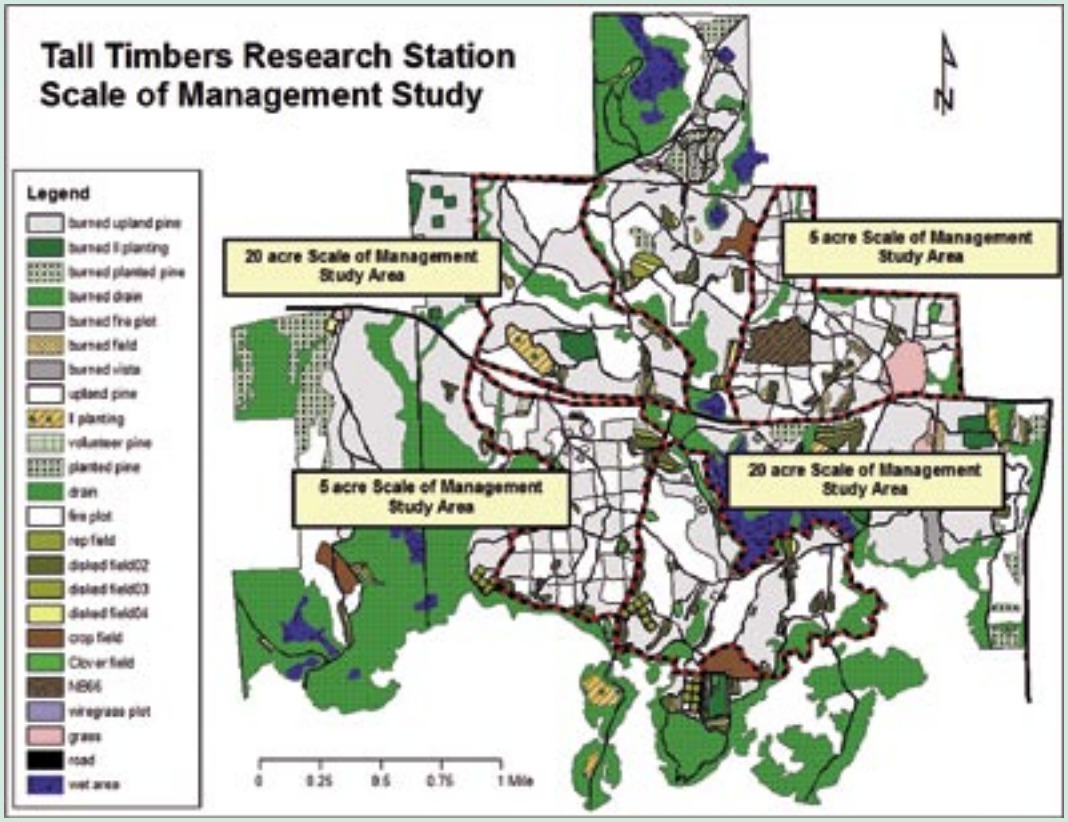
Carl Enis

Research technician, Mike Blondin, releases a bobwhite after it has been tagged with a radio transmitor. Photo by Shane Wellendorf.

Game Bird Program receives gift for research project

The Joseph H. Thompson Fund committed $50,000 for the Bobwhite Quail Scale of Management Research Study on Tall Timbers Research Station. We are grateful for this very generous gift given in memory of Joseph H. and Elizabeth Lacey Thompson by their grandchildren.

This project will allow us to determine how burning at small versus larger patches affects bobwhite habitat use, survival and reproductive success. We are also monitoring how these types of burning regimes affect rodent populations. We hope this work will help to determine optimum patch size for management of bobwhite quail.



Tall Timbers Research Station
13093 Henry Beadel Drive
Tallahassee, FL 32312-0918
850/893-4153
850/893-6470 FAX
EMAIL: bill@ttrs.org
www.talltimbers.org

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