



# Quail Call



## Outstanding Hatch Predicts Great Hunting Season

All signs point to an excellent hatch this year. We monitored nesting of 496 bobwhites this summer. Nesting began early in April and continued to October – nearly 7 months of constant nesting! On Tall Timbers Research Station, we had our first documented case of a hen hatching 3 clutches in a single season. Comparing this year's results to the severe drought of 1998, nest production of hens and incubation by males was nearly two times greater than in 1998!

We attribute this excellent nesting season to three factors. First, while weather conditions were



generally dry, scattered rainfall through the summer produced excellent nesting and brooding habitat. Second, managers wisely burned less than normal in 1999 in preparation for another dry year. This careful planning provided ample cover for the birds. Third, feeding programs through the nesting season particularly helped to increase production. Look for covey finds to be up from last year!

## Feeding Studies Continue To Provide Insights

Last year, we documented increased nesting success when quail were provided with supplemental feed throughout the nesting season. This year, we compared nest production of hens on 3 different areas with a supplemental feeding program to 3 areas not provided with supplemental feed (reference sites). This study occurred on Tall Timbers Research Station and Pebble Hill Plantation. The feeding program consisted of spreading one bushel of milo per 15 acres every two weeks between March and June and once per month from June through September. In addition to spreading feed,



Adult quail feeding on corn.

we maintained one feeder per 10 acres using a combination of a commercial "laying diet" and milo mixed 50-50. Here are the results from this year's feeding experiment:

1. Hens on fed sites began nesting nearly one month earlier than hens on reference sites. This resulted in the number of incubated nests on fed areas outnumbering the number of nests on reference sites by 18 to 1 by the end of May! This increased early nest production is critical to increasing quail populations.

2. Quail provided supplemental feed survived from March to September at a rate that was two times higher than quail on reference sites. This

## INSIDE

Field Borders in and Around Large Crop Fields Help Quail .....	2
Something Old, Something New: Cameras Identify Nest .....	
Predators .....	2
Tall Timbers Finishes Hardwood Removal and Develops Model Quail Course .....	3
Spring Game Bird Seminar .....	3
Woods Disk to Be On Display at Tall Timbers .....	3
In the Spring Issue .....	4
Quail Research Initiative .....	4

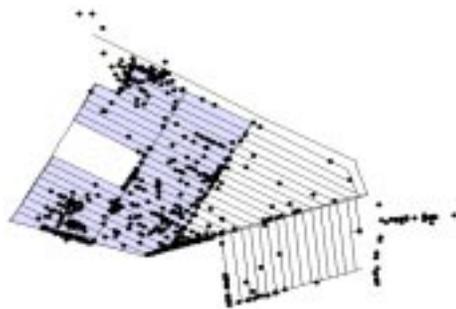
increased survival was important to overall increased nest production.

3. To control for effects of survival on number of nests produced, we compared nest production for hens provided with supplemental feed to those without supplemental feed, but this time only included hens that survived the entire nesting season. On average the hens on fed sites produced three times the number of nests than hens on reference sites! This implies that hens with supplemental feed were able to nest sooner and re-nest sooner than hens without supplemental feed.

This study needs to be continued next year by switching the areas receiving supplemental feeding. If the results are similar, it will help to remove any doubt about value of supplemental feeding as a tool to increase bobwhite populations in the Red Hills. Look for more information on the effects of including a laying diet in a feeding program in the spring issue of the *Quail Call*. This research is a cooperative project with Dr. John Carroll at the University of Georgia.

## Field Borders In and Around Large Crop Fields Help Quail

We are often asked what can be done to increase quail on farmland. One answer is leaving 5% of tillable acreage in fallow strips each year. This map shows quail locations (dark circles) on a 1000-acre research



farm in North Carolina that is broken up into many 25 acre fields. The area on the left (shaded area) has 15 foot fallow borders along field margins of soybean fields and the area on the right (not shaded) does not have field borders, but is farmed edge to edge.

Notice how quail on the area with weedy borders used more of the farm fields during the breeding season than quail on the area without borders. These managed edges provided quail with nesting and brooding habitat and increased the



*Weedy field borders help quail.*

value of the farm fields to quail. Quail on the areas without weedy borders used fields less and field edges or the surrounding forests more. The farm without weedy field borders was much less productive than the farm with borders. The moral of this story is that it pays in quail production to break up large fields using strips of weedy vegetation every 300 feet or so. This research was conducted in 1994 by K. M. Puckett, W. E. Palmer, and P. T. Bromley of the Department of Zoology, North Carolina State University. Dr. Pete Bromley has developed an excellent video describing this research and much more about managing farms for quail. It is available through the Cooperative Extension Service at North Carolina State University.



## Something Old, Something New: Cameras Identify Nest Predators

For some time Tall Timbers Research Station has been actively investigating the relationship of predators to bobwhites. This year, we began a study to identify quail nest predators by using 24-hour video survey cameras. We monitored the outcome of 49 nests and collected 12,000 hours of nesting behavior. Here are some interesting facts from this early investigation:

1. Rat snakes were the number one cause of nest failure this year. They were responsible for 56% of all nest depredations. Larger snakes attempted to catch the hen on the nest when she defended the eggs. Even small snakes were successful at consuming eggs. In one case, a snake approximately 2 feet long bumped the hen off the nest, ate two eggs as the hen watched. She immediately resumed incubation after the snake left and hatched the remaining clutch several days later. We commonly find eggs missing during the incubation period and we now know one reason why.

2. Armadillos are quail nest predators. We documented 3 cases of armadillos eating quail eggs. The incubating quail showed little fear of the armadillo and put up a vigorous fight to protect the eggs. In one case, a hen rode on the back of the armadillo as it ate her eggs! (See photo.) After a lengthy struggle the hen left, but she returned later to eat what remained of her eggs shells. It appears that the armadillo's crush the eggs, then lick out the contents. This behavior explains why eggshells have not been found when stomach contents of armadillos have been examined.

3. Cotton rats, long suspected to be nest predators, have not yet been



*This armadillo with hen on its back was "caught" eating quail eggs by our 24-hour survey video.*

documented depredated a quail nest or "stealing" eggs. However not all tapes with missing eggs have been thoroughly reviewed. We did document cotton rats and other rodents eating eggshells soon after the eggs hatched. If this is normal it will explain why rats have been cited as being nest predators. Snakes and raccoons were also documented eating the remains of hatched eggs.

Fire ants, raccoons and opossums were each responsible for only 6% of depredations identified by the cameras. While too early to make any strong conclusions about nest predators, these results do make clear that predation is a complex issue. These videos will be displayed at the Spring Game Bird Seminar at Tall Timbers Research Station. This



*24-hour video survey camera (bottom left), placed near quail nest (top right).*

research is a cooperative project between Tall Timbers and Dr. John Carroll at the Warnell School of Forestry, University of Georgia.

### Tall Timbers Removes Hardwoods and Develops Model Quail Course

Our land management crew has been working diligently to restore open piney woods to Tall Timber's and Pebble Hill. The 1200-acre area north of County Road 12 will be developed as a model quail demonstration and research area. Our new habitat program provides us with more room to conduct better research projects on the station. Also, because it will be managed as open piney woods, our research results on quail and timber management will be more valuable to local plantations. This area will also serve as an educational tool for visitors to the Red Hills.

### Spring Game Bird Seminar

We are hosting a 2-day Game Bird Seminar the second week in March. The first day will be a field day devoted to demonstration and discussion of management techniques including

state-of-art herbicide use, details on our predator research including original video of nest depredation, hatching, and quail behavior. Experts on herbicide applications and techniques will be here to answer any questions you have regarding available herbicides, their efficacy, use and cost. Handouts will be available that summarize research over the past 3 years, including supplemental feeding, hardwood control, quail in native ground cover, predator management and more. The second day of the field day will focus on research presentations of interest to biologists and quail enthusiasts. We expect many of the South's bobwhite experts to attend. We encourage anyone interested in bobwhite quail to attend one or both days. Detailed invitations will be sent to our membership early next year.

### Woods Disk On Display at Tall Timbers This Fall

We are testing a new type of disk that is specifically designed to work in the piney woods. Special features include: a 3-point hitch for easy maneuverability, an adjustable offset tandem with rugged diminishing blades, two shock absorbing gang risers to allow the gang to move upward and back to relieve shock when pulled over stumps. Options include a seeder and drag to allow harrowing and planting fire breaks in one pass. We see potential for this implement for creating firebreaks, planting food plots and general disking in the woods. AMCO Manufacturing, Inc. in Yazoo City, Mississippi was kind enough to send a loaner for us to test on Tall Timbers. We will host a manager's November 16, 1999, from 12 noon - 2 p.m., to demonstrate its capabilities. Or, call and come by to see it.

## In The Spring Issue

- Counting fall coveys - a research wrap-up
- Results of Laying Mash study on six sites
- Managing bobwhite in native ground cover areas

## Support Quail Research!

### Quail Research Initiative

In 1994, Tall Timbers embarked on an ambitious three-year quail research initiative (QRI). This program demonstrated overwhelming results that warranted a three year continuation of this research.

Our fundraising goal is \$250,000 per year. We hope you will consider a gift. Remember, no gift is too small and is exclusively for quail research. If you love these birds as much as we do, please fill out the enclosed envelope and mail today!!

*Thank you for supporting quail research at Tall Timbers.*



### Bobwhite Quail Research Team

William E. Palmer, Ph.D., Robert C. Balfour, Jr. Game Bird Management Research Fellow  
 Leonard A. Brennan, Ph.D., Director of Research  
 Vince Carver, M.S., Senior Research Technician  
 L. Wes Burger, Ph.D., Board of Trustees, Research Associate, Mississippi State University  
 John Carroll, Ph.D., Research Associate, University of Georgia  
 Brett Baker, Technician  
 Robert A. Baker, Technician  
 David Butler, Technician  
 Guy Crotsley, Technician  
 Ashely Duffie, Technician  
 Allan D. Gilbourn, Technician  
 Timothy Hanks, Technician  
 Matt Klietch, Technician  
 Adam Hammond, M.S. Candidate, Mississippi State Univ.  
 Eric Staller, M.S. Candidate, University of Georgia  
 Shane Wellendorf, M.S. Candidate, NC State University  
 Michael Eudy, Intern  
 Jennifer Fettingler, Intern

Tall Timbers Research Station  
 13093 Henry Beadel Drive  
 Tallahassee, FL 32312-0918  
 (850) 893-4153 FL  
 (912) 227-9001 GA  
 (850) 893-6470 FAX  
 EMAIL-bill@ttrs.org  
 www.talltimbers.org

Non-profit Org.  
 U.S. POSTAGE  
 PAID  
 Permit No. 119  
 Tallahassee, FL

*Tall Timbers Research, Inc.  
 is a non-profit,  
 tax-exempt organization  
 specializing in  
 ecological research,  
 resource management,  
 conservation & education.  
 Established 1958.*