

QUAIL NEWS

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The newsletter of game bird research and management from the Bollenbach Chair in Wildlife Ecology, Oklahoma State University.

BOBWHITES FOR 12 MONTHS

In the hustle and bustle of modern life, we tend to think about bobwhites just before hunting season and during hunting season. Maybe our thoughts turn to these birds after hunting season, with reminiscences about good days and good shots, and the day ol' Doc outdid himself (or undid himself).

After hunting season, though, our minds tend to wander away from quail as bobwhites begin preparation for the next hunting season. (Of course they do not do this, but we could interpret their behavior thusly and never find reason to question our assumption on cause and effect.)

What we are going to do in this article is to think about the things we tend not to think about as bobwhites complete an annual cycle.

The months of March and April occur at the worst of times and the best of times for bobwhites: the worst of times because abundance is at an annual low, the best of times because laying and incubation begin. Typically, laying starts in March and incubation begins in early April.

The first chicks hit the ground in May. That any chick survives until hunting season is a minor miracle that occurs every year. Talk about fragile! A newly hatched chick weighs but a fraction of an ounce, can't fly, and has the body temperature regulation abilities of a slug. Moreover, to survive and grow normally, it is restricted to the Back Forty Atkins Diet consisting largely of

In this issue.....

Bobs and birds,
page 3

Quailology
technology,
page 4

Plum good study,
page 5

Not-nests,
page 6

Bits and pieces,
page 6

invertebrates (insects, spiders).

If a chick can survive for about 30 days, it has a fairly good chance of entering the fall population. Thirty days represents the approximate time to thermal (body temperature) independence and a switch to the South Beach Diet (more carbohydrates).

During the summer months of June, July, and August, bobwhites of all sexes and ages go about the business of procreation. One of the big concerns during this time is high temperature. The only feasible management response to heat is the provision of ample herbaceous and woody cover.

Indeed, September is a key month for decision-making regarding ground cover. It represents the approximate end of the growing season. The herbaceous plants standing at this time will endure decay, mechanical destruction, and consumption by livestock and wildlife until the beginning of the next growing season. The manager must plan grazing intensity such that acceptable cover is available in March.

Bobwhites must enjoy October, if they have the capacity to enjoy. Abundance is at a high point in the annual cycle. Food supplies are ample. Temperature is balmy on the colin courtyard.

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HIGHLIGHTS OF THE BOBWHITE'S FISCAL YEAR

- *March*—lowest annual numbers, laying begins.
- *April*—incubation of early nests begins.
- *May*—first chicks hatch.
- *June*—second incubation attempts, if any.
- *July*—third incubation attempts, if any.
- *August*—continued incubation starts, hatches, brood-rearing. Nests in August may be first, second, or third attempts. Heat (high temperature) is a management problem in July and August.
- *September*—start of incubation ends. The weight of bobwhites begins to increase. **This is the time to make cover management decisions for fall, winter, and the next breeding season.**
- *October*—possible late hatches. Highest annual numbers. Bobwhites are living the life of Riley.
- *November*—chill winds presage the onset of winter.
- *December-January-February*—bobwhites need high energy foods, such as western ragweed during these months. Food plots or feeders may be added at the manager's discretion. These practices result in slightly fatter bobwhites, which gives them a weak hedge against blizzards. Bobwhites reach maximum average weight in December.

November or thereabouts marks the opening of hunting season. Almost all hunters, it seems, have self-imposed regulations. The most common one is a restriction on shooting into coveys below 6–8 birds.

Research indicates small coveys coalesce during fall and winter to form coveys averaging about 11 birds. Average covey size is about the same at the start of fall and the end of winter.

Depending on latitude, November's chill winds are the harbinger of winter. The main goal of bobwhites during winter is to keep their body temperature at normal—about 108 F. This means they need adequate food supplies (see table on page 2). We also know that bobwhites live in warmer temperatures than the air temperatures reported on Channel 5. How they do this is not known. However, they can take advantage of sunny spots, south slopes, and the body heat of fellow covey members. The roosting circle confers definite heat advantages.

Although bobwhites have distinctly seasonal elements in their life style, the management of their cover probably should be viewed more as an annual event. Good bobwhite habitat looks about the same regardless of the season. The only things that change are the temperature and the status of vegetation—growing or dormant.

At freezing air temperature (32 F), the average bobwhite in a roosting circle experiences a temperature of 45 F.

CAN BOBWHITES SAVE GRASSLAND BIRDS?

“The widespread and ongoing declines of North American bird populations that have affinities for grassland and grass–shrub habitats ... are on track to become a prominent wildlife conservation crisis of the 21st century,” report Leonard A. Brennan and William P. Kuvlesky, Caesar Kleberg Wildlife Research Institute, Kingsville, Texas.

These authors report that 80% of the grasslands in America have vanished to the plow and urbanization. In the southeastern United States, habitats that support grassland and brushland species have matured into timber that supports neither. Fragmentation of landscapes plays a negative role. It's the same old story we hear about quail: habitat loss and fragmentation.

Brennan and Kuvlesky see hope for grassland birds and bobwhites if conservationists of all ilk pull together.

“There is a huge cultural gulf between many birders and bird hunters. This gulf must be bridged if attempts to stabilize and increase populations of grassland birds will be successful.

“Quail are grassland birds. The northern bobwhite and scaled quail are declining like many other species of grassland birds. Maintaining and/or restoring habitat to stabilize and increase populations of wild quail will provide

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habitat that will support many other species of grassland birds.”

For further information contact Leonard A. Brennan, Caesar Kleberg Institute, Texas A&M University–Kingsville, Kingsville, TX 78363. Ask for a reprint of *North American Grassland Birds: an Unfolding Conservation Crisis?*

[Editor's note: In this day and age, there is growing interest in the effects of bobwhite management on other wildlife species, especially non-game birds.]



Editorial: quailology technology

Pioneer work in the lashing of radio transmitters to wild critters began in the early 1960s. B. J. Verts, Oregon State University, put transmitters on skunks to determine aspects of their behavior. At that time, transmitters were about the size of clock radios.

The technology evolved and grew more refined as time passed. Today we fit bobwhites with transmitters that weigh 6–7 grams and have a range of a quarter mile or more.

The technology available to current-day wildlife researchers is downright amazing in comparison with what was available even 30 years ago. Growth in technology has given

biologists great power to understand bobwhite populations as well as great opportunities to blunder.

Radio telemetry provides a case in point. This technology allowed researchers to document double- and triple-brooding, which is now recognized as a common behavior of bobwhites. The technology also provided biologists with a means of studying movements and cover use and deriving management implications from the results. We have substantially increased our understanding of bobwhites because of radio telemetry.

On the downside, though, we have learned that radio transmitters handicap bobwhites to a greater or lesser degree. For example, bobwhites may get a foot caught in the necklace that holds the transmitter, or they may snag the necklace on vegetation; in either case, premature death is the outcome. This clearly does not happen to quail that do not have necklaces. As a result, the survival rates of bobwhites reported from telemetry studies are at once suspect.

Global Positioning Systems (GPS) and Geographic Information Systems (GIS) go hand in hand with telemetry and have other useful applications. The location of a radio location is pinned down with a GPS unit. From these locations, we can determine movements, ranges, and cover use.

GIS technology has application from the scale of ranches and farms

to the scale of states and regions. It is feasible—though so far as I know it has not been done—to remotely assess cover conditions on a particular ranch. “Remotely assess” means “use satellite images” of various kinds. From these assessments it is possible to identify areas in need of management as well as areas that need only be maintained in their current condition.

The Oklahoma Department of Wildlife Conservation recently has used GIS technology to assess bobwhite habitat statewide. The results will be used in planning for population recovery in the state.

Another technology, which has resulted in astonishing new information on bobwhites, is the video camera. The technology is available to monitor nest sites—usually found with radio telemetry—24/7. Upon review of videotapes, biologists can determine incubation behavior and nest fate (success, losses to particular causes). Among the things we have learned is that it is almost impossible to identify a nest predator by evidence at a depredated nest.

We have also expanded our knowledge of nest predators. Rodents have been photographed killing and eating ground-nesting birds, and deer and elk have been videoed eating eggs.

Have the technological innovations benefited bobwhite management? They certainly have led to new and in many cases better knowledge of quail, and knowledge is a powerful

adjunct to management. The technologies have permitted us to see things at large scales and that overview is essential for planning at such scales.

And the technology continues to grow. I predict that in the future we will learn things about bobwhites based on molecular genetics that will shake our foundation of knowledge.

Fred S. Guthery
Bollenbach Chair in Wildlife Ecology



OSU RESEARCHERS INITIATE SAND PLUM STUDY

Perhaps no shrub in the Central Great Plains is more important to bobwhites than sand plum.

A recent study in north Texas indicated that 82% of more than 9,000 radio locations of bobwhites collected over 3 years were within 30 yards of a sand plum thicket. Bobwhites use this plant for nesting cover, but its main use is for protection from heat and predators when the birds are not foraging or roosting.

Allison Thomas (B.S., Texas Tech) has joined the OSU research team to study sand plum. Among other topics of study, she will measure rates of spread of sand plum mottes. This is important to ranchers, who see sand plum as a liability in grazing (grass) operations. The knowledge also is important to

bobwhite managers who plant sand plum to create usable space for bobwhites.

“You can’t go wrong planting sand plum for bobwhites,” said Mel Bollenbach, landowner and member of the Bollenbach Chair Advisory Board, at an August 2005 meeting in Stillwater.

WHAT CAUSES NOT-NESTS?

At the Fifth Bollenbach Quail Symposium held in Stillwater on 4–5 August 2005, the question arose as to what causes not-nests. Recall from the March 2005 edition of *Quail News* that not-nests are opportunities not taken and they deal a serious blow to production in down years.

We do not know the cause of not-nests, but we are free to hypothesize:

1. The burden of carrying a radio transmitter might cause some hens not to nest. We learn about not-nests only from radioed quail. In one published report the percentage of radioed hens laying was shockingly low.
2. Hens hatched late in the preceding year might not be physiologically capable of breeding until late in the succeeding production season. Laboratory studies indicate bobwhites do not lay until they’re at least 9 months old.
3. Substandard nutrition during poor production years might prevent some hens from entering laying condition or

cause them to go out of laying condition earlier in the season.

4. High temperatures mid to late in the breeding season might prevent late nesters from laying or previous nesters from starting additional nests. It is well known in domestic poultry production that high temperatures cause hens to quit laying.

5. All of the above, to some degree each.

6. None of the above.

Determining the cause of an effect is often difficult in ecology, which is also plagued by the possibility of multiple causes for the same effect. Perhaps future research will shed light. Certainly, little light will be shed without future research.

BITS AND PIECES.....

- The Texas Parks and Wildlife Department, in collaboration with other agencies and individuals, has produced an informative pamphlet titled, “Where Have All the Quail Gone?” Besides discussing the Texas Quail Initiative, the pamphlet provides sources of further information and the addresses of websites involved with quail conservation. Write the Texas Parks and Wildlife Department, 4200 Smith School Road, Austin, TX 78744 for a copy.
- Studies during 1999–2001 on the Tall Timbers Research Station, Tallahassee, FL, and other private lands indicated nesting success of bobwhites at about 45%. This is relatively high compared to a

national average of about 30%. Mammals were responsible for 59% of nest losses, snakes 29%, and fire ants 12%. Mammalian predators in order of importance were raccoons, armadillos, opossums, bobcats, and cotton rats. For further information contact Eric L. Staller, Tall Timbers Research Station, 13093 Henry Beadel Drive, Tallahassee, FL 32312. Ask for a reprint of *Identifying Predators at Northern Bobwhite Nests*.

- The USDA program of conservation buffers and filter strips stands a chance of increasing bobwhite populations as well as grassland birds. Researchers in Iowa observed 46 bird species using filter strips, including ring-necked pheasants. Nesting success of these birds was low, which is often the case on edge habitats. The most abundant non-game birds were red-winged blackbirds, dickcissels, song sparrows, and common yellowthroats. For further information, contact John C. Henningsen, Department of Natural Resource Ecology and Management, Iowa State University, 124 Science Hall II, Ames, IA 50011. Ask for a reprint of *Grassland Bird Use of Riparian Filter Strips in Southeast Iowa*.
- Evidence from north Texas indicates temperature does not play a role in winter or summer roost-site selection by bobwhites. One might expect bobwhites would seek out warmer roost sites in winter, but this behavior did not occur. In summer, bobwhite pairs roost tail-to tail. For further information, contact Tim L. Hiller, Department of Fisheries and Wildlife, 13 Natural Resources

Building, Michigan State University, East Lansing, MI 48824-1222. Ask for a reprint of *Microclimate Versus Predation Risk in Roost and Covert Selection by Bobwhites*.

- ***On Bobwhites*** by Fred S. Guthery (Texas A&M University Press, 2000) is available from the Department of Forestry, 008C Ag Hall, Stillwater, OK 74078 for \$25, including shipping and handling. This book is out of print but the Department of Forestry has some copies available. Texas A&M Press may issue a soft cover edition.
- ***The Technology of Bobwhite Management—The Theory Behind the Practice*** by Fred S. Guthery (Iowa State University Press, 2002) is available from the Department of Forestry for \$60. This book is out of print and probably will not be reprinted.
- ***Bobwhites on Oklahoma Farms and Ranches: Management Options for Landowners*** by Fred S. Guthery, Ronald E. Masters, and Michael D. Porter is available free from the Department of Forestry.

Support quail research. Send a tax-deductible contribution made payable to "OSU Foundation/Game Bird Research Fund" in care of Fred S. Guthery, Department of Forestry, 008C Ag Hall, Stillwater, OK 74078. Contributors receive *Quail News* and *Quail Flash*.