

QUAIL NEWS

No. 11

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

HEAT LOADS ON THE BACK FORTY

Wildlife biologists have become interested in the role of heat (high temperatures) in bobwhite productivity in the last decade. The quail research team at Oklahoma State University has developed the technology to assess heat loads at the scale of landscapes using a combination of on-the-ground measurements and satellite imagery. This breakthrough likely will lead to better understanding of bobwhite population behavior and better management.

Biologists became interested in heat because annual differences in rainfall fail to completely explain annual differences in quail production. Heat loads are of greater concern in semiarid areas than in rainy areas. High temperatures reduce the length of the laying season and the intensity of the breeding effort. Thus, renesting and multiple brooding are reduced during hot summers and it

is possible that hens destined to nest late won't nest at all. Compare production during the summer of 1997 (delightfully cool and rainy) with that during the summer of 1998 (miserably hot and dry).

The OSU research team, headed up by **Dr. Sam Fuhlendorf** and assisted by **Alex Rybak**, used satellite images to classify vegetation on 4 x 4-yard plots on the Mesa Vista Ranch in Roberts County, Texas. They then developed methods to predict the temperature experienced

In this issue.....

Peerless prognostications,
page 2

Neighbors,
page 3

Colin matrimony,
page 5

Brush needs,
page 6

Killer mule deer,
page 7

Desert quail,
page 7

by bobwhites (Bob-T) in one of the satellite-defined vegetation classes.

When air temperature was 75.2 F, areas with sparse vegetation had Bob-Ts of 86-95 F. Bob-T exceeded air temperature because of the heating effects of sunlight added onto air temperature. The sparse vegetation provided no shade.

At an air temperature of 86 F, Bob-T was above 95 F on 61% of a 2,000-acre pasture. Most of the rest of the pasture (about 39%) was at optimal Bob-Ts—between 86 and 95 F. This range of Bob-Ts is thought to be most comfortable to bobwhites, as 72 F is most comfortable for humans.

The thermal environment available to bobwhites (Bob-T) generally became stressful to intolerable at air temperatures near 96.8 F. Virtually the entire pasture reached Bob-Ts that would cause heat stress at best and kill outright at worst. The only available nonstressful temperatures were in cover types that bobwhites avoid, such as dense streamside vegetation. Refuges from the heat also were available at waterholes created for bobwhites on Mesa Vista Ranch.

As with any field research project, the results reported above are subject to uncertainty. The methods used to predict Bob-T in satellite-defined plots were imperfect. The results are best

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considered as average conditions for the pasture, with some plots cooler and others hotter than average at a specified air temperature.

Grazing at Mesa Vista Ranch is light to foster bobwhite cover. Hence, the Bob-Ts observed would be higher on ranches with butch-cut grazing that takes stubble height down to near-ground levels.

The butch-cut effect can be illustrated with the satellite classes characterized by low amounts of vegetation cover (as if they had been heavily grazed). At an air temperature of 86 F, all of the butch-cut classes were thermally stressful. At an air temperature of 96.8 F, all of the butch-cut classes were killer hot. Butch-cut grazing is as dangerous to bobwhites as chicken hawks from a thermal perspective.

PEERLESS PROGNOSTICATIONS FOR THE '02-'03 SEASON

(Editors note: I asked these folks to stick their chins out, bare their throats and predict how hunting would be in the upcoming season. They kindly agreed.)

Dale Rollins, Texas Agricultural Extension Service, San Angelo, TX—
“In summary ‘it’s been a quail of a summer.’ Looks like the best year shaping up since ‘97, maybe since ‘91. Don’t sell the dogs.

“Getting good reports from just about all areas, with exception of some areas in Chihuahuan Desert (Big Bend region).

(cont'd. page 4)

Editorial: look across the fence

→ I've been verbally whacked a good one several times, by colleagues and managers, for originating the notion that a viable population of bobwhites needs about 8,000 acres of quail-quality countryside. I'm beginning to feel like an old dog somebody dropped off at a dead armadillo on Highway 51.

→ "Is there no hope for the small landowner?" people say.

→ Let's look at precisely what I'm saying. I define viable population as one that has a 95% chance of being here in 100 years. This definition of viable is completely arbitrary. Based on computer modeling, I and colleagues find that if a population starts at 800 birds, it has 95% chance of being here in 2102. These 800 birds are large enough in number to shake off all the insults nature and man can offer up. If they drop to a bird/10 acres at worst, they will need 8,000 acres. I am describing a very, very secure population.

→ Notice what I am NOT saying. I am not saying there will be no quail on areas smaller than 8,000 acres. I am saying quail on smaller areas of quail-quality countryside are less likely to persist for 100 years, though, than our imaginary population.

→ I am not saying that people with less than 8,000 acres will have no quail. At the Third Bollenbach Symposium, held in Kingfisher, OK, on 9 August 2002, Roger Wells pointed out that he has about 15 coveys on 300 acres. Roger is the national habitat coordinator for Quail Unlimited out of Americus, KS. Well, Roger may hold title to 300 acres, but he has neighbors and his neighbors have neighbors and his neighbor's neighbors have neighbors and so on. If each has some quail-quality countryside, Roger's 15 coveys reside in a quantity of quail-quality countryside much vaster than 300 acres.

→ A lay reader of my book, *The Technology of Bobwhite Management* (Iowa State Press, 2002), upon reading the chapter on population viability, wrote that the information therein prompted him to "look across the fence" when he evaluated bobwhite abundance on his land. This is a wonderful philosophy for the small landowner who wants long-term security for his or her bobwhites. That security is to some large degree a function of neighbors and neighbors' neighbors and neighbors' neighbors' neighbors.

→ I realize that the content of this editorial is a reprise of previous editorials in *Quail News*. But the concept of enough space is a crucial one. Habitat loss and associated effects of habitat fragmentation—the cutting and dicing of quail-quality countryside into little islands of doom—are driving quail downhill across much of This Great Nation. Fragmentation is an insidious and powerful demon that holds the house advantage over quail populations in games of chance on the back forty.



Fred S. Guthery
Bollenbach Chair in Wildlife Ecology

Copy *Quail News* to kith and kin.

(cont'd. from page 2)

“Strong outlook from all of Rolling Plains but the eastern Panhandle. Viagra-like reports coming from Coleman Co. (SE corner of Rolling Plains) up through Vernon, west to Snyder and down to Big Spring.

“Blues coming back with vengeance in western half of Rolling Plains and scattered reports further east. Of particular note, I've had more comments on quail sightings in non-traditional Edwards Plateau counties (e.g., Kerr, Llano).”

Boone Pickens, Jr., Mesa Vista Ranch, Pampa, TX--“We have had rain at the right time to enhance our hatch, moderate summer temperatures, plenty of insects and good cover. This should be a very good year.”

Fidel Hernandez, Caesar Kleberg Institute, Kingsville, TX—“The precipitation amount and timing were not too favorable for quail early in [2002]. We received good rains around Oct-Nov of 2001, but we received no significant precipitation (to speak of) until these July 2002 rains. The range therefore began to dry up, and looked really bad (i.e., much bare ground, very few nesting sites, few insects).

“However, as you well know, South Texas rangeland responds quickly to abundant rainfall. The range is almost unrecognizable right now after the rains compared to how bad it looked before. There is abundant lush vegetation and a

LOT of insects right now. I flush grasshoppers with every step out there. The lush vegetation has not changed the relatively low density of nesting sites, but it has decreased (at least visually) the amount of bare ground and presumably cooled off the microclimate at the quail's level. I suspect that these recent rains will extend the nesting season into August and early September, whereas without these rains, I would speculate that the dry, hot conditions would have shortened the nesting season, possibly ending in early August, similar to what you observed back in the late 80s.

“I was out near Beeville yesterday touring a ranch and the range looked very good. The landowner was asking why there were no/few quail present if the habitat appeared in such good shape. I reminded him that while the range looked good right now, that it may have been in terrible shape prior to the rains, kinda like a ‘habitat bottleneck.’ He did state that the area had been grazed pretty hard during the dry spell and that the range had improved drastically after the rains.

“Our nest success has been somewhat good (48%), down from previous years (1999; 72%), (2000; 67%), and (2001; 37%). Although the summer rains have definitely helped the reproductive effort, I don't know if they can offset the habitat bottleneck that occurred over several months. The rains have caused much excitement down here regarding the quail season, but I'm afraid the excitement will fade and the season will fall below expectations (i.e., not a banner year, which is what everybody anticipates every year).”

Steve DeMaso, Texas Parks and Wildlife Department, Austin—"Texas bobwhite hunting season will be average to slightly above average. Texas scaled quail will be above average. However, there is still a lot of time until hunting season and weather conditions during the hunting season will play a large role in hunting success."

Sue Selman, Selman Ranch, Buffalo, OK—"I have just good news about the quail and the habitat. We have had the perfect summer for breeding conditions, plenty of rain but not too much, plenty of humidity and mild temperatures. We have had green grass and plenty of grasshoppers all summer. The grass and habitat look better than they have for 2 or 3 years. I am happy to report that we are seeing plenty of quail."

Lindell Dillon, Norman, OK—"I'm getting good reports from southwestern OK. My partner down there says he's seeing more chicks than he has seen in years."

Rick Snipes, Snipes Ranch, Aspermont, TX—"I've seen a significant number of young birds."

Mike Sams, Oklahoma Department of Wildlife Conservation, Oklahoma City—"Just entered most of the surveys but even with a few missing we encountered 2.8 times more quail this August than last. Numbers almost mimic what was observed in August 2000, which was followed by what many considered a good quail season (at least in recent memories). I've also heard good reports from people (biologist, rancher, etc.) who are seeing a lot of quail including a brood about 2 days old on August 26th in southeast Oklahoma."

In addition to quail reports the weather pattern has been favorable and it too mimics, at least in heat, the summer of 2000. I look for this to be a good season and would welcome a reprieve from the hate mail."

Your Editor--In the vicinity of Stillwater, OK, male bobwhites called vigorously through the first week in July. Your editor had to mow his native-grass lawn weekly. The last time that happened was 1997, a stellar production year. Despite potentially good production during the summer of 2002, populations are still recovering from the devastating winter of 2000-2001. It usually takes 2-3 consecutive good production years for populations to reach boom levels.

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Quail
Questions
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I am doing research on bobwhite quail for a paper on female mate choice. I would like to know if quail are monogamous throughout the breeding season, and if so do they remain so throughout subsequent breeding seasons? —Mary Wise, MT.

We used to think bobwhites were monogamous and you will find it so stated in the older literature. However, we have learned with radiotelemetry that bobwhites are definitely not monogamous. A good reference is *Reproductive Strategies, Success, and Mating Systems of Bobwhite in Missouri* by L. W. Burger et al., *Journal of Wildlife Management* 59:417-426, 1995.

Is moderate to thick brush necessarily poor quail habitat, and does brush control in such cases actually "improve" quail habitat (more usable space) or merely make them more huntable?—Steve Nelle, TX.

Theoretically, there are many different canopy coverages and dispersions of clumps that provide fully usable space and therefore all are of equal value to bobwhites under the usable space hypothesis.

Practically, the theory must hold to some degree, but we don't know the bounds of brush coverage, brush dispersion, etc., very well. We have only rules of thumb like the Huggins 50:50 Rule ("a bobwhite should never be more than 50 yards from a clump of brush 50 feet in diameter").

I'm pretty sure really thick brush is inimical. When I was in South Texas, I could guarantee a bob response to brush control in really thick brush—say more than 25% maybe, more than 50% canopy coverage for sure.

I have seen brush management done in the name of bobwhite habitat management where the brush was not too thick to begin with. I would not expect a population response from quail in these settings, but in some cases an area would be easier to hunt.

I also think that bobwhites can do well in higher brush coverages that are inimical to hunting. So if you stay within an acceptable range for coverage and dispersion of woody cover, taking or adding brush should have no effect on bobwhite abundance.

If you do have a true 25-40% canopy of taller species (dominantly mesquite in the Rolling Plains), then WHY does this possibly reduce usable space? Does it have to do with accipiters, lack of nest cover, lack of low shrubbery, lack of weeds or do quail just "not like" woods?

To me, this is like asking, "Why don't prairie species occur in forest interiors, or forest interior species occur on prairies?" Why don't we have ptarmigan in South Texas and bobwhites on Pikes Peak? I think it largely a Darwinian thing—animals occur where they are adapted and they are adapted where they occur. The niche (special habitat circumstance) that bobwhites have evolved to occupy is not dense thornscrub or forest. Consider 1 element of the evolved behavior of bobwhites—roosting. They generally roost in open areas not under the canopy of shrubs. There would be no place for them to roost in a dense forest. Or, if they found a place to roost, they would be on a short tether relative to that particular spot. Where bobwhites stop (roost, mid-day coverts) governs where they can be at other times to some large degree.

BITS AND PIECES.....

- *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, 008C Ag Hall, Oklahoma State University, Stillwater, OK 74078. This 15-page pamphlet provides practical and very honest management advice for bobwhites in agricultural, timber and rangeland habitats.

With [adequate woody cover] quail can take care of themselves in the presence of abundant numbers of hawks, which seek easier hunting elsewhere. Over the years we managed to convince preserve owners that refuge coverts would assure abundant quail on their preserves and were far more effective—and humane—than wholesale killing of hawks.—

Herbert L. Stoddard, Jr.,
Memoirs of a Naturalist,
University of Oklahoma Press,
1969:256

- Biologists have documented the loss of radioed bobwhites to flooding in Lyon County, KS, where 8.3 inches of rain fell during 31 October-2 November 1998. On 1 area, flooding caused the loss of 5 coveys. For further information, contact **Roger D. Applegate**, Department of Wildlife and Parks, Box 1525, Emporia, KS 66801. As for a reprint of *The Effect of Flooding on Northern Bobwhites*.
- During 1980-1999, “there was no increase in furbearer abundance and no correlation between raccoon fur prices, furbearer harvest or furbearer density with quail abundance” in 3 regions of Texas, report **Nova J. Silvy** and collaborators. “We conclude that available data do not support the assumption that a decline in fur prices and the subsequent decrease in furbearer harvest has led to an increase in furbearer numbers and a subsequent decrease in quail numbers.” For further information, contact Silvy at Department of Wildlife and Fisheries Sciences, Texas A&M University, 2258-TAMU, College Station, TX 77843. Ask for a reprint of *Relationships of Fur Market Conditions to Texas Quail Populations*.
- Biologists in Wyoming have recorded **coyote-killing mule deer**. On 28 October 1996, they watched as members of a group of 50 some mule deer took turns harassing a coyote. When the coyote tired, a large doe got a good lick on the coyote. Then 7-8 does joined in for the coup de grace. The coyote “appeared to be a yearling; the body was badly broken by hooves and had been trampled in the ground,” reported biologists **Jack A. Wilkinson** and **John F. Douglass**.
- The Arizona Game and Fish Department is hosting a quail symposium in Phoenix on 22-23 October 2002. Desert quail—**Mearns, Gambel’s, Arizona blues**—are the focus of discussion. For further information, contact **Mike Rabe**, Arizona Game and Fish, 2221 West Greenway Road, Phoenix, AZ 85023-4399.
- *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.
- *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.

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