

QUAIL NEWS

No. 6

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

BEST HABITATS FOR BOB W.

Bobwhite populations in central and western Oklahoma apparently do not follow the same principle of edge that Aldo Leopold made popular.

We determined population abundance on 78 500-acre sites in central and western Oklahoma during the summers of 1998 and 1999. Population abundance was estimated by repeated counts of males whistling *bobwhite* on each site.

We also measured land cover types on each site. Cover types included native prairie, pastures with introduced grasses (including CRP fields), mature oak timber, young oak timber, mixed prairie and brush, agricultural crops, river and stream bank areas and other minor habitats. We used the data on population abundance to determine how cover types could be best arranged and to

determine which types were most important to bobwhite populations.

Sites with a high percentage of mature oak timber (Cross Timbers) or cropland were associated with low bobwhite populations.

Introduced grasses were neither helpful nor harmful if they occupied less than 35% of an area. Fairly strong bobwhite populations were observed if native prairie occupied less than 63% of an area. Populations tended to

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decline when the quantity of native prairie increased above this percentage.

Introduced grasses include Old World bluestem, weeping lovegrass and bermudagrass.

The best habitat types for bobwhites were young oak timber and mixed prairie and brush. Each of these habitat types had native grasses with well interspersed, low woody cover. Areas in western Oklahoma with ample amounts of shinnery oak had the highest bobwhite populations.

Populations were not particularly sensitive to the arrangement of cover types on a 500-acre site. Populations were just as high with a 500-acre "blob" of mixed prairie and brush as they were if this "blob" contained a more diverse arrangement of land cover types. Highest populations were observed in the absence of cropland agriculture.

When we examined whether the amount of woody edge within a site affected abundance, we found bobwhites declined as woody edge increased. The rate of decline was low and we do not know whether our perception of edge matched that of bobwhites. However, our results show that the principle of edge cannot be applied blindly if one expects to increase bobwhite abundance.

QUAIL NEWS is published twice yearly by the Department of Forestry, Division of Agriculture and Natural Resources, Oklahoma State University, Stillwater, OK 74078. Subscribe with a contribution to "OSU FOUNDATION/GAME BIRD RESEARCH FUND." Direct inquiries to Fred S. Guthery at the above address (phone 405/744-9431, e-mail forfsg@okstate.edu). The Bollenbach Chair is part of the Oklahoma Agricultural Experiment Station.

The results indicated farm and ranch managers can expect to add between 1 and 3 calling males to a property for every 100 acres of young cross timbers or mixed brush and prairie that they add. This would be expected to add about 1-3 females and 8-24 juveniles at the start of hunting season.

Collaborators on this project were Ron Masters, Department of Forestry, Oklahoma State University, and Steve DeMaso, Oklahoma Department of Wildlife Conservation. DeMaso is now with the Texas Parks and Wildlife Department, Austin.

CALL-COUNTS

The best time to conduct counts of males calling *bobwhite* starts about 15 minutes after sunrise and lasts for 1 hour, according to research by Heather M. Wilson, Department of Forestry, Oklahoma State University.

Wilson studied the calling behavior of males during the summers of 1998 and 1999 to determine how to obtain reliable information on population abundance using call-counts. These counts are an inexpensive method of gauging population abundance on different areas and in different years.

To conduct a call-count, a biologist stops at a listening post and records the number of different males heard calling during a 3-minute period.

In the Stillwater, OK, area, calling activity peaked between 30 and 60

Editorial: What is stability?

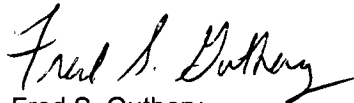
There are 2 outlooks on stability in quail populations and these different outlooks generate confusion among quail conservationists

Stability from 1 outlook is a literal interpretation: populations remain the same from 1 year to the next. Stability from another outlook involves trends through time. A population is said to be stable if it shows no trends, up or down, through time. Rather violent fluctuations between years are permitted under this definition of stability.

Data from north Texas, south Texas and western Oklahoma indicate bobwhite populations are unstable if viewed from year to year but stable if viewed over the last 2-3 decades. On the other hand, data from eastern Oklahoma and parts of Texas indicate a long-term decline in abundance (1 definition of unstable populations).

The last 3 years show that populations stable over the long term can be quite unstable from year to year. The year 1997 was an excellent production season from the standpoint of weather and fall quail populations were strong. On the other hand, 1998 was severely hot and some of the lowest production ever recorded occurred in the southern Midwest. The 1999 breeding season was favorable and production was average to good in most areas; however, populations were so low because of reproductive failure in 1998 that average to good production did not lead to strong quail populations in all areas.

The bottom line is that year-to-year fluctuations in abundance provide little information on the health of a quail population. A 1-year decline (or increase) is not especially remarkable and it tells us nothing about the future. This is especially true when population ups and downs can be attributed to annual weather patterns.



Fred S. Guthery
Bollenbach Chair in Wildlife Ecology

minutes past sunrise. Counts conducted during the hour starting at 15 minutes past sunrise were more consistent than counts conducted within other time periods.

**Copy Quail News to kith
and kin.**

The Bexar Audubon Society is sponsoring a symposium titled "Managing to Make a Living: People, Quail, and Land" to be held at Palo Alto College in San Antonio, TX, on 11 March 2000. For further

information, contact Susan Hughes or Tatjana Walker, phone 210/532-2332, fax 210/532-2023, or e-mail susan@wordwright.com or tatjana@wordwright.com. You can also visit <http://www.audubon.org/chapter/tx/bexar/>. Speakers include Dale Rollins, Fidel Hernandez, James G. Teer, and Fred S. Guthery.

BAG LIMITS IN THE LIMELIGHT

Whenever quail populations take a turn for the worse, concerned sportsmen wonder whether tighter harvest regulations might reverse temporary and long-term declines in abundance.

A recent analysis of Texas records by Markus J. Peterson, formerly of the Texas Parks and Wildlife Department and now with Texas A&M University, sheds some light on the regulation issue. Peterson's analysis indicated that, since 1978, scaled quail have declined in central, northern and west Texas and remained stable in south Texas. Bobwhites declined in coastal and north-central Texas and were stable (no long-term trend) in south, central and north Texas.

"Reducing the daily bag limit from 15 to 8 quail would probably only decrease the [statewide] harvest of bobwhites and scaled quail in Texas by 27 and 15%, respectively," Peterson reported. In other words, halving the bag limit will reduce the statewide harvest by about one-fourth, at most.

Peterson called bag limit restrictions "regressive" because they have the most effect when least needed and the least effect when most needed. For example, a 6-quail daily bag on bobwhites (down from 15) would reduce statewide harvest by 52% in boom years and 35% in bust years. In other words, reducing the daily bag from 15 to 6 would have a stronger effect in boom years than in bust years. The 6-bird limit would reduce the harvest of scaled quail by 43% in boom

years and 6% in bust years. Again, the effect of reduced bag limits is strongest when it is least needed.

Peterson observed that less than 10% of Texas quail hunters hunt for more than 12 days in any hunting season. The implication here is that length of the hunting season may have little impact on statewide harvest unless days available for hunting are severely restricted.

"For regulatory changes to affect quail population dynamics," Peterson reported, "they must alter the number of quail available to breed. All other regulatory changes are made for sociological reasons.

"It is likely that the only way to reverse declines in Texas quail abundance is to increase the quantity of space quail can use throughout the year. For this reason, 'quick fixes,' such as minor regulatory changes, are unlikely to be of value by themselves."

Peterson's comments were extracted from *Preserving Texas' Quail Heritage into the 21st Century*. This 163-page symposium proceedings is available for \$19 from TAEX Distribution and Supply, P.O. Box 1209, Bryan, TX 77806 (phone 409/845-6573).

Bobwhites of the Wild Horse Desert: Status of Our Knowledge
by Mickey Hellickson and Andrew Radomski recently was published by the Caesar Kleberg Wildlife Research Institute. This publication contains bullets on biology and management of bobwhites in South Texas, as well as a complete bibliography for the region. Contact the Institute at Mail Stop Center 218, Kingsville, TX 78363-8202 for a copy.

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I very much enjoyed your treatment of water and bobwhites [that recently appeared in The Wildlife Society Bulletin]. While I agree that the basins we all used in the past did not do much for the birds, I am still puzzled. If bobwhite occurrence at waterers was '5,000-6,000 times greater than expected by chance,' what is the net expected benefit?—Jim Mullen, Castroville, TX.

Mr. Mullen is referring to the results of a study I directed in South Texas. We had permanent water basins set out at 1/20 acres, and we supplied water year around for 5 years. We saw bobwhites at waterers with a very high frequency-- "5,000-6,000 times greater than expected by chance."

However, we measured no benefit from waterers in terms of fall populations. The abundance of bobwhites at the start of hunting season was equal on areas with and without waterers. Equal abundance held in rainy and droughty years alike.

Then why did quail camp at the waterers? I do not know, but a good guess is that the waterers provided a cool resting spot. Quail used them to stay comfortable. Temperatures hot enough to kill bobwhites in a few hours occur routinely during South Texas summers.

Concerning bobwhites and water, here are words written by Amory R. Starr more than 100 years ago: "In September, 1884, I went on a bear-hunt to what is known as the Nueces Canon ...

in the southwestern portion of Texas. It was during a severe drought. Water was to be found only on the Nueces River and a few of its tributaries, and while the cattle had eaten all the grass within several miles of the stream along part of our road, in other places we found it quite abundant, because the cattle would not go so far from water to graze upon it, and yet in those very places I saw more bobwhites than I ever saw before or since. They were just as abundant miles from water as they were upon the banks of the stream. The country was so dry and elevated that there was no dew"

For a copy of *The Role of Free Water in Bobwhite Management*, contact Fred S. Guthery, Department of Forestry, 008C Ag Hall, Oklahoma State University, Stillwater, OK 74078.

(Jim Mullen, a ranch broker and wildlife biologist, is experimenting with sprinkler irrigation to promote quail production in drought years.)

COYOTES CONTROL PREDATORS

Herbert L. Stoddard speculated long ago that the removal of major varmints might release populations of minor varmints. Until recently, the trendy notion of "mesopredator release" was more hot air than fact.

Scott E. Henke and Fred C. Bryant, Texas Tech University, studied the effects of coyote removal on small predators as well as prey populations in west Texas during 1990-92. They reduced coyote abundance on certain sites with aerial gunning and then

compared wildlife abundance between areas with and without coyote removal.

"Rodent density and biomass, black-tailed jackrabbit density, and relative abundance of badgers, bobcats, and gray foxes increased on treatment sites."

In other words, removal of coyotes was associated with increases in their prey and in other predators.

The results **could** indicate that, in some settings, coyotes benefit game bird populations by reducing small predators and holding rodent populations in check. Rodent predation on game bird nests is a documented problem for sage grouse in North America and grey partridge in Europe. However, the results do not prove that coyotes benefit game bird nesting, because research in South Texas indicates coyotes may be the most serious nest predator for bobwhites.

For further information, contact Scott E. Henke, Kleberg Institute, Campus Box 218, TAMUK, Kingsville, TX 78363. Ask for a reprint of *Effects of Coyote Removal on the Faunal Community in Western Texas*.

FIRE ANTS SUPPRESS CHICK SURVIVAL

In the Coastal Prairie of southern Texas, the 21-day survival rate for bobwhite chicks was about 3 times higher on areas with fire ant control than on areas without it.

James M. Mueller and associates, Texas Tech University, studied

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bobwhite-fire ant interactions in Refugio county during 1997-98.

The 21-day survival rate for nests hatched in areas without ant control was 22% (22 of every 100 chicks hatched survived for 21 days). The survival rate on areas with ant control was 60%.

Fire ants had no effect on hatching success.

Mueller surmised that chicks vulnerable to fire ants experienced the heaviest mortality some time within the first 24 hours after hatching. Fire ant stings can impair the vision and mobility of bobwhite chicks, rendering them more vulnerable to all forms of mortality.

"Red imported fire ants have probably degraded suitability of habitat for northern bobwhites throughout the Texas Coastal Prairie due to the mortality they inflict on northern bobwhite chicks," the authors concluded.

For further information, contact James M. Mueller; Department of Range, Wildlife and Fisheries Management; Texas Tech University, Lubbock TX 79409. As for a reprint of *Northern Bobwhite Chick Mortality Caused by Red Imported Fire Ants*.

SUPPORT QU

On Bobwhites by Fred S. Guthery is available from Texas A&M University Press (\$24.95 plus postage and shipping). Call the press at 800/826-8911 or visit <http://www.tamu.edu/upress>. The book also may be ordered through amazon.com or your local bookstore.

On Bobwhites (213 pages) consists of 55 chapters organized in 4 sections: Life and Times, Management, Populations and Harvest and Issues and Philosophies. The book, written for general audiences, will be of interest to ranchers, farmers, hunters and wildlife biologists.

DNA FINGERPRINTS USED TO DERIVE BEAR FACTS

Biologists have used mark-recapture studies to estimate wildlife abundance for decades. Recently, they realized wild animals are individually recognizable (marked) by their genetic code, and this fact can be used in estimating population numbers.

The theory is simple. Suppose you have a jar of beans and you want to estimate the number in the jar without counting them individually. Suppose you mark a sample of 100 beans with fingernail polish, return them to the jar, mix them up and draw another sample of 100 beans. If one-tenth of the second draw is marked, then 100 marked beans must represent one-tenth of the population. Therefore, the jar contains 1,000 beans.

Biologists in British Columbia obtained hair from grizzly bears by setting up barbed wire around a bait site. The wire snagged hair, which was submitted to DNA fingerprinting to identify individuals. This type of sampling continued until a sample of "recaptures" was obtained.

The genetic recaptures led to estimates of 262 grizzly bears in British Columbia and 74 in Alberta.

For further information, contact Garth Mowat, Timberland Consultants, Box 171, Nelson, BC V1L 5P9, Canada. Ask for a reprint of *Estimating Population Size of Grizzly Bears Using Hair Capture, DNA Profiling, and Mark-recapture Analysis*.

Support game bird research:
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