

Behavior of Bobwhite Hunters and Dogs

By Grant Mecozzi

The northern bobwhite has been hunted by man for centuries. The earliest records of its consumption by European settlers date to 1557 and the exploration party of Hernando De Soto. Yet despite its popularity and long-standing tradition as a game species the methods by which harvest takes place received little attention until recently.

Seven years ago, Dr. Fred Guthery, Bollenbach Chair at Oklahoma State University collaborated with Dr. Andrew Radomski of Texas A&M University-Kingsville to create the hunter-covey interface (HCI) theory.

The HCI theory attempts to describe and predict quail hunting by combining the travel characteristics of dogs and hunters while quail hunting, the duration of a quail hunt, the number of birds flushed during the hunt, and the number of birds taken by the hunter during a hunt.

In the fall of 2005 I began research to complete three objectives. The first objective was to gather information on the behaviors of hunters and dogs while engaged in bobwhite hunting. The second objective was to...

Continued on Page 4

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The Oklahoma Cooperative Fish and Wildlife Research Unit

By Dr. Chip Leslie

The Oklahoma Cooperative Fish and Wildlife Research Unit is pleased to be affiliated with the new Department of Natural Resource Ecology and Management (NREM). The Oklahoma Unit is part of a longstanding program of the U.S. Department of Interior that began in the 1930s as partnerships with Land Grant universities, state resource agencies involved in managing fisheries and wildlife, and the Wildlife Management Institute.

As originally chartered, the mission of each Unit continues to focus on education of graduate-level professionals interested in careers in natural resource management and research needs of Unit cooperators. Currently, 40 units operate under such partnerships in 38 states. Each Unit operates under the direction from its Coordinating Committee, made up of a representative from each of the Cooperators. Each Cooperator provides resources to support the mission of the Unit.

The Oklahoma Unit was established in 1948, the 12th in the program. Until the establishment of NREM in 2006, it was associated with OSU's Department of Zoology. In Oklahoma, research has been



conducted on a wide variety of fisheries and wildlife topics in cooperation with federal agencies, the University, the Oklahoma Department of Wildlife Conservation, and various private groups, such as The Nature Conservancy.

The Oklahoma Unit is particularly noted for its research over the years on instream flow, sandhill cranes, and recovery of endangered species. Most of the Oklahoma Unit's research projects are problem-oriented and designed to provide cooperators and landowners with useful information on resource issues. The majority of research through the Oklahoma Cooperative Fish and Wildlife Research Unit is conducted by M.S. and Ph.D. candidates in various academic departments at OSU. Over 320 theses and dissertations have resulted from their efforts.

Continued on Page 6

Bison on the Southern Great Plains: Past, Present, and Future

By Dr. Jim Shaw



This year is Oklahoma's centennial. It is also the centennial for the first reintroduction of bison in the United States. In the fall of 1907, 15 American bison were shipped by rail from the Bronx Zoo in New York to Cache, Oklahoma. From Cache the animals rode in individual crates atop wagons to what was then called the Wichita Mountains Game and Forest Preserve where they were released into a large, fenced area, the first of their kind to roam the region in 35 years.

Once they numbered in the millions. Colonel Richard Dodge encountered a herd along the

Arkansas River in 1871 that he estimated to be 25 miles across, 50 miles long and no fewer than 10-15 per acre. If his numbers were correct, the herd contained between 12 and 18 million bison. Clearly the carrying capacity for bison on the Great Plains was high.

The future for the American bison is excellent. In 1970 there were only about 30,000 bison in North America. Today their numbers approach half a million, as breeders take advantage of the species' resistance to drought and blizzard. Consumers enjoy the flavor of fine beef with a fraction of the calories and fat.

The World Conservation Union's Bison Specialist Group is developing an action plan which anticipates accelerated growth in numbers and distribution well into the 21st century. Just as 19th century bison relied upon rich forage resulting from frequent prairie fires, bison of the future depend upon prescribed fires. As bison increase so too will the prescribed fires and together those two forces will help restore and sustain the health of the native prairies and the diversity of plants and animals that live there.

Dr. Shaw is a professor of Wildlife Ecology at Oklahoma State University

Contents

OK Cooperative Unit.....	1
Hunter and Dog Behavior.....	1
Bison on the Plains	2
Trophy Bobwhites.....	3
Redcedar Control.....	3
Soil Tillage for Site Preparation.....	4
Sand Plum Research.....	5
Awards.....	6

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Wildlife Facts

Trophy Bobwhites

By Dr. Fred Guthery

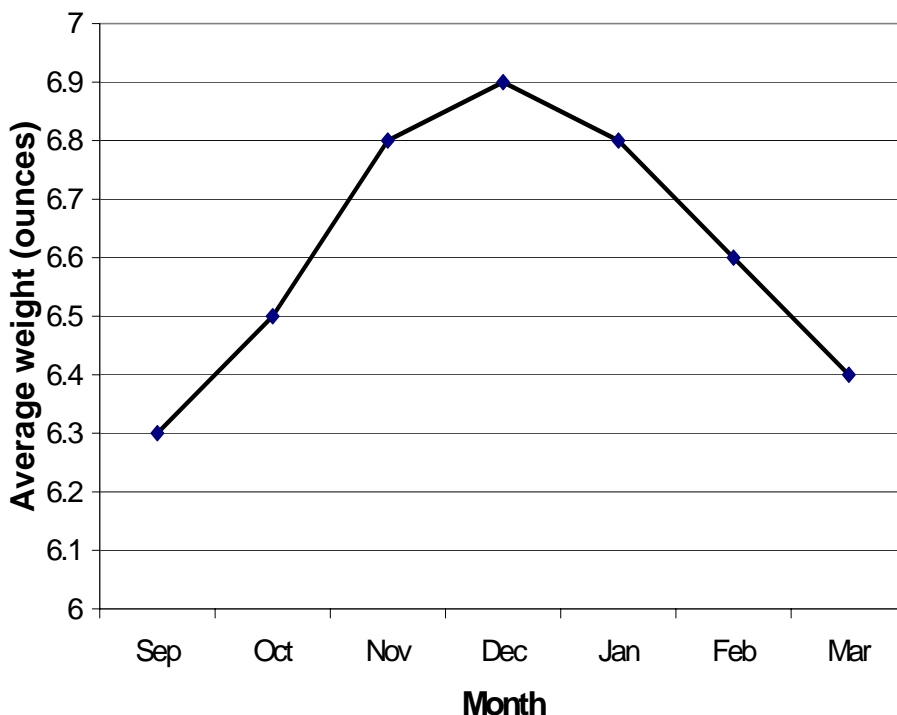
The “trophy bobwhite” hunter plans to be afield when the birds reach maximum weight. Bobwhites in Oklahoma reach adult weight (6.3 ounces) at about 150 days after hatching.

In September, all birds—younger, older, male, female—average about 6.3 ounces if they are at least 150 days old. Then, the average weight begins to increase. October bobwhites average 6.5 ounces, November bobwhites 6.8 ounces, and December bobwhites 6.9 ounces. A few birds might exceed 8.3 ounces. After December, there is an orderly decline in bobwhite weights.

By March, birds weigh about the same as they did in the preceding September. So, December is the month to hunt bobwhites if large birds are your goal! Actually, the heaviest bobwhites of the year are laying females. Their weight increases because of eggs and the reproductive tissue necessary to form eggs.

Dr. Guthery is the Bollenbach Chair in Wildlife Ecology at Oklahoma State University.

If you wish to find out more about the Bollenbach Chair at Oklahoma State University visit the website at <http://bollenbachchair.okstate.edu>



The average weight of bobwhites in Oklahoma peaks in December.

Management Notes

Redcedar Control

By Ryan F. Limb

Following westward expansion of European settlers, fire was largely removed from the landscape, allowing eastern redcedar to expand out of fire protected draws and invade adjacent grasslands. Once established, eastern redcedar changes the vertical structure, nutrient cycling, and hydrology of the landscape, which ultimately affects the plant community.

My research has shown that under closed canopy redcedar stands, the number of plant species is reduced by almost 50%. This loss of species creates bare ground which can lead to erosion and loss of forage. In fact, I found that the amount of forage produced in grasslands is nearly 3 times the production in dense redcedar stands. Increasing the amount of cedar cover from 20% to 30% reduced the forage production by nearly 50%.

However, even on locations with high redcedar cover hope is not lost. I found that after redcedar removal, the number of plant species present was equal to the number of species on sites without redcedar within one growing season. Forage production also increased 250lbs/acre within the first year. Ideally, grasslands should be managed with fire or other means to keep eastern redcedar cover low, but even sites with high eastern redcedar cover have the potential to be restored.

Ryan Limb is a Ph.D. student studying Rangeland Ecology at Oklahoma State University.

Soil tillage as a site preparation tool for forest landowners

By Dr. Rodney Will

Soil tillage is a common tool in forest management used to aid in the establishment of pine plantations. Tillage as a site preparation tool usually consists of some combination of subsoiling (ripping) and bedding. Subsoiling usually is done by pulling a shank approximately two feet long through the soil to fracture a restrictive soil layer. Bedding consists of using opposed disks to form mounds of topsoil approximately one foot tall.

Both of these treatments are beneficial because they facilitate planting, increase water infiltration, and increase root growth. In addition, bedding tends to concentrate soil nutrients near the planted seedlings and may increase the effectiveness of herbicide applications.

Previous research by Bob Wittwer in rocky, mountain soils of southeastern Oklahoma found that subsoiling increased seedling growth approximately 20%. In more recent work, I found that tillage which fractured the upper six inches of soil increased seedling growth approximately 20% and was as good as more intensive methods of site preparation. The primary mechanism related to increased seedling growth was associated with reduced soil strength and greater ability of roots to extend into the surface soil.

For plantation establishment, this indicates that less intensive tillage such as that associated with machine planting or bedding-only operations may be all that is necessary to gain the maximum

benefits of tillage. Thus, landowners can reduce the cost of tillage by pulling lighter equipment with a smaller tractor or by combining tillage and planting operations while at the same time reducing the erosion potential associated with more intensive tillage operations.

Dr. Will is a professor of Forest Ecology at Oklahoma State University.

Behavior continued from Page 1

...gather additional information for the HCI theory. The third objective was to develop methods that will allow bobwhite density to be estimated by using Global Positioning System (GPS). The overall goal of these objectives was to aid in the scientific management of bobwhite harvest.

During the two years of data collection I found that the hunting process was highly variable. Distance traveled by the 82 hunters varied from 1/2 mile to just under 5 miles but averaged about 2 miles. In contrast, the 154 dogs traveled from 1/2 mile to 18 miles but averaged about 5 miles during a hunt.

Not surprisingly, during both seasons the primary dog behavior while hunting was ranging or searching for birds. The percentage of a hunt that consisted of searching changed from 50% to 82% from the 2005 to the 2006 season. This makes sense given that road surveys of bobwhite abundance conducted by Oklahoma Department of Wildlife Conservation (ODWC) reported a statewide decline of 50% between the 2 years.

Continued on Page 5



Tractor pulling a combination plow that simultaneously subsoils and beds.

Behavior continued from Page 4

Also, if there are less total birds then a dog should be spending more time looking for those birds.

I also collected flush data during this study, which consisted of the distance from where a dog went on point to where bobwhites flushed (distance from point-to-flush), the number of birds that flushed/point, the number of birds harvested/flush, and the number of shots each hunter shot/flush.

Over the two seasons this study was conducted, a flush on average consisted of six birds that flushed about 20 feet from where a dog went on point. Hunters shot on average one shot each/flush and an average of one bobwhite was shot at each flush.

The distance from point-to-flush data was combined with the number of bobwhites that flushed during a hunt to determine an estimate of density within the hunting area. The average density of bobwhites for the areas hunted during the 2005 season was 3.7 birds/acre. In comparison, the average density for areas hunted during the 2006 season was 0.71 birds/acre. This seems consistent with ODWC reports.

While more work is needed to verify these results, my research objectives for this study were met and hopefully will aid landowner and wildlife managers in the scientific management of quail harvest.

Grant Mecozzi is a M.S. student studying Wildlife Ecology at Oklahoma State University.



A German Shorthaired Pointer ready to collect some data.

Sand plum: it's not just for jelly anymore!

By Stacey Dunkin, Brent Cooper, and Adam West

Sand plum (*Prunus angustifolia*) provides important cover for many species of wildlife such as northern bobwhites, white-tailed deer, songbirds, small mammals, insects, and even livestock due to the dense "motte" structure that it forms

Currently, research is being conducted in the Department of Natural Resources and Ecology (NREM) to gather data on the role sand plum plays in grassland ecosystems. The findings from these studies will provide managers information for the management, planting, and wildlife uses of sand plum.

Graduate student Stacy Dunkin is studying age-related use of sand plum by nesting birds. He is collecting data on sand plum growth characteristics. As spring arrives his attention will turn to observing the species of birds that nest in sand plum. Graduate student Brent Cooper is also studying the relationships of sand

plum to birds. His research is examining seasonal changes in bird abundance and density in different sand plum motte configurations. Finally, graduate student Adam West is conducting research on methods of establishment of sand plum, smooth sumac, and fragrant sumac for the purpose of providing cover habitat for bobwhite quail. A major limitation to bobwhite populations in the southern Great Plains is lack of cover provided by woody shrubs.

These research projects will provide important advances in the understanding of the ecology and management of sand plum with broader implications for quail and other wildlife species.

The authors are all M.S. students at Oklahoma State University.

Cooperative Unit, continued from Page 1

Unit students are currently conducting research on fisheries management in reservoirs and rivers; stream ecology; endangered, threatened, and candidate species; and management of elk, bear, river otter, and bobwhite quail.

As mentioned in the inaugural issue of this newsletter, many cooperating faculty and their graduate students are involved in projects affiliated with the Oklahoma Unit. Currently those projects involve, for example, patch-burning, Old World stem control, Cerulean Warbler status and ecology, and creation of digital bases for fishes and mammals in Oklahoma. While many projects are conducted in Oklahoma, the Unit's reach recently has included activities in Texas, New Mexico, Arkansas, and beyond.

As the Oklahoma Unit nears its 6th decade of involvement at OSU and begins its new relationship with NREM, future projects will continue to emphasize applied research to bring expertise to bear on important conservation issues in Oklahoma. More information about the Cooperative Unit Program can be found at www.coopunits.org. Call 405-744-6342 for specific information about ongoing research activities at the Oklahoma Unit.

Dr. Chip Leslie is a professor of Wildlife Ecology at Oklahoma State University.



With support from the ODWC, graduate students and technicians with the Oklahoma Coop Unit have been involved in black bear research in SE Oklahoma for the past 5 years (from left to right: Angela Brown and Meredith Magnuson, M.S. students, and Rex Medlin, Technician).

Exaltations

Charles Sabatia, a M.S. student in NREM, was presented with the Outstanding Graduate Student Poster award at the recent Southern Silvicultural Research Conference held in Athens, Georgia.

Oklahoma State University held a Research Symposium this spring to demonstrate the full range of research activities that are conducted at Oklahoma's Land Grant University. At this event, NREM student Ray Moranz was awarded first place in the Environmental Sciences category.

NREM Ph.D. students Ryan Limb and Stephen Winter tied for 2nd place in the Graduate Student Oral Paper Presentation at the 60th Annual Meeting of the Society for Range Management in Reno, Nevada.

Giving to NREM

Support training and research in natural resource conservation and management. Send a tax-deductible contribution made payable to "NREM Program" Oklahoma State University Natural Resource Ecology & Management 008 C Ag Hall, Stillwater, OK 74078.

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