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THE BACKBONE OF OUR RESEARCH PROGRAM

by Leonard Brennan, Rachel Smith, Ross Couvillon, and Carter Crouch

At the CKWRI, graduate student research projects are the backbone of our program. Regardless of whether a student is working on a Masters or Doctoral research project, the most important element of their success is being able to make the transition from acquiring existing knowledge (which they learned to do as undergrads) to generating new knowledge using the scientific method for conducting wildlife research. Communicating the results of this new knowledge is also a critical part of the research process. We communicate these results to scientific colleagues through peer-reviewed journals such as *The Journal of Wildlife Management*. We communicate these results to stakeholders and the general public through newsletters such as this one.

This article provides brief summaries of 3 recently completed graduate student research projects that have focused on northern bobwhite ecology, which illustrates the core of our program at the CKWRI.

How bobwhites respond to landscape changes following cattle removal is not well understood. Rachel Smith's objective was to investigate bobwhite response to the vegetation changes following removal of grazing. This study was conducted during 2015 and 2016 in Jim Hogg County, Texas and involved monitoring bobwhites on 3 areas of post-grazing habitat recovery: a 3,835-acre site rested from grazing for 15 years that is actively managed for quail; a 2,800-acre site rested 3 years from high grazing (17 acres per Animal Unit [AU]); and a 3,083-acre site rested 3 years from moderate grazing (35 acres per AU). We found evidence that purposeful management on the most rested site was successful in producing the highest bobwhite density in both 2015 (0.76 birds per acre) and 2016

Editor's Note: Dr. Leonard Brennan is the C.C. "Charlie" Winn Endowed Chair for Quail Research at the Caesar Kleberg Wildlife Research Institute and professor at Texas A&M University-Kingsville. Rachel Smith, Ross Couvillon, and Carter Crouch are graduate students at the Caesar Kleberg Wildlife Research Institute and Texas A&M University-Kingsville.

This Issue

By The Numbers

3 average number of eggs in a clutch (2–4) of a plain chachalaca (Handbook of Birds of the World, Vol. 2, del Hoyo et al., Lynx Edicions)

4 number of gecko species found in Texas (rough-tailed gecko, common house gecko, Indo-Pacific gecko, and Mediterranean house gecko) (A Field Guide to Texas Reptiles & Amphibians, R.D. Bartlett and P.P. Bartlett, Gulf Publishing Company)

(1.49 birds per acre) compared to the previously moderately grazed site (0.73 birds per acre in 2015 and 1.15 birds per acre in 2016) and the recently highly grazed site (0.37 birds per acre in 2015 and 0.83 birds per acre in 2016). Additionally, the most rested site had the highest nest survival, and the site previously grazed at a higher stocking rate had the largest bobwhite home range size at 48 acres compared to the most rested site and the recently moderately grazed site, which had home ranges of 32 acres. These results suggest that removing or reducing cattle along with active habitat management can lead to higher bobwhite density, smaller home ranges, and higher nest survival.

Land managers can generate predictable expectations about an upcoming quail hunting season based on how much rainfall a pasture received from April through August during a given year. From 2014 to 2016, Ross Couvillon studied whether habitat irrigation via sprinklers benefitted bobwhites by maintaining the herbaceous vegetation and arthropods that are scarce during dry periods. In one 988-acre study site, 58 sprinklers each watered a 1,800 ft^2 patch. As

© Ross Couvillon

Ross Couvillon studied the effects of using sprinklers on bobwhite ecology.

© Carter Crouch

Carter Crouch evaluated the effects of bermudagrass on bobwhites. The lack of plant diversity and dense monoculture provides little usable habitat for bobwhites and many other grassland birds.

expected, from June through August, there were more forbs, grasses, and arthropods at the irrigated site than the non-irrigated site. Home ranges of bobwhite hens on the irrigated site tended to be smaller than hens on the non-irrigated site, possibly because of this concentration of resources. However, maintaining these resources in irrigated patches did not produce a population-level benefit to bobwhites. During all years of the study, hen survival was at least 9% greater on the non-irrigated site compared to the irrigated site. Differences in bobwhite densities between irrigated and non-irrigated sites were negligible. A larger difference on the 2 sites might have been observed during a drought year, but hens stopped nesting as soon as a month after the last rainfall during the breeding season. Even when bobwhite management goes beyond providing suitable habitat, these efforts may not be enough to overcome the strong influence weather has on population dynamics.

Bermudagrass is planted widely for cattle grazing, but provides poor habitat for bobwhites due to a lack of diversity. Carter Crouch's objectives were to compare bobwhite abundance and vegetation composition on bermudagrass pastures, a native shrubland pasture, and a bermudagrass pasture that had been restored for bobwhites. Bobwhite abundance, based on trap success and whistle count data, was highest in the restored site during all 3 years. However, Carter found an increasing trend in abundance in the bermudagrass sites from the 1st year to the 3rd year.

Because of the economics of managing a hay field during a drought, land managers ended fertilization and broad-leaved herbicide application on the bermudagrass sites. These 2 factors and a reduction in grazing led to an increase in forb and nesting cover, resulting in an increase in bobwhites. This study illustrates that bermudagrass pastures can be reclaimed as bobwhite habitat through practices that increase forbs and nesting cover and is possible whether you use active or passive habitat management.

At the CKWRI, we typically have between 50 to 60 graduate students conducting wildlife research while working on their Masters or Doctoral degrees. The 3 studies described above are just the tip of the iceberg of our program. ~

CKWRI NEWS

Leonard Brennan Recognized for His Service

Dr. Leonard Brennan was recognized for his outstanding contribution to quail science, receiving the *National Quail Symposium Recognition of Excellence Award* at the Joint Quail Conference of the 23rd Annual National Bobwhite Technical Committee Meeting and Eighth National Quail Symposium banquet awards luncheon during the meeting held July 25–28 in Knoxville,

Dr. Leonard Brennan received the prestigious *National Quail Symposium Recognition of Excellence Award* from the National Bobwhite Technical Committee.

Tennessee. He received a fine art print of the Quail Eight Proceedings cover along with a plaque.

We are thankful for researchers like Leonard for their contributions in their area of expertise and passing their knowledge on to students, other researchers, and the general public.

Students and Faculty Contribute at Quail Symposium

The CKWRI was well represented at the Joint Quail Conference of the 23rd Annual National Bobwhite Technical Committee Meeting and Eighth National Quail Symposium held July 25–28 in Knoxville, Tennessee. Of the 94 total presentations, 14 (15%) were from CKWRI faculty and students, and included a plenary presentation.

Plenary presentations are "invited" by the symposium organizers, and they are a special honor to those individuals that are chosen. The title of our researcher's plenary presentation was "Population Response of Three Quail Species to Habitat Restoration in South Texas" by CKWRI faculty **Drs. Eric Grahmann**, **Fidel Hernández**, **Leonard Brennan**, **Timothy Fulbright**, and **Fred Bryant**, graduate students **Carter Crouch** and **Michael Hehman**, landowner collaborator **David Heft**, and Texas Parks and Wildlife Department's **Robert Perez**. Congratulations to our scientists for presenting their quail research at the international venue of the Quail Eight Symposium.

Visit our web page at
http://www.ckwri.tamuk.edu

Bart Ballard Awarded

We are excited to announce that **Dr. Bart Ballard** was awarded the *2017 Conservation & Environmental Stewardship Award* in the higher education category by the Coastal Bend Bays Foundation. Each year, the Coastal Bend Bays Foundation recognizes and honors outstanding Coastal Bend citizens, educators, businesses, governing bodies, and other entities for their significant contributions in the areas of habitat conservation, enhancement, protection, restoration or preservation of the Coastal Bend's precious natural resources, or in educating the region's youth and adults about the importance and value of their natural surroundings. More information about this award and the Coastal Bend Bays Foundation can be found at http://www.baysfoundation.org/.

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Dr. Bart Ballard (left) receiving the *2017 Conservation & Environmental Stewardship Award* in the higher education category by Jace Tunnell, Director of the Mission-Aransas National Estuarine Research Reserve and President of the Coastal Bend Bays Foundation.

We congratulate Bart for his hard work in educating the next generation of natural resource managers and scientists. ~

A YEAR OF BLESSINGS, CHALLENGES, AND HARD WORK

by David Hewitt

Just as wildlife have an annual cycle that defines the rhythm of their life, the CKWRI also has an annual cycle. Part of this cycle is defined by the academic year with 5 to 10 graduate students entering our program each semester, students taking classes during spring and fall semesters, and then 5 to 10 students defending their research and graduating at the end of each semester.

We also have a fiscal cycle involving budgeting, soliciting support in various ways, and tracking income and expenditures throughout the year. There are cycles of evaluation for CKWRI employees and the program as a whole. I have now been through this annual cycle as Executive Director and no longer feel like a yearling buck wandering through the pasture, trying to get a feel for the landscape.

This past year has shown me just how fertile the pastures are at the CKWRI. One pasture is composed of Texas A&M University-Kingsville, which provides facilities, some faculty salary, and the academic environment needed for an outstanding graduate program. Another pasture is composed of the funding sources that support CKWRI's operating and research expenditures. These funding sources are diverse, ranging from individuals, ranches, and foundations to state

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Editor's Note: Dr. David Hewitt is the Leroy G. Denman, Jr. Endowed Director of Wildlife Research at the Caesar Kleberg Wildlife Research Institute.

Did You Know?

Nutria were introduced into Texas to control the overgrowth of wetland associated vegetation. (The Mammals of Texas, W.B. Davis and D.J. Schmidly, Texas Parks and Wildlife Press)

For lungless salamanders (Family Plethodontidae), respiration occurs through their skin and mucous membranes. (A Field Guide to Texas Reptiles & Amphibians, R.D. Bartlett and P.P. Bartlett, Gulf Publishing Company)

and federal agencies. The final pasture that supports the CKWRI is composed of the landowners, wildlife managers, and wildlife enthusiasts who take the knowledge we generate and use it to meet their management goals, thereby promoting wildlife conservation.

So, just as the natural world provides for an animal's needs if that animal is willing to work hard, Texas and areas outside our great state provide the resources needed by the CKWRI because of our hard work. The 3 quail projects described in this newsletter's lead article are a perfect example. Questions from quail managers prompted generous landowners to approach the CKWRI about conducting studies because of our track record of high-quality, applied research. These landowners supported the research by providing access to their property, money, and other resources. This fertile collaboration between the CKWRI and the supporting ranches not only resulted in information useful to managers but also in the education of 3 outstanding wildlife professionals who will influence wildlife conservation for several decades.

© Sara Barrera

Snow at the Tio & Janell Kleberg Wildlife Research Park—a rare sight in Kingsville!

The natural world not only provides resources for animals but also serves up challenges that separate the strong from the weak. Such challenges were abundant this past year in the form of hurricanes, localized drought, and even a December snow storm. Similarly, the CKWRI experienced challenges in the form of a tough fiscal environment at the state and federal levels. We weathered these challenges, in part, because of the great support from everyone who gets this newsletter.

CKWRI's annual cycle has begun anew. We look foward to a year of blessings, challenges, hard work, and the satisfaction of promoting wildlife conservation for its beneficial effects upon the health, habits, and character of the American people. ~

Consider giving a tax-deductible donation to CKWRI

What Do They Eat?

Western spotted skunks dine on turkey eggs, young rabbits, mice, and various arthropods. (The Mammals of Texas, W.B. Davis and D.J. Schmidly, Texas Parks and Wildlife Press)

The common poorwill feeds on "beetles, moths, cicadas, bugs, grasshoppers, locusts, flying ants, and flies." (Handbook of Birds of the World, Vol. 5, del Hoyo et al., Lynx Edicions)

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