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## HABITAT FRAGMENTATION AND SCALED QUAIL DECLINE

by Eric Grahmann, Timothy  
Fulbright, and Fidel Hernández

Ecologists Daniel Simberloff and Edward Wilson published a set of landmark scientific papers 45 years ago that had a far reaching impact on the field of ecology, and,

Editor's Note: Dr. Eric Grahmann is the Director of the Game Bird Science Program at CKWRI; Dr. Timothy Fulbright is the Meadows Professor at CKWRI and Regents Professor at Texas A&M University-Kingsville; Dr. Fidel Hernández is the Alfred C. Glassell, Jr. Endowed Professor for Quail Research at CKWRI and Professor at Texas A&M University-Kingsville.

as it turns out, many animals including quail.

They fumigated 6 mangrove islands of various sizes and distances from the mainland in the Florida Keys to test the rate and patterns of insect recolonization to these islands. A pattern emerged suggesting that islands which were larger and closer to mainlands (large habitat patches) tended to be recolonized at higher rates than islands that were smaller and further from mainland source populations.

Applying this concept to wildlife, patches of habitat in a fragmented landscape could be viewed

as islands. Thus, quail populations in habitat patches that are larger and closer together should recover more rapidly than those in smaller, more isolated habitat patches.

We typically think of an island as a piece of land surrounded by water. However, an island is any area of habitat for an animal surrounded by an expanse of land or water that is unfavorable for that animal. Examples of habitat unfavorable to quail are Bermudagrass pastures and extensive areas where brush has totally been cleared. In this article, we explain how the principles of island biogeography can be applied to the management of scaled quail.

In 2009, we initiated a study in LaSalle County to evaluate a rangeland management treatment that would increase habitat for both bobwhites and scaled quail by manipulating non-native grasslands via burning and grazing. We assumed that scaled quail would be a part of this study given the ranch was well

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## By The Numbers

115 average number of days in the gestation period of a feral pig  
(The Mammals of Texas - Online Edition, Texas Tech University)

8–16 length in inches of an adult western lesser siren (A Field Guide to  
Texas Reptiles and Amphibians, R.D. Bartlett and P.P. Bartlett, Gulf Publishing Co.)

within their geographical range, and the ranch had historically supported high densities of the birds. However, after trapping for 2 months, we did not capture any scaled quail.

The lack of trapping success led to questions such as...Why had scaled quail numbers declined so abruptly on this particular ranch? And, if management of this ranch is consistent with that of others across South Texas, what is the current status of scaled quail populations throughout South Texas?

Most landowners within the range of scaled quail in South Texas reported serious declines in scaled quail abundance, a quarter of which reported local extinctions within the past 20 years. On those ranches where a decline occurred, the common denominators were (1) widespread mechanical manipulation of brush, (2) planting non-native grasses, and (3) a change toward a more conservative grazing strategy or removal of cattle altogether. In addition, long-term data from the breeding bird survey suggested that scaled quail have declined about 5% per year in South Texas and their range was retracting to the south and west.

Since 2009, we have radio-collared more than 150 scaled quail in the area surrounding the

ranch in LaSalle County. We found that scaled quail can range over a large area of contiguous habitat—individuals sometimes moving more than 4.5 miles.



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**Researchers at the CKWRI are studying habitat features needed to successfully reestablish and increase scaled quail populations in South Texas.**

In South Texas, scaled quail prefer landscapes sparsely covered with grass. One of our most significant findings is that they avoid areas with a dense cover of non-native grasses. We also found that scaled quail did not cross patches of non-native grasses that were more than 200 yards wide.

It appears that scaled quail use patches of sparse habitat within a matrix of more productive areas (in terms of grass cover); however, we have only detected them in patches that are connected to large parcels of contiguous habitat (over 10,000 acres). Patches of suitable habitat as large as 300 acres can remain unoccupied if the patches are isolated by a barrier of non-native grassland. This implies that planting buffelgrass in a 200-yard-wide pipeline right-of-way can result in a barrier that prevents scaled quail moving from one area to another.

If too many such barriers are created in the landscape surrounding an area of habitat, the area of habitat may cease to support scaled quail. This type of fragmentation has

been a common scenario across South Texas for the past few decades and coincides with the decline in scaled quail populations.

Preliminary analyses suggested that scaled quail in South Texas may be correlated with habitat patch size and the proximity of these patches to other occupied patches. Furthermore, through the use of targeted grazing by cattle, scaled quail have recolonized patches of previously inaccessible habitat on our study site in LaSalle County.

Maintaining scaled quail populations within their geographical range should be a goal of every quail manager. Our data on habitat use by scaled quail emphasize the importance in using native plants in rangeland replanting and pipeline right-of-way reclamation, maintaining cattle grazing to suppress excess grass production, and establishing brush management programs that ensures mixed-brush habitats are maintained on the landscape and these habitats are interconnected.

Although scaled quail possess the ability to fly between islands of habitat, many habitat islands go uninhabited because scaled quail prefer to walk or run rather than fly. The principles of island biogeography are frequently at play. In quail management, managers may best be rewarded by maximizing habitat and restoring bridges of connectivity for quail where these features are limited on the landscape. ~



© Eric Grahmann

**Successful populations of scaled quail require complex native plant communities that are of the appropriate size and connected to other suitable habitat patches.**

**Consider giving a tax-deductible donation to CKWRI**



## CKWRI NEWS

**Fulbright Receives Award**  
CKWRI's **Dr. Timothy Fulbright** has been racking up the awards recently (see Fall 2014 issue). This time, Tim has been honored with the *Sustained Lifetime Achievement Award* by the Society



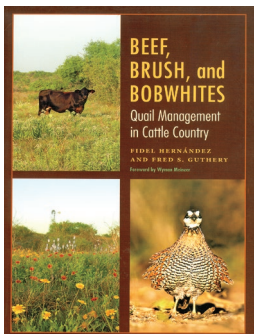
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**Dr. Tim Fulbright** receiving the *Sustained Lifetime Achievement Award* from **Jenny Pluhar**, 2014 President of the Society for Range Management.

for Range Management. This award is presented to members of this society “for their long-time contributions to the art and science of range management and to the Society for Range Management.”

### TSSRM Publication Award

*Texas Section of the Society for Range Management (TSSRM) Special Category Publication Award* went to **Drs. Fidel Hernández** and



**Fidel Hernández** and **Fred Guthery** received the *Texas Section of the Society for Range Management Publication Award* for “Beef, Brush, and Bobwhites.”

This book can be purchased through Texas A&M University Press.

**Fred Guthery** for their book *Beef, Brush, and Bobwhites: Quail Management in Cattle Country*, which is an updated version of the original classic by Fred Guthery and CKWRI. This

## 2014 IN OUR REAR VIEW MIRROR

by *Fred Bryant*

### The Bobwhite Stampede

After several years of miserable drought, wild bobwhites have rebounded in a *remarkable* way. Two important things to remember: First, during a severe drought, most hens will not attempt to nest no matter what you provide—they seem to know “it ain’t worth the effort.” How they tune into their environmental cues and refuse to nest is a real mystery. Second, it takes more than one year of decent and timely rainfall to achieve the population rebound we are seeing today. But, the remarkable part about this year is that wild bobwhites apparently kept trying to nest and raise young all year when presented with a year of moderate, but very timely rainfall.

The hens were giving it “the old college try” even up to late November. A friend sent me a picture of a hen that was shot on November 13th with an egg that dropped out as she was picked up. Now if that was the last egg of the clutch she was laying, she would have had chicks on the ground by December 6th. But, if that was the first egg of her clutch, the hatch could have happened as late as December 22nd.

The last year in recent memory where hens were bringing off broods almost consistently from May through December was 2004. If we can catch a good year of rainfall in 2015, then look out...

Editor’s Note: Dr. Fred Bryant is CKWRI’s *Leroy G. Denman, Jr. Endowed Director of Wildlife Research*.

### Where Fore Art Thou, Oh Egret?

Good science usually turns up new findings. The long held myth was that reddish egrets, a coastal heron, didn’t move a whole lot except maybe up and down the coast. Dr. Bart Ballard’s students have learned that reddish egrets (monitored with satellite radios) are showing up in Mexico (Tamaulipas, Oaxaca, Campeche) and El Salvador. At least half of the egrets that had monitoring radios were migratory. It is clear that what people do in other places of the world can potentially affect Texas’ natural resources.



© Bart Ballard

**Dr. Bart Ballard** and his students are making strides in learning about the elusive reddish egret in coastal areas of Texas, Mexico, and Central America.

### Water Wars

In partnership with the Harte Research Institute for Gulf of Mexico Studies at TAMU-CC and the Meadows Center for Water and the Environment at Texas State University, we hosted a Texas Summit on *Water, Wildlife and Wide Open Spaces* in November. It comes as no surprise that one can attend a water summit or conference every week of the year and “twice on Sunday.” In fact, a water conference was held in Kerrville on the same

### Did You Know?

Each front foot of the nine-banded armadillo has 4 toes and each back foot has 5 toes. (The Mammals of Texas, W.B. Davis and D.J. Schmidly, Texas Parks and Wildlife Department)

White-tipped doves are year-around residents, but are considered migratory under the Migratory Bird Treaty Act. (Migratory Shore and Upland Game Bird Management in North America, T.C. Tacha and C.E. Braun eds., Allen Press)

day as ours. The difference was (and is) that no water conference in Texas covered what we covered, that is, the impact of declining water supplies on terrestrial wildlife, on the function of bays and estuaries, and on our rivers and watershed health.

Those who came said it was one of the best conferences they had ever attended, which was gratifying. Some suggested we should take it on the road to places like Dallas and Houston. The sad part to me was that, in spite of it being within



© Larry Ditto

The South Texas landscape places a premium on water resources for humans, livestock, and wildlife.

### Advisory Board

The Advisory Board of the Caesar Kleberg Wildlife Research Institute provides leadership in all aspects of our work. We are indebted to them for their commitment to CKWRI and its mission.

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20 miles of Austin and in spite of invitations being sent to staffs and members of our legislature, not one person showed up from Texas' governing body. Not one. Sad, but true.

### The Game Changer

As many of you know, we have had an integral partner in Texas Department of Transportation (TXDOT) for over a decade to develop native seeds for restoration and reclamation. With their support and the support of many private donors, we have made great strides to have commercially available,

certified native seed on the seed market in Texas.

In the 1990s, before native seed was commercially available on a meaningful scale, TXDOT was forced the use non-native seeds because (1) there were no commercial options for natives and (2) EPA requirements necessitated planting species that would provide adequate erosion control. However, as of November 2014, all TXDOT specifications for rural roads and highways in south, central, and west Texas will require the use of only native plants. We are thankful that our partnership with TXDOT over the past 14 years has born a new paradigm to restore our rural roadsides.

As 2014 closes, we are so blessed to have your support, encouragement, and confidence in what we do. We could not do this without you! ~

Visit our web page at [Http://www.ckwri.tamuk.edu](http://www.ckwri.tamuk.edu)

### What Do They Eat?

Mottled duck ducklings in freshwater habitats most commonly consume midge larvae and scuds. (The Mottled Duck, C.D. Stutzenbaker, Texas Parks and Wildlife Department)

The marsh rice rat is an omnivore, feasting on green vegetation, seeds, insects, crabs, gastropods, fish, and dead rodents and birds. (The Mammals of Texas, W.B. Davis and D.J. Schmidly, Texas Parks and Wildlife Department)



**TEXAS A&M**  
**UNIVERSITY**  
**KINGSVILLE**

Caesar Kleberg Wildlife  
Research Institute  
700 University Boulevard  
MSC 218  
Kingsville, Texas 78363-8202

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