ROLLING PLAINS QUAIL RESEARCH RANCH

4th Annual Field Day
Friday, Sept. 30, 2011
9 a.m. – 3 p.m.

theme:

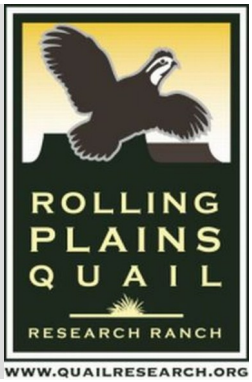
Bobwhite vs. La Nina:
Quail Management During Drought

AgriLIFE EXTENSION
Texas A&M System

AgriLIFE RESEARCH
Texas A&M System

RPQRR's Vision: To sustain Texas' quail hunting heritage for this, and future, generations.

Mission statement: To provide land managers, and other stake-holders, with timely, relevant technology and management schemes for enhancing quail populations in the Rolling



Students of Quail,

Wow! What a difference a year makes . . . in this case unfortunately. Like you, we've languished in the worst drought on record, and our quail population reflects it. There's two ways to spell "drought", i.e., "drought"and "drouth. " I prefer the former, because between the beginning and the end, it's "rough" in between!

I read recently where one writer compared the drought to a constrictor snake—and what an appropriate metaphor, for indeed it squeezes the life out of us, our landscape, and our animals. But I remember a silver bullet that reminds us that while "we can't change the wind, but we can adjust the sails." Today you'll observe how the quail population has suffered and how drought impacts various components of the "quail equation." And how we're coping with La Nina and positioning our habitat to best take advantage of rains when they ultimately return.

Please take advantage of the plant quiz, the poster sessions, and time afield with our staff and students in order to enhance your knowledge and your skill set. And if you have observations about how we could be doing things better, we're all ears.

Indeed, education is a lifelong process.

Dale Rollins
Director &
Extension Wildlife Specialist

Schedule

8:30 Registration & Refreshments
Plant ID Quiz featuring "*Shrubs of the RPQRR*" – Ricky Linex & Kent Mills

9:00 Welcome & Opening Comments
Dr. Dale Rollins, Director
Rick Snipes, President, RPQRF

9:20 Depart for Tour
Stop 1: Water Harvesting Strategies
2011 Weather at RPQRR – Lloyd Lacoste
Spreader Dams & Quail Oases – Barrett Koennecke
Sprinklers to Enhance Microhabitats for Quail – Dale Rollins
Half-cutting Mesquites as "Quail Houses" - Dale Rollins
Stop 2: Patch-Burn Grazing during Drought
Cows & Quail: Drought Strains the Relationship
Vegetation Response – Dave Barre
Grazing behavior— Dave Barre
Insect Response – Christine Litton
Quail Response - Barrett Koennecke
Quail Response to Wildfires – Becky Ruzicka
Stop 3: Modifying Water Troughs for Quail - Dale Rollins

Noon: Catered lunch & Poster Session

Updates:
Operation Idiopathic Decline Update – Steve Presley
Parasite Research – Dale Rollins
Disease research – Dale Rollins
Predation Research
Coyote Diets – Mark Tyson
Raptor Research – Becky Perkins
Rainfall insurance – Jason Johnson
QuailMasters - Debi Simpson & Mackey Morgan
Bobwhite Brigade - A. Simpson, G. Jennings, F. Price, S. Bierschwale

Stop 4: Miscellaneous
Photo-surveillance of feeders – Lloyd. Lacoste
Supplementation with a Layer Ration – Barrett Koennecke
Increasing efficiency of feeders – Lloyd Lacoste
Horned Lizard Abundance at RPQRR—Bradley Lawrence
Non-target Brush Response to Prickly Pear Herbicides - Dave Barre

Return to HQ
Review plant quiz
Distribute CEU certificates

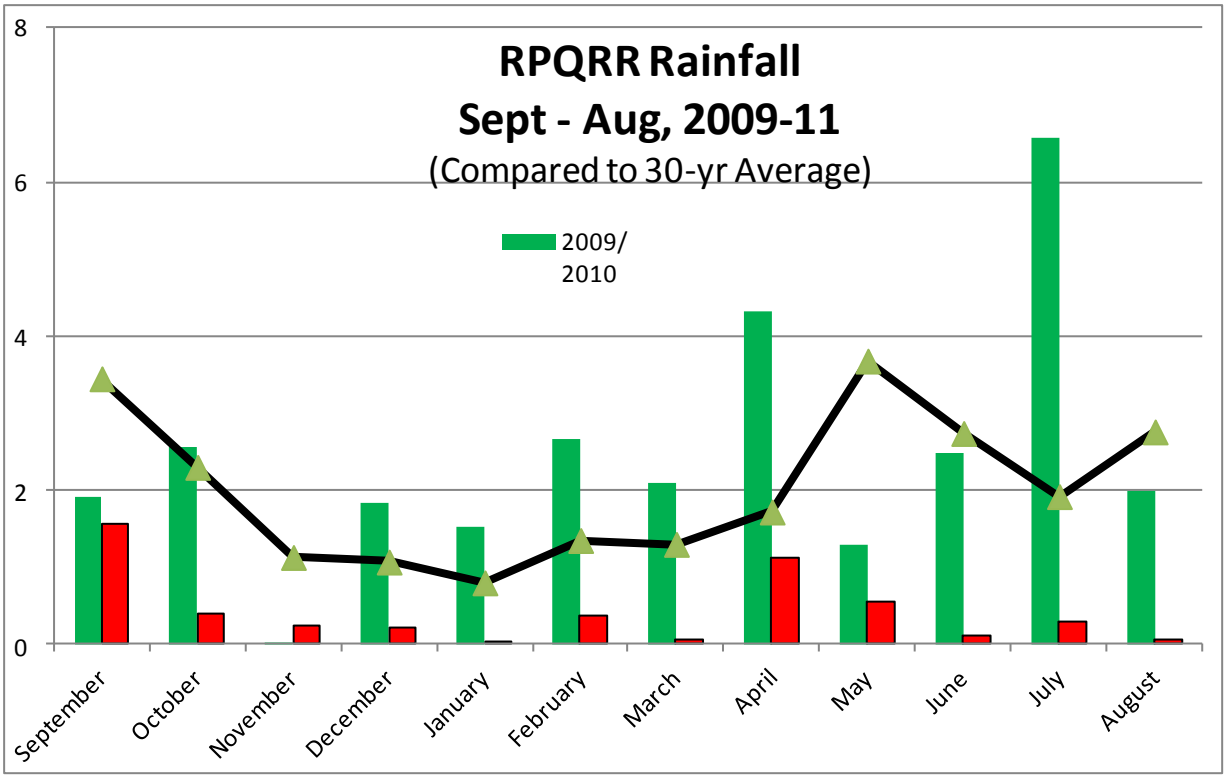
Tour route


Lunch
Stop 3
Stop 4
Stop 2
180
Stop 1
Farm to Market 611
Texas Orthoimagery Program
© 2011 Google
©2010 Google
Imagery Date: 3/30/2008
1996
14 S 354234.48 m E 3620230.63 m N elev 2143 ft
Eye alt 26309 ft

2011—The Year in Review

Lloyd LaCoste, RPQRR

Rainfall is thought to account for a large portion of quail production. We have been in the grips of a La Nina weather pattern for quite some time. Typically a La Nina weather pattern causes Texas to be hot and dry. The 30-year rainfall average for Roby is 24.2 inches. From September 2009 through August 2010 RPQRR had 29.21 inches of rainfall. This year from September 2010 through August 2011 we have only had 4.96 inches of rainfall. Since January 1st we have received 2.71 inches of rainfall. During the summer of 2010 we had 5 days that were over 100 degrees Fahrenheit. This summer we had 79 days that were over 100 degrees Fahrenheit.



Days Above 100° F

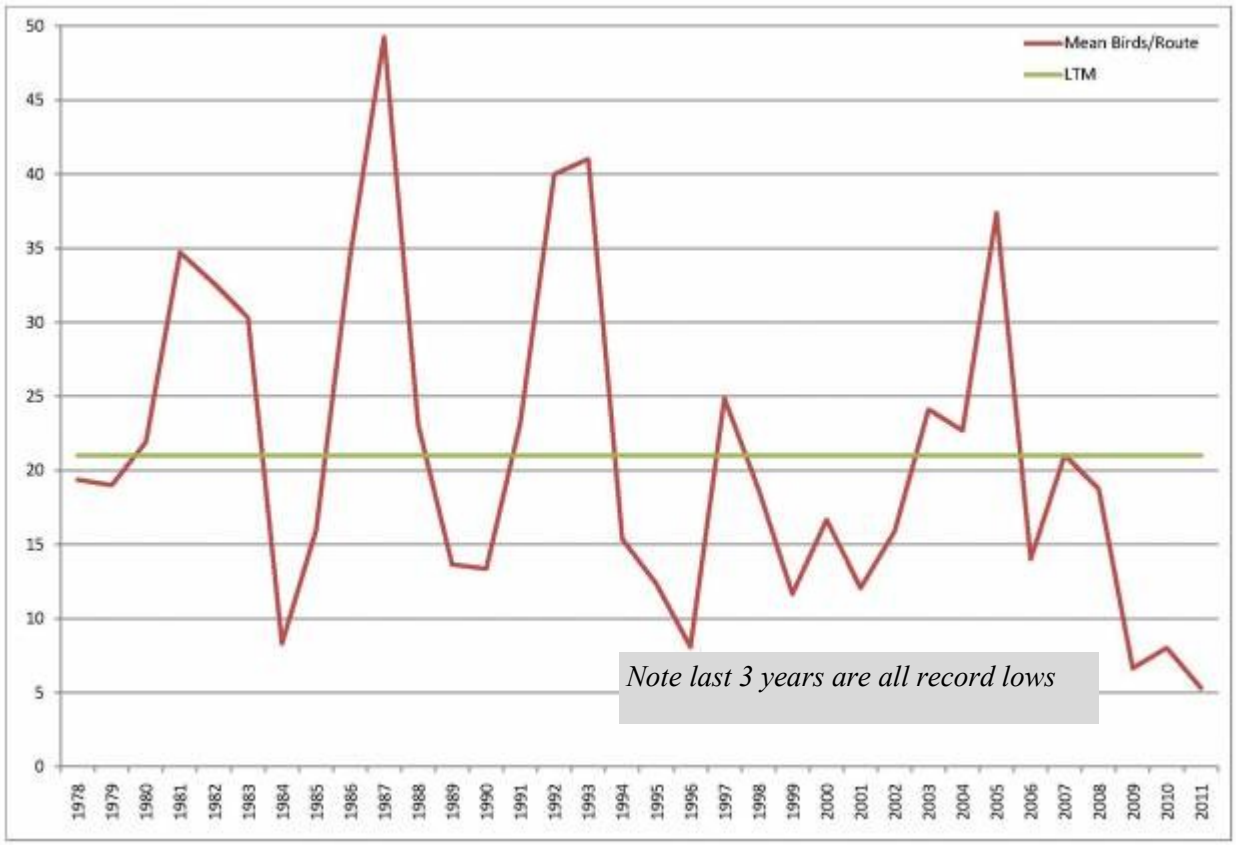
	2010	2011
May	0	7
June	1	22
July	0	21
August	4	28
September	0	1

The State of the Quail

Dale Rollins, RPQRR

I'm tired of making history. Quail populations (bobwhite and scaled) are at record low populations across Texas, and also here at RPQRR. The record drought and hot temperatures have stymied any reproductive effort. All ofour counts were down—way down. Our spring call counts were only about 20% what they have been in previous years. Of 78 radiomarked hens alive on May 1, only 11 attempted a nest, and only five of those nests hatched. Three weeks after hatching, no chicks were observed. Arthropod counts, e.g., Order Orthoptera (grasshoppers) were 90% less than that observed in 2010. Our last three indices (fall covey call counts, trapping success, and fal helicopter counts will commence next month, but I'm not optimistic any will indicate a much-improved situation.

I can only offer two "positives"— (1) quail enjoyed greater survival (probably because of the low nesting rate) and (2) given that next year's breeding population will be mostly (perhaps all) adult birds, their output per individual should be greater (higher nest initiation rates, greater renesting).



TPWD fall roadside count data, 1978-2011.

Quail Statistics

Since RPQRR was started in 2007, we have implemented various ways to monitor quail abundance over time; these efforts include helicopter surveys, whistle counts (spring and fall), mark-recapture (using leg-banded birds), radio telemetry, dummy nest survival, and fall roadside counts. We seek to determine which of these provides reliable estimates relative to the time and expense of conducting the counts.

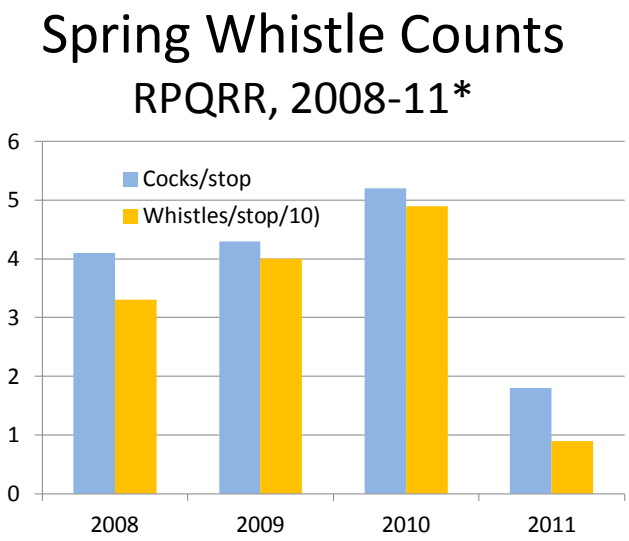
Helicopter counts

Every Year we conduct two helicopter surveys, one in the fall (Nov) and one in the spring (Mar). We fly the same transects with a total sampling effort of 52 miles, using a technique developed by Caesar Kleberg Wildlife Research Institute. This year the spring survey on March 13, 2011, recorded 17 coveys of quail, identical to the count we observed in November 2010. In Spring of 2010 we recorded 11 coveys. Fall surveys will take place in early November.

Roadside Counts

Roadside counts are easy to conduct—you simply drive a prescribed route during early-morning or late-afternoon hours and count the number of quail observed. We repeat our counts four times during September; two during morning hours and two during afternoon hours. The number of birds observed per mile is an index to quail abundance. Each year during August, Texas Parks and Wildlife Department biologists conduct roadside counts on 20-mile routes across much of west and south Texas. At RPQRR, we count along two 10-mile routes, i.e., an "east" and "west" line to give us greater resolution. Our habitat is quite different from one side of the ranch to the other, with the western half having considerably less brush (i.e., "quail houses") than the eastern part of the ranch. The table below compares TPWD'S mean number of quail per 20 mile route to RPQRR's.

Mean Number of Bobwhites Observed per 20-mile Route		
Year	**TPWD**	**RPQRR**
2008	18.7	96
2009	6.6	25.2
2010	8.2	29
2011	5.3	8.8



**2011 data through 6-27-11*

Call Counts

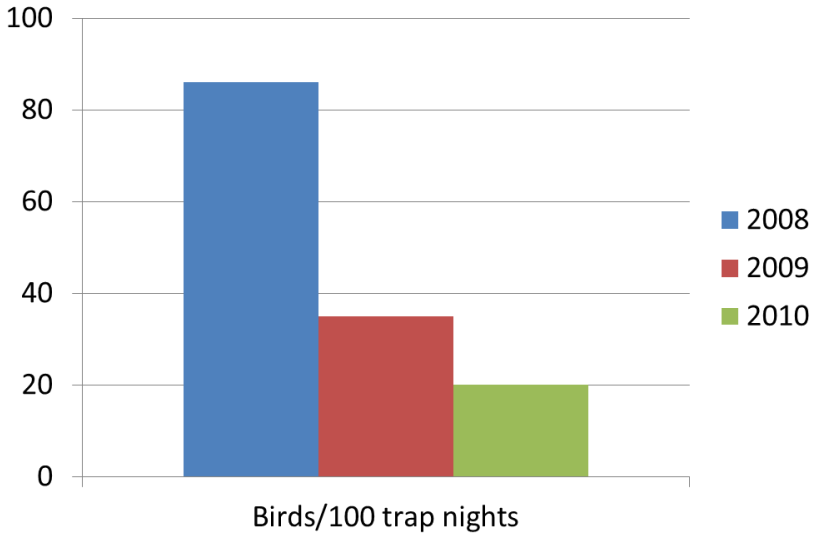
Call counts can be used to index abundance of quail over time. Spring call counts are conducted at 25 call count stations or "mile markers" that are spread out across the ranch. The ranch is divided into 2 transects: a West line which has 13 mile markers, and an East line with 12 mile markers. Call counts were conducted twice a week starting on May 24, 2011 and continued until July 28, 2011. Counts averaged 1 rooster and 5.1 calls per stop for 2011. This is down considerably from 2010 (5.3 roosters/ stop and 49.2 calls per stop).

Survival

We use radio-marked bobwhites for several aspects of our research. These objectives include monitoring survival rates, determining cause-specific mortality, documenting movements and spatial use of habitat, and nesting ecology. We radio collar males during our fall-trapping effort and females during our spring trapping effort. We defined last year's winter survival period as November 1 through February 7 (99 days). Survival of adult males was estimated at 41% while juvenile males was estimated at 61%; these estimates are similar to those of 2010 for adult males, but juvenile males enjoyed higher survival than observed last year (36%). The summer female survival went from April 1 through July 8 (99 days). Adult females had a survival rate of 67% while juvenile females had a survival rate of 65%; these estimates are about 3X greater than those observed in 2010 (23% for both age classes). These differences likely reflect the survival costs associated with nesting (i.e., very little nesting effort in 2011).

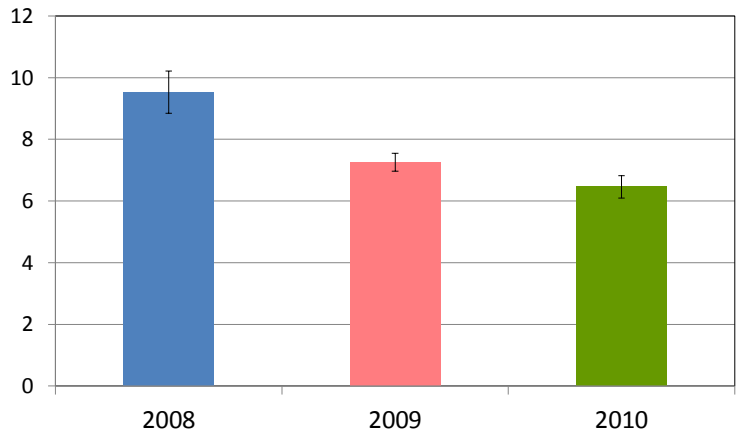
Trapping success at RPQRR

Fall period, 2008-10



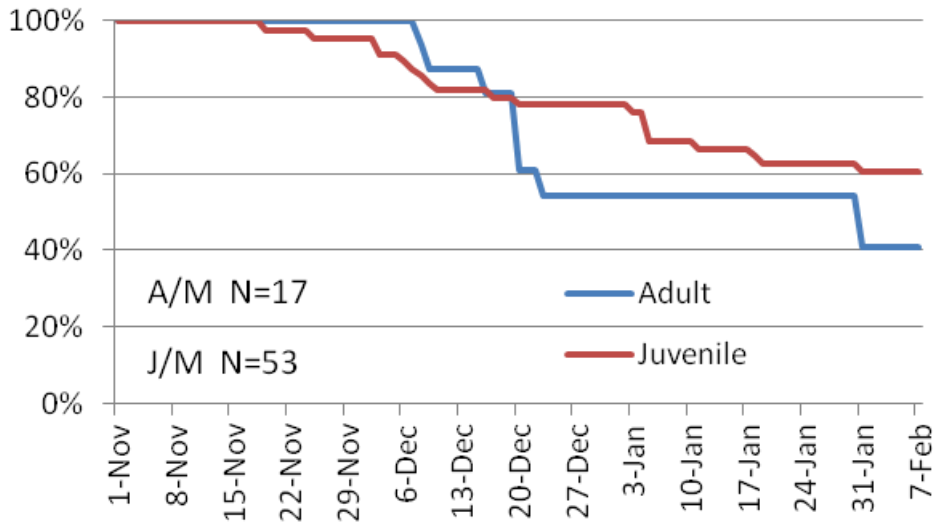
N = 1088, 1271, and 1480 trap-nights for 2008-10, respectively.

Fall Call Count Summary



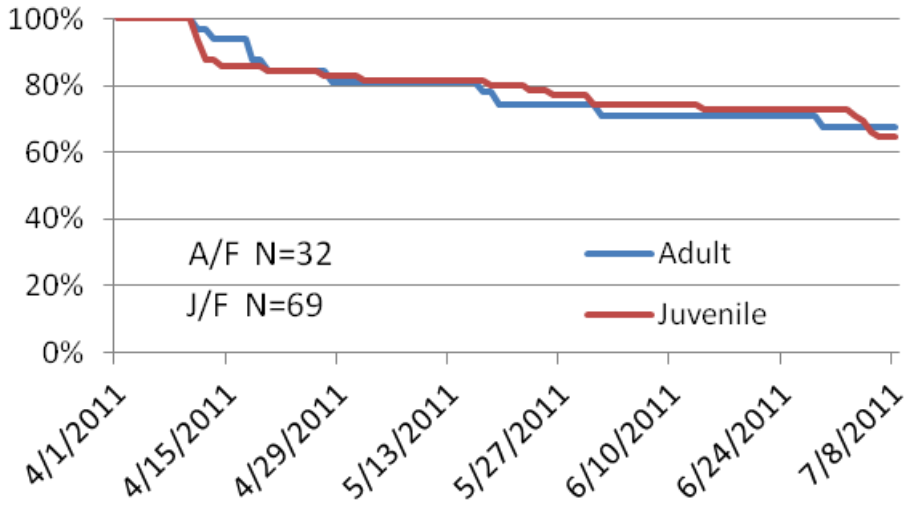
Bobwhite Survival - Winter 2010

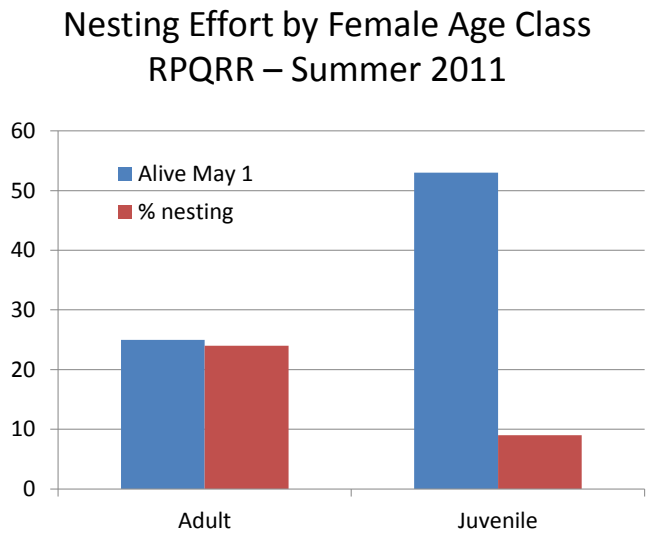
(males)



Bobwhite Survival – Spring-Summer

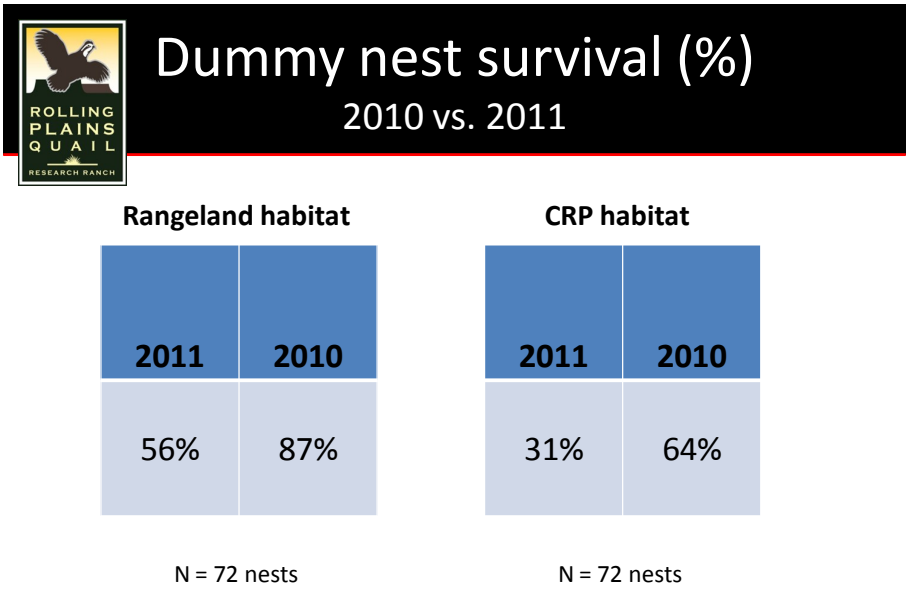
(females)





Dummy Nests

We conduct dummy nests to get an idea of nest survival in a real life situation during May and June, when quail are nesting. This year we had 72 nests in CRP and 72 nests in Rangeland. This year's dummy nest results were considerably down from last year. In CRP last year 64% of the nests survived compared to this year where only 31% survived. In the Rangeland, 87% survived last year compared to this year where only 56% survived.



STOP 1

Water Harvesting Strategies

As we depart for Stop 1, note several spreader dams ("quail oases") on your right. These were installed in September 2010, but insufficient rainfall has prevented them from "developing" yet. Inset shows oasis on Aiken Ranch (in drought year) dominated by western ragweed.

Water Harvesting Strategies

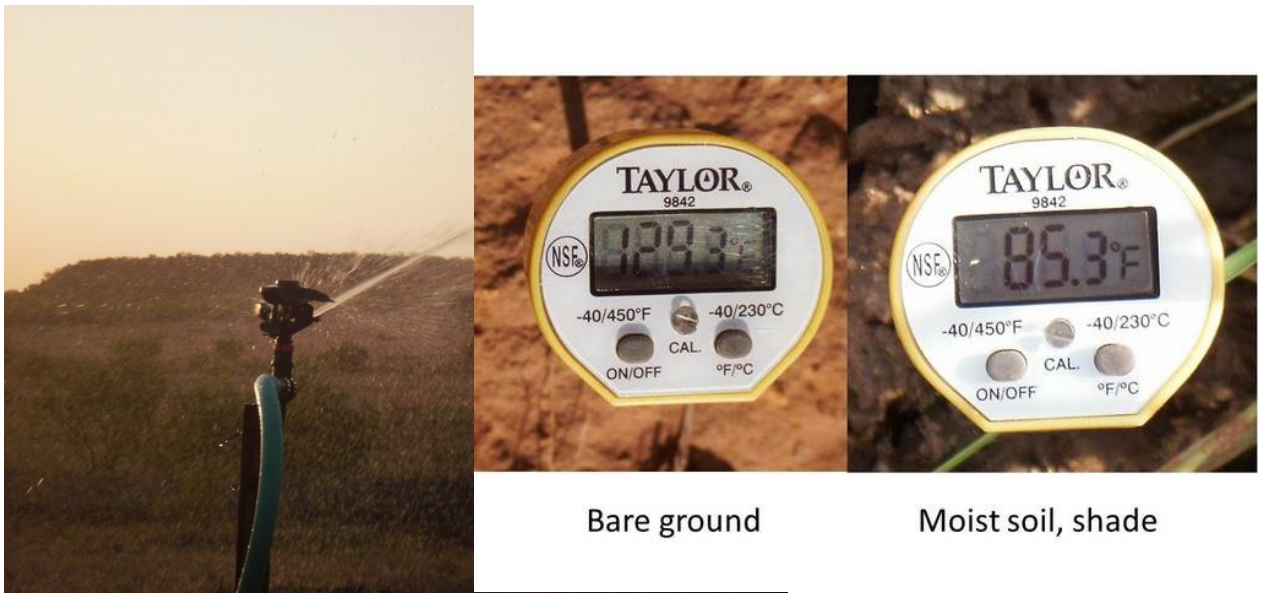
Barrett Koennecke, RPQRR

In the Fall of 2010 we created 148 spreader dams ("quail oases") to prevent erosion and enrich microhabitats for quail (via vegetation and insects) from the collection of water. We seeded several different cool- and warm-season plants into the dams, including Illinois bundle flower, cowpen daisy, prickly poppy, hairy vetch, winter peas, and alfalfa. Given the resultant dry weather and seed consumption by winter migrant songbirds, few seeds have germinated. Only Illinois bundleflower has seen any notable establishment. We had planned on getting seedling plums to act as a permanent cover but as time went on and still no rain we decided against that idea at least for this growing season. Over the next several years we hope these spreader dams will increase the "usable space" for bobwhites on the western half of the ranch.

An Evaluation of Sprinklers to Provide "Quail Oases" during Drought

Dale Rollins, RPQRR

Given the acutely dry weather and high temperatures, we fashioned six oscillating sprinklers and attached them to water faucets scattered across RPQRR. Our objectives were to determine if sprinkled plots would provide attractive microhabitats for bobwhites, either via food availability and/or a cooler microhabitat. The faucets were installed on 3 July. We disced half of the resulting circle and broadcast-seeded German millet. Since mid-July, the plots have been irrigated thrice weekly for 10 hours per cycle. Bobwhites have been observed in most of the plots. Soil temperatures are typically 20 to 40 degrees F cooler in the plots than on exposed soil adjacent to the plots.



Bare ground Moist soil, shade

Half-Cutting Mesquites to Enhance "Usable Space" for Bobwhites

Jacob Shatwell, Dale Rollins, and Christine Litton, RPQRR

Here at R.P.Q.R.R we use half-cutting on select mesquites in desired areas to enhance cover,i.e., increase "usable space" for quail and other species. Cutting only halfway through limbs keeps them from perishing and the resulting growth form provides a more attractive covert for quail. However, not all of the limbs are half-cut; some near the center of the tree are left. Done correctly the mesquite will continue to grow, but the limbs will grow downward. To complete half-cutting on your own all you need is a good pair of gloves and a very inexpensive hand saw. Start by finding a suitable smooth-barked mesquite with plenty of limbs. Saw halfway through each limb until the limb breaks downward under its own weight. Remember to leave some of the center limbs so the mesquite can continue to grow upright too. Don't cut just a single tree, but instead half-cut a "motte" of them, perhaps a half-dozen over an area the size of a basketball court.

A half-cut mesquite at one year post-cut. The idea is to simulate a "quail house" like a plum thicket or a lotebush.

STOP 2

Patch-Burn Grazing During Drought

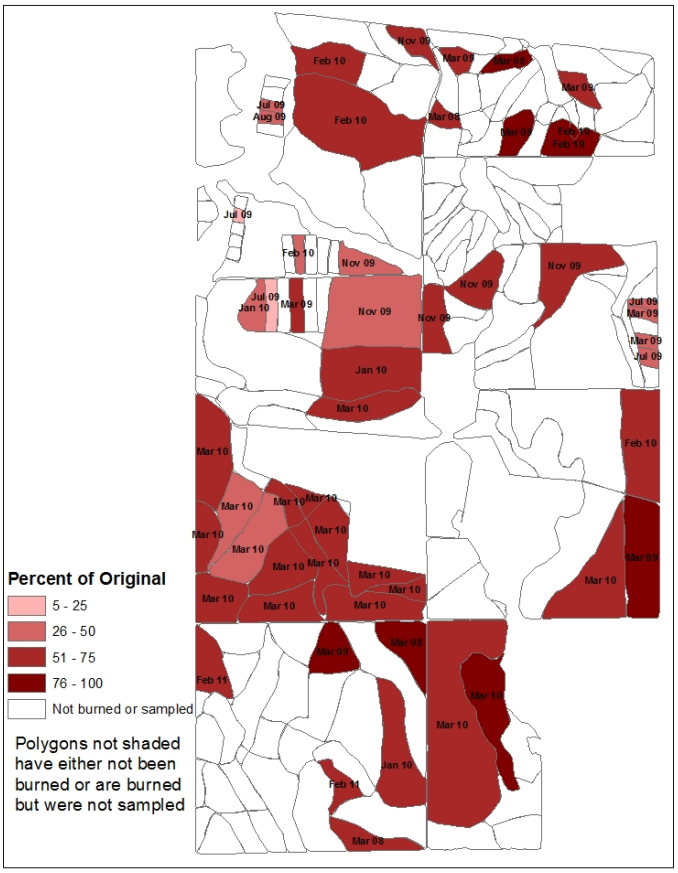
After we pass through a CRP field ("Babe" Pasture), we will be driving through the "Meg" Pasture which was burned in March 2010 then sprayed with a 32-oz rate of Surmount herbicide on 25 April. Spraying was done via helicopter and the area containing most of the hackberry trees was not sprayed by incorporating GPS-navigation.

Prickly Pear Reduction Following Warm- and Cool-season Burns

Dave Barre, RPQRR

We measured prickly pear densities across the ranch in certain polygons and plots that have been burned either in cool or warm season prescribed fires. We continue to sample burns at 1-, 2-, and 3-years post-burn to determine whether prickly pear densities return to pre-burn levels. In April 2010 the Meg pasture was also treated with a 32-oz/ac rate of Surmount, about 5 weeks following a prescribed fire implemented on March 13th 2010, and so has been summarized separately from the summer and winter burns. Prickly pear responds differently following warm- vs. cool season burns. Cool-season burns reduced pad numbers by only 30% of initial densities at 1-yr post-burn whereas warm-season burns reduced pad numbers by twice that (63%). At 2 years post-burn, cool season burn polygons returned to about 96% of initial densities, whereas warm season burn polygons had increased to almost 70% of initial densities. In the Meg pasture prickly pear densities were reduced to about 58% of initial densities at 1-yr post-burn. Pear re-growth occurred more quickly in cool-season burns compared to warm-season burns and it is yet to be determined if chemical and cool season-burn treatments combined keep prickly pear densities from returning to pre-burn numbers.

Prickly Pear Densities - 1 Year Following Burns
Percent of Original Density



Note: We pre-treated a few summer burn polygons with glyphosate (64 oz/ac) and prickly pear densities were reduced to 5% of initial densities, then returned to about 20% of initial densities after two years. (Data not shown in table)

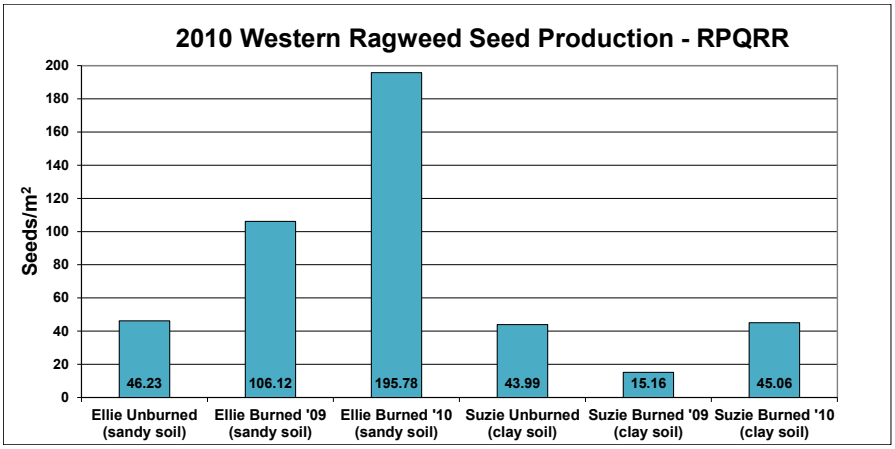
% Yr-0	Years Post Burn		
	Yr-1	Yr-2	Yr-3
Control	115.2	120.4	124.0
Summer	37.5	69.5	X
Winter	70.7	96.4	98.8
Meg	58.3	X	X

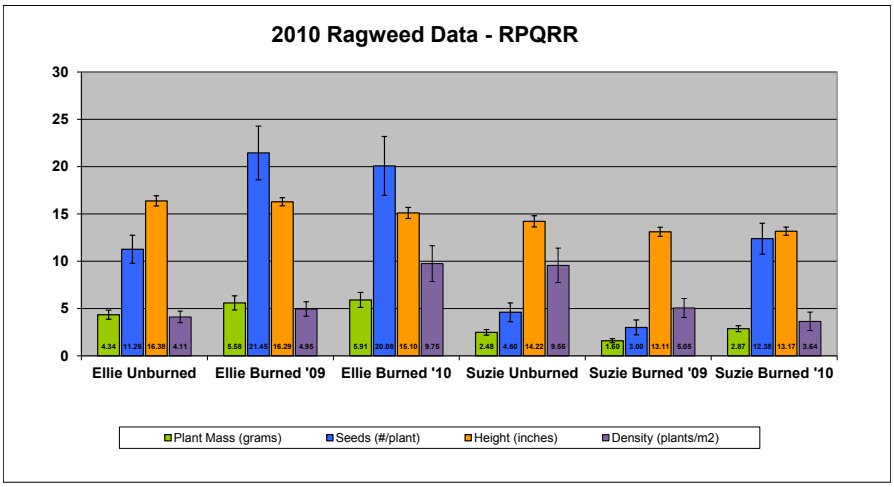
Funding provided by RPQRR.

Impacts of Dormant-Season Burning on Seed Yield in Western Ragweed

David A. Barre and Dale Rollins, RPQRR

Seeds of western ragweed (*Ambrosia cumanensis*) are a major component of the winter diet of bobwhites. We measured seed yields of western ragweed on the Rolling Plains Quail Research Ranch (Fisher County) to determine whether dormant-season burning stimulates seed production, as it can do for other plant species. In November of 2009 and 2010 western ragweed was sampled using a stratified random design on two rangeland sites burned in March 2009 and March 2010, respectively, and from two adjacent unburned control areas. In 2009, seed counts were 2-3 times greater on plants from burned areas (8.54 ± 0.89 and 10.92 ± 1.93 seeds/plant) than plants from unburned areas (4.26 ± 0.62 and 3.54 ± 0.69 seeds/plant, $P<0.05$). In 2010 a similar trend was evident; with mean seed yields in burns (20.08 ± 3.11 and 12.38 ± 1.64 seeds/plant) approximately double that of the unburned means (11.26 ± 1.49 and 4.60 ± 1.00 seeds/plant). These data suggest that an immediate and, in some cases, 2-year treatment effect is possible for ragweed seed production following dormant-season burning. Additional counts will be done this October to determine if drought impacts the treatments.





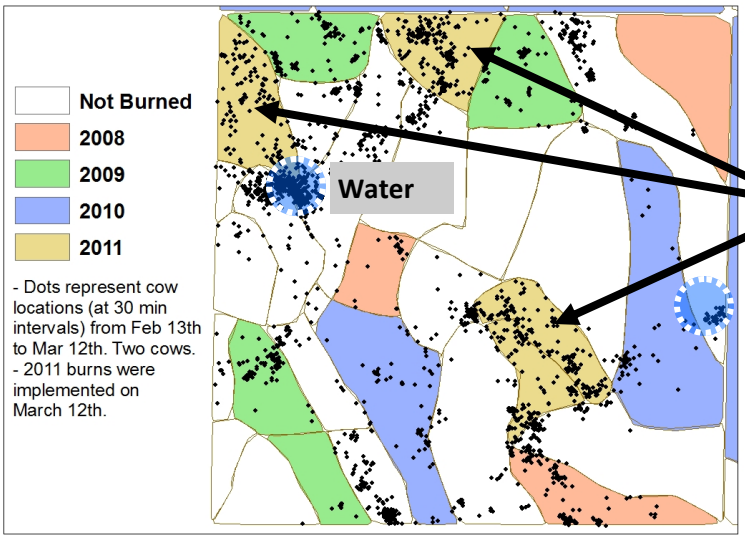
Cattle Grazing Distribution on Patch-Burns during Drought

Dave Barre and Dale Rollins, RPQRR

Patch-burn grazing (PBG) is the application of a combination of prescribed burning and grazing in order to achieve specific habitat management goals. Cattle are allowed to graze freely within a pasture, which has a patchwork of burned and unburned patches within it. The result is the cattle are attracted to freshly burned prickly pear and palatable and nutritious new growth that appears shortly after burning, and therefore tend to focus their grazing activity on those burned portions of the pasture. This selective burning and subsequent grazing results in a heterogeneous plant species composition and structure at the pasture scale. Based on patch burn grazing research on North American tallgrass prairies, we predict that this vegetative heterogeneity will benefit wildlife, including quail. Our objectives in this PBG study are 1) to quantify pasture utilization over time by the cattle; 2) to quantify changes in forb, grass and prickly pear composition in response to burning and grazing; 3) assess the use of PBG as an effective tool for quail management ("quail-friendly); 4) quantify arthropod dynamics in response to PBG; and 5) quantify small mammal dynamics in response to PBG. The drought conditions of 2011 significantly altered spatial grazing patterns of cows relative to previous years. Cows were on-site during our grazing regime of Feb 13th to Jun 28th. During an average-high rainfall year cattle tend to graze within the recently-burned patches during the weeks immediately following the prescribed burns. This year, the cattle grazed the pasture relatively homogenously compared to recent years, and due to the very dry months this year tended to graze areas containing shinoak as a source of browse.

Funding provided by NRCS Conservation Innovation Grant and RPQRR.

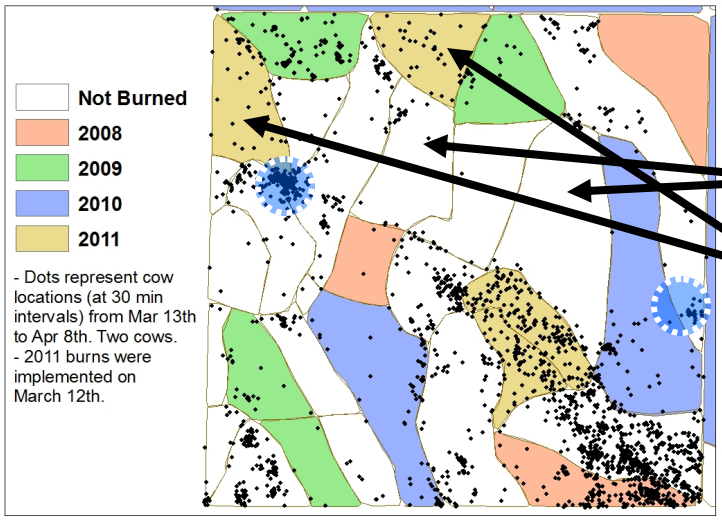
Ellie Patch Burns - Cow Locations (Feb 13 - Mar 12)



Pre-burn

- **Little use of previously burned areas**
- **Considerable use of all 3 polygons that were scheduled to be burned (lower right; tan-colored)**

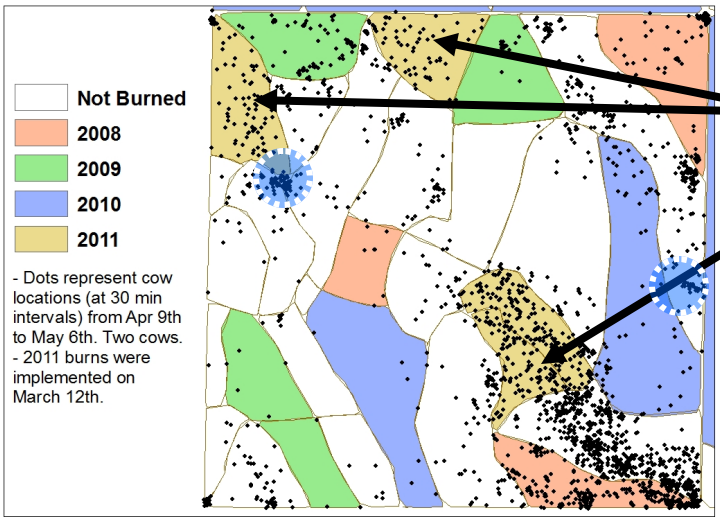
Ellie Patch Burns - Cow Locations (Mar 13 - Apr 8)



1-mo Post-burn

- **Congregation towards SE portion (sandy—shinoak)**
- **Note very little use of white-colored polygons (untreated) in upper central portion of figure**
- **Little use of 2 recently burned polygons in NW portion of pasture**

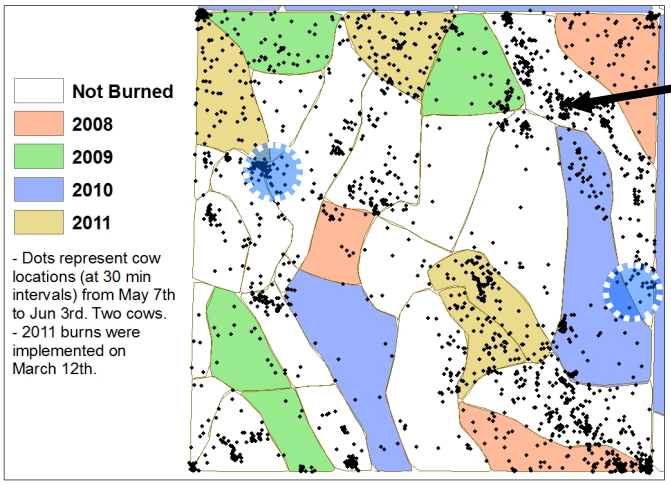
Ellie Patch Burns - Cow Locations (Apr 9 - May 6)



1-2 mos post-burn

- **Little use of previously burned areas**
- **Greater use of recently burned (prickly pear consumption?)**
- **Continued heavy use of polygons with shinoak**

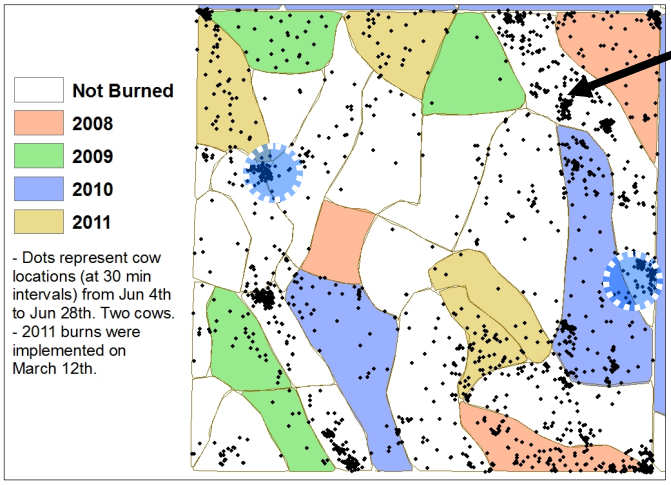
Ellie Patch Burns - Cow Locations (May 7 - Jun 3)



2-3 mos post-burn

- **Most uniform grazing to date**
- **Concentrations in riparian area (shade)**

Ellie Patch Burns - Cow Locations (Jun 4 - Jun 28)



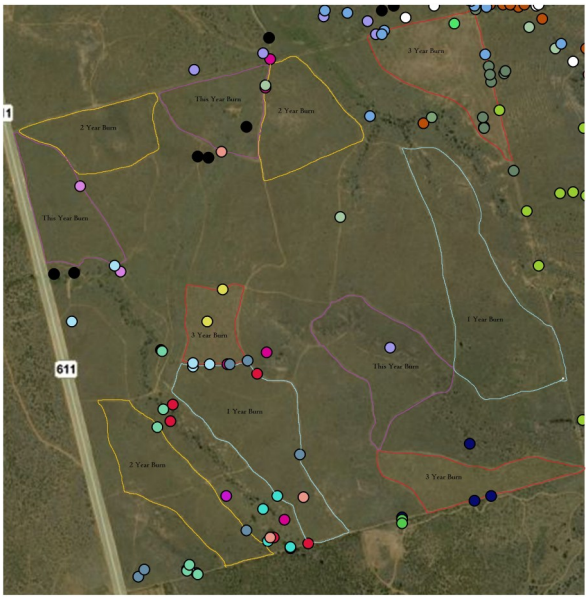
3-4 mos post-burn

- **Concentrations in riparian areas (shade)**
- **Most uniform grazing to date**

Quail Response to PBG during Drought

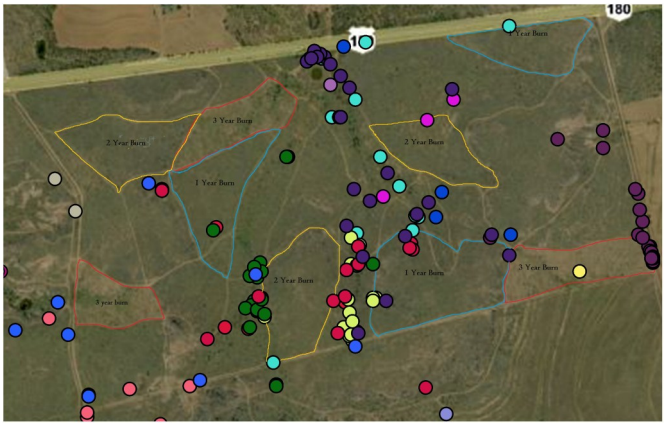
Barrett Koennecke, Christine Litton, and Shesh Jhala, RPQRR

As part of the Patch-Burn-Grazing Study we are also monitoring quail and their response to different burns. The attached maps show movement of quail throughout Ellie and Suzie from Feb. 2 of 2011 through mid-Sept. Each quail is represented by a different color on the map. To date, quail have not exhibited any obvious preference for differently-aged burns. The only apparent selection is their tendency to reside mostly in riparian areas, probably because these areas afford better woody cover. Upon saying that, if the weather conditions are taken into account, (little rainfall, and high temperatures), it would make sense that birds do not spend much time in the burned areas where there is not much cover from the elements.



Ellie Pasture

- Few quail overall in this pasture
- Associated mainly with perimeter of pasture or riparian areas



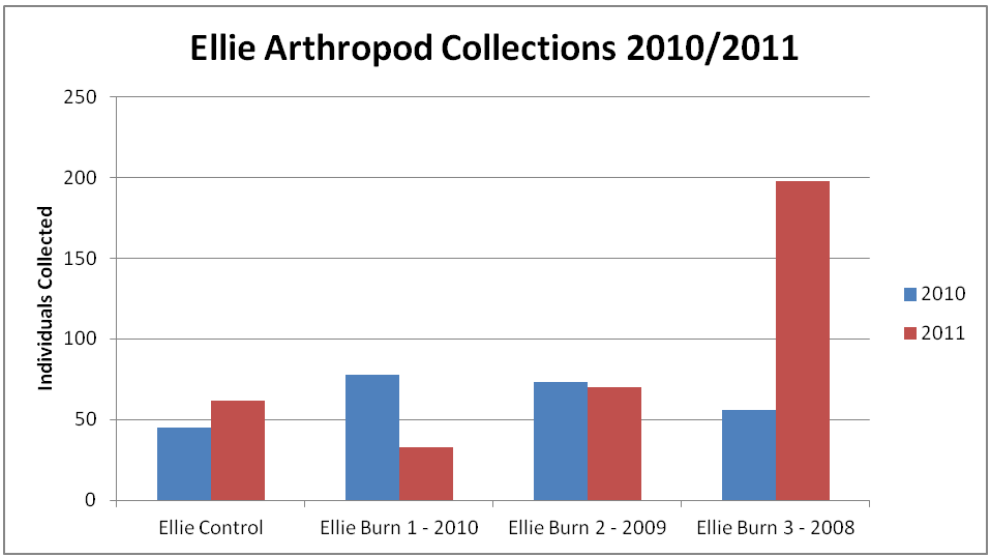
Suzie Pasture

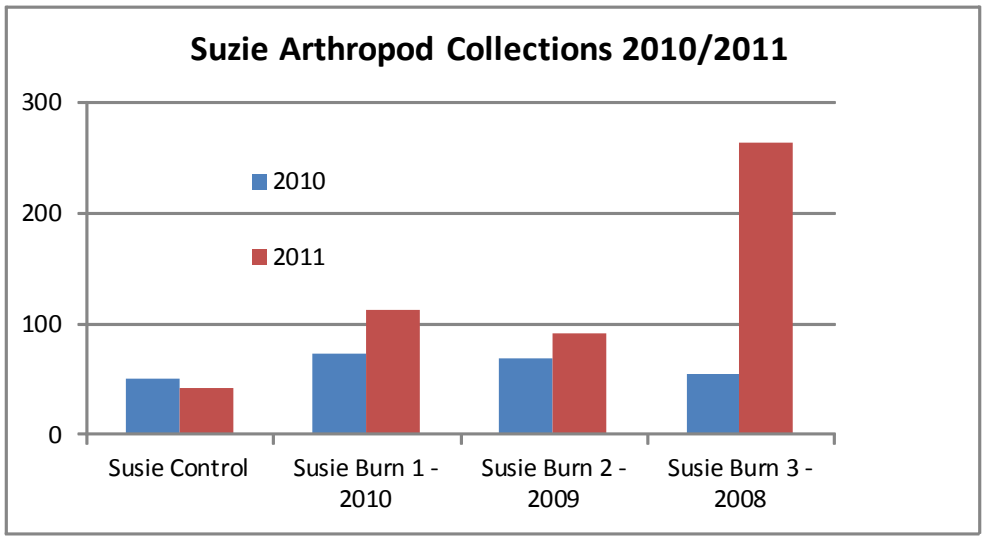
- Associated mainly with perimeter of pasture or riparian areas
- Little use of burned areas during 2011

Arthropod Response to Patch-Burn-Grazing in the 2011

Christine Litton, RPQRR

Arthropods (e.g., insects) are one of many food resources for quail. At R.P.Q.R.R. we conduct an arthropod survey to estimate the overall abundance of these important creatures. Our survey takes place within our Patch Burn Graze (PBG) and other habitat types over the entire ranch. Here we are going to focus on the PBG section of the study. The burn years range from 2008 till present year including control patches in each pasture. When conducting the survey we used two sampling techniques, Pitfalls and Sweep nets. Each burn year has three transects (lines) with six pitfalls within each. All the pitfalls were checked at three day increments with a total of three checks for the survey. After pitfalls are completed sweep nets are implemented at four randomly selected pitfalls. All arthropods and counted and recorded. The result from this year's survey suggests that the oldest burns (2008) contained a higher concentration of arthropods than more recent burns. However, the other burn years (2009, 2010, 2011, control) didn't show a significant difference between the 2010 survey and the 2011 survey.



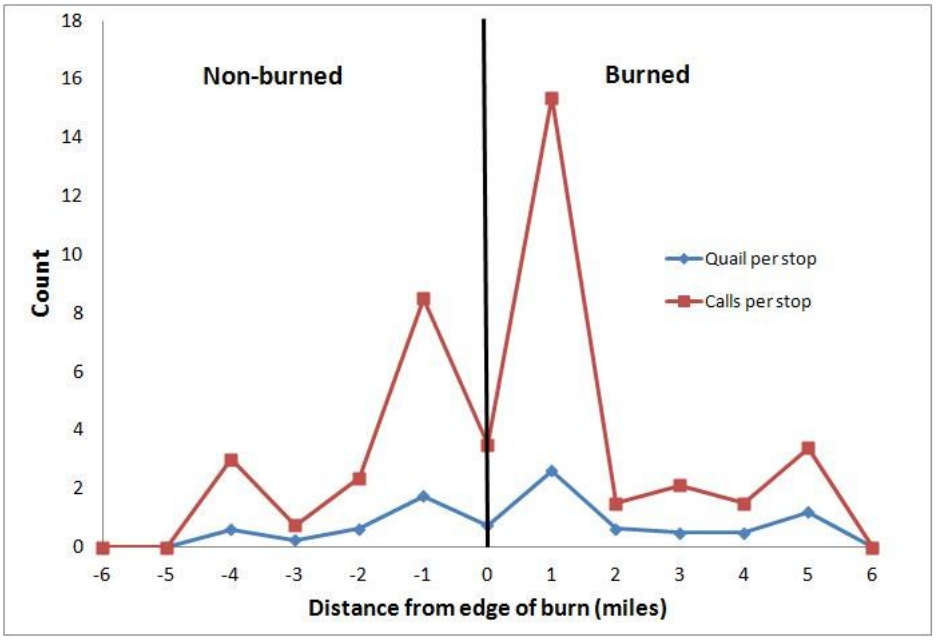


Operation Phoenix: Bobwhite Recovery following Large-scale Wildfires in West Texas

Becky Ruzicka, RPQRR and Texas AgriLife Extension Service
Dale Rollins, Texas AgriLife Extension Service, San Angelo
Ken Cearley, Texas AgriLife Extension Service, Amarillo

During the spring and summer of 2011 severe wildfires consumed over 2 million acres of prime quail habitat in west Texas. We conducted bobwhite call counts in adjacent burned and unburned habitats in 10 different west Texas counties to gain a greater understanding of quail dynamics following large-scale wildfires. This study builds on a similar 2006 study conducted in the Panhandle region by covering a larger area under different weather conditions. We established transects of 7 to10-miles with permanent listening stations every mile that ran perpendicular to the fire line and covered approximately an equal amount of burned and non-burned land. We counted the number of bobwhite calls heard at each listening station during a 5-minute time span and repeated counts three times for each site between June and July 2011. A total of 347 bobwhite calls and 87 birds were counted. We recorded an average of 6.6 bobwhite calls and 1.5 quail were counted per stop in burned areas. Non-burned habitats held half as many calling birds with only 3.5 calls and 0.75 quail per stop. Edge habitats were similar to non-burned with 3.4 calls and 0.75 bobwhite quail per stop. Nearly half (47%) of the quail counted were on the fire line or within one mile of it and the number of quail appeared to decline as listening stations progressed deeper into burned or non-burned territory. Cover is vitally important to quail and the edge habitat provides this in the non-burned country directly adjacent to a food resource in the burned country. Another contributing factor to the pattern of quail abundance we observed could be that quail displaced by the fire settled in the nearest suitable habitat. Due to exceptional drought conditions, calling activity was likely suppressed on all habitats (burned and non-burned). These counts will continue through 2013.

Funding provided by Texas AgriLife Extension Service's Quail Decline Initiative.



STOP 3

Water for Quail

Quail oasis resulting from overflow from a stock water trough. Contrast growth in foreground with that in background. Temperature differential between the 2 sites often exceeded 30 degrees F during late afternoon.

STOP 4

Lunch & Poster Session

Please take this opportunity to view various posters and visit with RPQRR staff, graduate students, QuailMasters, and Bobwhite Brigade cadets.

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Turner Seed

Prevalence of Coccidia and *Cryptosporidium* infections in Bobwhite Quail from the Rolling Plains Quail Research Ranch (RPQRR)

Lacy Parson[1], Xicheng Ding[1], Lloyd LaCoste[2], Markus Peterson[3], Dale Rollins[2,3] and Guan Zhu[1]

[1] Department of Veterinary Pathobiology, Texas A&M University, College Station, TX
[2] Texas AgriLife Research & Extension Center, San Angelo, TX
[3] Department of Wildlife & Fisheries Sciences, Texas A&M University, College Station, TX

We have developed nested PCR protocols to specifically detect coccidial and cryptosporidial parasites in the feces from the wild Bobwhite quail collected in the annual trapping program at RPQRR. Presently, we have completed a preliminary study on the fecal samples collected in the fall, 2010 (32 pooled samples from 158 birds) and spring, 2011 (21 pooled samples from 84 birds) (e.g., Fig. 1). Using a maximum-likelihood (ML) algorithm, we estimated that the infection rates among the pooled samples were ~25% (lower and upper limits at ~15% to ~35% with 95% confidence) for the coccidia and ~5% (~2% to ~10%) for *Cryptosporidium* species (Table 1). The positive rates between the two collections are similar for both groups of parasites, suggesting reasons might have little effect on the infection rates. The current methods are unable to distinguish the parasites at genus level for the coccidia or species level for *Cryptosporidium*. Therefore, we have started to clone and sequence the PCR products for speciation. Our primary study indicates that all coccidial sequences analyzed so far belong to avian *Eimeria* species. The identity of PCR products for *Cryptosporidium* is also confirmed. While more sequences are to be cloned and sequenced, attempts to clone and produce longer sequences for a better speciation of parasites are ongoing. In parallel, we have also acquired feces from a number of farmed quail, from which we may gain a more comprehensive picture on the parasite infections in Texas quail. We have observed a large number of oocysts in these samples, in which the majority appear to be *Eimeria* spp. However, we have also surprisingly observed a *Cyclospora* 18S rDNA sequence. To our knowledge, this is for the first time that a *Cyclospora* species is observed in birds, or at least in galliformes. Further analysis on the nature of this potential new species is ongoing.
In summary, we have determined that coccidia and *Cryptosporidium* may infect ~25% and ~5% Bobwhite quail in RPQRR as determined under the sensitivity of the newly developed nest PCR methods. *Eimeria* is at least one of the coccidia in quail.

Funding provided by Rolling Plains Quail Research Foundation.

Table 1. Positive rates of coccidia and *Cryptosporidium* species in bobwhite fecal samples as determined by nested PCR and estimated by a maximum likelihood (ML) algorithm. Lower and upper limits are set at 95% confidence. Rolling Plains Quail Research Ranch, Fisher County, Texas 2010-11.

Date	Parasite	Infection Rate (%)	Lower Limit	Upper Limit
2010 Fall	Coccidia	24.57	15.74	34.57
2011 Spring	Coccidia	25.90	15.85	37.87
Combined	**Coccidia**	**25.15**	**18.30**	**32.88**
2010 Fall	*Cryptosporidium*	4.29	1.39	9.94
2011 Spring	*Cryptosporidium*	5.15	1.69	11.66
Combined	***Cryptosporidium***	**4.68**	**2.20**	**8.63**

See http://www.texas-wildlife.org/index.php?option=com_content&view=article&id=275&Itemid=263 for 8 new webisodes taped at RPQRR!

Summary of avian influenza virus surveillance in wild bobwhite quail populations at RPQRR

Owais Khan[1], Pamela J. Ferro[1], Christine Vuong[1], Sanjay M. Reddy[1], Lloyd LaCoste[2], Dale Rollins[2] and Blanca Lupiani[1]
[1]College of Veterinary Medicine & Biomedical Science, Texas A&M University, College Station, TX 77845; [2]RPQRR, AgriLife Research, Texas A&M University, Roby, TX

Bobwhite populations have declined significantly in the past few years throughout the Rolling Plains. The objective of our study was to determine the prevalence of avian influenza viruses (AIV) in these declining quail populations. A total of 588 tracheal swabs and 603 cloacal swabs were collected from wild captured or hunter-killed bobwhites from November 2009 to April 2011 at RPQRR. Samples were collected using sterile swabs and placed in 2-3 mL viral transport media. Presence of avian influenza virus genetic material was determined by real-time RT-PCR (rRT-PCR), and selected samples were examined for presence of infectious virus by virus isolation. A total of 18 samples, 11 from cloacal swabs (1.8%) and 7 from tracheal swabs (1.2%), tested positive for AIV genetic material. On the other hand, 24 cloacal swabs (4.0%) and 61 tracheal swabs (10.1%) were suspicious for AIV by rRT-PCR. No virus was isolated from any of the samples tested. Similar findings of low AIV prevalence by rRT-PCR without positive virus isolation have been recently reported in quail in California. Prevalence of Avian Influenza seemed to be greater in November 2010 and March 2011 than at earlier dates. This is an ongoing project and the biological significance of the data presented here remains to be determined.

Funding provided by Rolling Plains Quail Research Foundation.

Table 1. Avian Influenza surveillance in bobwhites at Rolling Plains Quail Research Ranch, 2009—2011

Year Month	Tracheal swabs tested	rRT-PCR positive or suspicious	Cloacal swabs tested	rRT-PCR positive or suspicious
2009 November	114	2 (1.75%)	113	3 (2.65%)
2009 December	130	0 (0%)	132	1 (0.75%)
2010 September	19	2 (10.5%)	19	1 (5.26%)
2010 November	126	7 (5.5%)	138	23 (16.6%)
2011 March	153	19 (12.4%)	155	41 (26.4%)
2011 April	46	1 (2.17%)	46	3 (6.5%)
Total	588	7 (1.2%) positive 24 (4.0%) suspicious 31* (5.3%)	603	11 (1.8%) positive 61 (10.1%) suspicious 72* (11.9%)

*Positive samples: Ct value ≤35; suspicious samples: Ct value >35<40

Helminths in Bobwhites from the Rolling Plains Quail Research Ranch

Stacie M. Villarreal, Alan M. Fedynich, Leonard A. Brennan, and Dale Rollins–Texas A&M University–Kingsville

Assessment of helminth parasites infecting bobwhites in Texas has not been extensively examined. Additionally, most studies have used hunter-shot bobwhites, which sample the "survivors" of the critical breeding stage of the bobwhite's lifecycle. The objective of this study is to assess the prevalence, intensity, and abundance of helminths in bobwhites from the Rolling Plains Ecoregion during an annual cycle and determine whether infections are related to season, host age, and host sex. Bobwhites were collected in spring 2010, summer 2010, and winter 2010–2011. Nematodes were the most prevalent and numerically dominant group, represented in order of abundance by *Aulonocephalus pennula*, *Oxyspirura petrowi*, *Tetrameres pattersoni*, and *Dispharynx nastua*, whereas cestodes (*Rhabdometra odiosa* and *Rallietina* spp.) and acanthocephalans (cystacanth) occurred infrequently and in low numbers. *Dispharynx nasuta* and cystacanths are reported for the first time in bobwhites from the Rolling Plains. Additionally, we confirmed that the previously unknown species of *Tetrameres* occurring in bobwhites from this region is *T. pattersoni*. Preliminary findings indicate that most of the helminth infections increase with the host age and vary between summer and winter periods, but infections are similar between host sexes. Our findings indicate the importance of sampling hosts over an entire annual cycle, thereby documenting when juvenile hosts become infected and how helminth infections vary through time. Upon the conclusion of this study, we will have better insight regarding the dynamics of helminth infections in bobwhites from the Rolling Plains of Texas.

Funding provided by Rolling Plains Quail Research Foundation.

Descriptive statistics for helminths collected from northern bobwhites.

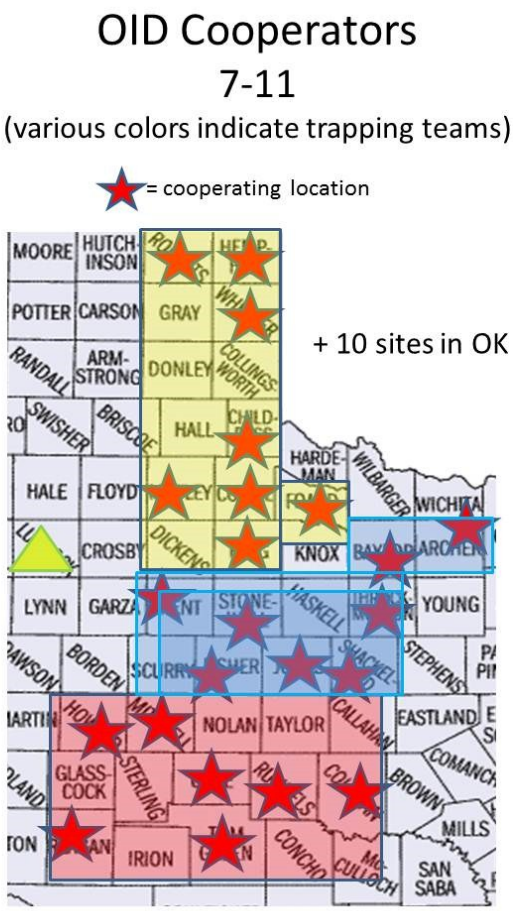
	Prevalence	**Intensity**	**Abundance**		
Helminths	**No. Infected (%)**	**$\bar{x}$ ± SE**	**Range**	**$\bar{x}$ ± SE**	**Total**
Aulonocephalus pennula[CSL]	117 (82%)	134 ± 11	2 – 518	111 ± 10	15,716
Oxyspirura petrowi[E]	67 (47%)	6 ± 0.7	1 – 23	3 ± 0.4	373
Tetrameres pattersoni[P]	37 (26%)	3 ± 0.3	1 – 8	0.8 ± 0.1	108
Dispharynx nasuta[P]	1 (0.7%)	1	1 – 1	0.01 ± 0.01	1
Acanthocephalan larvae[N]	26 (18%)	4 ± 2	1 – 43	0.8 ± 0.3	113
Cestode spp.[S]	13 (9%)	—	—	—	—

C Ceca, E Eye and nictitating membrane, L Large intestine, N Neck muscle, P Proventriculus, S Small intestine.

Operation Idiopathic Decline: August 2011 Sample Collection and Processing Efforts

Steven M. Presley, Ph.D., The Institute of Environmental and Human Health, Texas Tech University

In support of the overall research program to study the potential influence of macro- / micro-parasites and toxicants on the decline of bobwhite quail populations throughout the Rolling Plains region, a Central Specimen Receiving, Processing and Distribution Laboratory (CSRPDL) was established and is responsible for collecting samples from quail for analyses at collaborating laboratories. Five field teams were established and were deployed on 15 August, and operated through 11 September (approximately 190 man-days in the field). Bobwhite quail and potential arthropod vectors (i.e., mosquitoes and ticks) of pathogens were collected at 33 different locations throughout the Rolling Plains regions of northern Texas and southwestern Oklahoma. Quail were trapped in standard funnel traps baited with milo, samples (i.e., blood, tracheal/cloacal swabs) were collected and processed in the field, and specimens transported by courier under prescribed conditions to the CSRPDL at The Institute of Environmental and Human Health, Texas Tech University. A total of 172 bobwhite quail were trapped, with totals for specific regions, including total number of quail collected (*consumed birds:sampled and released birds*): North Team = 45 (14:31); Central Team = 2 (1:1); South Team = 27 (9:18); Oklahoma North Team = 38 (12:26); and Oklahoma South Team = 60 (16:44). Approximate total mileage for field teams during the August 2011 phase was 7,200 miles, and approximate total mileage for the courier team was 5,600 miles.



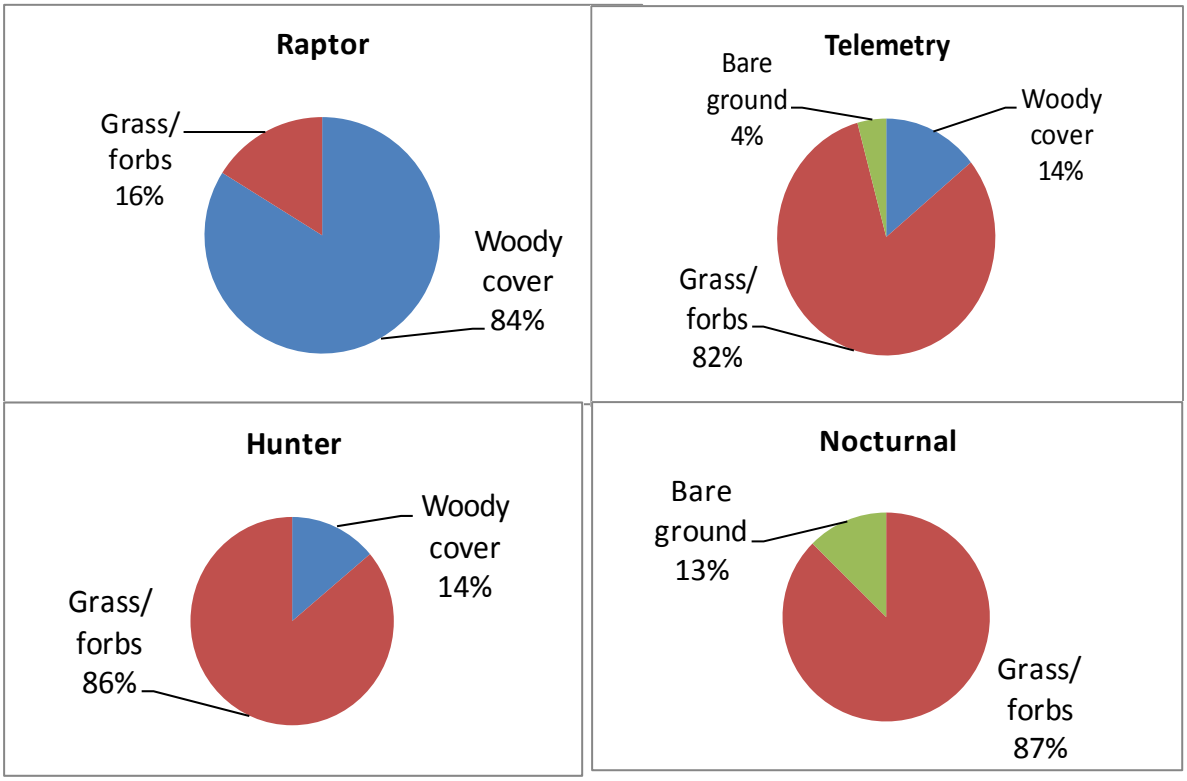
Funding provided by Rolling Plains Quail Research Foundation.

Threat Avoidance by Northern Bobwhite in the Texas Rolling Plains

Rebecca Perkins[1a], Clint Boal[b], Dale Rollins[c], and Robert Perez [d]

Current land management recommendations for bobwhites are based on data gathered in response to human-induced threats. As we know, bobwhites face a number of non-human threats daily. Our goal with this project is to better understand the predator-prey dynamics of bobwhites including, but not limited to, natural predators. Beginning in January 2010 and continuing through March 2011 we investigated the differences in habitat use and escape behavior of bobwhites exposed to four different predation threats: raptor, nocturnal mammalian, hunter, and researcher. To examine habitat use and escape behavior we recorded distance to flush, flush speed, over-all flight speed, flight distance, and cover use in response to the simulated threats. We found no significant difference among treatments for bobwhite behavior, however we feel that this is not representative of the true flight speeds due to sampling limitations. We did find a significant difference among landing cover use. Bobwhites flushed by a raptor selected dense woody vegetation as escape cover 84% of the time, whereas bobwhites selected for grasses and forbs 82-87% when flushed by the remaining threats. We are currently conducting a deeper analysis of our data in which we plan to provide a model depicting the factors that best predict bobwhite escape behavior. Our data confirm the importance of adequate escape cover, especially suitable brush thickets and cactus mottes; such microhabitats should be preserved when conducting brush control operations.

Funding provided by Rolling Plains Quail Research Foundation and TPWD.



Coyote Diet on the Rolling Plains Quail Research Ranch

Mark Tyson, Department of Natural Resource Management, Texas Tech University
Dale Rollins, Texas AgriLife Research – San Angelo
Warren Ballard, Department of Natural Resource Management, Texas Tech University
Philip Gipson, Department of Natural Resource Management, Texas Tech University
Lloyd LaCoste, Rolling Plains Quail Research Ranch

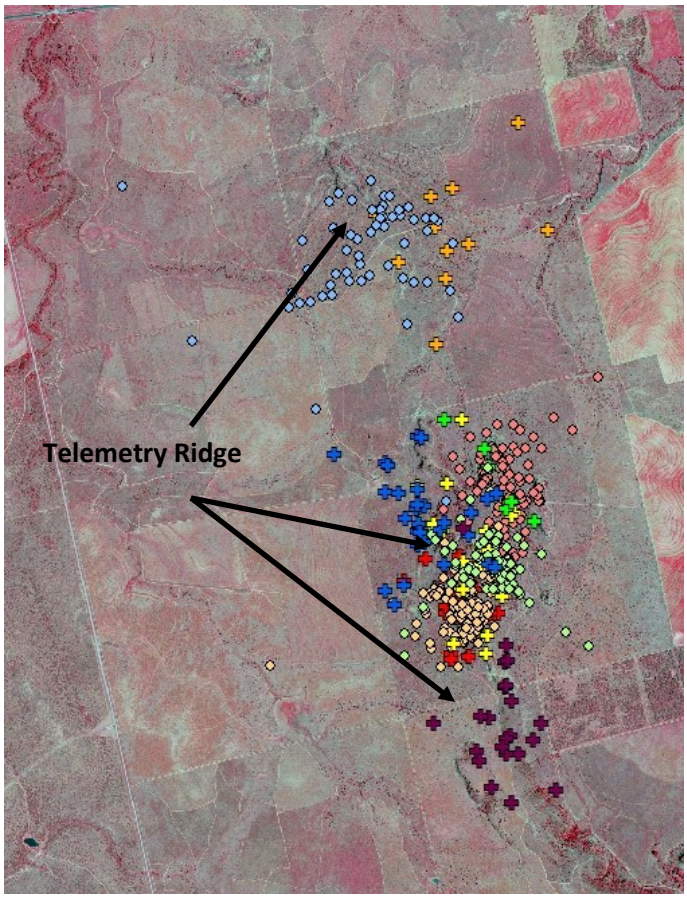
Predation is a major cause of adult mortality and nest failure for northern bobwhites (*Colinus virginianus*) across its range. Coyotes (*Canis latrans*) are a potential predator of bobwhites. Few data exist regarding the importance of bobwhites in the coyote's diet in the Rolling Plains of Texas. Incidences of predation by coyotes on quail can be difficult to assess, as not much evidence of the predation event is left behind. The purpose of our study is to describe the seasonal diets of coyotes on the Rolling Plains Quail Research Ranch, Fisher County, Texas. A total of 1,080 coyote scats will be collected along two 12-mile transects from December 2008 to December 2011. The scats will be analyzed macroscopically following standardized methods. We will also estimate abundance for a range of potential food sources during this time period including bobwhites, small mammals, and insects.

Greater Roadrunner (*Geococcyx californianus*) Population Dynamics, Energy Expenditure, and Morphometric Sexing in the Rolling Plains of West Texas

Andrea Montalvo, Texas A&M University
Dean Ransom, Texas A&M University

With this study we hope to answer 4 core questions. First we will try to determine if modern telemetry methods can capture replicated home range (95% probability of occurrence) and core (50% probability of occurrence) areas, overlap percentage of adjacent home ranges, and vegetative preference in a novel roadrunner population in west Texas. Previous studies that used only locations based on sighting showed home range estimates that were almost half the size of estimates done with telemetry in north central Texas. Second, by tracking hourly movements we hope to better understand movement patterns as they relate to temperature, humidity, and time of day. We also want to find if there is a firm temperature limit at which the roadrunner remains relatively stationary for the purpose of temperature regulation. Additionally we want to understand their total daily movements. Lastly we wish to uncover a simple and quick methodology for roadrunner sexing in the field using different physical measurements of birds of known sex. This would be derived from different corporeal measurements taken upon capture of live birds and using museum specimens. Preliminary results are showing similar home range estimates and the bill depth (top to bottom at the nostril) as a distinct characteristic of males and females.

Funding provided by NSF Bridge to Doctorate Fellowship and RPQRR



Locations of 8 roadrunners radiomarked on RPQRR; note their association with "Telemetry Ridge" in the east-central portion of the ranch.

STOP 5

Supplemental Feeding, etc.

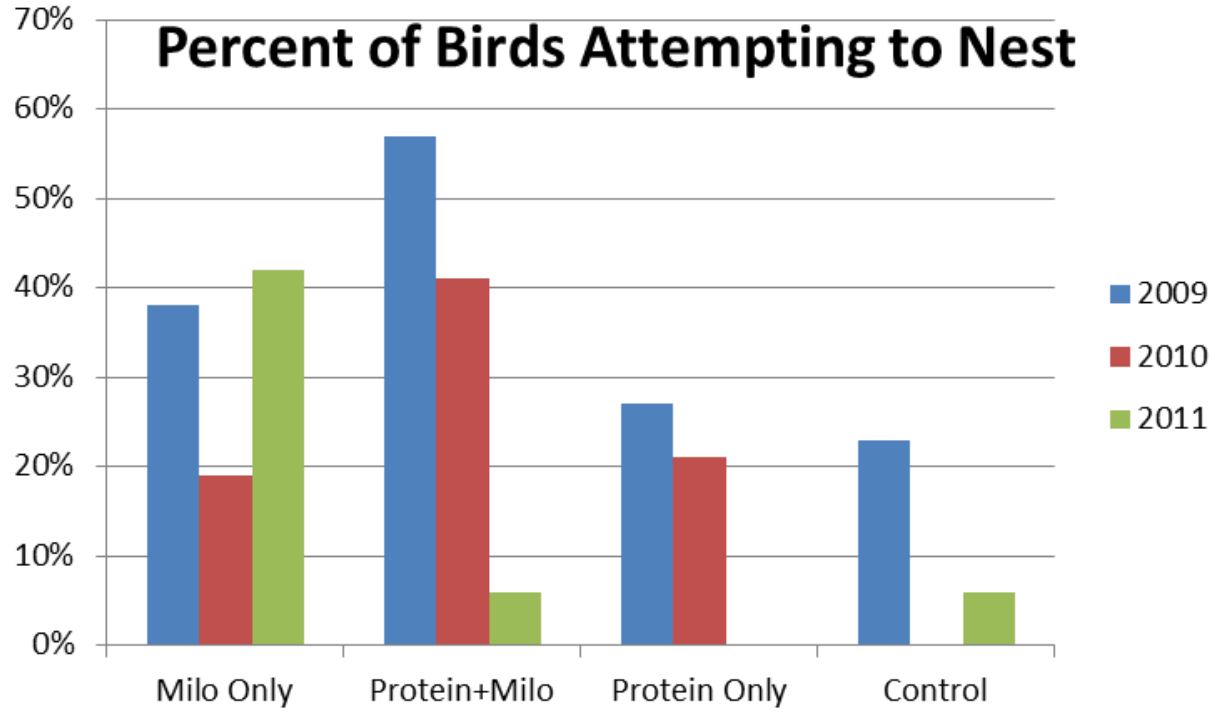


Photo Surveillance of Supplemental Feed Sites

Lloyd LaCoste, RPQRR

In 2008 we initiated a supplemental feed study to evaluate the efficacy of supplemental feed to increase survival and nesting output by bobwhites during a La Nina dominated weather pattern. As a part of that study, we wanted to determine what species were frequenting the feed sites. Game cameras were set up with a 10-minte delay between photographs. We have photographed a total of 20 species visiting the feed sites. During the summer of 2010 small mammals were the most often photographed species (occurring in 35% of the photographs), followed by doves (32%), and songbirds (17%). Quail were present in 4% of the photographs during the summer of 2010. During the summer of 2011 the most often photographed species were doves (occurring in 45% of the photographs), followed by large mammals (42%). Quail were present in only 1% of the photographs. We have recently installed exclosures at our protein feed sites to see if we can reduce feed loss to non-target species. Our data suggest that feeder use by quail has been especially minimal—whether quail are obtaining enough protein to make a nutritional difference is unlikely.

Supplementation with Layer Ration

Barrett Koennecke, RPQRR

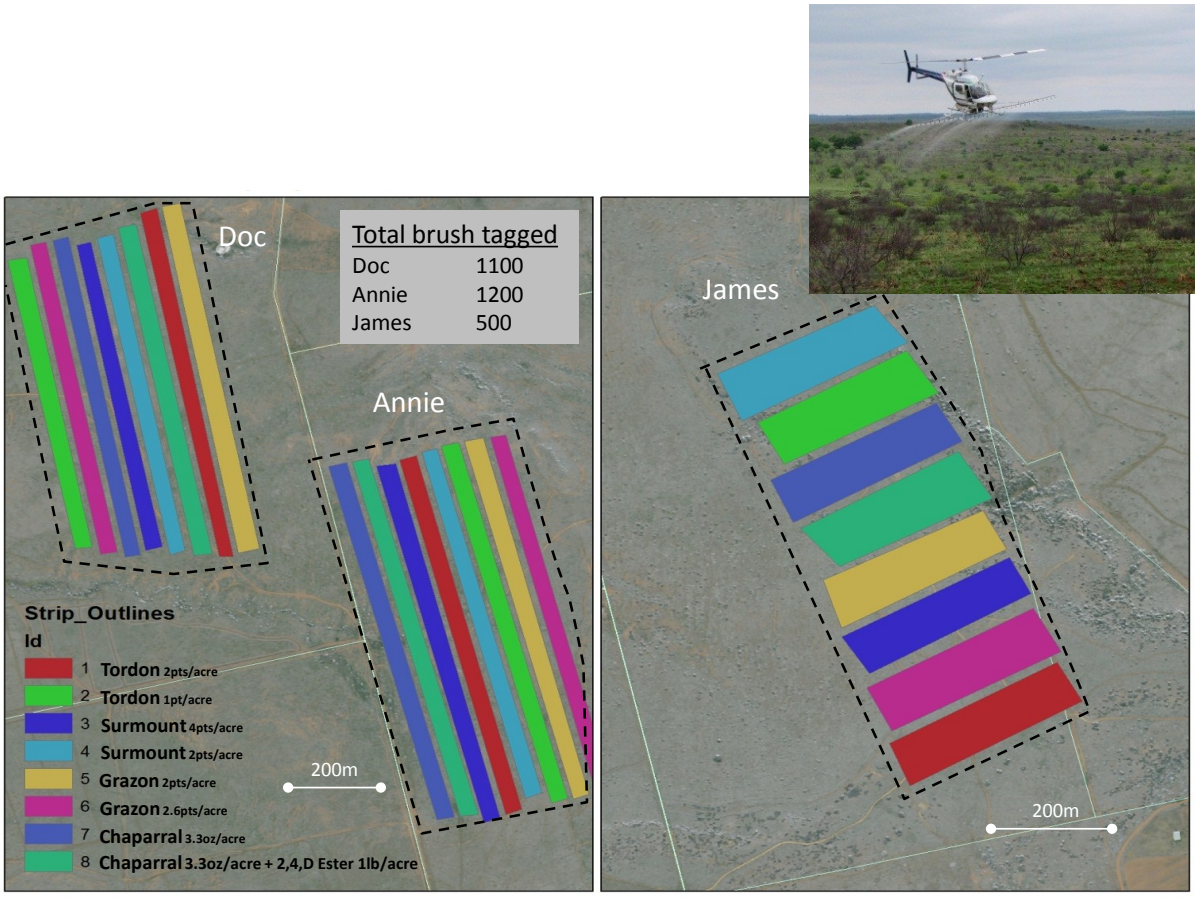
We conducted a study over the last two years monitoring quail and quail nests in pastures where fed either milo (M), protein (P), both milo and protein (M+P), or no supplement (control). In that study we saw a higher percentage of birds attempting to nest in the pastures that received (M+P) than we saw in any other pasture including the control. We decided to repeat that study but changed up the pastures so that they did not have the same treatment as they had the past two years. This nesting season's attempted nests were very low among all the pastures but surprisingly the (M) pastures hosted 8 out of the 11 nests for this year. In the (M) pastures 42% of the birds' nested while the (M+P) pasture and control had 6% of its birds attempt a nest. As for the (P) pastures, there were no collared birds attempt nests.

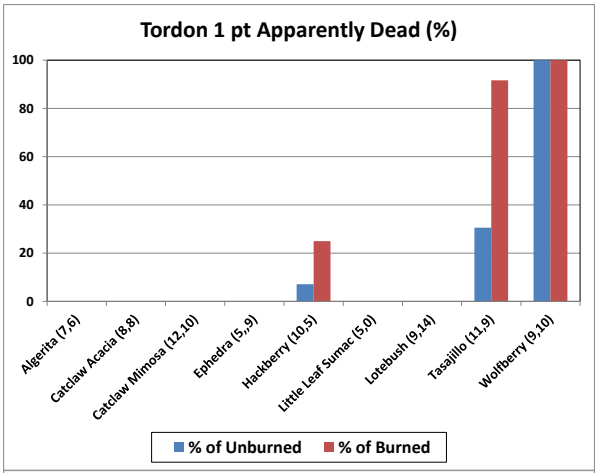
Feed provided by Lyssy & Eckel Feeds.

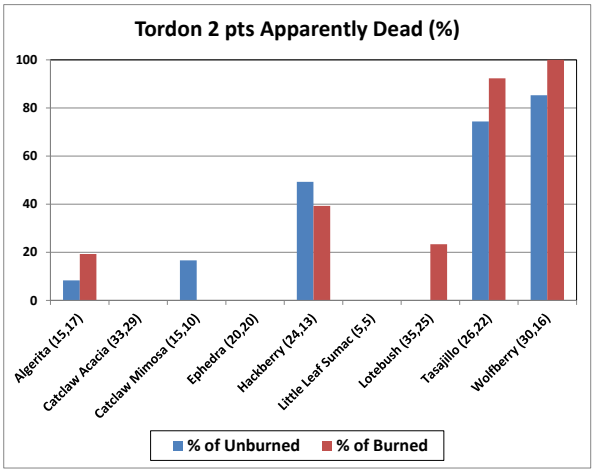
Assessment of Non-target Brush Mortality from Prickly Pear Herbicides

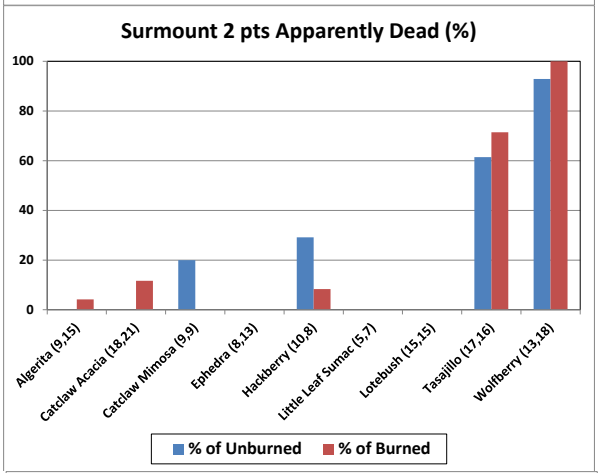
Dave Barre, Jordan Graves and Dale Rollins, RPQRR

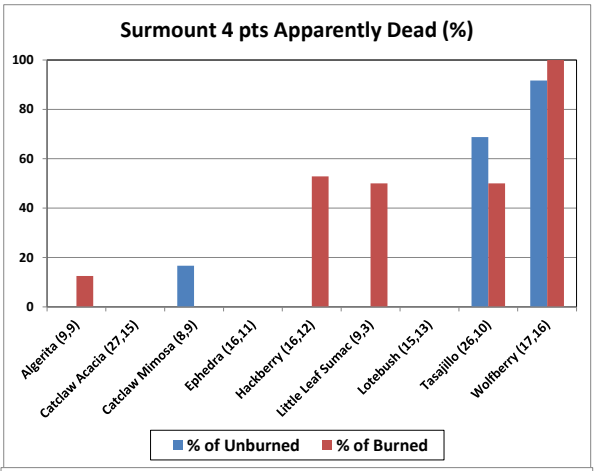
Dense stands of prickly pear occupy several pastures on RPQRR. At the end of April 2010 we applied various herbicides for cacti control using a helicopter. Our objective was to determine the "collateral damage" to desirable woody shrubs (e.g. hackberry and lotebush). A total of 500 acres were sprayed in three different pastures, with eight treatment strips (four herbicides at different rates) in each pasture crossing areas of prescribed burning to see combined effects (burning and chemical). These strip "plots" were evaluated, at the 1-yr following treatment, for shrub, forb and grass dynamics. Control (untreated) areas are sampled around the perimeter of the strips treated. Brush species (a total of 2,800 individual plants) were tagged with ID numbers and GPS points for future location and subsequent monitoring. Prickly pear density will be monitored, as die-off continues, using length-wise transects through each strip. It will be some time (two to three years after treatment) before a percentage kill of prickly pear can be estimated. Wolfberry and tasajilla were affected considerably by all eight treatments. Hackberry was somewhat affected by all treatments especially if combined with burning. Grazon Next and Tordon at the higher rate affected more species, whereas Tordon at the lower rate affected the least number species. Additional evaluations will take place for the next two years.

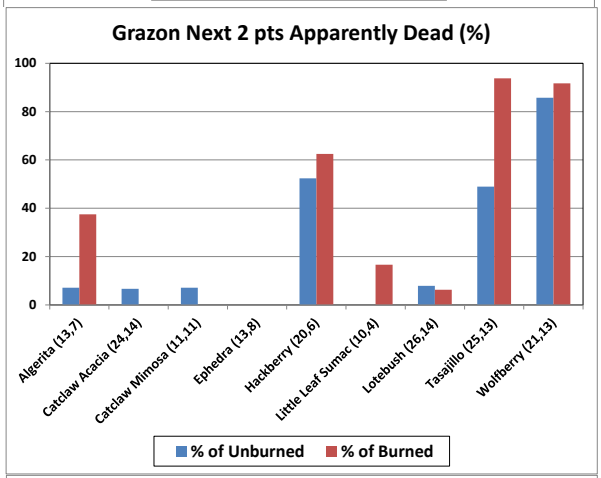


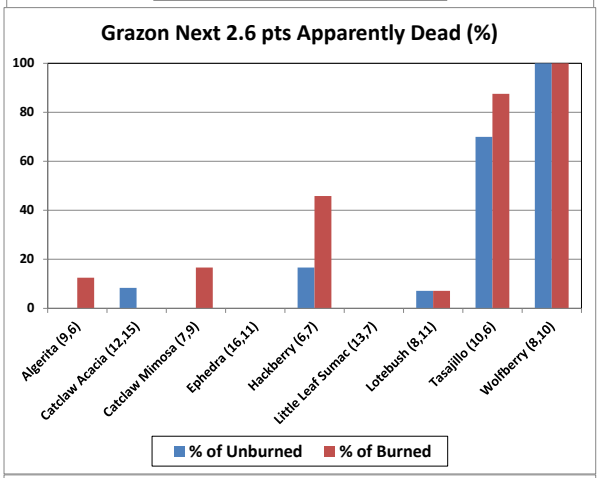


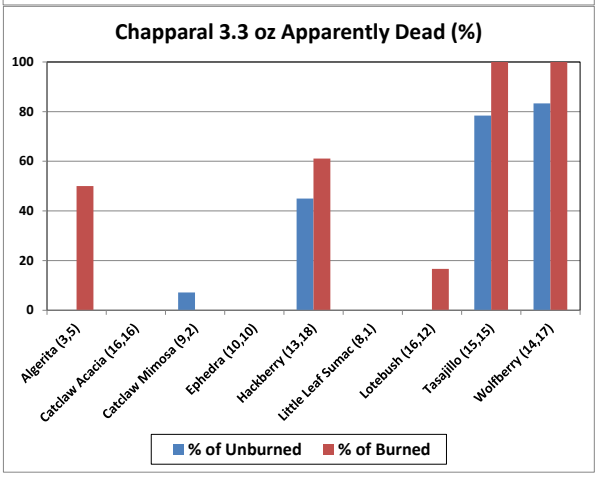


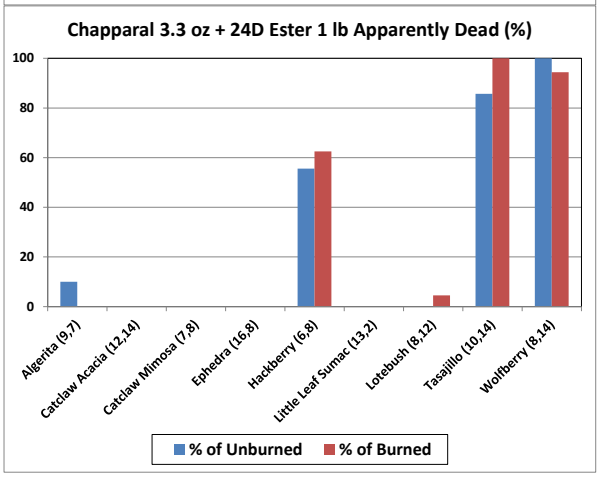










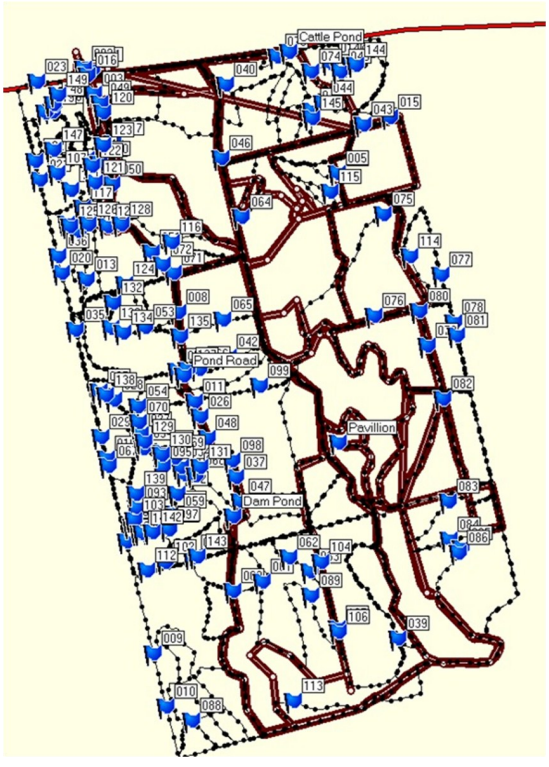


Percent of each shrub species that is “apparently dead” as of 1-yr post-treatment.

Monitoring Texas Horned Lizards (Phrynosoma cornutum) in the Rolling Plains of West Texas

Dallas Zoo Department of Herpetology
Dallas Zoo Management, Inc.

Horned Lizards, also known as Horny Toads, represent a unique group of arid dwelling lizards that inhabit the Southern United States and Northern Mexico. The Texas Horned Lizard, *Phrynosoma cornutum*, is perhaps the most recognizable species of Horned Lizard. It is the largest native species of Horned Lizard (Family: Phrynosomatidae) and has the widest distribution of any other Horned Lizard in the Unites States. Once extremely common throughout their range, Horned Lizards in general are now known to be in decline. The Texas Horned lizard is no exception. It is perhaps the most threatened member of this group, with estimated population declines of greater than 30% across its range (Texas, Oklahoma, Kansas New Mexico, and northern Mexico) and even higher in its population epicenter, Texas (Linam 2008, Henke 2003). Populations have disappeared in East and Central Texas, and are decreasing in North Texas as well. Such across the board declines have prompted local and state governments to provide limited protection to Horned Lizards. Currently the Texas Horned Lizard is listed by Texas Parks and Wildlife (TXPW) as a "Threatened Species". This status provides limited protection by prohibiting private ownership and/or collection from the wild without a TXPW permit and outright banning any related commercial activity. We began preliminary data collection in the summer of 2010 and continued through the 2011 active season, which is typically May through October. Our goals have been to determine Texas Horned Lizard population density estimates, determine habitat preferences, and gather basic life history traits including movement patterns, environmental preferences, behavior and spatial relationship with Harvester Ants. Our current method of collecting data consists of road surveys or "road cruising." The thorough system of roads at the RPQRR allows us to efficiently sample many habitats and cover many acres in a reasonable amount of time. GPS coordinates are taken along with environmental conditions, UVB exposure, morphometric data, behavior, and potential prey interaction. The lizards are then marked with an electronic tag (PIT Tag), a tool used to determine population density through mark and recapture. We have also partnered with Drs. Dean Williams and Amanda Hale, Biology department of Texas Christian University. We are taking DNA samples from each lizard, via cloacal swab, to be used in determining fine scale sex biased spatial distribution patterns of this population as well as contribute to the overall study of Texas Horned Lizard genetic diversity in the Rolling Plains and throughout Texas. To date we have spent roughly 280 hours sampling roads resulting in close to 400 captures. Approximately 180 have been tagged and 50 have been recaptured at least once.

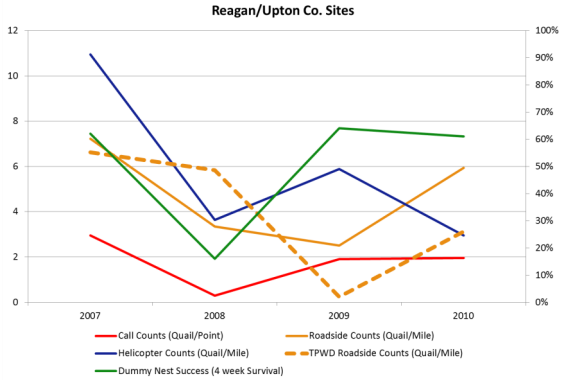


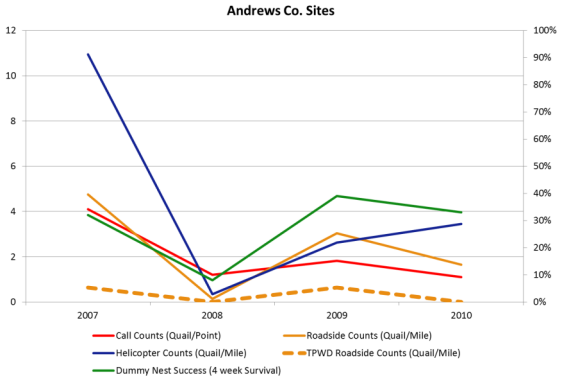
The figure at right depicts where Texas Horned Lizards have been captured on Rolling Plains Quail Research Ranch, 2010-2011. THLs have been captured more frequently on the west side of RPQRR.

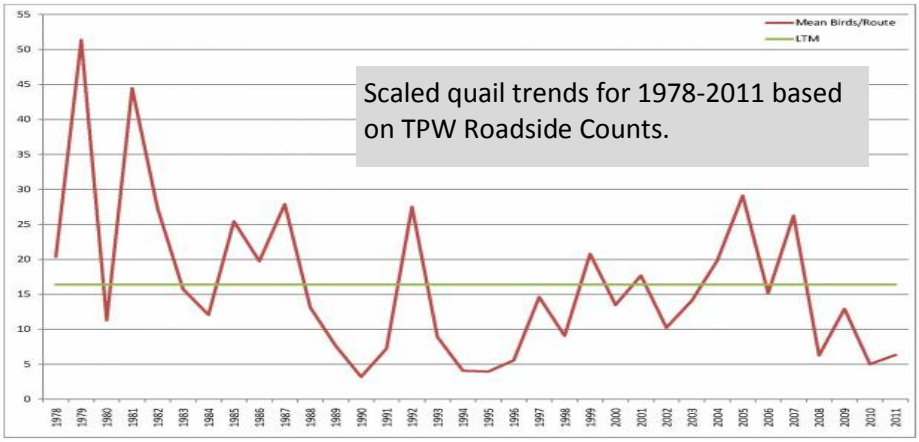
SURVEY INDICES FOR SCALED QUAIL IN WEST TEXAS

Barrett A. Koennecke, Rolling Plains Quail Research Ranch, Roby, Texas; Dale Rollins, AgriLife Research, San Angelo, Texas; Chris Snow, Angelo State University, San Angelo, Texas; Jeff White, University Lands-West Texas Operations, Midland, Texas.

Wildlife biologists and land managers require information on population demographics in order to effectively plan harvest schedules and evaluate habitat modifications. Population indices can potentially provide an efficient way to gather reliable information on wildlife populations as long as they reflect population behavior. We evaluated the relationships among standard survey indices used to monitor scaled quail (*Callipepla squamata*) across 6 sites in west Texas from 2007-2011. We collected data on spring cock call counts, simulated nest survival, roadside counts, and helicopter counts, and where possible, compared them to hunter data (flush rates, age ratios) collected in the winter. When we compared relative abundance, roadside counts and helicopter counts showed similar numerical trends. The mean difference between methods was 2.4 quail per mile on the Andrews county sites, and 4 quail/mile at the Upton/Reagan county sites. Simulate nest fate (i.e., dummy nests) tended to track trends in population abundance. Our survey indices also tended to follow annual fluctuations in scaled quail abundance determined by TPW from roadside surveys.







Scaled quail trends for 1978-2011 based on TPW Roadside Counts.

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Collaborators

Park Cities Quail
25 Highland Park Village • Suite 100-417 • Dallas, Texas 75205

Richard M. Kleberg, Jr. Center for Quail Research
CAESAR KLEBERG WILDLIFE RESEARCH INSTITUTE

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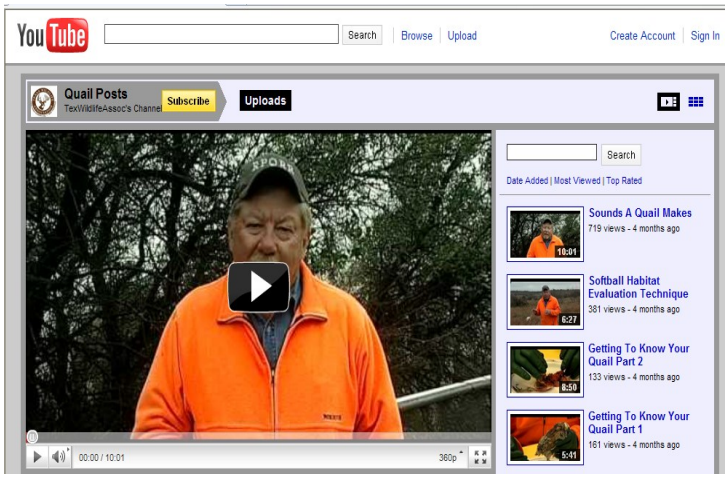

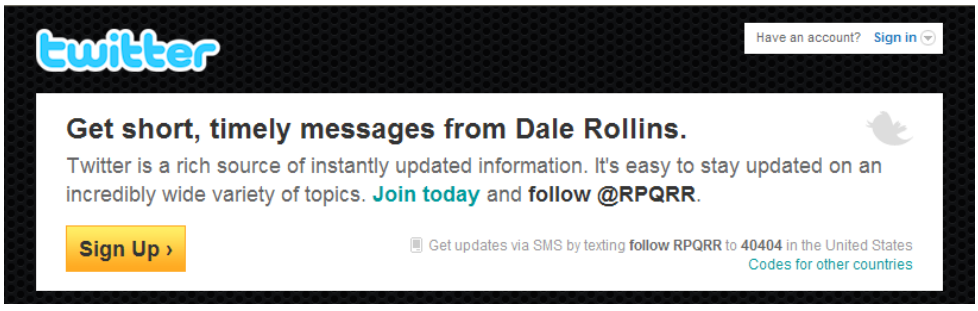

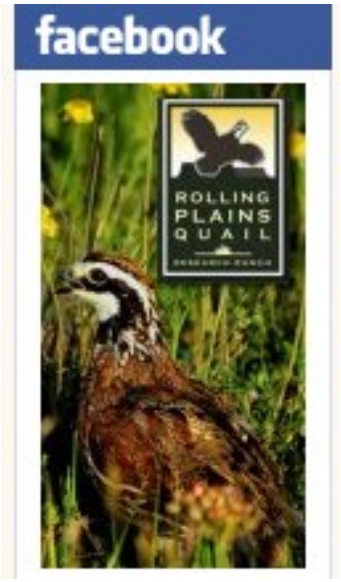

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