

ROLLING  
PLAINS QUAIL  
RESEARCH  
FOUNDATION

2022 ANNUAL REPORT







## ABOUT US

The Rolling Plains Quail Research Foundation (RPQRF) is a 501 (c)(3) non-profit focusing on one thing: understanding and managing bobwhite and scaled quail in West Texas. Everything we do centers around quail and quail hunting, as reflected by our mission:

*To preserve Texas' wild quail hunting heritage, for this, and future, generations.*

The foundation and its Research Ranch were established to provide a living laboratory to devise land management strategies for the benefit of quail and also as an exemplary property to demonstrate the best methodologies and techniques to other "students of quail."



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# *A Message*

## FROM THE ROLLING PLAINS QUAIL RESEARCH FOUNDATION

OVER THE YEARS, CONVERSATIONS SURROUNDING THE CAUSES AND SOLUTIONS FOR THE DECLINE OF QUAIL HAVE BEEN ALL OVER THE BOARD. TODAY, QUAIL EXPERTS CAN DIAGNOSE MANY OF THE LIMITING FACTORS TO QUAIL ON OUR RANGELANDS WITH A SIMPLE SITE VISIT. IDENTIFYING PROBLEMS AND DEVELOPING A PLAN FOR PRACTICAL SOLUTIONS ARE TWO VERY DIFFERENT THINGS, HOWEVER. SOME SOLUTIONS MAY BE AS SIMPLE AS MANIPULATIONS TO GRAZING OR BRUSH, WHEREAS OTHERS MIGHT BE AS COMPLEX AS THE RESTORATION OF PLANT COMMUNITIES LONG DOMINATED BY INVASIVE PLANTS, SOME OF WHICH BEST MANAGEMENT PRACTICES ARE STILL BEING DEVELOPED.

THE SUPPORT OF OUR DONORS HELPS THE ROLLING PLAINS QUAIL RESEARCH FOUNDATION (RPQRF) DETERMINE PRACTICAL SOLUTIONS THROUGH RESEARCH AND SHARE THOSE RESULTS IN A VARIETY OF INNOVATIVE FORMATS. WE ARE ESPECIALLY PROUD OF THE ACCOMPLISHMENTS WE'VE MADE THIS YEAR ON BOTH THE RESEARCH AND OUTREACH FRONT. IN THIS VOLUME, YOU'LL READ ABOUT RPQRF'S IMPACT AND COMMITMENTS OVER THE LAST YEAR TO ADVANCE ITS MISSION OF PRESERVING TEXAS' WILD QUAIL HUNTING HERITAGE FOR THIS AND FUTURE GENERATIONS. AT THE FOREFRONT OF OUR ACCOMPLISHMENTS WAS THE COMPLETION OF OUR NEW HEADQUARTERS, INCLUDING THE GORDY FAMILY GUEST LODGE, JAMES R. CURRIE RESEARCH LAB, AND PARK CITIES QUAIL COALITION EDUCATION CENTER. THE NEW COMPLEX SERVES AS A HUB FOR SCIENTIFIC INQUIRY AND COMMUNITY EDUCATION WHILE UNDERSCORING THE COMMITMENT OF RPQRF TO LONG-TERM WORK IN THE REGION. IN THE SAME VEIN, NEW RESEARCH AT RPQRR, REVITALIZED OUTREACH PROGRAMS, AND LAND MANAGEMENT CONSULTATIONS ON TENS OF THOUSANDS OF ACRES UNDERSCORE OUR EFFORTS TO TIE IT ALL TOGETHER.

WE HOPE YOU ENJOY THIS YEAR'S ANNUAL REPORT AND APPRECIATE YOUR SUPPORT TO CONTINUE OUR EFFORTS FOR QUAIL CONSERVATION IN THE FUTURE.











RPQRF broke ground on a new headquarters facility at our research ranch near Roby, Texas on May 7, 2021. The \$2.4 million facility was funded with generous gifts from Park Cities Quail Coalition and private individuals and was completed in December 2022. The new 6,400 sq. ft. Rolling Plains Quail Research Foundation headquarters is comprised of three buildings:

The **James R. Currie Research Lab**, which will allow RPQRF to increase its technical research capacity and accommodate the various needs of RPQRF's graduate students, technicians, and staff.

The **Park Cities Quail Coalition Education Center & Kitchen** provides ample space to host presentations and seminars for biologists, students, landowners, ranch managers, universities, natural resource professionals and field day attendees.

The **Gordy Family Guest Lodge** contains six bedrooms, three bathrooms, a living area and kitchen to host overnight visitors at the Research Ranch. Expected guests include biologists from government agencies, ranch managers seeking guidance on habitat management, researchers from other conservation organizations and universities and visitors participating in multi-day events.



# LONG-TERM DATA COLLECTION

## AT THE ROLLING PLAINS QUAIL RESEARCH RANCH

The Rolling Plains Quail Research Ranch was gifted to RPQRF through the generosity of the Richard King Mellon Foundation and the Conservation Fund in 2006 to be a living laboratory for quail research and education. The Research Ranch arguably has the most comprehensive dataset on quail in Texas, with over 16,000 banded and 3,000 radio-tagged quail. In contrast to the typical 2-3 year study duration, we have datasets spanning 15+ years.

The following sections provide a summary of our long-term data collection efforts. These data have been used to support many graduate student projects over the years and various in-house scientific publications. You can find our growing body of research archived on our website ([www.quailresearch.org](http://www.quailresearch.org)).

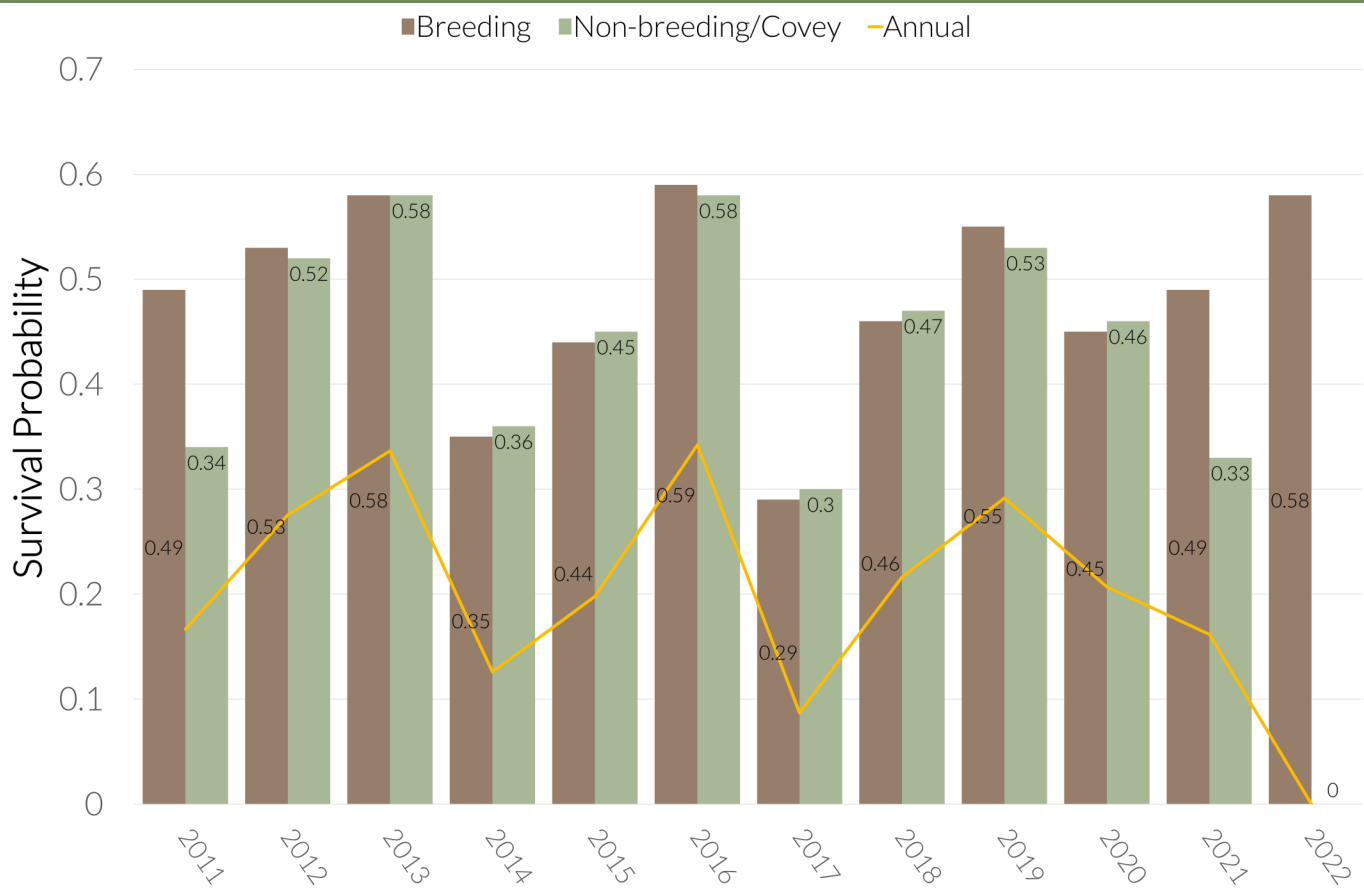




# QUAIL DEMOGRAPHICS

## AT THE ROLLING PLAINS QUAIL RESEARCH RANCH

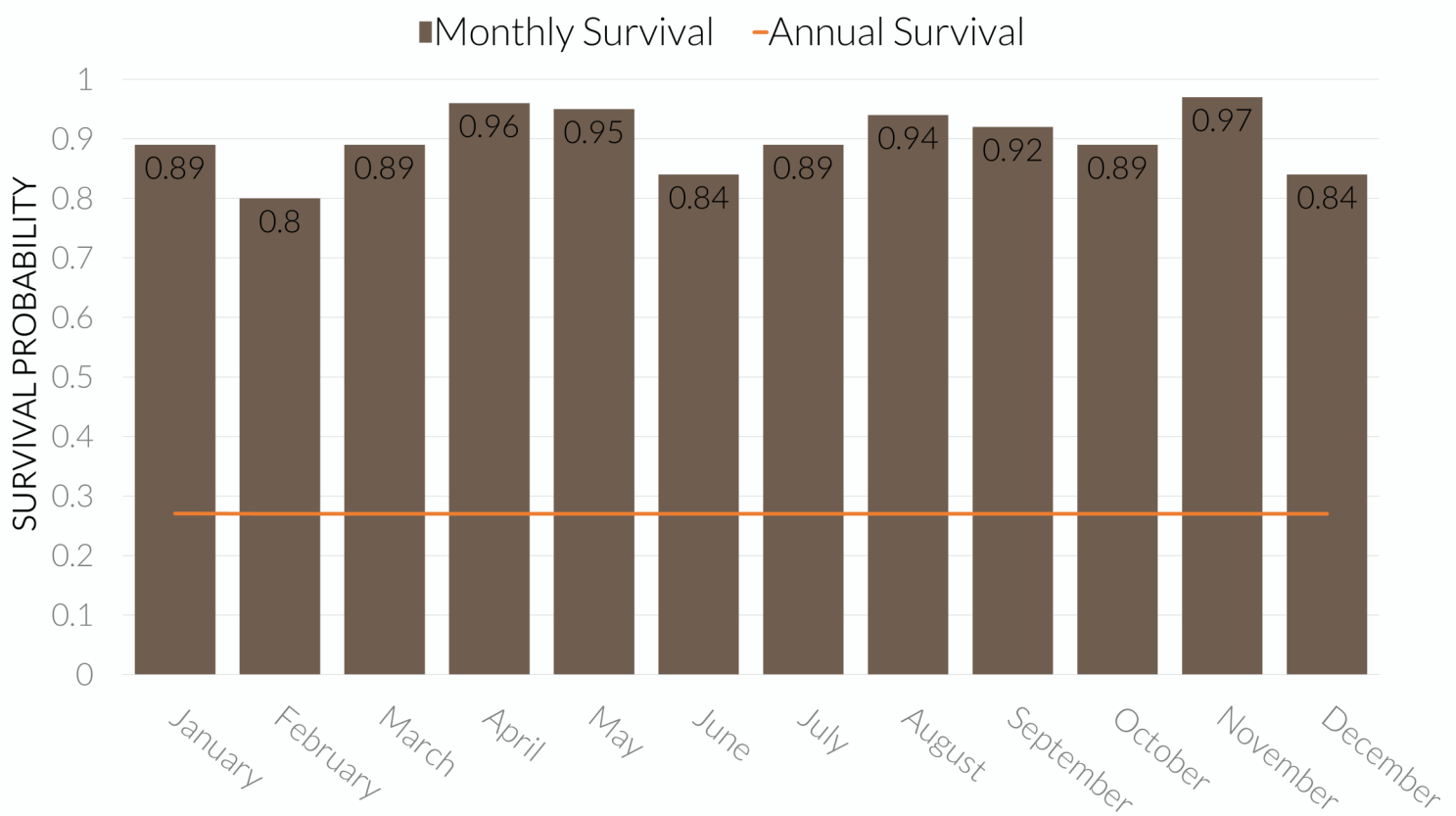
Our primary source of information on quail demographic rates (e.g., adult survival, nesting success, nest initiation, etc.) comes from data collected via radio-telemetry. We attach 6-gram radio transmitters to adult and juvenile quail in the winter and spring and follow them year-round.



## ANNUAL QUAIL SURVIVAL

Variation in breeding (April-September) and non-breeding/covey (October-March) season survival on the Research Ranch fluctuates both seasonally and annually. Note that annual estimates are the product of breeding and non-breeding estimates, thus also span two calendar years (e.g., April 2011-March 2012).



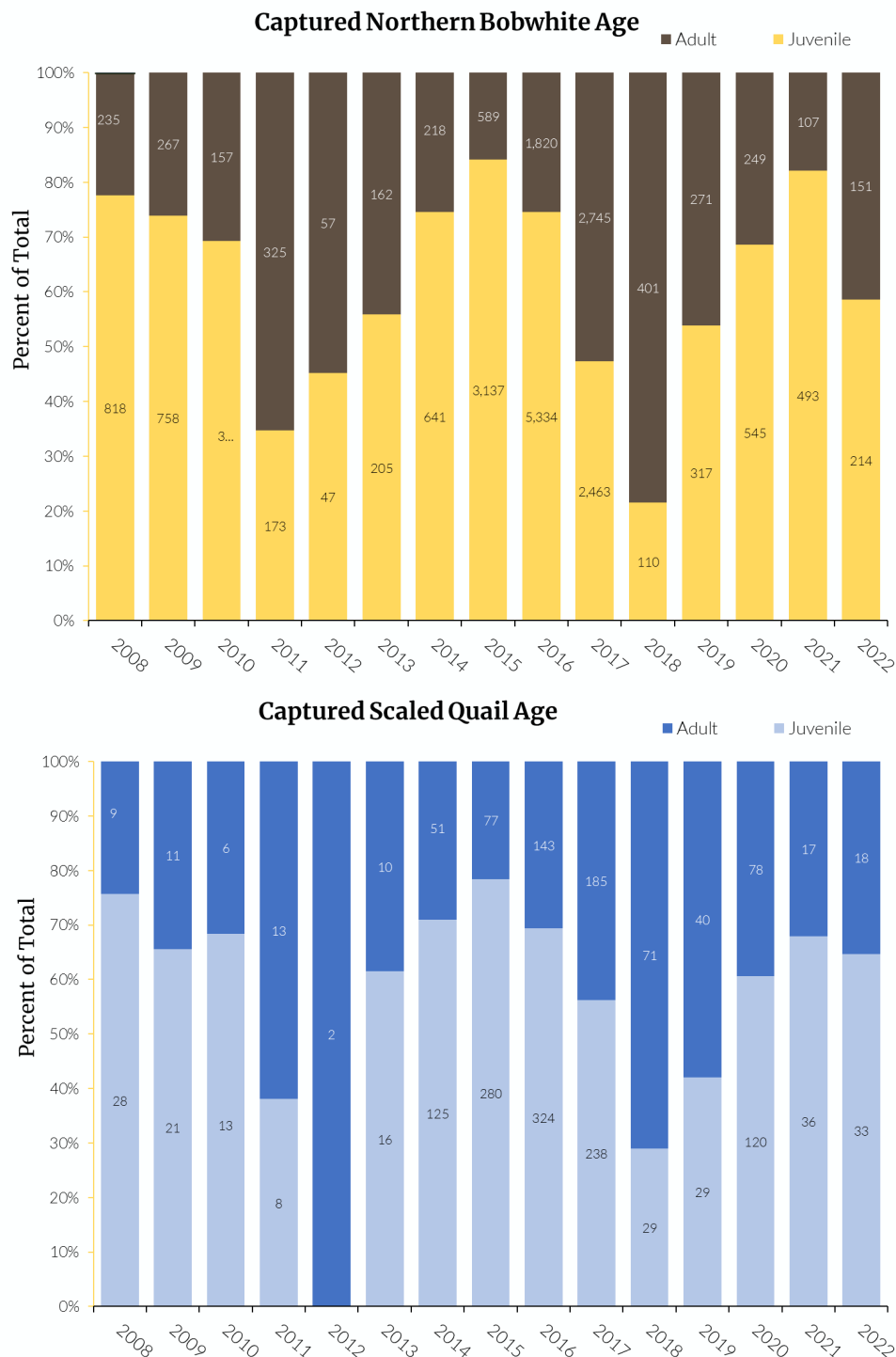


## 2022 MONTHLY SURVIVAL

Monthly survival for a sustainable population should average above approximately 0.8 and when on the lower end, survival needs to be balanced by higher reproduction. The average monthly survival in 2022 was 0.90. Survival is typically lowest in February and March due to increased predation during spring raptor migration. In 2022, the lowest survival was 0.80 in the month of February and was significantly greater than the lowest monthly survival recorded last year (0.65).

# REPRODUCTIVE METRICS

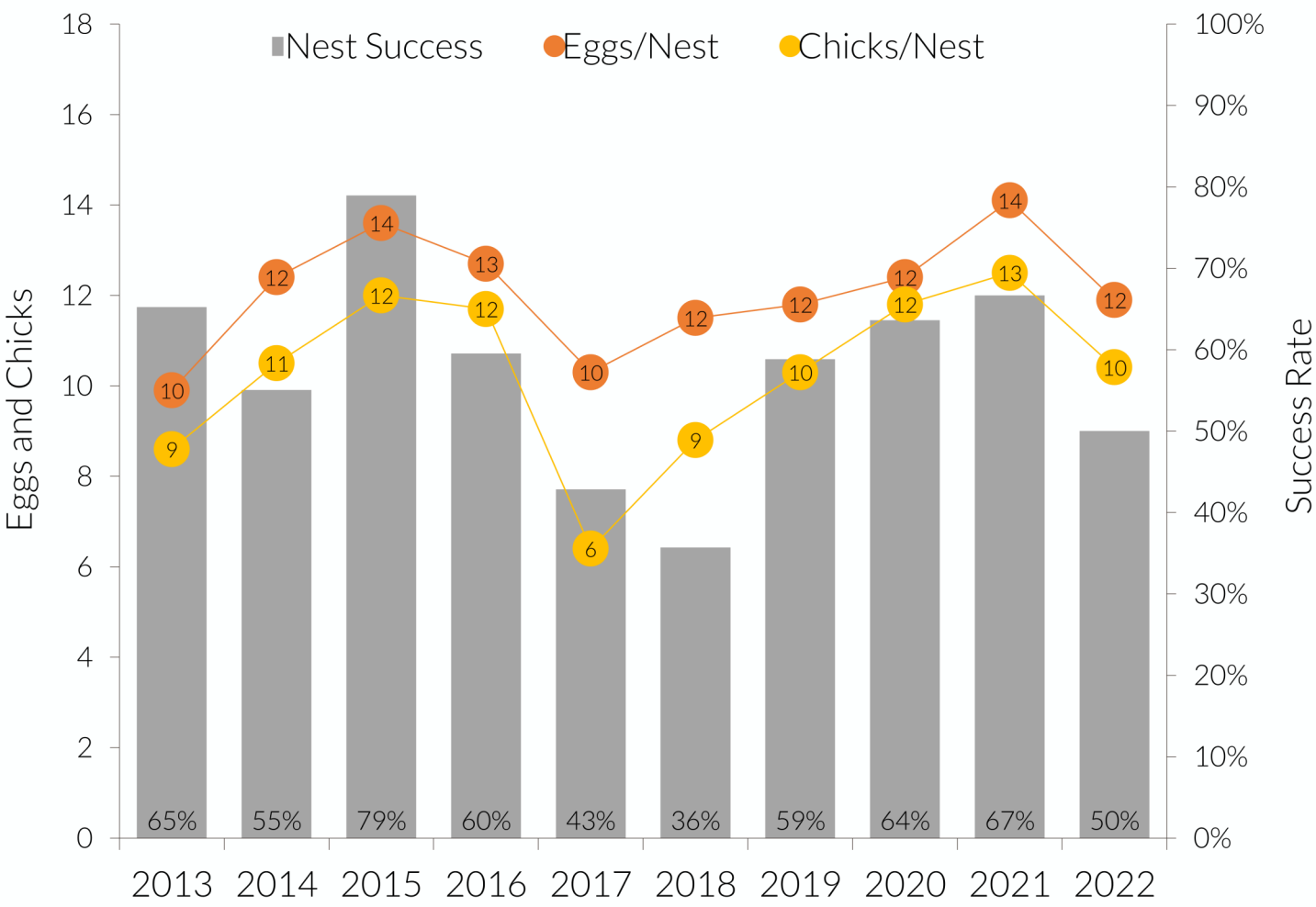
Radio-marked bobwhite hens are followed throughout the breeding season to collect data on reproductive metrics. Collecting data on all aspects of quail reproduction is essential for understanding annual population dynamics. As a short-lived species, huntable populations are highly dependent on annual recruitment.



Age ratios, or the ratio of juveniles to adults in the fall population, is an indication of annual production. Numbers within the bars, indicate the number of in each age group of birds marked.



# NESTING METRICS



## NESTING SEASON SUMMARY



## CHICK RESEARCH

Variation in chick production and survival is incredibly important to population changes from year to year, but has been historically difficult to study. Long-term banding, new capture techniques, and contemporary modeling efforts, now allow researchers to gain insight into chick survival. During the 2022 nesting season we captured and tagged 68 bobwhite chicks from 10 broods. Recapture during the subsequent fall and spring trapping for adults then informs survival. In November 2022, we captured 4 of the 68 chicks as adults during our biannual trapping. None of them were recaptured during the 6-day November trapping session, suggesting that detection was relatively low during November. Collectively, these data begin to give us a rough idea of survival from tagging to the November and March sessions. Over time, these data can be paired with variables such as our supplemental feeding treatment data or rainfall.

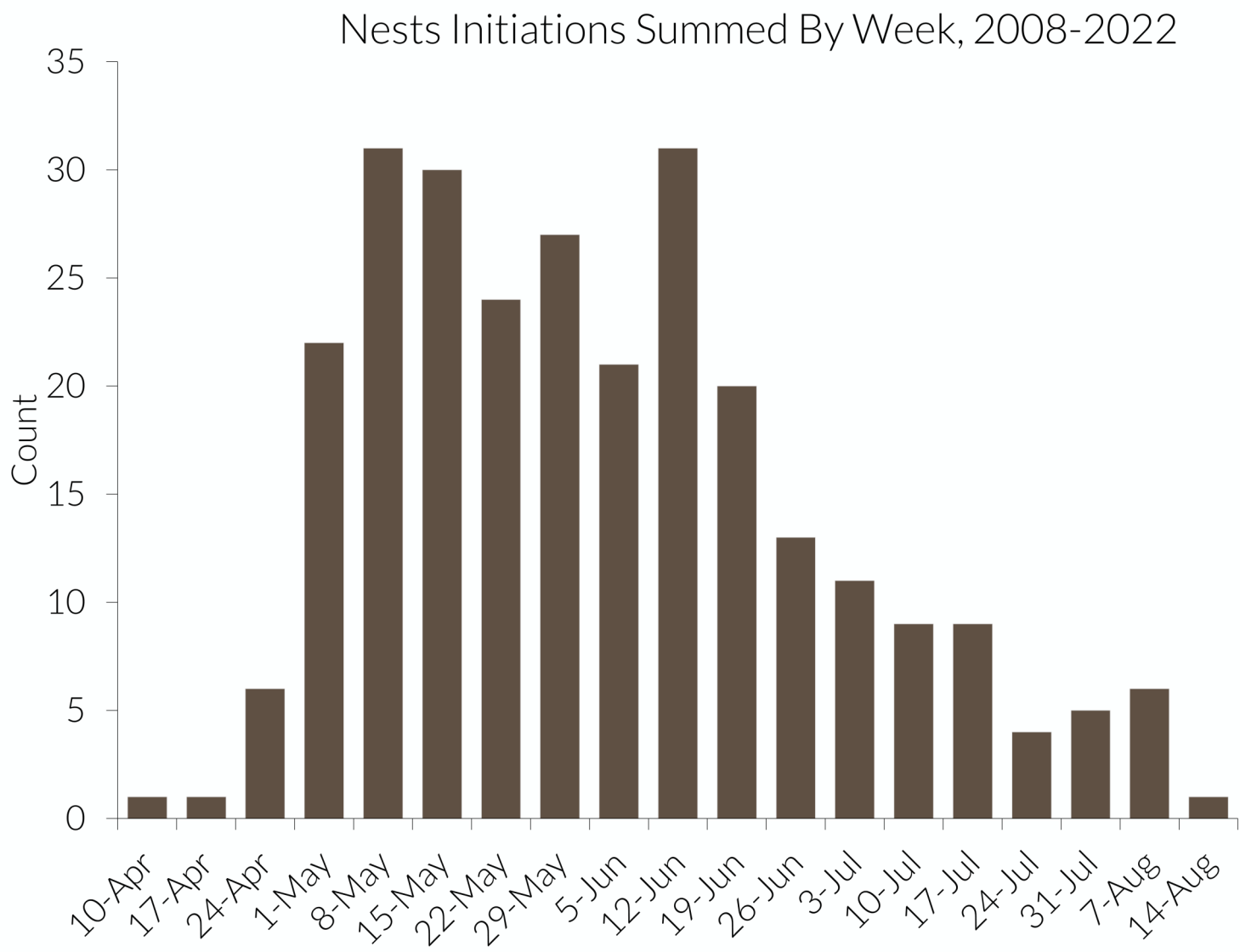


*Adam Courvelle*



# LATE-SEASON NESTING IN 2022

We documented two nesting hens in the month of October. One of those nests hatched! A nest that hatches in October would suggest a nest initiation date of early September. We assume a successful nest of 10 eggs requires about 38 days to complete (15 days for laying, 23 days for incubation). Both nests were found opportunistically in that they were not associated with radio-marked hens. One nest was “stumbled upon” by the 2022 QuailMasters class while touring the Ranch in October and the other was found by technicians monitoring a radio-marked male bird. The graph here summarizes nest initiations by radio-marked hens on the Research Ranch from 2008-2022 and illustrates how the rarity of late-season nests for northern latitudes – we’ve never recorded a single radio-marked hen initiating a nest in September. The pulse of late-season nests occurred at a larger scale across Texas’ quail country than just the Research Ranch according to anecdotal reports. Managers observed October broods in Dimmit, McMullen, Culberson, Jim Hogg, Stonewall, and Fisher counties.

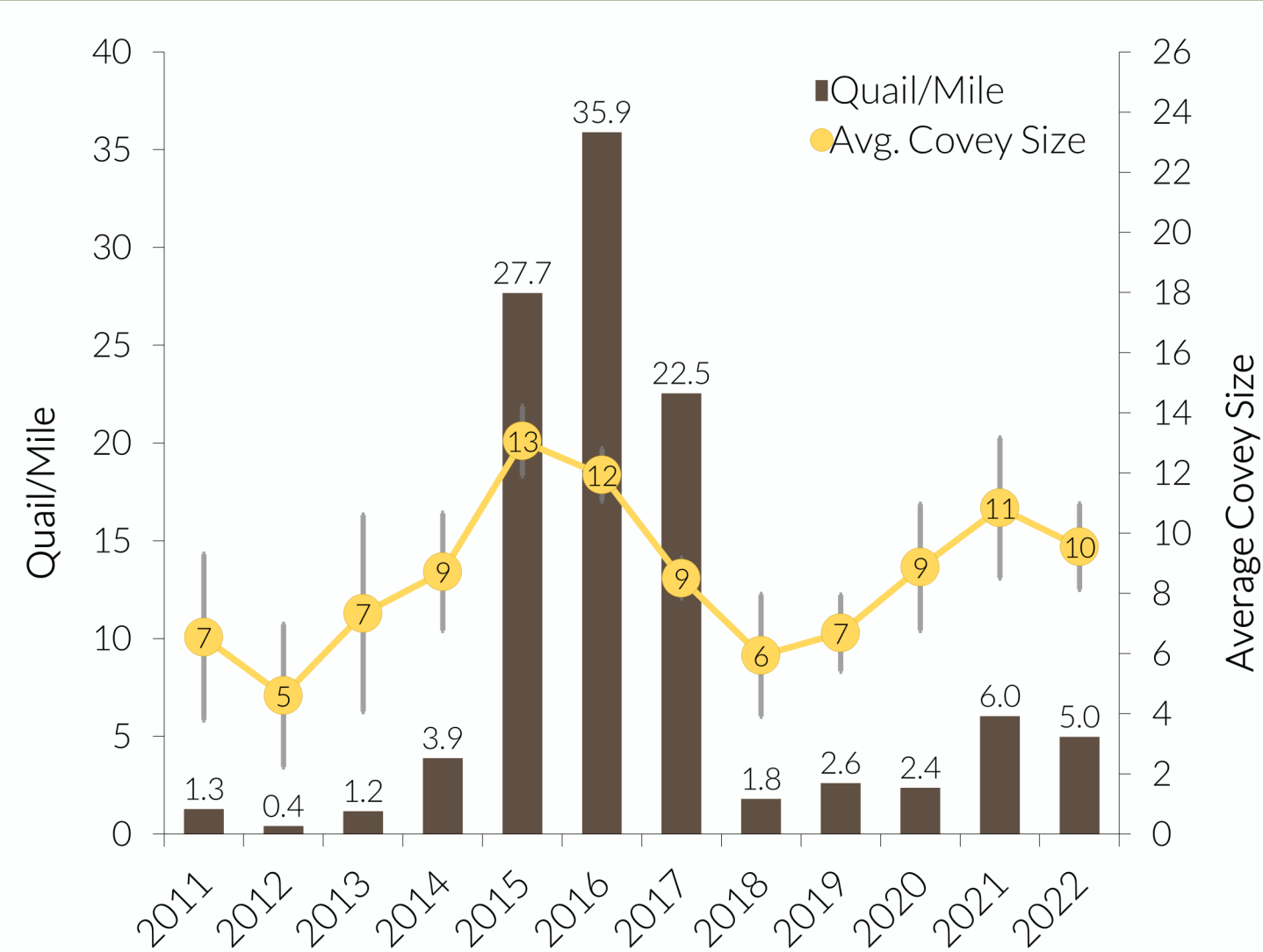


# QUAIL ABUNDANCE AT THE ROLLING PLAINS QUAIL RESEARCH RANCH

WE IMPLEMENT A VARIETY OF METHODS FOR MONITORING QUAIL ABUNDANCE EACH YEAR. OUR GOALS ARE TWO-FOLD: 1) TRACK CHANGES IN ABUNDANCE OVER TIME TO TEASE APART DRIVING FACTORS AND MEASURE RESPONSE TO LAND MANAGEMENT PRACTICES, AND 2) TO PROVIDE RELIABLE AND EASY TO IMPLEMENT INDICES FOR LAND MANAGERS TO USE ON THEIR OWN PROPERTIES. DETAILS OF THE METHODOLOGIES FOR MONITORING ABUNDANCE AND SUMMARIES OF ANNUAL UPDATES FOLLOW.

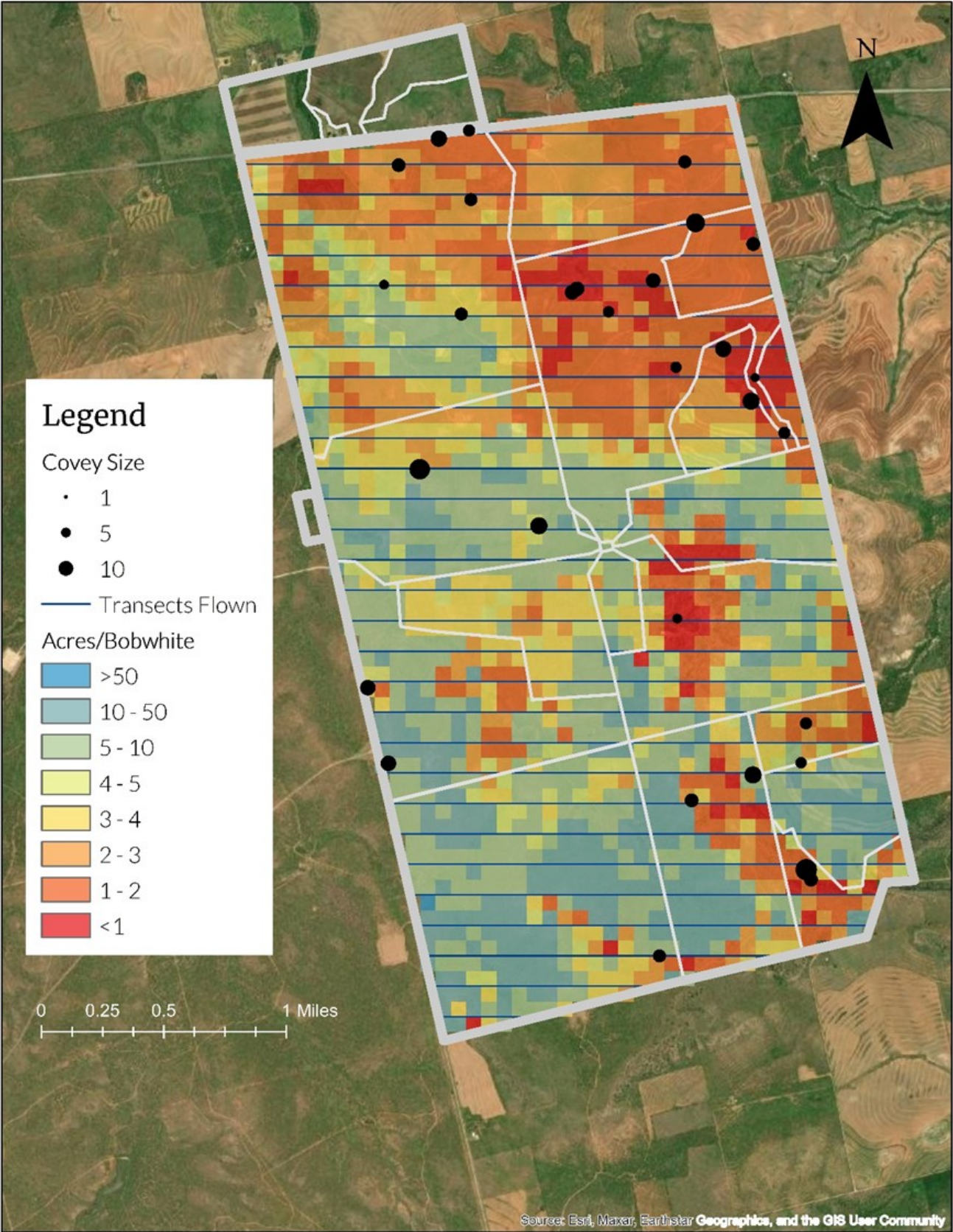
## HELICOPTER SURVEYS

We flew 52 miles of helicopter surveys in November using distance sampling methods. The data presented here combine both species of quail (bobwhite and scaled) in an annual index of abundance from 2011-



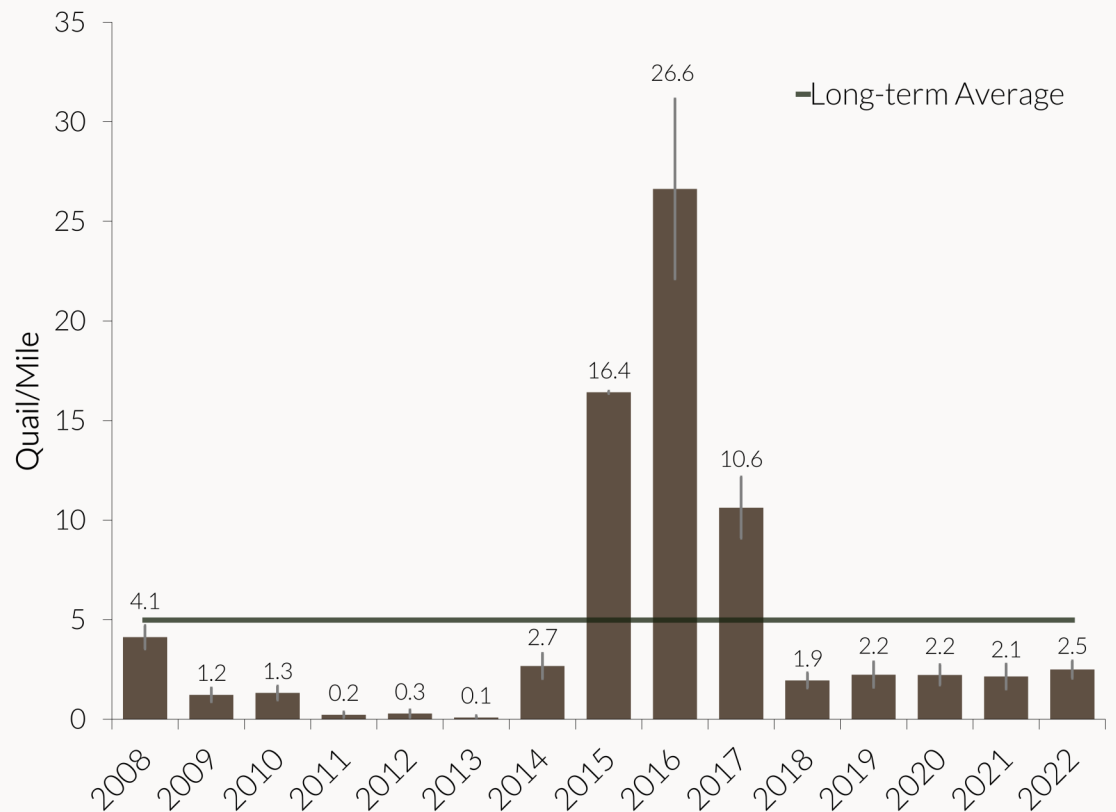


NORTHERN BOBWHITE DENSITY ON THE ROLLING PLAINS QUAIL RESEARCH RANCH ESTIMATED USING DISTANCE SAMPLING METHODS DURING HELICOPTER SURVEYS IN NOVEMBER 2022.



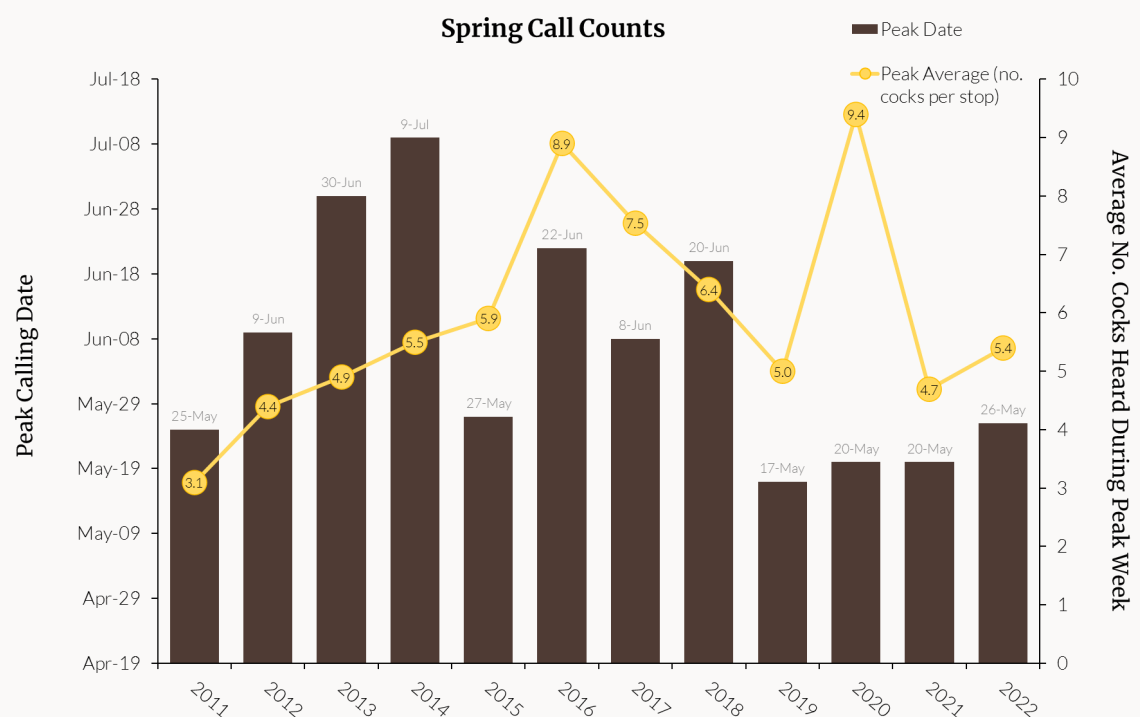
## ROADSIDE COUNTS

We conduct roadside counts annually in September during morning and evening, driving a 20-mile route across the Ranch. Roadside counts are one of the most accurate indices and are easily conducted by land managers.



## SPRING CALL COUNTS

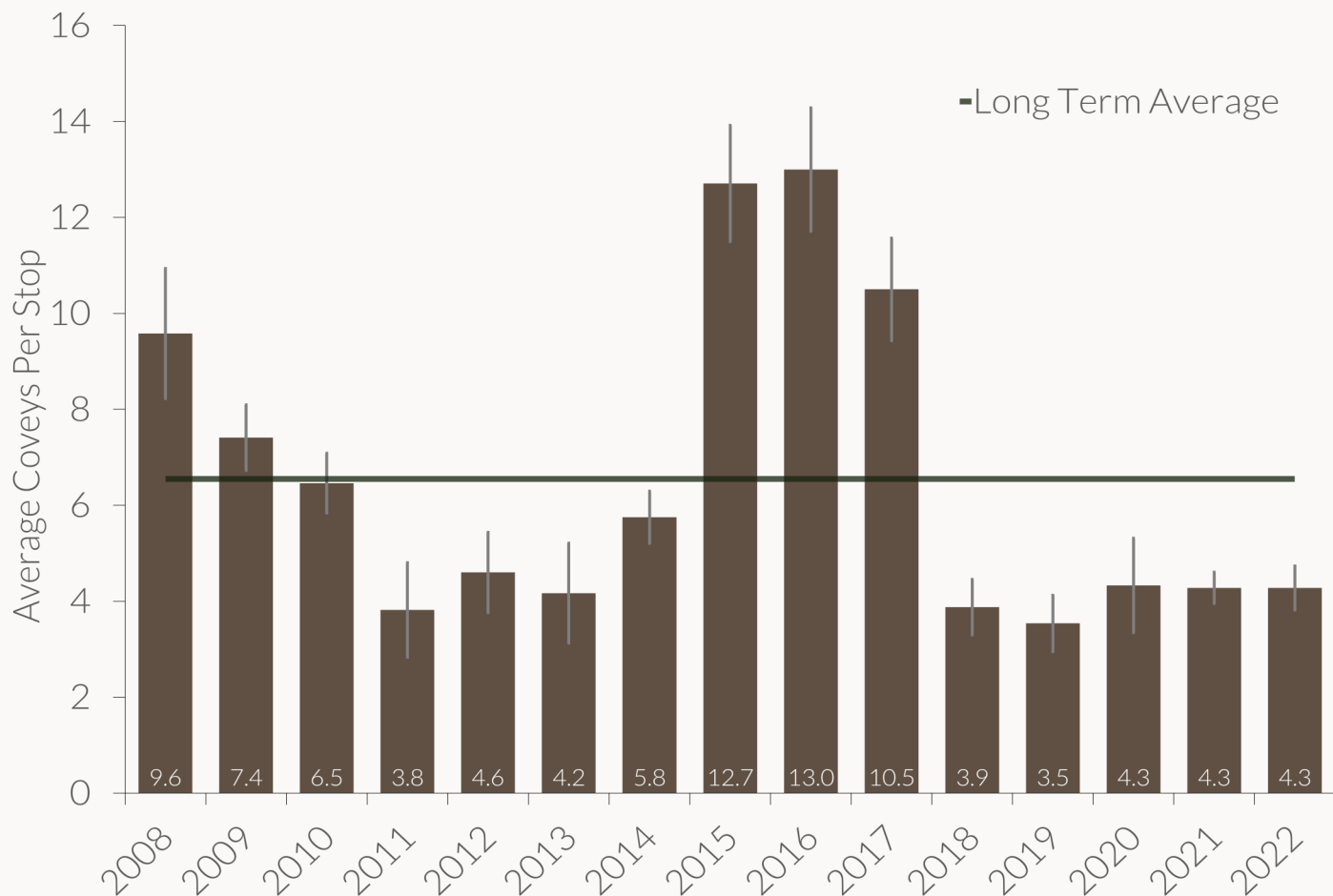
Spring calls—the distinctive “poor-bob-white!” calls of the northern bobwhite scaled quail—are counted twice weekly from May–June at 25 points on the Ranch. An average of >7 bobwhite roosters per stop indicates high abundance, while counts averaging <3 bobwhite roosters per stop indicates low abundance.





# FALL COVEY CALL COUNTS

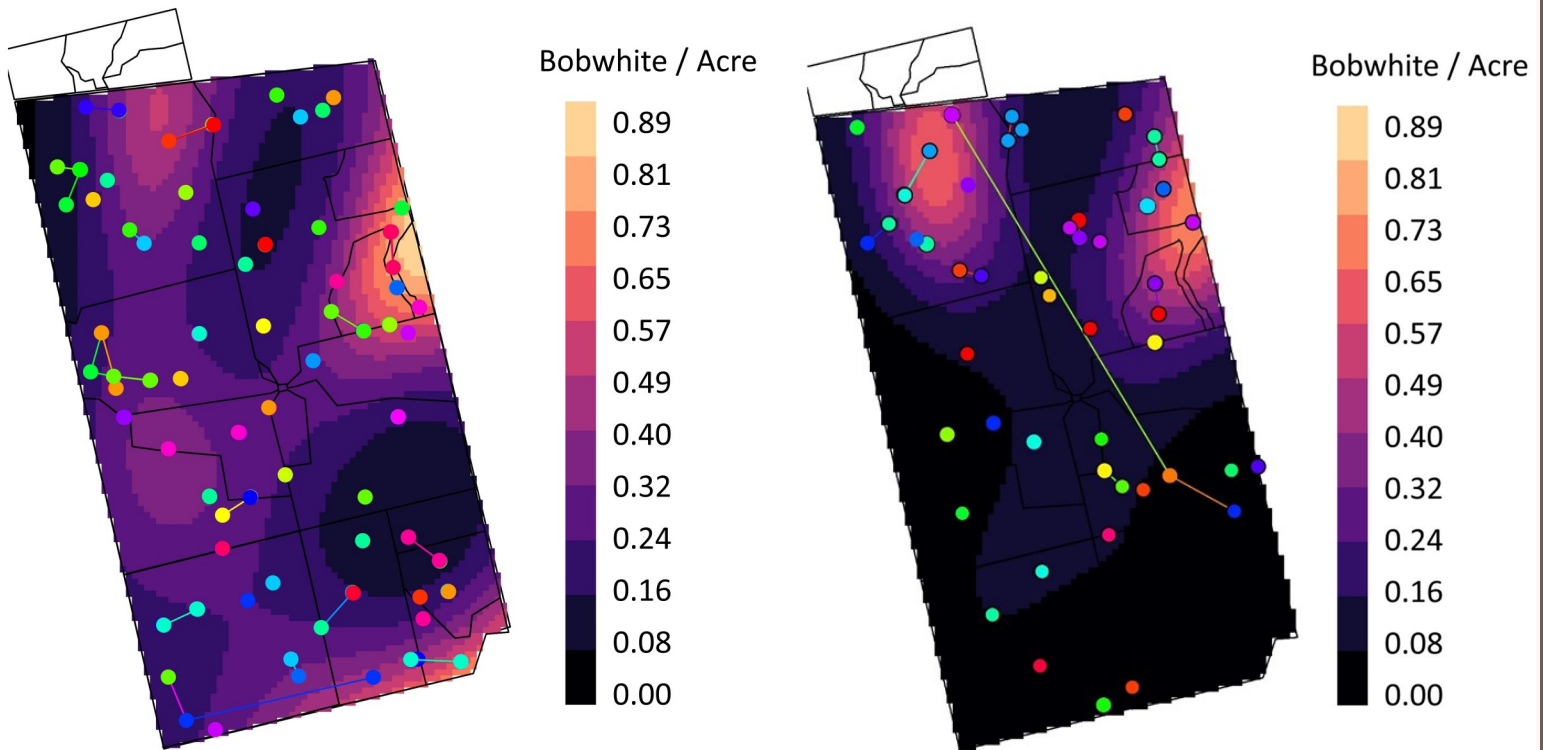
We count bobwhite coveys in the fall during October by listening for the distinctive “koi-lee” call of bobwhites at dawn at established listening points. Covey call counts are a measure of covey density.



2021

VERSUS

2022



## TRAPPING AND BANDING DATA

We trap quail intensively on the Research Ranch twice annually to affix leg bands and radio-collars to monitor survival and reproduction, estimate abundance, and annual production. The data presented here are density estimates of bobwhites on the ranch based on that trapping data. The circles represent locations where bobwhites were captured and the lines represent movement between successive recaptures.

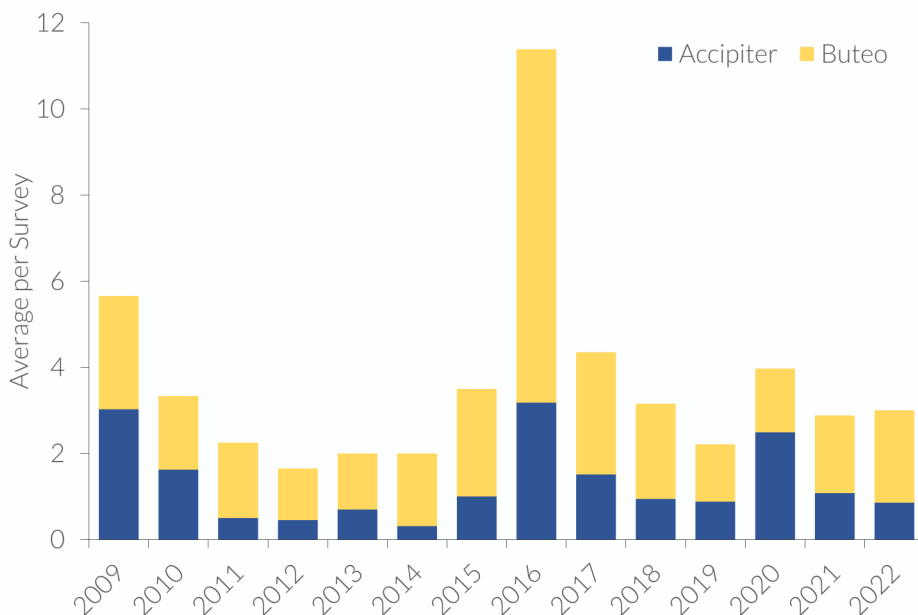


# RAPTORS

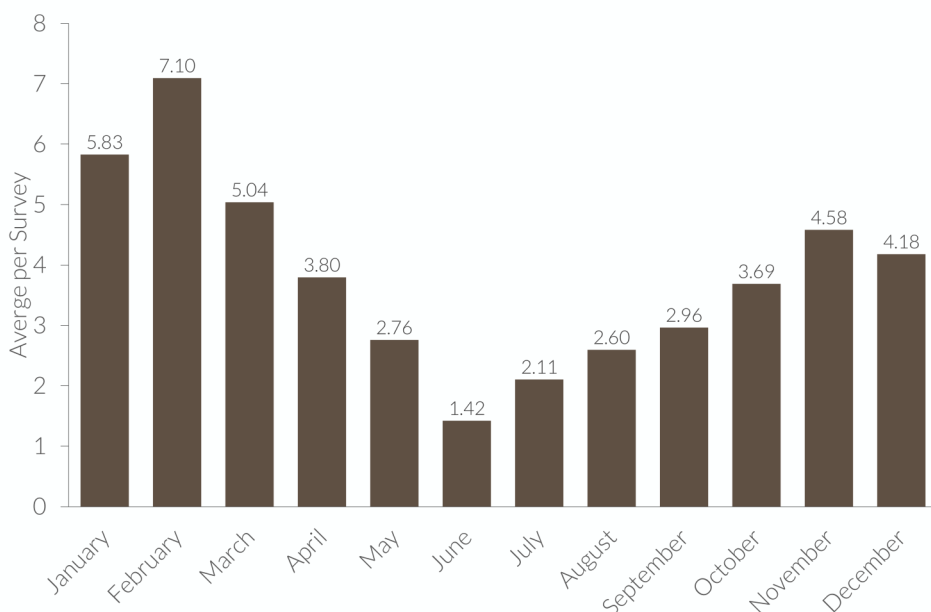
## AT THE ROLLING PLAINS QUAIL RESEARCH RANCH

Raptors are important predators of quail and a major contributor to over-winter mortality. Much of that mortality occurs in the months just prior to breeding season when raptor abundance is at its peak in the Rolling Plains. Maintaining adequate herbaceous cover and managing for interspersed shrub cover is critical to protect quail over winter. We conduct twice weekly raptor counts on the Research Ranch to better understand raptor community dynamics and how those dynamics impact northern bobwhite and scaled quail survival and abundance. Accipiters (e.g., Cooper's hawks) and Northern Harriers are the most efficient quail predators. However, buteos such as red-tailed hawks can also impact quail abundance.

Annual average raptors observed per survey.



Average raptors observed per survey for each month of the year (2009-2022).



# SMALL MAMMALS

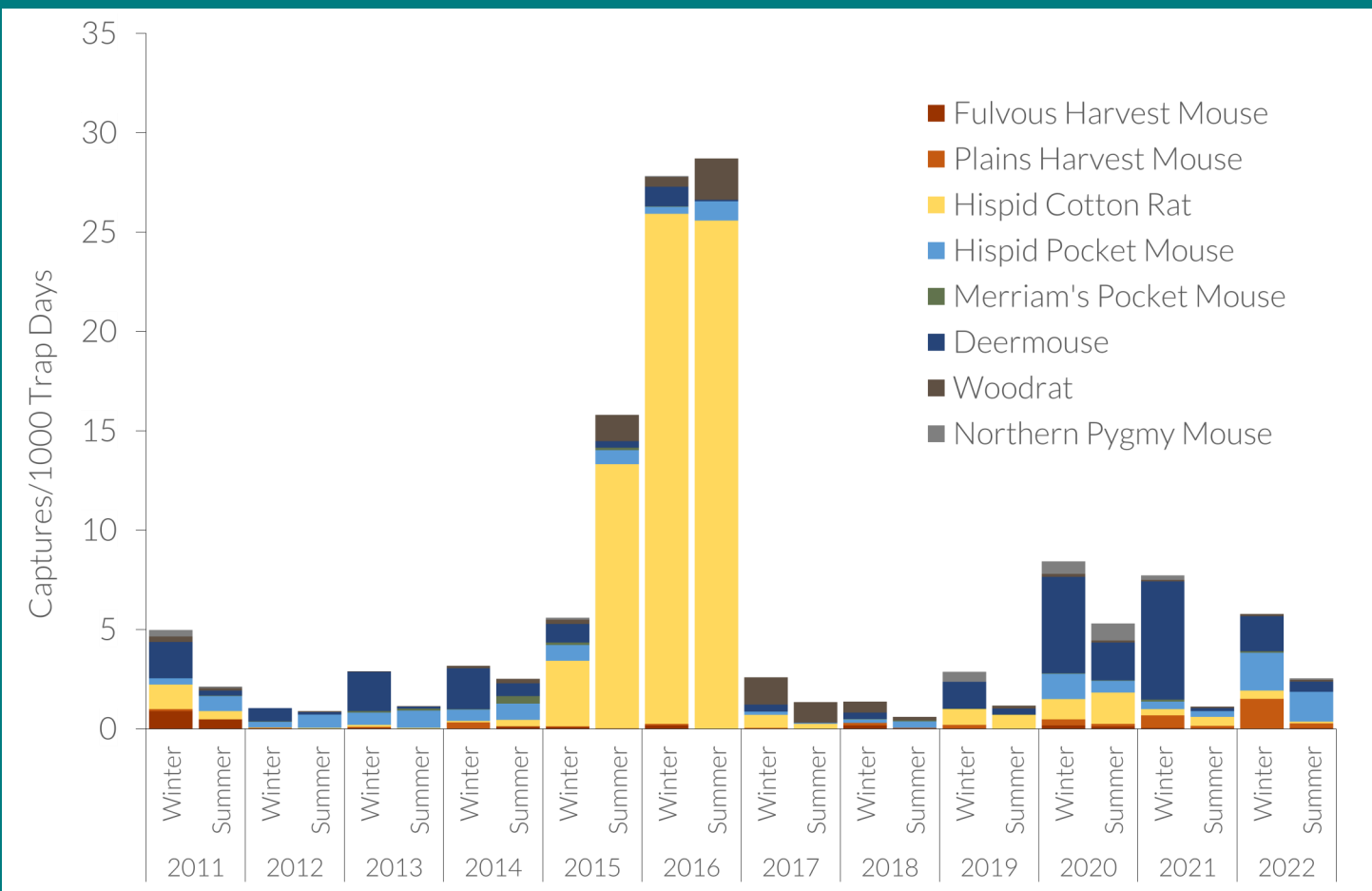
## AT THE ROLLING PLAINS QUAIL RESEARCH RANCH

Small mammals exhibit the same irruptive growth as quail and both communities appear to be driven by the same environmental factors. In fact, small mammal and bobwhite abundance are highly correlated. We monitor small mammals at the Research Ranch to learn more about the linkages with bobwhites. The small mammal community serves as an important buffer against predation on quails.

We trap small mammals in January and June using mark-recapture methods. The data presented here are an index of abundance.



Hispid Pocket Mouse





# EFFICACY OF BROADCAST SUPPLEMENTAL FEED

## FOR NORTHERN BOBWHITES IN THE ROLLING PLAINS

Supplemental feeding may directly affect quail through changes in behavior, survival, and reproduction either positively or negatively, depending on method of feed delivery, timing, and coverage. Feeding may also indirectly affect quail by altering components of the ecosystem that are inextricably linked to quail numbers, like small mammal populations. In general, it is thought that broadcast feeding benefits quail populations through alterations to some or all of these components but the mechanisms by which these benefits occur are not well understood, especially on western ranges. As such, the purpose of the feeding study is to evaluate the costs and benefits of broadcast feeding on all aspects of a quail's life cycle (including chick survival) as well as hunting performance (e.g., coveys moved per hour). RPQRR is evaluating changes in small mammal populations as well to understand the mechanisms of influence of supplemental feeding on quail populations.

During 2022, a large feeding study was initiated at RPQRR. The Ranch was divided into 8 experimental units with 2 treatments. Four units received feed and the other four served as controls, where no feed was delivered. We began supplemental feeding in January 2022 and distributed 1.2 bushels per acre on designated treatment units. Our goal was to distribute 2 bushels per acre, based on previous research, but we did not feed during quail trapping and small mammal trapping. For preliminary analyses, birds having GPS locations with median distances greater than 200 meters (219 yards) from the feedlines were considered "not-fed" and those with median locations less than 200 meters were considered "fed."



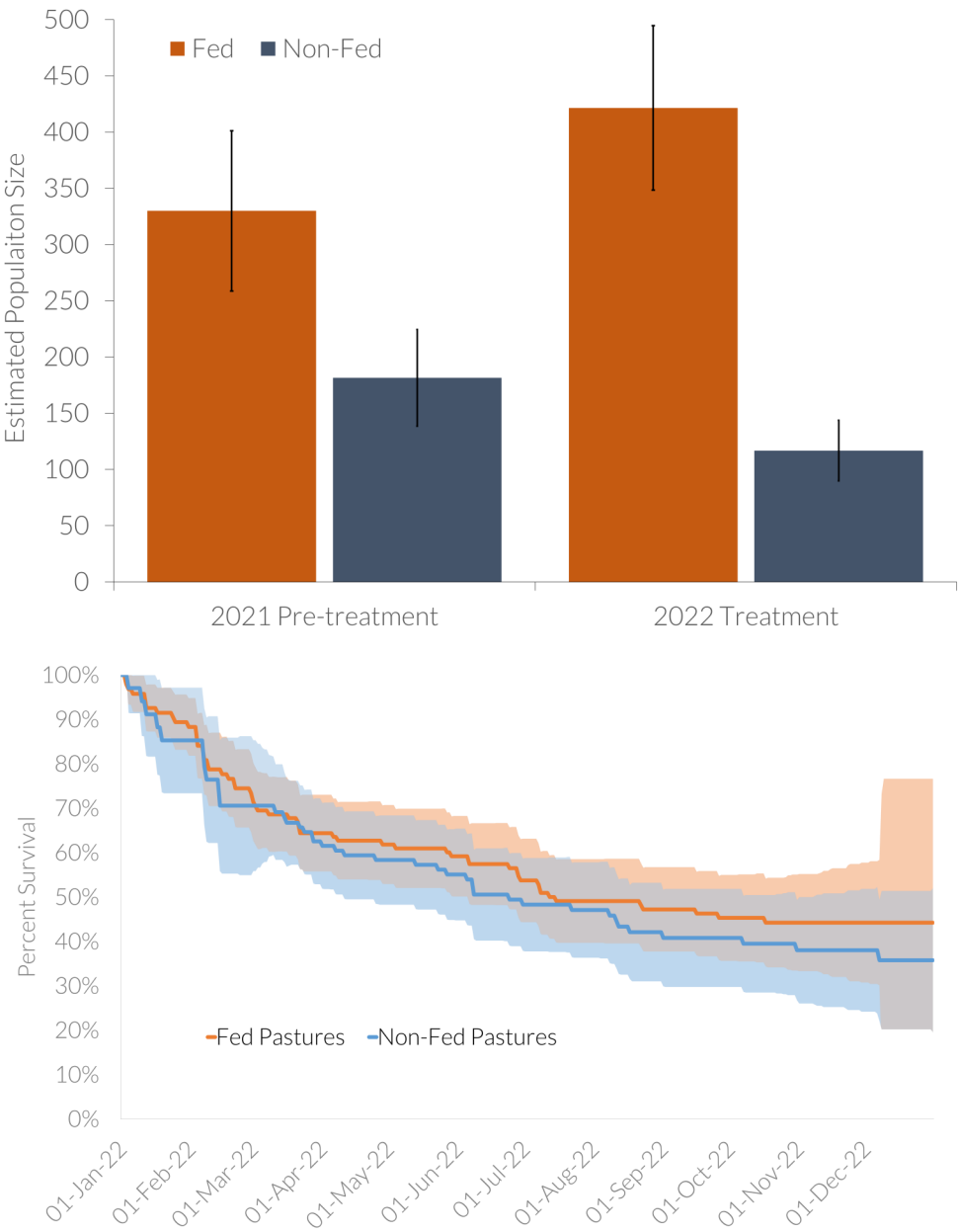
*Dana Wright*

## Quail Demographics in Relation to Feed

We collected data on multiple aspects of quail demographics including breeding season survival, nests per hen, clutch size, and length of nesting season. Breeding season survival (April 15 - October 15) was 62% for fed bobwhite ( $n = 55$  bobwhite alive April 15) and 55% for the control group ( $n = 42$  alive April 15). Fed females produced 0.74 nests per hen and 0.60 nests per hen for non-fed individuals. Clutch size

(number of eggs) was nearly identical for both groups. Clutch size typically diminishes with successive nest attempts and throughout the nesting season. We documented that nesting season was longer for fed individuals (May 16 - August 15) compared to non-fed birds (May 25 – July 14) and the rate at which clutch size diminished throughout the nesting was lower for fed individuals. Sample sizes limited our ability to detect statistical differences in any of our comparisons ( $n = 39$  fed-hens,  $n = 20$  non-fed hens). During 2023 and subsequent years, we will attempt to nearly double the 2022 sample size. Hunting was limited to 11 hunts during 2022-2023 hunting season. We observed 1.3 coveys per hour in fed areas and 1.1 coveys per hour in non-fed areas.

The experimental units that received feed were, by chance, the areas of the Ranch that historically held the highest densities. However, we observed a slight increase in abundance in the fed areas comparing fall 2021 (pre-feed treatment) to fall 2022 and a slight decrease in the non-fed areas. These data are preliminary, but encouraging.





## Feed Disappearance Rates

Throughout the year, we documented the rate at which feed disappeared from feedlines. These data will be paired with space use of bobwhite in future analyses. Research from the southeastern U.S. indicated a “giving up density” once the number of milo grains per one-quarter of a square meter fell below 15. In other words, it became more profitable for bobwhite to forage in areas other than feedlines once food abundance dropped below a certain level on the feedline. In a similar effort to determine appropriate feeding rates for the Rolling Plains, we documented feed consumption in 2022. It appeared that we met the 15-grain threshold observed in the southeastern U.S. at 2 weeks post-feeding, but disappearance rates varied throughout the year. Similarly, we expect them to vary by year when the number of primary consumers (e.g., small mammals, songbirds, red harvester ants, etc.) ebb and flow.



## Small Mammals in Relation to Feed

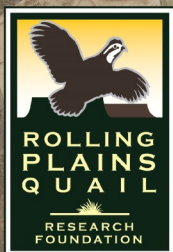
Quail and small mammals (e.g., rats, mice) have many things in common—they both eat seeds, use similar vegetation, and everything wants to eat them. It should be no surprise that when small mammals are doing well, quail are as well.

But, so what? Are there ways we can manipulate rodent numbers? This was one of the questions that arose as part of our new supplemental feeding study. If we can see changes or relationships in some parameters of the system (e.g., quail nesting rates, survival, small mammal numbers) but not others, this may help understand the mechanisms in which food provisioning works (directly, indirectly, or both) and which to explore further.

Overlaying our 8 experimental units are 24 small mammal trapping grids (3 grids per unit). Each grid consists of 49 traps spaced 10 meters apart. Since beginning the feed study, we have trapped small mammals 3 times. During the first small mammal trapping occasion (Feb 2022), we had just started our study (January 2022). Captures were slightly lower on non-fed pastures. During summer, we observed a 60% decrease in captures on non-fed areas and a 43% decrease on fed areas. This January, fed areas increased 75% whereas non-fed areas increased by 25%. These data are to be considered preliminary, as the treatment and control units will be reversed in 2024. Statistical comparisons for population sizes are pending. One thing was certain, the addition of feed alone was not enough to outweigh the dry conditions during summer 2022. Cover and temperature likely remained important variables in the equation.







**Legend**

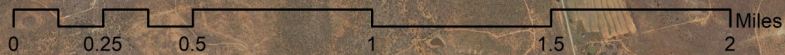
Small Mammal Grids

Feedlines

**Hunt Courses**

**Course**

- Babe-Meg
- East Annie
- Ellie
- James-Lucy
- North Doc
- South Doc
- Suzie
- Tex-Oscar
- West Annie



NAIP Imagery 2020  
Created 11 February 2022  
RPQRF, B. Kubecka



# CENTRAL ROLLING PLAINS SCALED QUAIL RESTORATION

We launched the fourth iteration of RPQRF's scaled quail translocation research program in the spring of 2021. This project, located on the boundaries of Kent and Fisher Counties, builds on previous research by further understanding impacts of source populations and assessing habitat selection of scaled quail in the Rolling Plains. Past projects focused on basic feasibility (RPQRR), release strategies (Cottle and Knox counties), and source populations (Knox county).

The release ranch is an approximately 25,000-acre property on the Double Mountain Fork of the Brazos River. The property is managed for a variety of wildlife species and primarily composed of the "red dirt" juniper breaks that characterize river drainages in the Rolling Plains. We focused releases on a small portion of the ranch then documented dispersal, survival, and reproduction of translocated scaled quail on the release ranch and surrounding properties. Past research indicates that brush encroachment by mesquite and juniper in the Rolling Plains played a major role in the reduction in quality of scaled quail habitat. Brush density in the Double Mountain Fork area along the Brazos River was reduced during an intense wildfire in 2011.

Throughout February and March of 2021 and 2022 our team alternated trapping and translocating scaled quail from the Permian Basin and the northern Panhandle with on-site telemetry monitoring. A portion of the translocated birds were hard-released within 48 hours of capture. Soft-released quail were placed in holding pens in a central location on the release site. The birds were released in early April. All hens were radiomarked.



*Becky Ruzicka*



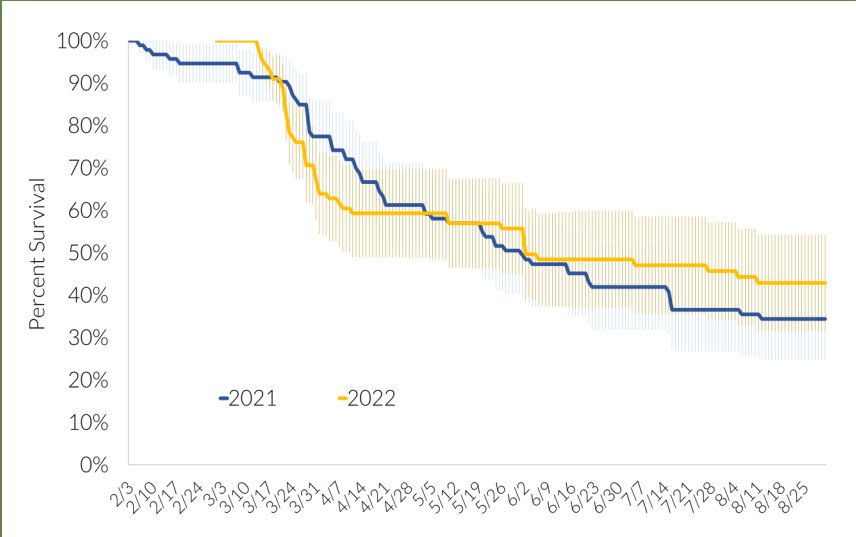
*Becky Ruzicka*



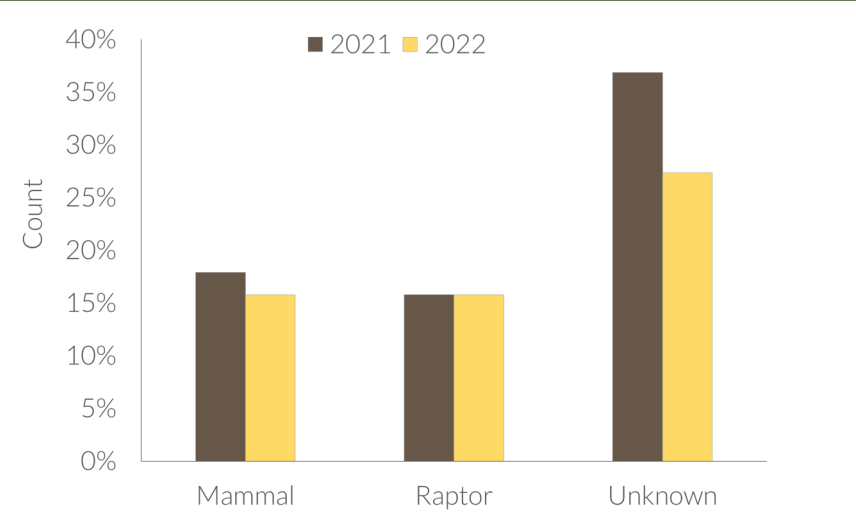
# Survival

We monitored radio-marked hens for approximately a 200-day interval each year that coincided with breeding season. Interval survival was 34% and 43% in 2021 and 2022, respectively. The breeding season survival we observed would equate to annual survival of 14 - 22%. Roughly speaking, stable and huntable quail populations routinely exhibit survival from 15 - 30%. While the survival we observed was on the low end, it is not far from sustainable given moderate to good reproductive effort. We believe modifications to management practices will increase annual survival to a reliably sustainable range.

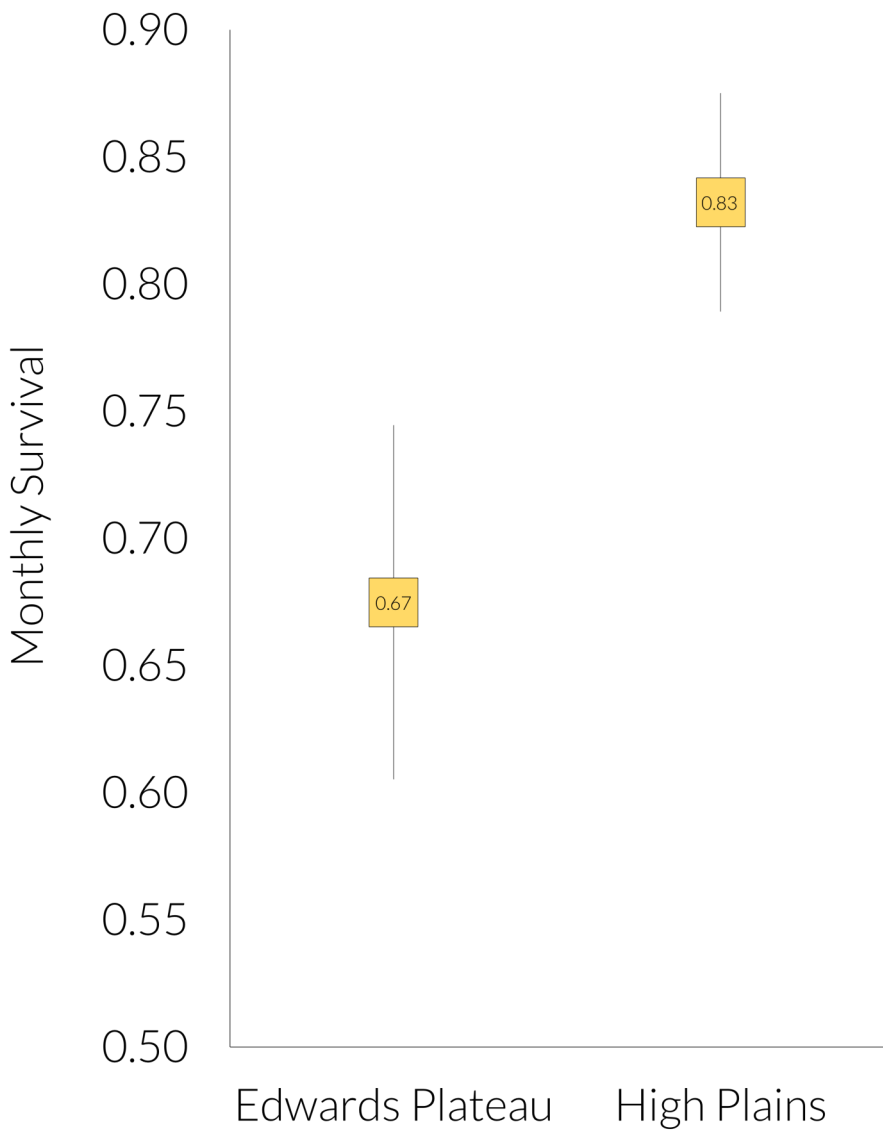
This graph shows a comparison of translocated scaled quail survival derived from monitoring of radio-marked birds. Shading in the graph represents 95% confidence intervals. Overall, survival was similar between years. Both populations experienced highest mortality from March - April. This time of year coincides with raptor migration. All West Texas quail populations experience high mortality during this time relative to the rest of the year, however, leaving residual ground-level herbaceous cover can help mitigate predation pressure. comparison of cause specific mortality between years.



Most mortalities are unattributable to a specific cause due to insufficient evidence at the mortality site. In general, mortalities attributed to raptors peak early in breeding season. As breeding season progresses, the total number of mortalities decrease, but shift more toward mammal-related causes. A few mortalities in each year were attributable to bobcats (i.e., carcasses found cached). Attributing cause to mortalities is an inexact “science.” Undoubtedly, the number of mammal-related mortalities were overestimated in each year due to scavenging that occurred on carcasses before they were recovered.



One of the questions we sought to address with this research was the efficacy of translocating scaled quail from the High Plains to the Rolling Plains ecoregion. The question of appropriate source populations to use for translocation has long been a research need in translocation science. Past research found that scaled quail translocated within the Rolling Plains and from the Edwards Plateau survived equally well on release sites in the Rolling Plains. In this study, we found that birds translocated from the High Plains dramatically outperformed the birds translocated from the Edwards Plateau. Further analyses of these data are needed to tease out potential mechanisms. However, the impact of winter storm Uri in 2021 and subsequent poor range conditions hence in the Edwards Plateau cannot be discounted. We observed a marked decline in weight at capture during trapping following the winter storm when compared to capture weights just prior to the storm.

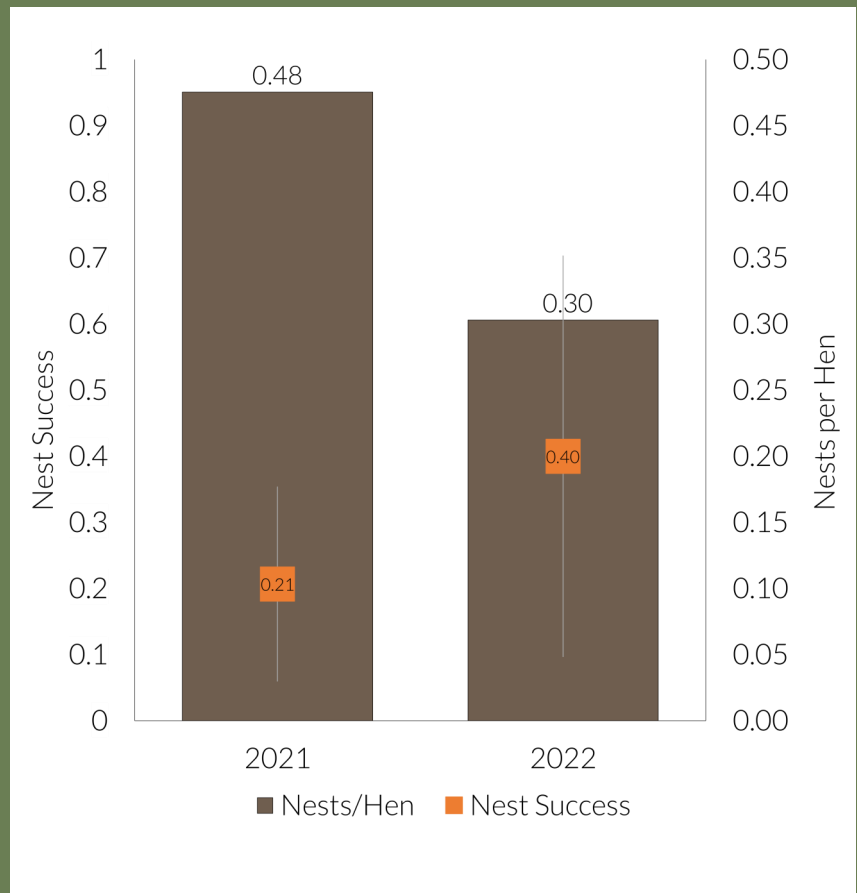




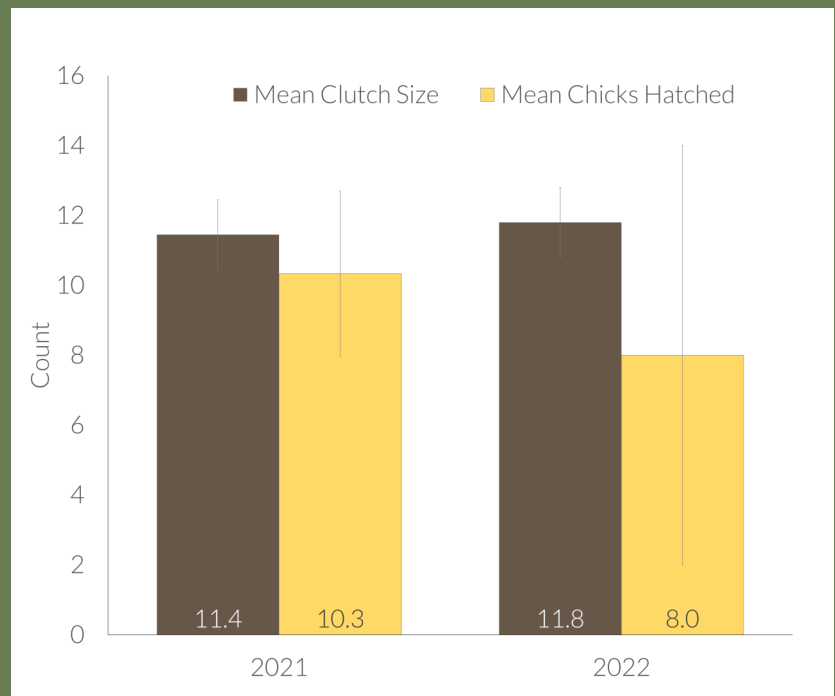
## Reproduction

Overall, both nest initiation and success were low throughout this project. We calculated nest initiation as the number of nests produced per hen that were alive on May 1 (entering breeding). Thus, nest initiation is confounded with breeding season survival. However, breeding season survival was equivalent between years and so the numbers for nest initiation between years are comparable.

Nest initiation was greater in 2021 following late spring rains, however, that effort was counteracted by low nest success (i.e., percent of nests hatching). 2022 brought much lower nest initiation, but higher nest success. Productivity (calculated as the number of chicks produced based on clutch sizes and successful nests) was higher in 2021 (60 chicks) compared to 2022 (32 chicks). Part of the decrease in productivity resulted from partial nest depredations.

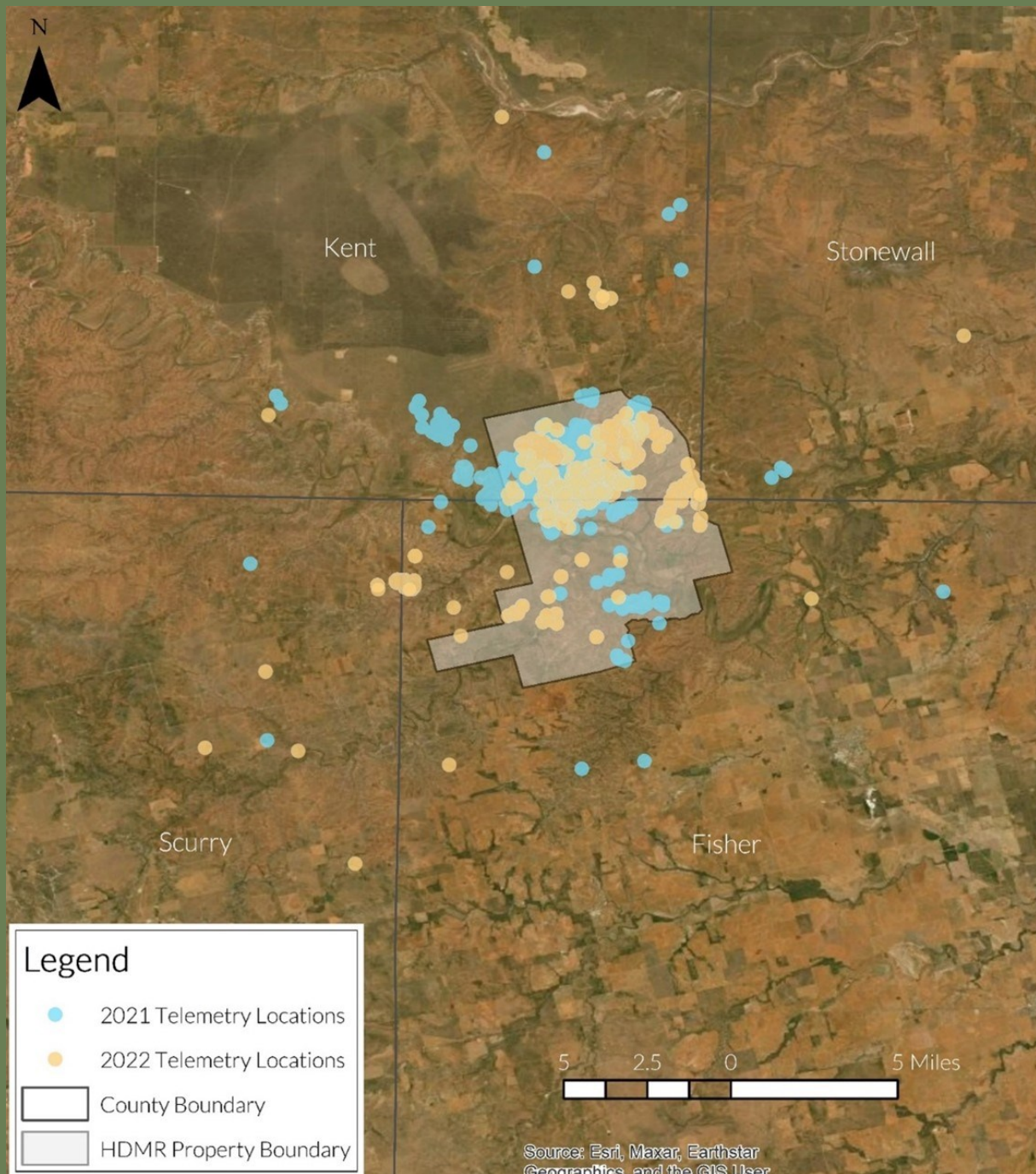


Average number of eggs per clutch was typical of scaled quail populations in both years; however, there were apparently more partial nest depredations in 2022. Partial nest depredations decrease productivity and are typically attributable to ground squirrels. Snakes can also contribute to partial nest depredations, but the degree to which they do is unclear.



## Dispersal

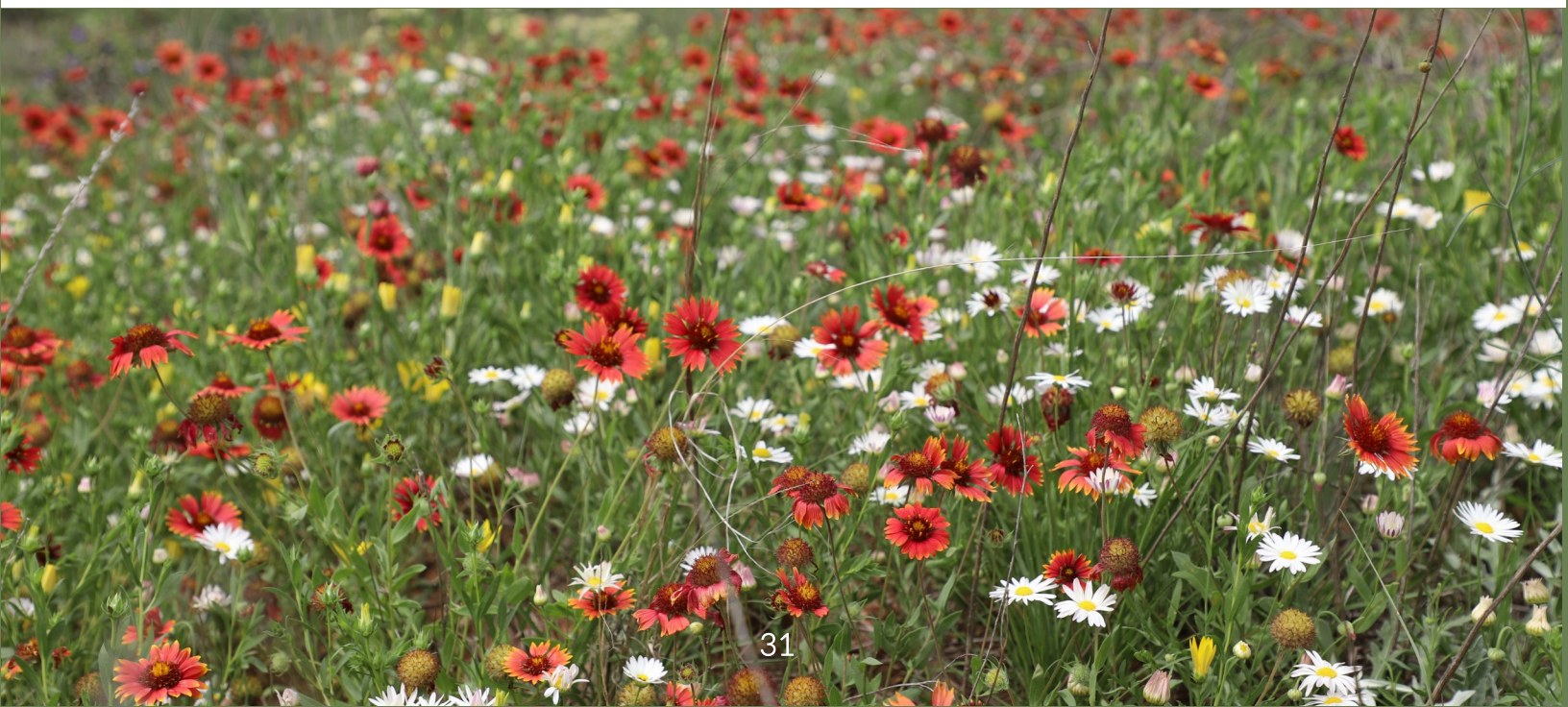
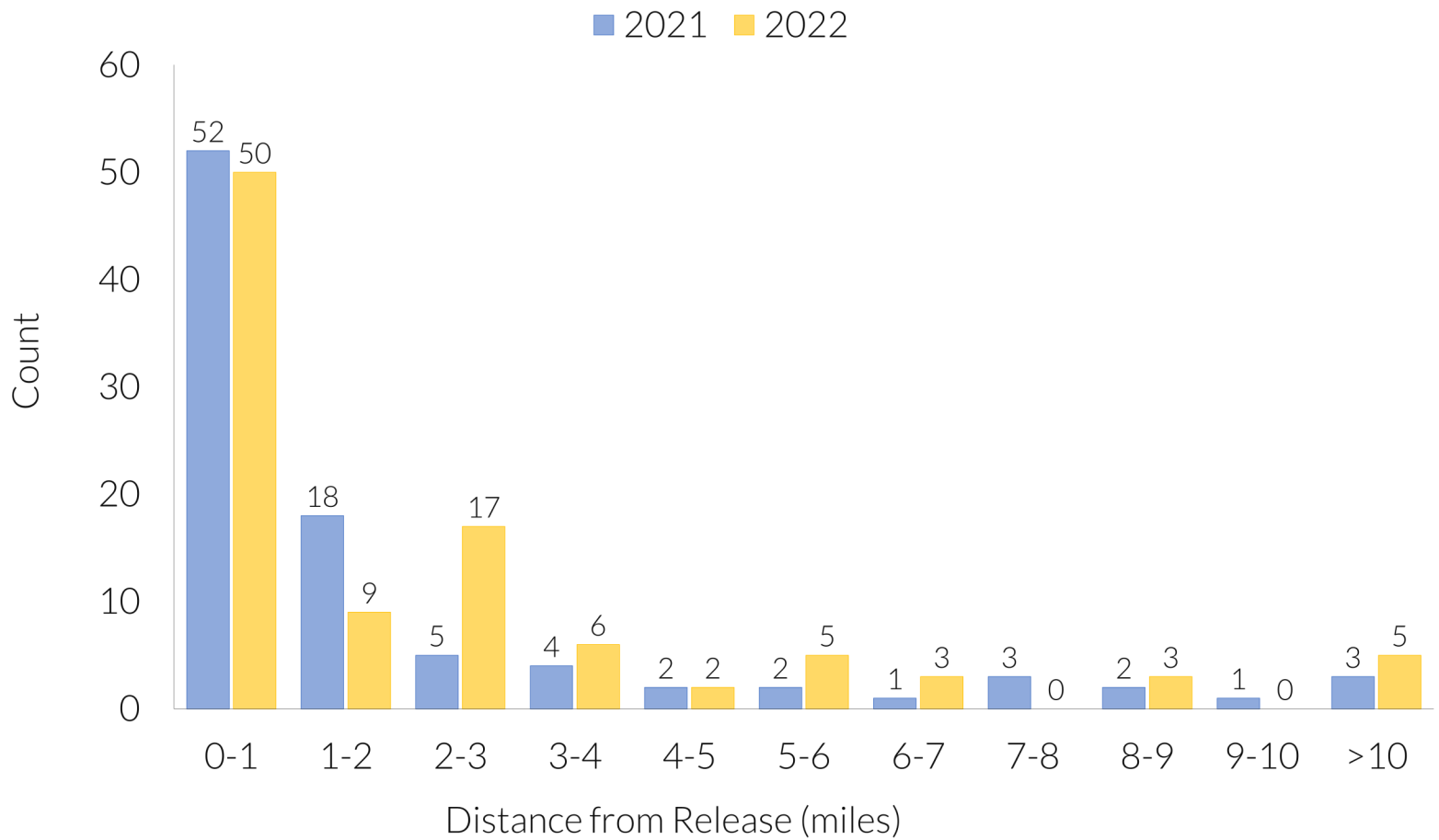
The map shows locations of scaled quail collected during approximately 3,500 miles of fixed-wing aerial surveys and roughly 4,000 “man hours” of on-the-ground radio telemetry in 2021 and 2022. It highlights the long-distance dispersal capabilities of scaled quail and the impact a single translocation can have on surrounding populations of scaled quail. Technicians worked to gain access to the properties with dispersed scaled quail to monitor dispersing birds on the ground to better understand the landscape level implications for scaled quail translocation and habitat selection.





## Dispersal

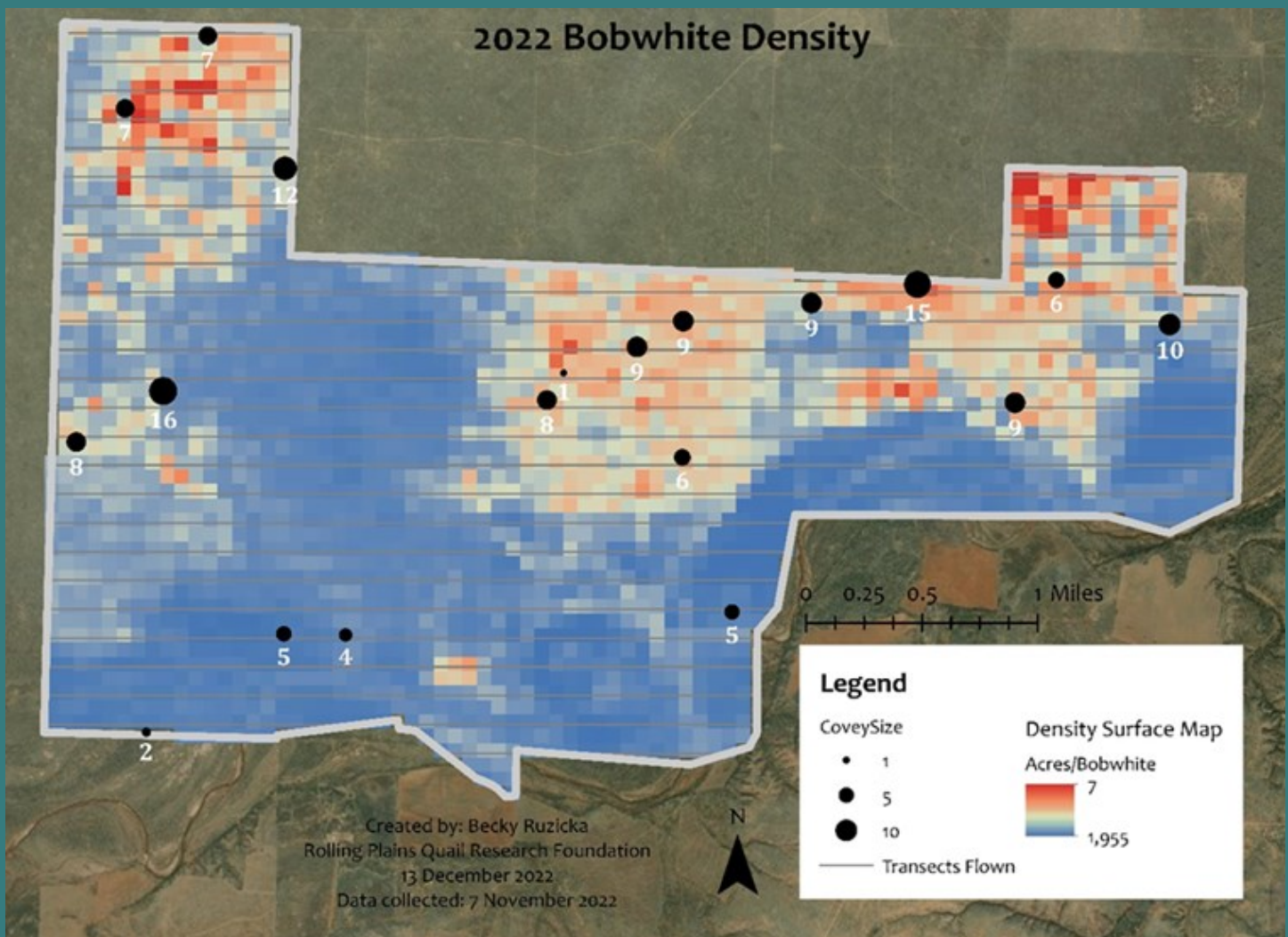
Comparison of dispersal distances in translocated scaled quail by year. We observed slightly more long-distance dispersers (>3 miles) in 2022.





# REGIONAL HELICOPTER SURVEYS

RPQRF launched a new program using helicopter surveys paired with state-of-the-art distance sampling methods that were developed through past work on the Research Ranch. The goal of this program is to provide landowners with a service that will help them identify where to apply management, what aspect of their habitat to focus efforts on, and which management tools will best achieve their objectives. This program is also a way to increase outreach with landowners in our region to foster a sense of community and renewed commitment to the resources that bind us. We coordinate the entire survey process with the landowner and helicopter pilots. Landowners are billed for employee time and the cost of the helicopter survey. In return, landowners receive a detailed report with a spatially explicit map of quail density, a cursory assessment of weak links on the property, and management recommendations. In the first year of the program, we enrolled 4 ranches located in Kent, Stonewall, Pecos, and Wheeler counties. We surveyed 34,308 acres, flying 436 miles of transects.



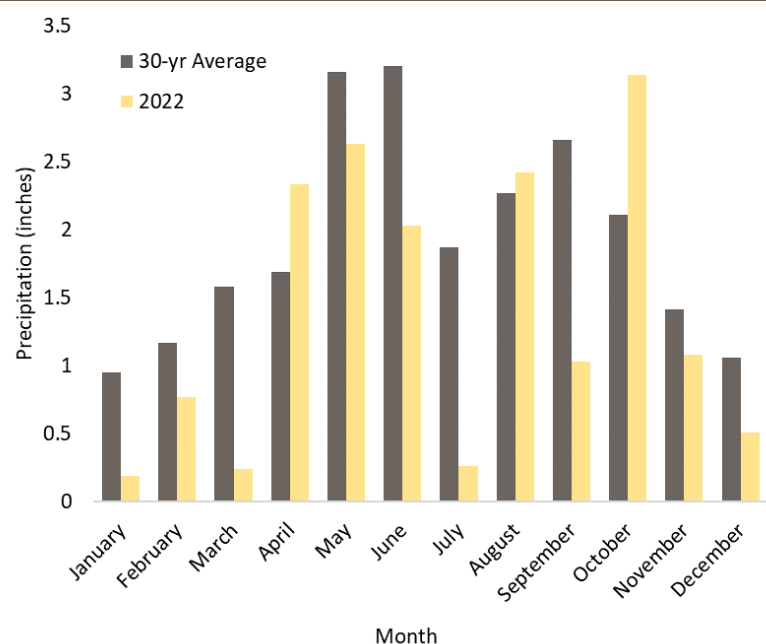
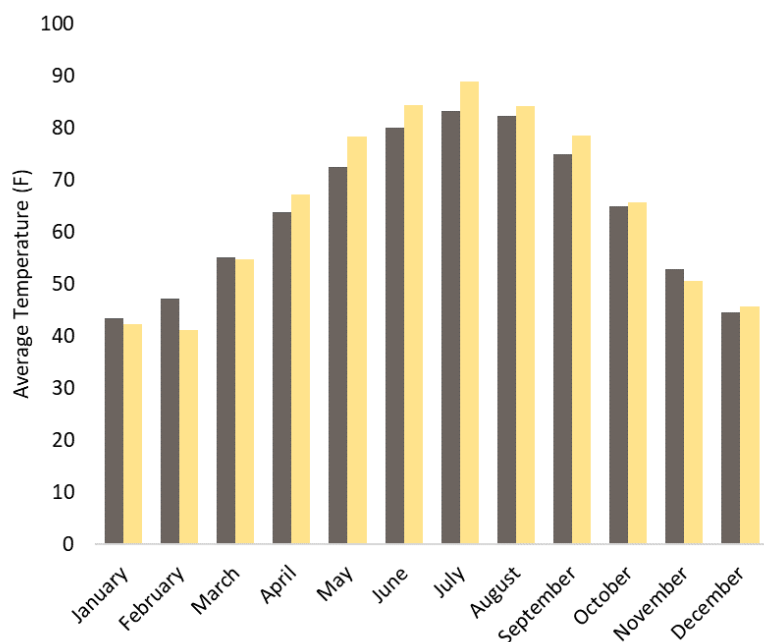
# 2022 WEATHER IN REVIEW

A quail manager in west Texas should always manage as if there is an impending drought—because there is!

Quail populations in arid regions of Texas are strongly tied to temperature and rainfall. Increased rainfall leads to more cover for concealment (increasing survival), more food, more alternative prey, and lower temperatures which sustain nesting activity. During 2022, RPQRR experienced cold and dry winter conditions prior to breeding season and hot and dry conditions during the nesting season. Neither bode well for quail populations. RPQRR finished the year with a little over 16 inches of cumulative rainfall, much of which was received in August and October (too little, too late). The 30-year average is 23 inches.

What can a manager do?

- ◇ Consider complete grazing deferment in years of below average rainfall and high heat. Destock early and don't wait. Conservation incentive funding is available through NRCS for deferment.
- ◇ Avoid disking brood patches and-or strips during dry winters where the future forecast appears bleak and forb response is expected to be poor.
- ◇ Do not conduct prescribed burns when soil moisture is low and limits potential vegetation response post-burn.
- ◇ Practice conservative harvest. Never harvest more than 15% of your quail population (including crippling loss).
- ◇ Broadcast feed heavily. Consider making broadcast feedlines throughout the habitat. Do not feed off of main roads.
- ◇ Practice predator removal. Water sources and deer feeders are good trapping locations during drought.



# Texas Horned Lizard Population Monitoring by the Dallas Zoo Project

The Texas Horned Lizard, (*Phrynosoma cornutum*), is listed as a State Threatened Species by the Texas Parks & Wildlife Department (TPWD) and as a “species of conservation concern” throughout the species’ larger range. The population decline of Texas Horned Lizards is directly linked to the decline of native Red Harvester Ant (*Pogonomyrmex spp.*) populations within the historic range of Texas Horned Lizards, which make up 60-70% of the Texas Horned Lizard diet. The goal of the Zoo’s work is to determine population density, habitat or environmental preference, and spatial relationship with Harvester Ants at the Rolling Plains Quail Research Ranch (RPQRR). In addition to wild population surveying, Dallas Zoo collects wild gravid female Texas Horned Lizards to participate in a juvenile head-start program with TPWD. After laying eggs, adult females are returned to RPQRR at the site of capture and hatchlings are released annually at a site dictated by TPWD in September. This project has been on-going since 2010.

From 9 June to 30 September 2022, 144 Texas Horned Lizards were hand-collected, processed, and released. Of these 144 individuals, 53 were male, 75 were female, and 15 were of unknown/indeterminate gender. Of those, 106 individuals received passive integrated transponders; 38 individuals were too small to receive transponders and were marked with permanent marker on their ventrum. A total of 272.5 man-hours were spent in the field in 2022.

On 9 June 2022 one gravid female was collected and transported back to Dallas Zoo. Individual 22F147 laid a total of 31 eggs on 7 July 2022 and was released back at the site of her original capture at RPQRR on 20 July 2022. Hatchling group 22F220 contained 31 eggs. One egg was broken during excavation of the nest. Hatching began on 27 August 2022 with 19 animals emerging by end of day 28 Aug 2022. The rest of the eggs did not hatch. One juvenile was significantly smaller than the rest of the group and died within 24 hours of hatch. The remaining 18 juveniles were released at Mason Mountain Wildlife Management Area on 15 September 2022 in conjunction with Nathan Raines, TPWD Diversity Biologist. Hatchlings were tagged prior to release using harmonic tags.



Dana Wright



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*Dana Wright*





We especially thank Park Cities Quail Coalition for their significant contributions to RPQRF since our inception. Over the past decade plus, PCQC has provided critical funding that has allowed our research efforts to flourish.

*They are truly the wind beneath our wings.*





## Support Quail Conservation!

As a non-profit, RPQRF is dependent on the generous contributions of individuals, agencies, foundations, and corporations. These commitments are incredibly important for our research and scientifically sound management recommendations we provide for supporting wild quail populations. If you love these birds as much as we do, we hope you'll consider donating – no gift is too big or too small. And thankfully, there are more ways (and reasons) than ever to include RPQRF in your charitable donations.

### Direct Donations: The Easiest Way to Give

Our website makes it easy to make an online donation and will even let you schedule monthly recurring gifts to support RPQRF on a year-round basis. If you'd rather mail your gift, you'll find the key details there, too. For more information, visit:  
[www.quailresearch.org/donate](http://www.quailresearch.org/donate)

### RPQRF Endowment Series

Endowments are the lifeblood of many non-profit organizations with long-term visions. This year, RPQRF launched an inaugural endowment to support general operating expenses. RPQRF is also seeking endowment support to secure each of its organizational tenets: quail research, education, and outreach. Endowments are a great way to honor a donor, family member, or friend while ensuring our quail conservation efforts continue well into the future.

For more information on endowment opportunities, please contact RPQRF Executive Director, Ryan O'Shaughnessy, [roshaughnessy@quailresearch.org](mailto:roshaughnessy@quailresearch.org)

### Planned Gifts: Ensuring the Future of Quail Conservation

You can give the gift of quail conservation to future generations by including RPQRF in your estate plans. These gifts are not complicated (they can be completed in as little as one sentence) and will help ensure that we continue our mission for years to come. Use the link below to learn how to make a planned gift to RPQRF.

[www.quailresearch.org/planned-giving](http://www.quailresearch.org/planned-giving)

The future we want requires action now.



