



THE

QUAIL-TECH

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FINALLY, NESTS!

By Brad Dabbert

The bobwhite life cycle in spring generally proceeds with covey break up and pair formation by mid-March to April followed by nesting in late April or early May. Unfortunately, cool weather in March and an extremely dry April and early May, 2018 have delayed pairing and stifled the nesting season. We have anxiously monitored radiomarked bobwhite hens the past couple of months over a wide swath of the Rolling Plains, but detected no nesting through the month of May. Finally, a nest was detected on June 1, 2018. Like the first gift of Christmas it was a celebrated sight. And, since then we have found several more nests. Unfortunately, most evidence suggests that early season nests provide the greatest input into the fall population, because they have a higher success rate and a larger clutch size. Nevertheless, it is a welcome site to see some rain followed by bobwhites nesting across the Rolling Plains of Texas.

Quail-Tech biologists are spread across the Rolling Plains right now finishing up spring call counts and conducting a plethora of research studies including investigations concerning bobwhite and scaled quail habitat use, bobwhite chick survival, and the influence of predator management on bobwhite nest success. Look for an Ebulletin next month detailing our spring 2018 call count results.

Nest success has a major influence on bobwhite population growth, because one nest predation event removes 12 or more potential chicks from the population. This influence contributed greatly to the differences that we witnessed between the boom populations of fall 2016 and the year of reduced populations during fall 2017. Nest success in the Rolling Plains of Texas generally averages around 40%. We measured nest success during the boom year of 2016 at 54% (no predator reduction). Nest success declined to 29% (no predator reduction) during the 2017 reproductive season. This difference means that 50% fewer chicks were hatched during the 2017 reproductive season. This 50% reduction occurred before chicks ever made it out of the egg. Chick survival to 21 days-of-age also declined between years (23% during 2016, 9% during 2017). It is easy to do the math and see why populations declined. During 2016, 1,000 hens (54% nest success, 12 egg clutch, and 23% chick survival) produced 1,490 chicks that survived to at least 21 days-of-age; a growing population. During 2017, 1,000 hens (29% nest success, 12 egg clutch, and 9% chick survival) produced only 313 chicks that survived to at least 21 days-of-age; a declining population. So, severe population decline happened chiefly because of predation events that occurred before most chicks hatched. Evidence suggests nest success and chick survival declined, because the small mammal population (primarily cotton rats) collapsed across the Rolling Plains of Texas. Small mammals are the primary prey for many predators including raptors, mammals and reptiles. When small mammals are absent, other species such as bobwhites and their nests replace them as food for predators. This prey switch causes the predation rate to increase (look for a future E-bulletin detailing this relationship) leading to a bobwhite population reduction. Reptiles are a significant source of nest mortality. We recorded a fascinating snake predation event during the 2017 breeding season. Be sure and go to www.quail-tech.org and view this amazing video.



First bobwhite nest detected by Quail-Tech biologists during the 2018 reproductive season. Hopefully we see a relatively high percentage of these nests make it to hatch this year.



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Reptiles are a significant source of nest mortality. This photo is a snapshot from a video that we recorded of a bullsnake nest predation event on the 6666 Ranch during the 2017 breeding season. You will see the hen's side out of focus because the camera is right in the nest. Then, you will see the hen flush as she senses the snake. The snake enters the nest and eventually consumes every egg in the nest. Be sure and go to www.quail-tech.org and view this amazing video.

The Quail-Tech Alliance is not simply observing these changes but attempting to develop methods to mitigate these negative influences on bobwhite population growth. As you know, we have been investigating the influence of predator management and predator reduction on bobwhite population demographics for the past two years (see past E-bulletins). Predator management is the use of 3 techniques to reduce the efficiency and impact of predators on bobwhite populations. Habitat management, the first of the techniques, provides visual obstruction of sufficient height to hide bobwhites and their nests from predators and large enough areas of habitat to prevent predators from being able to quickly search a small area. Supplemental feeding into the habitat, the second technique, allows bobwhites to acquire food quickly and get back to dense protective cover, reducing the exposure to predation. Predator reduction, the third technique of predator management, is the reduction of mesomammal predators in response to a predator population that has become

abundant relative to the bobwhite population in the same area. Bobwhite nest success during 2016 was 10% greater on the predator reduction site (64% nest success) as compared to the control site (54% nest success with no predator reduction). Chick survival to 21 days-of-age was essentially the same between predator reduction and control sites (24% with predator reduction and 23% with no predator reduction). These combined increases in nest success and chick survival represent a 24% increase in bobwhite chicks on the ground at 21 days-of-age in predator reduction areas (1,843 chicks produced per 1,000 hens) as compared to control areas (1,490 chicks produced per hen) where no predator reduction occurred. Bobwhite nest success during 2017 was 18% greater on the predator reduction sites (47% nest success) as compared to the control sites (29% nest success with no predator reduction). Predator reduction may influence nest success even more positively during years when reproductive efforts are limited by environmental factors such as limited rainfall. In fact, given a 12-egg clutch size and 9 % chick survival to 21 days-of-age, this increase in nest success, means that predator reduction in 2017 resulted in 62% more chicks surviving to 21-days-of-age as compared to control areas (no predator reduction). This increased benefit of predator reduction during 2017 as compared to 2016 supports the inference that predator reduction may influence nest success even more positively during years when reproductive efforts are limited by environmental factors such as limited rainfall. Thus, two years of evidence support the positive influence of predator reduction on bobwhite nest success. The 2018 predator management experiment is currently underway. I again expect to see a positive influence of predator reduction on nest success during the 2018 breeding season. Nevertheless, this experiment needs to be replicated multiple years to examine the variability in response over time. We remain hopeful that rains will continue this summer and we will see many more bobwhite nests. Stay tuned!



A feral hog consumes a bobwhite nest on the 6666 Ranch during May, 2016. Everything loves to eat quail eggs.

The predator management study is funded by the 6666 Ranch, the Burnett Foundation, and the Park Cities Chapter of the Quail Coalition. We are extremely grateful for their generous support.