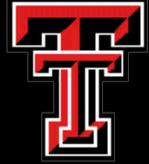




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UPDATE: CHICK SURVIVAL & MOVEMENT STUDY

By Brad Dabbert and Veronica Urbanczyk

As you know, we initiated a study to estimate bobwhite chick survival and to determine causes of mortality during the 2017 reproductive season. Chick survival is an important demographic parameter driving bobwhite population growth. Current estimates suggest that 50% of bobwhite chicks that hatch do not survive their first two weeks of life. Data concerning the factors that may influence bobwhite survival from hatch to 3 months of age is very limited, because of deficient tagging and tracking methods for neonate bobwhites. Unless bobwhite chicks can be individually marked and relocated, their fate is uncertain when they are missing from their original brood. It is uncertain whether chicks missing from their original brood are dead or have simply mixed into a different brood and are alive and well. Marking and relocating individual chicks removes this uncertainty regarding chick fate.

In 2013, researchers at the Tall Timbers Research Station in Tallahassee, Florida, developed a suture technique to affix miniature transmitters to bobwhite chicks. Radio-marking individual chicks will provide estimates of their survival and identify causes of chick mortalities. We have initiated a collaborative research project with scientists at the Tall Timbers Research Station to estimate bobwhite chick survival and resource use in the Rolling Plains of west Texas. We are using a combination of GPS-equipped radio-transmitters fitted to hen parents and VHF radiotransmitters sutured to backs of chicks. Laboratory and field tests in Florida demonstrated that this suture technique does not adversely affect the chick and the radio-transmitters are well retained. Tracking parent hens using GPS tags provides fine-scale movement information while suture-tags on chicks provide a more accurate estimation of individual and group-specific survival. During 2017, we monitored 13 broods and 70 chicks using a combination of patagial tags and radio-tags, 2-4 times a day to determine movements, survival and cause of mortality (based on evidence at the mortality site). Chicks that could not be located were censored from the data set. We observed that broods often used mesquite, western ragweed, and vine mesquite cover. Raptors and mammals were both significant sources of chick mortality during 2017 (See Figure). Hypothermia is the suspected cause of some chick deaths in the unknown category. Survival rate after day 9 was estimated to be 72% per day. This means 23% of chicks die each day. Chick survival to 21 days of age was estimated to be 2%. Chick survival to 21 days of age during the population boom year of 2016 was estimated to be 23%. This large reduction in chick survival rate is a significant reason for the population declines that occurred during 2017. Additional factors potentially influencing survival and resource use such as predator occurrence, weather conditions, insect availability, and vegetation composition and structure will be incorporated as covariates in future analyses.



Quail-Tech Alliance Biologist Veronica Urbanczyk holds a bobwhite chick after a predawn capture to mark, weigh, and fit it with a VHF radiotransmitter.



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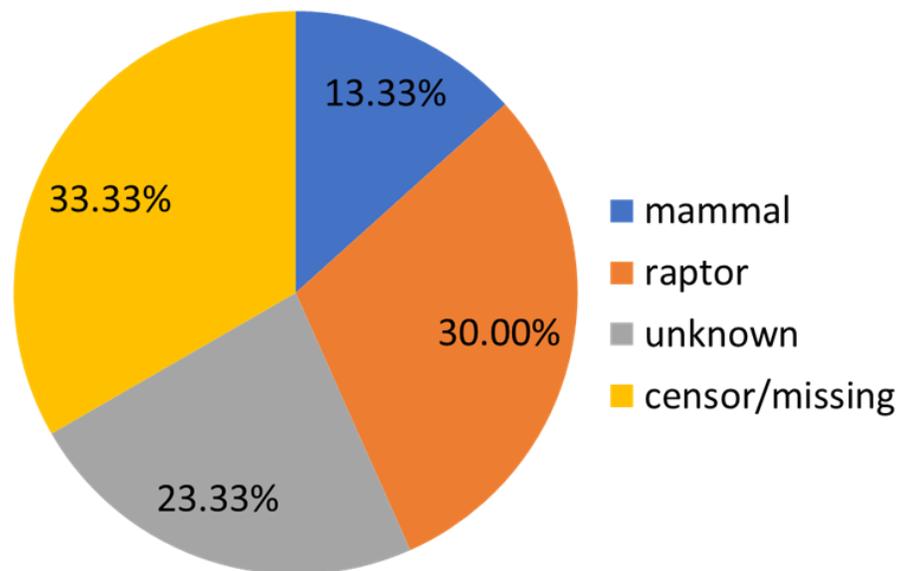
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A Bobwhite chick fitted with a patagial tag and 0.75g VHF radiotransmitter. Laboratory and field tests in Florida demonstrated that this suture technique does not adversely affect the chick and the radiotransmitters are well retained.

Understanding causes of this variation in chick survival among years will help us to develop management tools to maximize chick survival in a given year. In 2018 our goal is to increase our sample size and continue monitoring brood movement and chick survival at two separate ranches. These data will provide much needed insight to management practices that will help maintain or increase bobwhite populations in the Rolling Plains of Texas as well as help to fill a gap in the literature on bobwhite ecology. This research study is funded by the Burnett Foundation, the Cross Timbers Chapter of the Quail Coalition, and the Park Cities Chapter of the Quail Coalition. We are extremely grateful for their generous support.

Cause of Mortalities



Cause of mortality of 30 bobwhite chicks from 8 different broods during the 2017 reproductive season. Mortality of chicks was classified as unknown when sufficient evidence was not available to classify as mammal or raptor caused. Some unknown mortalities were likely the result of hypothermia.