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We promote the advancement of land stewardship through ranching, science, and education.

Documenting a Late Season Quail Hatch

D. ABRAHAM WOODARD, ANDREA MONTALVO, LEONARD A. BRENNAN, FIDEL HERNÁNDEZ, HUMBERTO L. PEROTTO-BALDIVIESO, NEAL WILKINS

As fall approaches in South Texas, quail enthusiasts begin to speculate what the northern bobwhites (*Colinius virginianus*) hunting forecast will be for this season. However, before anyone makes predictions, we would like to recap 2018 and 2019 and the unpredictable nature of bobwhite reproduction.

For many hunters in South Texas, the summer of 2018 was too familiar. The bobwhite breeding season began with timely rainfall in June but was followed by hot and dry conditions throughout the remainder of the summer. All hope for a productive breeding season seemed to have faded by the end of August. A few fortunate areas of South Texas received rainfall in September and October, with some ranches receiving over ten inches (more than 200% of the monthly precipitation average for Jim Hogg County).

Like every year, reports from annual bobwhite estimates began circulating in late summer through early fall. Those who conducted helicopter surveys and pre-scouted with dogs, predicted a gloomy forecast for the hunting season. For many ranches this was the second year of downward trends, with declines ranging from 40% to 80% of the bobwhite numbers in 2016.

Within the frustration, one anomaly was noticed. In October and November, hunters and quail managers were seeing an unusual amount of quail still paired up. It looked as if the late rainfall had rejuvenated breeding activity and triggered a late season bobwhite hatch.

Researchers with the Caesar Kleberg Wildlife Research Institute (CKWRI) in Jim Hogg County documented a bobwhite nest with 12 unhatched eggs as late as October 20, 2018.

Photo. Bobwhite nest found on El Sauz inside a small grazing exclosure in late October 2018. Photo Credit: Kye Johnston

In South Texas, rainfall is a key factor for the reproductive success of bobwhites. Over the years, quail managers and researchers have found evidence of active reproduction within bobwhite populations throughout every month of the year. Therefore, it should come as no surprise that rainfall in early fall would revitalize reproduction efforts throughout parts of the region.

A collaborative study between the CKWRI and the East Foundation allowed for a unique opportunity to document this reproductive phenomenon. The study is taking place on two separate properties (e.g., hunted vs. non-hunted areas) owned by the East Foundation in Jim Hogg County. To analyze the temporal effects of harvest on northern bobwhite populations, line-transect distance sampling surveys from helicopter are being conducted in November, mid-December, early February, and early March. A total of 26,000 acres are surveyed with each survey conducted at 100% coverage (transects are 200 meters apart).

Surveys conducted from November 8th to 10th found densities of one bobwhite per seven acres on both the hunted and non-hunted areas. Coveys containing half-grown quail were observed (6% of coveys), along with a high rate of singles and pairs (38%). In comparison, only 8% of quail detections were singles and pairs during the 2017 surveys.

At this point, the question was: *Will this late season reproduction attempt add any individuals to the winter population?*

To our benefit, we had three more surveys to gauge the population changes (Figure 1). When the second flight of 2018 (December 17th and 18th) was conducted, the estimated quail abundance across both study areas had increased by roughly 30%. In simple terms, the population increased by an estimated 1,255 quail over the 26,000 acres. The typical quail population peaks in late fall, followed by declines through March. **Our surveys indicated the population peak was in December; which was followed by declines through March, on both our hunted and non-hunted areas.**

Photo. Guide and hunter approaching covey on January 12, 2019 at Buena Vista Ranch. Photo Credit: Abe Woodard

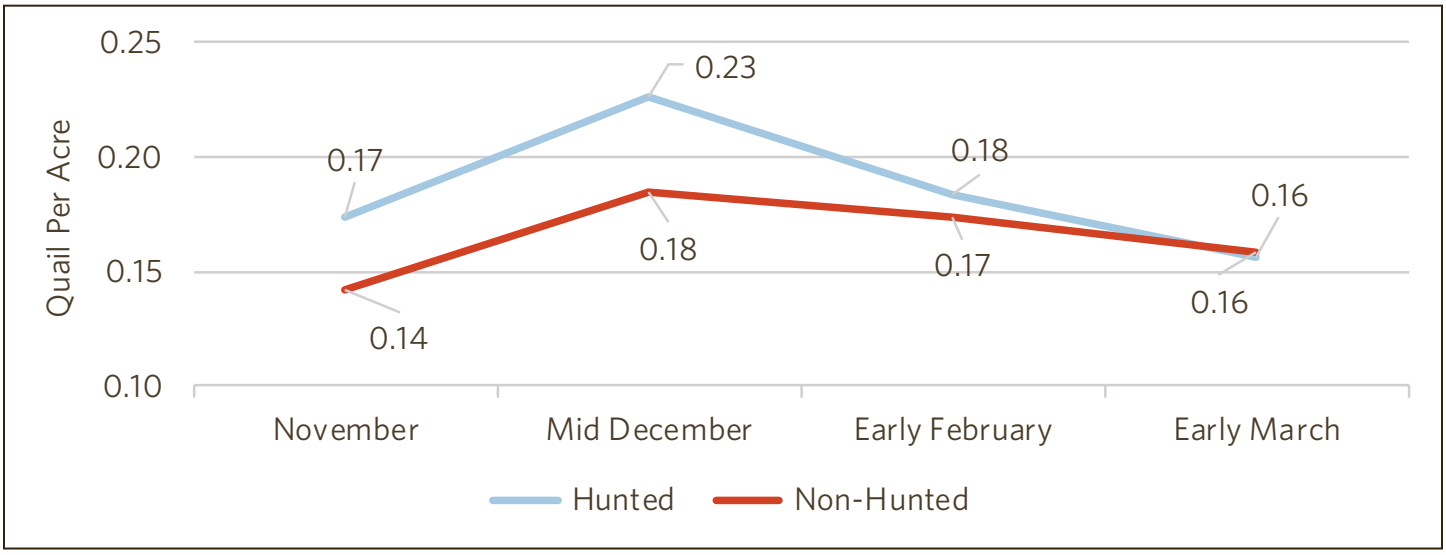

Figure 1. 2018-2019 Northern bobwhites densities obtained from aerial surveys using line-transect distance sampling in Jim Hogg County, Texas.

The next logical question was: *How did this influence the quail harvest on our hunted area and throughout the region?*

From November through December hunters had 137 separate quail encounters (e.g., pointed and flushed) of various group sizes over 17 hunts. Three percent of the encounters were pairs, 7% of the encounters were singles, and 2% of the encountered coveys contained juvenile quail less than four weeks old (≤ half grown). These rates were, however, similar to the encounters throughout the remainder of the 42 hunts from January through February: 1% of encounters were pairs, and 5% of encounters were singles.

A total of 211 juveniles were harvested from our hunted study area during the 2018 to 2019 hunting season. An estimated hatch week can be obtained for bobwhites less than ten weeks old, depending on which of the one through seven primary wing feathers they are molting. (Note: Primary eight takes longer, while primaries nine and ten are not molted until the bird is an adult.) Young juvenile in stages of primary molt (e.g., molting primaries one through seven) represented 4% of the total juveniles harvested and 8% of juveniles harvested between November 10th and January 26th. The estimate hatch date for these individuals ranged from October 29th to December 15th with a mean hatch date of November 10, 2018.

Photo. Dog on point wearing GPS tracking unit to monitor spatial hunting parameters. Photo Credit: Abe Woodard

While we expected the largest proportion of our harvest to be made up of young juveniles, 93% of our total harvest occurred in the second half of the hunting season (e.g., after December 28, 2018). If the mean date of our late hatch was on November 10, 2018, juveniles hatched on this date would be older than ten weeks after January 26, 2019. It is also probable that many of the birds hatched during October and November were too small to flush during our first 17 hunts (Figure 2). While an average mean hatch date is typically not reported for South Texas, a normal year may dictate a mean hatch date between late June to early July; at least 4% of the juveniles we harvested hatched after October 29th.

Figure 2. Quail chick from late hatch, caught on October 29, 2018. Photo Credit: Brandon Hubert

Throughout the region, reports from other hunters mirrored our late hatch observations. In Jim Hogg County, some hunters observed the presence of five to six week old birds in their harvest and an unusually high juvenile: adult ratio over a few hunts in early February (9-to-1). Hunters in Brooks County observed small chicks on foot early in the season with juvenile: adult ratios of 1.9-to-1 until late January.

Further east, hunters found juvenile: adult ratios in Kleberg County (2.3-to-1) to be the highest since their 2015 to 2016 season and ratios in Kenedy County (2.1-to-1) were the highest since their 2013 to 2014 season (another year where a known late hatch occurred). On

two instances in mid-January, they saw ratios of 4-to-1 and 2.8-to-1. A hunting camp in Kenedy County noted young birds on covey rises around Thanksgiving and recorded at least half a dozen instances of a harvested bird weighing less than 100 grams (or roughly the weight of a bar of soap) from Thanksgiving to the first of the year. Juvenile: adult ratios on this camp ranged from 3.8 to 5.1-to-1.

Precipitation patterns in late summer and early fall for 2019 seem to be mirroring those of 2018 with increased precipitation in September following a hot dry summer. Hunters could see a similar breeding response in their bobwhite populations during the 2019 to 2020 hunting season.

In conclusion, it's important to remember the influence of precipitation and the resiliency of northern bobwhites. Quail populations can change from one month to the next, even in the fall. These late hatches may go unnoticed if quail harvest is focused during the second half of hunting season. Completing surveys and quail counts periodically can help avoid making preemptive management decisions. And always remember, when conditions change, so can the quail forecast.

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CONTACT INFORMATION

D. ABRAHAM WOODARD
Ph.D. Student
Texas A&M University — Kingsville
d.abrahamwoodard@gmail.com

CONTRIBUTORS

D. ABRAHAM WOODARD is a Ph.D. student at the Caesar Kleberg Wildlife Research Institute at Texas A&M University – Kingsville in Kingsville, Texas.

ANDREA MONTALVO, Ph.D. is a Research Scientist for the East Foundation in Hebbronville, Texas.

LEONARD A. BRENNAN, Ph.D. is a Professor in the Department of Animal, Rangeland, and Wildlife Sciences and the C.C. Winn Endowed Chair in the Richard M. Kleberg Jr. Center for Quail Research at the Caesar Kleberg Wildlife Research Institute at Texas A&M University – Kingsville in Kingsville, Texas.

FIDEL HERNÁNDEZ, Ph.D. is a Professor in the Department of Animal, Rangeland, and Wildlife Sciences and holds the Alfred C. Glassell, Jr., Endowed Professorship for Quail Research at the Caesar Kleberg Wildlife Research Institute at Texas A&M University – Kingsville in Kingsville, Texas.

HUMBERTO L. PEROTTO-BALDIVIESO, Ph.D. is an Assistant Professor and Research Scientist at the Caesar Kleberg Wildlife Research Institute at Texas A&M University – Kingsville in Kingsville, Texas.

NEAL WILKINS, Ph.D. is the President and CEO for the East Foundation in San Antonio, Texas.

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