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EFFECT OF FIELD TRIALS ON NORTHERN BOBWHITE SURVIVAL AND HUNT QUALITY ON DIXIE PLANTATION

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ABSTRACT

The potential negative effects of horseback field trials on survival and post trial hunting quality of northern bobwhites (*Colinus virginianus*) have long been debated. Recent acquisition of Dixie Plantation (3,650 ha) by Tall Timbers Research Station provided a unique opportunity to evaluate this interaction as Dixie has been home to the Continental Field Trial since 1937. We monitored radio-tagged bobwhites annually ($n = 183$; ~20 coveys during fall/winter) on a core study area (640 ha) upon which a portion of the field trial was conducted during January 2015 & 2016. We estimated Kaplan-Meier survival of radio-tagged bobwhites on Dixie before, during, and after the field trial event as well as compared seasonal survival to bobwhite ($N = 387$) on nearby Tall Timbers Research Station (1,570 ha) during the same time period. Additionally, we recorded the number of coveys seen, coveys pointed, and shots fired during each half-day hunt ($n = 133$) to evaluate hunt quality before and after the field trial. Bobwhite survival on Dixie was similar ($P > 0.05$) during the two weeks prior to (0.89, SE = 0.026), during (0.93, SE = 0.023), and after (0.92, SE = 0.026) the field trial for the two years combined, as were seasonal survival curves between the two study sites for both years monitored. No differences ($P > 0.05$) were observed in the number of coveys seen per half day hunt before ($X = 11.78$, SE = 0.39) compared to after ($X = 12.35$, SE = 0.44), covey rises shot before ($X = 6.89$, SE = 0.28) and after ($X = 7.75$, SE = 0.37), or number of shots fired before ($X = 23.5$, SE = 1.19) versus after ($X = 24.11$, SE = 1.26) the field trial. We were unable to detect any evidence that the type of disturbance generated by this field trial had any effect on either bobwhite survival or post trial hunting quality on our study area.

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Key words: bird dogs, *Colinus virginianus*, field trial, hunting, northern bobwhite, radio-telemetry, survival

INTRODUCTION

The potential effects of frequent disturbance by bird dogs on coveys of wild northern bobwhite (*Colinus virginianus*; hereafter, bobwhite(s)) has been a concern of sportsmen and biologists for decades and has been debated in the literature as well as among the field trial community. Stoddard (1931) proposed that hunting pressure caused coveys to shift use to heavier cover, and Rosene (1969) who reported consecutive weeks of bird dog training caused coveys to abandon an area in Alabama. Klimstra (1972) likewise reported coveys abandoning an area in Illinois when subjected to heavy hunting pressure, contributing to declining hunting success over the course of the season. Kellogg et al. (1982) also reported that the percentage of bobwhite coveys found declined significantly with successive hunts in north Florida. Janvrin (1991) reported increased covey movement in response to heavy hunting pressure but no abandonment of home ranges. Taken collectively, the concern of the potential impact of increased activity by hunting pressure, training dogs, or field trials is valid. A

major difference exists however between hunting pressure and these type field trials as no birds are shot during the trials. Any effect on mortality then would have to come from the potential for increased disturbance associated with the trial itself. Radio-telemetry studies of field trials, however, have revealed coveys to be generally unaffected (Dimmick and Yoho 1972) or the disturbance to be inconsequential (Wiseman 1977).

More recent concerns arose as bobwhite populations declined throughout their range and many field trials began to switch from wild bobwhites to pen-raised quail. To address these concerns, Kreh (1997) examined bobwhite movements, habitat use, and survival at the National Championship Field Trial on the Ames Plantation in Tennessee. Kreh (1997) found that in response to the field trial disturbance coveys would shift to heavier cover within their home range, but that survival was unaffected. He also concluded that the decline in wild bobwhite numbers on the property was not associated with field trial activities. While no detrimental impacts to bobwhite survival have been documented by any of these previous studies, none of them have addressed the potential impact of field trials on subsequent hunt success and/or quality.

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Unfortunately, there are few venues left in the southern U.S. where field trials are conducted exclusively on wild bobwhite. The Continental Field Trial is one of these rare exceptions and has been an integral part of the history of Dixie Plantation since 1937. Conducted annually during the last 2 weeks of January, the Continental Open All Age Championship is considered one of the top wild bobwhite field trials, routinely drawing nearly 150 of the top all-age bird dogs in the country. Consisting of morning and afternoon courses, each 20 km in length, the trial traverses most of the property on a daily basis. Wild bobwhite hunting is also an important part of Dixie Plantation's history as well as current land use. Revenue generated from lease hunting helps fund the operating budget on this working plantation. Lease hunters pay a premium for world class horseback wild bird hunting with the Florida season running from mid-November to early March. Care is taken to maintain the hunt quality by not hunting the same area more than once every two weeks and having a conservative harvest.

The recent gifting of Dixie Plantation to Tall Timbers Research Station & Land Conservancy, along with the ramped up wild bobwhite hunting program initiated, caused some concern from both the field trial community and the lease hunters. Since the two-week long trial occurs during hunting season each year in late January, lease hunters expressed concern about the impact the daily disturbance during the trial may have on bobwhite survival and post-trial hunt quality. Likewise, the field trial community was concerned about potential effects increased hunting pressure might have on the ability of the dogs to locate and point quail during the trial. As such, as part of a larger research effort on Dixie Plantation, we initiated research using radio-telemetry to evaluate the effect of the field trial on bobwhite survival and the subsequent hunt quality following the event.

STUDY AREA

Dixie Plantation has been a privately owned quail hunting property since 1926. The property was gifted to Tall Timbers Research Station & Land Conservancy in December of 2013, which now operates the property as Dixie Plantation Research, LLC. The objectives of the property are to: 1) maintain a high wild northern bobwhite population for hunting and field trials; 2) protect and enhance the ecological, cultural, and historical values; and, 3) conduct research and education in wildlife management.

Dixie Plantation is located in Jefferson County, Florida with the Aucilla river swamp as the western boundary and the Georgia state line the northern boundary. There are 720 ha of protected wetlands much of which is in the river swamp as well as ephemeral wetlands dotted throughout the uplands. There are approximately 400 ha of intensively managed planted pines and 220 ha in row crop agriculture/hay. Most of the remaining acreage (approx. 2,300 ha) is

mature upland pine forest intensively managed for bobwhite quail hunting and field trials. Management practices include maintaining a low pine basal area, hardwood removal, frequent prescribed fire, roller chopping, mowing, herbicide spraying, and seasonal disking. Additional management practices include control of mammalian nest predators and year round supplemental feeding. These management practices result in a wild bobwhite population at Dixie that routinely exceeds 2.5 birds/ha as well as excellent habitat for many game and non-game wildlife species indigenous to the area.

A designated core research study area was developed on 640 ha in the heart of the property (Figure 1). This area is representative of the uplands on the property and is traversed by both the morning and afternoon field trial courses. Because the field trial covers the whole property, there was no opportunity to have a control study area directly on Dixie Plantation. Therefore, we used ongoing telemetry monitoring of bobwhites at Tall Timbers property, located 35 miles due west, as a control to compare survival curves through the fall-spring season. Tall Timbers (1568 ha), located in Leon County, Florida, is in the same physiographic region, part of the same landscape of private quail properties, and has a similar management regime maintained by frequent fire and low timber volume with mostly old-field groundcover (Carver et al. 2001). Bobwhite populations here also routinely exceed 2.5 birds/ha (Palmer et al. 2002).

METHODS

Monitoring

A year round sample of radio-tagged bobwhites has been maintained on Tall Timbers property since 1985 and on the Dixie study area since the spring of 2014. We trapped bobwhites 1 to 3 times a year (January, March, and/or October) in baited funnel traps (Stoddard 1931). All birds were weighed, sexed, aged, and leg banded with a subset outfitted with a 6-gram pendant style transmitter containing an activity switch (Holohil Systems. LTD., Ontario, Canada). Trapping, handling, and marking procedures were consistent with the guidelines in the American Ornithologists Union Report of Committee on the Use of Wild Birds in Research (American Ornithologists Union 1988) and the protocol was approved by the University of Georgia Institutional Animal Care and Use Committee, IACUC. On Dixie we deployed 5-6 transmitters in approximately 20 different coveys, evenly distributed across the core research area, each year in October. Similarly, more than 20 well distributed coveys were radio-tagged and monitored on Tall Timbers. All birds were monitored 2-4 times per week throughout the winter with additional emphasis and effort given to the weeks just prior to, during, and after the field trial. Previous analysis of radio-tagged birds on our study areas using the same procedures have revealed no effect of capture and handling or radio-handicapping; and that no censor period is needed

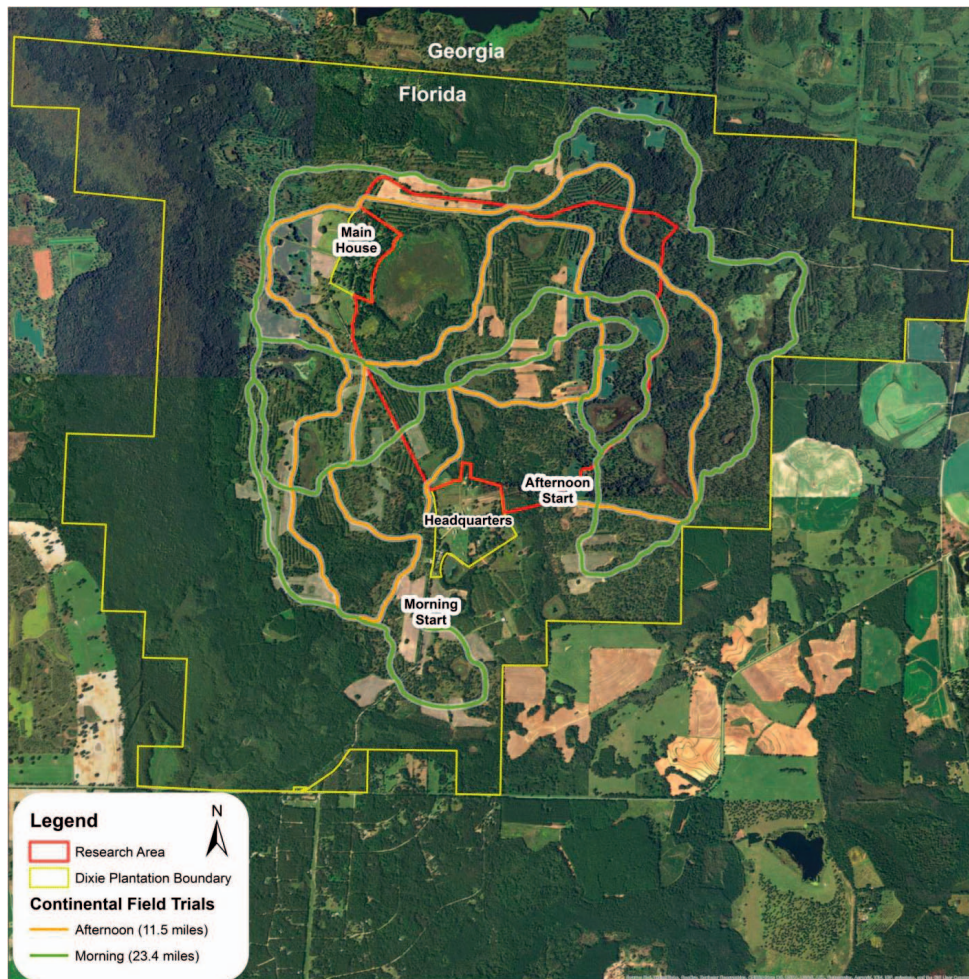


Fig. 1. Field Trial Courses and core research area (outlined in red) on Dixie Plantation in Jefferson County, Florida.

(Palmer and Wellendorf 2007, Terhune et al. 2007, Sisson et al. 2009).

Field Trial Disturbance

The disturbance created by the field trial was most similar to that described by Dimmick and Yoho (1972) and Kreh (1997) at the National Championship on Ames Plantation. The Continental was conducted each year beginning the third Monday in January and lasted until all dogs ran, usually about 14 consecutive days. Dog handlers used horseback to monitor braces of 2 dogs each with interchanging braces running for three hours in the morning and three hours in the afternoon. Separate morning and afternoon courses are 19-24 km in length with 7-8 km of each course overlapping the core research area (Figure 1). The courses are run the same time daily over the same route. They are traversed at a rapid pace as the Continental is an all-age stake, which means dogs are judged on their ground race and stamina as well as in finding game and holding steady to wing and shot. No birds are shot during the trial although a blank gun is fired each time there is a covey pointed and flushed. In addition to the dogs, there is a mounted dog handler and scout for each dog, two judges, a reporter, marshals, and spectator

gallery each day. Total mounted participants can range from 20-50 depending on the day. We used records published in the American Field Magazine to evaluate the number of coveys pointed per 3 hour half day during the field trial.

Bobwhite Hunting

Hunts were conducted from horseback with 2 dogs on the ground at a time, a hunting wagon, and generally 6-8 horses carrying dog handlers, hunters, and guests. Each half-day hunt lasted approximately 3 hours and were systematically rotated across the 12 hunting courses on the property. A Dixie employee was present on each hunt as a guide and to collect data from the hunt. Data collected for each half day hunt included the total number of coveys seen by the party, number of coveys that were pointed by the dogs, number of shots fired, number of birds killed, and the sex, age, and weight of each harvested bird. Tall Timbers property is also hunted annually but was not hunted during the two weeks that the trial occurred at Dixie. Harvest was conservative and similar on both properties at a rate of less than 15% of the fall population.

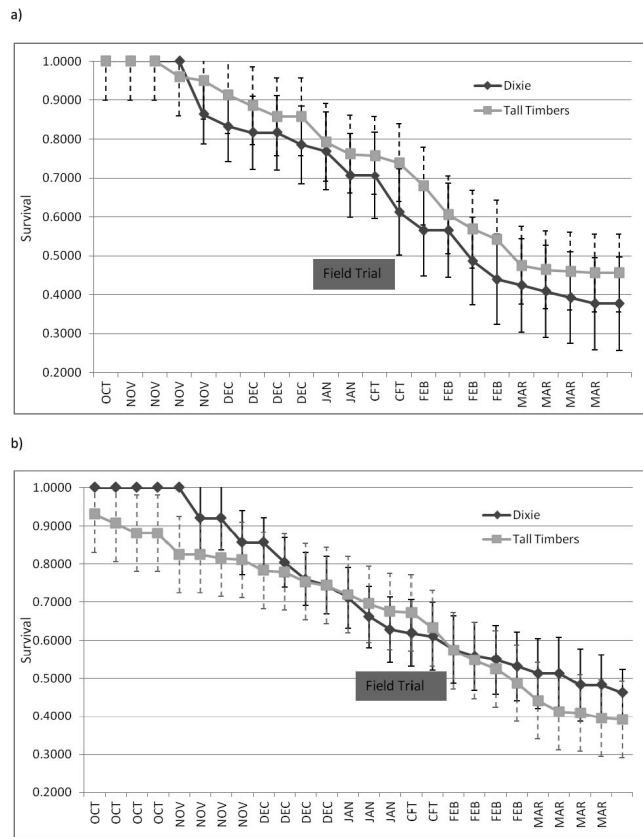


Fig. 2. Kaplan-Meier survival curves and 95% CI's show that survival of northern bobwhite did not differ between Dixie Plantation in Jefferson County, Florida and nearby Tall Timbers Research Station in Leon County, Florida during: a) October 2014-March 2015, and b) October 2015 – March 2016.

Statistical Analysis

We calculated seasonal survival estimates for the fall-winter period (1 Oct – 31 Mar) for both sites using the Kaplan-Meier staggered entry method (Kaplan and Meier 1958, Pollock et al. 1989) which allowed for inclusion of additional birds during the study and the censoring of others due to radio failure or emigration. Survival curves were compared between years and among treatments using log-rank tests (Pollock et al. 1989). We used the same methods to compare survival for two week intervals before, during, and after the trial. To evaluate data on hunt quality (coveys, points, and shots) between the hunts occurring before and after the field trial each year and for the two years combined, we calculated standard error of the means following Payton et al. (2003) and Schenker et al. (2001) and interpreted statistical and biological differences using 95% confidence intervals (Schenker et al. 2001, Williams et al. 2002, and Payton et al. 2003).

RESULTS

We monitored 570 radio-tagged bobwhites during the two over-winter seasons; 183 on Dixie and 387 on Tall Timbers. Bobwhites on Dixie had marginally lower survival than those at Tall Timbers during 2014-2015,

but had marginally higher survival in 2015-2016 (Figure 2). However, log-rank tests showed no difference in survival distributions between sites for either year ($\chi^2 = 1.77$, $df = 1$, $P = 0.183$, and $\chi^2 = 0.493$, $df = 1$, $P = 0.472$, respectively). Over-winter survival in 2015 was 0.393 (SE = 0.06) on Dixie and 0.46 (SE = 0.03) at Tall Timbers, but was 0.48 (SE = 0.04) on Dixie and 0.40 (SE = 0.03) at Tall Timbers in 2016. Bobwhite survival was similar ($P > 0.05$) on Dixie for the two-week period prior to, during, and after the field trial both years, and for the two years combined (Table 1). Data were collected on 133 half day hunts during the two hunting seasons, 78 prior to and 55 after the Continental Field Trial. We did not detect a difference either year or for the two years combined between number of coveys seen, coveys pointed, and shots fired before and after the trial ($P > 0.05$) (Table 1).

DISCUSSION

Our results confirm those from previous work demonstrating little to no effect on quail survival from the disturbance created by field trials (Dimmick and Yoho 1972, Wiseman 1977, Kreh 1997). Despite consistent activity and repetitive pressure from the field trial event, we believe the nature of this trial limits the overall impact on bobwhites. All-age bird dogs are judged as much on their range and stamina as hunting ability. Records of the trial show an average of 5-7 coveys pointed per half day with the gallery covering 19-24 km. On a typical hunt at Dixie, where dogs course more closely to hunters and cover ground more comprehensively, 7-8 coveys were pointed per half day with the hunt only covering approximately 8 km during a similar 3-hour time period. Our observations further support the finding of Dimmick and Yoho (1972) in that the daily variation in the actual areas that the dogs searched and the lack of repetitive and consistent disturbance of individual coveys contributed to this overall lack of effect. When these considerations are combined with the fact that no birds are being shot during the trial, it makes a compelling case that effect on survival is also minimal. While beyond the scope of this initial study, our preliminary observations seem to support the previous findings of coveys moving to heavier cover after repeated disturbance (Dimmick and Yoho 1972, Kreh 1997) but not leaving the area entirely as reported by Rosene (1969) and Klimstra (1972).

Previous studies have not evaluated the effect of these types of field trials on subsequent hunting success, but this was an important consideration of our work. We did not detect any negative effects on hunt quality in the parameters we measured (coveys seen, coveys pointed, shots fired) after the trial as compared to those conducted prior to it. However, this activity is quite different than heavy hunting pressure in which individual coveys are being moved and shot at repetitively which is known to make coveys harder to find (Kellogg et al. 1982) or move off the area entirely (Rosene 1969, Klimstra 1972). In our study, the hunts at Dixie were intentionally rotated throughout the courses to avoid frequent repetition of hunting the same ground and disturbing the same coveys

Table 1. Survival ($\pm$ SE) and hunting success (coveys seen, coveys pointed, shots fired) ($\pm$ SE) for northern bobwhites on Dixie Plantation in Jefferson County, FL before, during, and after the Continental Field Trial 2015 & 2016.

	Before	During	After
SURVIVAL			
2015	.90 $\pm$.041	.87 $\pm$.047	.92 $\pm$.043
2016	.88 $\pm$.034	.97 $\pm$.019	.91 $\pm$.033
Combined	.89 $\pm$.026	.93 $\pm$.023	.92 $\pm$.026
HUNTING SUCCESS			
Coveys Seen			
2015	13.96 $\pm$.60		13.28 $\pm$.71
2016	10.75 $\pm$.43		11.57 $\pm$.51
Combined	11.78 $\pm$.39		12.35 $\pm$.44
Coveys Pointed			
2015	6.60 $\pm$.41		6.84 $\pm$.56
2016	7.04 $\pm$.36		8.50 $\pm$.46
Combined	6.89 $\pm$.28		7.75 $\pm$.37
Shots Fired			
2015	29.36 $\pm$ 1.8		22.96 $\pm$ 1.78
2016	20.7 $\pm$ 1.39		25.07 $\pm$ 1.79
Combined	23.5 $\pm$ 1.19		24.11 $\pm$ 1.26

which did not result in enough pressure to alter behavior of individual coveys.

The unique circumstances of the Continental Field Trial at Dixie provided us with the opportunity to test the general effects of these type of events on bobwhite survival and hunt quality but did not allow for replication. This lack of temporal and spatial replication limits the inferences that can be drawn, but do not undervalue the findings. The effect of field trials of differing duration and/or timing, or in lower density bobwhite populations may produce different effects. Additional study under varying circumstances as well as more detailed information on covey movements during these type events is warranted.

MANAGEMENT IMPLICATIONS

Field trial grounds with abundant wild bobwhite populations are rare on today's landscape. The lack of effect of this trial on post trial hunting quality and on bobwhite survival is significant and should comfort those in decision making roles in similar situations. These results show that if managed properly with all parties working together, hunting and field trials can co-exist on the same grounds when there is an abundant wild bobwhite population that is conservatively hunted and harvested.

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LITERATURE CITED

- Carver, A.V., L.W. Burger Jr., W.E. Palmer, and L.A. Brennan. 2001. Vegetation characteristics in seasonal disked fields and at bobwhite brood locations. *Proceedings of the Annual Conference of the Southeastern Association of Fish and Wildlife Agencies* 55:436–444.
- Dimmick, R.W. and N.S. Yoho. 1972. The response of Bobwhite Coveys to disturbance during field trials. *National Quail Symposium Proceedings* 1:82–89.
- Janvrin, J.A. 1991. Movements of northern bobwhites in response to hunting pressure and evaluation of drive counts for estimating quail densities. Thesis, University of Missouri, Columbia, USA.
- Kaplan, E.L. and P. Meier. 1958. Non-parametric estimation from incomplete observations. *Journal of the American Statistical Association* 53:457–481.
- Kellogg, F.E., G.L. Doster, W.R. Davidson, and W.M. Martin. 1982. Efficiency of dogs in locating bobwhites. *National Quail Symposium Proceedings* 2:31–34.
- Klimstra, W.D. 1972. Population dynamics of bobwhites on an intensively managed area in southern Illinois. *National Quail Symposium Proceedings* 1:356–360.
- Kreh, C.D. 1997. Movements, habitat selection, and survival of northern bobwhites in response to disturbance during field trials. Thesis, University of Tennessee, Knoxville USA.
- Palmer, W.E., S.D. Wellendorf, L.A. Brennan, W.R. Davidson, and F.E. Kellogg. 2002. Hunting success and northern bobwhite density on Tall Timbers Research Station: 1970–2011. *National Quail Symposium Proceedings* 5:213–216.
- Palmer, W.E., and S.D. Wellendorf. 2007. Effects of radio-transmitters on bobwhite survival and recovery rates. *Journal of Wildlife Management* 71:1281–1287.
- Payton, M.E., M.H. Greenstone, and N. Schenker. 2003. Overlapping confidence intervals or standard error intervals: What do they mean in terms of statistical significance? *Journal of Insect Science* 3:34.
- Pollock, K.H., S.R. Winterstein, C.M. Bunk, and P.D. Curtis. 1989. Survival analysis in telemetry studies: the staggered entry design. *Journal of Wildlife Management* 53:7–15.
- Rosene, W. 1969. *The bobwhite quail: Its life and management*. Rutgers University Press. New Brunswick, N.J.
- Schenker, N.J., and J.F. Gentlemen. 2001. On judging the significance of differences by examining overlap between confidence intervals. *American Statistician* 55:182–186.
- Sisson, D.C., T.M. Terhune, and H.L. Stribling. 2009. Additional evidence against radio-handicapping of northern bobwhites. *National Quail Symposium Proceedings* 6:518–525.
- Stoddard, H.L. 1931. *The bobwhite quail: Its habits, preservation, and increase*. Charles Scribner's Sons, New York, NY.
- Terhune, T.M., D.C. Sisson, J.B. Grand, and H.L. Stribling. 2007. Factors influencing survival of radio-tagged and banded bobwhites in Georgia. *Journal of Wildlife Management* 71:914–921.
- Williams, B.K., J.D. Nichols, and M.J. Conroy. 2002. *Analysis and management of animal populations*. Academic Press.
- Wiseman, D.S. 1977. Habitat use, food habits, and response to bird dog field trials of bobwhite on northeastern Oklahoma tallgrass prairie rangeland. Thesis, Oklahoma State University, Stillwater USA.