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D. Clay Sisson

*Tall Timbers Research Station and Land Conservancy*

William E. Palmer

*Tall Timbers Research Station and Land Conservancy*

Theron M. Terhune

*Tall Timbers Research Stations and Land Conservancy*

Reggie E. Thackston

*Georgia Department of Natural Resources*

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# DEVELOPMENT AND IMPLEMENTATION OF A SUCCESSFUL NORTHERN BOBWHITE TRANSLOCATION PROGRAM IN GEORGIA

D. Clay Sisson<sup>1</sup>

Tall Timbers Research Station and Land Conservancy, Albany Quail Project, Newton, GA 39870, USA

William E. Palmer

Tall Timbers Research Station and Land Conservancy, Tallahassee, FL 32312, USA

Theron M. Terhune

Tall Timbers Research Station and Land Conservancy, Tallahassee, FL 32312, USA

Reggie E. Thackston

Georgia Department of Natural Resources, Wildlife Resources Division, Forsyth, GA 31029, USA

## ABSTRACT

Gamebird translocations have been used for many years to establish or re-establish populations in North America. A long-term severe decline of northern bobwhites (*Colinus virginianus*) over much of their range has brought this issue to the forefront for this species as well. Field studies in Georgia over the last decade have documented site fidelity, high survival, reproductive success, and population response from bobwhites translocated into large blocks of well-managed habitat. The Georgia Department of Natural Resources/Wildlife Resources Division developed an official wild quail translocation policy in 2006. Five translocation projects have been permitted and conducted since the policy was established. Extensive large scale habitat modifications were required on the recipient sites while donor sites were required to have existing high density bobwhite populations. These projects have resulted in translocation of > 800 bobwhites and the establishment of 7,480 ha of new wild quail population centers thereby contributing to the National Bobwhite Conservation Initiative (NBCI) recovery goals. Average fall densities on completed projects have increased from < 0.5 birds/ha to > 1.25 birds/ha.

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**Key words:** *Colinus virginianus*, Florida, Georgia, northern bobwhite, National Bobwhite Conservation Initiative, translocation

## INTRODUCTION

Translocation of upland game birds to establish, re-establish, or augment existing populations is not new in North America. This is true for wild bobwhites as well with interstate translocations documented by state game agencies dating to 1906 (Latham and Studholme 1954) and shipments arriving from Mexico beginning in 1910 (Phillips 1928). Stoddard (1931) conducted the earliest known study of translocated bobwhites in Georgia when he banded 2,516 bobwhites imported from Mexico and released them on large estates near Thomasville. He stated these birds were imported “not because the native stock was depleted and restocking was necessary in consequence, but simply in the belief that to do so would improve the shooting by replacing a portion of the birds shot” (Stoddard 1931:480). He concluded these birds represented themselves fairly well when compared to native stock but “it is likely that the same expenditure of

funds on field development as recommended in this report would in the long run give more satisfactory results” (Stoddard 1931:488).

Bolstered by a new understanding of the biology of bobwhites (Stoddard 1931) and the emerging field of game management; a unique set of socioeconomic, political, and biological circumstances created the perfect situation for quail populations and quail hunting to thrive for the next several decades. Statistics peaked in 1960–1961 when 142,000 (SE = 20,000) quail hunters in Georgia comprised 50% of the state’s licensed resident hunters and harvested an estimated 3,365,000 (SE = 888,000) wild bobwhites (Georgia Game and Fish Commission 1961). Unfortunately this was not to last. The Breeding Bird Survey for the southeastern United States has revealed population declines of > 5% annually since 1980 (Sauer et al. 2011) and, by the 2008–2009 season, the number of quail hunters in Georgia had decreased to 22,423 (SE = 1,064) and comprised only 10% of licensed resident hunters. These hunters harvested an estimated 808,036 (SE = 37,977) bobwhites, of which ~

<sup>1</sup>E-mail: clay@pinelandplantation.com

97% were reported as pen-raised birds (Duda et al. 2009). Bobwhite densities in much of Georgia are reported to have declined to below the level needed to attract and maintain hunter interest and, in some landscapes, particularly the northern half of the state, viable bobwhite populations are no longer apparent (Thackston and Tomberlin 2010). Severe loss, degradation, and fragmentation of early successional habitat (Brennan 1991) coupled with changing predator dynamics (Hurst et al. 1996, Rollins and Carroll 2001) are the most cited problems. Consequently, there has been escalating use of pen-raised birds and frustration among biologists, land-owners, and managers as habitat management techniques were not producing the expected results. It was these circumstances that renewed interest in translocation from biologists in the southeast in the 1980s and spawned a series of radiotelemetry studies that produced variable results (DeVos and Mueller 1989, Jones 1999, Parsons et al. 2000, Liu et al. 2002). Terhune (2008:144) eloquently summarized these changing dynamics when he stated “today the utility of translocation in most circumstances highlights the imperiled status of bobwhites. The use of translocation as a luxury has shifted to that of a necessity”. Our objectives are to describe: (1) the development of Georgia’s translocation policy, (2) implementation of this policy to date, and (3) the preliminary findings on the quail recovery generated by this program.

## DEVELOPMENT OF POLICY

The Albany Quail Project (Sisson and Stribling 2009) began a series of studies on bobwhite translocation in 1997. During 1997 and 1998 they compared and found no difference in survival, home range, movement, site fidelity, and reproductive characteristics of 74 translocated and 166 resident radio-marked bobwhites on study sites in southwest Georgia (Terhune et al. 2005, 2006). They then implemented a large scale translocation of 202 wild bobwhites during 2000–2002 and documented increased hunting success on all sites the following fall (Terhune et al. 2006). These studies led to the conclusion that wild bobwhite translocation into high quality habitat prior to the breeding season could augment low density populations, help fill voids within populations, and have the potential to facilitate preservation and conservation of isolated bobwhite populations by augmenting restoration efforts focused on habitat management.

The opportunity to test this idea occurred in 2003 on a property in Marion County, Georgia that was a 1,200-ha isolated ‘island’ of well-managed habitat surrounded by a matrix of poorer quality landscapes. Under a special research permit from the Georgia Department of Natural Resources, Wildlife Resources Division (GA WRD) during 2003–2004, 127 (70 male, 57 female) bobwhites were radiomarked and translocated from sites near Albany. No differences in survival, movement, and site fidelity between resident and translocated bobwhites were detected (Terhune et al. 2010); similar nesting rates, clutch sizes, hatching success, and nesting success

between the 2 groups was measured (Terhune 2008). In addition, a 115% post-translocation population increase was documented in the core of the translocation site (3.25 birds/ha) compared to only a 40% increase (1.5 birds/ha) on the control portion of the same property. The success of this project was attributed to having a relatively large recipient site of intensively-managed, high-quality bobwhite habitat coupled with a reliable source of wild bobwhites available for translocation.

This project also generated questions that were addressed in additional studies. The first was what role infusion of novel genes might have had in the documented population increases. A 3-way ‘genetic swap’ was conducted in a separate pilot study and revealed no evidence that introducing potentially novel genes had any impact on any of the 3 populations (Sisson and Palmer 2006). This topic was later addressed by Terhune (2008) for the Marion County site from genetic samples taken from all resident and translocated birds used in the study. He concluded (2008:144) “the hypothesis that translocation would benefit genetically depauperate populations and serve in the capacity of ‘genetic rescue’ could not be adequately investigated in this study because genetic variation was high on the study site prior to translocation.” Apparently the site was not sufficiently isolated to measure a decline in bobwhite genetic diversity and to be in need of ‘rescue’. The final issue addressed was the timing of translocation. A pilot study was conducted on 2 sites during the fall-spring of 2010–2011 which showed a much lower percentage of the fall translocated birds (< 50%) survived to the onset of breeding season than when relocation occurred just prior to the breeding season (> 90%) (D. C. Sisson, unpublished data).

## TRANSLOCATION POLICY

The GA WRD developed **Game Management Policy Statement: Q-1 Quail Translocation** in 2006. The stated purpose (2006:001) was “to establish guidelines ... for the translocation of wild bobwhites from private land with high density populations to lands with newly developed high quality habitat and ongoing management, but which have low density populations”. The objective of the policy is to expedite bobwhite population recovery on sites conducting quality habitat management. The highlights of the full policy ([www.georgiawildlife.com/hunting/game-management/quail-management](http://www.georgiawildlife.com/hunting/game-management/quail-management)) include 5 major points.

1. Recipient property must be a minimum of 600 ha of contiguous high quality habitat as confirmed by a WRD Biologist, have a low density population (< 0.5 birds/ha) based on fall covey census, and have a long-term habitat management plan on file with WRD.
2. Donor sites must be high density (> 2.5 birds/ha) based on fall covey census and cannot receive any form of payment for the provision.
3. Translocation must be conducted by a Wildlife Biologist approved by WRD acting as an agent who is also responsible for covey censuses of the

Table 1. Northern bobwhites translocated in southwest Georgia under special permit from Georgia DNR/WRD from 2003 to 2011.

Project #	County	ha	Years	# Birds translocated	Density (birds/ha)	
					Pre	Post
*	Marion	1,200	2003-04	127	0.75	3.25
WRD-001	Baker	800	2006	100	0.50	1.25
WRD-002	Baker	800	2007-09	219	0.35	1.56
WRD-003	Stewart	1,920	2011-13	348	0.08	1.00
WRD-004	Mitchell	600	2012-13	50	0.13	NA
WRD-005	Lee	3,360	2012-14	101	0.38	NA
Totals		8,680		945		

\* Conducted under special research permit.

- population prior to, during, and for 2 years after translocation to document the effects.
- Recipient property must agree to discontinue use of pen-raised quail on the property and not hunt quail on the property during the duration of the translocation.
  - Recipient property must agree to being added to a list of potential donors for future translocation projects.

## POLICY IMPLEMENTATION

Translocation permits have been issued for 5 separate projects since the policy was created in 2006. Two of the permitted projects have been completed, one is in its second year, and the final 2 are in year 1. The first (WRD-001) was in 2006 on a 800-ha property in Baker County where a change in ownership from an industrial forest company to a private individual interested in quail hunting brought a change in management regime from heavily-stocked pine (*Pinus* spp.) trees with no prescribed fire to an open canopy pine forest maintained by frequent burning. One hundred wild bobwhites were moved to this site from north Florida in March 2006 resulting in a population increase based on fall covey census from < 0.5 birds/ha to 1.25 birds/ha (Table 1). This satisfied the new landowners desire to jump start the population and no further translocations were conducted.

The second project (WRD-002) was conducted on another 800-ha property also in Baker County. This property consisted of 336 ha of intensive row-crop cultivation with most of the remainder in unmanaged pine woodlands. The new owner purchased this property for the purpose of quail hunting and initiated major habitat developments for wild quail. All woodland areas were treated by thinning and prescribed fire, as well as mechanical removal of undesirable upland hardwoods. The agricultural fields were subdivided with hedgerows of native vegetation and planted shrub thickets, and field borders were developed around each field. One hundred twenty hectares of longleaf pines (*P. palustris*) were also planted in strips in the agricultural fields. In addition to the habitat work, a year round supplemental feeding and nest predator trapping program was initiated; both of which are permitted through GA WRD. The 2006 fall covey census revealed the baseline bobwhite population was very low at only 0.35 birds/ha. A source of wild birds for translocating was secured from a nearby quail

plantation and a translocation program was implemented in 2007 to augment the habitat improvements. During March 2007, 94 wild birds were moved to the property. Additional releases of 67 and 58 birds were translocated in March 2008 and 2009, respectively, resulting in a total 3-year translocation of 219 birds (Table 1). Population response was measured with point counts ( $n = 6$  points) that were distributed throughout the property and conducted 3 times each in May for whistling males and October/November for fall coveys. Population response was very satisfactory with large increases in whistling male counts and the fall point-count covey census indicating a population of 1.56 birds/ha in fall 2009 (Fig. 1).

The third project (WRD-003) is ongoing and is being conducted on a 1,920-ha property in Stewart and Chattahoochee counties. Most of this property had also been under ownership of an industrial forest company for many years until the current owner added it to his holding for recreational land. A heavy timber thinning was applied to the entire property and frequent prescribed fire was re-introduced. Permanent openings were created in the timber and a year-round supplemental feeding and nest predator trapping programs were initiated. An extremely low density of native bobwhites was documented by covey census on this property in fall 2010 (0.08 birds/ha). This project is unique because it involves translocation of

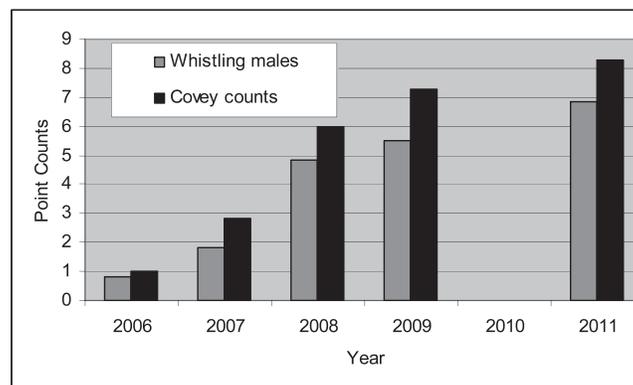


Fig. 1. Increases in the average number of both whistling males and fall coveys heard from 6 points on northern bobwhite translocation site (WRD-002) in southwestern Georgia from 2006 to 2011.

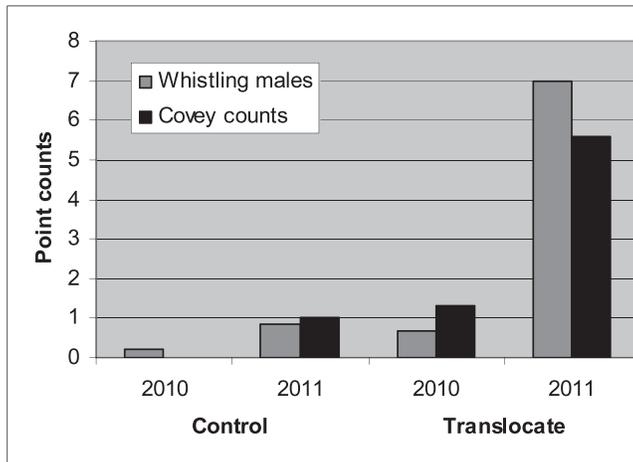


Fig. 2. Increases in the average number of both whistling males and fall coveys from point-counts on translocation ( $x = 3$  points) and control sites ( $x = 6$  points) on northern bobwhite translocation site (WRD-003) in southwestern Georgia during 2010 and 2011.

wild birds from the initial recipient of translocated wild quail in Georgia in Marion County. This property was divided into thirds for translocations due to its size with each third receiving birds in 1 of 3 years (2011–2013). Translocations began in March 2011 with 220 birds with an additional 128 birds translocated in March 2012 for a current total 348 (Table 1). Spring whistle counts conducted in May/June 2011 give some indication of early success as the listening points where translocations occurred that year ( $n = 3$  points) averaging 7 males/stop compared to the control points ( $n = 6$  points) where translocation had not yet occurred averaging  $< 1$  whistling male/stop (Fig. 2). Point-count covey censuses conducted on these same points during fall 2011 indicated the same trend with an increase from 1.3 coveys heard per point to an average of 5.6 on the translocation site (Fig. 2). Additional translocations will occur on this property in 2013.

The final 2 projects (WRD-004, WRD-005) are in their first year with initial translocations conducted on each during March 2012. Only pre-translocation monitoring has been conducted at this time. WRD-004 is being conducted on a 600-ha property in Mitchell County that has been modified from industrial forest land to recreational land through timber thinning, creating openings, and prescribed burning. A pre-translocation fall point-count covey census ( $n = 6$  points) in 2011 revealed a low population density of 0.13 birds/ha. Fifty wild quail were translocated onto this property in March 2012 (Table 1). WRD-005 is being conducted on a 3,360-ha property in Lee County that is an existing plantation that has been extensively renovated and has discontinued a pen-raised bird release program. Pre-translocation fall point-count covey census ( $n = 9$  points) in 2011 revealed a population of only 0.38 birds/ha and 101 wild quail were translocated there in March 2012 (Table 1). This brings the total to 945 wild northern bobwhites that have been translocated under

special permit in Georgia onto properties totaling 8,680 ha (Table 1).

## DISCUSSION

The development and implementation of a wild quail translocation program in Georgia is a good example of research affecting natural resource policy and ultimately management of an imperiled species. This program is significant because it is resulting in establishment and maintenance of large blocks of quality early succession habitat capable of supporting high density bobwhite populations, benefitting numerous other species of conservation concern, and making strong contributions to the NBCI goals. Some of this acreage would not have been purchased and/or managed for wild quail without the ability to translocate wild birds and expedite population recovery onto these sites with extremely low densities. At best these properties would have been used for pen-raised bird releases. The confidence instilled into new landowners by having this program has contributed to their willingness to spend the time, effort, and money to do very intensive habitat improvements over large areas. The carefully thought out program by the GA WRD insures these sites are adequate in habitat quality and scope before a valuable resource can be moved there and sets standards to avoid the pitfall of wildlife privatization. It keeps the focus on creating new centers of quail habitat but also provides the tool to augment these populations where necessary due to extremely low densities currently occurring over much of the landscape.

## MANAGEMENT IMPLICATIONS

The conservation ethic of the landowners involved in these research and translocation projects cannot be overstated. It takes a large commitment (and leap of faith) to purchase a large piece of property with very few wild quail and commit resources to the management necessary to make it suitable for a high density bobwhite population. The donor properties should receive special recognition as they are the key to this process. This program is creating new source populations as landowners who benefited from the program now feel compelled to help others just getting started. This is evidenced by the original recipient of wild birds in Georgia now being a source for the most recent project. The GA WRD policy has recently been modified to require that recipient properties allow their names to be placed on a list of potential future donors. Not only do these properties create new population centers of wild quail, but they are a boost to the local rural economies. These properties, through job creation, equipment and supply purchases, property taxes, and other avenues are in every case a boost to the areas where they occur. Management of these properties contributes significantly to achieving the goals of NBCI (Palmer et al. 2011) and also creates great habitat for many other wildlife species, a number of which are in serious decline.

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