

FINAL REPORT

Grant Title: State Funded Wildlife Research

Period Covered: May 1, 2005 – June 30, 2006

Study Title: Percent Return To Bag of Pre-season Released Pen-reared Bobwhites

Study Objectives: 1) To determine the percent return to bag of preseason released pen-reared bobwhites.  
2) To subjectively evaluate the behavior of preseason released pen-reared bobwhites relative to timing and technique of release.  
3) To determine of the percent of hunter harvest bag comprised of wild reared bobwhites.

**Abstract**

During May 2005 – January 2006, a study was conducted on an approximate 1,000-acre portion of a private shooting preserve in Monroe County Georgia, Piedmont Physiographic Province, to assess the return to hunter bag and flight behavior of pen-reared bobwhites that were liberated prior to the hunting season using two release techniques. A total of 1,641 five-week-old wing-tagged pen-reared bobwhites were released using the Surrogate Propagation™ system during June, August and September; and 1,000 12-16 week old leg-banded bobwhites were “dump released” during November. Birds were liberated into intensively managed pine savanna habitat that included supplemental feeding and predator control. Fifteen horseback or wagon quail hunts totaling 70 hours were conducted during November – January with 21 different coveys located and 99 covey flushes. A total of 93 birds were harvested of which 81% were leg banded, 14% wing banded, 5% unmarked and presumed to be wild reared. Relative to the total number of birds released, hunter bag returns were 0.80% for the wing-tagged chicks and 7.5% for the leg-banded adults. Based on subjective ratings, the summer released wing-tagged chicks exhibited flight behavior exceeding that of fall released leg-banded adults and similar to that of wild reared birds. Hunter bag return rates were low for both systems. The cost per released bird returned to hunter bag was \$74.53 and \$42.00 for the Surrogate Propagation™ system and dump-release, respectively.

**INTRODUCTION**

The Northern Bobwhite (*Colinus virginianus*) occupies a prominent place in Georgia's wildlife heritage. Georgia once was known as the quail capital of the world and in 1970, the General Assembly of Georgia designated the bobwhite as the State Game Bird. However, from 1966 to 2002 Georgia's quail population declined by - 4.20% per year (Sauer et. al 2005). The number of quail hunters and the quail harvest also have declined dramatically. In fact, in 1964 there were 127,000 quail hunters who comprised 47% of the licensed resident hunters and harvested an estimated 3,365,000 quail (Ga. Game and Fish Commission Federal Aid Report, 1965). In 2005-2006, there were 22,850 quail hunters who harvested an estimated 622,123 quail, of which 79%% were reported as being pen-reared birds (Ga. DNR unpublished data).

The productive quail habitat and high quail densities resulted primarily from the extensive, but low intensity, farming and forestry that dominated Georgia's landscape from the mountains to the coast. However with the decline of row crop agriculture in the northern one half of the state and the intensification of timber management, farming practices, reduction in prescribed fire, and increased urban/sub-urban development throughout the state, bobwhite habitat and populations have been greatly fragmented and diminished (Thackston and Whitney, 2001).

In response to this decline many hunters use pen-reared bobwhites to meet their hunting or shooting objectives and some believe that pen-reared quail can survive and contribute to the restoration of a self-sustaining wild quail population. However research has shown survival of pen-reared birds to be low and below that of wild reared bobwhites (Fies et al. 2000 and Perez et al. 2002). Commercial release techniques continue to be developed and sometimes marketed with claims of increasing survival of pen-reared bobwhites. Recently the Surrogate Propagation™ system ([www.quailrestoration.com](http://www.quailrestoration.com)) has been promoted as a means to increase pen-reared bobwhite survival during the hunting season and increase recruitment from natural reproduction the following year (Kidwell, 2005). However, there is no peer reviewed scientific evidence to support these claims. Nevertheless, many landowners and land managers are interested in releasing pen-reared quail and commonly question wildlife biologists about the efficacy of release techniques. This study assessed the return to hunter bag and flight behavior of 2,850 pre-season released pen-reared bobwhites.

## **METHODS**

The study was conducted during May 2005 – January 2006 on an approximate 1,000-acre portion of a private shooting preserve in Monroe County Georgia in the Piedmont Physiographic Province. A total of 1,641 five-week-old wing-tagged pen-reared bobwhites were released in groups of approximately 100 – 150 birds during June (456), August (430) and September (307) from Surrogate Propagation™ systems. This system employs propane-powered brooders that are placed in the field at desired release sites, which in this case was contiguous pine savanna habitat with release units spaced at least 300 meters apart. One-day-old quail chicks are brooded in these units and released when 5 weeks of age. Additionally, 1,000 12-16 week old leg-banded bobwhites were “dump-released” (i.e. liberated in groups of 25 to 30 birds across the study area) during November. All birds from both techniques were liberated into intensively managed pine savanna habitat that included supplemental feeding and mammalian predator control. Fifteen hunts totaling 70 hours were conducted during November 2005 – January 2006 and records were maintained for all marked and un-marked birds in the harvest. Additionally, hunters subjectively rated all coveys and harvested birds for “wildness” i.e. flushing and flight behavior (Appendix I).

## **RESULTS**

During November 2005 – January 2006, hunters reported finding 21 different coveys, experiencing 99 covey flushes, and harvesting 93 birds. A total of 75 (81%) of the harvested birds were leg banded, 13 (14%) were wing banded, and 5 (5%) were unmarked and presumed to be wild reared. Relative to the total number of birds released, hunter bag returns were 0.80% for the wing-tagged chicks and 7.5% for the leg-banded adults. Based on subjective ratings, the summer released wing-tagged chicks exhibited flight behavior exceeding that of fall released leg-banded adults and equivalent to that of un-banded wild reared birds.

Costs varied by release technique (Appendix II). Excluding labor and brooder unit costs, the cost per bird released from the Surrogate Propagation™ system was \$0.59. The cost per dump-released bird was \$3.15 excluding labor. However, the cost per bird returned to the bag was \$74.53 for the Surrogate Propagation™ birds and \$42.00 for the dump-released birds. If brooder costs are included the Surrogate Propagation™ cost per bird released rises to \$3.88 and the cost per bird returned to bag to \$489.91. Since the Surrogate Propagation™ brooders can be used for multiple years these costs would decline as the systems are depreciated through time.

## CONCLUSIONS

In this study the Surrogate Propagation™ release system alone did not result in the establishment of a sufficient number of “coveys” to meet the shooting objectives of the landowner. In fact, when the land manager conducted an informal bird dog census during early November, after the Surrogate Propagation™ releases but before the dump-releases, only five “coveys” were located. At that point the decision was made by the landowner prior to hunting to supplement the population with more dump-released birds than originally planned (Jason Butler, Fickling Plantation Manager, personal communication). It remains unknown whether the paucity of birds in November was due to poor survival, emigration, or both.

In highly fragmented landscapes and/or on small sized properties releasing pen-reared birds may provide the only means of meeting bobwhite-shooting objectives. Pre-season releases may provide birds that are more wild like in flight behavior but this increased flight quality must be weighed against the much higher costs associated with reduced survival and/or emigration.

## PROJECT COSTS

Personnel Costs = \$2,500; Materials = \$350.00; Total Costs = \$2,850.00

## REFERENCES

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**Project Leader:** Reggie Thackston, Private Lands Program Manager

**Date:** September 13, 2006

## Pre-season Release Bobwhite Study

### Harvest Data Form

Complete one harvest form per covey and complete the harvest information for each bird harvested from an individual covey.

**Data Recorder:** \_\_\_\_\_ **Weather: Temp** \_\_\_\_\_ ; **Wind** \_\_\_\_\_ ;

**Date Of Hunt:** \_\_\_\_\_ **Moisture: (circle one) Wet, Moist, Dry**

<b>Covey Location</b>	<b>No. Birds Per Covey</b>	<b>All birds flushed at once (yes or no)</b>	<b>Covey Wildness Rating</b>	<b>* Birds Harvested (include w= wing tag; L = leg band; N = none)</b>	<b>Birds Harvested Wildness Rating (see details below)</b>	<b>Birds Lost</b>

### **Important:**

Wildness Rating: should be made prior to looking for bands and for each bird harvested.

**1 = poor - birds were visible on the ground, had to be manually flushed (unharvested birds flew less than 50 yards);**

**2 = good - birds were manually flushed but flew moderately well (unharvested birds flying more than 50 yards);**

**3= Excellent - birds flushed in front of the hunter and flew well (wild bird behavior with unharvested birds flying more than 100 yards)**

**\*Important: 1 = bird flushed with initial covey rise; 2 = bird flushed after initial covey rise; 3 – bird was flushed as a single from the previous covey rise – these numerical codes should go in front of the band number for wing tagged, leg banded and unmarked birds.**

Appendix I. Pen-reared Bird Hunter Harvest Form

**Surrogate Propagation™**

Cost of birds	:	\$ .42 each x 1641 birds =	\$ 689.22
Brooders	:	\$ 1,350.00 each x 4 =	\$5,400.00
Brooders propane	:		\$ 176.00
Chick feed	:		\$ 103.66
Total			\$6,368.00

Cost per Surrogate Propagation™ bird released including brooders:  $\$6,368.88/1,641=\$3.88$

Cost per Surrogate Propagation™ bird returned to bag including brooders:  $\$6,368/13 = \$489.91$

Cost per Surrogate Propagation™ bird released excluding brooders:  $\$968.88/1,641 = \$.59$

Cost per Surrogate Propagation™ bird returned to bag excluding brooders:  $\$968.88/13 = \$74.53$

**Dump-release**

Cost of birds:  $\$315.00$  each x 1000 released =  $\$3,150.00$

Cost of bird returned to bag:  $\$3,150/75$  birds harvested =  $\$42.00$

Appendix II. Cost calculations for pen-reared bobwhites preseason released using the Surrogate Propagation™ systems and dump release techniques