

# Recovery and Economics of Pen-reared Bobwhites in North-central Texas<sup>1</sup>

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*Abstract:* A total of 2,189 pen-reared northern bobwhites (*Colinus virginianus*) was banded and released when 14 weeks old on a hunting club in north-central Texas from May 1984 through February 1985. Recovery of banded birds released during the 5 months preceding the hunting season was 7.5%, whereas 38.6% of birds released during the first 3 months of the hunting season were recovered compared to 55.4% of those released during the last 2 months. Release of birds just prior to the hunt decreased the cost per bird recovered to \$6.5 as compared to \$18.65 for birds released 14 days before the hunt.

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Kozicky (1987:9) noted that the number of public and private hunting preserves in the United States has declined since the 1974–75 hunting season and this decline continued through 1979–80. General opinion today is that the number of preserves has stabilized at about the 1979–80 level. Kozicky (1987:8) noted that all southeastern states had hunting preserves in 1979–80.

Maximum recovery of released birds is the primary objective of hunting clubs. Release methods have involved banding and releasing fully grown birds prior to and during the hunting season (Davis 1970, Webb and Nelson 1972). Releases prior to the hunting season presumably allow birds to adapt to their environment, thereby enabling them to flush and fly more vigorously than recently released birds (Webb and Nelson 1972). A disadvantage of early release is substantial loss to predators (Buechner 1950). We determined the recovery rate of bobwhites released pre-season and those released just prior to the hunt and the cost per bird harvested in relation to timing of release.

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## Methods

The study was conducted on the 2,753-ha Running High Hunting Club in Montague County, Texas, about 21 km north of Bowie. The Club has been in operation since 1980. The Club had a 626-ha area licensed by the Texas Parks and Wildlife Department as a "shooting resort" on which hunting could occur from 1 October through 31 March and a 122-ha tract designated as a "private bird shooting area" where hunting could be conducted year-round.

Dominant plant species on Club lands included honey mesquite (*Prosopis glandulosa*), western ragweed (*Ambrosia psilostachya*), pricklypear (*Opuntia phaeacantha*), tasajillo (*O. leptocaulis*), and blue gramma (*Bouteloua gracilis*). Bottomland species included honey locust (*Gleditsia triacanthos*), hackberry (*Celtis occidentalis*), live oak (*Quercus virginiana*), greenbriar (*Smilax spp.*), and buckbrush (*Symphoricarpos orbiculatus*). Dense stands of woody shrubs such as sand plum (*Prunus angustifolia*) were in isolated areas, but probably did not occur with sufficient frequency to impact wildlife numbers. Strip disking to encourage growth of annual plants had been attempted previously; however, vegetation response was largely limited to silverleaf nightshade (*Solanum eleagnifolium*) and mesquite seedlings. Fields about 7, 10, and 25 ha were planted to grain sorghum during the study and 1 field about 57 ha was planted to wheat. About 30 quail feeders, filled with grain sorghum, were used from November–March.

Release of pen-reared quail to supplement native bobwhite began in 1984. Quail were hatched and placed in pens equipped with automatic watering devices

**Table 1.** Numbers of released and recovered bobwhite and elapsed time (days) between release and recovery by month on the Running High Hunting Club, Montague County, Texas, 1984–85.

Month	N Released	Recovered		Mean elapsed time <sup>a</sup>
		N	%	
May	61	8	13.1	219
Jun	0			
Jul	106	2	1.9	<sup>b</sup>
Aug	281	29	10.3	80
Sep	340	20	5.9	50
Oct	110	23	20.9	14
Nov	416	158	38.0	6
Dec	283	131	46.3	4
Jan	377	220	58.3	2
Feb	215	108	50.2	2
Mar	0			

<sup>a</sup>Mean elapsed time in days between release and recovery.

<sup>b</sup>One recovery not documented as to date, and number recovered too small for calculation of mean.

and bulk feeders to reduce exposure to human contact. Because of problems with incubators, half of the quail released had to be purchased mid-way through the release program. The cost of release of each purchased bird was less than that of birds raised. The cost at release of each purchased bird averaged \$3.73, which included initial cost (\$2.85), shipping and handling (\$0.25), feed consumed prior to release (\$0.16), labor (\$0.32), and depreciation of holding pens (\$0.15).

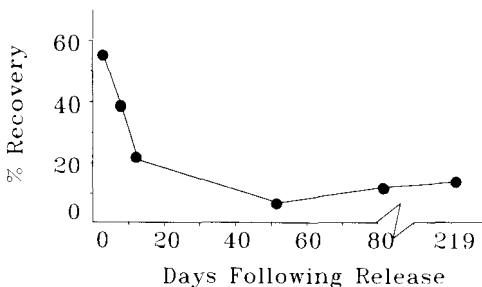
Bobwhites were banded and released in coveys (10 to 30 birds) throughout the ranch from May 1984 through February 1985. Quail were released in areas containing food, cover, and water. Quail were released when 14 weeks old. No effort was made to locate the released coveys at feeder sites. Hunting occurred from October–December 1984 and hunting effort (guns/day) was considered constant because of the reservation system used at the Club. Different groups of hunters had different abilities which could have affected hunting success; however, because all groups hunted until limits were filled, this was not considered a factor. Data were kept on date of release, location of release, and date of hunter recovery.

**Results and Discussion**

A total of 2,189 quail was released during May 1984 through February 1985 (Table 1). When only the 788 quail released from May through September 1984 (pre-hunting season) were considered, 59 (7.5%) were recovered during the following 6-month-hunting season (Oct 1984–Mar 1985). During the first 3 months of the hunting season (Oct–Dec 1984), another 809 quail were released with 312 (38.6%) recovered. During the last 3 months of the hunting season an additional 592 quail were released and hunters bagged 328 (55.4%).

Percent recovery was highest immediately after release (Fig. 1). From 1–14 days the probability of recovery dropped and then stabilized. Fourteen days appears to represent a “break point” in the recovery curve. Webb and Nelson (1972) observed little difference in the percent recovery of pen-raised quail released in South Carolina 2 weeks to 2 months prior to hunting (33.5%) and those released a few days before hunting (37.6%).

The 20.9% recovery of quail 14 days post-release during our study equated to about \$18.65/bird bagged (Cost/bird bagged = \$3.73/proportion recovered). Re-



**Figure 1.** Percent of bobwhites recovered and days after release, Running High Hunting Club, Montague County, Texas, 1984–85.

lease 5–6 days prior to hunting decreased the cost/bird bagged to < \$10 and release 2 days before shooting decreased the price to about \$6.85/quail bagged. Buechner (1950) indicated that cost of hatchery production of bobwhites varied from \$0.68–\$3.00 (\$3.04–\$13.42 when adjusted for inflation to 1985). He noted that low survival of pen-reared birds resulted in costs per bird in the hunter's bag of from \$2.80–\$55.56 (\$12.53–\$248.59 adjusted to 1985).

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