



Chapter 7

HUNTING

HUNTING AND HARVESTS

Traditional views have been that hunting has no impact on small game populations that experience high annual turnover. Since most of these animals die annually, they may as well be utilized through hunting. This view is sound up to a point. Animals experience mortality, hunted or not. So, it is certainly not unsound to propose hunting as a means of utilizing a portion of the population that will be lost anyway. The view becomes unsound when an assumption is made that hunting mortality can entirely replace all other forms of mortality.

It is an error to assume that hunting mortality entirely compensates for natural mortality or that small game populations cannot be over hunted. Even though annual mortality rates may be similar in hunted and non-hunted populations, seasonal mortality rates differ. Most mortality occurs before breeding season in hunted populations, so these individuals do not contribute to reproduction. Non-hunted populations experience higher mortality during breeding season, and more birds reproduce before death.³³

Relationships between bobwhite winter losses and hunting were documented in the Southeast. On a quail plantation in Alabama where annual hunting harvests were very restricted, mortality in winter (November 20-March 1) averaged about 13 percent. On a heavily hunted plantation in South Carolina, winter losses averaged 57 percent.³⁷ Hunted bobwhite populations in North Carolina experienced direct hunting mortality that averaged 14 percent, lower survival (45 percent) in winter (November-February), and lower summer whistle count indices than unhunted populations (67 percent winter survival).³²

A long-term bobwhite investigation in Illinois led researchers to conclude that hunting mortality only partially compensates for other losses.³⁴ In addition, the later in winter that hunting losses occur, the more additive they become since a bird removed from the population in late winter would most likely have become a breeding bird. Population modeling indicated that hunting tended to reduce long-term bobwhite population densities compared to a nonhunted population, even though hunted populations might remain stable at lowered densities. The modeling indicated that harvests at or below 40 percent of the fall population caused only moderate reductions (14 percent) in long-term population levels.³³ The calculation of a "safe" harvest is not easily done because population levels and environmental conditions vary each year. Bobwhite populations exhibit density dependence, a process in which populations of low density are more productive than high density populations. This process influences the effects of hunting on quail populations.¹⁹

The abundance of wild bobwhites on some quail plantations illustrates the value of an environment optimally managed to

produce quail. The quail populations are carefully guarded in all aspects, including harvest. Annual harvests are often less than 10 percent of the fall population. Such an approach contributes to long-term quail abundance. Some would consider this approach an under utilization of the resource since higher harvests could be sustained over time. However, the goal for such areas is not maximum harvests, but rather, maximum covey encounters as a measure of a quality hunting experience. Conversely, lands subjected to high harvests will exhibit a lower threshold of bobwhite abundance. The trade-off between high harvests and high bobwhite abundance is real. In the purest sense, quail hunters cannot have their birds and shoot them, too. If the goal is to maintain highest population levels, then high harvests are not compatible with that goal. Managers and hunters must take this reality into account when choosing harvest strategies.

The practice of limiting quail harvests by shooting coveys down to a predetermined level, such as six or eight birds, is not necessarily a sound conservation measure. As a method to limit harvests, it could actually result in over-shooting. Hence, the individual covey is not the appropriate focus for harvest limitations. This is because coveys tend to maintain a certain functional size. As coveys become small from attrition, they combine to form normal size coveys. As winter progresses, the number of coveys declines, but covey size may remain relatively constant. So, a rule of shooting coveys down to six or eight birds could result in over harvests of late season populations.

A more appropriate method of controlling harvests is to remove a certain percentage of the pre-hunt fall population. When this harvest level is attained, harvests cease. An accurate estimate of the fall population is a prerequisite. Subsequent to this, a harvest level must be decided and accurate hunting records kept during the season.

Based on telemetry of radio tagged birds, a technique of counting morning covey calls during autumn is being quantified as a reasonably accurate population density estimator. At this time of year, coveys often call shortly after daybreak. All coveys do not call each morning, and calling rates vary with weather, date, and population density.⁴⁰ More coveys call on calm, fair mornings. Calling rates are consistently highest in late October to early November⁵⁶ when mornings are typically cool, calm and fair. The calling rate is greater in higher density quail populations, the presence of other nearby coveys stimulating calls.

HUNTING SUCCESS

In a study of 838 radio marked covey encounters with hunting parties on the Albany Area Quail Management Project,⁵² on average, about half (53 percent) of the coveys on hunting courses were seen by hunters. About a third (32 percent) of the coveys

COUNTING COVEYS

In autumn, bobwhite populations form into coveys composed of 12 to 18 birds. The coveys select ranges that offer food and security for the fall and winter seasons. During this autumn transition period, coveys frequently call just after daybreak. The calling behavior is believed to play a role in the coveys spacing themselves across the landscape.

One or two birds in a covey will call, and the calling stimulates nearby coveys to answer. Some coveys in an area may not call on a given morning. Calling begins about 30 minutes before sunrise, rapidly increases with most coveys calling simultaneously, and quickly ends after a few minutes. Covey call rates are consistently highest on calm, fair mornings from late October to early November. Autumn covey call surveys based on these observed behaviors can provide reasonable estimates of bobwhite abundance.

Conducting a Covey Call Survey

The best time of year to conduct a covey call survey is during the last two weeks of October and first week of November. The best time of day is 25 minutes before sunrise, although the time fluctuates slightly from day to day. The best weather conditions are clear and calm. Fewer coveys will call on cloudy, windy mornings. Listeners can hear calls out to about 500 meters (547 yards, 0.31 miles) in open, agricultural terrain. To conduct a call count, observation points should be placed 0.62 miles apart to minimize overlap. The stations should be located at open, upland sites that permit good hearing. Observation points should be located on a map or aerial photo and copies given to each observer when the survey is conducted. Listeners will use the map to mark approximate locations of each calling covey.

Observers should be in place at the pre-selected listening points at least 45 minutes before sunrise and remain at their stations until 10 minutes before sunrise.

This allows them time to set up at the stations, orient maps and be ready to record when calling begins. Calling intensity rapidly increases following the first covey calls and the calling lasts for only a few minutes. Listeners should mark on their maps the estimated locations of each calling covey and assign covey locations according to two distance categories of 0-250 meters away and greater than 250 meters away from the observer. This is because the listener detection rate declines at greater distance. Where coveys are numerous and call rates are high, discerning each covey can become a challenge. Following the survey, each observer should have a map of the locations of individual coveys heard in the area surrounding the assigned listening station. The surveys can be conducted at all listening points on a single morning if enough observers are available. If possible, repeat the surveys over multiple mornings and use the highest covey count obtained for each point. When observers are limited, survey new locations on subsequent mornings until all stations are surveyed. The counts of individual coveys heard during the survey provide an index or measure of relative abundance to compare different areas/sites and the same areas over years.

Estimating Bobwhite Density

Reasonable estimates of autumn bobwhite population density can be obtained using point covey counts. Assuming a listening radius of 500 meters, the observer is surveying an estimated area of 194 acres. Research has shown that even experienced observers do not detect all of the calling coveys within the listening area. Listeners detect 90 percent of calling coveys within a 250 meter radius and only 40 percent between 250 and 500 meters. Listeners should group calls into near (within 250 meters) and distant (beyond 250 meters) coveys to adjust an observed count for density estimates. For example, if 3 coveys are heard within the near area and 3 coveys within the distant area, the adjusted count is:

$$3/0.9 + 3/0.4 = 10.8 \text{ estimated coveys}$$

A major factor that influences covey call rates is the presence of other calling coveys. Call counts at each station also should be adjusted according to the following information on calling rates:

Coveys Heard	2	3	4	5	6	7	8	9	10	11	12	13+
Calling Rate	.53	.61	.76	.82	.87	.90	.93	.95	.96	.97	.98	.99

In the example, 6 coveys were heard and the adjusted count is:

$$(3/0.9 + 3/0.4)/0.87 = 12.4 \text{ estimated coveys}$$

Weather factors such as cloud cover, wind speed and barometric pressure also affect calling rates, but these effects are minimized when call count surveys are conducted on mornings when weather is clear and calm.

Flush counts of autumn coveys have shown average covey size is 12 to 14 birds. In the above example with 6 observed coveys, bobwhite density is estimated as:

$$(12.4 \text{ coveys} \times 12 \text{ birds/covey})/194 \text{ acres} = 0.76 \text{ birds/acre}$$

Density estimates are only approximations due to variability in covey call rates, listening area and observer accuracy.

Adapted From: Wellendorf, S., and W. E. Palmer. 2004. How many bobwhite coveys are there? Tall Timbers Research Station, Tallahassee, FL. 9pp.



Pointing dogs locate about half of the quail coveys on a hunting course. Coveys not found are either not actively feeding or run away to avoid approaching hunters.

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were pointed by dogs and shot into, the desired hunting outcome.

An additional 9 percent of coveys were pointed by dogs, but flushed wild. Twelve percent of coveys were seen to flush wild ahead of the hunting parties, and 7 percent flushed without being seen. In all, more than one-fourth (28 percent) of all coveys flushed wild. During a hunting season of thin winter cover resulting from dry summer weather and unusually severe winter weather, wild flushing coveys occurred in almost 40 percent of all covey encounters with hunting parties.⁴⁴

When encountering hunting parties, 40 percent of the coveys stayed on the ground. Twenty-four percent held tight as dogs



Quail hunting on managed plantations may annually remove only about ten percent of the estimated fall populations of bobwhites. Such an approach may contribute to long-term quail abundance on a local scale.

TED DEVOS

and hunters passed by, and 14 percent ran off. (Two percent of coveys were pointed by dogs, but held tight and never flushed for hunters).

Pointing dogs, on average, located 43 percent of quail coveys on hunting courses. In most cases, birds that were passed by were not actively feeding. When dogs pointed, about 13 percent of radio tagged covey finds were concluded by hunters to be false points because no birds were seen. In fact, the birds had been there, but ran away or flushed wild before hunters arrived. In some cases, birds were still there, but would not flush.