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# BOBWHITE HARVEST MANAGEMENT: ACCOUNTING FOR TOTAL MORTALITY

Understanding the many causes of mortality in a game species is an important component of understanding population dynamics to better manage that species for long-term viability.



As we enter the 10th year of our study into the sustainability of quail harvest in South Texas, the one variable that continues to stand out is "crippling loss". Harvest quotas are intended to limit the total number of bobwhites lost during a hunting season, but the birds retrieved and reported in the bag are only part of that loss. Some birds are wounded, escape recovery, and die later—a form of mortality known as crippling loss.

The long-held 20% annual harvest recommendation for South Texas assumes that 16% of the population will be retrieved, and another 4% will be lost to crippling. After 10 years of studying sustainable quail harvest, however, we have consistently documented crippling loss above that assumed level, even before accounting for injuries that hunters never detect.

When a covey flushes and shots ring out, some birds are bagged and reported in the harvest. But what happens to the others that flew off seemingly unharmed – do they survive? What about the bird you marked down with a broken wing, or the bird that was "feathered" by the gunshots?

To shed light on the survival of bobwhites following a hunting party encounter, we trapped and radio-tagged 195 bobwhites across 25 coveys on Santa Rosa and San Antonio Viejo over the course of three hunting seasons from 2022 to 2024. We fitted each bird with a VHF radio transmitter collar and tracked them daily for 14 days. Some coveys were exposed to a single hunting encounter, while others were captured, tagged, and released without exposure to hunters.

We also recorded and categorized crippled birds observed during the hunt – winged (birds with visible







impairment or a broken wing), downed (birds that fell but were not recovered), legged (birds with a visibly dangling leg), and feathered (birds that shed feathers but flew off).

We found that hunted coveys had lower survival than those never exposed to a hunting encounter: 87% compared with 96% over a 14-day monitoring period. Visibly crippled (i.e., injured) birds had a 24% survival rate, while all birds classified as winged at the time of the encounter did not survive the monitoring period. In comparison, across all hunted birds monitored, non-crippled birds had a 95% survival rate (i.e., birds not identified as crippled post-hunting encounter). Shot count also drove outcomes, where every shot fired above the average (8.7) led to an additional 7% drop in survival.

Our study provides an updated view of the cost of a hunting encounter, focusing on crippling loss, through controlled hunting. Not every hunting operation records crippling loss when prescribing the bobwhite harvest quota for the season. Texas bag limits count the quail in your hand. They don't count the bird that flew off after the shot, carried pellets into the brush, and died two days later. That bird doesn't appear in any harvest report. It just disappears into the landscape.

We carefully documented every shot, flush, and harvest in our study area within just a single hunting encounter and found that if a bobwhite was visibly observed as crippled in the field, their survival rate was low. For species that have high natural mortality, not accounting for crippling loss can lead to overharvest, which could lead to declines in population and the loss of our hunting heritage for future generations.

The practical lesson is straightforward: sustainable harvest management must account for all hunting-related mortality, not only the birds retrieved. Our findings indicate that crippling loss may exceed the amount built into the standard 20% annual harvest recommendation for South Texas. For a species already subject to high natural mortality, overlooking those losses can cause managers to remove more birds than intended. Protecting bobwhite populations—and the hunting tradition they support—requires counting the full cost of a season, not just the birds in the bag.



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