

PREDATION MANAGEMENT AND BOBWHITES

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Predation management is a management concept that depends on multiple strategies to reduce the effects of predation on bobwhite populations and includes habitat management, food management, measuring predator abundance, and adjusting predator abundance when needed. The goal of predation management is to provide an environment where bobwhite demographics are not limited by predation. That is, the goal is managing the entire system to reduce the probability of predation on quail or their eggs and chicks. Successful implementation of predator management requires knowledge of the behaviors of bobwhites and their predators, and how they interact.

Predation management should not be confused with predator control. Predator control was a failed management paradigm because it focused on reducing predator numbers without regard to how predation affected bobwhite populations. It was based on the false assumption that removing a predator would result in increased bobwhite populations. However, some predators have minimal if any effects and others have significant effects only at certain times or if their densities are high enough. Predation management is much broader than running a trapping operation.

Predation management can result in higher bobwhite numbers. This is a direct result of improved survival of adults, nests, and chicks. It is one of the main reasons why bobwhite populations in the Red Hills of Florida are at historical highs. Another significant benefit of predation management is a reduction in the amount of variation in quail numbers from year to year. This is because improved demographics buffer population declines caused by uncontrollable factors, such as bad weather conditions for nesting. For instance, if heavy rains reduced the success of first nests, but adult survival was high, enough hens would survive and reneest, thus reducing the effect of the flooding associated with bad weather.

Predation management begins with understanding what predators occur on a property and how and when they are most likely to negatively affect bobwhites. This means understanding what animals are actually significant predators of bobwhites. For instance, we now know that armadillos, bobcats, eastern rat snakes, and king snakes are important nest predators and alternatively, that hogs, coyotes, and cotton rats are not significant nest predators. Also, on some properties, Cooper's hawks annually remove a significant proportion of the fall population and influence future populations. On other areas, Cooper's hawks are much less of a concern, but predation of nests by snakes or mammals is a population level concern.

Managing predation begins with habitat management. The single best method to reduce predation is to maximize the suitability of habitat for quail and at the same time reduce the suitability of the habitat for key predators. The concept may seem simple, but it is surprising how often it is not followed. An example of ignoring this principle is planting dense timber stands in or around quail management areas. These areas provide habitat for predators and as a result bobwhite populations can suffer higher mortality rates.

All land management decisions should consider how an action affects the relationship between bobwhite predators and predation rates on quail. For instance, the scale and coverage of burning has a huge effect on bobwhite survival rates. Burning large blocks of habitat forces bobwhites to find refuge in small unburned patches and exposes them to excessive predation. Bobwhite predators key in on these refuge areas and can cause significant damage to the abundance of bobwhites. However, it was the decision to burn in large blocks that caused the decline, but because the manager did not consider the predation consequences of their decision, that is, predation management was not practiced. Another example would be allowing oaks and myrtles to get tall on fencerows. These trees provide ambush points for avian predators when bobwhites are using structure along fencerows.

Supplemental feeding is another form of predation management. With an effective food supplementation program (see companion article), the effects of predation are reduced. For instance, it reduces the forage time of bobwhites and therefore reduces their susceptibility to predation and annual survival can increase. Research indicates that hens with supplemental feed can recycle faster after a failed nesting attempt than those without. Since few bobwhites are actually killed on the nest, supplemental feeding helps reduce the effects of nest predation by allowing hens to renest faster and bring off a brood. Improving survival and nesting through supplemental feeding is a form of managing predation.

Bobwhite predators are generalist predators that have broad diets. They feed on insects, fruit, grain, mammals, birds, eggs, and more. So, predator populations on a property are not affected by bobwhite populations. Said another way, bobwhites are insignificant to the populations of predators. Because of this reality, predator numbers can become quite high relative to bobwhite numbers. When predator numbers are relatively high they can reduce chick production and populations over time. Therefore, it is important to assess the abundance of nest predators on a property to determine if predator numbers are excessive. In the Red Hills, research indicates that as predator numbers increase, at a certain point (~0.15 on our predator abundance index) it is likely that chick production will be reduced through predation on eggs. When predator abundance is too high it may be necessary to reduce their numbers to acceptable levels through removal programs to achieve bobwhite population

growth. Preliminary research indicates that, *given appropriate habitat and management*, reducing predator abundance can result in increased fall and spring populations. We have measured as much as a 200% increase in fall populations following a release from excessive predation through a focused trapping effort.

Unfortunately, running an effective trapping program is not cheap. Research indicates running up to 1 trap per 20 acres from February through September may be necessary to reduce predator abundance during the breeding season and increase bobwhite reproduction. Traps need to be checked at least daily, moved regularly, and multiple lures and techniques need to be used. Such trapping efforts need to be conducted annually, because predators such as raccoons, foxes, bobcats, and opossums are highly mobile and can recover to pre-trap levels in a matter of months from immigration from surrounding sources.

Therefore, I recommend landowners take all appropriate actions to reduce predation through careful habitat and feeding management before considering implementing an intensive trapping effort. In some cases, trapping is needed to achieve the bobwhite population goals. However, it must be recognized that to be effective trapping programs must be intensive and long in duration. You can visit our web site (ttrs.org) to read more about predation and learn how to run a predator survey to determine if the predator abundance is excessive on your lands.

