

Controlling Predators to Increase Quail Populations

► Looking for guidance as to when, where, and how predator management can and should be implemented to increase quail population? Topics include property size, habitat, predator community, reasonable expectations, and social issues.

Controlling predators to increase quail populations is a frequent topic of discussion at hunting camps, around the table at your local restaurant, the grocery store, or any other place where a few quail hunters happen to stumble upon one another. Usually, the topic is preceded by a discussion about the lack of quail on one's property, and it finally concludes with predators as the culprit. If you remove what's eating the quail (the predators), you'll have more quail. Indeed, predator management is an accepted wildlife management tool; however, all too often predator control is the first management tool that many people seek without giving proper thought as to whether it is the correct tool to use. Implementation of predator management to increase bobwhite quail populations is a very complex process involving a great deal of time, money, and dedication in order to be successful.

The process of predation is much more complex than simply predators consuming prey. Thought must be given to other factors such as weather, abundance of other prey species, competition between and among other predator species, and so forth.

It is important to note that predation is a natural, normally occurring process in nature and that bobwhite quail (and their nests) are a common source of food for many animals. Furthermore, bobwhite quail have developed many physiological and morphological adaptations to offset high levels of predation, mainly adaptations in the way they reproduce. For example, bobwhite quail frequently nest multiple times during the breeding season and lay a relatively large clutch (about twelve eggs). Male bobwhite quail will occasionally incubate nests, allowing the female to produce and incubate another nest. And finally, if sufficient resources are present, females may double-clutch, attempt a second nest after successfully raising

the young from the first nest. All of these adaptations enable bobwhite quail populations to survive with relatively high amounts of predation.



Bobwhite quail are one of Alabama's most sought after gamebirds.



Bobwhite quail have several reproduction adaptations: frequent renesting; male incubation of nests and rearing of young; and female double-clutching to offset high annual mortality.



Quail hunting is a significant part of the southern hunting culture.



Proper quail habitat must be established throughout the property. No habitat equals no quail—no matter how much predator control is accomplished.

The intent of this publication is not to discourage or encourage the use of predator control as a wildlife management tool, but rather to provide the reader with some guidance as to when, where, and how predator management can and should be implemented in order to increase quail populations. Determining whether you or your property meets the following criteria (listed in order of importance) will save you a great deal of time, money, and energy that could be put to work more effectively elsewhere.

Property Size

Predators, especially coyotes, fox, and bobcat, have relatively large home ranges, almost always in excess of 1,000 acres. Many of these mammalian predators are territorial, and once an individual is removed another will

quickly claim its territory. During a predator removal study conducted on twelve 600-acre farms in North Carolina, researchers removed approximately the same number of mammalian predators each year during a 3-year study. In other words, predators from adjacent, nonremoval areas were continually moving back into the removal areas once the resident predators were removed.

Predator management must be targeted toward a significant reduction or complete removal of predator populations, not just a couple of individuals. Therefore, it is recommended that predator management occur on properties with at least 5,000 or 6,000 acres in order to have a population-level effect. Why thousands of acres? Because the goal is to remove the vast majority of predators and their neighbors to “buy time” before other predators re-colonize the property. A property of this



Coyotes and foxes have large home ranges; a successful predator management program for these populations has to be implemented on a substantial amount of land.



Prescribed fire, along with disking, are two techniques that can be used to create excellent quail habitat.

size or larger will enable the landowner to remove a substantial percentage of the predator population, especially predators with smaller home ranges such as raccoons, opossums, and skunks.

It is possible to implement a predator management program on smaller properties (1,000 to 2,500 acres), but the likelihood of success is significantly reduced in most cases. Very few landowners in Alabama own or manage property of this size (5,000 to 6,000 acres); therefore, predator management will likely not be a viable option to increase quail populations for most landowners. However, cooperative agreements with adjacent landowners can be established to increase the total amount of area on which a predator management program can be implemented.

Habitat

It is mandatory to have high-quality quail habitat throughout most of the property before implementing predator management. Bobwhite quail are habitat specialists, meaning they do best in a very specific type of habitat—mainly early succession habitats. Early succession habitats are characterized by annual grasses and forbs such as ragweed, foxtail, goldenrod, and partridge pea that first appear (sprout up) after the soil has been disturbed or the surface substrate (dead plant material) has been removed, exposing the soil to sunlight.

Early succession habitats can be created and maintained in open fields or under the canopy of sparsely stocked pine stands. Prescribed fire and light disking are the best methods for creating these habitats.



All birds of prey, such as this Cooper's Hawk, are federally protected and cannot be harassed or killed.



Snakes are predators of quail nests and chicks. Most snakes are protected under state or federal laws.

These early succession habitats provide multiple benefits for quail relative to their physiological, morphological, and behavioral adaptations. This is what the bobwhite quail call home, and once that home is created they are able to survive and reproduce.

There is no scientific evidence demonstrating that predator management in the absence of adequate bobwhite quail habitat will produce birds. Conversely, there is a wealth of scientific evidence demonstrating that habitat management will significantly increase local quail populations in the absence of predator control. Simply put, no habitat equals no birds—no matter the amount of predator management that is accomplished. Habitat is the cake, and predator management is more or less the icing on that cake. If predator management is employed without first creating proper bobwhite quail habitat, the end result will be poor quail habitat with no predators and still no quail.



Predator management quickly becomes hard work when done at the correct intensity.

Predator Community

In most states, including Alabama, the only quail predators that may be controlled legally are mid-sized carnivores like raccoons, foxes, and coyotes. These mammalian predators constitute only one-quarter of the total predator community that prey on bobwhite quail and their nests. Hawks, owls, and other raptors frequently consume adults and juveniles throughout the year. However, these avian species are federally protected and cannot be killed, harassed, or disturbed.

Another group of predators that consume quail, more specifically quail nests, chicks, and incubating adults, are snakes. Snake predation may account for up to 30 percent of nest losses in some areas. Again, most snakes are protected under state nongame laws, which prohibit their take.

Even if it were legal to control the predators mentioned above (raptors and snakes), it would be very difficult to do so at a level significant enough to impact quail populations, and it would be cost prohibitive.

The final portion of the predator community consists of an assortment of other animals that may consume quail nests. These other predators are opportunistic, meaning they'll eat a quail nest when they happen along one. These predators include mice, rats, squirrels, crows, armadillos, opossums, and hogs, to name a few. Using 24-hour video surveillance equipment hidden next to quail nests, even white-tailed deer have been documented consuming eggs from a nest.

Clearly, there are many predators that eat quail or their nests. Predator management programs can only remove legally one-quarter of the total predator community (mid-sized carnivores), leaving many other predators that naturally consume quail and their nests.

Intensity of Removal

To be successful, predator management should be conducted in a systematic and intense fashion. Oftentimes, the level of trapping intensity required to adequately remove a substantial number of predators on 5,000 to 6,000 acres requires hiring a full-time trapper for several months out of a year. Multiple trappers may be needed if the property is larger.

Because of the diversity in the types of mid-sized mammalian predators, trappers need to employ a wide variety of techniques and traps such as cage traps, foothold traps, nylon egg traps, and snares (where legal). Remember, the goal of a predator management program is to remove as much of the predator

community as possible. If predator management is not carried out at a sufficient intensity, negative consequences may arise.

A research study on predator control conducted in Texas in the 1970s demonstrated that coyotes in areas of high-intensity removal had greater reproductive success (about 7.1 pups per litter) than those in areas with light-intensity predator removal (about 2.3 pups per litter). The coyotes remaining in the high-intensity removal area were reproducing nearly three times as many pups. This high reproductive success was due to the fact that the coyotes that were not removed in the high-intensity removal area had more resources available to them (because coyote density was much lower on high-intensity removal sites), thus these coyotes were able to devote more energy toward reproduction.

When it comes to predator control, it is best to take an all-or-nothing approach; either do it thoroughly or not at all.

Duration of Removal

In order to be successful, predator removal should occur each year, preferably, if legal, just before and during the nesting season. Remember, predators will eventually recolonize a property from adjacent nonremoval areas. Re-colonization may occur in a matter of a few days (as has been documented with bobcats) to a few months. Also, predators missed in the control efforts will be producing offspring each year that must be removed. It is generally agreed among scientists who study quail that predator management must be conducted intensively for the first 3 to 5 years of the program, and then conducted at moderate levels each year thereafter.



Predator control is not favored among the vast majority of the voting public, those who will ultimately dictate the future of hunting and trapping.

Reasonable Expectations

Predator management is not a clear-cut science, and neither are the results that can be expected from controlling predators on a property. Several factors come into play that can affect the outcome of a predator management program. Weather conditions during the nesting season will have a significant impact on how well quail reproduce—and how well predators will be able to secure prey. The abundance of alternate prey will also affect the amount of predation quail receive. Depending on which predators are removed, competition among predators will influence predation on quail as well. For example, it is well known that coyotes and foxes are competitors, the larger coyotes oftentimes outcompeting the smaller fox. This is beneficial from a predator management standpoint in that fox are presumed to be a more efficient predator of quail nests than coyotes, which are more of an opportunistic predator of quail and quail nests.

Given the above factors that may influence the outcome of a predator management program, expectations must be tempered. In some years on some properties a noticeable increase in quail may be observed, while in other years no difference may be experienced. In most cases, predator management will likely “dampen” natural yearly fluctuations in quail populations.

Social Issues

Hunters, fishers, and trappers have been the single greatest driving force in America’s conservation legacy; however, less than 15 percent of Alabamians participate in hunting- or trapping-related recreation. Furthermore, many Alabamians are one or two generations removed from a rural lifestyle and may not fully appreciate the importance of hunting and trapping to wildlife conservation. Most of this nonhunting public disagrees with the killing of one animal so that humans can harvest another animal for recreation. This is an important consideration given that the nonhunting public will dictate, through voting, whether hunters and trappers will be able to continue pursuing their favorite pastime. Careful consideration must be given to how your actions (removing predators to increase hunting opportunities) will be viewed by the public.

Predator management is a legitimate wildlife management tool. However, its use for increasing quail populations is only effective under a limited set of circumstances (those mentioned above). Predator management is a supplemental practice that should only be considered after proper quail habitat has been created over a significant amount of acreage (thousands of acres at a minimum). The landowner must also be willing to devote a substantial amount of time and resources each year toward a predator management program. Given the above criteria, very few landowners will be able to implement a predator management program with a reasonable degree of success. However, if predator manage is for you, remember to always check with your local conservation officer before initiating any type of predator control because laws vary and what may be legal in one state may be illegal in another.



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