

UPLAND URGENCY:



RUSSELL GRAVES

The Fight Against Bobwhite Quail Decline



The seemingly lonely lands of rural Oklahoma are actually rich with wildlife, such as the bobwhite quail. Unfortunately, this treasured bird has experienced downward population trends for the last 50 years.

To an Oklahoma quail hunter, every moment spent in the field with family, friends and dogs is a moment well spent.

Memories of dogs on point, coffee from a thermos, snowy winter days, big open country, coveralls, over-and-unders, game vests, hearty lunches, Grandpa, Dad and Mom are conjured up in the minds of hunters when they look back upon years of great quail hunting. And while all of these things are central to the making of a great memory in the field, none of them are as symbolic of the great sport of quail hunting as the iconic bobwhite quail itself.

Oklahoma has long been home to some of the best quail hunting and quail habitat in the nation. But the species is currently in a state of long-term decline across its range. While Oklahoma remains one of the strongest holdouts of bobwhite quail populations and habitat, wildlife professionals are proactively launching an extensive effort to understand and address what could be a number of contributors to the downward trend in quail populations.

“Quail are dependent on weather and habitat, but there are other issues out there,” said Alan Peoples, chief of wildlife for the Oklahoma Department of Wildlife Conservation.

The downward trend in bobwhite quail populations range-wide has been long-term since the 1960s and more recently in western

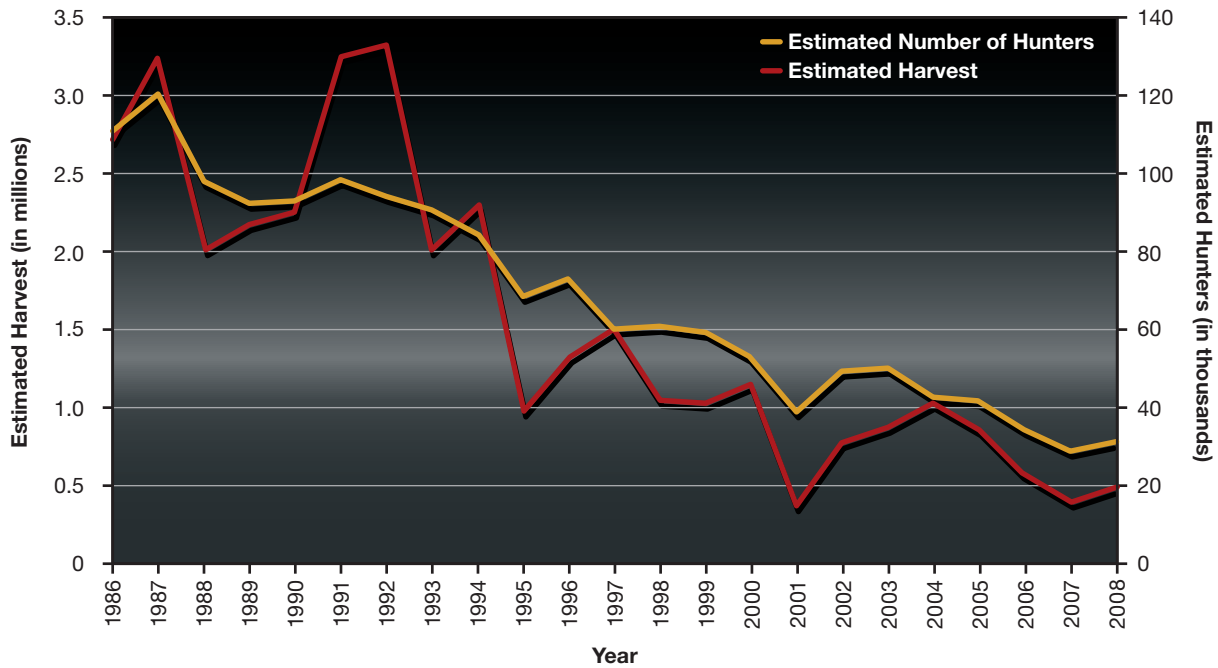
Oklahoma. The number of quail hunters has declined as well — from 111,000 in 1986 down to an estimated 30,000 hunters last year.

Quail decline has been attributed to a number of causes, and there is no shortage of theories blaming everything from diseases and food contamination to habitat loss, fragmentation and predation. But Wildlife Department officials say the issues need to be studied from all angles.

This fall, the Wildlife Department is embarking on an intensive, long-term research project on two northwest Oklahoma wildlife management areas to study quail reproductive success and mortality. The Department is also teaming up with a group of partners to conduct an extensive research project that covers the western portion of the bobwhite quail’s North American range. Additionally, the Department will continue ongoing quail conservation efforts across the state through a number of initiatives on both public and private lands.

Through these measures, the Department aims to learn as much as possible about the current downward trends in quail populations as well as how to most effectively approach quail conservation in the years to come. By joining with research partners as well as with landowners and sportsmen, the Wildlife Department looks forward to making headway in restoring and enhancing habitat for quail and other wildlife.

Hunter and Harvest Trend



This hunter survey data shows that the number of quail hunters has been going down since 1986 and the number of quail harvested has also been going down, from 111,000 hunters harvesting 2.7 million birds to 31,000 hunters harvesting 476,000 birds last year.



The Wildlife Department has begun an intensive joint research effort to better understand and address bobwhite quail decline.

An Overview of Key Concerns and Theories Affecting Quail Populations

Which ones are most likely behind the decline and why biologists see them as priorities

It has been established that quail populations are currently in decline, but what exactly are some of the factors that could be negatively impacting the numbers? And just how much of a threat does each of them pose to the state of the bobwhite quail? A better question still: What is the “number 1” cause of quail decline? According to wildlife biologists, there is likely no single answer, but rather a combination of factors occurring at the same time across the quail’s range that together present concerns. Quail may face challenges related to land uses in western Oklahoma that aren’t

as concerning in eastern portions of the state, but the quail in eastern Oklahoma still face their own slate of threats, such as the maturation of forests into habitats unsuitable to the needs of quail. As a whole, a number of different issues facing quail across its range can have significant impacts.

Take a look through the following section to get a feel for which environmental factors are proving to be the most daunting, as well some issues that are of less immediate concern but still important to biologists hoping to understand and reverse downward quail trends.

Fire Exclusion



One hundred years ago, a wildfire could consume thousands of acres of land at a time without interruption. With nobody to control what, where or when it burned, the detriment could be significant...for a time. But just like the sun comes up every morning, charred earth recovers — and it actually recovers in a manner that beneficially restores the landscape with new growth, forage, food and habitat for wildlife. Fire maintains grassland ecosystems and suppresses woody growth. Wildlife managers have known for years that prescribed fire is a useful tool for improving habitat, but with development and expansion comes the need to suppress fires to protect property, homes, communities, livestock and people.

What You Can Do

Prescribed fire is a tool that can be used by landowners. It can help control invasive trees and clear undergrowth. Small areas can be burned while other portions remain habitable until the burned portion is restored with new growth. For more information about prescribed burning, log on to wildlifedepartment.com to view past issues of the Department’s landowner newsletter *Your Side of the Fence*, or contact Jena Donnell, quail habitat restoration biologist for the Wildlife Department, at (405) 684-1929. Opportunities



BEN DAVIS



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may also exist to join local burn co-ops. Additionally, see page 15 of this booklet to learn about a new group dedicated to helping landowners with prescribed burning efforts.

Large Scale Habitat Fragmentation/Degradation



While there is indeed a vast amount of undeveloped land in Oklahoma, large tracts of it are increasingly becoming fragmented. Even communities in rural and semi-rural areas that once were havens for wildlife continue to sprawl

with housing additions, businesses and roadway expansions that pressure wildlife to look elsewhere for suitable habitat. Additionally, other tracts are becoming degraded by land use changes that affect the quality of available habitat. Because movement of quail across the landscape is interrupted in fragmented habitats, the birds have a difficult time recolonizing or increasing their numbers following weather catastrophes. Also, the localized populations within these small patches of habitat are more vulnerable to direct losses from predation, hunting, disease, etc.

What You Can Do

When you purchase a hunting license, the money is used in research, management, habitat improvement and development and land acquisition that ultimately



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benefits wildlife in the state, so go hunting. Additionally, habitat management assistance is available for landowners from a number of sources, ranging from the Oklahoma Department of Wildlife Conservation to other state and federal agencies and programs. If you own property, start by doing a habitat assessment. For more information, contact Doug Schoeling, upland game bird biologist for the Wildlife Department, at (405) 301-9945.

Cattle Grazing



Cattle grazing can be good or bad for quail habitat. Overstocking, leads to overgrazing. If quail are unable to find suitable cover and food due to overgrazing, an imbalance results that impacts quail populations. On a positive note, if an area is

too overgrown, cattle grazing can contribute to ideal quail habitat conditions.

What You Can Do

Biologists with the Wildlife Department believe cattle ranching and quail management can go hand in hand. For more information about developing a grazing plan to fit your property, contact your local Natural Resource Conservation Service office.

A Year in the Life of a Bobwhite Quail



This figure shows the annual cycle of social and reproductive behavior of the bobwhite quail.

Bobwhite quail are found in groups called coveys. A covey remains together during most of its daily and nightly activities. The birds scatter when flushed but soon reunite through calling. The size of a covey is generally 12 to 15 birds but can be as many as 30 or 40 birds; the composition in the early fall usually includes one to three adult pairs, their surviving young, and one to several cocks or pairs that failed to produce broods. Bobwhites lost from one covey may join another so that birds of several different ages may be found together.

The covey roosts in a tight circle with tails toward the center and heads oriented outward, primarily for the detection of predators. Roosting sites typically contain vegetation no taller than six inches, allowing rapid escape from predators.

Adult body coloration is typically reddish brown and gray above, whitish below. Breast feathers have narrow, V-shaped barring. Tail feathers are slate-gray. Males have a white forehead, chin and throat, and a wide white line continuing back from the beak, just above and behind the eye; in the females these areas are a buff color. Abnormal body colorations have been reported in the bobwhite as in other wildlife species. The most striking of these are white phase and red phase birds.

The adult bobwhite is approximately eight inches long and usually weighs six to seven ounces. Occasionally a bird will weigh up to nine ounces. Quail follow an annual cycle illustrated by the figure shown above.

(Continues on page 7)

Low Fur Market



Though predator calling and hunting may have enjoyed a resurgence of popularity in recent years, the fur market isn't booming like it once was. During the historical booms of the fur trade, trappers may have put significantly greater pressure on all furbearing species, including those that are known to prey on nests of ground nesting birds.

As a result, predator species like bobcats may still be highly sought after by hunters, but others such as raccoons, skunks and possums that are likely to prey on quail nests are receiving less pressure from hunting and trapping in recent years. Quail, especially in fragmented habitats, may be more vulnerable to predation now than during years when the fur market offered higher prices.

What You Can Do

A skilled, responsible trapper or predator hunter is an asset to the Oklahoma landowner. And likewise, a generous landowner is an asset to the sportsman who enjoys trapping and hunting predators. The Oklahoma Predator Hunters Association and the Oklahoma Furbearer Alliance are two Oklahoma-based organizations that could provide invaluable resources for learning to trap and call furbearing predators, or for locating trappers in your area of the state. Both organizations maintain booth exhibits at the Oklahoma Wildlife Expo, held the last weekend in September at the Lazy E Arena, just north of Oklahoma City.



No Till/Chemical-Fallow Farming



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No-till farming can be productive for farmers, but farmers using this method have to use applications of herbicides that reduce annual production of forbs and seeds on which quail depend.

With a less diverse vegetative composition, insects may be less abundant — a problem because insects are a critical component of quail chicks' diet for the first several weeks of their life.



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Large Scale Clean Farming



Over the years, farming operations have not only become more efficient, but many have also focused on cleaner properties with well manicured fields that lay abruptly adjacent to edges created by timber or fence lines. Though this contributes to efficiency and looks good to many people, field edges and fence lines that were once left brushy and ideal for wildlife are fewer and farther between. Many of the family farms that brought richness to the history of Oklahoma also contributed to the richness of wildlife diversity in the state. Years ago, a drive across rural farmland may have revealed miles of brushy roadsides as well as feathered field edges and fence lines that gradually transitioned from timber or rugged prairie into crop production. Today, you may see a "cleaner" approach, but biologists say this is affecting downward quail populations trends.

What You Can Do

Farmers and ranchers interested in benefiting wildlife should consider leaving some areas untilled, such as fencelines, field edges and other marginal portions not used for crop production. The resulting conditions lead to growth, brush and forage that may be used as habitat.

Hunting Pressure



Some have suggested reducing the available days to hunt quail to three days weekly as in the past, but legal hunting is shown to have no negative impact on quail populations rangewide. However, localized hunting pressure may cause reduced numbers of quail, such as may be the case on some Oklahoma wildlife management areas. To help regulate quail harvests, some WMAs are open to quail hunting only during specific hours. For example, on the popular Beaver River WMA in northwest Oklahoma, shooting hours for quail hunting close at 4:30 p.m. and shooting hours for quail close at noon on Cimarron Bluff and Cimarron Hills WMAs (these WMAs and some others also are closed for part or all of the deer gun season). In short, biologists don't discourage the hunting of quail, and in fact remind sportsmen that hunters are key to the success of quail.

What You Can Do

Go Hunting.

Oklahoma's hunting opportunities are numerous. From upland bird hunting for quail and turkeys to big game hunting for deer, antelope, elk and black bear, Oklahoma is one of the most diverse states for hunting. Hunters and anglers are the largest group of wildlife conservation supporters in Oklahoma, serving as the primary source of funding for wildlife conservation in the state through their purchase of hunting and fishing licenses. Additionally, manufacturers of certain sporting goods and boat motor fuels are charged federal excise taxes. Manufacturers pay these taxes to the federal government, and the U.S. Fish and Wildlife Service disburses these funds to state wildlife agencies like the Oklahoma Department of Wildlife Conservation. Wildlife agencies must use these funds for wildlife conservation. Therefore, participating in hunting and fishing is one of the best things anyone can do to support wildlife conservation in Oklahoma. License dollars are put right back into funding conservation, which includes everything from habitat improvement and management to land acquisition for public hunting and fishing opportunities.



WAYNE HUGHES

(Continued from page 5)

Spring

During March and April, covey bonds weaken and the covey begins to dissolve. This is called *spring break-up*, a period during which mates are chosen and *pair-bonds* are formed in preparation for mating and nesting. These pair-bonds usually exist for one mating and brooding season. Both mated males and males that have not mated use the common two- or three-note whistle to attract a mate, establish a territory, or both. The nesting season, initiated by selection of a mate and territory, begins in late April and can last through summer. However, as birds nest later in the season, the average clutch size and percentage of eggs hatching tend to decrease, resulting in smaller broods. Nests are usually constructed on the ground in bowl-shaped depressions, in areas of light to moderately dense vegetation and ground litter.

Typically, nests are found in dried clumps of last year's growth of warm season grasses like little bluestem. They may be modest or intricate, with the latter occasionally topped by an arched or dome-shaped roof and access limited to a small side opening. Once the nest is completed to the hen's satisfaction, she may delay egg laying for several days. Then, visiting the nest one or more times each day, she will lay eggs until the clutch is complete. The average clutch size ranges from 12-15 eggs, although clutch sizes as low as six and as high as 28 have been reported. After egg laying is completed, there may be a delay before incubation begins. The incubation period is 23 days. From 45 to 55 days are usually required to complete the nesting and incubation process.

Summer

The majority of the hatch is complete by mid-July. The cock may occasionally assist the hen in incubating the eggs and can continue hatching and brood rearing activities even in the absence of the hen.

Except for one or two short feeding periods per day, the setting bird stays on the nest. Insects are the preferred food of birds during the reproductive period.

Bobwhite chicks generally hatch within an hour or two of each other. Those hatching later are left behind. The newly hatched bobwhite chick weighs about a fourth of an ounce and is covered by buff-colored down.

Bobwhites can nest several times during a season in an attempt to raise a brood if early nests are destroyed by predators, farming operations, or other causes. Farmers harvesting warm-season grasses for hay before July 1 may cause nest destruction and abandonment.

Successful early nesting hens may occasionally produce

(Continues on page 9)

Catastrophic Weather Events



Some researcher believe annual and short-term trends in quail populations may be due in large part to weather effects on production, and we all know the state's weather can be harsh. In the past year alone, weather events have been particularly detrimental.

July 2011 was the hottest July ever on record in Oklahoma with temperatures soaring above 100 degrees for extended periods, and extreme drought has affected over 85 percent of Oklahoma. Data has shown correlations between periods of drought and fall quail population levels, and field biologists have often noted nest abandonment, egg spoilage and suppressed courtship during extended periods of high heat combined with low moisture.

Winter was harsh as well, seeing snowfalls of up to 14 inches and temperatures well below zero. Tornadoes and hailstorms hammered the plains this spring. Nighttime cold and wet weather during certain times of brooding season can predispose chicks to hypothermia.

Likewise, the catastrophic weather can disrupt reproduction and survival of adult birds. For example, ice storms can pack a thick layer of ice on the surface of the ground, making it difficult to impossible for quail to access food underneath. Flooding can destroy nests and send birds looking for cover; and prolonged heat and drought can be detrimental to insect populations that quail rely on for food. Combine a few of these, such as a period of poor insect production followed by a flood season that takes a toll on quail nesting success, and you have a recipe for disaster.

While weather extremes are nothing new and cannot be blamed entirely for rangewide quail declines, biologists agree that localized weather events as well as the timing of inclement weather with other factors can be problematic for wildlife.

What You Can Do

Anyone who has lived in Oklahoma for any length of time knows that, unfortunately but obviously, there is no controlling our state's weather. That's why habitat work on private land and participation in hunting or conservation groups is critical.

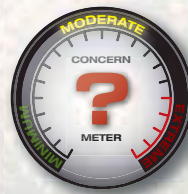


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Global Climate Change



Whether or not the origin of the extreme weather Oklahoma has experienced in recent years is an effect of a long-term global climate change, biologists want to better understand weather effects on quail population dynamics in Oklahoma.

The Wildlife Department is working with Oklahoma State University on two northwest Oklahoma wildlife management areas, and biologists plan to use the knowledge gained from the study to move forward with conservation efforts that help minimize negative environmental effects on quail populations.

Herbicides & Pesticides



Along with impacting food sources like insects and weed seeds, overuse of herbicides to control brushy cover in grassland does no favors for habitat. Quail require some brush like plum thickets and shinnery oak to provide escape and protective cover from raptors. Additionally, brush is very important for thermal cover during extreme weather conditions like heat, snow or ice storms.

“Basically, if you own or manage grassland and you overuse herbicides to eliminate brush on your property, it will have negative impacts on quail,” said Doug Schoeling, upland game bird biologist for the Wildlife Department. “Have a good percentage of brush scattered across the landscape.”



Exotic Non-Native Grasses



Areas that once held large numbers of quail may hold fewer now as some farming operations have transitioned from production of row crops to pasture, hay fields and other crops that are “less friendly” to birds. Introduced, non-native grasses like Bermuda and tall fescue make for poor quail habitat because of their sod-forming qualities that make it difficult for quail to walk and search for food. Additionally, sod forming grasses contribute to loss of cover and good structure needed for nesting. Bare ground availability, such as that provided in habitat with native grasses that form bunches rather than sod, offer better foraging opportunities and easier traveling for quail. Non-native grass plantings also tend to be monocultures, with far less beneficial diversity than native grasses.

What You Can Do

Landowners who want to see more quail on their property should look at the grasses produced on their property. Is bare ground available among bunches of native grass? Or do introduced sod-forming grasses eliminate any available bare ground for quail to move easily and with enough security to remain on the property? A number of state and federal programs are available for assisting landowners such as the Wildlife Department's Wildlife Habitat Improvement Program. For more information, contact Mike Sams, private lands senior biologist for the Wildlife Department, at (405) 590-2584.

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second broods. Chicks observed late in the nesting season may even be the result of a third nesting attempt.

Bobwhite chicks are able to leave the nest and seek food with the adults as soon as their down dries. Early departure from the nest may serve to reduce the risk of predation from animals attracted by the scent of newly hatched chicks.

Young chicks forage for small, high-protein insects in brood rearing habitat, which consists of relatively open ground for freedom of movement, and lush green growth with overhead concealment. It is important that cover for refuge from predators is close by and that the area is free of tangled vegetation at ground level. This feeding area used by the brood may cover from two to 100 acres or more.

The most critical period for chicks is the first two weeks. Their initial covering of natal down provides little protection from wetting, but by about two weeks of age, down begins being replaced by juvenile plumage. However, only short flights are possible at this time.

Predation plus adverse weather during this period may account for a loss of 50 percent or more of the hatch.

Parents protect chicks during the night as well as a considerable portion of the day by covering them. Sometimes parents lure predators away from their young using a broken wing display. Six-week-old chicks primarily have juvenile plumage, are capable of extended flights and weigh about 2 1/2 ounces. At this age, the diet of the chick often includes berries and seeds in addition to insects. Adult size and appearance are reached by four months of age, but these sub adult birds can still be distinguished from adults by their growing primary wing feathers and buff-colored tips on their primary covert feathers.

Fall

Much movement and mixing of bobwhite quail, called the fall shuffle, occurs in early fall when coveys are forming on their winter ranges. They select an area where food is abundant and suitable cover is near. The mixing of birds during the fall shuffle and spring break-up limits inbreeding. Movement of several miles to a winter range has been observed, but in quality habitat, movement of less than one-fourth mile is common. Bobwhite quail in northwestern Oklahoma use highlands in summer, but shift their ranges to brushy canyons in winter.

Winter

Interchange between coveys continues to occur all winter. Coveys may lose or gain a new member every two or three days. 🌿

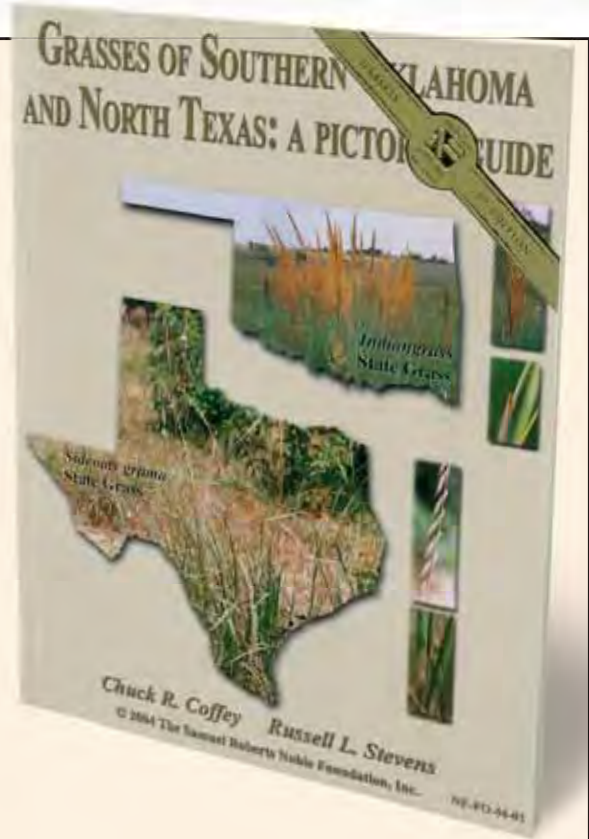
A Few Good Weeds

Forbs — or as many call them, weeds — are an important part of the life of a quail. Not only do they provide cover, but they also produce seed for food and attract insects on which quail feed.

Just like the front lawn, drought and extremely hot temperatures take a toll on wild vegetation, and icy conditions in the winter can make foraging for seeds difficult. Additionally, land use changes can eliminate many of the weeds on lands that quail would otherwise inhabit. It takes a balance of nature and conscious land management efforts to build the kind of habitat that will attract and hold quail.

Oklahoma has around 70 public hunting areas that are managed specifically for wildlife such as quail, deer and turkeys. Production of native weeds and grasses are an important part of managing wildlife habitat to ensure species like quail can find the habitat they need. On these areas, hunters can rest assured knowing that creating and enhancing diverse habitat is a top priority.

Private landowners interested in learning more about native plant growth in Oklahoma should check out the Noble Foundation's *Grasses of Southern Oklahoma and North Texas: A Pictorial Guide*. A comprehensive reference book on grasses in the southern Oklahoma and North Texas region, this publication is ideal for wildlife enthu-



siasts as well as farmers, ranchers, and other landowners who are interested in identifying grasses. This 120-page, full-color book can be used to easily and accurately identify grasses in the area.

The book costs \$25 and can be purchased on the Noble Foundation's website at noble.org.

Can you name these quail-friendly forbs?



A. Ragweed, B. Croton, C. Bundletflower

Disease



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West Nile Virus, Coccidiosis, Avian influenza, quail fever, pox, and bronchitis are diseases that quail can contract. Many questions remain to be answered regarding their direct and indirect population level impacts across the bobwhite's range.

Biologists would like to learn more about the incidence of disease among quail populations, be it through contact with domestic quail that have been released on hunting preserves, through blood-feeding insects like ticks and mosquitoes, or at wildlife feeders.

In order to better understand which diseases and parasites are having the greatest impacts on quail populations, the Wildlife Department is taking part in a research project with the Rolling Plains Quail Research Ranch, Texas A&M and Texas Tech University to study quail diseases and parasitism. Through the study called "Operation Idiopathic Decline," biologists are not only analyzing individual quail for diseases, but they are also studying certain quail parasites like mosquitoes and ticks for more insight on the spread of disease through parasitism.

A more in depth look at this research project is provided later in this issue.

Feeders and Aflatoxin



Though often employed with good intentions, a wildlife feeder may be a two-edged sword. While they do provide some supplemental food and can increase the likelihood for hunters and wildlife watchers to see and harvest animals that

concentrate near them, they also draw natural predators that opportunistically prey on quail. They also can lead to the transfer of disease. Additionally, they have little positive impact on quail numbers when placed where quality quail habitat already exists. The result could mean fewer birds seen by hunters in those areas.

In addition to attracting predators to potentially "easy pickings," some seeds used in wildlife feeders, especially corn, may contain naturally occurring aflatoxins (a form of toxic mold). Quail can survive very high levels of aflatoxin, but it may have sublethal effects that could compromise a quail's fitness, including its reproductive success. The impact aflatoxin may be having on quail reproduction is still unknown.

Wildlife feeders are legal in most scenarios in Oklahoma, and they are not believed to be a threat to quail populations rangewide. Rather, they may simply impact very localized coveys and hunters. But even so, landowners who focus on creating and enhancing as much habitat on their property as possible can have lasting effects. Making habitat a priority and getting involved in conservation is as important now as it ever has been, and it starts with landowners and sportsmen getting involved. Additionally, if you are concerned that aflatoxins in corn may be affecting quail populations in your area, there are other feed options that may be more expensive but are known to have lesser amounts of aflatoxins, such as black-eyed peas and milo. You can also routinely clean your feeders.

Late Stage Habitat Succession



With the exception of the Ozarks and Ouachitas, Oklahoma was historically a prairie state. Exclusion of fire along with other human activities has led to much of Oklahoma's prairie and Savannah habitats being invaded by timber growth, all at the expense of native prairie and therefore the bobwhite quail.

Many counties that were characterized by native grasses during the early 1900s (or even the late 1900s) are now marked by draws of oak timber with trees as wide as 10 inches in diameter. In short, habitat characteristics change over time, sometimes in ways that would be difficult to control or that might even go unnoticed, until it affects something so dear to the heart of Oklahoma as bobwhite quail.

What You Can Do

If quail habitat is your top priority for your property, yet you cannot pinpoint just what has changed in your area that may be affecting quail populations, call Mike Sams, private lands senior biologist for the Wildlife Department, and seek input and further information on restoring and creating quail habitat on your property. For more information, log on to wildlifedepartment.com.



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Urbanization and Commercial Development



Pick any remaining patch of habitat on the outskirts of a community experiencing growth, and watch closely to see how long it takes for a large commercial development or housing addition to go up in its place. While economic growth and development are good things, the fact that wildlife habitat may be impacted as a result is well known. If the habitat is gone, the wildlife will be gone as well. New roads, parking lots, parks, homes and businesses are signs of thriving, but the natural world that once called those places home are forever gone.

While economic growth and development are good things, the fact that wildlife habitat may be impacted as a result is well known. If the habitat is gone, the wildlife will be gone as well. New roads, parking lots, parks, homes and businesses are signs of thriving, but the natural world that once called those places home are forever gone.

What You Can Do

In addition to purchasing a hunting license and going hunting, wildlife enthusiasts can also purchase a habitat donor patch, which features a unique Oklahoma wildlife species. Doing so designates you as a contributor to the Wildlife Department's Land Acquisition Fund, which is used to purchase and secure land for conservation and hunting opportunities. The Wildlife Department has purchased several new properties across the state in recent years that are secure for conservation from now on. Patches are \$10 and are also available on top-quality, American-made caps for \$18. To purchase a patch or cap, log on to wildlifedepartment.com or turn to the Wildlife Department's *Outdoor Oklahoma* magazine.



Wild Wonders and Feral Foes

Competition is one of the greatest forces in the natural world, from the smallest of organisms that affect the natural food chain on up to Oklahoma's largest game animals such as deer and elk. When species compete — each one with the powerful natural will to survive — one will often take a greater hit than the other. Such may be case for quail. Though biologists believe it to be of little consequence to quail populations, it is possible for turkeys, deer, egrets, roadrunners and other wildlife to prey on quail chicks. Ticks can sometimes kill chicks as well.

A bigger threat still presents itself when non-native competition comes into play. In Oklahoma, feral hogs are widespread, and feral cats are found statewide as well. Non-native fire ants may at times kill quail chicks too. Each one can inflict harm on quail habitat and individual birds, and the worst part about them is they are not native wildlife. When a non-native species is the source of competition and predation on native wildlife, the significance of the problem is automatically increased, even in the case of feral hogs and cats that are not believed to be top-level threats to quail populations. Non-native and invasive species often have little competition and few predators, allowing for more detrimental impacts on native habitat and food sources otherwise available for native species.



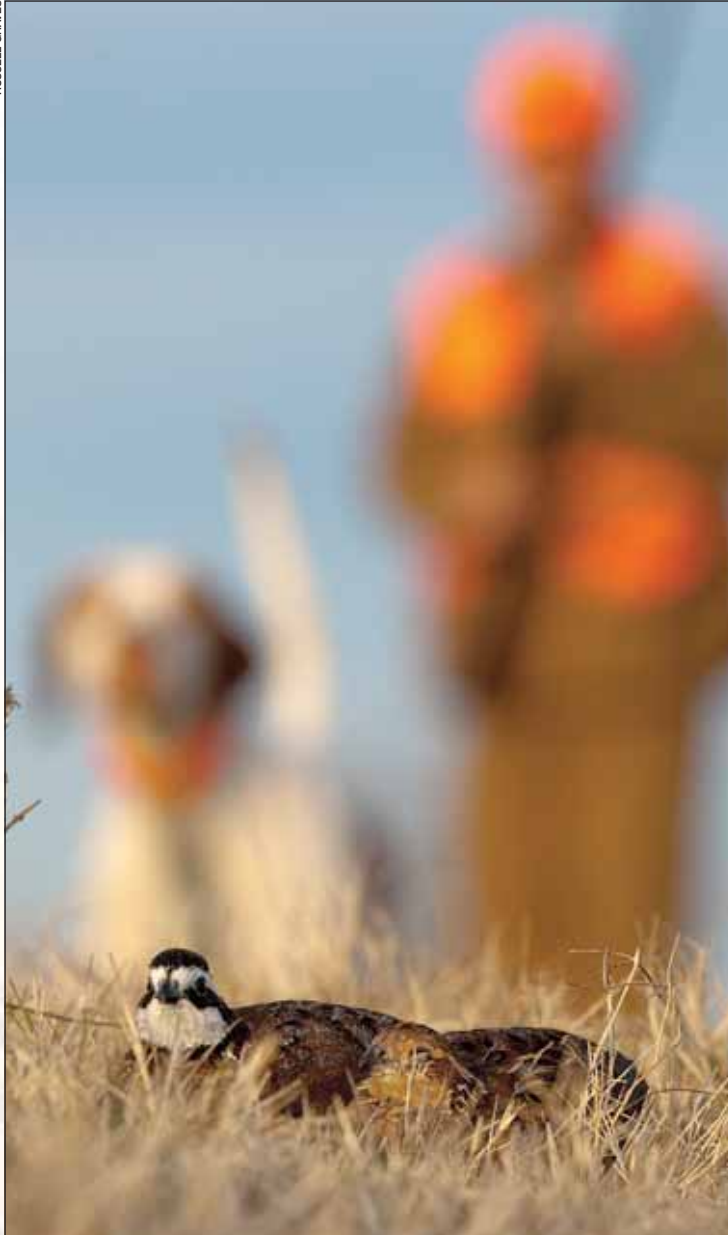
Feral hogs and feral cats



Ticks and fire ants



Turkeys, deer, egrets, roadrunners



Two More Theories: Survival of the Fittest and Fewer Wild Birds for Training Bird Dogs

The “survival of the fittest” concept basically implies that individuals of a species who adapt most readily to their environment tend to have a better chance of survival and thus reproducing their genes. Biologists say it’s possible that today’s quail, though maybe fewer in number, are better at surviving. Could that mean they are more elusive as well? For example, quail that tend to run under pressure rather than flush may create greater distance between themselves and a bird dog that has pinpointed their location. The result in that case is that the birds may go unseen more often than flushing. If the tendency to run rather than flush results in higher survival, then the tendency to run could be passed on to offspring with increased frequency as each generation improves at surviving in their environment.

Additionally, with wild bird numbers down in recent years, the rate at which young hunting dogs can gain experience hunting wild quail may be slowed. It’s been suggested that this phenomenon may be causing a decrease in the number of coveys seen by hunters while also forcing them to rely more on domestic birds for training.



Survival of the fittest



Fewer wild birds to provide experience for young hunting dogs

What Does it All Mean?

The quail is somewhat like any type of crop in that environmental conditions affect a given year’s production. When the condition of the habitat and available food interact favorably with the weather and other factors, the chance for a successful year of quail production is increased. But even then, the average lifespan of a wild quail is only seven months, and only about 20 percent survive from one October until the next. Their approach to species survival is to produce excessive numbers of offspring to compensate for the high number of losses caused by the environment. When a given year’s environmental conditions are particularly challenging, it shows in the quail population. It goes without saying that conditions that negatively affect the survival of the bobwhite quail in one year — be it weather or any of the threats that have been explored in this issue — can have far reaching affects on the next year, and likewise, a series of challenging years can lead to gradual declines like those seen across the western edge of the bobwhite’s range.

The challenge before Wildlife Department biologists as they begin their upcoming comprehensive research efforts with OSU and Operation Idiopathic Decline is to determine what unknown factors are playing a role in the downward population trend of quail, and just how much of a role they are playing. Only then can a sharper focus be placed on halting the unexplained decline. But we aren’t limited to waiting and doing nothing while biologists carry out their research, however. We all can be involved in bobwhite quail conservation now. 🌿

We All Can Play a Role

WAYNE HUGHES



Wildlife Department officials are optimistic that we can make a difference for quail in Oklahoma. One thing that is sure is quail populations have a better chance of rebounding when private landowners, sportsmen and the Wildlife Department partner together for the benefit of wildlife.

The Role of Private Landowners

In Oklahoma, the impact of what a landowner does for wildlife on his property spreads beyond his fence line. When an area provides a good arrangement and diversity of nutritious food, shelter and nesting cover, quail have a better chance of foraging and nesting successfully. And when more than one landowner in an area catch on and begin striving to provide better wildlife habitat, their success is multiplied.

While landowners cannot control the weather, they can make great strides in restoring and enhancing the wildlife habitat on their property, and in doing so put in place at least one of the puzzle pieces critical for quail to thrive.

Landowner efforts are far more than simply a beneficial supplement to quail and other wildlife; they are actually crucial for the success of wildlife in the state.

“Ninety-seven percent of Oklahoma is privately owned,” said Mike Sams, private lands senior wildlife biologist for the Wildlife Department. “Without private landowners, wildlife management is not going to happen.”

With so much land under private ownership, it’s up to landowners to partner with the Department and sportsmen to provide habitat for wildlife, and they do a good job of it. However, with land use changes taking place every day, small-tract landowners face challenges in the quest to provide habitat on a small scale that still makes a big impact. But there is a way.

The Role of Sportsmen

Put simply, *hunting is conservation.*

The Oklahoma Department of Wildlife Conservation receives no general state tax appropriations and is supported primarily by sportsmen through their purchase of hunting and fishing licenses. Through their purchase of hunting licenses as well as the purchase of certain hunting equipment, funds have continued to flow into wildlife conservation in Oklahoma as part of the Wildlife Restoration Program. Hunting equipment carries a federal tax that is collected from the manufacturer, and the U.S. Fish and Wildlife Service then distributes such taxes to state wildlife agencies like the Oklahoma Department of Wildlife Conservation. The funds must be used by the states for wildlife conservation efforts. The program functions as a “user pay, user benefit” program in that the number of hunting licenses issued in Oklahoma annually helps determine the final amount of the program’s funding. Because of the Wildlife Restoration Program, Oklahoma’s funds today represent millions of additional conservation dollars invested in our state by licensed hunters.

Because of efforts to enhance and restore habitat, quail benefit, as do so many other species in Oklahoma ranging from big game like deer and antelope to turkeys, rabbits and others. Sportsmen’s dollars have gone a long way in making that happen through research projects, habitat restoration, law enforcement, education and long-term cooperative relationships between the Wildlife Department, landowners and sportsmen.

In short, one of the best ways to support wildlife conservation, and therefore quail conservation, is to purchase a hunting license and go hunting. Additionally, hunters can introduce others to the outdoors by taking them hunting. Becoming a volunteer instructor for the Wildlife Department’s hunter education program makes a big difference through educating the next generation of hunters in local communities. For more information, contact Lance Meek, hunter education coordinator for the Wildlife Department, at (405) 522-4572. Or get involved in local chapters of effective conservation groups such as Quail Forever and Quail Unlimited. Projects and fundraisers held by conservation organizations are effective ways to raise money for conservation projects.

The Role of the Wildlife Department

—By Jena Donnell, Quail habitat restoration biologist

While quail are known for their “boom or bust” cycles, biologists have seen a consistent and concerning downward population trend. Unfortunately, this trend has been mirrored by the number of Oklahoma quail hunters — declining from 110,000 in 1980 to less than 30,000 hunters today.

While this issue has explored a number of threats that could be contributing in one way or another to declining quail populations, and while landowners and sportsmen have an important role to play in conserving quail, the question that begs an

answer is what does the Wildlife Department plan to do to help conserve this upland treasure known as the bobwhite quail?

To many Wildlife Department biologists, the question is both scientific and deeply personal. Biologists with the Department are not only experts in the science of wildlife biology, but most are passionate hunters and wildlife enthusiasts who eagerly seek to benefit the bird that has given them so many cherished memories afield. And while it is true that quail numbers can fluctuate between “good years” and “bad years,” biologists are working now to ensure the bobwhite quail is a staple of the upland landscape forever.

Along with private lands programs and routine management efforts on public lands, the Wildlife Department is beginning a phase of extensive research involving two specific projects—one right here in Oklahoma and another through a joint effort between the Department and some of its national partners.

Research Project #1

A True Oklahoma Partnership to Benefit Quail: The Wildlife Department has recently committed to a long-term bobwhite quail research project with Oklahoma State University’s Department of Natural Resource Ecology and Management and the Oklahoma Cooperative Fish and Wildlife Research Unit. This research is in response to the decline in both quail populations



and hunter numbers.

By conducting research on two of the best remaining public lands quail habitat areas in the nation — Packsaddle and Beaver River wildlife management areas in northwest Oklahoma — biologists hope to gain insights on various aspects of quail management, including the movement and distribution of birds during the late summer and early fall when coveys are known to shuffle and regroup into new coveys, how to effectively manage habitat to boost chick survival, and how the weather influences reproductive success and bobwhite survival in Oklahoma. To address these and other topics, studies will revolve around four primary approaches: habitat and population dynamics, insect and food availability, quail use of habitat by predators and aflatoxin.

Habitat and Population Dynamics: In this approach, researchers will fit both adult quail and chicks with transmitters to determine which factors affect habitat use, production and brood survival, and mortality of bobwhites throughout the year. In addition to telemetry work, habitat manipulations will be closely monitored for changes in vegetation, and biological information will be collected from hunter-harvested birds. From this information, biologists hope to create models that will help them predict the response of quail populations to drought and evaluate the role that temperature plays in nesting and survival.

Arthropod (Insect) Availability and Preference: Telemetry work from the above-mentioned studies will be used in conjunction with arthropod sampling to determine how nest location and chick survival are linked to arthropod abundance. Invertebrate samples

New Association to Help Simplify Prescribed Burning for Landowners

A new association has been formed to provide landowners and state prescribed burn associations with an organization that can assist them with liability insurance, finding funding for equipment and training, and a voice for prescribed burning throughout the state.

The Oklahoma Prescribed Burn Association (OPBA) was formed through a three-year Conoco-Phillips challenge grant from the Playa Lakes Joint Venture through the High Plains Resource and Conservation District. Ron Voth is the executive director of this first of its kind organization to assist landowners with all aspects of prescribed burning.

Prescribed burning is a useful and important habitat management tool employed to remove accumulated litter, encourage new vegetative growth and to control excessive invasion of brush and woody cover. Native rangelands that are burned periodically have a wider diversity of plants that are beneficial to wildlife than unburned prairies. Wildlife such as quail benefit from burns because they increase mobility by removing ground level clutter, attract greater density and diversity of insects used by quail chicks as food and increase the ability of birds to feed on those insects.

The primary goal of the OPBA is to become the umbrella organization for landowners and local prescribed burn associations to receive reasonably priced liability insurance for conducting prescribed burns. Through the OPBA, the insurance will be available to burn association members at an affordable rate. The insurance covers escaped fires, suppression costs, injury to people assisting with the burn, and problems caused by smoke. A five-member board of directors has been formed to assist with the development of this organization. Members include Alva Gregory, Oklahoma Department of Wildlife Conservation; Darrel Dominick, Oklahoma Conservation Commission; Paul Clark, Natural Resource Conservation Service; Karsen Davis, Roger Mills Prescribed Burn Association; and John Weir, NREM, Oklahoma State University.

There will be a minimal annual fee, and a charge for each burn the landowner would like to have insured. There will be some requirements for each burn, which are currently being developed by the association and the insurance company.

The OPBA is currently conducting a survey of landowners throughout the state to get information on the number of landowners that would be interested in joining a prescribed burn association and if they are interested in the liability insurance. The survey can be found at the Oklahoma Prescribed Fire Council website at www.oklahomaprescribedfirecouncil.okstate.edu. Click on “Burn Associations” and send the completed survey to Ron Voth at the address listed. 🌿

Packsaddle WMA

- Approx. 22,000 acres, and is located in Ellis County.
- Uplands sites are vegetated with mixed native grass species including big bluestem, indian grass, little bluestem, side-oats grama, and buffalo grass and brush species like shinnery oak, sagebrush, and sand plum.
- Bobwhite quail are usually present in good numbers, but are highly sought after.

Beaver River WMA

- 17,700 acres of western Beaver County in the Oklahoma panhandle.
- Sagebrush and buffalo grass predominate on upland sites.
- Bobwhite quail are usually present in good numbers but are highly sought after. Very few blue quail present.

will be taken from preferred home ranges, known nesting sites, and areas where foraging is not occurring. Researchers will also attempt to identify how diets fluctuate as chicks develop. A model will be developed at the end of this approach to predict how nest selection and chick survival will be influenced by invertebrate abundance.

Aerial/Terrestrial Predator Influence on Usable Space: The potential impact of both avian and mammalian predators will be evaluated through raptor surveys, perching site assessments, and carnivore surveys. A GIS model will be developed using these surveys, predicting how potential raptor perch sites (including human structures) and areas frequented by mammals (waterways and streams, food plots, etc.) may facilitate predation of quail.

Aflatoxicosis: Though aflatoxin-related issues have long been a concern for waterfowl managers, the role of this fungus in quail populations has yet been determined. To better understand the potential effects on quail, several seed sources (including both native and commercially-obtained seed) will be evaluated for potentially toxic concentrations. Additionally, researchers hope to learn how feeders and supplemental feeding strategies influence quail and quail predation.

The six-year study is anticipated to begin in fall 2011 and will continue until summer 2017. Field stations will be built

on both study areas, providing research students with both a working lab and temporary housing.

Research Project #2

Operation Idiopathic Decline: In addition to the cooperative research with OSU, the Wildlife Department will participate with the Rolling Plains Quail Research Ranch, Texas A&M, Texas A&M-Kingsville and Texas Tech University in a second study dubbed “Operation Idiopathic Decline.” The role of Wildlife Department biologists will include trapping quail in the fall and sending them to Texas Tech, where samples will be analyzed for contaminants and diseases like West Nile virus and avian influenza. Extensive research on the birds will also cover disease, parasitism, herbicides, insecticides and other issues. The Rolling Plains Quail Research Ranch is providing \$2 million of privately raised funds for this project.

“We are going to look at things like aflatoxins, Coccidiosis, West Nile virus, and all of the other ‘black box’ diseases,” said Doug Schoeling, upland game bird biologist for the Wildlife Department.

The primary goal of this project is to determine the role of infectious diseases on bobwhite quail. Disease research with respect to quail has been limited and little is known about the prevalence or importance of specific diseases on the population.

Ten Wildlife Management Areas (WMA’s) from across Oklahoma’s Rolling Plains region have been selected as sample sites for the operation: Beaver River, Black Kettle, Canton, Cimarron Hills and Bluff, Cooper, Ellis County, Hackberry Flat, Mountain Park, Packsaddle and Sandy Sanders. Biologists and technicians will trap quail twice at each location — once in August and again in October. Each sampled bird will be banded to ensure all future samples are unique. Researchers hope to collect approximately 300 samples during each trapping session.

ODWC staff will also collect insect samples from each site. Once the samples have been tested for a range of pathogens, researchers will compare the number of birds with diseases to the prevalence of that pathogen in quail parasites (ticks and mosquitoes).

By collecting biological samples from bobwhite quail, ODWC hopes to have a better understanding of which diseases are impacting our population. The three year study began August 15, 2011. 🌿

If you are a landowner who would like to speak with a Wildlife Department biologist about enhancing or creating quail habitat on your Oklahoma property, contact one of the following:

Tell Judkins
Upland Game Biologist
(405) 301-9945

Josh Richardson
Private Lands Program Supervisor
(405) 637-7324

The Oklahoma Department of Wildlife Conservation is the state agency charged with conserving Oklahoma’s wildlife. The mission of the Wildlife Department is the management, protection, and enhancement of wildlife resources and habitat for the scientific, educational, recreational, aesthetic, and economic benefits to present and future generations of citizens and visitors to Oklahoma. The agency receives no general state tax appropriations and is supported by hunters, anglers, recreational shooters and boaters through hunting and fishing license fees and special taxes through the Wildlife & Sport Fish Restoration Program on sporting equipment and motorboat fuels. For more information about the Wildlife Department, its programs or about hunting or fishing in Oklahoma, log on to wildlifedepartment.com.