

# Misconceptions About Upland Game

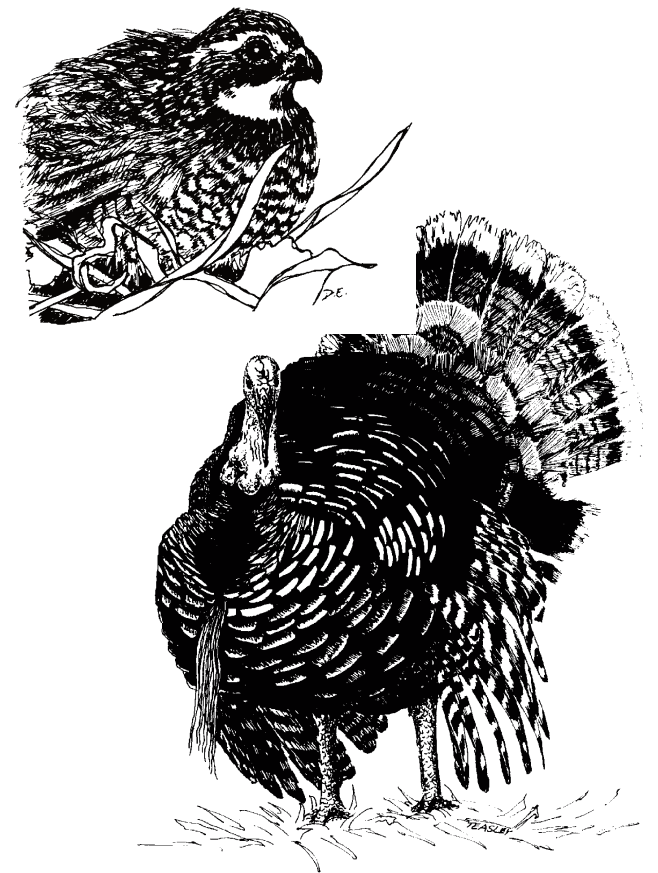
The information contained in this brochure addresses many concerns and misconceptions about upland game. The responses were formulated using information from numerous scientific studies.

For more information about Kansas wildlife, visit our website at [kdwp.state.ks.us](http://kdwp.state.ks.us). You will be able to download area brochures, check upland bird forecasts, and review the latest regulations summary.

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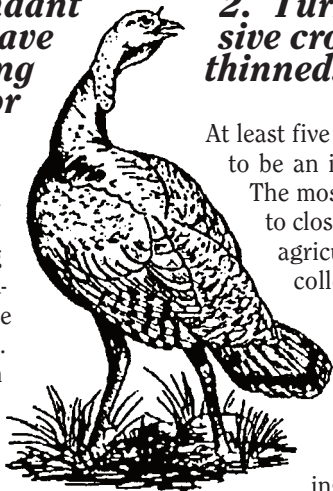
## 1. Turkeys have become abundant while at the same time quail have declined. Turkeys must be eating quail or competing with them for resources.

It is true that turkey populations have exploded while quail populations have declined. This has caused some people to assume turkeys are having a negative impact on quail. In reality, both populations have been influenced by a large-scale landscape conversion that has occurred over several decades.

Wildlife biologists have been studying both quail and turkeys intensely for more than 75 years and have never documented a single occurrence of a turkey eating a quail. It is a common rumor that turkeys have been shot with quail in their crops but no biologist has ever seen a specimen or a photograph. Another problem with this claim is that most quail hatch in late June or early July well after the turkey season has closed. It would be highly unlikely that a legally-harvested turkey would have a quail chick in its crop even if the phenomenon was known to occur.

The main factor contributing to declining quail populations and increasing turkey populations is a landscape conversion from grasslands and shrubs to woodlands. Satellite images show that woodland habitat increased 23 percent in eastern Kansas from 1984 to 2000. If the 1950s landscape were compared to the present landscape, the woodland increase would have been much greater. This landscape transformation occurred throughout Kansas but has been most severe in the Flint Hills and eastward. The additional trees have improved habitat for many woodland species (turkeys, deer, and squirrels) but degraded habitat for grassland species like quail.

Large trees are required by turkeys for roosting, and as woodlands have matured and expanded into the prairie, more areas have become suitable for turkeys. These trees have shaded out low-growing bunch-grasses and shrubs required by quail for nesting and protective cover. Additional woodland has also benefited quail predators such as hawks, owls, raccoons, and opossums. Avian predators are a major source of mortality for adult quail, and trees provide ideal perches from which raptors can hunt. Other factors have contributed to quail decline, but more trees in the landscape has had the greatest negative impact.



## 2. Turkeys are causing extensive crop damage and need to be thinned.

At least five scientific studies have found turkeys to be an insignificant source of crop damage. The most recent study used infrared cameras to closely observe wildlife activity in various agricultural crop fields. Observations were collected during both day and night throughout two different growing seasons. While turkeys were regularly seen in all the surveyed fields, researchers did not once observe them digging up seeds, pulling plants, or directly eating from standing plants. They did observe crop damage caused by other wildlife species such as white-tailed deer, raccoons, crows, squirrels, beavers, and rodents. The majority of damage observed during their study was from raccoons at night. Turkeys do spend much time in agricultural fields displaying and foraging, but diet studies have shown that the birds are eating insects, grubs, and waste grain from previous years' crops.

## 3. Why isn't predator control recommended as a management strategy to increase quail numbers?

It is true that predators are the primary source of mortality for adult quail, nests, and young. It is also true that populations of many different quail predators have increased over the last 25 years. These two facts are widely known and it is easy to see why many land managers now use predator control as a method to increase quail populations. On the surface this seems like a logical approach to increase quail numbers but does predator removal really work?

Recently, a study in Florida tested the effects of predator removal on quail survival and productivity. Trappers removed opossums, armadillos, raccoons, bobcats, coyotes, and foxes from March through October on two 3,000-acre study sites. One of the sites was managed extensively for quail and offered high-quality habitat while habitat at the other site was of much lower quality. For three years, 300-500 predat-

tors were removed annually from each site. Little or no improvement in quail numbers was observed on the site with high-quality habitat. On the site with poorer habitat, there was a sharp increase in nest success and fall bird densities. These results indicate that predator removal provided little benefit if the habitat was already suitable for quail.

All of the predators that prey upon quail are opportunistic feeders and when it is difficult for them to locate quail nests and young they begin targeting animals that are easier to find. Predation on quail can be minimized by simply increasing habitat quantity and quality even if predators are fairly abundant. This phenomenon has occurred in central and western Kansas over the last 20 years where more than two million acres of Conservation Reserve Program (CRP) grasslands was added to the landscape. Quail populations in this part of the state have been stable or even increasing despite increasing predator populations.

In poor habitat it is possible to increase quail numbers by removing predators during the summer reproductive season. However, the practice is extremely costly and the benefits are only short-term. Quail predators will quickly re-colonize an area when trapping stops so for lasting results the removal must be done annually during the reproductive season. In Kansas, many quail predators are classified as furbearers and cannot be legally removed outside of the fall hunting and trapping seasons. Because predator removal can only be done during the fall in Kansas, it makes the practice even less effective than in other parts of the quail's range. It is much more cost efficient and socially acceptable to focus agency dollars towards the creation of suitable habitat. Additionally, the benefits provided to quail through habitat improvements are long-term compared to those gained from the removal of predators.





#### **4. How does fall turkey harvest effect spring hunt success and future populations?**

Two major factors are considered when setting fall turkey regulations: the impact on future population growth and the effect on spring hunting success. In terms of population growth, males are much more expendable than females because one male can mate with numerous females. Taking hens in the fall can cause a population decline if over 10 percent of the hens are harvested. In Kansas, it is estimated that < 2% of all the hens are harvested. Thus, a reduction in fall harvest alone would not be enough to increase overall turkey numbers in Kansas. In our state, habitat availability and weather conditions are the major factors contributing to changes in turkey populations. However, if populations become critically low, it might be beneficial to reduce fall hen harvest to help speed recovery.

While harvest of male turkeys during the fall doesn't significantly impact overall population growth it can impact spring hunting success. Most male turkeys taken during a fall turkey season would have survived until spring. If spring hunter success were to decline substantially, a reduction in fall harvest might be justified.

#### **5. Why doesn't the state stock game birds to supplement or establish populations?**

It was once common for state fish and game agencies to propagate and distribute pheasants and quail for stocking, but this practice largely ceased after research clearly revealed it was ineffective. Pen-raised birds simply do not have the skills necessary to survive in the wild.

Since the 1970s, numerous studies have documented survival of pen-reared pheasants and quail using all sorts of propagation and release techniques.

Nest success and chick survival were extremely poor for the few stocked birds that did survive long enough to reproduce. This was true even when the birds were released into ideal habitat.

The most recent stocking technique is a device known as a "surrogator," which is essentially a portable brooder house than can be placed at the intended release site. This method is relatively new, but the two scientific studies that have evaluated this approach found no improvement over previously-tested stocking techniques. In 2005, the Georgia Department of Natural resources released 1,641 wing-tagged quail chicks using surrogators on a plantation considered to have ideal quail habitat. During the fall following release, less than 1 percent of the quail harvested on the plantation were produced in surrogators. The researchers estimated the cost for each surrogated bird harvested to be \$74.53, not including the cost of the surrogators. A separate study conducted by the Nebraska Game and Parks Commission has recently found similar poor results with surrogated pheasant chicks.

The only proven method of increasing populations is to create and maintain suitable habitat. Spending money on habitat improvements is much more cost effective and wild birds will re-colonize the area naturally. Upland game populations are sufficiently distributed across Kansas for this to occur when suitable habitat is provided.

#### **6. KDWP should reduce the pheasant bag so that we will have more birds in future years.**

Pheasants are minimally affected by hunting because only males can be legally harvested. A single male pheasant can mate with many hens each season. A spring sex ratio of one rooster per 10 hens is sufficient for all hens to be bred and initiate nests. In Kansas, at least three or four roosters are typically available per 10 hens each spring. Changes in pheasant numbers from one year to the next are mostly dependent on the weather. Long-term population changes are driven by land use and its effect on the quantity and quality of habitat available for nesting and brood rearing. Pheasants are short-lived birds and cannot be stockpiled by limiting hunting or imposing more restrictive seasons or bag limits.

#### **7. Hunting has decimated prairie chicken populations in eastern Kansas.**

Researchers have found that hunter harvest in Kansas accounts for less than 2 percent of prairie chicken mortality. Prairie chicken populations in the eastern part of the state have declined over the last 25 years for two primary reasons: too much prairie burning or too little. Periodic burning on a two- to four-year rotation provides good habitat for grassland wildlife. Unfortunately, much of the rangeland in eastern Kansas is either burned annually or seldom burned at all.

Prescribed fires in some parts of eastern Kansas have been rare over the last couple of decades, and as a result, these landscapes have been invaded by trees. Prairie chickens require large expanses of open grassland to survive and reproduce. When trees become scattered across the landscape, the habitat becomes less suitable for prairie chickens. Prairie chickens tend to avoid areas with tall structures (natural or man-made) probably to avoid predation.

Prairie chickens require 18 to 20 inches of the previous year's growth (residual cover) to adequately conceal nests. Annual burning in April across most of the Flint Hills removes that residual cover. It is true that annual burning has been common in parts of the Flint Hills for more than half a century, even during times when prairie chickens were abundant. But prior to the 1980s, those fires were patchy, leaving some nesting cover for chickens. Today, the burns are much more thorough, leaving vast landscapes completely blackened. Additionally, most producers have switched from traditional season-long stocking to intensive early stocking. Intensive early stocking uses double the season-long stocking rate for a short duration, immediately following a spring burn. This approach keeps new growth short, only allowing re-growth after livestock are removed in July. This minimizes cover availability in May and June, when prairie chickens are attempting to nest and rear young. Prairie chicken nesting success in a landscape dominated by annual burning and intensive early stocking is generally less than 10 percent. Before this system was widely adopted, nest success exceeded 40 percent in the Flint Hills.

Fragmentation of the prairie is another factor that has led to declining prairie chicken populations. Large expanses of unbroken grasslands are required to sustain a core population of prairie chickens. Whenever a tract of prairie becomes heavily fragmented by agriculture, roads, power lines, buildings, oil and gas infrastructure, or other man-made features, it becomes less suitable for prairie chickens. If too much fragmentation occurs, the area will become completely unusable by prairie chickens. Fragmentation of prairie chicken habitat has occurred throughout Kansas, but it has been most prevalent in the eastern part of the state.

#### **8. Why doesn't KDWP provide winter food for game birds during harsh winters?**

When ice or deep snow remains on the ground for an extended period of time, some of our game bird populations suffer significant mortality. Quail are by far the most susceptible to severe winter weather. Pheasants and prairie-chickens are much heartier, but occasionally severe winters harm these species too. Turkeys are least susceptible because their strong legs allow them to scratch through deep snow and ice to locate food. In Kansas, severe winter weather seldom lasts long enough to have a negative impact on turkeys.

To have a noticeable effect on spring breeding populations, KDWP would have to provide food to a large proportion of the affected population. The agency doesn't have the funding or manpower to accomplish a task of that scale. Winter feeding is not an effective use of sportsmen's dollars or staff time, which can be better spent on habitat projects that have more lasting benefits. Fortunately game birds are prolific and can recover from winter losses relatively quickly. It is not uncommon for some game bird populations to increase over 200 percent from spring to fall when habitat and weather conditions are favorable.

#### **9. The agency regulates deer numbers through hunter harvest. Why can't they do the same thing for upland game birds?**

The biological factors driving deer and gamebird populations are quite different. Deer are relatively long-lived and have a lower reproductive potential compared to upland gamebirds (pheasant, quail, prairie chickens, etc.). This difference makes survival of adult animals much more important to the growth of a deer population. Hunting greatly impacts natural survival of adult deer because a high percentage of the harvested animals would otherwise survive to reproduce. Thus, it is possible to regulate the size of a deer population by adjusting the number of animals that are taken by hunters.

Hunter harvest has minimal impact on upland gamebird populations because a high percentage of the harvested animals would have succumbed to natural mortality even in the absence of hunting. The primary force influencing the growth of upland game populations is productivity. Upland gamebirds typically lay clutches with more than 10 eggs and renege if necessary. Productivity of upland gamebirds is highly variable and more affected by habitat and weather than productivity of deer.

Hunter harvest poses virtually no risk to a pheasant population because only males can be legally harvested. There is a slightly greater risk for harvest to influence populations of prairie chickens and quail because females can be harvested. The time of year when most harvest occurs determines the severity of that risk. The likelihood that a hen will survive until the breeding season becomes greater as fall turns into winter. Thus, late-season harvest of females has somewhat more potential to reduce the number of breeding hens than early-season harvest. In Kansas, the majority of the harvest occurs early in the season for both these species.

When considering the impact of hunter harvest on prairie chicken and quail populations it is also important to recognize that 1) hunting activity is not evenly distributed across the landscape and 2) gamebird populations in Kansas are seldom geographically isolated from other birds. Even if late-season harvest is heavy in one place, there is generally another population of birds nearby that receives little or no hunting pressure. Natural dispersal from these areas assures that overexploited populations get replenished, so long as habitat and weather conditions are suitable for productivity.

#### **10. Why are there no pheasants in southeast Kansas?**

The most obvious factor is inadequate habitat caused by too many trees, too little high-quality nesting habitat or brood-rearing habitat, intensive agriculture, and urbanization. These problems have worsened over the last 30 years in southeast Kansas and have also been detrimental to pheasants in other parts of the country. However, even before these problems intensified in southeast Kansas, pheasants were mostly absent. Some areas in southeast Kansas and other places outside the pheasant range seem to have suitable habitat, so habitat inadequacy probably isn't the sole explanation.

Soil-mineral deficiency is another factor that may influence pheasant distribution. Calcium, which is important for eggshell development and adult survival, may be deficient in non-range areas. Soils in the central, northeast, and western portions of the state are naturally high in calcium. Southeast Kansas soils are naturally low in calcium. While the exact mechanism by which this may limit pheasant distribution is complicated and not entirely clear, mineral deficiencies may play a role in explaining why pheasants are absent.

Another possibility is higher spring temperatures and humidity. Research has shown that egg hatchability declines with increasing temperature and humidity. When the temperature is held at 85 degrees and humidity at 80 percent, hatchability drops to around 40 percent. Southeast Kansas certainly has much higher springtime temperatures and humidity than in parts of the state where pheasants are common.

It is likely that habitat inadequacies, mineral deficiencies, and weather all combine to prevent pheasants from establishing in southeast Kansas. It is also possible that factors we have not yet identified might play a role.

#### **11. I've seen a lot of different-sized pheasant chicks this year so the hens must have produced multiple broods.**

It is normal for pheasant hatching to extend from May through July. Most pheasant hens in Kansas start laying eggs in late April or early May. But many of these initial nests are destroyed by predators or farming operations. Fortunately, pheasants are persistent re-nesters and most hens will try again if their initial clutch is lost. Many will continue trying if a second or even a third nesting attempt fails, but re-nesting mostly ends by the beginning of July because hens are physically exhausted. This pattern of re-nesting after failed attempts is what produces different-aged chicks by late summer.

Unlike bobwhites, which occasionally incubate and hatch more than one nest when conditions are favorable, pheasant hens seldom re-nest after they have produced a brood. Rare exceptions to this occur if a hen's chicks are killed within a day or two of hatching. Either way, a pheasant hen never produces more than one brood per summer, and many don't succeed at all. It's common to see young of different ages with one or more hens, but this is a result of different broods mixing together or lost chicks joining up with another brood.

