

A man wearing a brown hat and a green jacket is crouching in a field of dry brush. He is holding a black dog. Two pheasants are perched on a branch in the foreground. A rifle is leaning against the brush on the left. The background shows a field with trees under a blue sky.

THE Upland Birds

KANSAS
FISH
& GAME
MAGAZINE

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Photography by Ken Stiebben

The Ringneck

The ringneck pheasant, now an accepted part of the Kansas wildlife scene, is really a naturalized foreigner. His scientific name, *Phasianus colchicus*, is a description of some of his original territory, the Phasis River in the province of Colchis in western Asia where early Greeks first met him. Introductions of pheasants to North America occurred as early as 1733 when a few pairs were brought to Governor's Island in New York, but early attempts at establishing the species in the eastern United States were unsuccessful. It wasn't until the pheasant was brought to the Willamette Valley in Oregon that he found a place to his liking in the New World. Judge O.N. Denny, Consul General in Shanghai, sent thirty-eight ringnecks to his brother in the Willamette in 1881. They prospered, and it wasn't long before birds from Oregon were being transplanted for release in other parts of the country.

The Fish and Game Commission brought 1500 ringnecks to Kansas in 1905 and released them in 84 counties. These birds, along with a few others that had already been released by interested hunters and game breeders, took to the central plains immediately. By 1939, there were enough pheasants in the western two-thirds of Kansas to justify a hunting season. Twenty-one counties in the northwest and northcentral parts of the state were opened in that first year.

Today, the ringneck thrives in most of the state except the southeast where he is either absent or scarce. Many explanations for this scarcity have been proposed, but none of them completely accounts for it. A combination of several factors seems to limit the survival of southeast pheasants. Soils in the region are not too fertile and tend to be acid and poorly drained. Heavy rainfall—usually more than thirty-five inches a year—along with high temperatures and humidity seem to be tough on young of the year and handicap ringneck populations.

Across most of Kansas, winter flocks of pheasant begin to break up in late February and early March. Roosters establish territories with rather definite boundaries which they announce to other males with a strong crow and a ritual flap of the wings. Crowing also



attracts females. When a hen enters a rooster's territory, he struts around her, tail feathers spread, the wing nearest the hen trailing low. His head is low with ear tufts and neck feathers flared out. His wattles swell and turn bright red. The hen accepts these demonstrations coolly at first but eventually succumbs to the cock's courtship.

The rooster continues his displays until he has established a harem of three to ten hens. This polygamy is the reason behind the cock-only regulation during the season—by the time the shooting stops, the sex ratio in the population is approaching one rooster to every seven to ten hens, the ideal ratio for efficient breeding.

After mating in late April or early May the hen selects a nest site and builds. She scratches out a depression and lines it with grass, leaves, and her own down. The nest also has a lid of grass and feathers which keeps the eggs warm and camouflaged. Alfalfa, wheat, and uncut roadsides are preferred sites for nests. Of the three types, wheat is probably the most productive because clutches usually hatch out before



harvest begins. Alfalfa, on the other hand, can be a death trap for nesting ringnecks. The first June cutting almost always catches hens well into serious incubation. Permanent wild vegetation along roadsides attracts many hen pheasants and provides excellent cover; unfortunately, such narrow strips of prime habitat are magnets for predators as well, so losses of hens and eggs are often high.

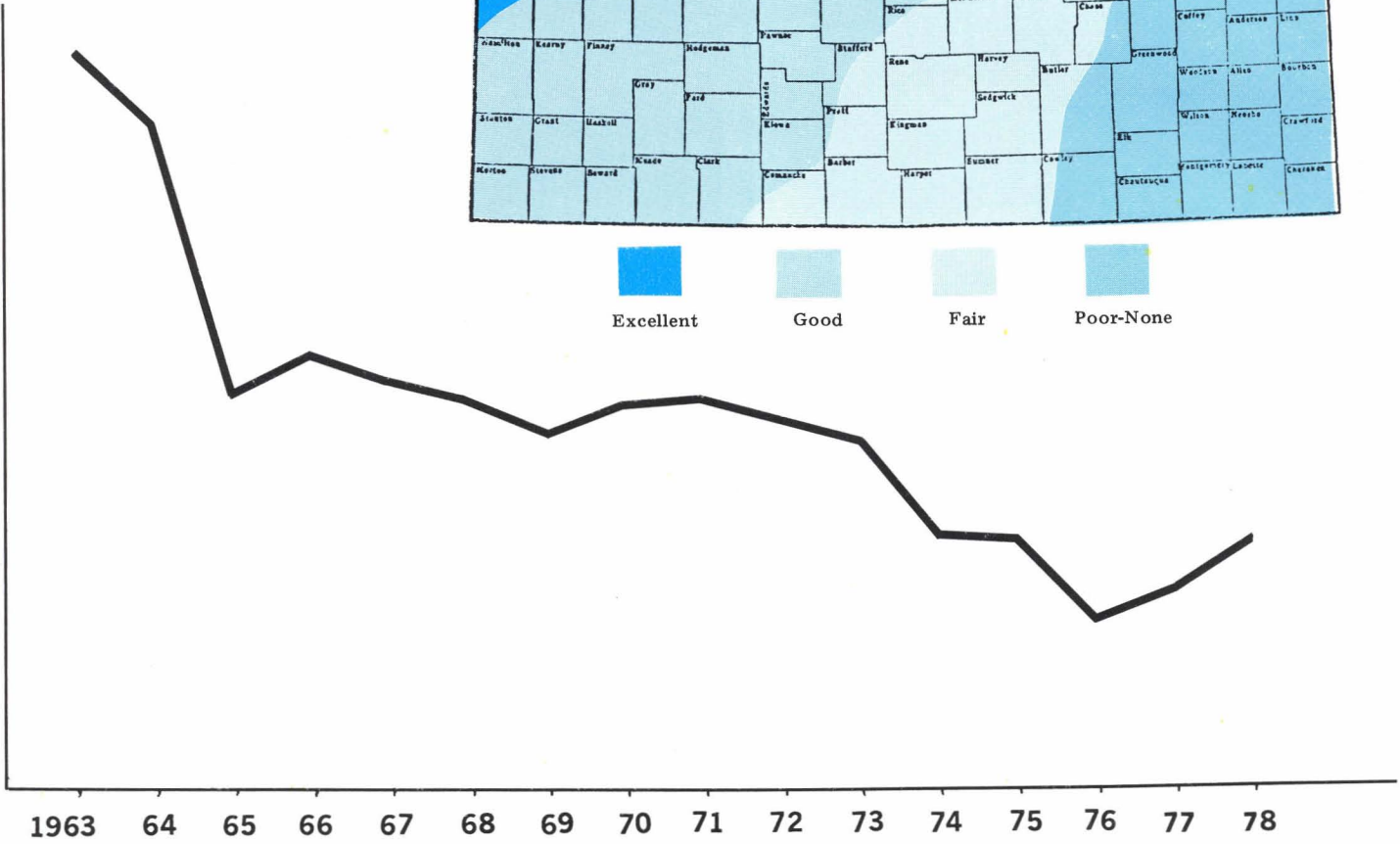
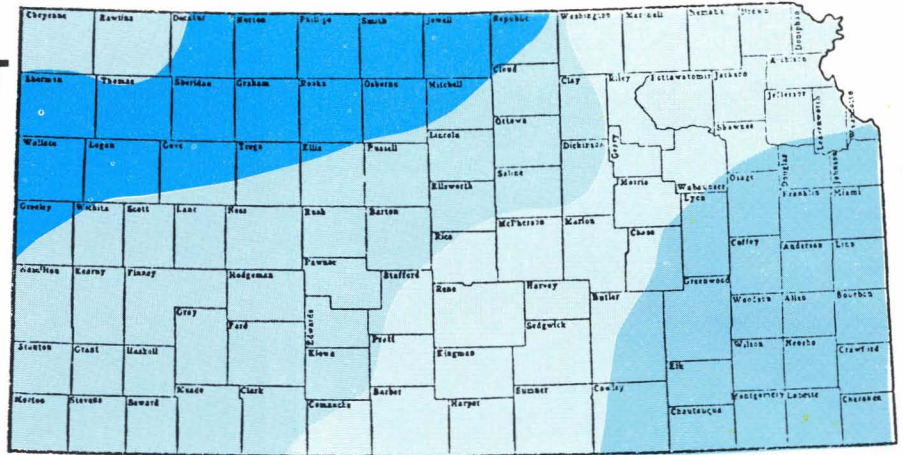
The hen usually lays an egg a day, spending no more time at the nest than necessary until the clutch is complete. An average clutch will contain ten to twelve eggs; single hens have been known to lay as many as twenty. If the nest is disturbed during egg laying, the hen may abandon it, but, as incubation progresses, she becomes more attached to the site and is less likely to give it up. Occasionally, several hens will drop eggs in the same place. These “dump nests” may contain twenty to thirty eggs which are usually picked up by predators. This random egg laying is most common early in the breeding season and is discontinued as the females get serious about establishing their nests.

The hen completes the clutch before she begins

incubation so that all the eggs begin developing at the same time and hatch within a few hours of each other. Once she starts, she stays with the nest almost continuously until the chicks hatch out about twenty-three days after incubation begins. The peak of the Kansas hatch occurs around the second week in June and, by July 1, more than seventy percent of all broods have left the nest. Like many other ground nesters, the hen pheasant is persistent—if something happens to an existing nest, she will keep trying most of the summer. In spite of renests, however, only about fifty percent of the hens will bring off broods.

After the chicks hatch and dry, the hen leads them away from the nest. Both chicks and hen feed heavily on insects in the first weeks after hatching; the hen, to replace protein lost in egg laying and later molt, the chicks, to supply protein for growth. Development of the young pheasants is explosive. At two weeks of age, they can fly short distances. They're fully grown in eighteen weeks. It isn't uncommon to see broods with chicks of different sizes. Broods will mingle, and hens sometimes adopt chicks that have been separated from

KANSAS PHEASANT NUMBERS



Two vital ingredients for a good pheasant population—a healthy hen and good cover.



their own mothers. These mixed groups of young birds are never the result of one hen bringing off two clutches. It takes three to four months to bring one brood from egg to independence; one hen just doesn't have time in a summer to handle more than one set of chicks.

Roosters maintain their territories while the hens nest, occasionally shifting their boundaries to include the nest of an errant female. The cocks have even been known to help with incubation, and they usually keep an eye on the broods under their jurisdiction through early summer. In late July and through the shank of August during their molt, they're hard to find, preferring to stay hidden in heavy cover until they replace worn feathers.

As September approaches, the broods break up, and the scattered birds form small flocks of hens and roosters. These persist until the first snow and sharp weather when the sexes tend to segregate into larger flocks. Hens are usually found in larger groups because they lack the territorial drive of the males and because there are more hens than cocks after the hunting season. These late season groups often contain well over 200 birds and can do a lot to liven up a long December pheasant hunt.

About seventy percent of Kansas hunting license buyers go after the ringneck in November. Between

1962 and 1977, an average of 140,000 pheasant hunters took 577,000 ringnecks a year. The Kansas pheasant population supports about 715,000 mandays of hunting annually. About half of the harvest occurs in the western third of the state; thirty-five percent of the birds are killed in the central third, and fifteen percent are taken in the northeast corner.

Commission biologists follow changes in pheasant population with three surveys. Rural mail carriers make a five-day count in July, October, January, and April; and Fish and Game personnel count broods in July and August. A questionnaire mailed to a sample of license buyers yields information on hunter success and effort. Over the last twenty years, these surveys have shown a long decline in pheasant numbers. Populations fluctuate from year to year depending on weather and habitat conditions during the winter and spring, but the long-term trend has shown that, as habitat disappears, so does the ringneck.

Pheasants are hardy birds, well adapted to the rigors of winter on the Great Plains. They can dig through a foot or two of snow to reach food, and, if they can't find anything to eat, they can live on stored fat for several weeks. But as hardy as they are, they can't survive a Kansas blizzard without good cover. A pheasant forced to face the blast of a winter storm will face into the wind to keep the snow from driving under his feathers. In this position, he may have trouble keeping ice out of his nasal openings, and when he opens his mouth to breathe, even his beak will plug with wind-driven snow, suffocating him. If he turns slightly to get a breath, snow accumulates under his feathers, melts, and finally refreezes as skin temperature drops. A shelterbelt or plum thicket, a brushy draw grown up to Russian thistle and sunflower, or a cattail and smartweed marsh are modest shelters but all the pheasant needs to make it through one of these blue Northers. If there's some corn or milo stubble nearby, he's set for the winter.

Loss of Soil Bank lands in the late Fifties and early Sixties had a definite effect on Kansas pheasants. Odd corners of cover have disappeared year by year to make way for center pivot irrigators and larger equipment. Today, fields don't run from fence to fence but from section road to section road. Fall plowing and discing of harvested wheat fields have eliminated even the shelter of winter stubble. Road ditches have been plowed, mowed, or burned. Insect sprays have eliminated vital summer forage for broods.

The pheasant has adapted well to the agricultural era, but there is a limit to the loss of food and cover he can survive. In Kansas and other midwest states, that limit has been reached, and the pheasant population has responded accordingly. Until the trend in habitat loss is reversed, we can expect the population to decline to even lower levels than those we have seen in the last ten years.

Too many times, we blame pheasant losses on longer hunting seasons or lack of restocking programs and call loudly for shorter or closed seasons and the initiation of release programs. However, the fact remains that where there are no places for pheasants to live we



can't expect to see pheasants.

The burden of increasing pheasant populations should not be entirely on the shoulders of landowners, but rather on the sportsmen and others who gain some enjoyment from the pheasant resource. We must actively assist (physically and financially) the landowner

in providing necessary food and cover.

The pheasant is a tough bird that will respond to an increase in habitat. However, he is at the mercy of man and man's activities.

We know how to support him. All we have to do is make up our minds to try.

Greater Prairie Chicken

The abundance and distribution of the greater prairie chicken in Kansas before the territory was settled by white man can only be inferred from the accounts of early explorers. It appears that the greater prairie chicken did not occur farther west than the middle of Kansas, and that the bird did not occur in impressively large numbers. There are very few references concerning the species in early journals of explorers and traders.

The elimination of the buffalo, a nomadic grazer, changed the structure and composition of grassland vegetation and probably further reduced greater chicken populations.

During the last half of the nineteenth century, farmers planting small grains and ranchers reestablishing grazing on the grasslands dramatically boosted prairie chicken numbers. The expanding chicken population drew attention of market and sport hunters and became a staple food source for local people.

By 1900, intensified agricultural practices in the eastern part of the state had caused prairie chicken numbers to dwindle. At the same time, these birds began to occupy previously unused range in northwestern Kansas. Since the mid-Twenties, the population in northwestern Kansas has for the most part disappeared. The nucleus of the prairie chicken population has been, and still is, the Flint Hills in east central Kansas. The population east of the Flint Hills has continually declined, but chicken numbers have increased in the grasslands of north central Kansas. In Kansas, lack of extensive stands of native tall and mid-grass prairie and overuse of the grass that remains seem to be the factors stopping greater prairie chicken expansion.

Prairie chickens begin an elaborate courtship display in late January or February that peaks in late March and early April. Males will continue to come to these booming grounds through May and into June. In addition, there is a mock-courtship period in the fall which extends from late September into December. The booming grounds are used morning and evening throughout the peak of this display period.

Most booming grounds are located on open ridges, knolls, or slight rises. They are generally in areas of sparse, short vegetation. Most booming grounds cover

half an acre or more, with an average of nine to twelve males per ground. Grounds are used year after year, and records show that some have been used for forty years or more.

The same males come to the ground every day about half an hour before sunrise and display for two hours. Early in the spring, all their energies are focused on claiming a small portion of the booming ground by intimidating other males with vocal and visual displays. Later in the spring, activities are expanded not only to defending territories but courting females as they arrive on the ground. In the most pronounced booming ground display, the male erects his earlike pinnae like a war bonnet and inflates his air sacs until they look like small oranges. With wings drooping and tail spread to its full extent, he produces a resonant booming sound, much like the sound made by blowing across the open neck of a bottle. On a calm day, the sound can be heard a mile or more away.

Evening displays are similar but less intense and begin about an hour and a half before sunset.

Nesting begins in April. Nests are quite flimsy, built in a slight depression scratched out by the hen and lined with dead vegetation. Vegetation around the nest is generally quite thick and arches over the nest, concealing it from above. Every April, the Flint Hills pastures are burned. The heaviest vegetation is good fuel for burning but also is the best nesting cover. Nest success and production of young may depend on the extent of burning.

An average of ten to twelve olive or tan eggs flecked with brown comprise the clutch. It takes about fourteen days for a hen to lay twelve eggs and about twenty-three days of incubation to hatch them. Hatching time from the first pipping to emergence of the last chick varies but generally takes from six to ten hours. Hatching peaks in the latter part of May into the first of June. If the first nest is destroyed, the hen will usually build another nest and try again.

Prairie chicken chicks are highly precocial. Within a few hours after all the eggs have hatched, the chicks, accompanied by the hen, leave the nest. Newly hatched young are covered with greenish-yellow down spotted with black. In several days, the brood leaves the vicinity of the nest and moves to areas of mixed



vegetation or disturbed ground. Such areas of sparse ground cover are easy for the chicks to walk through and provide cover for protection from the summer heat. Habitat for chicks is better in burned pastures because accumulated vegetation from previous year's growth is gone and the mobile chick will have an easier time getting around. During the summer, insects make up eighty-five percent of both young and adult diets.

Weather during the first month of the young chicks' lives is important to their survival. Heavy rains and cool temperatures may drown them or reduce their resistance to disease.

When the chicks are ten to twelve weeks old, the adult female leaves them to complete her molt. The young at this time are good fliers and highly mobile.

They will meet other broods and in some years will start forming flocks as early as August.

The adult males move off into small bachelor groups after the booming ground activities to go through their annual molt. By September, the old cocks and young males begin to congregate on booming grounds again.

The displays of the male prairie chicken as the fall booming begins are considerably less intense than the spring activities. Not all of the spring grounds are used in the fall, so the number of birds on a single occupied ground in the fall is generally two to three times as great as in the spring.

Male prairie chickens begin to appear on the booming grounds for their fall display activities in the last two weeks of September. The largest number of birds



on the ground and the peak of the activity occur during the first three weeks in October. After the first of November, the number of birds visiting the grounds declines, but some birds continue to visit the ground daily until periods of severe weather interrupt display activities and ground visits. During December and January, prairie chickens have been observed on display grounds, but not at regular intervals.

Booming grounds provide ready-made flocks of male prairie chickens. During the fall and winter, prairie chicken flocks are seventy-five percent males. The majority of females are in small groups of two to six birds. After booming activities, the male flocks will fly to the feeding area, preferably a nearby grainfield or where wild weed seeds are plentiful. The females will generally go to the same feeding areas but go earlier in the morning while males are still on display grounds. Both sexes feed again in the late afternoon and evening. The birds will loaf during midday in nearby pastures. During severe weather or in late winter, feeding may continue throughout the day.

In recent years, the hunting seasons for greater chickens have extended from early November to mid-December when the birds are accessible while going to and from feeding areas. A hunter will set up a blind in or on the edge of a grain field used by feeding flocks of prairie chickens. When the birds pass over on their way

to feed, they are shot. On the average, only one out of four hunters bags a bird.

There are three major land-use practices that affect prairie chicken populations: (1) conversion of land-use, (2) grazing and (3) burning.

A never-ending threat to the prairie chicken population east and west of the Flint Hills is the conversion of grasslands to intensified agricultural use. Agriculture's initial surge in the late 1800's proved beneficial to prairie chickens, but as the ratio of cropland to grassland increased, they were eliminated from much of their original range. The development of modern agricultural techniques makes possible the tilling of previously unavailable lands and encourages further encroachment of native grassland. Left unchecked, this could lead to very marginal prairie chicken ranges outside of the Flint Hills.

A second major threat to the prairie chicken in Kansas is over-grazing. Livestock abuse of grasslands is a major contributing factor to low numbers of prairie chickens in local areas. In all wildlife management on private land, it should be noted that the primary concern of the ranches is producing cattle for a living, and not raising prairie chickens. However, good range management produces more beef *and* more prairie chickens.

In the Flint Hills grazing is most common during the



Jerry Horak

summer growing season. To prevent deterioration of pastures, about half of the year's growth should be left at the end of the growing season. This leaves enough top growth for the plant to put by some reserves for the winter. Prairie chickens use every type of prairie habitat. Thus, uneven grazing is most desirable for chicken management. Recommended stocking rates in large pastures will provide over-used areas such as salt licks (ideal for booming grounds); moderately grazed areas for loafing, roosting and brood rearing sites; and lightly grazed areas for nesting.

Annual burning of the pastureland has persisted since the Flint Hills settlers discovered that steers selected forage and gained more rapidly on burned rather than unburned range. But, over the years, annual burning reduces herbage yield and eventually leads to overgrazing. Occasional burning is an important ecological factor for maintaining prairies, without which prairies will soon deteriorate. A certain amount of mulch is required for best overall performance of the prairie; the dead matter serves as a source of food and shelter for many types of beneficial soil organisms. It

also protects the soil against surface run-off and evaporation. On the other hand, accumulation of too much mulch depresses prairie herbage yield and reduces the number of plant species. Burning every three years removes this excess mulch, and, in addition, burning at the proper time will control brush.

Occasional burning is necessary to maintain prairie needed for prairie chicken populations. Although previous year's vegetation is needed for nest building and hen concealment, excessive mulch will make it nearly impossible for young chicks to move freely in search of food.

Burning the entire prairie every three years would have a considerable adverse effect on the prairie chicken population for that year because of the complete destruction of nesting cover. Rotation burning, that is burning approximately one-third of the prairie pasture each year, would accomplish two important ends: removal of excessive mulch for brood mobility and control of brush, and preservation of enough mulch each year for nesting cover.

Lesser Prairie Chicken



Lesser prairie chickens were probably found throughout southwestern Kansas before settlement. Early naturalists failed to differentiate between the lesser and the greater prairie chicken, but from sketchy information, biologists assume that the lesser prairie chicken's original range probably extended as far north as the Smoky Hill River and east to Harper and Kingman Counties. The range of the two species overlapped, and both could be found in some areas.

Early market hunting and later illegal hunting took great numbers of the lesser prairie chicken, but nothing indicates any great reduction in their numbers before the drought of the 1930's. During this drought, there was little water, food, or cover available. There were reports of chickens found dead in large numbers, their throat and nostrils clogged with dust. Since the Dust Bowl Days, the land has never returned to its original condition, and the population of lesser prairie chickens has not recovered its former size. Land-use changes have confined the birds to sandsage prairie and, to a lesser extent, the sand prairies. Today, the lesser prairie chicken is found in limited areas in southwest Kansas south of the Arkansas River and west of the Pratt-Barber county lines.

The lesser prairie chicken is slightly smaller than its cousin, the greater prairie chicken. The coloration of the two species is very similar with the lesser prairie

chicken being a little lighter in color. During spring courtship displays, the air sac and eyebrows of the male lesser chicken are rose colored, in contrast to the orange air sac and eyebrows of the greater chicken.

Perhaps the most obvious difference between the two is the sound they make during courtship performances. The voice of the lesser chicken resembles a turkey call or, at times, a series of air bubbles emerging from water, totally unlike the low-pitched booming of the greater chicken. Thus the term "gobbling ground" is used to describe the lesser chicken's display area in contrast to the "booming ground" of the greater prairie chicken. Courtship behavior of both species is very similar.

Nesting of the lesser chickens generally starts in late April. Nests are located on the ground in the open prairies. They are placed in a hollow, scratched out of the sand, about four inches deep and eight inches in diameter, and are usually lined with dead vegetation. A hen feels more secure when vegetation is dense enough to conceal her with an overhead cover of sand sage, sand plum, or some other small bushy plant. She lays an average of twelve eggs in about fourteen days and incubates them for about twenty-three days before they hatch. The young are precocious and leave the nest within hours after hatching.

Broods escape from the hot Kansas sun by spending

much of their day in the shade of shrubs and weeds. While moving through this cover, the birds feed on insects which make up more than eighty-five percent of their diet. When the young are eight to ten weeks old, the adult hen leaves them to go through her annual molt. The broods start associating with each other, forming early fall flocks. By mid-September, the adult males have completed their annual molt and with the young males start visiting the fall gobbling grounds. The fall display isn't as intense as the spring dance but does occur daily from mid-September until winter weather discourages it.

The fall and winter flocks of lesser prairie chickens feed in grain fields both morning and evening. At midday, they loaf in nearby pastures.

There are two types of habitat used by lesser prairie chickens in Kansas: the sand prairie and the sandsage prairie.

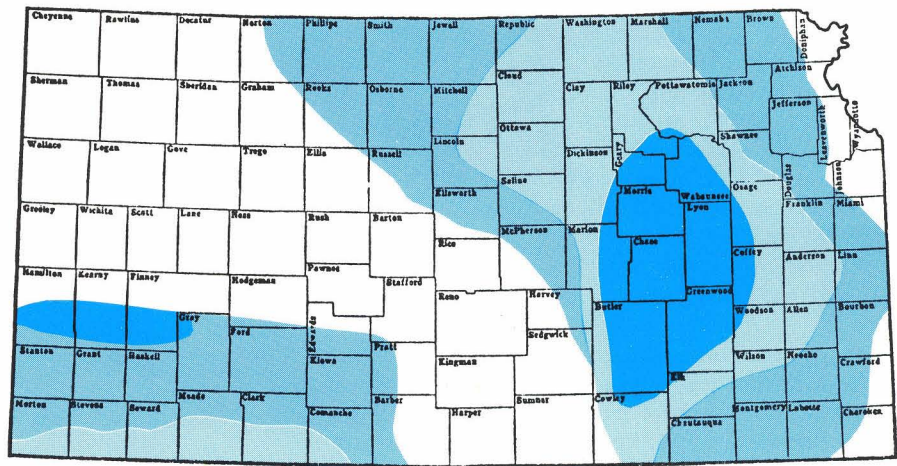
The sand prairies make up a large percent of lands in southwest Kansas. Originally, this area was mid-to-short grass prairie. The lesser prairie chicken breeds best in areas where sixty to eighty percent of the range

is in native grassland. Since the Thirties, the farmers have plowed up large areas of the native grass to plant wheat and sorghum, and much of the remaining rangeland is overgrazed. Only scattered flocks of lesser prairie chickens remain in these areas. The prairie chicken doesn't ask for much. If the rancher took better care of his land, the chicken would thrive and, in the long run, the ranches would also show greater profits.

The highest densities of lesser prairie chickens occur in the sandsage prairies south of the Arkansas River. Since the Sixties, center-pivot irrigation systems have cut into these choice sandsage prairies—at a rate of six percent in the last two years. At this pace, this prime area will be gone in thirty years or less. There is a threshold acreage of grassland below which the future of lesser chickens is in doubt, and that threshold is rapidly being approached in the sandsage country south of the Arkansas River near Garden City.

Both types of the sand country are in danger of being plowed or overused in some way, and the lesser chicken is in danger as a result.

GREATER AND LESSER PRAIRIE CHICKENS IN KANSAS



Lesser chicken

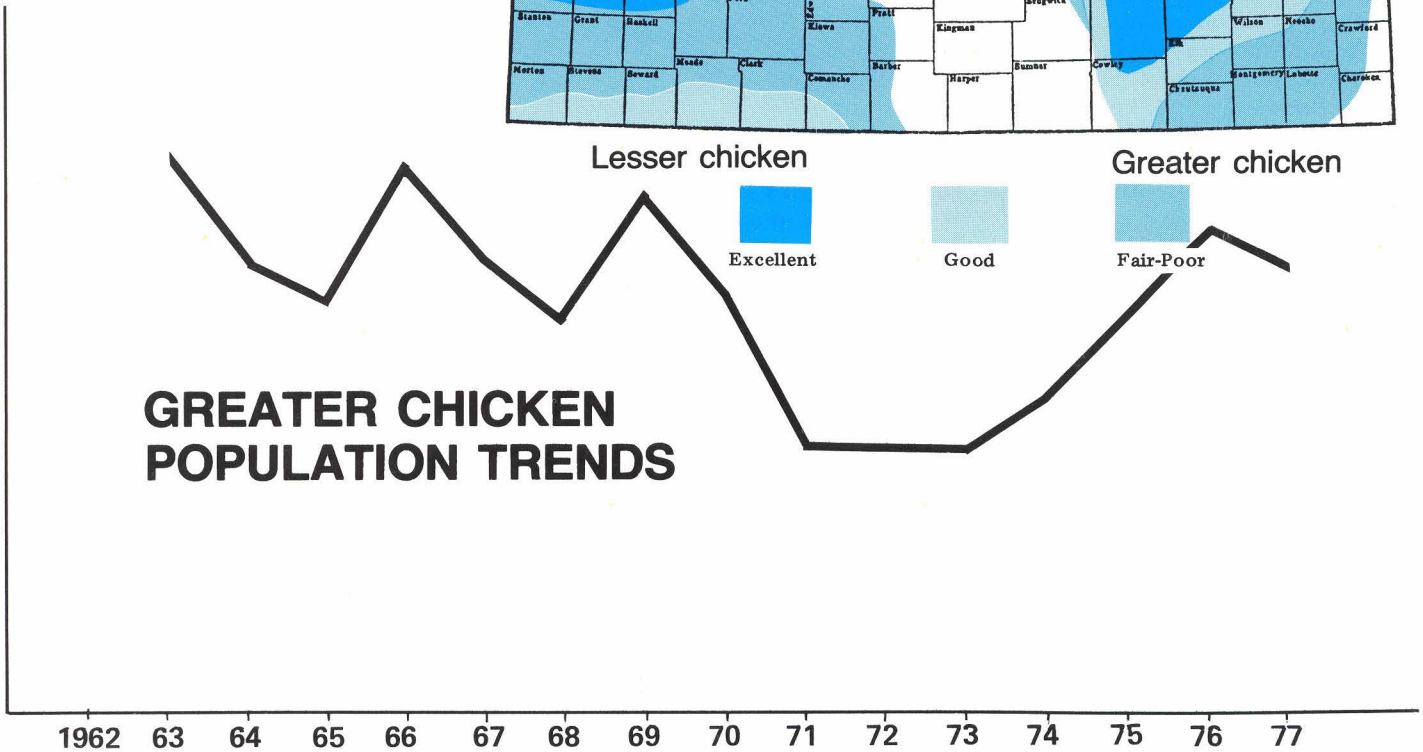
Greater chicken

Excellent

Good

Fair-Poor

GREATER CHICKEN POPULATION TRENDS



Bobwhite Quail



The bobwhite has been in Kansas for quite a while. C.W. Hibbard, a Kansas fossil expert, was poking around in a Meade County rock outcrop in 1937 when he stumbled on the remains of an extinct quail. The fossilized bones dated back to the Pliocene, a million years or so before the first birdy pointer and quail-happy wingshooter came to the plains. A later paleontologist, Alexander Wetmore, named the ancient Meade County quail *Colinus hibbardi* in honor of its discoverer. The modern bobwhite probably counts this long forgotten bird among his direct ancestors.

The Kansas grass that whitemen first traveled into wasn't the best bobwhite cover. On the pristine prairie, the bob was probably found only along brushy creek bottoms and in the mixed brush and grass east of the Flint Hills. When the plow first broke Kansas sod, all that changed. The prairie was converted into a patchwork of fields, fencerows, road ditches, and grass that suited the bobwhite perfectly. He responded by expanding his range to the west and becoming much

more common in his original Kansas strongholds.

The bobwhite has been reported in every county in Kansas, but the species reaches its greatest density in the eastern and central parts of the state. Although there are a few bobwhite in the western third of Kansas, they have a tough time there, hanging on along brushy watercourses for a few years, then nearly disappearing in a year of severe drought or harsh winter storms. Such extreme fluctuations are common in populations that exist at the outposts of a species' range.

Spring in bobwhite country brings with it the familiar call "ah, bobwhite!"—the announcement of a new biological year. Winter coveys break up as the weather softens, usually in April but sometimes as early as March or as late as May. Some birds find a mate before they leave the covey; others prospect a little longer before making up their minds.

The cock whistles early in the season to attract eligible females and later on to declare the pair's territory. In normal years, whistling reaches a peak in

mid-June when most nests are hatching, but unmated males will continue to call well into September. If bad weather forces a large part of the population to renest, the cock's whistle will remain a common sound through most of the summer.

The bobwhite is monogamous, and the cock takes an active interest in nest building, egg laying, and brood rearing. Most pairs prefer open cover with bare ground underneath. Quail like cover they can walk through and usually favor herbaceous vegetation less than twenty inches high for nesting. Sparse strips of weeds next to disced ground, roadways, or mowed hay fields and lawns are attractive nesting coverts. Most nests are within fifty feet of open ground.

Controlled burning can be a valuable tool for maintaining good nesting habitat. The best burning program is probably a two or three-year rotation which leaves some well-established weedy cover mixed in with new growth and recently burned ground. It's important to burn early in the spring before the hens have nested. The length of the burning rotation may vary with the vigor of vegetation; the important thing is to provide variety and keep the cover from getting too thick.

The mated pair build their nest on the ground, scratching out a depression and lining it with dead grass and feathers. Overhanging grass often forms a canopy over the nest. The hen ordinarily lays an egg a day, although it isn't unusual for her to skip a day. She deposits the egg quickly, then leaves the nest unattended until the next laying. After laying an egg, she meets her partner nearby. Average clutch size is four-

teen to sixteen but can vary from two to twenty.

The female starts incubation after the last egg is laid. She stays on the nest almost constantly for twenty-three days, leaving only for short feed-and-stretch breaks in morning and the afternoon. The eggs don't begin to develop until they are incubated, so they all hatch at about the same time. Incubation is a risky business. As many as sixty to seventy percent of first nests are lost either to predators or bad weather. Heavy rains can flood out nests, chill eggs, even drown chicks. If the first summer heat wave comes before the hen begins incubation, the sun's heat may start egg development prematurely. The hen will lead these first chicks away from the nest and leave later eggs to spoil. Chicks may have trouble pipping in extremely dry weather. The hen herself may be lost to a predator or farm implement, but if she survives the destruction of her nest, she will try again, three or four times if necessary. Late nests are not as well built as earlier efforts, and clutches are usually smaller. After continued stubborn effort, about fifty percent of the summer's breeding pairs finally bring off broods.

In Kansas, the peak of hatching comes in mid-June. By the first of July, about sixty percent of the year's broods have hatched. Quail are about the size of a bumblebee when they come out of the egg. The female lets them dry and fluff out, then leads them away from the nest to join the male. The young quail chill easily in their first week. If the temperature drops or it rains, the brood takes shelter under the wings of the two adults. The mortality rate among chicks is high during their first four weeks, but, by the time they're six weeks old, they can take care of themselves, relying on their parents mainly for warning of danger. If the female is lost at any time during incubation or brood rearing, the male takes over household duties.

The chicks begin searching and scratching for food almost as soon as they hatch. They may weigh half as much as their parents by the time they're eight weeks old. To support this meteoric growth, they require a diet of almost thirty percent protein and feed almost exclusively on insects to get it. The adults often lead their broods into vegetation that is just recovering from burning; the rapid growth of green vegetation supports a myriad of plant-eating insects, and the ground is clear of accumulated dead vegetation that can hide the bugs from hungry chicks. Fields of row crops are favored brood rearing habitat if there is a little smartweed and foxtail mixed in with the corn or milo.

As early fall approaches, the immature quail wander from the family group and eventually come into contact with other birds. As a result of this shuffle, fall coveys are composed of birds from different broods which helps reduce inbreeding the following spring. The coveys, usually fifteen birds or so, establish a home range and settle in to fatten up and wait for winter. The population at this time of year is almost eighty percent young of the year.

The covey generally feeds during early morning and late afternoon, except in severe weather when the birds are more likely to stay on the roost drawn up in a tight circle, tails in, heads out, to conserve heat. Low tem-



peratures alone aren't usually a threat to quail as long as they have a good food source to supply the calories they need to generate body heat. A combination of low temperature and snow or ice, however, can be disastrous. Quail aren't big enough to dig through to buried food and don't carry enough food reserves to support themselves for more than a few days in extreme cold.

When the first blizzard of January descends, it occurs to many people that the quail need help, and the first thing that comes to mind is putting out feed. Quail use such handouts, but after the feeding program starts, it has to continue regularly through the winter since the birds quickly come to depend on charity. It's probably a good idea to furnish some grit along with the grain. It's also important to realize that predators are always willing to take advantage of a concentration of any prey animals, including quail; don't be surprised if the coveys around a feeding station thin out as the weeks pass, no matter how well-nourished they are.

Winter is a critical time for the bobwhite, but, with the right food and cover, a solid breeding nucleus will survive nearly any winter. The key to the survival of a covey is a few brushy coverts with a weather-resistant canopy and plenty of vegetation near the ground. A nearby grain field or source of wild seeds will probably do as much to pull the birds through as the most

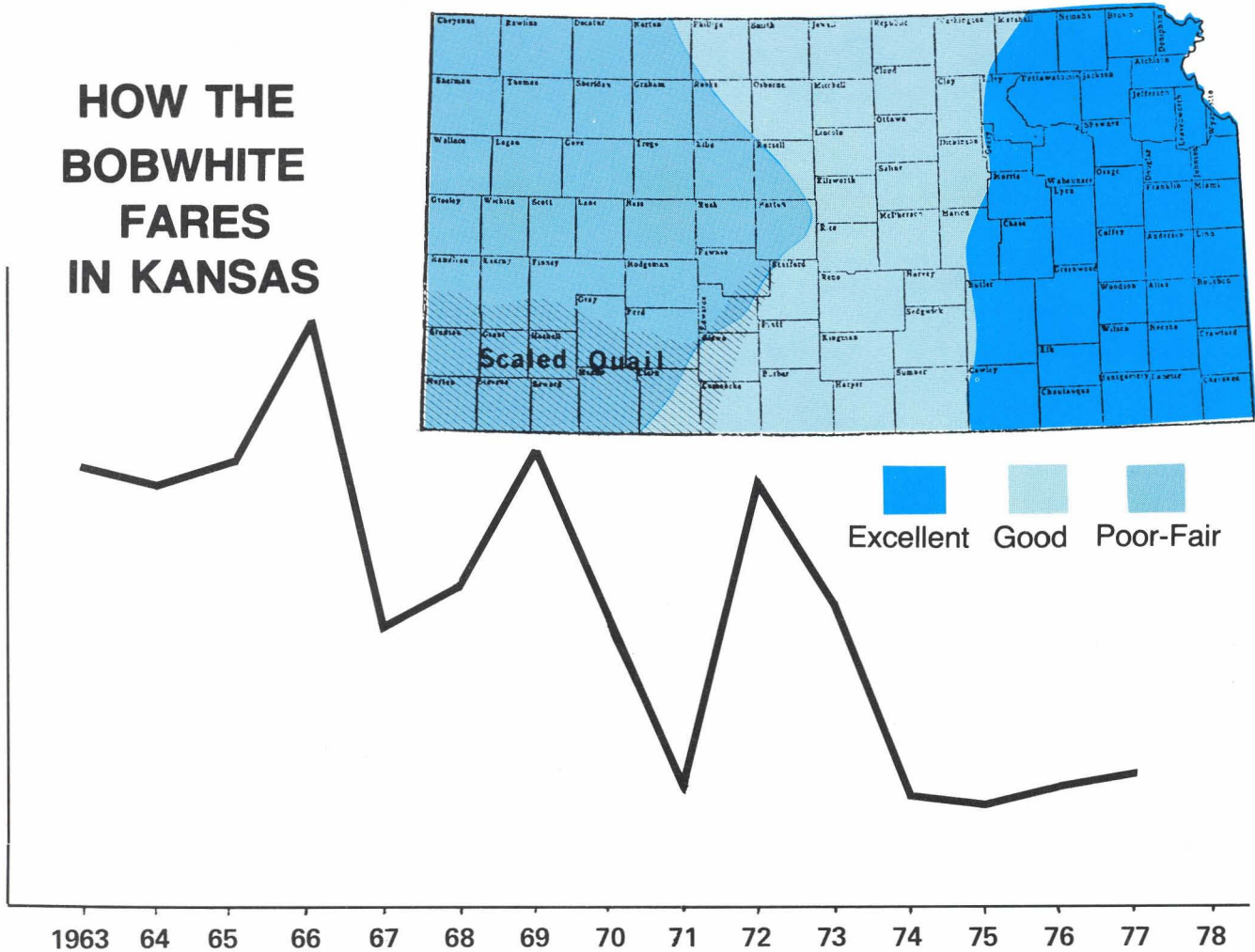
extensive winter feeding program.

With each fall comes the anticipation of hunting seasons, and for nearly three-fourths of all Kansas hunters, that means quail. Over the last fifteen years, an average of 146,000 Kansas hunters have taken 2,500,000 bobwhite a year. In 1966, nearly 4,000,000 quail found their way to the table. Bobwhite hunting is best in eastern Kansas; about two-thirds of the harvest comes from the eastern third of the state, and most of the rest comes from the central third. Kansas bobwhite populations and hunting success fluctuate drastically from year to year. In 1958, for example, the typical hunter averaged nearly five birds a day while, two years later, the average was a little more than two birds a day. A few small birds always show up in the bag during the season. Labeled "Mexican quail" by many hunters, these are actually birds of the year that come from late clutches or renests and haven't yet reached adult size or coloration.

Commission biologists follow quail populations with counts made around the state by rural mail carriers, brood counts in July and August, and surveys of hunters after the season. Bobwhite numbers seem to follow the long-term cycle of wet and dry years across the state. There was a general increase in bobwhite population from 1962 to 1966 followed by a long



HOW THE BOBWHITE FARES IN KANSAS



decline that has shown signs of turning up again since 1974. Within these long term increases and declines, smaller population fluctuations may occur due to less extreme local weather changes. The size of Kansas' fall bobwhite population depends mainly on the weather during the spring production period. A fairly small number of breeders can come back after a good nesting year while a large, healthy breeding population may have trouble maintaining itself after a cold, wet spring.

When population declines occur, there is always a cry for shortened hunting seasons or even a closure. The current Kansas season length doesn't hurt bobwhite populations; the hunter is harvesting birds that would eventually be lost to other natural causes. The real threat to the continued well-being of the Kansas bobwhite is loss of top-notch habitat.

The basic components of good bobwhite habitat are grass, cropland, brush, and woodland. Large tracts of any of these types alone, however, will not support many quail; it takes a mixture of all four with a lot of edge where two types meet to produce highest bobwhite densities. Interspersions of these habitat types are disappearing from the modern agricultural landscape. Large tracts of land are committed to monocultures of grass or grain. Overgrazing on many pastures has reduced their value as quail nesting cover, and the

waste grain in many fields goes unused because there are no shelterbelts, brushy fencelines or weedy rows of stubble to protect a covey while it eats. A couple of rows of standing corn or milo next to a patch of woody cover can bring a covey or two through a long winter when other food is covered with snow and ice. If the field is fall-plowed, a narrow strip of unplowed ground next to the native cover will help, too.

Woody quail cover has also taken a beating in the last decade. Hedgerows get in the way of large equipment and irrigation machinery and are rapidly disappearing. Woodlots are grazed or converted to cropland, and brush in pastures and along roadsides and power-line rights-of-way is being sprayed to tidy up the landscape. Urban expansion is converting thousands of acres of cover to asphalt plains.

Restricted bag limits, predator control, shorter seasons, and limits on hunting and hunters won't protect the bobwhite from these threats. Unless we provide the necessary food and cover, we can expect to see Kansas quail slowly evaporate. All of us who enjoy pursuing the bobwhite with a good pointing dog or just like the way he sounds in a spring backyard must take a hand in providing for him or accept our part of the responsibility for his decline.

Scaled Quail



Steve Cappel

A close relative of the bobwhite, the scaled or blue quail, is also found in Kansas. The scaled quail is most common in New Mexico, Texas, and Mexico, but the northern edge of its range stretches to the southwest corner of Kansas where the bird has settled in the sandsage prairie along the Arkansas and Cimarron rivers west and south of Pawnee County.

Somewhat larger than the bobwhite, the scaled quail is bluish gray with black markings (“scales”) on its breast, back, and abdomen. A bushy crest on the head varies in color from buff in the female to a cotton white in the male. The species has a distinctive vocabulary. Unmated males challenge each other with a single nasal whistle which has been described as a “whock”, “squawk”, “kwook”. When a covey or two mated birds are separated, they use a nasal monotone “pey-cos” call to find each other again.

Scaled quail mate while their winter coveys are still intact. The covey, usually thirty birds or so, breaks up in March or early April as mated pairs set up house-keeping and males become more antagonistic toward each other. The female builds her nest in early May, scratching out a shallow depression in the shade of a shrub and lining it with dry grass. She lays an average

of twelve to fourteen eggs, and incubates them for twenty-one to twenty-three days, mostly on her own. The males do help rear the chicks who move out of the nest as soon as they are dry, like young bobwhite, and like the bobwhite chicks, scaled quail feed mainly on insects for the first eight weeks of their lives.

Scaled quail are strong fliers but share the pheasant’s taste for running. They hang out in thick clumps of soapweed or sage that provides some overhead protection along with an open understory to stretch their legs in. During the winter, coveys will often take up residence around abandoned windmills, old car bodies, or other unused man-made structures.

The birds may move out of the heavy cover as the weather warms up toward spring, but they return to rest and lay their eggs. Overhead cover protects them from hawks and provides a little shade, especially important through the searing heat of mid-summer in the southwest.

As with other wildlife species, the most critical threat to the well being of the scaled quail is destruction of its primary habitat, the sandsage prairie by irrigation projects, and row crop agriculture.