Waddell and Hauzlick 1978

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KANSAS FISH & GAME

MARCH/APRIL 1978

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APR 19 2010
US FISH & WILDLIFE SERVICE
TULSA ES

Published Bimonthly

Vol. 35, No. 2

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KANSAS FISH & GAME is the official bimonthly publication of the Kansas Fish & Game Commission, Rural Route 2, Box 54A, Pratt, Kansas 67124 (316) 672-5911. Subscription rates: one year (6 issues) $3.00, two years (12 issues) $5.00, and three years (18 issues) $7.00. Single copies are available at 50 cents per copy.

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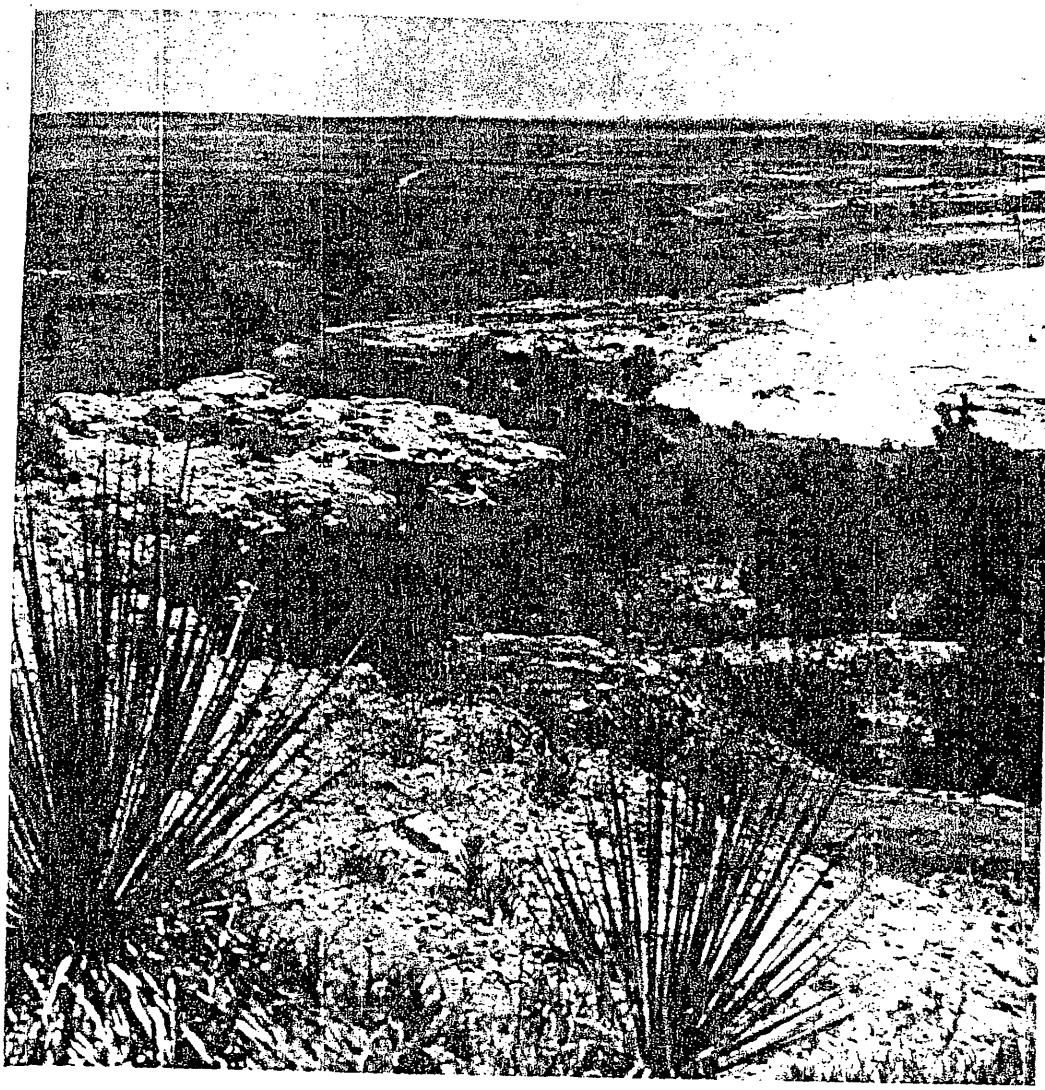

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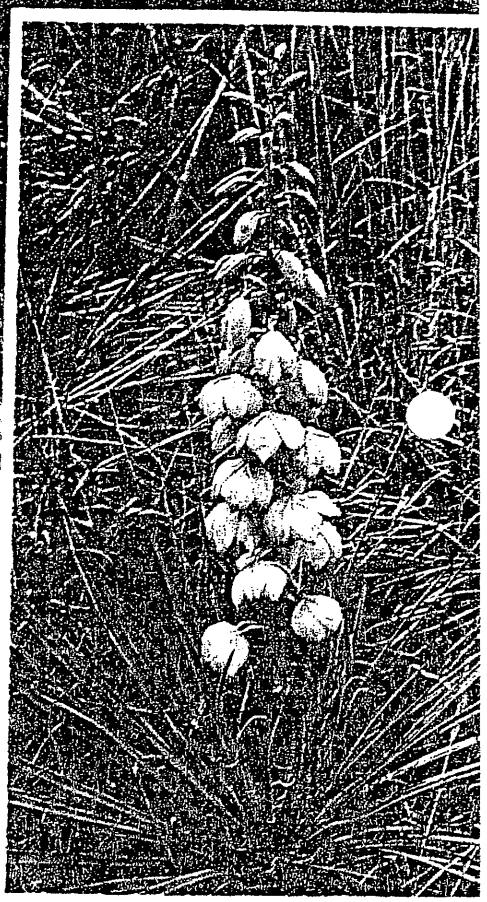


The Vanishing SANDSAGE PRAIRIE

Bruce Waddell and Bill Hanzlick

There are many natural grasslands in Kansas, ranging from the tall grass bluestem and Indian grass stands on the Flint Hills to the short grass of the western high plains. Botanists have tried to explain the absence of trees on the prairie in a variety of ways. Some say there was never enough rain to support timber; other believe the trees couldn't survive the wildfires that regularly swept the plains. For most grasslands, the argument will probably never be completely resolved, but for the sandsage prairie, the dominance of grass-sage vegetation is easy enough to explain. The sand country is just too dry to support trees.

It's not that the area doesn't get enough rain. Rainfall averages nineteen inches a year, enough to support some timber if the water stays at the surface. But in sand country, the water seldom stays where roots can get at it. This entire region is made up of stabilized dunes and sandy basins, the result of prevailing winds blowing sand up out of the Arkansas and Cimarron drainages. Most rain quickly sinks out of sight, and the little remaining moisture is sucked back into the air by summer heat and low humidity, leaving a landscape that has about as much in common with central Arizona as it does with the Kansas plains. The largest contiguous piece of sandsage prairie in Kansas is south of the Arkansas River near Lakin, Garden City, and Cimarron, but there are also large tracts in the Oklahoma panhandle, eastern Colorado, and southwestern Nebraska.

The lack of water in this country means hard times for most plants, but there are some species tough enough to make it. The most obvious survivor is sand sagebrush, a tough, leather-leafed shrub that is palatable to jackrabbits and antelope and very little else. When the grasses on the prairie are overgrazed, the sage moves in. Where the prairie is less harshly used, other species like sand bluestem, little bluestem, switch grass, sand reed, and side-oats grama are common. Buffalo grass and blue grama do well on the heavier, more stable soils. There are also a large number of forbs—sand lily, blazing star, bush morning glory, sand sunflower, and yucca, among others—that bloom profusely throughout the growing season.

The usual dryness of the sandsage makes it a kind of southwest connection for wildlife. The catalog that follows is an incomplete list of the most unique.

The roadrunner, predatory member of the cuckoo family, is a common resident. He's at home in country like the sandsage where he slips through the sparse cover after rats, snakes, small birds, insects—anything that moves and is small enough to kill with a quick stroke of the beak.

The scaled quail also calls the sandsage home. Like the roadrunner, the scaled quail seems to feel more comfortable on the ground than in the air, preferring to scuttle off through the sage when threatened instead of flying. It seems like an inefficient way to escape a predator—at least, until you see it. Generally, all a hunter ever spots of a covey of scaled quail is a flicker of movement in the brush accompanied by a faint scuttling sound. Then nothing. They fade into the sage like smoke, driving good bobwhite dogs and their masters slowly crazy. With the lack of tall cover like the brush and timber in good bobwhite cover, it may be that scaled quail have found that a covey rise only exposes them and gives a predator the chance to mark their location when they land.

The dust-colored Brewer's sparrow has also adopted the running style of escape. An early naturalist in

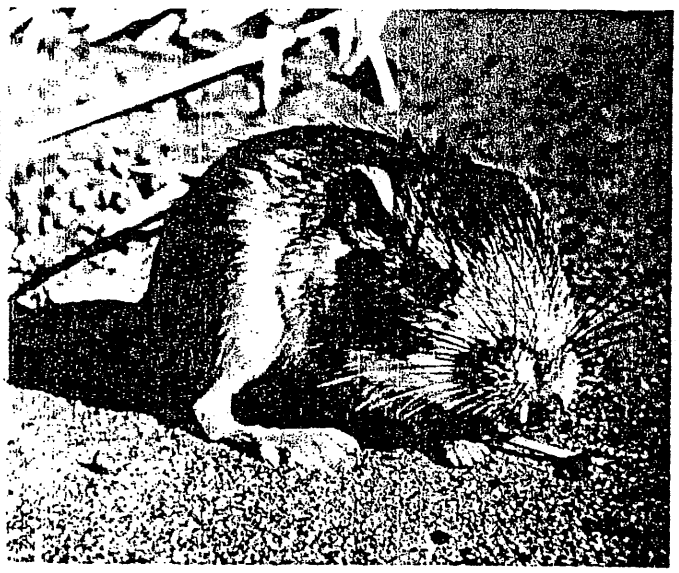
Leonard Lee Rue

Leonard Lee Rue

California commented, "The Brewer's are very shy, sneaking from their nests and running through the grass instead of flying." The Brewer's, along with other western dickeybirds like the Cassin's sparrow, black-throated sparrow, and sage sparrow, seem to prefer the sparse brush in the sand country. Most of them make a pathetic attempt to nest up off the ground like their eastern relatives, but "off the ground" in the sandsage may only take them to the dizzying height of two feet. It's not unusual for one of these sparrow's nests to be built in the first crotch of a sage bush with the bottom just touching the ground. With their dull coloring and secretive habits, these sage-dwelling sparrows are practically invisible on the prairie—but far from being unimportant. They make the spring music for this country. Bird biologists have set down a few inadequate descriptions: the Brewer's—"a cicada-like trill . . . suggestive of a canary's song", the black-throated—"tinkling, canary-like", and the Cassin's—"exquisitely sweet, haunting, a long, high, liquid trill."

The kangaroo rat is another common resident on the Kansas sandsage. As the name implies, this rat gets around by hopping on its hind legs with a long tail held behind for balance. But the kangaroo rat's jumping is far from being the strangest thing about him. Most wildlife on the sandsage makes efficient use of water, depending on the moisture from green plant food and an occasional trip to the waterhole to get by. The kangaroo rat doesn't drink any water at all. Water is produced in the chemical processes as his dry food (mostly seeds and cured vegetation) is broken down. The rat is so economical with his water that he can survive on this moisture alone.

Buddy Mays



The tremendous variety and number of wild rodents on the sandsage attracts a dense population of predators.

The bridled weasel occurs in the region; coyotes and badgers thrive along with a host of airborne predators. The most striking of the sandsage raptors are the golden eagle, prairie falcon, and ferruginous hawk, but marsh hawks, redtails, roughleggeds, and Swainson's hawks are the most common. There are about as many of them as there are telephone poles for perches.

There are a half-dozen reptiles and amphibians in the area that are found nowhere else in Kansas. All of them are southern species, drawn to the sand by their taste for low scrub and drought. Biologists are just beginning to look at the insects and other invertebrates on the sandsage, but these populations promise to be as interesting and unique as the vertebrates. One of the most voracious predators on the prairie are the tiger beetles, constantly prowling, iridescent insects that will eat anything they can catch and hold. One of the larger species of this beetle has brought as much as $40 a pair from collectors who prize it for its beauty as well as its rarity. Much stranger invertebrates, the fairy, clam, and tadpole shrimp, also survive in this country. They complete their life cycles in temporary puddles formed by heavy summer thunderstorms, then go into drought resistant egg stages before the water dries up—if they're lucky. The fairy shrimp actually resemble miniature shrimp; the clam shrimp look more like oysters with feathery feelers sticking out of the shells, and the tadpole shrimp is almost like a tiny landlocked horseshoe crab.

Most hostile environments breed unusual critters, and the sandsage prairie is no exception. The region is a wild menagerie of tremendous variety, a unique part of Kansas and the Great Plains. Unfortunately, those who find it interesting had better enjoy it while they can—it's going fast.

The decline of lesser prairie chicken —a sign of the times

While many of the species on the sandsage are probably adaptable enough to live with row crop agriculture, the lesser chicken appears to require habitat that contains at least sixty percent grassland. An important part of this rangeland habitat appears to be

some form of overhead cover, probably provided by sand sagebrush or plum thickets in Kansas. As a result of these requirements, the lesser chicken does best in the sand country of southwest Kansas, and when center-pivot irrigation systems began to cut into the sandsage in the 1960s, biologists became concerned over the fate of the bird.

Surveys used in the late '60s and early '70s to measure natural population fluctuations were inadequate to assess the seriousness of the threat of irrigation, so Commission biologists began a study in the spring of 1976 to document the current range of the lesser chicken and to find out how fast its habitat was disappearing. The study focused on two areas: developing an up-to-date map showing where the chickens currently occur and mapping available habitat to show where cover was being converted to row crop fields. Since little work had been done along these lines, the study started almost from scratch.

To determine the numbers and distribution of lesser prairie chickens, biologists began an early spring search for gobbling grounds, the areas where these birds congregate to display and breed. The cackling and gobbling of the males on the gobbling ground can

Ken Stiebben

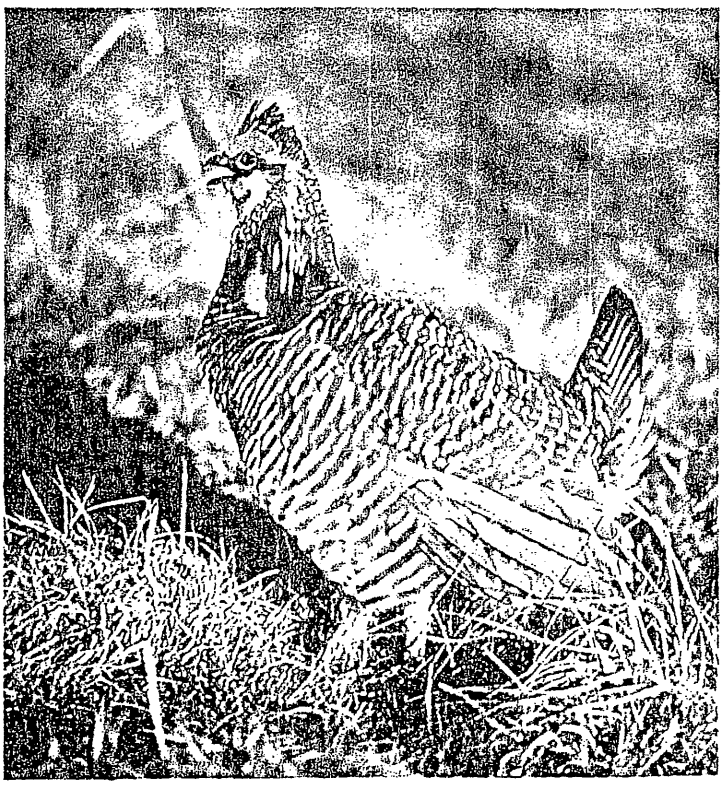
be heard for a mile or more depending on wind speed and direction and assuming someone is there to listen at sunrise when breeding activity is at its peak. Using this technique, survey parties located gobbling grounds on 237 sections of ground in the first two years of the study.

Getting an idea of the rate of loss of lesser chicken habitat was a tougher assignment. Vegetation maps and descriptions by the Kansas geographer A.W. Küchler furnished a general idea of vegetation boundaries and a basis for classifying the major plant communities. More specific information on the location and amount of rangeland came from 1974 maps researched by the Kansas Land Use Data and Analysis Program. After data from all sources had been gathered, calculations showed a lesser chicken range in Kansas of about 4000 square miles, about 1000 square miles of sandsage prairie and around 1300 square miles in cropland.

Satellite pictures of southwest Kansas told the rest of the story. Taken in 1975 and 1976, the satellite maps showed that the lesser chicken's overall habitat had been reduced by more than three percent in just two years. Loss of grassland during the two-year period was almost four percent. For the sandsage prairie, a vital habitat for lessers, the loss was about six percent. Sand prairies south of the big bend of the Arkansas River, the core of the range, was disappearing at an average rate of five percent a year.

In 1974, a tract of lesser chicken range in southern Finney, eastern Kearney, and northern Haskell, Grant, and Gray counties had 289 sections of land with a minimum of fifty percent sandsage prairie. Prime lesser chicken habitat. By 1976, 44 of those sections had lost their grass. At that rate, the 289 sections of chicken habitat in that area will be gone by 1987.

There are some who might question the assumptions underlying these estimates, but a careful look at the satellite pictures of the area clearly shows that massive conversion to center-pivot irrigation has occurred. There is a threshold acreage below which the future of the lesser chicken is in grave doubt, and that threshold is rapidly being approached in the sand country south



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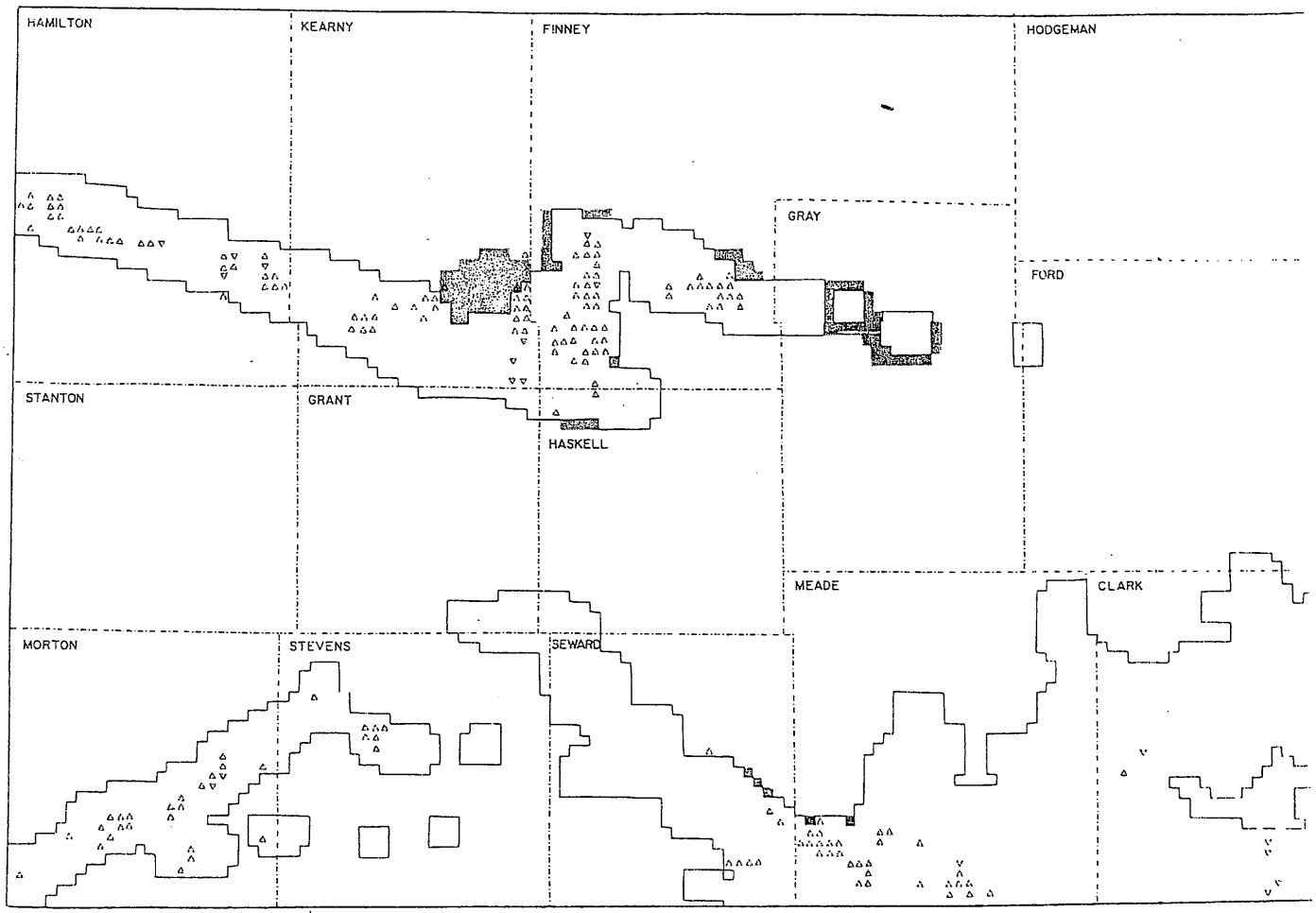
Habitat of the lesser prairie chicken in Kansas . . .

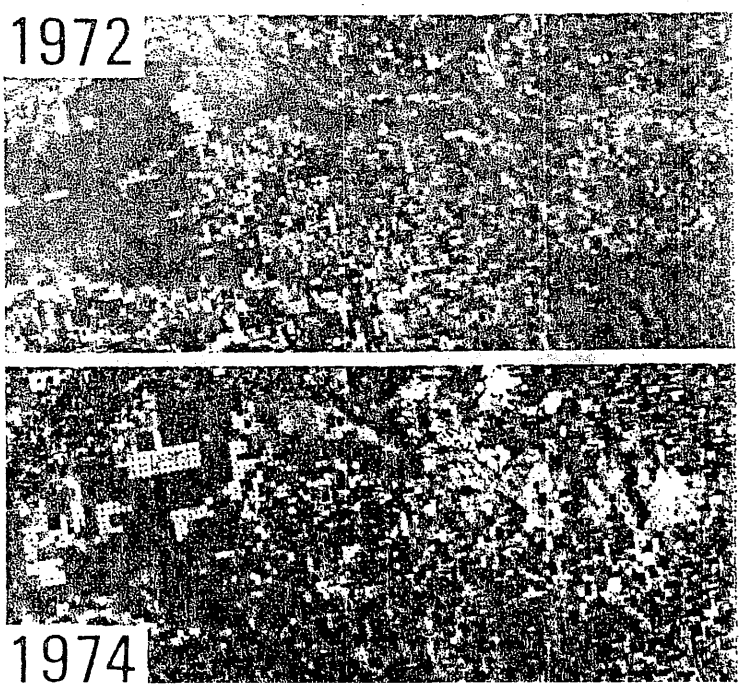


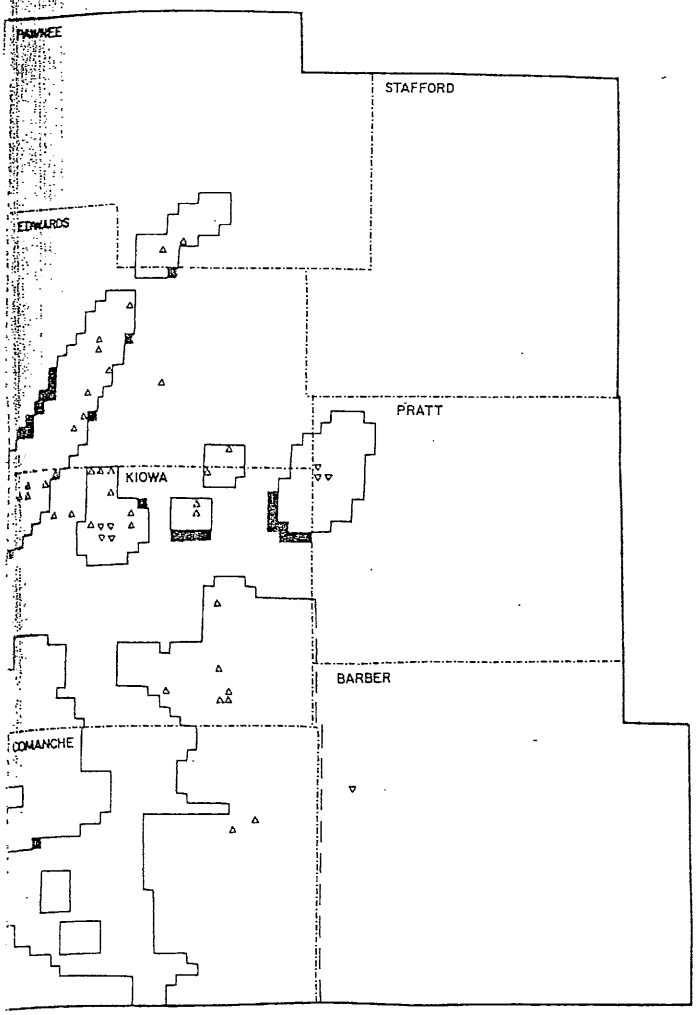
△ GOBBLING GROUNDS LOCATED IN 1976
▽ ADDITIONAL GOBBLING GROUNDS LOCATED IN 1977
— BOUNDARY OF LESSER PRAIRIE CHICKEN RANGE
PRAIRIE CHICKEN RANGE LOST, 1974 - 1976

Going . . .

Lands at photos taken from 570 miles above the earth record the spread of circle irrigation in a small part of the sandsage. Circle irrigators show as dots about an eighth-inch in diameter. The lesser chicken tolerates a few irrigated fields, even exploits them when food is hard to find during the winter, but the bird cannot survive what promises to be near-total conversion of grass to cropland.

Going . . .





of Garden City. In other parts of the lesser chicken's range, the birds are already restricted to narrow bands of suitable habitat. There are a few lesser chickens on hard land prairies along the fringes of the sandsage prairie, but these hard lands support considerably less than one bird per square mile. The biologists estimate that there are less than 100,000 breeding birds left in Kansas, forty percent of which live in areas which will be plowed by the late 1980s. Generally speaking, as the sand country goes, so goes the lesser prairie chicken.

Why all the fuss over a wild version of a banty hen? Observers who have seen the bird on its spring breeding ground know part of the reason. The performance on the gobbling ground is a wild tradition that refuses to be pushed aside, an echo of the Great Plains of 200 years ago.

But there's a more practical reason for concern over the threat to the lesser chicken. Putting the chicken and loss of the sandsage prairie on one side of the ledger and the benefits of more irrigated cropland on the other, it looks as if a chance for short-term profit is going to lead us into long-term bankruptcy. There are 100 to 300 feet of ground water under the sandsage. As a result of the center pivots, that level is dropping from one to nine feet a year, depending on who's measuring and where he decides to measure. As the water level drops, it'll take more diesel fuel or electricity to pump it to the surface. As a result, the price of irrigation water is going to go up, even without another 1973 energy panic. And, of course, there's always the possibility that the ground water will dry up altogether in twenty or thirty years. Thirty years is a long way to look ahead, but from today's vantage point, it seems that the disappearance of the lesser chicken may ultimately be a sign that the sand country farmer himself is threatened.

It seems we've always tried a thing just to see if we could do it whether it was building a transcontinental railroad, sending a man to the moon, or growing corn in the desert. That philosophy has brought us a long way—far enough, maybe, to recognize that there's very little we can't do. We've been at it long enough now to start asking a couple of other questions, strictly in our own interest—"Should we? And if we do, how much is it going to cost?"

Gone . . .