

EFFORTS TO PREVENT THE EXTINCTION OF THE PRAIRIE CHICKEN IN ILLINOIS

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ABSTRACT.— The decline of the prairie chicken in Illinois is reviewed. Actions to prevent the extinction of the prairie chicken are: formation of the Prairie Chicken Foundation, formation of the Prairie Grouse Committee, purchases of land for nesting sanctuaries, and investigations of distribution, abundance, nesting requirements, and other ecological factors affecting the prairie chicken. Continuation of these investigations, and continuation of land acquisition on an increased scale, are necessary if the prairie chicken is to be saved in Illinois.

At the time of settlement, greater prairie chickens (*Tympanuchus cupido pinnatus*) were well-distributed over areas covered by tall grass prairie in Illinois—about 60 percent of the state (Fig. 1). Yeatter (1943: 378) states that “As the Illinois timberlands were cleared and put under the plow, prairie chickens extended their range into these areas from the adjacent prairies, in which the first settlers had found them. Later, as the prairie sod was broken and grain became common, chicken populations increased enormously throughout the grasslands. The highest populations, resulting from the early development of agriculture, seem to have occurred during the 1860’s.” Then, as agriculture progressed from the early stages, primarily into intensive grain farming, numbers of prairie chickens began to decline.

Leopold (1931:165) concluded that the prairies of Illinois “had in 1874 just passed their prime as chicken

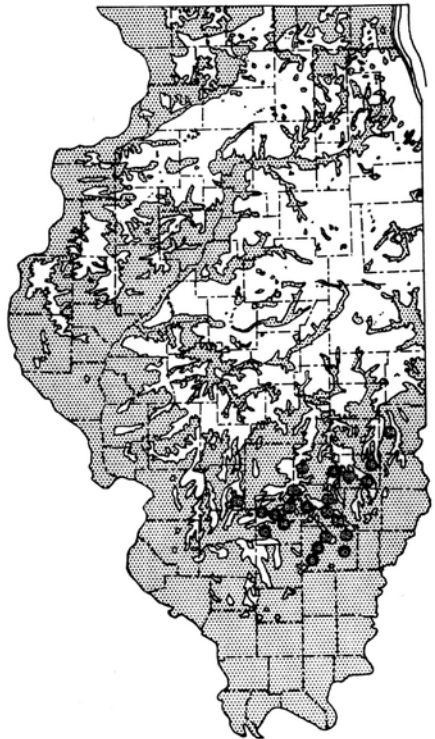


FIGURE 1.— Estimated numbers of prairie chickens on 11 census areas in the spring of 1965 (Westemeier 1966: table 1) in relation to the original prairie vegetation (unshaded portion of map). Map reproduced from Telford (1926:v).

country." The Illinois State Legislature, on June 9, 1887, passed game laws that included a closed season on prairie chickens during 1887 and 1888, thus indicating concern over the decline in abundance of these birds.

At the turn of the century, prairie chickens were still well distributed over the Illinois prairie but were found only locally and in greatly reduced numbers (Yeatter 1943:378). In 1903, the hunting season on prairie chickens, then 30 days, was closed and hunting was not again legalized until 1911. Beginning in 1911, seasons of 5 to 15 days with a daily limit of three birds were tried until 1933. The hunting season on prairie chickens was closed in 1933 and has remained closed. Nevertheless, chicken numbers have continued to decline.

Forbes (1912:47-48) reported that prairie chickens were present in at least 74 counties, "so abundantly in some that farmers are beginning to protect against their future increase because of the amount of grain which they devour." Leopold's (1931:163) map showed no colonies in the prairie soils area west of the Illinois River, but did indicate that local colonies were still present in east-central, northern, and southeastern counties. The period from 1930 to 1935 saw the disappearance of nearly all remaining colonies in the east-central counties and a reduction in numbers of prairie chickens in the northeastern marshlands. One of the last flocks in central Illinois was present on the University of Illinois south farms until 1932 (Yeatter 1943:379).

In 1940, the range of the prairie chicken in Illinois was reduced to 50 square miles of sand prairie along the Green River in Lee County and about 2,600 square miles of gray prairie in the southeastern counties, and there were a few scattered flocks in poorly drained areas in northern Illinois in the Kankakee drainage (Yeatter 1943:379). The last prairie chickens—the Lee County flock—probably disappeared from northern Illinois about 1950 or shortly thereafter.

Before the use of modern techniques of fertilization and land management, the gray prairie soils of southern Illinois were poorly drained, strongly acid, and low in productivity. The chief crop was redtop grass (*Agrostis alba*) grown principally for seed. In 1934, about 85 percent of the world production and 95 percent of the U.S. production of redtop seed was produced in southern Illinois (Burlison et al. 1934, in Yeatter 1943:381). Redtop grown for seed provided nesting cover for prairie chickens and was unquestionably the factor most responsible for maintenance of prairie chickens over much of southern Illinois during the 1930's and 1940's.

In the years since World War II, there have been tremendous changes in the land use of southern Illinois, perhaps best described as successive waves of tractors, limes, fertilizers, and soybeans, followed by herbicides and pesticides. The result has been a change from a grass to a grain economy and a loss of nesting cover. A census of prairie chicken flocks in 20 counties in Southern Illinois during October and November

1962 revealed 179 individual flocks containing approximately 2,000 birds (Ellis 1964:5). This census was based on questionnaires distributed by the Natural History Survey to vocational agriculture students living in 47 high school districts where prairie chickens were thought to occur. With normal winter mortality, this number was down to about 1,000-1,100 birds by the spring of 1963. By the spring of 1964, an additional 20 percent reduction in the population meant that no more than 800-900 prairie chickens were present in Illinois. No more than 500 to 600 prairie chickens existed in Illinois in March 1965 (Fig. 1) and, as of this writing (March 1966), perhaps no more than 300 to 400 survive.

Recent research by the Natural History Survey strongly suggests that a majority of the few remaining flocks of prairie chickens in Illinois would now be extinct if it were not for the Federal Conservation Reserve (CR) Program initiated in 1958. As a result of this program, many acres of cropland in the gray soils area were retired from cropping and planted to grasses and legumes. These fields provided the nesting cover so critically needed to maintain prairie chickens. Unfortunately for the prairie chicken, the CR Program is fast disappearing. In 1963, the six counties supporting the largest numbers of prairie chickens had 595 CR contracts in effect. In 1964 the number of contracts was reduced to 166; in 1965 only 46 remained.

HISTORY OF PRAIRIE CHICKEN CONSERVATION IN ILLINOIS

The future, and even the present, of the prairie chicken in Illinois appears grim. What has been done to offset this impending tragedy, what is being done, what must yet be done, and by whom? These questions we will now try to answer.

For many years the Natural History Survey has studied and accumulated data on ecology and status of prairie chickens in Illinois. Forbes (1912: 40, 47-48) commented on the status of the prairie chicken and other of our native fauna as early as 1912. Dr. Ralph E. Yeatter began work on the prairie chickens on an area near Hunt in Jasper County in 1936, which he continued until his retirement in 1963. His bulletin (Yeatter 1943) on prairie chickens was one of the first major contributions to the life history and ecology of this species. In conjunction with Dr. V. E. Shelford (Shelford and Yeatter 1955), he reported on suggested relationships between the abundance of prairie chickens and physical factors, especially rainfall and solar radiation. More recently he (Yeatter 1963) reported on population responses of prairie chickens to land-use changes in Illinois.

In the summer of 1962 a cooperative study on the ecology and management of prairie chickens in southern Illinois was instituted by the Survey, the Department of Conservation, and the U.S. Bureau of Sport Fisheries and Wildlife. That fall, Survey biologist Mr. R. J. Ellis was assigned full-time to this project, with headquarters in Jasper County. The study is continuing with Mr. R. L. Westenefer, who replaced Mr. Ellis this past February, as project leader. This research is financed by the Department, under Illinois Federal Aid Project No. W-66-R.

Activities of the Survey biologists have been primarily concerned with (1) determining the annual abundance and distribution of prairie chickens comprising our few scattered remaining flocks, (2) correlating land-use changes with the abundance of prairie chickens, (3) studying the nesting ecology of prairie chickens, and (4) serving as management consultants to the Department of Conservation, the Prairie Chicken Foundation of Illinois (PCFI), and more recently to the Prairie Grouse Committee

of The Illinois Chapter-The Nature Conservancy.

Two particularly noteworthy observations have resulted from the Survey's prairie chicken studies. First, prairie chickens exhibit definite preferences for a certain type of nesting cover—it must be comprised primarily of grasses and there must be a substantial mat of accumulated duff upon which to build the nest (Ellis 1965:7). Second, where the proper vegetative conditions exist, prairie chickens will tolerate relatively high nesting densities. On the Yeatter Sanctuary in 1964 a total of eight nests were found in a 19.1-acre field of redtop seeded in 1962 (Ellis 1965:7).

On the basis of these studies it was concluded that land must not merely be acquired, but that it must be managed to provide quality nesting cover if the chicken is to survive. The ability of chickens to tolerate nesting densities of one nest per 2-3 acres of good habitat suggests that in Illinois a flock can be saved by providing it with a properly managed sanctuary system of as few as 500 acres in high quality nesting cover in several tracts of 40 to 80 acres each on native range near traditional booming grounds.

Biologists of the Survey, as well as wildlife specialists of the Department of Conservation, also participate regularly in the activities of the Prairie Grouse Technical Council. This is a group comprised of biologists representing various states and Canadian provinces actively engaged in research and management of prairie chickens and other native prairie grouse. Working meetings of technicians were initiated in 1957 under the auspices of the National Wildlife Federation in response to the critical or near critical status of the prairie grouse throughout most of their range. Council meetings are held about every 2 years; Illinois will be host state for the next meeting, the seventh, scheduled for September 1967. The purpose of these meetings is for researchers and managers to exchange information on recent experimental findings and new management concepts.

Private groups of conservationists have been and are now actively cooperating with the Illinois Natural History Survey and the Illinois Department of Conservation in the fight to save the prairie chicken. At a meeting of the Illinois Natural Resource Council in the fall of 1958 the necessity of forming an organization to preserve Illinois' native

prairie chickens was expressed. A year later, on September 25, 1959, bylaws were adopted and the Prairie Chicken Foundation of Illinois (PCFI) became the first group, public or private, in this state, organized with the single objective "to preserve and perpetuate the prairie chicken."

The parent membership of the PCFI was composed of the Illinois Audubon Society, The Izaak Walton League-Illinois Division, The Illinois Federation of Sportsmen's Clubs, and The Illinois Chapter-The Nature Conservancy. The charter of the PCFI called for a managing Board of Delegates to be comprised of three members selected by each of the four parent organizations—a total of 12 delegates. On March 2, 1966, the Field Trial Clubs of Illinois became the fifth sponsoring member of the PCFI.

The stated goal of the PCFI for the first 5 years was to raise funds adequate to acquire a sanctuary system of 1,000 acres located in the best area of prairie chicken range then remaining in Illinois. On the basis of censuses and field work of Dr. Yeatter and of wildlife specialists of the Department of Conservation, areas near Ilunt and Bogota in Jasper County, near Farba in Marion County, and in the vicinity of Clay City in Clay County were considered to have the best potential as sites for future sanctuaries (Fig. 1).

On May 24, 1961, an option was taken by the PCFI to purchase a 77-acre tract, the N $\frac{1}{2}$, NE $\frac{1}{4}$, Section 28, T. 6N, R. 9E, Jasper County (Fig. 2). The deed for this property was dated May 1, 1962, and was recorded on May 15, 1962. In recommending purchase, Dr. L. J. Starnard reported he had been informed that 68 cocks had been booming there that spring. This tract of fertile, well drained, gray prairie was purchased for \$225.00 per acre. It was subsequently dedicated "The Ralph E. Yeatter Sanctuary" in honor of Dr. Yeatter's many years of research on the prairie chicken in Illinois.

On December 17, 1963, a second option was taken on a 20-acre tract (Fig. 2). This tract, the W $\frac{1}{2}$, SW $\frac{1}{4}$, SE $\frac{1}{4}$, Section 28, T. 6N, R. 9E, was acquired at a cost of \$275.00 per acre, and, although the cost per acre was higher, the quality of the land was not as good as that on the Yeatter Sanctuary. The deed for this property was dated February 17, 1964, but was not recorded until June 26, 1964. This tract was dedicated "The Max Mc-

Graw Sanctuary" in honor of one of the early contributors to the PCFI.

In July 1964, the PCFI acquired control of a third tract, the SE $\frac{1}{4}$, NW $\frac{1}{4}$, and the W $\frac{1}{2}$, SW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 27, T. 6N, R. 9E. This 60 acres is being purchased on a 10-year contract at a cost of \$300 per acre. It is centrally located in Section 27, east of the Yeatter and McGraw Sanctuaries (Fig. 2). This tract was dedicated "The Donnelley Sanctuary" in honor of the efforts of Messrs. Gaylord Donnelley and Elliott Donnelley in behalf of the prairie chicken.

The most recent acquisition was an 80-acre tract, the NE $\frac{1}{4}$, SW $\frac{1}{4}$, and the SE $\frac{1}{4}$, NW $\frac{1}{4}$, Section 4, T. 5N, R. 9E, purchased by Mr. Jameson McCormack on November 1, 1965, for \$25,000 and leased to the PCFI at a cost of \$750.00 per year (Fig. 2). Mr. McCormack paid \$400.00 per acre for 10 acres of good prairie soil and \$300.00 per acre for 70 acres of less desirable agricultural land. Provisions of the lease stipulate that it is for a period not to exceed 25 years, or until the death of Mr. McCormack and his wife, if less than 25 years. After this period, the property, plus the money

paid for the annual leasing, becomes the sole property of the PCFI. Should the PCFI cease to function, the land and money go to The Nature Conservancy (PCFI 1965:7).

The history of the PCFI points out several things: (1) acquisition of sanctuaries has been slow; after 6 years the PCFI has acquired control of only 237 acres, less than 25 percent of this group's original 5-year objective; (2) to date, only about 70 acres of critically needed, high quality, nesting cover have been developed on the sanctuaries; (3) there has been a dramatic increase in the cost of agricultural land suitable for prairie chicken sanctuaries, from slightly more than \$200.00 per acre in 1960 to more than \$400.00 per acre in 1965; and (4) the abundance of prairie chickens at Bogota has continued to decline because of a continuing deterioration of habitat conditions over the area as a whole (Ellis 1964).

While the PCFI has done its best to interest others in the plight of the prairie chicken, to raise funds, and to acquire land, their efforts have not been adequate to compensate for the rapid loss of nesting habitat and to assure the

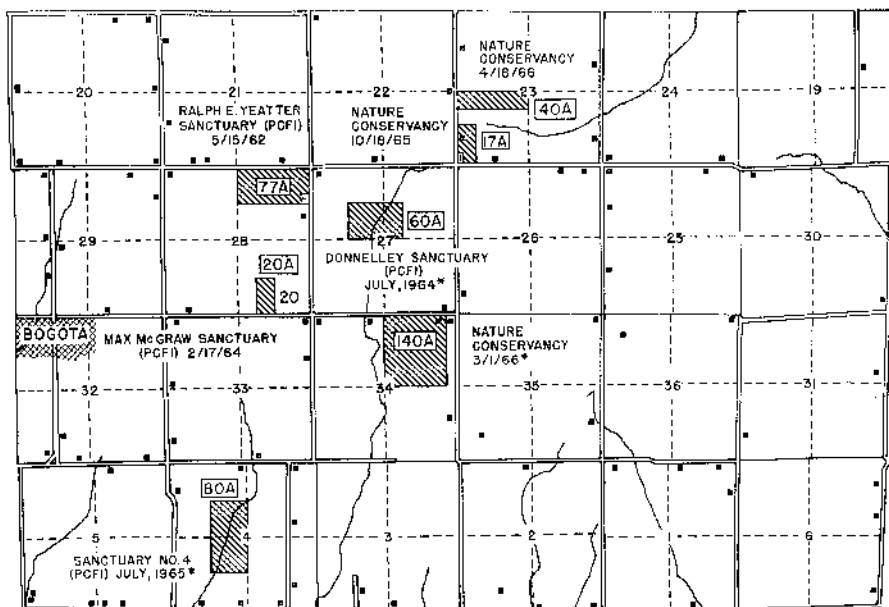


FIGURE 2.—Location of prairie chicken sanctuaries at Bogota in March 1966. *Purchase contract or lease; final transfer of these tracts will be made at future dates.

saving of the prairie chicken flock at Bogota.

Land prices have been rising each year and the prairie chicken population level has been declining each year. The Nature Conservancy, through the leadership of a group of dedicated conservationists from Chicago, with the advice of the Illinois Natural History Survey, has initiated an accelerated campaign to supplement and complement the PCFI's pioneer efforts. The Honorable Otto Kerner, Governor of Illinois, demonstrated his interest in the Nature Conservancy's project by accepting the position of Honorary Chairman of the committee.

Thus, the Illinois Chapter-The Nature Conservancy in the fall of 1965 formed a special Prairie Grouse Committee, to raise \$125,000 to purchase 300 additional acres of sanctuaries for prairie chickens. This committee purchased a 17-acre tract, the W $\frac{1}{2}$, SW $\frac{1}{4}$, SW $\frac{1}{4}$, Section 23, T. 6N, R. 9E, at public auction for \$400 per acre on October 2, 1965 (Fig. 2). The deed was recorded October 18, 1966. A purchase contract for \$60,000 for a tract of 140 acres (\$428.57 per acre), all but the E 20 acres of the NE $\frac{1}{4}$, Section 34, T. 6N, R. 9E, was signed on March 1, 1966 (Fig. 2). A third tract of 40 acres, the N $\frac{1}{2}$, N $\frac{1}{2}$, SW $\frac{1}{2}$, Sec. 23, T. 6N, R. 9E, was purchased at public auction on April 9, 1966, for \$435 per acre. The deed was recorded April 18, 1966. Together with the 237 acres owned by the PCFI, this brings the total acreage in sanctuaries to 434. This acreage, plus three or four more strategically located 20- to 80-acre parcels, and the development of good nesting cover on all sanctuary land, should be adequate, under present conditions, to save the prairie chicken flock at Bogota.

Unfortunately, good nesting cover for the 1966 nesting season is present on less than 70 acres of the land now in sanctuaries. Although seedlings are being made as soon as possible after land is acquired, it takes a minimum of 2 years to obtain the desired quality of vegetation, longer if weather conditions are unfavorable. So even though it appears that the desired acreage is finally being acquired, the necessary grass is still 2 or 3 years away.

Although the immediate goal of 500 acres of managed grassland in a sanctuary system has been proposed to save the prairie chicken flock near Bogota, this is far short of what is ultimately

desirable to preserve this species in Illinois. A more realistic, long-term objective would be the development of a 600- to 1,000-acre sanctuary surrounded by 10 to 20 satellite sanctuaries, each 20 to 80 acres in size, distributed over a 10- to 15-square-mile area. To avoid putting all our prairie chicken eggs in one basket, at least three such sanctuary complexes would be desirable. Possible locations for future sanctuary sites are the ranges used by the flock still persisting south of Farina in Marion County and the one northwest of Mt. Erie in Wayne County (Fig. 1).

While the Department of Conservation has not purchased land for sanctuaries, it has played, and will continue to play, an important role in the efforts to save the prairie chicken. As indicated above, wildlife specialists of the Department cooperated with the biologists of the Natural History Survey in the census work done in the late 1950's and early 1960's to locate surviving flocks of chickens. Mr. John Slachter of the Game Division of the Department has from the beginning cooperated in the management activities of the PCFI in both an advisory and physical capacity. As reported earlier, the Department of Conservation provides financial support for the prairie chicken research program conducted by the Natural History Survey and has also supported with small annual grants the studies on artificial propagation and on the growth and development of prairie chickens, which have been conducted at the University of Illinois by Dr. H. H. Shoemaker.

At the request of the PCFI, the Department made funds available for the annual leasing of grass and clover hay from local farmers as a stopgap measure to provide the critically needed nesting cover until it could be provided on permanent sanctuaries. The Department leased 164 acres in 1962 (personal communication from Thomas R. Evans), 233.9 acres in 1963 (Ellis 1964:9), 93 acres in 1964 (personal communication from John Slachter), and 7 acres in 1965 (personal communication from Thomas R. Evans).

Partially because of the high cost of leasing, a minimum of \$20.00 per acre per year, and the lack of any permanent benefit to the chicken for the money expended, nesting studies were initiated by the Natural History Survey at Bogota in 1963. It soon became obvious that few fields of suitable nesting cover

were available for leasing. Those available were primarily second-year seedlings of red clover (*Trifolium pratense*) which lacked the buildup of the duffy vegetative debris preferred by nesting prairie chickens.

A total of 850.7 acres of potential nesting cover systematically searched for prairie chicken nests by Survey biologists in 1963 revealed only two nests in 204.9 acres of unharvested red clover and no nests in 125 acres of red clover which had been harvested (Ellis 1964:7). Although nest densities were low, because of the current relative abundance of this hay type, destruction of nests during mowing and plowing of clover was a major cause of nesting failure, yet leasing of fields of red clover at \$20-\$30 per acre per year was not justifiable, particularly when densities of only about one nest per 100 acres occurred. This is in sharp contrast to densities as high as one nest per 2.4 acres found in the 19.1-acre field of red-top (Ellis 1965:7) referred to earlier.

The outcome of these nesting studies was the recommendation by Survey biologists that the Department lease only high quality nesting cover, but even more important, that the Department initiate a cooperative land-purchase, land-management program with the PCFI. This proposal called for the PCFI to lease sanctuaries to the Department for the development of high quality nesting and brood-rearing habitat and for the PCFI to use all lease payments to help pay indebtedness on existing sanctuaries and to purchase additional acreages. It was felt that such a program would assure (1) that the money spent by the Department would provide high quality nesting habitat not just for 1 year, but for many years, and (2) that annual lease payments to the PCFI in amounts similar to those spent on leasing in 1963 would allow the PCFI to acquire immediately, and pay for in a 10- to 15-year period, up to 200 acres of additional nesting sanctuaries.

The Department readily accepted this proposal and a lease for \$2,000 was negotiated with the PCFI in 1963. The lease was renewed in 1964, but the PCFI elected not to continue the program for more than 2 years.

While we regret that the Department of Conservation has not purchased land for prairie chicken sanctuaries, we recognize that Department funds for land acquisition are limited and are normally expended for multiple-use projects in-

volving activities such as hunting, fishing, water sports, picnicking, camping, hiking, and field trials, most of which would conflict directly with the objectives of prairie chicken management. In fact, although the Green River Conservation Area in Lee County was purchased primarily to save the last major flock of prairie chickens in northern Illinois, the flock could not survive the multiple-use program developed for that area and, as noted earlier, disappeared within a few years.

The Federal Government has played no direct role in attempts to save the prairie chicken although there is some hope for the future but not the immediate future. Mr. Lester Dundas of the U.S. Bureau of Sport Fisheries and Wildlife has visited southern Illinois to view our remnant prairie chicken range and has discussed the problems of management with specialists from the Department of Conservation. On the basis of this trip, Mr. Dundas recommended that, under the terms of the endangered species bill (H.R. 9424), the Bureau establish a prairie chicken refuge system in southern Illinois. However, such action would be dependent upon funding from the Land and Water Conservation Fund; no money will be available from this fund prior to the 1967 biennium and possibly not then. We must recognize that the prairie chicken is only one of several endangered species and that Illinois is only one of several states where prairie chickens are endangered.

The Cook County Forest Preserve District has become interested in re-establishing prairie vegetation on several large tracts of land which this organization has recently acquired in the Chicago area. As part of their program, they would like to encourage native prairie fauna and flora on these areas and are currently working with Dr. Shoemaker to re-introduce prairie chickens. An initial, small-scale release of prairie chickens reared in pens was made near Barrington in the summer of 1965, but it is too soon to comment on the success of this experiment.

CONCLUSIONS

In summary, the remnant prairie chicken flocks are in immediate danger of extirpation. By 1970 the story will be told. Fortunately, the PCFI and the PGC have now acquired 434

acres of sanctuaries and hope to buy more. If high quality nesting cover can be developed on this acreage in the next 2 years, the flock at Bogota should be saved for the present. However, a minimum of two more flocks, probably those near Farina and Mt. Erie, should be provided similar nesting sanctuaries. Ultimately, sanctuary systems should each be comprised of approximately 2,000 acres of managed grassland or prairie distributed in a scatter pattern over 10 to 15 square miles of traditionally good prairie chicken range. At present, chances of immediate participation by Federal or State agencies in a land acquisition program of this magnitude do not appear good. It appears that saving the prairie chicken in Illinois must continue to be the responsibility of private individuals. While the future does not look bright, it does not appear completely dark, thanks to the efforts of the PCFI and the PGC. There is still time to save the prairie chicken in Illinois—but fast action is needed, and that action is the rapid acquisition, quick development, and proper management of nesting sanctuaries.

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