

**GLEN C. SANDERSON**

Guidelines for a Cooperative Approach to Habitat  
Management for a Remnant Native Flock of  
Prairie Chickens near Hoyleton, Illinois

By

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PURPOSE

To assist several private farmers in establishing suitable nest cover for the preservation of endangered native prairie chickens near Hoyleton, Illinois.

JUSTIFICATION

The flock of prairie chickens near Hoyleton in Washington County is one of only 4 remnant flocks remaining in Illinois (Fig. 1). The other 3 flocks are located in Jasper, Marion, and Wayne counties. The Hoyleton flock has been hovering on the brink of extinction since at least 1969, yet these birds have demonstrated remarkable tenacity despite intensive agriculture characteristic of the area. If use of newly established nest cover and a subsequent population increase, or even stabilization of the population, can be demonstrated with a flock so close to extinction as the Hoyleton flock, the long-term security of the flocks in Jasper and Marion counties may be relatively assured with the present acreage of permanent sanctuaries. However, current problems with pheasants in Jasper County cast new doubts about the future of Illinois' largest flock of prairie chickens. All remaining flocks in Illinois thus deserve whatever help can be mustered.

## BACKGROUND

The long-term ecological studies of prairie chickens in Illinois beginning in 1935 by Dr. Ralph E. Yeatter and continued since 1962 by the present project provide the basis for recommendations in this proposal.

Censuses.--The Hoyleton flock was first censused systematically by this project in the spring of 1969 and counts were made each spring since then. Mr. Donald Schnitker and his father, Edmund, local farmers, reported that 6 cocks were present on the booming ground in 1968. Counts by INHS personnel have ranged from 2 to 11 cocks from 1969 through 1980 (Table 1). Seven cocks and 4 hens were observed on the booming ground on 5 April 1980.

Booming Sites.--Booming grounds (or leks) have been located in the southcentral 160-acre block of Section 24, T.1S.-R.2W. since 1969 (Fig. 2). The N 1/2 of the SWSE and the N 1/2 of the SESW are particularly important traditional sites for booming grounds. Lek sites have been on the Greiman farm 5 springs; Garnholz farm 3 springs; and Hake farm 3 springs. One spring (1974) booming was divided between Section 24 (Hake farm) and to the east in Section 19 on the Schnake farm. Also in 1975 and 1976, booming grounds were located 4 miles west of the Hoyleton lek, near New Minden.

Nesting.--Two prairie chicken nests were reported to me by Mr. Don Schnitker in 1976. I examined both nests which were located in wheat stubble-red clover cover; both were unsuccessful due to hay mowing. A third nest on the Schnitker farm was reported by Mr. Schnitker in 1978, but I was unable to relocate the nest. According to Mr. Schnitker, the hen and most eggs were again destroyed by a hay mower. This nest was located in an old alfalfa sod. Another chicken nest was reported in 1976 about 1 mile south of the Hoyleton lek on the Hake farm in Section 25; the hen and eggs were destroyed by plowing--according to Mr. Irvin Peithman (via Dr. W.D. Klimstra) of Southern Illinois

University. On 17 May 1968, Mr. Harold Garnholz reported (to me) finding at least 5 chicken nests in May 1964 in a 7-acre field of red clover about 1/4 mi southeast of his farmstead. After mowing into several nests (one in the process of hatching), he quit mowing until after the nesting season. He found several other nests upon completion of his hay mowing. Similar stories can be related by most of the older farmers in this area.

#### THE PROBLEM

The lack of safe attractive cover for nesting is clearly the most obvious factor threatening the survival of the prairie chickens at Hoyleton. Permanent sanctuaries are not likely to be established in this area because of (1) the unavailability of suitable land for sale, (2) the high price of suitable land, (3) the high degree of uncertainty regarding the continued survival of this flock, and (4) the continuing need to emphasize purchase of suitable land in Jasper and Marion counties with the limited funds available. Cover management for prairie chickens at Hoyleton is thus limited to cooperative agreements with private landowners.

#### COVER ESTABLISHMENT

Sites.--The most rapid response by, and benefit to, prairie chickens to establishment of nest cover may be expected near the traditional booming sites in Section 24 and the north 1/2 of Section 25. Emphasis should be with, but not necessarily limited to, the 7 landowners in this area. Sloping fields oriented south or west are preferred but not essential.

Field size may be limited to as little as a few acres, but hopefully several fields of at least 10 acres can be established. Additional grassy cover may be established by widening and lengthening existing waterways, pond banks and watersheds, and field borders. Native prairie grasses have particular potential in such sites.

Cover Types.--Two types of grass, redtop and prairie grass, offer the combination of economic incentive and acceptability by prairie chickens. The first harvest of a redtop meadow often results in a yield of about 200 lb per acre. A per-acre income of \$300 is possible at the 1980 market price of \$1.50 per lb. However, several farmers in the Hoyleton area are involved in dairying. Harvest of a small acreage for redtop seed may not be as feasible as would a hay crop in a dairy farmer's management program. Prairie grass, particularly big bluestem, offers an alternative to redtop. Switchgrass and Indian grass may be desirable species of prairie grasses to include in a mixture but big bluestem has the highest nutritive value and palatability among the three grasses. Prairie grasses mature about mid-July (safe mowing time for prairie chickens). A single cutting commonly yields 3-4 tons per acre, depending on soil fertility (competitive with several cuttings of alfalfa). Also, regrowth of prairie grasses following hay harvest in mid-July provides attractive cover for night roosting, day loafing, and, particularly, nesting the following spring. Prairie grasses can be difficult to establish. Often new seedings are not evident until 2 or even 3 years after seeding. During the period of establishment redtop may be used as a profitable companion crop. Redtop and prairie grasses seeded together at the same time will gradually change from a meadow initially dominated by redtop to one dominated by the more vigorous prairie grasses.

Redtop.--1st Year - Establishment of Sod

Winter - Spring Seeding

- 1) Time - February or March to allow for freezing and thawing to embed seed in the soil.
- 2) Seed bed options - Normally, wheat does not provide a suitable companion crop for establishing redtop due to competition by the wheat. However,

such exceptions as a poor stand or late seeding of wheat, or as may be the case at Hoyleton, mowing green wheat for silage, will greatly improve the chances for establishing redtop in wheat.

Typically, oats is a good companion crop for establishing redtop. Seed bed preparation may include disking of soybean stubble in March or not later than mid-April. Oats and redtop may also be broadcast on bean stubble or fall-tilled ground and "frozen in" if seeded in February or early March. Successful stands of redtop have also resulted by disking, seeding, and harrowing or rolling in late spring or summer depending primarily on soil moisture.

3) Fertilizer - 100 lb per acre of 33% N, 46% P, 60% K desirable but often not essential on built-up cropland.

4) Seeding rate - redtop	4-5 lb per acre
timothy	1 lb per acre
Korean lespedeza	1 lb per acre
red clover	1 lb per acre

5) Seeders - Broadcast above mixture at rate of 7-8 lb per acre typically in swaths 8 ft apart, center to center. Timothy and legumes are desirable in redtop to diversify the cover for prairie chickens. Legumes help build nitrogen in the soil for the grass and a scattering of legumes helps attract insects essential to growing chicks. Timothy seed can be readily separated from redtop but it is sold together at harvest time.

6) Clipping - High mowing or clipping of small grain stubble in late summer may be desirable. Midsummer clipping for weed control will likely be desirable if no companion crop of small grains are involved.

#### Late Summer Seeding

1) Time - About 1 September is best (or from mid August through mid September). Seedings made at this time of year will usually provide excellent seed harvests the following summer.

2) Seed bed options - Summer fallowed (disked) soil, disked small grain stubble, or especially, hayed and disked clover sod is ideal.

3) Fertilizer - (same as above).

4) No companion crop is best.

5) Seeding rate (same as above but exclude legumes).

6) Broadcast seed.

7) Light harrowing or, preferably, a soil roller is desirable.

8) Overseed legumes the following February. Add additional grass seed if necessary.

#### Redtop - Second Year - First Harvest of Grass Seed

1) Seed yield potential - Often about 200 lb per acre.

2) Harvest time - 20 July through 15 August (the last week of July is usually prime time) depending on humidity and other weather conditions.

3) Combine adjustments--

a. Screen over riddles essential--ordinary window screen will suffice, but clover or redtop screens are available. Screens are necessary for high purity seed. Excessive greens (grass stems and weed fragments) may cause heating and loss of germination.

b. Some farmers set cylinder close (about 1/16 inch) to concaves, however, others find that this adjustment is not necessary or desirable.

c. Shut off wind almost completely (a little wind is desirable according to some operators). Cardboard or sheet metal and duct tape is usually sufficient to block air intake.

d. Slow down machine as much as possible.

e. Pick up reel desirable for lodged or flattened stands of redtop (sometimes the result of too much nitrogen fertilization, wind, or rain).

4) Cutting height - Seldom necessary to mow less than 12-14 inches high. This stubble height, or higher, is desirable for attractive nest cover for the following spring and for year-round roosting.

5) Seed handling - Use a wide flat-bed wagon or truck to spread out seed for drying and cooling. It is sometimes necessary to spread out seed on a floor for drying. Gravity-flow wagons are not recommended if seed heating is likely.

6) Baling combine residue - It is usually desirable to bale the windrows made by the combine in order to avoid smothering the redtop sod. However, a haying operation (low cutting with the combine or mowing the stubble after combining) should not be a part of the seed harvest operation if attractive cover for nesting and roosting is to be attained. Only the top 1/2 of the redtop plant, the combine residue, should be baled and removed from the field. The addition of timothy to the basic redtop seeding improves the quality of combine residue to be baled.

Redtop - Subsequent Years - Seed yields typically decline to 50-100 lb per acre after the first harvest. However, yields ranging from 100 to 200 lb per acre are likely to be maintained with annual top dressings of 100 lb per acre of 15-15-15 or 18-46-60 fertilizers. If phosphate and potash levels are initially moderate to high, an annual application of 100 lb per acre of 33% N may maintain high annual yields of redtop seed. By 6 to 8 years of age spraying with 2,4-D may be necessary to control weeds.

#### Prairie Grass.--

##### Winter-Spring Seedings

The seeding time, seed-bed options, and clipping listed for redtop apply to prairie grass seedings as well. Fertilization is less important for prairie seedings because of the danger of compounding competition from annual

weedy forbs and grasses, particularly foxtail. Seeding rates should include several pounds per acre (pure live seed) of each of the three species, big bluestem, switchgrass, and Indian grass. Seeding may be by broadcasting (by hand with big bluestem and Indian grass) or by a special grass drill.

#### Summer Seeding (June - early July)

Lightly disked and rolled small grain stubble makes a particularly good seed bed for prairie grass seed. The straw mulch helps retain moisture for seed germination and also helps minimize soil erosion. No fertilization or companion crops (unless redtop is planned for the 1st 1 or 2 years) are recommended for summer seedings.

Seed Sources.--The prairie chicken project can provide a limited amount of redtop and timothy seed to cooperating farmers in selected areas for the benefit of prairie chickens. The limitation would probably be enough seed for 5 or 10 acres with perhaps 2 or 3 farmers. The source of seed is from harvests made on sanctuaries owned by The Nature Conservancy and the Illinois Department of Conservation in Jasper and Marion counties. Free seed to cooperating farmers would be limited to areas where it would be of most benefit to prairie chickens. Ideally, such areas are within about 1/2 mile of an active booming ground.

A source for prairie grass seed is presently uncertain and may have to be purchased from a dealer in one of the Great Plains States.

#### IMPLEMENTING MANAGEMENT

Mr. Martin Kemper, DOC District Wildlife Biologist, established rapport with several farmers relative to potential grass seedings in the Hoyleton prairie chicken area during the fall of 1980. Conservation Police Officer Robert Jack and his wife also expressed a willingness to help the Hoyleton birds during their visit to the booming grounds in Jasper County in 1980.



News releases by Wilbur Smith, Extension Advisor-Agriculture and by Judith Joy of the Centralia Sentinel and member of the Illinois Nature Preserves Commission were most helpful in sparking interest and a desire to act in the local area. Personal contact with local landowners on a continuing basis will be essential. Provision of grass seed, advice, and perhaps some physical help with seeding and harvesting are also necessary.

The success of every possible nest is vital to the preservation of the chickens at Hoyleton. Thus, while safer grass cover is being developed, one stop-gap measure will be to locate nests in clover fields that are scheduled for hay mowing so that nest destruction may be avoided. Field edges, the first 30 yards or so of clover fields, near booming grounds, are sometimes selected for nesting by prairie chicken hens. Frequent contact and cooperation with local farmers may also provide the opportunity to salvage eggs from nests that have been destroyed by plowing or mowing.

Personnel of the Illinois Natural History Survey, Section of Wildlife Research, will continue census efforts, covermapping, limited collection of data on nesting, and advise on management efforts at Hoyleton. Survey personnel may assist with seeding and seed harvesting--if time permits. Prairie chicken project personnel are already over-extended in management in Jasper and Marion counties.

#### AGENCIES, PERSONNEL AND COLLABORATORS

##### Illinois Department of Conservation

Carl Becker, Endangered Species Coordinator, Springfield

Martin Kemper, District Wildlife Biologist, Sparta

Robert Jack, Conservation Police Officer, Nashville

##### University of Illinois Cooperative Extension Service

Wilber Smith, Extension Advisor-Agriculture, Nashville

Illinois Natural History Survey

Ronald L. Westemeier, Associate Grassland Wildlife Ecologist, Effingham  
John E. Buhnerkempe, Assistant Grassland Wildlife Ecologist, Effingham

Illinois Nature Preserves Commission

Judith Joy, Commission member and newsperson for Centralia Sentinel

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Table 1. Spring counts of prairie chickens on booming grounds near Hoyleton, Il., 1968-80.

Year	Observer(s)	Cocks	Hens	Booming Ground Location	Cover Type
				T.1S.-R.2W.	
1968	Don Schnitker	6	--	SW of farmstead	--
1969	K.P. Thomas	8	1	Sec. 24 NE SE SW	green wheat
1970	J.A. Ellis	4	2	Sec. 24 SW SE	bean stb.
1971	J.A. Ellis	2	--	Sec. 24 SW SE	bean stb.
1972	D.R. Vance	5	1	Sec. 24 NW SW SE	bean stb.
1973	J.A. Ellis	3	--	Sec. 24 NW SE SW	bean stb.
1974	J.A. Ellis & R.L. Westemeier	10	2	Sec. 19 NW SE SE & Sec. 24 SW NE SW	bean stb. green wheat
1975	R.L. Westemeier	9 <sup>a</sup>	4	Sec. 24 SE SW	green wheat
1976	R.L. Westemeier	11 <sup>b</sup>	2	Sec. 24 NW SW SE	bean stb.
1977	R.L. Westemeier	6	3	Sec. 24 NW SW SE	green wheat
1978	R.L. Westemeier	7	--	Sec. 24 NE SE SW	green wheat
1979	R.L. Westemeier	4	1	Sec. 24 NE NE SW	bean stb.
1980	J.E. Buhnerkempe	7	4	Sec. 24 NE NE SW	corn stb.

<sup>a</sup> 5 cocks also located 4 miles west near New Minden.

<sup>b</sup> 2 cocks also located 4 miles west near New Minden.

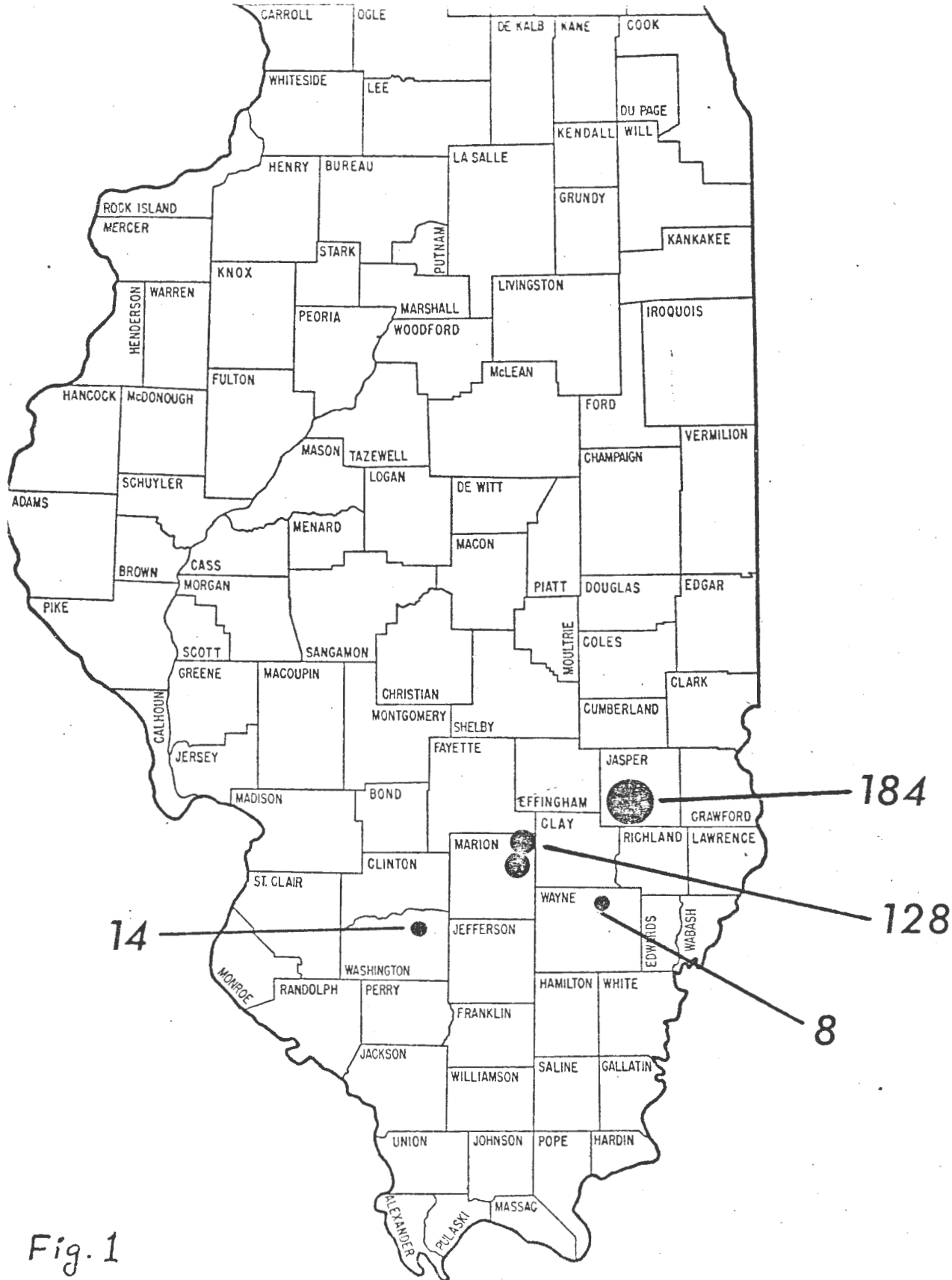


Fig. 1  
 DISTRIBUTION OF THE ESTIMATED 334  
 PRAIRIE CHICKENS IN THE SPRING OF 1980.

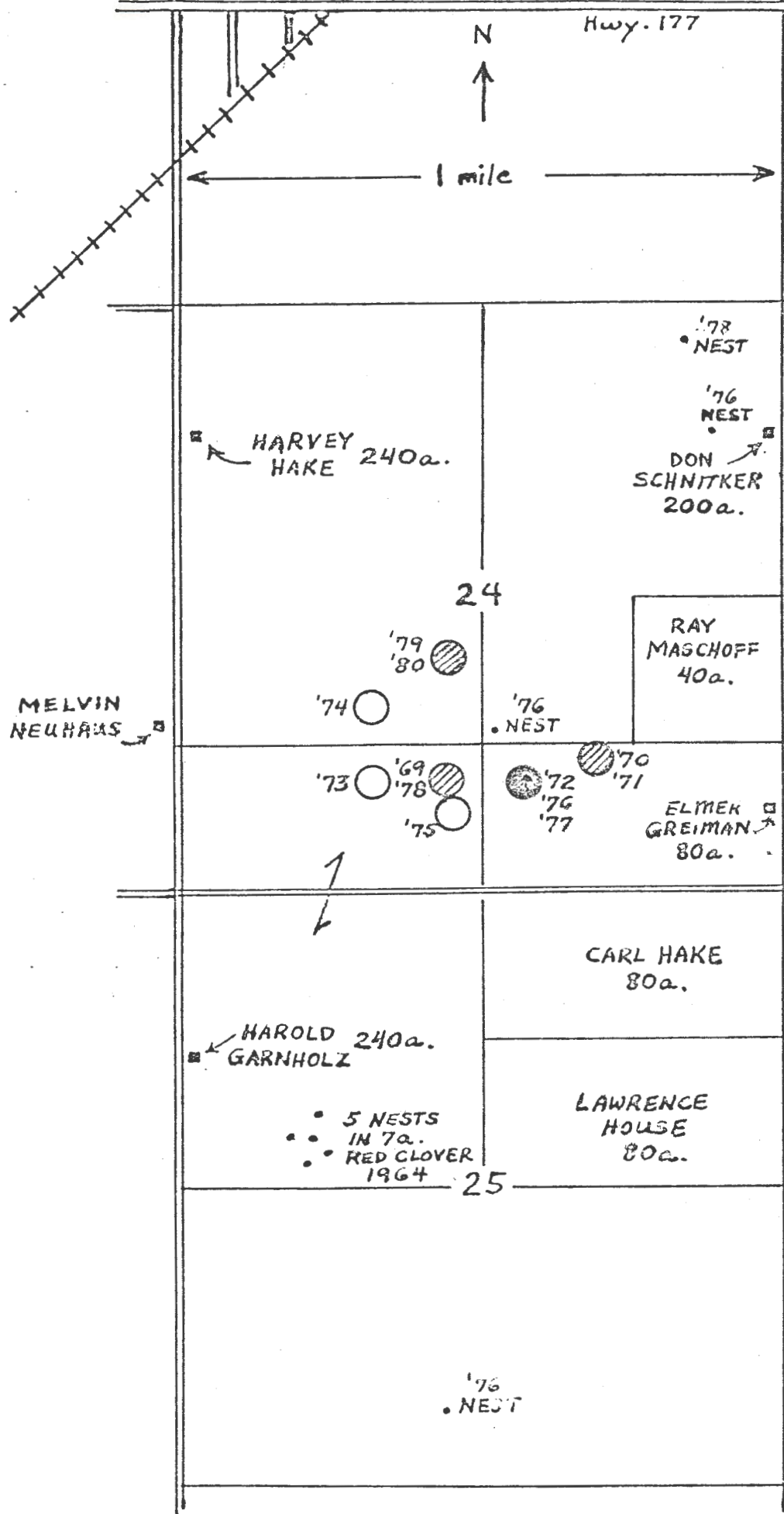
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1 mile

Fig. 2 Prairie chicken booming grounds and nest location on several farms near Hoyleton, Ill. 1969-80.

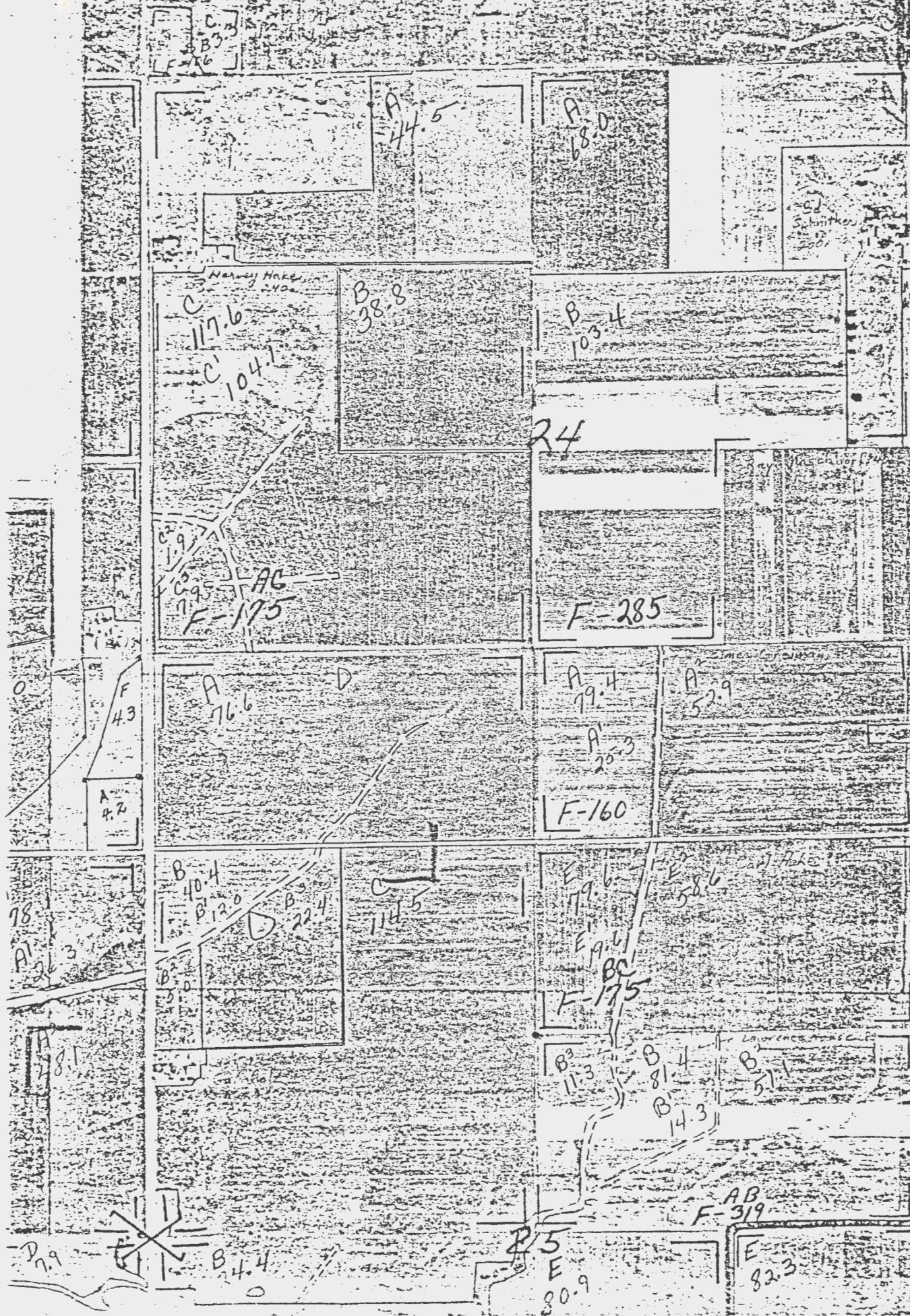
○ - BOOMING GROUNDS



19

30

Fig 3 Aerial photo of the Hoyleton prairie-chicken area



10-6-1969-96  
FIG. 3

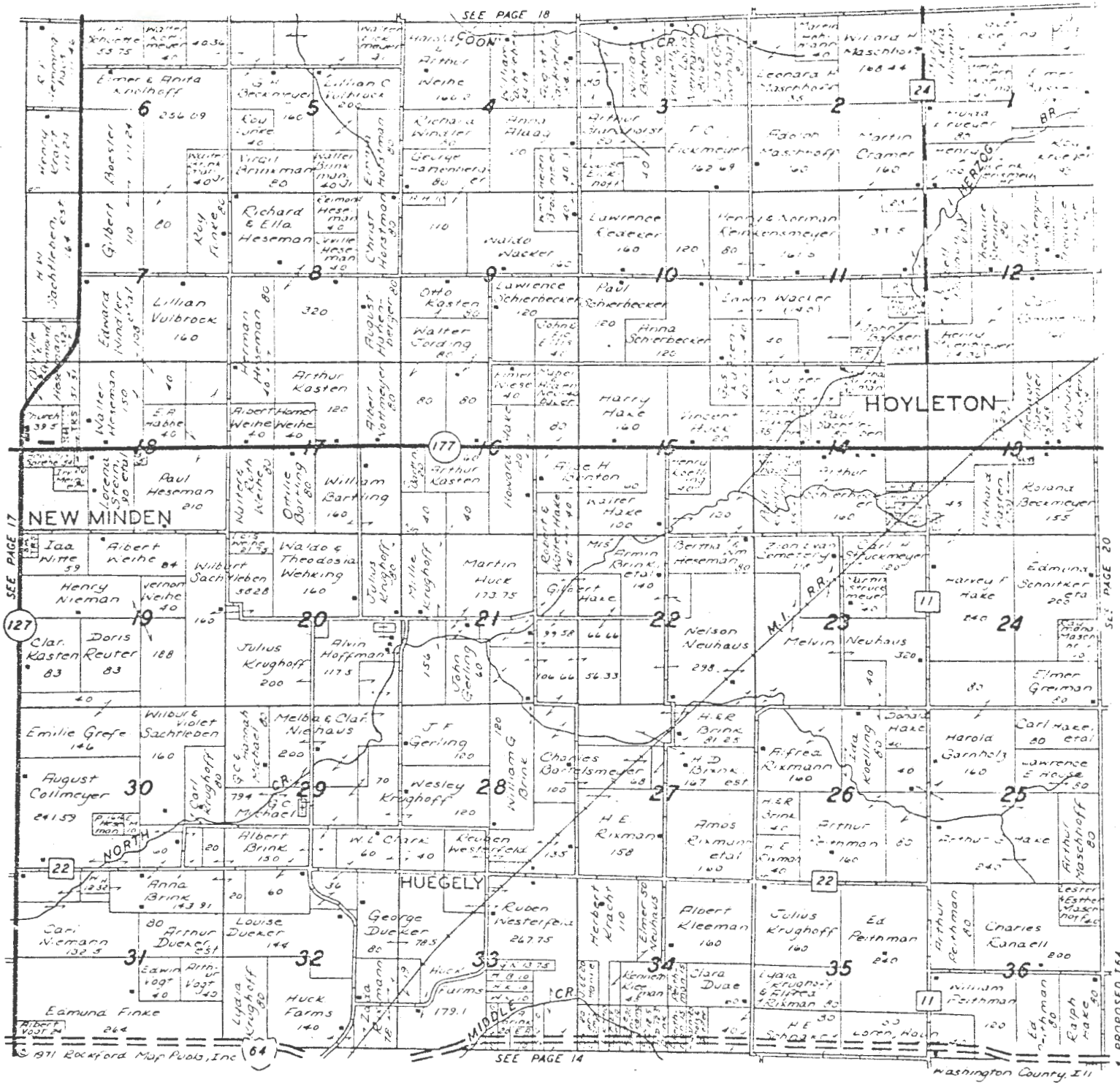


Fig. 4 Plat map of the Hoyleton, Il. area.