

ANALYSIS OF ILLINOIS WILD TURKEY HABITAT¹

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ABSTRACT

A vegetation analysis of wild turkey habitat was conducted in the Illinois' counties of Alexander, Calhoun, Jackson, and Union. From these studies it was determined that wild turkey inhabit relatively open stands of timber with agricultural fields and forest openings in proximity. Species of *Quercus* comprise approximately 40% or more of the trees samples, with *Q. alba*, *Q. rubra*, and *Q. velutina* being the most important. Common associates include *Carya* spp., *Cornus florida*, *Acer saccharum*, *Sassafras albidum*, *Fraxinus americana*, and *Ulmus rubra*. Though generally associated with dense forest, the present study revealed that wild turkeys readily adapt to more open agricultural areas with the increased edge effect.

In 1959, with the release of wild trapped stock obtained from Mississippi, West Virginia, and Arkansas, the Illinois Department of Conservation initiated a restocking program that would successfully restore the Eastern Wild Turkey (*Meleagris gallopavo silvestris*) to its original range in Illinois (Calhoun, 1966). The success of this program is best evidenced by the fact that the turkey population was high enough in 1970 in Alexander, Jackson, and Union counties to warrant the first legal season since their disappearance from the state (Cottingham,

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1974). Pope and Calhoun Counties were opened to hunting in 1972 and 1978 respectively.

Lindzey (1967) noted that the turkey habitat criterion which presumes that large tracts of timber with little or no human interference were required, has been modified as the wild turkey is returned to its original range. Birds in Iowa, Pennsylvania, New York, Texas, and Illinois, have been reported in relatively close association with humans. Truly wild turkeys, however, seem to thrive best in areas with minimal human contact. The purpose of the present study is to determine the type of habitat in which high concentration of wild turkey occur in Illinois.

MATERIALS AND METHODS

The field study areas were determined by utilizing data collected at hunter check stations during the spring turkey seasons. Data were available for Alexander, Jackson, and Union Counties from 1970-1979, Pope County for 1972-1979, and Calhoun County for 1978-1979. Kill locations were recorded by township, range, and section numbers. Sections with high kill concentrations were selected for subsequent field studies. Three sections in Alexander, Calhoun, and Union Counties, and two sections from Jackson County were selected. Pope County was eliminated from the study due to the absence of kill concentrations.

The general habitat of each section was determined from 1974 black and white aerial photographs obtained from the USDA Agricultural Stabilization and Conservation Service. From these photographs the km of roads, the km of edge, and the percent of forests, fields, and orchards for each section was obtained with the use of a Lasico compensating polar planimeter. The number of occupied dwellings was determined by driving all roads in each section.

Within each section a randomly located forest, at least 20 ha in size, was sampled using a 3 BAF metric wedge prism. Within this forest 20 study plots were randomly located about 40 m apart along a compass line through the area. The total number of individuals of each species in each plot was recorded (Dilworth and Bell, 1976). From these data the basal area (m^2/ha), relative dominance, and relative frequency for each tree species was determined using the procedure outlined by Ebinger (1982). At every other sample point for the metric wedge prism a 0.025 ha circular plot was located. In these plots the trees were tallied by species into 10 cm dbh. diameter classes. From these data the density, relative density, and density by diameter class was determined for each species using the procedure outlined by Ebinger (1982). The importance value (IV) for each species was then calculated to provide a better basis for comparison of the various species in the forest areas studied. As used here the determination of the IV follows the procedure outlined by McIntosh (1957) and later Boggess (1964) in which the IV is the sum of the relative frequency, relative density, and relative dominance. The nomenclature used follows Mohlenbrock (1975).

RESULTS

An analysis of the aerial photographs of each section (Table 1) show that the counties in extreme southern Illinois (Alexander, Jackson, and Union) are for the most part heavily forested (74% -98%), have relatively small amounts of fields

and cultivated land (2% -26%), average 8.3 km of forest edge, 1.3 km of roads, and 2.5 occupied dwellings. In contrast, the sections in Calhoun County located in west-central Illinois, are less heavily forested (63% -81%), have extensive areas of non-forested land (19% -37%), average 77.6 km of forest edge, 2.6 km of roads, and 5 occupied dwellings.

Of the forest areas studied in each section, 10 are upland sites, composed primarily of ridges and narrow valleys. White oak (*Quercus alba*) is found in all of these forests, and in most is the leading dominant with an IV from between 23.2 and 102.3, averaging 64.0 and with an average basis area of 5.2 m²/ha. Red oak (*Q. rubra*), black oak (*Q. velutina*), and occasionally yellow chestnut oak (*Q. muhlenbergii*) are commonly associated with white oak, and this species group generally dominated these upland forest sites. Hickories are also common components of these upland sites with an IV range of 21.9 to 80.5, averaging 54.2. These species include shagbark hickory (*Carya ovata*), mockernut hickory (*C. tomentosa*), bitternut hickory (*C. cordiformis*), and occasionally pignut hickory (*C. glabra*). Two species that contribute extensively to the understory are sugar maple (*Acer saccharum*) with an IV range of 10.6 to 90.6, and flowering dogwood (*Cornus florida*) with an IV range of 9.1 to 51.9. Over 75% of the sugar maple and 98% of the flowering dogwood are in the 1-2 dm diameter class. Other tree species encountered are tulip tree (*Liriodendron tulipifera*), sassafras (*Sassafras albidum*), white ash (*Fraxinus americana*), sour gum (*Nyssa sylvatica*), beech (*Fagus grandifolia*), and slippery elm (*Ulmus rubra*).

One forest area sampled in Jackson County, located near the Turkey Bayou Recreation Area, occurs in a lowland area. Overcup oak (*Quercus lyrata*) with an IV of 53.4 is the dominant tree species in the larger size classes. Other oak species include Shumard's oak (*Q. shumardii*), pin oak (*Q. palustris*), cherry-bark oak (*Q. pagodaefolia*), and bur oak (*Q. macrocarpa*). The oaks have a combined IV of 150.7. American elm (*Ulmus americana*) and sweet gum (*Liquidambar styraciflua*) account for nearly all of the individuals in the 1-2 dm diameter class of this forest. Sharbark hickory and kingnut hickory (*Carya laciniosa*), with a combined IV of 37.4, are the only hickory species encountered.

DISCUSSION

All of the sections studied in extreme southern Illinois are located in the Ozark, Shawnee Hills, and Lower Mississippi River Bottomlands Natural Division (Schwegman, 1973) which are part of the eastern deciduous oak-hickory forest. Hendricks (1969) stated that this area still contains the physical and biotic conditions suited to the Eastern Wild Turkey. A description of the study area would read very similar to Wheeler's (1948) description of ideal turkey habitat: "a well watered, forested area that is composed of a variety of timber types of which 50% is hardwoods (one half of which is oak), that is broken by well dispersed forested clearings that support rank growth of native grasses, legumes, and plants producing succulent fruits."

The present study suggests that the best habitat for wild turkeys in Illinois are forested areas in which oaks and hickories are the dominant overstory. In nearly all forests sampled oaks and hickories together account for more than 50% (IV of 150 or above) of the tree species present. Also, in most sections sampled, agricultural fields and forest openings are in close proximity. These canopy open-

ings provide food plants, breeding territories, nesting and brooding areas, and loafing grounds (Holbrook and Lewis, 1967). The increased edge effects created by the interspersing of forest and agricultural fields allows the intrusion of potential food plants into the mature forested areas. Lindzey (1967) noted that the birds prefer situations at the forest edge where suitable forest habitat is at hand.

Originally it was thought that the only acceptable turkey habitat was large unbroken tracts of mature timber, but now the birds are found in a variety of situations from virgin forest to late sapling stage hardwoods and even in woodlots (Dellinger, 1967). Loomis (1978) stated that wild turkeys are capable of surviving on relatively small tracts of timber if these woodlots are connected by narrow strips of woods or brushy draws not more than one fourth of a mile long. This more open habitat is typical of that found in Calhoun County, located in the Middle Mississippi Border Natural Division of west-central Illinois (Schwegman, 1973). Here the sections lack the extensive forests, more open fields, cultivated land, and orchards occur, and there is a relatively large amount of forest edge. This further indicated that the Eastern Wild Turkey, though originally a bird of extensive forest, is well adapted to more open agricultural areas with the associated increased edge.

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Table 1. General habitat of the kill areas and the composition of a representative forest of each kill areas in Illinois counties with high concentrations of turkeys.

SECTIONS STUDIED	GENERAL HABITAT OF KILL AREA						REPRESENTATIVE FOREST STUDIED IN KILL AREA									
	km of roads	km of edge	dwellings	% forest	% field	% orchard	Basal Area (m ² /ha)	Stem/ha	IV <i>Quercus</i> spp.	IV <i>Carya</i> spp.	Number of trees per ha by diameter class (dm)					
											1-2	2-3	3-4	4+		
Alexander County																
Sec 14 T14S R2W	1.2	2.4	0	98	2	0	18.8	3	186.6	72.6	140	84	72	24		
Sec 23 T14S R2W	2.0	4.0	0	96	4	0	24.2	332	213.9	21.9	132	52	88	60		
Sec 31 T14S R2W	2.0	36.8	1	83	17	0	23.0	292	160.2	51.3	132	52	48	60		
Calhoun County																
Sec 16 T10S R2W	2.8	76.8	8	63	31	6	18.4	388	123.6	34.2	256	48	52	32		
Sec 20 T9S R2W	3.2	114.2	4	64	29	7	19.0	364	121.5	47.1	196	72	68	28		
Sec 27 T11S R2W	1.9	41.9	3	81	17	2	21.3	328	82.9	27.4	160	52	80	36		
Jackson County																
Sec 34 T10S R3W	1.6	4.5	10	98	2	0	20.0	340	154.3	75.5	168	56	60	56		
Sec 2 T10S R3W	.8	5.7	0	95	5	0	20.6	412	150.7	37.4	232	64	36	80		
Union County																
Sec 14 T11S R3W	1.2	2.4	1	92	8	0	22.0	352	143.1	80.5	148	104	48	52		
Sec 4 T13S R2W	0	1.0	0	96	4	0	29.9	304	103.0	76.4	104	60	88	52		
Sec 15 T12S R2W	1.8	9.7	8	74	26	0	20.6	360	190.4	55.1	152	84	64	60		