HOME RANGE, DISPERSAL AND HABITAT UTILIZATION OF EASTERN WILD TURKEY GOBBLERS DURING THE BREEDING SEASON.[1]

by

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ABSTRACT

Eight eastern wild turkey *(Meleagris gallopavo silvestris* Viellot) gobblers were captured on the Britt Research Area in McCormick County, South Carolina, during February and March of 1973. They were equipped with numbered leg bands, colored vinyl patagial streamers, and radio transmitters and were released at the sites of capture.

The turkeys were located several times daily from the time of release until the primary breeding season ended in middle June using both telemetric and visual observations. Average minimum home ranges during the breeding season for two adult and five juvenile gobblers were determined to be 93.5 and 95.0 hectares, respectively. Three adult and five juvenile gobblers dispersed an average 4.57 and 1.47 kilometers, respectively from their capture and release sites over a four months period.

Several aspects of habitat utilization by gobblers were studied. No significant changes in habitat utilized by gobblers were noted as the breeding season progressed (P .10). Gobblers utilized different types of habitat at different times of the day (P .02). Use of pastures peaked during early morning and again in late afternoon. There was a difference in utilization of habitats by adult and juvenile gobblers (P .10). Adults utilized pasture habitats more frequently, while juveniles made more use of pine wood habitats.

A present concept of wildlife management is maximum utilization of all available wildlife habitats within limits dicated by current land use practices. However, sufficient information to predict the impact of one species home range and behavior on another is not known. Home range and behavior of game animals need to be known, especially if the present concept of multiple game use of the same habitat is to be continued.

Many areas of apparently good turkey habitat have few or no turkeys. To help alleviate this condition, more needs to be known about wild turkey ranges. This investigation was initiated to study home range, dispersal from release site, and habitat utilization of adult and juvenile gobblers occupying the same range throughout one breeding season.

SITE DESCRIPTION

The study site for this investigation was Britt Research Area and surrounding lands, located 13 km north of McCormick, South Carolina (Figure 1). This typical Piedmont terrain was predominately mixed pine-hardwood and pine woodland with hardwoods along the stream bottoms.

Dominant species existing in the pine habitat were loblolly pine *(Pinus taeda)* and short-leaf pine *(P. echinata),* while the pine-hardwood habitat was dominated by loblolly pine and white oak *(Quercus alba).* White oak was dominant in the hardwood habitat. Most of the wooded area was grazed, resulting in a relatively open understory. Grazed pastures of fescue *(Festuca* sp.), coastal bermuda *(Cynodon dactylon)* and bahia grass *(Paspalum notatum)* were concentrated in the center part of the study area.

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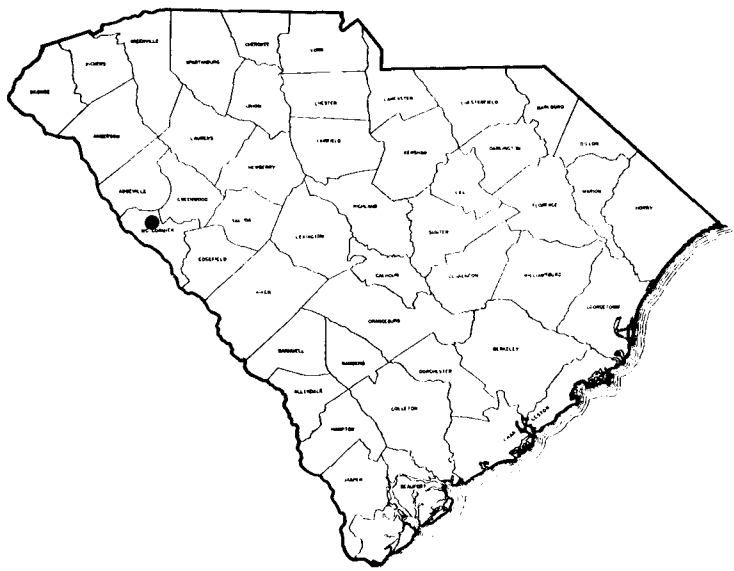

Figure 1. Location of Britt Research Area in McCormick County, South Carolina.

MATERIALS AND METHODS

A vegetative-cover-type map of the study area was constructed from aerial photographs and divided into square units 1 hectare in size. Each unit was assigned a dominant vegetative-cover type according to which type was most prevalent in the unit. It was determined that 21 percent of the land area was pine, 16 percent was hardwood, 32 percent was pine-hardwood, 20 percent was pasture, and 11 percent was brush.

Eight wild turkey gobblers were trapped with rocket projected nets on prebaited sites as described by Austin (1965). Captured turkeys were weighed and banded with numbered leg bands. Vinyl patagial streamers similar to those described by Knowlton et al. (1964) were attached to both wings of each turkey. The turkeys received indentical streamers on both wings, but no two turkeys received the same colored streamers. A harness of surgical tubing (Williams et al. 1968) was used to fasten a radio transmitter to the back of each turkey. All transmitters were in the frequency range of 150.860 MHz to 151.120 MHz and emitted from 84 to 336 pulse signals per minute. Transmitters were attached to turkeys in the field, and the turkeys were released at the capture site within one hour after capture.

Radio locations of each turkey were obtained several times daily when possible from the date of release until the transmitter ceased functioning or until 15 June when the study was terminated. The decline in the number of visual observations of hens by early June indicated that most had begun nesting and that the primary breeding period had

ended. Location points were determined by triangulation of azimuths taken from two or more identifiable locations and were plotted on a grid map of the study area for home range and habitat utilization determinations. Home ranges were determined by connecting the outer periphery location points on a map of known scale and measuring the enclosed area with a polar planimeter.

RESULTS AND DISCUSSION

Adult and juvenile gobblers' minimum home ranges and dispersal distances from release sites were compared for the 1973 breeding season (Table 1). Means of 93.5 and 95.0 hectares were found for the minimum home ranges during the breeding season of two adult and five juvenile gobblers respectively. Analysis of variance indicated that there was no significant difference in the size of the minimum home ranges during the breeding season of adult and juvenile gobblers ($P > .10$). Mean dispersal distance from the release site for three adults (4.57 km) was more than three times that of five juveniles (1.47 km). A significant difference in the distances that adults and juveniles dispersed from the sites of release was indicated by analysis of variance ($P < .09$). Dispersal distances of two monitored adults varied. Turkey number A-2 established a home range near the release site while turkey number A-1 dispersed 8.47 km.

Juvenile gobblers either joined an adult gobbler and harem or joined other juvenile gobblers for the duration of the breeding season. Turkeys number J-1 and J-5 (Figures 2 and 3), juveniles, joined turkey number A-2 (Figure 4), in early April and remained together throughout the breeding season. Although the adult occasionally chased the juveniles, no other aggressive behavior was observed except when turkey number J-1 was once observed attempting to breed a hen. The adult drove the juvenile away and then bred the hen. After breeding occurred, the juvenile rejoined the flock. Two other juvenile gobblers, turkeys number J-2 and J-3 (Figures 5 and 6), were captured from the same flock as turkey number J-1 on 2 March. However, these two juveniles remained together until turkey number J-3 was killed on 9 April. Within a week, turkey number J-2 was observed with another juvenile gobbler, turkey number J-4 (Figure 7). They remained together until monitoring was discontinued in middle June and were observed rarely in the presence of other turkeys.

Three aspects of habitat utilization by wild turkeys were studied: (1) habitats used by adult and juvenile gobblers, (2) changes in habitats used by gobblers as the breeding season progressed, and (3) variations in habitats used at different times of the day.

Various habitats utilized by adult and juvenile gobblers are shown in Table 2. A significant difference in the habitats used by adult and juvenile gobblers was determined by chi-square analysis ($P < .10$). Utilization of hardwood and mixed pine-hardwood habitats was similar for both age groups. Adults, however, used pastures more while juveniles spent more time in pine habitat. The greater utilization of pastures by adults was probably because pastures were favored as gobbling and strutting areas. Juveniles did less gobbling and strutting than the adults. The use of pastures as favorite courtship areas was previously noted by Barwick and Speake (1973). Greater use of pine habitat by juvenile gobblers was primarily for loafing.

To determine if habitat utilization varied as the breeding season progressed, the observations made in each habitat were grouped by months. Although the number of observations made on gobblers in pastures steadily increased as the breeding season advanced, chi-square analysis indicated that the increase was not significant ($P > .10$). The number of observations recorded in hardwood habitat showed a decrease during the same period (Figure 8). This higher number of observations noted in pastures was considered to be related to the increased gobbling and strutting activities. Also, the food supply in pastures increased during this period, possibly accounting for an increase in use by juveniles. Barwick and Speake (1973) reported that adult gobblers were more active in mating than feeding during the spring. Schorger (1966) reported that food was not as important during this period because fat stored in the breast sponge acts as a source of energy.

Table 1. Minimum home range and movement data for eight telemetry-monitored wild turkey gobblers in McCormick County, South Carolina, during the breeding season of 1973.

Turkey Number	Age Class	Trap Date	No. of days monitored	No. of Observations		Home Range (hectares)	Dispersal From Release Site (km)
				Radio	Visual		
A-1	Adult	27 Feb	21	3	0	–	8.47
A-2	Adult	27 Feb	109	61	17	127	1.20
A-3	Adult	27 Feb	41	4	3	60	4.03
	Mean (Adults)		57	23	7	93.5	4.57
J -1	Juvenile	2 March	106	9	18	70	1.25
J -2	Juvenile	2 March	106	49	5	100	1.47
J -3	Juvenile	2 March	34	20	0	72	1.63
J -4	Juvenile	26 March	83	44	2	92	1.70
J -5	Juvenile	26 March	83	40	20	141	1.28
	Mean (Juveniles)		82	32	8	95.0	1.47
	Mean (Totals)		73	29	8	94.6	2.63

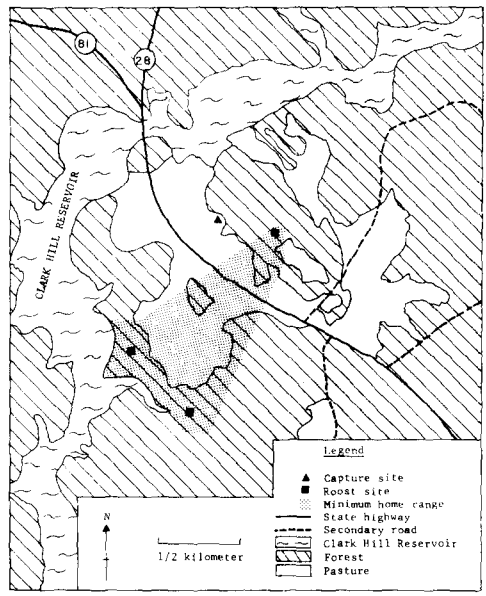

Figure 2. Minimum home range during the 1973 breeding season for turkey number J-1, a juvenile gobbler in McCormick County, South Carolina, as determined by telemetric and/or visual observations.

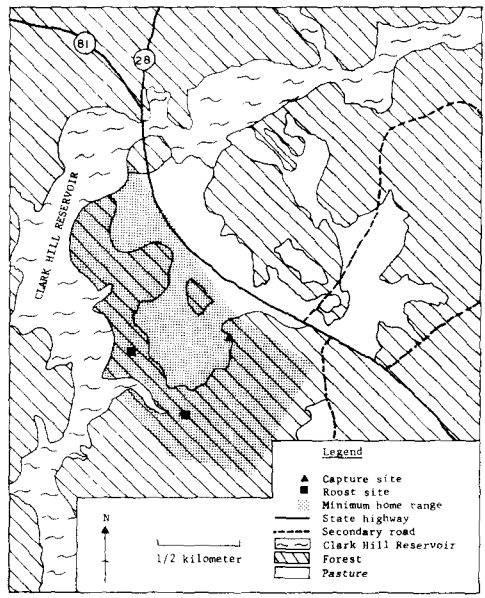

Figure 3. Minimum home range during the 1973 breeding season for turkey number J-5, a juvenile gobbler in McCormick County, South Carolina, as determined by telemetric and/or visual observations.

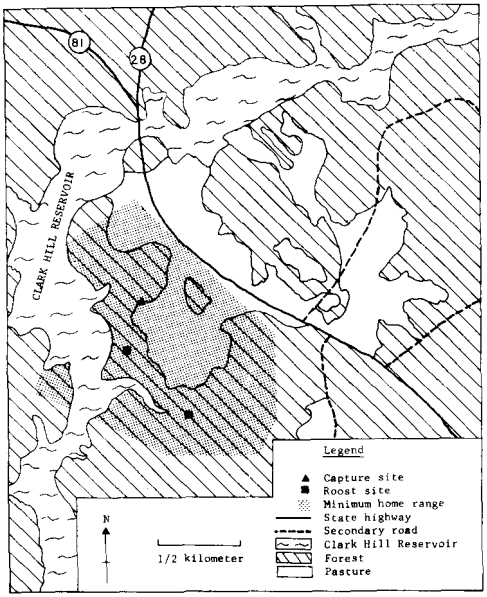

Figure 4. Minimum home range during the 1973 breeding season for turkey number A-2, an adult gobbler in McCormick County, South Carolina, as determined by telemetric and/or visual observations.

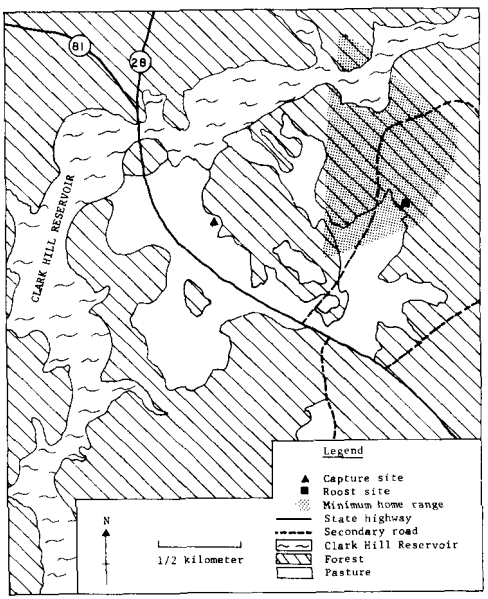

Figure 5. Minimum home range during the 1973 breeding season for turkey number J-2, a juvenile gobbler in McCormick County, South Carolina, as determined by telemetric and/or visual observations.

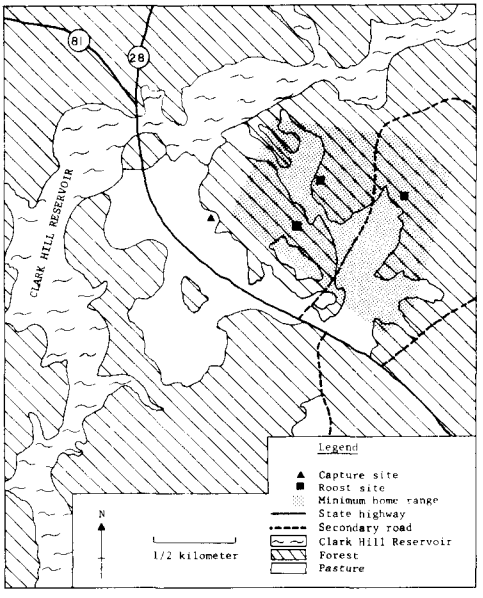

Figure 6. Minimum home range during the 1973 breeding season for turkey number J-3, a juvenile gobbler in McCormick County, South Carolina, as determined by telemetric and/or visual observations.

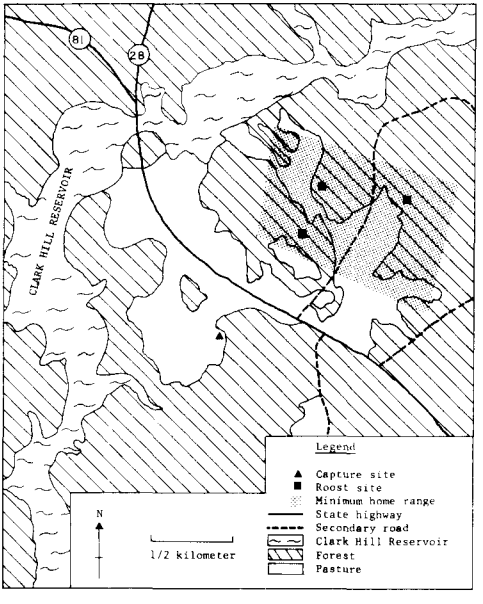

Figure 7. Minimum home range during the 1973 breeding season for turkey number J-4, a juvenile gobbler in McCormick County, South Carolina, as determined by telemetric and/or visual observations.

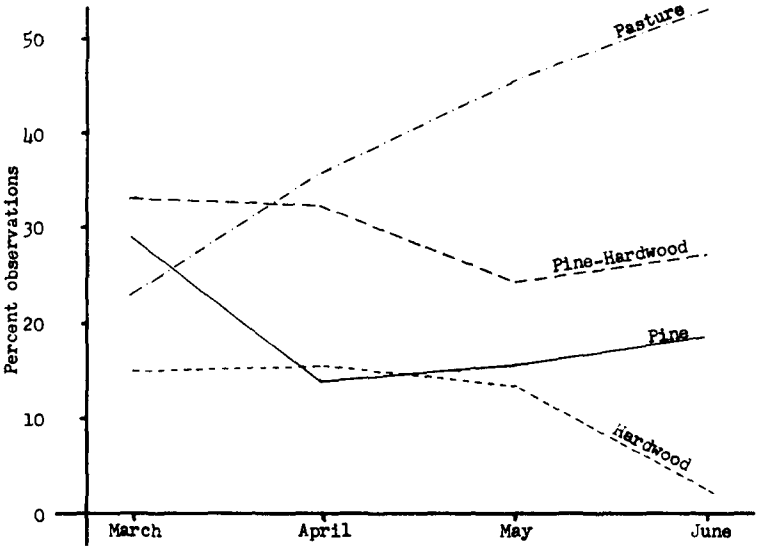

Figure 8. Changes in utilization of habitat by seven monitored gobblers during the 1973 breeding season.

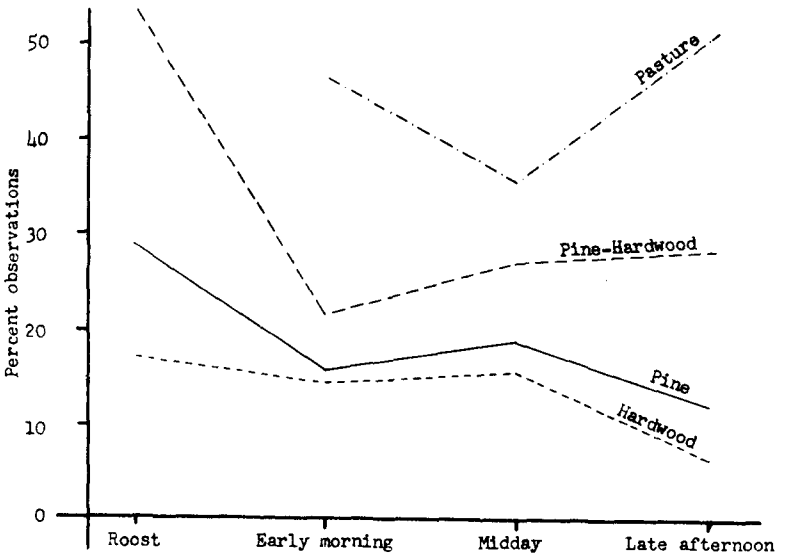

Figure 9. Changes in utilization of habitat by seven monitored gobblers relative to the time of day during the 1973 breeding season.

Table 2. Percent of daylight observations made in each of five habitats utilized by seven telemetry-monitored gobblers in McCormick County, South Carolina, during the breeding deason of 1973.

Turkey Number	Age	Total Observations	Pine	Hardwood	Pine-hardwood	Pasture	Brush
A-2	Adult	78	10.2	16.7	30.8	42.3	0.0
A-3	Adult	7	14.3	28.6	0.0	57.1	0.0
Subtotal		85	10.6	17.6	28.2	43.6	0.0
J -1	Juvenile	27	0.0	14.8	14.8	70.4	0.0
J -2	Juvenile	54	33.3	9.3	38.9	18.5	0.0
J -3	Juvenile	20	40.0	15.0	45.0	0.0	0.0
J -4	Juvenile	46	30.4	10.9	34.8	19.6	4.3
J -5	Juvenile	60	5.0	18.3	31.7	43.3	1.7
Subtotal		207	20.8	13.6	33.3	30.9	1.4
Total		292	17.8	14.7	31.9	34.6	1.0

Habitat utilization in relation to time of day was also analyzed. Days were divided into four time periods: (1) roost, (2) early morning (before 0900) (3) midday (0900 until 1500), and (4) late afternoon (1500 until dark). Chi-square analysis indicated that the types of habitat utilized by gobblers varied with the time of day ($P > .02$).

Fifty-four percent of the roost observations made were in mixed pine-hardwood habitats, 29 percent were in pine habitats, and 17 percent were in hardwood habitats (Figure 9). Loblolly pine was the species most often observed as a roost tree. Only on two occasions was a turkey observed roosting in hardwood trees - white oak and sweetgum *(Liquidambar styraciflua)*. The data showed that the use of pastures peaked during the early morning and again during late afternoon (Figure 9). These two periods were reported by Mosby and Handley (1947) to be the major feeding periods for turkeys. Although adult gobblers were observed to feed little, they often followed hens into the pastures. While hens fed, gobblers remained in the pastures, often gobbling and strutting.

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SEASONAL FLUCTUATIONS OF A BOBWHITE POPULATION IN THE GEORGIA PIEDMONT

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ABSTRACT

A Bobwhite population in the Georgia Piedmont was censused periodically throughout the year by bird dogs, baiting and sightings, and trapping. The population (on a 100 acre basis) varied from a late summer high of 15.3 birds to the year later figure of 2.7 adult quail. Average weekly losses calculated for each different interval were: 1 September to 1 November-2.8 percent, 1 November to 1 April-2.0 percent, 1 April to 1 July-3.2 percent, and 1 July to 1 September-3.3 percent (summer figure for adult birds only).

INTRODUCTION

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