

ACTIVITIES OF WILD TURKEY HENS AND POULTS AS INFLUENCED BY HABITAT¹

by

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ABSTRACT

Daily movements and brood rearing among wild turkey (*Meleagris gallopavo silvestris*) hens in the Piedmont of eastern Alabama was studied during 1968 and 1969. Twelve hens were tagged in the patagium and instrumented with radio transmitters. Daily movements did not cover the entire spring and summer ranges. Daily movements of non-nesting hens averaged 0.4 mile; those of nesting hens averaged 0.22 mile; and those of hens with broods averaged 0.32 mile. They were usually linear and were strongly influenced by feeding areas provided by permanent pastures. All brood rearing ranges were within grazed permanent pastures and adjacent grazed woodlands. Management suggestions for brood rearing habitat based on range and movement data are given.

INTRODUCTION

A radio telemetry study of wild turkey hens was conducted during the reproductive season in 1968-69 in the Piedmont of Alabama. The study was part of a comprehensive investigation of the population dynamics of a newly introduced wild turkey population (Speake et al. 1969).

Telemetrically determined movements and activities revealed the location, size, and shape of the turkey's range during the spring and summer (Hillestad 1970). But simply delineating these attributes of an animal's range may not fully reveal their significance, and the determination and analysis of the daily movements and activities of the hens on the study area were undertaken to better evaluate the habitat selected for nesting and brood rearing.

Assistance and helpful suggestions were contributed by L. H. Barwick, A. K. Burttram, A. S. Johnson, R. L. Marchinton, L. E. Williams, Jr., D. H. Austin, M. K. Causey, and E. P. Hill. Conservation officer E. J. Baker assisted in patrolling the research area for poachers. Appreciation is expressed to the landowners of the Saugahatchee Wildlife Research Area for permission to work on their land. Financial support was furnished by the Alabama Cooperative Wildlife Research Unit, the National Wildlife Federation, and the American Museum of Natural History, Frank M. Chapman Fund.

STUDY AREA

The 9,083-acre study area is located in the Alabama Piedmont in Lee County (Fig. 1). The area is used by the Alabama Cooperative Wildlife Research Unit for wildlife studies by agreement with landowners.

¹A contribution of the Alabama Cooperative Wildlife Research Unit: Auburn University Agricultural Experiment Station, Game and Fish Division of the Alabama Department of Conservation, the U. S. Fish and Wildlife Service and the Wildlife Management Institute cooperating.

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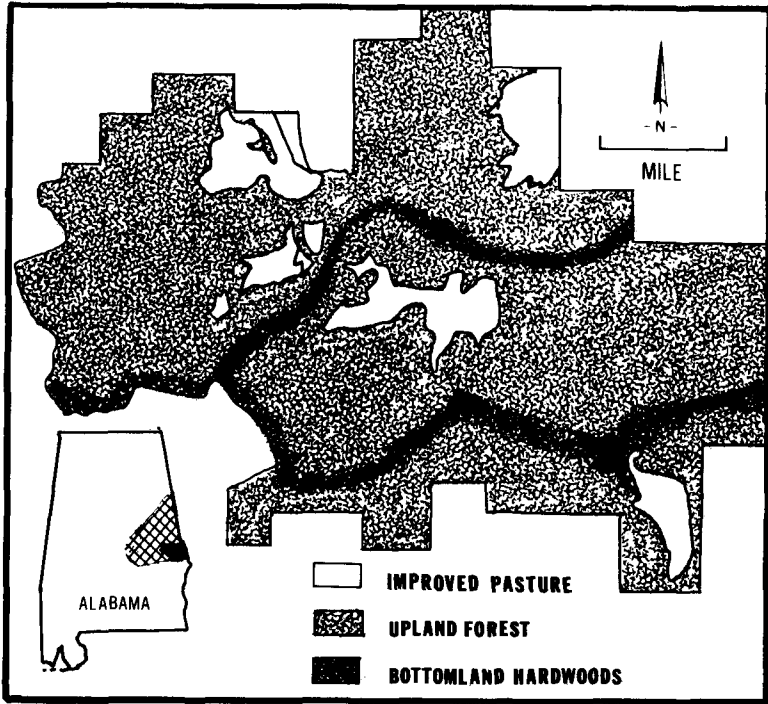


Figure 1. The 9,000-acre Saugahatchee Wildlife Research Area, Lee County, Alabama. Crosshatch on inset map indicates Piedmont Area in Alabama; solid area is Lee County.

Agricultural land use is primarily cattle grazing of improved and woodland pastures. The dominant improved pasture vegetation is Coastal bermudagrass (*Cynodon dactylon*). Bahiagrass (*Paspalum notatum*) also occurs in some of the pastures and one 10-acre pasture is sown to this species. Roughly one-third of the area is grazed by cattle. Very little row-cropping agriculture is conducted on the area. Most of the forested area is cutover at irregular intervals for sawlogs and pulpwood.

The area was restocked with 26 turkeys in 1965-66 and had an estimated population of 118 in October 1968. Continued observations on this population along with periodic capture and patagial tagging of unmarked individuals made it possible to estimate this population by direct count since most of the individuals could be identified with field glasses (Speake et al. 1969).

More detailed descriptions of the habitat and previous and existing turkey populations have been reported by Speake et al. (1969), Barwick and Speake (1970), and Hillestad (1970).

METHODS

During 1968 and 1969, 12 hens were captured with alphachloralose (Williams 1966), aged by wing characters (Williams 1961), and patagially tagged as described by Knowlton et al. (1964). Small, 27 MHz radio transmitters were attached to the hens, and subsequent radio tracking was conducted as

described previously (Hillestad 1970). In addition to these previously described procedures, locations of the instrumented birds were recorded at 1- to 2-hour intervals to permit plotting of daily movements. Successive roosts were located and were included in each daily tracking period. Minimum daily movements were the straight-line distances between successive roosting sites.

RESULTS AND DISCUSSION

Daily Movements and Activities

Non-nesting hens.—Daily movements of four subadult hens were monitored in 1968. None of these hens attempted to nest, although a fifth instrumented subadult hen did nest. Radio contact could not be maintained with this hen, however, and little data were collected.

Hens 23, 28 and 38 dispersed an average of 1.4 miles from their capture sites to their spring-summer ranges. Due to unfavorable tracking conditions at the time of dispersal, detailed monitoring of the dispersal was not possible. However, all of the dispersal movement was accomplished in two days and, in the case of Hen 28, the dispersal distance was 1.9 miles. After dispersal, all four hens established stable ranges and maintained fairly predictable daily movements within their ranges. All ranges were within permanent pastures and the upland hardwood-pine association.

Daily movements averaged 0.4 mile (Table 1) and were primarily located along the pasture-woods ecotone. These non-nesting hens seldom associated with other turkeys for any length of time.

During daily activities, the hens spent approximately one-half of the day feeding in the pastures (often close to cattle) and along the pasture-woods ecotone. Without exception, all hens were located at least once each day during the tracking period in the pasture or ecotone within their ranges (Table 1). The peaks of the daily feeding cycle corresponded very closely to the morning and evening peaks described by Mosby and Handley (1943:26). Occasionally a hen was found feeding in a pasture near midday. Loafing was usually concentrated in the woods within 25-100 yards of the pastures.

The average range was only 194 acres (Table 1) during the tracking period, and the hens most often used one-third to one-half of this area each day. The important and conspicuous aspect of these observations was that hens did not wander daily over their entire range. This was true even though the ranges were smaller than the 400-acre daily range estimate of Wheeler (1948:22). Daily feeding and general movements were usually linearly aligned within the range.

Nesting hens.—Five adult and three subadult breeding hens were radio tracked in 1969. The spring and summer ranges, nesting activities, and social behavior of these hens and their broods have been described elsewhere (Hillestad 1970).

All these hens nested outside the grazed area, but daily feeding and loafing were primarily in pastures and woods that were grazed. Laying hens roosted, fed, and loafed within 400-500 yards of their nests. Daily movements averaged 0.22 mile (Table 1).

During incubation, the instrumented hens restricted their movements, usually feeding within 100 yards of the nest. They usually fed late in the morning (about 11:00), although Hen 32 often fed in the afternoon (4:00-5:00). The 11:00 feeding period is in accord with Blakey's (1937:8) observation that hens usually left their nests within an hour of noon. After feeding hurriedly for periods of 20-60 minutes, the incubating hens would return directly, but cautiously, to their nests.

Hens with broods.—In 1969, three instrumented hens successfully brought off broods. Daily movements of the groups formed by these hens and their broods were observed and monitored. The groups consisted of a hen with a

TABLE 1
SUMMARY OF DAILY MOVEMENTS AND RANGES OF 12 TURKEY HENS ON THE SAUGAHATCHEE WILDLIFE RESEARCH AREA DURING 1968-69

Turkey No.	Capture Date	Weight (lbs)		Total Tracking Period (Days)	No. of Daily Tracking Periods	Range (acres)		Average Daily Movements (miles)		Nesting Hens with Broods
		Subadult	Adult			Non-Nesting Hens	Nesting Hens	Non-Nesting Hens	Nesting Hens	
23	Apr. 1968	7.70		65	17	288		.52		
28	Apr. 1968	7.50		65	20	210		.37		
32	Mar. 1968	8.10		67	25	134		.25		
38	Apr. 1968	8.50		65	21	144		.45		
2	Apr. 1969		8.50	139	45		401		a	.37b
21	Apr. 1969		8.25	137	42		326		.22	.32
29	Apr. 1969		9.00	99	30		384		.18	
32	Apr. 1969		7.00	129	50		160		.15	
44	Apr. 1969		8.00	81	35		218		.27	
45	Apr. 1969		7.00	156	70		282		.21	.28
59	Apr. 1969		8.00	106	42		884		.30	
68	Apr. 1969		8.00	98	37		301		.18	
Average		7.83	8.15	100		194	370	.40	.22	.32

a Nest not found

b Part of a flock of three hens and 14 poult

brood of 4, another hen with a brood of 6; these two hens and their poults after combined into one flock, and a third hen and her brood of 8 with which were associated two non-instrumented hens and 6 poults.

After hatching, the hens immediately moved with their broods into a nearby lightly grazed field that was abandoned from cultivation two years previously. Williams et al. (1970) reported that broods in south Florida moved across the "grazed glades and into forest cover." During the first week after hatching, the daily movements of hens and broods covered approximately 30-75 acres, and most of the day was spent in or along the field edges.

Daily movements of hens and poults were often restricted to 50 acres or less near a freshly mowed pasture. Family flocks often remained within this small area for periods up to two weeks. On several occasions the hens and their broods quickly responded to mowing by using the pastures, often on the day of mowing. The pastures had not been recently used by the turkeys, probably because the vegetation was too dense for easy travel, especially for young poults.

Although the poults grew quickly, there was no significant increase in the size of the daily range. Hens and poults were constantly associated with the pasture and ecotone and each day's activities included some feeding in the pastures.

The typical movements of Hens 21 and 45 and their poults are shown in Figure 2. Daily movements of these turkeys did not change appreciably after they formed a composite flock. Figure 3 indicates the typical movements of Hen 2 with two unmarked hens and 14 poults. Average daily movement for all hens and broods was approximately 0.32 mile (Table 1). An extreme daily movement of 0.75 mile was recorded.

Hens following loss of nest.—Little is known of the activities and behavior of hens after a nest is lost. Williams et al. (1968) reported one hen remaining near her disrupted nest for 1 month before moving back near her original capture site, a distance of 4 miles. Another hen was not known to visit the immediate vicinity of her abandoned nest, but remained in the study area (distance traveled not reported). Watts (1968:209) reported for Rio Grande turkeys (*M. g. intermedia*) that "birds losing nests often moved some distance, . . . joining another nesting group before renesting." In this study five hens (excluding Hen 44 which was thought to have been shot following nest loss) abandoned their nests after disturbance by predators. However, all movements were within the pasture-woods complex.

Hen 68 was typical of all hens losing their nests. She abandoned her nest in the afternoon, after a predation attempt, and roosted about 400 yards away from it that night. The next morning she moved rapidly away from the nesting area and roosted 1 mile from the abandoned nest. This roost was in the general vicinity of roosting sites used prior to the nesting season. The second day, she moved $\frac{3}{4}$ mile farther from the nest into an area in which she had not been tracked before.

Mosby and Handley (1943:129) stated that hens would renest, but that fertility would be lower because the hens might not locate a breeding gobbler. With the exception of Hen 59, all hens joined adult gobblers following loss of their nests, yet while observed the gobblers did not strut or show any inclination to breed. None of the incubating hens appeared to attempt re-nesting after loss of their nests.

Management Implications of Movement Data

The most significant aspect of this study concerns the habitat selected for brood rearing. The spring and summer ranges of hens and poults on the study area were all located within the permanent pasture and grazed woodland habitat types (Hillestad 1970), and it was obvious that this was due to preference and not to chance. This was more evident after detailed daily observations indicated which portions of the range were utilized and to what degree.

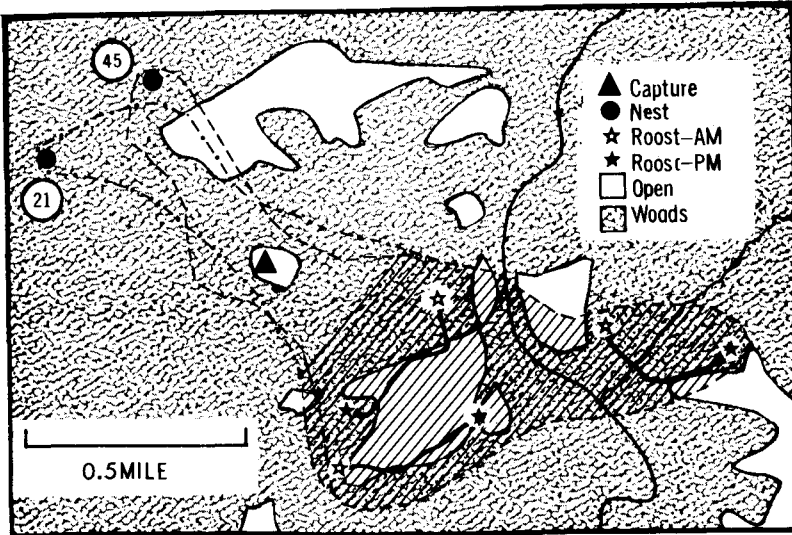


Figure 2. Typical daily movements of adult Hen 21 and Sub-adult Hen 45 and their composite broods, July 1969.

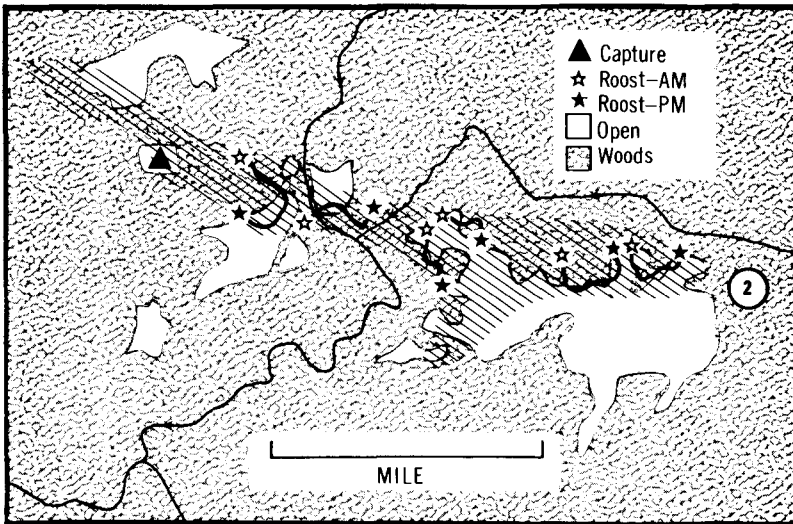


Figure 3. Typical daily movements of adult Hen 2 and brood, Hen 2 and her eight poults were part of a composite flock of two other hens and six poults, July - August, 1969.

Daily movements and feeding of hens, prior to and during nesting, and of hens and poults following nesting revealed the importance of the pastures as a food source. The ability of the pastures to furnish much of the turkeys' food requirements was indicated by the relatively small sizes of the ranges (Table 1) and the restricted daily movements of turkeys within these ranges. Additionally, excellent loafing areas and some feeding areas were furnished by woodland areas grazed by cattle. No management specifically for turkeys was practiced on the area except for the planting of one small plot of chufa (*Cyperus esculentus*).

The pastures utilized as brood-rearing habitat were maintained for cattle grazing and/or hay production. The cattle (overstocked in some of the more ing by (1) keeping vegetation cropped, which facilitated poult movement, and (2) stimulating new plant growth to which insects responded. The new plant growth also furnished the poults with high quality forage.

Stoddard (1963:36-37) is one of the few authors that recognizes the beneficial aspects of cattle for maintenance of good brood-rearing habitat for turkeys. He states that ". . . as is well known, turkeys and their young are partial to short grass or stubble ground during the late summer and fall months. . . and . . . nothing can be more favorable for this season than rich, well-grazed-down, improved pastures of mixed legumes and grasses. . . ." Speake et al. (1969) reported that on the Saughatchee study area, "most turkeys, regardless of sex and age, seemed to be strongly attracted to permanent pastures from March through October. . . it appeared that the distribution pattern of large openings had an important influence on the movement patterns of turkeys."

Although a few observations such as the ones cited above have been published, the majority of game managers regard livestock management and turkey management as incompatible. Additionally, most references relating to competition between turkeys and livestock suggest that livestock seriously compete with turkeys, resulting in a loss of food (Mosby and Handley 1943: 436).

This study indicates that southeastern turkey managers may obtain a favorable response from turkeys by establishing and maintaining brood-rearing habitat similar to that of this study. This is also suggested by observations of wild turkey populations elsewhere in Alabama. Some of the highest turkey populations and some of the best hunting in Alabama occur where a high percentage of the land is devoted to cattle production on perennial (permanent) pastures and grazed woodland.

Good brood-rearing range probably already exists in many areas of the Southeast in association with cattle operations. However, similar ecological conditions can be established with openings (Lewis 1964) in the forest planted with a combination of perennial summer pasture grasses such as Coastal bermuda and bahiagrass. A preliminary analysis of poult crops by Davis and Hamrick (1969) indicated at least 70 percent of the total volume of food for 21 poults was obtained in "grassy" openings. Bahiagrass alone contributed 46.4 percent of the total volume of food. The 2½-month-old poults of their study were collected in late July and early August.

Game managers often concentrate on providing an abundance of available food for wild turkeys during the "lean" months of winter. However, the wild turkey may be the master opportunist, and perhaps fares better during this period than most of our game species. For instance, gobblers are usually at their maximum weight for the year in early spring at the beginning of the breeding season—at the very end of the "lean" season. The observations of this study suggest that the brood-rearing season of spring and summer, a time when game managers often "relax", may be the period that management efforts for the wild turkey should be intensified. Lack of high quality brood-rearing habitat may be the "weak link" in turkey management on some areas.

More research is needed to better evaluate the effect of perennial "grassy"

openings in extensive forests on overall turkey population dynamics. This research should include a study of poult food habits as related to food availability throughout the brood-rearing season.

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