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ROOSTING OF YOUNG TURKEY BROODS DURING SUMMER IN FLORIDA

by

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ABSTRACT

During spring and summer in 1969 and 1970 approximately 200 observations were made of wild turkey (*Meleagris gallopavo*) brood roosting sites, most of which were found by radio-telemetry. The age that broods began to roost in trees varied from 12 to 19 days for the 14 broods. Most of the ground roosts were located under forest canopies in sparse ground cover. Brood hens normally did not defecate in their ground roosts.

After tree roosting began, broods utilized cypress (*Taxodium ascendens* and *T. distichum*) and pine (*Pinus palustris* and *P. elliottii*) more than all other trees combined. The first night off the ground was typically spent on a horizontal limb 2 to 3 inches in diameter about 22 feet above the ground. Within three days they began to roost higher in the trees, but roost limb diameters were about the same size. Most of the roost trees were over water. Broods did not attempt to seek concealment in spanish moss (*Tillandsia usneoides*) or thick foliage while roosting in trees although this cover was readily available to them.

Broods utilized a different site for roosting each night, but there was a tendency for the roosts to be clustered in favorite roosting areas. Four broods traveled an average of .27 miles between successive nightly roost sites. One brood moved an average of .24 miles farther each night than the other three broods.

INTRODUCTION

There is little doubt that suitable roosting places are an essential part of wild turkey range. A good understanding of the roosting habits of turkeys is prerequisite for effectively judging the quality of turkey range or manipulating it.

Two recent studies (Beoker and Scott, 1969; Hoffman, 1968) deal with roosting habits of the Merriam's turkey (*M. g. merriami*). Both summer and winter roosts are described. The data are presumably from adult and older juvenile turkeys.

Although it might be expected that family broods, certainly flightless young broods, have different roosting habitat requirements than adults, we

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cannot find that the roosting habits of these age and social classes have been studied. This probably because of the difficulty of obtaining a sufficient amount of data on young broods. The techniques used in this study permitted that obstacle to be overcome and provided a type of data on broods in which age, daily activities, and social makeup were known. Because individual broods were identifiable and could be found and observed at will, the data are more meaningful than observations made on random broods.

This paper deals with the roosting habits of wild turkey broods on two study areas in north-central and southern Florida from the time of hatching in May through late summer when most of them were about 12 weeks old. This is part of a brood life history study of the wild turkey in Florida. Nesting of the turkey in southern Florida, and observations on movement, behavior, and development of broods have been reported. (Williams et al., 1968; and Williams et al., in press).

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METHODS

Study area.

Most of the field work was conducted on Lykes Fisheating Creek Wildlife Management Area and Refuge in Glades County near Palmdale. This study area has been described (Williams et al., in press). The turkeys there are typical *M. g. osceola*.

Other data were obtained on a study area near Cross Creek on Lochloosa Wildlife Management Area in Putnam and Alachua Counties of north-central Florida. The turkeys there are intermediate between *M. g. osceola* and *M. g. silverstris* but closer to *M. g. osceola*.

The terrain on the Lochloosa study area is slightly rolling, ranging from 58 to 100 feet above mean sea level. The predominant original plant communities of longleaf pine (*Pinus palustris*) and turkey oak (*Quercus laevis*) have been largely replaced by plantings of slash pine (*Pinus elliottii*) during the past 20 years. The area also contains a few large live oak (*Quercus virginiana*) hammocks, some bay-heads, flatwoods bogs, prairies, and ponds surrounded by bald cypress (*Taxodium distichum*) and water tupelo (*Nyssa biflora*), and some natural slash pine flatwoods.

The major land use is pulpwood forestry and grazing by cattle that range over the area at will. Grazing and periodic controlled burning keep the understory open in much of the area. Turkey hunting, for gobblers only, is allowed only during the spring.

Capture methods.

Hens were captured during early spring with alpha-chloralose (Williams, 1966; Williams et al., 1967) or tribromoethanol (Williams et al., in press) on whole shelled or cracked yellow corn, or with a cannon net (Austin, 1966). They were held overnight, instrumented with miniature transmitters, and released at the capture site or a nearby part of the study area.

Measurements.

Tree heights, limb diameters, and overstory cover percentages were estimated visually. Surface distances were paced or measured on maps. Tree diameter measurements (DBH) were made with tapes, or estimated in some cases.

Equipment and technique.

Transmitters and batteries together weighing 50 to 80 grams were attached to hens with surgical tubing looped and tied under each wing. Each transmitter operated on a unique frequency between 150 to 151 MHz and produced either a continuous or pulsating signal. Each transmitter was powered by one or two mercury batteries and had an expected operating life of about 150 days. One experimental transmitter was powered by a solar cell. Four different receivers were used—all were light and portable with 24 channels. Each had a sensitivity of better than 0.10 microvolts.

Three different types of receiving antennas were used: small two element hand-held yagis for directional locations on nearby birds, multi-element high gain antennas for detecting distant signals, and non-directional whips. This equipment has been described previously (Williams, Austin, Peoples, and Phillips, in press).

Position fixes on hens and their broods were made at least once each night or predawn morning during the first two or three weeks after hatching, and frequently but not every night thereafter for a few weeks. Investigators, directed by radio signals, walked to roosting broods in order to obtain data about the brood or its roost site. Most preflight roosting sites were found by approaching in darkness and hiding close to the roost until the brood left after daylight in the early morning. The exact roost spots were detected by poult droppings, slight depressions on the ground left by the hen and brood, or by landmarks when the sleeping brood had been seen.

If the general location of a brood was unknown, it was located at night by a fix made with a large multi-element antenna so that an operator could begin his approach on foot the next morning from a place well within radio range with a hand-held yagi antenna. When the broods were approximately 10 days old they were carefully monitored each morning in order to determine with certainty when they roosted in trees for the first time.

Roost locations were plotted on quadrangle maps and descriptive notes were made on printed forms in the field. They were summarized later and copied into bound record books kept for each study hen and brood. No data obtained after July 15, 1970 are included in this report.

RESULTS AND DISCUSSION

Preflight roosts.

The length of time that broods roost on the ground after leaving their nests is shown in Table 1. Age at first roosting in trees was from 12 to 19 days on 14 broods. More than half of these were roosting in trees by the time they were 13 days old.

There is disagreement in the literature as to when turkey poults first roost in trees. This is probably because it has been difficult to determine the age of wild broods accurately. Latham (1956) thought that broods begin to roost in trees after four or five weeks. Mosby and Handley (1943) reported the first tree roosting in four-week-old poults. Some other writers (Ligon, 1946; Wheeler, 1948; and Bailey and Rinell, 1968) were in closer agreement with our findings in reporting first tree roosting between 10 and 14 days of age. Audubon's (from Bent, 1932, p. 332) estimate of a "fortnight" (14 days) agrees very closely with our observations.

Nearly all roosting spots on the ground used by poults of preflight age were under a forest canopy of either cypress (Fisheating Creek study area) or slash pine (Lochloosa study area) in sparse ground cover which did not completely conceal the brooding hen laterally. Brood hens often selected a spot on the ground beside a tree, cypress knee, or tree stump for roosting. The ground cover was composed of short grasses and herbs. Lizzard's tail (*Sarurua*

TABLE 1
DATES AND AGE OF FIRST ROOSTING IN TREES FOR
14 WILD TURKEY BROODS

Band Number of Hen	Nest Departure Date	Date of First Roost in Tree	Age of brood in Days ¹
267 R	8 May 1969	20 May 1969	13
289 R	13 May 1969	24 May 1969	12
6 R	19 May 1969	31 May 1969	13
288 R	5 June 1969	17 June 1969	13
255 R	23 May 1970	4 June 1970	13
335 R	6 June 1970	20 June 1970	15
226 R	6 June 1970	20 June 1970	15
321 R	24 May 1970	4 June 1970	12
314 R	19 May 1970	30 May 1970	12
342 R	20 May 1970	3 June 1970	14
3020M	7 May 1970	22 May 1970	16
6 R	13 May 1970	25 May 1970	13
330 R	6 June 1970	22 June 1970	17
4966M	10 June 1970	28 June 1970	19

¹The number of days or partial days after newly-hatched brood left its nest.

cernuus), smartweed (*Polygonum* sp.), iris (*Iris* sp.) and grasses and sedges were commonly present.

Broods roosted outside the forest canopy regularly when high water in Fisheating Creek flooded them out of the cypress woods. Then they usually roosted in saw palmetto (*Serenoa repens*) which lies just above the high water zone. Occasionally broods roosted on the ground in openings in the cypress woods where no canopy was directly overhead, but this was usually very near stands of cypress trees (Fig. 1).

The only brood regularly observed during the preflight period on the Lochloosa study area in north-central Florida roosted several times in an open swamp of a type which Laessle (1942) calls a flatwoods bog (Fig. 2A).

After a brood left its roost in the morning, the roost spot was easily found by the body depression left in the grass by the hen and the numerous poult droppings in and around the depression. Normally, one or more very large hen droppings were deposited from 6 to about 20 feet from the roost when the hen departed in the morning. A hen was known to defecate in the ground roost spot on only one occasion in more than 100 observations.

Five cover situations which were rarely used by broods in southern Florida for roosting on the ground were: 1) open glades more than a few feet from trees; 2) thickets; 3) under low overhanging vegetation; 4) live oak hammocks; 5) saw palmetto flats (except during high water and then only the edge was used). No generalizations can be made about cover types which were not used on the north-central study area because the data there are from only one brood.



FIGURE 1. A ground roosting place in a cypress woods opening on the Fisheating Creek study area. The cypress woods in the background, and the ground cover, are typical places for preflight broods to roost. The arrow marks the spot.



FIGURE 2. Roosting places used by one brood on the *Lochloosa* study area. A. Preflight roost in an open bog. B. First tree roost in slash pine. Arrows mark the spots.

Roosts in trees.

The 13 broods on the study area in southern Florida used cypress trees almost exclusively after they began roosting in trees and the brood on the north-central study area used almost nothing but pine trees. These were the most abundant trees in the range being used by the broods in each area, respectively.

The first night off the ground was typically spent in a cypress (Fig. 3) or pine (Fig. 2A) tree on a horizontal limb located a few feet lower than those used by older broods but of about the same diameter (2 to 3 inches). The average height above the ground for the first night roosts in trees was 22 feet (extremes 14 to 35 feet). Three days later the average roost height was 31 feet (extremes 15 to 55 feet). They did not seem to roost noticeably higher after the fifth night of tree roosting, but this may have been related to the characteristics and size of the trees present and could vary under different circumstances. Some physical characteristics of roosting trees are given in Table 2.

Roosting places used by young broods in trees were similar to the places used by adult turkeys. Most roosts were in trees over water (Fig. 4), or, if over dry ground, they were in places of lower elevation that were often wet and where a noticeable understory of leafy shrubs and small trees grew. The denser understory in the low depressions and around water is probably due to less frequent and severe woods fires there. Roosting over water may be only coincidental in some cases because cypress and other suitable trees grow mainly in watered areas. Broods did not roost in dry, open flatwoods without an understory and they did not roost low in thickets or in especially leafy trees. Neither did they crouch near the tree's trunk nor seek concealment in moss or thick foliage.

Wheeler (1948) stated that broods in Alabama roosted in thickets on low limbs. Hillestad (1970) also referring to Alabama, found two young broods roosting in grape vines (*Vitis rotundifolia*). We have made no observations on broods roosting in northern Florida where the habitat is similar to that in Alabama, but the contrast between early roosting sites used in southern Florida and Alabama cannot be attributed entirely to differences in availability of vegetation types because grape vines and thickets are abundant on our study areas and could have been used by the turkeys.

Movement between roosts.

Figure 5 shows the roosting locations used by four broods during the pre-flight period and a few weeks thereafter. Roosting plots in this figure tended to cluster somewhat around favorite roosting areas in Figures 5A, 5B, and 5C, but not for the brood in Figure 5D. These figures illustrate graphically that the broods used different places to roost each night and did not return to exactly the same places repeatedly. In contrast, fall and winter flocks of turkeys tend to find favorite roosting places and return to them often, sometimes using the same tree and limb for several consecutive nights (unpublished data).

The minimum, maximum and average distances traveled between successive ground and tree roosts are shown in Table 3. The four broods on which these data were available traveled an average of .27 miles between nightly roosts. Distances moved between roosts varied from .04 to 1.31 miles. The brood in Figure 5B moved greater distances between several roosts before the poults could fly than after. The other three broods moved greater distances between successive roosts after they began roosting in trees. This brood averaged moving at least .24 miles farther between roosts each night than the other three broods. This brood was located on the Lochloosa area and in a habitat that differs from the Fisheating Creek area.



FIGURE 3. A typical first tree roosting place in cypress woods on the Fish-eating Creek study area. The arrow marks the spot.

TABLE 2
 CHARACTERISTICS OF TURKEY BROOD ROOSTS IN TREES DURING SUMMER IN FLORIDA

Observation Made in Date Interval	Number of Flocks	Number of Hens	Number of Poults	Height in Tree (feet) ¹	Number of Trees	DBH of Tree (inches) ¹	Distance of Brood From Boole (feet) ¹
1969							
May 1-15	5	5	16	45	5	15	3
May 16-31	1	1	5		1	14	1
June 1-15							
June 16-30	9	19	49	53	17	13	9
July 1-15	4	7	14	57	6	14	
July 16-31	4	10	38	50	11	12	
Aug. 1-15	5	11	46	53	12	12	
Aug. 16-31	6	14	48	62	14	12	
1970							
May 16-31	1	1	2	55	1	14	
June 1-15	7	10	25	43	10	11	2
June 16-30	8	13	17	50	10		
July 1-15	4	6	16	62	5	15	
June 16-30**	2	3	10	30	3	7	2
July 1-15**	4	11	*	39	11	9	2

¹Mean of all brood hens during Date Interval.

*Undetermined number of poults.

**Lochloosa Study Area.



FIGURE 4. A typical roosting place on a cypress pond in southern Florida. Two broods had left this roost about one hour before the photograph was made.

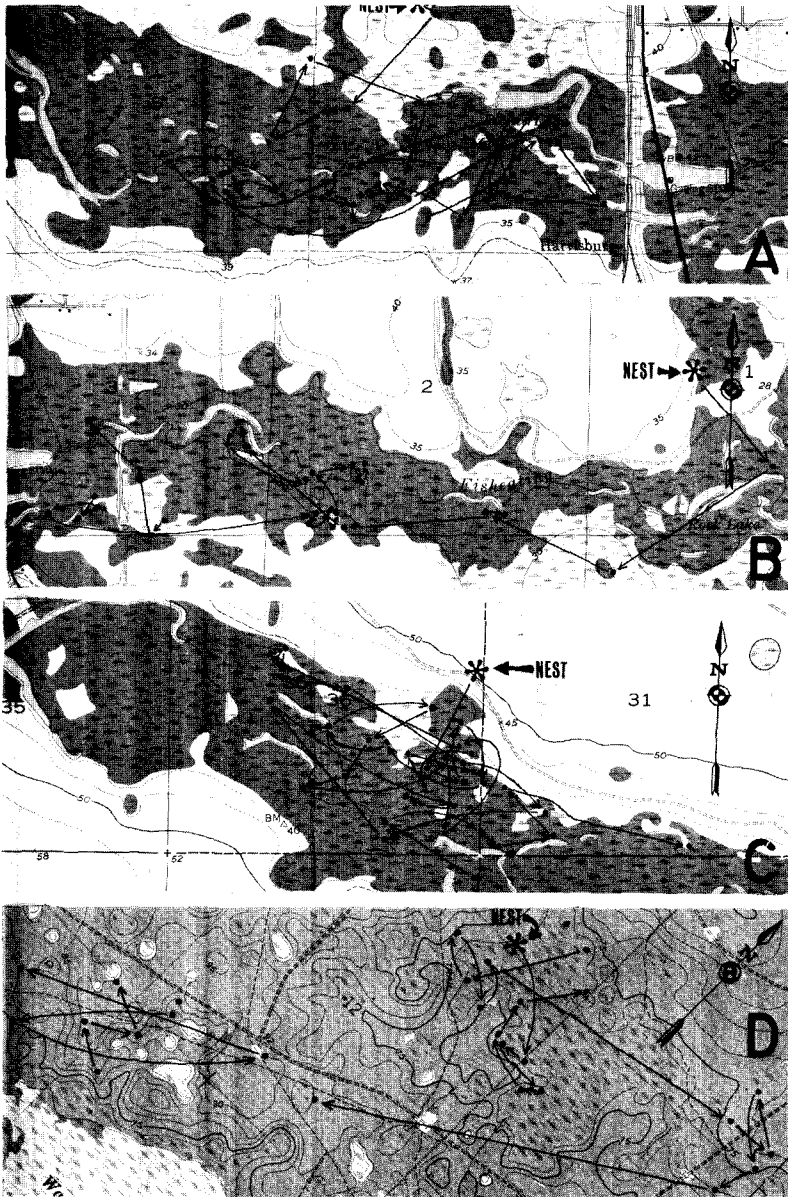


FIGURE 5. One hundred and fourteen roosting locations plotted on quad-range maps (section lines indicate scale of miles) for four broods of turkeys from the time of hatching through several weeks afterward. Arrows indicate the sequence in which the places were used and not the route of movement. Only consecutive nights are connected by arrows. A, B, and C, are from the Fisheating Creek study area; D is from the Lochloosa study area.

TABLE 3
 DISTANCES BETWEEN SUCCESSIVE NIGHTLY ROOSTS FOR FOUR BROODS

Brood Hen Band No.	Before Roosting in Trees (Miles)			Roosting in Trees (Miles)			Overall (Miles) Average
	Minimum	Maximum	Average	Minimum	Maximum	Average	
276 R	.04	.43	.21	.04	.54	.25	.24
289 R	.09	.48	.25	.06	.72	.31	.29
6 R	.06	.58	.23	.04	.78	.18	.21
4966M	.07	.79	.24	.13	1.31	.55	.35

CONCLUSIONS

The wild turkeys in this study roosted on the ground until they were two or three weeks old. Most began roosting in trees at about two weeks of age. Broods did not seek heavy cover while roosting on the ground or in trees even though this type cover was readily available. Broods did not roost in the same general area frequently. There was no marked difference in the distance traveled between nightly ground roosts and nightly tree roosts. Height of roosting in trees was slightly lower for the first few nights than it was a week later.

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