THE PRESIDENT'S PAGE

MARCH, YUKI, MARCH! With a backward look at the second year of the Alabama Ornithological Society, we are proud of the accomplishments. The membership has grown to 107. One A. O. S. chapter has been formed (Auburn). Naomi Banks, of Gadsden, Alabama, has become a bird bander. Field days have been held in districts 1, 3, and 4 which include Christmas censuses. Two state meetings have been held. The fall meeting at Joe Wheeler State Park, attended by 68 members and additional visitors, was highlighted by Gordon Hight, Chimney-swift bander, of Life Magazine fame, and by Ben Fever of Scotland who addressed the group with wit and charm. The annual meeting at Fort Morgan in May was attended by 37 and was addressed by Dr. Oliver L. Austin, Jr., well-known author, lecturer, and ornithologist of Cape Cod, Mass., who is stationed at Maxwell Field.

Yes, it has been a year well spent. For its success our thanks go to our incoming President, Jim Keeler, now Vice-President and Chairman of the Membership Committee; to all who helped in any way to make the meetings a success, especially Tom Atkeson, David Hulse, Wilson Gaillard, and Byron Huffman who arranged the meetings locally; to Julian Dusi for getting Alabama Bird-Life off to a good beginning; and to Fred Carney who has worked so faithfully as Treasurer. The leaders and planners for the Nature Camp deserve special mention. They have done a fine piece of work for the whole state and the sponsoring organizations. We extend our heartfelt thanks for their help.

As we look ahead, the job before the organization is education. There is a great need for increased activity in the districts. New chapters should be formed, field trips conducted and bird records kept. Each district should seek out leaders with initiative and determination to initiate some activity during his or her term of office. The success of tomorrow lies in the interest and activity in these districts. There is a great need of published material on birds in the state. These things take years to work out and should begin now. So, there is the need for records to be published from all parts of the state. I firmly believe that those who know nature and love our state will rise to meet this challenge if the needs are made known to them. We call upon the membership to begin education in each district, formulate plans, bring suggestions to the president, and to support our officers. Alabama has been retarded long enough by lethargy and ignorance. Like Yuki, Mrs. O. L. Austin's Japanese born Spitz, who understands only one English word "March!" let us awaken to the need and march to achievement.

THE TERRITORIAL RANGE OF THE ALABAMA TOWHEE*

By MAY S. LAUDEN

Introduction

The Alabama Towhee, **Pipilo erythrophthalmus canaster** Howell, a subspecies of the Eastern Towhee, **Pipilo erythrophthalmus** (Linnaeus), is recognized as the breeding race in Alabama and in other sections of the southeastern United States. This bird is quite abundant in the vicinity of Auburn, Alabama.

Auburn is a small city located at the juncture of the piedmont and coastal plains areas. Its average elevation is 732 feet above mean sea level and it has a relatively moderate climate. The mean annual temperature is 64.4 degrees Fahrenheit, with a range of from 20 to 100 degrees during the year. The summers are long and warm and the winters mild and damp. Many migratory birds winter in this vicinity and the Alabama Towhee is a year-round resident.

This bird was first described by Howell in 1913, yet very little has been written about this subspecies. A review of the literature revealed only one item on territory, in which the towhee was mentioned. Hickey (1943) discussed foraging areas with regard to a number of species, including the Red-eyed Towhee. His study, made during May and June week-ends at Yonkers, New York, states that "although a number of birds actively defended the areas here reported, more frequent observations are probably needed to show the complete size of their territories." Barbour (1950 and 1951) prepared 2 papers on the breeding habits and the development of the nestlings of the Red-eyed Towhee in Kentucky. Dickinson (1952) published the geographic variation in the Red-eyed Towhee which included the Alabama Towhee. Other articles on the Alabama Towhee were concerned with its range and the reporting of nests found in various localities.

This study was undertaken to determine whether the Alabama Towhee was territorial, and if so, to ascertain the acreage used by breeding pairs. Other aspects of towhee life, particularly those found to be at variance with that reported for the Red-eyed Towhee, are herein included.

The writer is indebted to Dr. Julian L. Dusi, Dr. Henry G. Good, and Dr. Allen M. Pearson for their criticism of the manuscript; to Mr. James J. Franklin for the identification of plants.

The area in which the study was made was limited to that lying within a one-half mile radius of Comer Hall of the Alabama Polytechnic Institute. This information was secured by

*This paper is a portion of a thesis submitted to The Graduate School of the Alabama Polytechnic Institute.

observations made during the period from October, 1952, through June, 1953, inclusive. Trapping, banding and feather-marking were used in order to identify the territory owners.

THE ROLE OF TERRITORY. The Alabama Towhee was found to be territorial. It is recognized that the territory is established and protected for the purpose of providing food and protection for the female and young. Due to the variation in size of the territories, it was obvious that where food was plentiful and where the population was dense, the male did not claim more area than was needed for themselves and their families. Apparently both adult birds became thoroughly familiar with the entire territory, for they were able to go directly to the best feeding grounds and to locate each other without any delay.

EXTENT OF TERRITORY. A study of 10 representative territories was carried on in detail. The size varied from 1.7 to 6.4 acres, with an average of 3.08 acres. Figure I shows the shape and location of the territories studied.

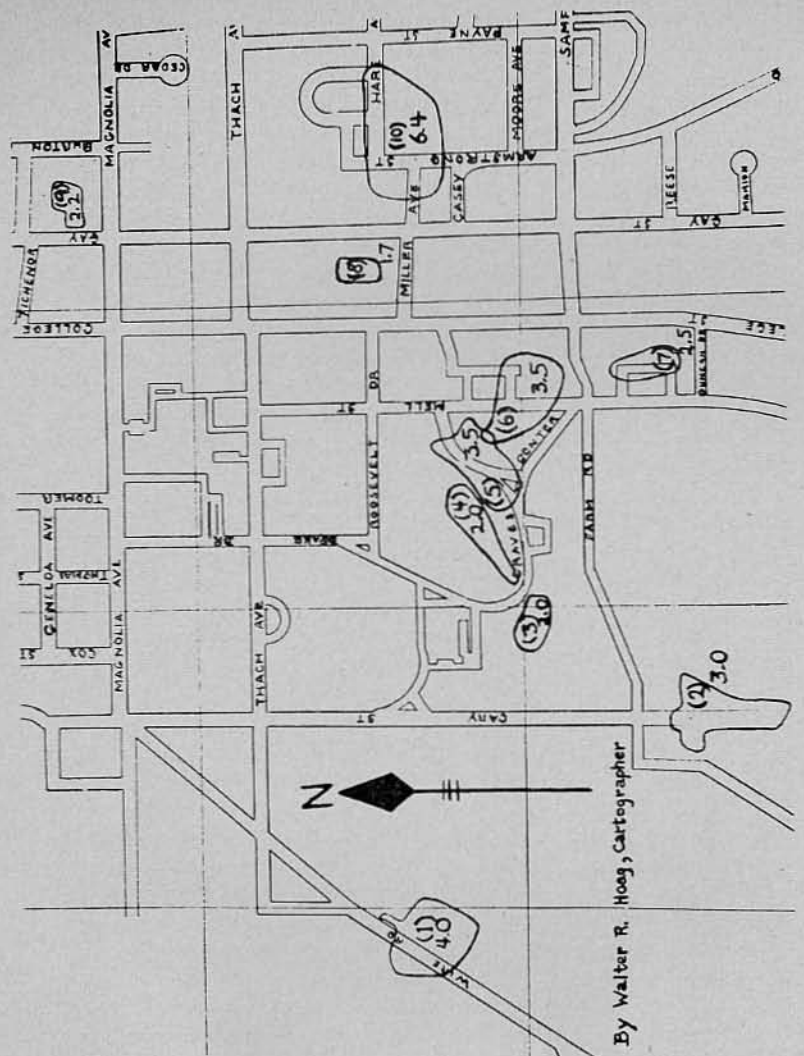

Figure I. The shape and location of territories studied.

From the study it was found that the presence of other towhees in the vicinity had a definite influence on the size of the territory. An excellent example was the 6.4 acre plot which comprized Territory 10. The nearest towhee neighbors of this pair were a considerable distance away. On the other hand, Territories 3 and 4, each of which occupied only 2 acres, were located in an area in which there were numerous other towhee pairs occupying adjacent areas. The size of Territory 8 (1.7 acres), which was the smallest area found, was probably influenced by the facts that it was located among buildings and that other towhees were occupying surrounding areas.

DESCRIPTION OF TERRITORIES. The topography of the land varied from relatively level to slightly rolling, with approximately 25 feet being the extent in elevation. In all territories the nest-site areas were well drained and water which was available from lily ponds, small streams, drainage ditches, bird baths, or ground pools, was used for drinking and bathing.

The dominant species of trees were oaks, pines, Mimosa, Cherry-laurel, willows and Pecan trees. While towhees are found in second-growth pines with an understory of the introduced Japanese Honeysuckle and Kudzu vines, native Sweet Gum and other miscellaneous trees, they are also plentiful where there is a variety of ornamental deciduous and evergreen shrubs. The selection of nest-sites as shown in Table I, is an indication of the majority of the dominant species of ornamental shrubbery in the vicinity of Auburn.

Considerable vehicular traffic occurred during the daylight hours in the majority of the territories. Human activity was at a minimum in all but a few of the areas.

Territories 1 and 3 were 2 of those studied which had vine-covered nest-sites. Only one of the 10 territories (number 3) was located on a steep slope, though the ground on the slope was well supplied with organic duff.

In those areas where movement by man was pronounced, the towhees so behaved that their foraging was not disturbed even when persons walked casually within 5 feet of them. Territory 5 was exceptional in that the nest-site was located within 2 feet of a window of a dwelling house. Territory 6 was exceptional in this way also, because it was surrounded by large buildings and the central portion consisted of a large paved parking lot. The nest-site (Showy Jasmine) was located on a small island between a busy street and the parking lot. Additionally odd was the fact that it did not contain a hardwood thicket or vine-covered bush, both of which seem to attract towhees. It appeared that the edge effect with its numerous varieties of ornamental shrubs was the main ecological factor in this area.

Territory 7 which comprised 2.5 acres surrounded the A. P. I. President's house and included the formal garden and the courtyard. Except for the house and the courtyard, the entire area was in lawn and contained a considerable number of trees. The nest-site was located in a shrub immediately adjacent to the garden wall which gave a measure of protection from the activity in the courtyard.

Territories 8 and 9 were located in the city, within a block of dwelling and fraternity houses. Both these areas contained a small hardwood thicket although the thicket had not been selected for the nest-site. It is believed that the thicket was used for night roosting in those territories where thickets were available, otherwise dense shrubbery was used.

"Singing posts" and lookouts used by the male towhees ranged from the tops of tall chimneys, large southern oaks, tall pines, branches of Pecans, public utility wires, fence posts, low branches of Red Cedars 3 feet from the ground, as well as on the ground.

TERRITORIAL MAINTENANCE. Reference is made repeatedly in ornithological literature to the pugnacity of the males of those species that establish territory. In connection with the Alabama Towhee, it was observed that the male drove away Blue Jays and English Sparrows but that he foraged with Mockingbirds, Robins, Starlings and White-throated Sparrows; the latter species being absent in this locality during the summer. Whenever 2 male towhees foraged on the same ground, the male who had established the territory would approach the intruder without any particular display of belligerance, and when arriving at a point about 3 feet from him, the intruder would then fly away.

After the young left the nest, the parents moved them progressively farther away from the nest-site each day. The contention of Nice as contained in Pettingill (1948) that "once the territory is established, the birds customarily remain on it until the young are independent" is borne out. No young birds were observed outside of the territory prior to attaining a degree of independence which would permit them to fend for themselves. It was concluded that the abandonment of territory does not occur prior to the departure of the young from the parents.

EXCEPTIONAL SITUATIONS. A male towhee (M-77) and female towhee (F-78) were banded and feather-marked April 17th at which time they were feeding their 2 nestlings on Territory 4. This nest was abandoned April 21st. On April 23rd while the female parent was seen on her own territory, the male parent was discovered in an adjacent area foraging with an unmarked female. The nest containing 3 eggs was found in this adjacent area (Territory 3) on April 28th. All 3 eggs hatched on May 2nd. Calculating the time for egg-laying and incuba-

tion for this brood, the male towhee undoubtedly may be considered somewhat polygamous.

An unusual situation was encountered where 2 nests, designated as Nest-site C and Nest-territory 10, were found within 50 feet of each other. Nest C was unoccupied but apparently had been used by a pair of towhees at one time. Information available revealed that the occupants of Nest 10 had used another nest in an adjacent territory which had been destroyed by the tornado on April 18. The whereabouts of the original occupants of Nest C remain unknown.

Another instance of 2 nests in close proximity to each other was the case of Nests F and H, located only 200 feet apart. The female was incubating the eggs of Nest F while the adult birds were feeding nestlings in Nest H. These nestlings departed from the nest prior to the hatching of the eggs in Nest F. On several occasions both males were seen feeding together within 20 feet of Nest F. Territories connected with these nests were not among the 10 territories studied in detail.

Once during this study, a mounted male bird was placed in close proximity to a nest-site. The specimen was wired to the ornamental wire fence surrounding a cemetery plot in Territory 10. The male of the pair occupying this territory exhibited great curiosity by flying from one side of the specimen to the other, approaching within a few inches, tossing his head up frequently and singing lustily. This continued for about 20 minutes, at which time he flew to the ground and commenced to forage.

An unusual happening, which is not in accord with Nice's statement (1940), that the purpose of territory is primarily to prevent the interference in family life, was observed in Territory 5. The fledglings of this territory on their first day out of the nest were separated by a distance of about 100 feet. The male was seen caring for one fledgling while the female, accompanied by the male from Territory 6, was observed feeding the other fledgling. This assistance by the male from another territory showed that, at least in this instance, the territory was not inviolate.

During the fall of the year towhees usually foraged together in pairs, but small flocks of as many as 9 towhees were observed feeding in an area of approximately 20 square feet. Defensive vigor was reported by Dr. Julian L. Dusi, when in the middle of November he observed 2 male towhees fighting by bodily contact. The writer observed pursuit-flying equal to that of the mockingbird. This areal gyration display also occurred during November. An interesting phase of this event was that a female towhee followed the pursuit flying and when the chased male towhee departed from the area, the male and female calmly con-

tinued to feed. The reason for these quarrels appeared to be that these 2 pairs remained mated after the breeding season.

MATING. All birds observed during the course of this study were paired when first observed. Dickinson (1952) noted that Catesby, as far back as 1731, made a statement that "one seldom sees them but in pairs." Dickinson further commented that he believed that Catesby was dealing with **P. e. canaster** as the greater portion of the geographic area of South Carolina has the Alabama Towhee as its breeding race today and that there is no indication that there has been a change since Catesby's time. These conditions continue to prevail with **canaster** as far as this study is concerned. A separate study, following a number of banded young birds, would be of great value in determining the time and manner in which these birds pair off. As all birds observed were found to have a companion of the opposite sex throughout the entire fall and winter, it is believed that mating is not an annual spring occurrence.

Copulation was observed on several occasions and in one instance the female was the aggressor. She was observed to fly over the male at a distance of about 2 inches following which she would alight and remain motionless a few inches from him. In all other cases, the male approached the female and indicated his intentions by a rapid twitching of his tail and at the same time spreading the tail feathers out and retracting them. The female remained motionless and copulation occurred.

NEST BUILDING. The Alabama Towhee started nest building as early as the middle of March. Two fledglings approximately 10 days old accompanied by the parent birds were seen as early as April 10, and another family group of the same size and age were seen on the previous day.

Despite the early and late hours at which observations were conducted, the gathering of nesting materials was observed on only two occasions. On the first of these, a female was seen picking up a piece of nest-building material which she carried to a Pyracanthus shrub located approximately 50 feet away. Two minutes later she returned and deposited another piece of dead root stem with the other piece. After she departed the second time, the bush was kept under surveillance for a period in excess of 2 hours, but she did not return during this time. This occurred on the second of April, and a search conducted subsequent to this time revealed that she had built her nest in another location within Territory 1. As this pair were banded birds, their activities were followed closely, and their eggs hatching on April 29 indicated clearly that the nest was built about April 14 or 12 days after the female was originally observed gathering the nesting material in the initial location.

The second time that the towhee was observed carrying nesting material, the nest was found to be almost complete and ready for the eggs. The bird was actually in the process of lining the nest with fine grasses and the first egg was laid within 48 hours. In both instances, the female was the one observed carrying the material.

NESTS. A total of 18 separate nests were studied, 8 of these being in addition to the nests contained in the 10 territories previously discussed. Table 1 shows the data relative to the type of vegetation in which the nest was located, its height from the ground to the rim of the nest, and the date on which it was first observed. Only 1 nest was found on the ground, and the 17 remaining nests ranged from 8 inches to 6 feet above the ground, 61 per cent of the total being 3 feet high or higher. Eleven were found in evergreen ornamental shrubs and 6 in various deciduous plants. Nests of other species of birds were never found in the same shrub in which the towhee's nest was located.

The nests were built of dead root stems, strips of fine bark, dried leaves, pine needles and other vegetable matter found in the area. All were lined with fine grasses. They varied in construction, some being so well put together that it was possible to pick them up intact. Others had to be handled very carefully to avoid disintegration. The inside dimensions were 3 inches in diameter, and 2 to 3 inches in depth.

In every case but 1, the nests were well concealed in the vegetation. In the exceptional instance, the nest was loosely constructed with Daffodil leaves, and was located in a Glossy Abelia bush, the branches of which were widespread, and did not provide much cover.

SECOND NESTS. The adult birds who had occupied Territory 5 and whose nestlings left the nest on April 24 were found to have established a second nest (Nest E) in a location outside of their original territory. This nest was situated approximately 350 feet away from the first nest. A second brood of 3 nestlings were reared and left the nest May 29.

Table 1. Location, height, date and size of clutch of some Alabama Towhee Nests in Auburn, Alabama

Location	Height from ground	Date discovered	Size of clutch
*Thorny Elaeagnus	2 ft. 3 in.	April 11	2
Thorny Elaeagnus	3 ft. 8 in.	May 8	3
Thorny Elaeagnus	4 ft. 4 in.	June 16	4
*Chinese Privet	6 ft.	April 11	2
Sweet Osmanthus	2 ft. 5 in.	April 17	2
Japanese Honeysuckle	3 ft.	April 21	2
Japanese Honeysuckle	2 ft. 6 in.	April 24	4
*Pine Needles	On ground	April 27	3
Showy Jasmine	1 ft. 2 in.	April 28	4
Rose	6 ft.	April 29	3
Yaupon	5 ft. 4 in.	May 1	--
Yaupon	5 ft. 6 in.	May 17	4
Dog-fennel, (last year's growth), and Horseweed	8 in.	May 2	4
Glossy Abelia	5 ft.	May 8	3
Glossy Abelia	3 ft.	May 31	3
*Water Oak	4 ft. 7 in.	May 10	3
Sargent Barberry	2 ft. 6 in.	May 29	3
*Persimmon and Muscadine	6 ft.	June 8	3

*Japanese Honeysuckle association.

EGG-LAYING AND INCUBATION. Barbour (1951) stated that egg-laying was begun on the day the nest was completed or in the early morning of the succeeding day. An oral report made by Dr. and Mrs. Henry Good of the Alabama Polytechnic Institute, furnished the information that a nest was constructed during the course of a morning and that by noon of the same day the first egg had been laid. This nest was rather flimsily constructed in comparison to the majority of towhee nests observed. In a nest observed by the writer, the first egg was deposited almost 48 hours after the nest was complete. One egg was laid each day until the clutch was completed.

The size of the clutch varied from 2 to 4 eggs; 4 nests containing 2 eggs, 8 nests having 3 eggs, and 5 with 4 eggs each. The number of eggs varied from that reported by Barbour for the Red-eyed Towhee in which he stated 4 or 5 was the most common number for that subspecies.

The eggs varied only slightly in shape; being ovate and tapered slightly at one end. They were white, pale-grayish white, or pale pinkish-white with great variations in the reddish-brown markings. One clutch containing 3 eggs had 2 heavily marked with bold blotches and a third sprinkled quite evenly with pale fine speckles. The larger markings were the darkest and were mainly confined to the more rounded end.

The writer concurs with the statement of Barbour (1951) that "incubation never was found to begin until the clutch was complete." Heil (1909) reported for the towhee in Massachusetts that on "one or two occasions" he found the male on the eggs.

Forbush and May (1939) commented that while the female is incubating, "the male waits upon her and occasionally relieves her on the nest." In no instance was the male seen feeding the incubating female nor sharing the incubation duties during the entire study. The period of incubation was verified as being 12 to 13 days.

Hatching of the eggs occurred in a period ranging from 5 hours and 35 minutes for a clutch of 4 eggs down to 2 hours for a clutch of 2 eggs, except in 1 instance, Nest 10, where 1 nestling was hatched at 7:40 a. m. and another was not hatched until the same time the following day.

Infertile eggs, which were permitted to remain in the nests all during the time the young were being brooded, were found in the nests located in Territories 9 and 10, and in Nest F.

The contents of Nests D and F were confiscated by some outside source. Nest D was left totally intact, and 2 days after the eggs disappeared an unidentified snake was found in the nest.

BROODING AND FEEDING OF THE YOUNG. Immediately following the hatching of the young, the female commenced

brooding her nestlings and continued to do so for 6 to 7 days. This brooding was interrupted frequently by her foraging expeditions and to permit the male to feed the young. Night observations showed that the female brooded until the night before the nestlings departed from the nest. The females generally foraged in close proximity to their young, and it was observed that the male sought their food further afield.

A peculiar type of conduct was observed on the part of the female in 2 of the territories. As soon as the first egg was hatched, the female left in an unusual hurry, flew to the male's feeding ground from which they both returned immediately, he going to the nest and she perched on a nearby limb until he departed from the nest, at which time she returned to her brooding and incubation duties.

A total of 43 nestlings was hatched in the 18 nests observed. Mortality among these was high as 4 disappeared from the nests prior to the departure of their siblings; 2 were found dead in the nest, and 1 was 2 feet away from the nest dead from unknown causes. This gives a mortality rate of 18.6 per cent prior to the departure of the brood from the nest.

A study made by Barbour (1951) showed that only the female had been observed to brood the young, but while observing the nest in Territory 3, the male parent was seen actually brooding the young for a period of 13 minutes. He departed from the nest when a male towhee in an adjacent area commenced to sing, flew to a nearby branch where he perched, and began to call. This undoubtedly was his way of telling other towhees that his area was occupied.

It was observed that the guarding of the young was assumed by the female, while their feeding was seemingly the male's responsibility. The female, of course, as she finished foraging for her own food, was always observed carrying food back to the young when she returned to the nest. However, her trips with food to the nestlings were far fewer than those of the male. Feeding trips made to the nest ranged from 7 to 16 in a 60-minute period.

The female was seen to leave the nest apparently for the purpose of foraging at unscheduled times during the entire day. She would remain away for periods varying from 3 to 45 minutes. The average time she remained away would be about 18 minutes. This varies from the report that Barbour made on the Red-eyed Towhee as he gave an average time of 30 minutes duration for that subspecies. The time spent on the nest at any period by the female during daylight hours varied from 15 to 65 minutes, with an average of about 38 minutes.

In Territory 6, the male parent, in the absence of his mate,

fed the 4 nestlings during their last day in the nest. He made a total of 30 trips in 3 hours and 38 consecutive minutes.

It was noted with some surprise that the characteristic scratching in the leaves and humus, which has always been characteristic of the towhee while foraging, suddenly ceased about the middle of the month of April. From then on the birds were seen hopping on the ground or foraging among the branches of pecan trees. The scratching apparently is not necessary during warm weather when insects are plentiful.

During periods when both parent birds were absent from the nest and the nestlings unattended, the adult bird would emit a few faint calls prior to the time it entered the nest shrub to feed the young. When the female was on the nest brooding the young, the male always perched a short distance away from the nest and called lightly a few times. This undoutedly was done to let the female know that he was ready to feed the nestlings. In most instances she would depart from the nest immediately, but on occasion would remain in the nest shrub, and answered the male with a light "twee" before he left his perch and came to feed the nestlings. It was noted that calling by both adult birds occurred many times when one was foraging directly under the nest-site. Towhees were not quiet around the nest and the calling attracted passers-by as a result.

The towhee may be heard calling and singing throughout the entire day regardless of the hour. One afternoon when the temperature and humidity were high, their infrequently heard "drink-your-tea" song was noted. This song is not heard as often as their usual rapid call followed by a trill. Contrary to the contention of Hickey (1943) and Forbush (1905), the Alabama Towhee was frequently observed singing on the ground, as well as at various heights up to 60 feet.

SUMMARY AND CONCLUSIONS

The Alabama Towhee, **Pipilo erythrophthalmus canaster** Howell, was found in urban as well as rural areas wherever suitable cover and food occurred.

During the period from mating through the departure of the nestlings from the territory, the adult birds exhibited definite territorial characteristics. From 10 pairs of towhees observed, it was found that territories varied in size from 1.7 to 6.4 acres, with the average size being 3.08 acres. The principal consideration in selecting a territory was apparently the availability of food, a nest-site, and the proximity of other towhees.

The nests were found from ground level to a height of 6 feet from the ground. They were usually located in shrubs but were also found on the ground. Materials used in their construction were root stems, fine bark, dried leaves, and pine needles. All nests were lined with fine grasses.

Two to 4 eggs, ovate in shape, ranging from white to pale pinkish-white with reddish-brown markings were laid 1 each day following the completion of the nest as early as the middle of March. Two or more broods might be produced in a year.

Incubation (12 to 13 days) was carried out by the female. Brooding was essentially performed by the female, although in 1 instance a male was observed brooding for a short period. Feeding of the young was carried on primarily by the male.

The Alabama Towhee was frequently observed singing on the ground, as well as at various heights up to 60 feet.

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