

## MIGRATION IN THE LITTLE BLUE HERON

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MIGRATION in the Little Blue Heron (*Florida caerulea*) is a composite of three distinct phases: 1) dispersal of the young and adults from the colonial nesting sites; 2) the autumnal southward movement of adults and of the young after their dispersal; and 3) the return to the breeding areas in the north the following spring.

The writer started banding Little Blue Herons in 1953, at a colony south of Tuskegee, Alabama, in an attempt to obtain the data necessary to describe these migrations. Since then he has been banding them at a number of colonies distributed over the state. Data other than the bandings done by the writer were needed to explain North American migration outside of Alabama. Reports in the literature, especially those of Ben B. Coffey, Jr. (1943, 1948), have been very helpful. A listing of bandings and recoveries for the years 1926 to 1962, provided by Allen J. Duvall, from the Fish and Wildlife Service Bird Banding Laboratory, have been an additional important source of information.

### PROCEDURES

Practically all of the banding of Little Blue Herons has taken place at their colonial nesting sites and practically all of the birds banded have been nestlings. Adults have been difficult to capture, whereas the nestlings have been much more easily obtained in sufficient numbers to make banding them attractive.

The banding of the nestlings has presented several problems mostly concerned with the inaccessibility of the breeding colonies and nests. The majority of the colonies has been located in small brushy ponds or swamps. The others have been in upland situations, usually with ponds, swamps, or rivers nearby. In the colonies located over water and in low bushes, the nests have been easy to reach and the young easily captured by hand or by the use of bamboo poles with wire hooks on the ends. In the colonies with higher trees, nests were frequently 20-25 feet above the water. Longer poles with hooks and baskets, or light weight extension ladders were needed in these colonies. Our use of an extension ladder from a small boat has worked well in one swamp. In upland colonies, trees were much taller and nests were frequently 35-50 feet high. This made the use of poles with hooks, from the ground, must less satisfactory or impossible. If the young fall into water, little damage is done, but if they fall onto the land, before they can use their wings to break their fall, they are usually fatally injured. Therefore, in upland colonies, the use of extension ladders was necessary when the nests were more than 15 feet from the ground. In our work, the use of a 36-foot magnesium ladder has been very successful. The trees were usually tall and spindly and would not support much weight. If the ladder was placed tightly against the tree and tied to the tree every 10 feet, as it was ascended, it supported the tree

TABLE I  
DISPERSAL OF YOUNG

Banding Locality	Banding Date	Recovery Locality	Recovery Date
Tuskegee, Ala.	6-12-53	Rising Fawn, Ga.	8-__-53
" "	5-27-55	Harperville, Miss.	7- 7-55
" "	"	Etowah, Tenn.	7- 2-55
" "	"	Meridian, Miss.	8-12-55
" "	5-14-56	Eastman, Ga.	6-19-56
" "	"	Columbus, Ga.	8-25-56
Marvyn, Ala.	5-22-59	Thomaston, Ga.	7-__-59
Mt. Creek, Ala.	6-14-60	Oneonta, Ala.	8- 1-60
Opp, Ala.	5-22-61	Andalusia, Ala.	7-10-61
" "	"	" "	7- 3-61
" "	5-30-62	" "	9-18-62
Pansey, Ala.	5-13-64	Willacoochee, Ga.	8-__-64
Floral, Ala.	6- 1-64	Thomasville, Ga.	- - -64
St. Marks, Fla.	6- 6-26	Jacksonville, Fla.	9-_-26
" "	6- 3-61	Ashburn, Ga.	8-21-61
Glen Allan, Miss.	5-25-36	Dalton, Ga.	8-28-36
" "	"	Jena, La.	7- 6-36
" "	5-24-36	Baton Rouge, La.	7-_-36
" "	"	Corning, Ark.	7-_-36
" "	"	Helena, Ark.	7- 6-36
" "	"	Watson, Ark.	7- 4-36
" "	"	Star City, Ark.	11-_-36
" "	"	Delaplaine, Ark.	7-_-36
" "	"	Wellston, Ohio	8-_-36
Harperville, Miss.	"	Desha Co., Ark.	7-_-36
" "	5-31-36	Jennie, Ark.	7-12-36
" "	"	Merigold, Miss.	7- 3-36
" "	"	Louisville, Miss.	7-27-36
" "	"	Denmark, Miss.	7- 3-36
" "	"	Drew, Miss.	7- 6-36
" "	"	Isola, Miss.	8-20-36
Glen Allan, Miss.	6- 7-36	Mayersville, Miss.	7-_-36
" "	"	Booneville, Miss.	8-_-36
" "	"	Tallula, Miss.	7-_-36
" "	"	Indianola, Miss.	8-_-36
" "	5-23-37	Rosedale, Miss.	8-_-37
" "	"	Holland, Mo.	7-22-37
" "	"	Vicksburg, Miss.	8- 3-37
" "	"	New Albany, Miss.	8-_-37
" "	"	Pollard, Ark.	8-_-37
" "	"	Doniphan, Mo.	7-_-37
" "	"	Indian Bay, Ark.	7-12-37
" "	"	Marked Tree, Ark.	7- 8-37
" "	"	Leland, Miss.	7-_-37

TABLE 1 (cont.)

Banding Locality	Banding Date	Recovery Locality	Recovery Date
" "	"	Alligator, Miss.	7-__-37
" "	"	Acworth, Ga.	8-__-37
" "	"	Crockett's Bluff, Ark.	7-__-37
" "	6- 6-37	Batesville, Miss.	8-__-37
" "	"	Burr Ferry, La.	9- 7-37
" "	"	Crockett's Bluff, Ark.	9-__-37
" "	"	Ruleville, Miss.	7-__-37
" "	"	Sikeston, Mo.	__-__-37
" "	"	Harrisburg, Ark.	7-20-37
" "	"	Lake Village, Ark.	7-__-37
" "	"	Carroll Parish, La.	9-__-37
" "	"	Drew, Miss.	7-__-37
Moon Lake, Miss.	6- 3-40	Elaine, Ark.	7-21-40
" "	"	Gunnison, Miss.	7-__-40
" "	"	Crowville, La.	8- 9-40
" "	"	Abbeville, La.	8-__-40
" "	6- 1-41	Lucy, Tenn.	6-30-41
" "	"	Hogansville, Ga.	7-25-41
" "	"	Calhoun, Ala.	9-10-41
" "	6- 7-42	Uniontown, Ky.	9-19-42
Glen Allan, Miss.	5-25-47	New Iberia, La.	8-__-47
" "	"	Marked Tree, Ark.	7-__-47
Moon Lake, Miss.	6- 1-47	Kennett, Mo.	8-23-47
Glen Allan, Miss.	6-15-47	Marked Tree, Ark.	7-18-47
" "	"	Beaumont, Texas	10-__-47
" "	"	Moon Lake, Miss.	9-__-47
" "	6-13-48	Bastrop, La.	9-25-48
" "	"	Memphis, Tenn.	8-14-48
Norwood, Pa.	6- 2-41	Williamstown, N.J.	6- 7-41
Elizabethtown, N.C.	6- 1-43	Goldshoro, N.C.	7- 8-43
" "	"	Dillion, N.C.	7-15-43
" "	6- 3-43	Sanford, N.C.	8-__-43
" "	"	Salisbury, N.C.	7-__-43
" "	"	Spartansburg, S.C.	7-26-43
" "	5-28-53	Danville, Va.	7- 4-53
Muskogee, Okla.	5-25-58	Warsaw, Mo.	9-__-58
" "	5-31-58	Vinita, Okla.	8-16-58
Arkoma, Okla.	5-23-59	Forest City, Ark.	7-__-59
Okla. City, Okla.	6- 7-59	Lebanon, Mo.	8-18-59
Webber Falls, Okla.	6-13-59	Waco, Texas	9-__-59
" "	"	Claremore, Okla.	8-__-59
Arkoma, Okla.	"	Heavener, Okla.	8-21-59
Webber Falls, Okla.	6-14-59	Waco, Texas	9-__-59
Muskogee, Okla.	6-12-60	Grove, Okla.	8-__-60
Charleston, S.C.	6- 9-31	Yorktown, Va.	8-20-31

TABLE 1 (cont.)

Banding Locality	Banding Date	Recovery Locality	Recovery Date
" "	8- 9-35	Moncks Corner, S.C.	10-14-35
Memphis, Tenn.	6- 7-42	Covington, Tenn.	7-12-42
" "	"	Monette, Ark.	7- 6-42
Dyersburg, Tenn.	6- 2-51	Madisonville, Ky.	7-22-51
Anahuac, Texas	5- 2-26	Fort Worth, Texas	9-11-26
" "	5-25-26	Baytown, Texas	7-17-26
" "	6- 3-26	Shelbyville, Ind.	8- 7-26
" "	7-29-27	Alvin, Texas	9-19-27
" "	6- 3-30	Nacogdoches, Texas	7-__-30
" "	"	Tyler, Texas	7-15-30
Columbus, Texas	6- 4-38	Jennings, La.	7-29-38

Note: Banding and recovery localities are approximations determined from coordinates, except for Alabama banding localities which are the writer's.

from banding and was much more safe. If the climber tied himself to the tree, at the top of his ascent, then caught the birds with his hands or a short pole with a wire hook, and then lowered them in a plastic bucket to a helper on the ground who did the banding and recorded the data, he could work much more efficiently.

The construction of the poles with hooks and baskets was simple. James E. Keeler, Alabama Department of Conservation, introduced the writer to the use of the hooks in a cooperative effort in banding White Ibises (Keeler, 1956). A bamboo pole of suitable length was obtained. A piece of eight or nine gauge iron wire, about four feet long, was attached to the upper two feet of the pole using several wrappings of adhesive tape. The end of the wire was then bent so that about six or eight inches of the wire was parallel to the rest of the wire and about one inch from it. The very end was bent out slightly so that it was easier to guide the hook around the neck of a bird. The basket was made with a similar pole and piece of wire. The wire was bent to form a loop six to eight inches wide and about 18 inches long. A piece of one-inch mesh chicken wire about 8 inches by 16 inches was slipped over the frame and the ends of the frame were attached to the pole with adhesive tape. Keeler found that if the

TABLE 2  
DISPERSAL OF ADULTS

Banding Locality	Banding Date	Recovery Locality	Recovery Date
Tuskegee, Ala.	5-14-56	Wadesboro, N.C.	10-15-60
Glen Allan, Miss.	5-23-37	Oakland Mills, Iowa	10-27-41
" "	6- 6-37	New Orleans, La.	7-19-39
Moon Lake, Miss.	6- 3-40	" "	8- 5-40
" "	6- 7-42	" "	8-__-44
Muskogee, Okla.	6- 6-59	Dyersburg, Tenn.	8-__-61
Bay Town, Texas	5- 2-26	Baton Rouge, La.	7-31-27

TABLE 3  
SOUTHWARD MIGRATION

Banding Locality	Banding Date	Recovery Locality	Recovery Date
Tuskegee, Ala.	5-27-55	British Guiana	3- 1-61
" "	"	Puerto Rico	10-31-55
" "	"	Venezuela	12-16-55
" "	"	British W. Indies	10-23-55
" "	"	Honduras	1-29-56
" "	"	Cuba	1-15-60
" "	"	"	2-13-58
" "	"	Bahamas	3-__-56
" "	5-14-56	British Guiana	2- 3-60
" "	6-16-57	Venezuela	10-__-63
Marvyn, Ala.	6- 6-58	British W. Indies	10-15-61
" "	"	British Guiana	6- 9-59
" "	5-22-59	British W. Indies	9-27-59
" "	"	British Guiana	2-15-60
Faunsdale, Ala.	6- 1-59	Cuba	8-__-60
Opp, Ala.	6-22-60	Venezuela	10-12-60
" "	6-12-61	Cuba	9-24-61
" "	5-10-62	Lake City, Fla.	6-17-64
Delaware	9-14-51	Haiti	1-__-52
St. Marks, Fla.	5-22-39	Panama	11- 1-39
" "	6-24-61	Jamaica	1-__-62
New Iberia, La.	7-17-37	Mexico	10- 2-37
Harpersville, Miss.	6-16-35	"	10-__-37
" "	6-16-35	British Honduras	7-20-36
Glen Allan, Miss.	5-25-36	Cuba	10-13-38
" "	"	Colombia	__-__-43
" "	5-24-36	Mexico	9-28-36
" "	"	French W. Indies	9-__-36
Harpersville, Miss.	5-31-36	Mexico	1-23-38
Glen Allan, Miss.	5-23-37	Colombia	4-19-50
" "	"	Cuba	7-16-41
" "	"	Honduras	9-__-37
" "	"	Mexico	9-30-37
" "	6- 6-37	Honduras	10- 8-37
" "	"	Panama	10-17-37
Moon Lake, Miss.	6- 3-40	British Honduras	12- 6-40
" "	"	Mexico	12-13-40
" "	6- 1-41	"	2-__-54
" "	6-7-42	"	4- 2-46
Glen Allan, Miss.	5-25-47	Nicaragua	11-20-49
" "	"	Haiti	3-15-48
Moon Lake, Miss.	6- 1-47	Mexico	10- 4-47
" "	"	Cuba	2-22-48
Glen Allan, Miss.	6-15-47	Panama	3-10-51

TABLE 3. (*cont.*)

Banding Locality	Banding Date	Recovery Locality	Recovery Date
" "	"	Puerto Rico	4- 1-49
" "	"	Mexico	2- __-49
Wildwood, N.J.	6- 8-41	British W. Indies	11- 6-41
" "	5-29-49	" " "	12- 3-49
Clarkton, N.C.	6- 1-43	" " "	1- __-44
" "	5-25-54	Cuba	5- 6-55
" "	6-15-54	Bahamas	12- 7-54
Muskogee, Okla.	5-25-58	Mexico	11- __-58
" "	"	"	11- __-58
" "	5-23-59	Colombia	1-16-60
" "	5-24-59	Costa Rica	8-22-60
Greenwood, Okla.	5-23-59	Mexico	3-10-60
Okla. City, Okla.	6- 7-59	British Honduras	3- 7-60
" "	"	Nicaragua	12- __-59
Okmulgee, Okla.	6-13-59	Mexico	10-13-60
" "	"	Costa Rica	11-26-59
" "	"	Panama	11-26-59
Arkoma, Okla.	"	Nicaragua	3- __-60
Muskogee, Okla.	"	Costa Rica	5- __-60
" "	6-14-59	Mexico	9-15-59
" "	"	"	2- 2-60
" "	"	"	8-15-60
Arkoma, Okla.	6- 4-60	"	12- __-60
" "	"	Panama	9-24-60
" "	"	Costa Rica	9-30-60
" "	6-18-60	Colombia	10- __-60
Muskogee, Okla.	6-12-60	Panama	10- __-60
Charleston, S.C.	6-15-31	Louisiana	6-19-36
" "	6-11-32	Jamaica	10-30-34
" "	6-24-32	British Honduras	9-25-32
" "	"	Cuba	11-18-38
" "	6-12-33	Bahamas	10- 1-35
" "	"	Colombia	4- __-38
" "	"	British W. Indies	1-16-34
" "	6- 6-34	Venezuela	10-21-34
" "	5-29-37	Haiti	2- __-43
" "	6- 5-38	Cuba	10-26-38
Dyersburg, Tenn.	6- 5-51	Colombia	3-21-53
" "	"	Mexico	12- __-51
Galveston, Texas	5-12-26	"	10- 1-26
" "	6-25-26	British Honduras	11-20-26
" "	6-14-26	Mexico	10-18-26
" "	6- 3-30	"	8-28-30

Note: Banding and recovery localities are approximations determined from coordinates, except for the Alabama banding localities.

TABLE 4  
NORTHWARD MIGRATION

Banding Locality	Banding Date	Recovery Locality	Recovery Date
Tuskegee, Ala	5-11-55	Wetumpka, Ala.	5-16-60
" "	"	Opp, Ala.	3-_-59
" "	5-20-55	Summit, Miss.	3-24-57
" "	5-27-55	Selma, Ala.	6-30-57
" "	5-14-56	Tuskegee, Ala.	8- 2-59*
Opp, Ala.	5-30-62	Dothan, Ala.	4-20-63
Glen Allan, Miss.	5-25-36	Coushatta, La.	3-28-38
" "	5-24-36	Winnsboro, La.	5- 2-40
" "	"	Indianola, Miss.	4- 8-38
Harperville, Miss.	5-31-36	Oxford, Miss.	7-26-38
" "	"	Natchez, Miss.	6- 1-40
Glen Allan, Miss.	5-23-37	Gonzales, Texas	3-26-39
" "	"	Indianola, Miss.	2-_-38
" "	6- 6-37	Bernie, Mo.	3-_-44
Moon Lake, Miss.	6- 3-40	Prichard, Miss.	2-_-46
" "	"	Batesville, Miss.	3-_-43
" "	"	Eudora, Miss.	3-14-41
" "	"	Swan Lake, Miss.	6-_-43
" "	6- 1-41	Clarksdale, Miss.	4-_-42
" "	6- 7-42	Crockett's Bluff, Ark.	4- 8-47
Glen Allan, Miss.	6- 1-47	Memphis, Tenn.	1-_-54
Clarkton, N.C.	5-30-42	Boardman, N.C.	4-_-44
" "	6- 3-43	Clarkton, N.C.	4-26-50
Charleston, S.C.	5-29-37	Morehead City, N.C.	2-_-38

\* A date this late does not necessarily indicate the destination of spring migration but may reflect post-breeding dispersal before autumnal migration.

Note: Banding and recovery localities are approximations determined from coordinates, except for Alabama banding localities.

birds were caught by the neck, they would release their toe-holds; if caught by the leg, they usually held on and the leg would be broken. Little Blue Herons are quite agile climbers and can frequently be returned to the nest by perching them on the pole, below the hook, and raising them to their nests. Little Blue Heron nestlings that cannot climb well and some of the other herons and ibises, are best returned to the nests in the baskets.

The size of the nestlings banded varied greatly. The optimum size was that attained at about two weeks of age, at which time the birds were able to climb a little but not enough to evade the bander easily. At one week of age, the birds are at the minimum size at which the proper size band will stay on the tarsus. At about four weeks of age, the young are able to climb so well that it is difficult to capture them. It was our practice to start banding when the first group was about two weeks old and to return at periods of

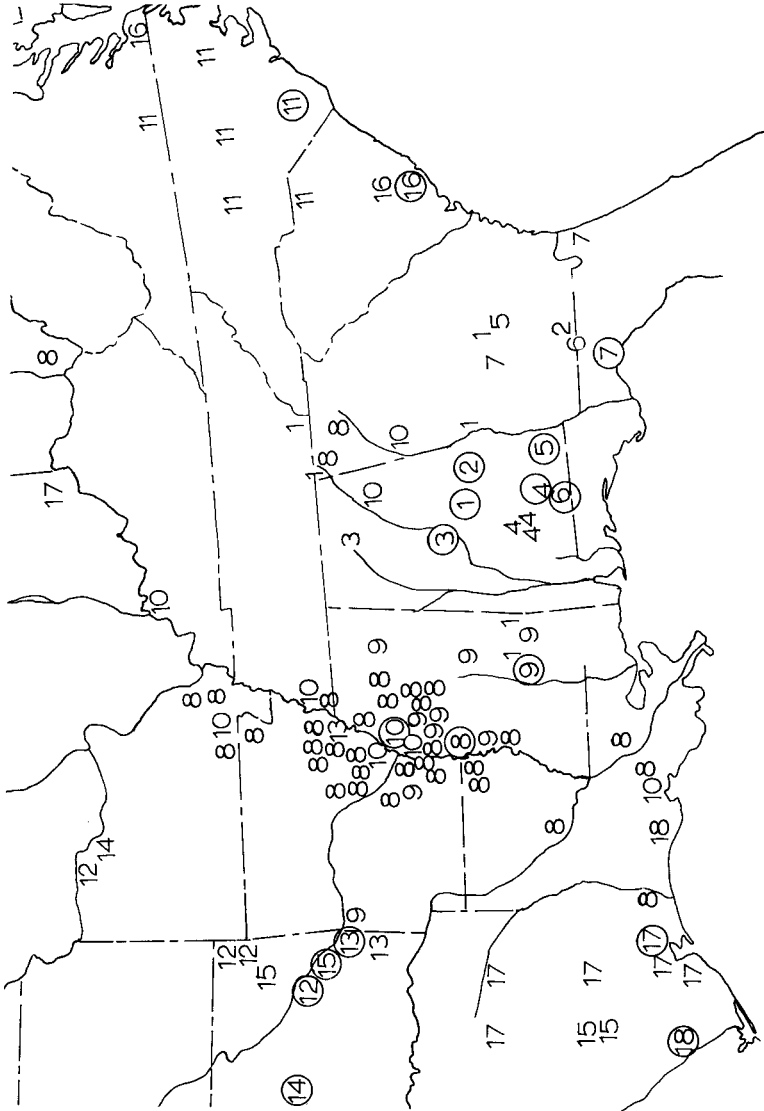


FIG. 1. Dispersal of Young From Nesting Colonies. Each number represents a colony (circled) and the band recoveries from that colony (uncircled).



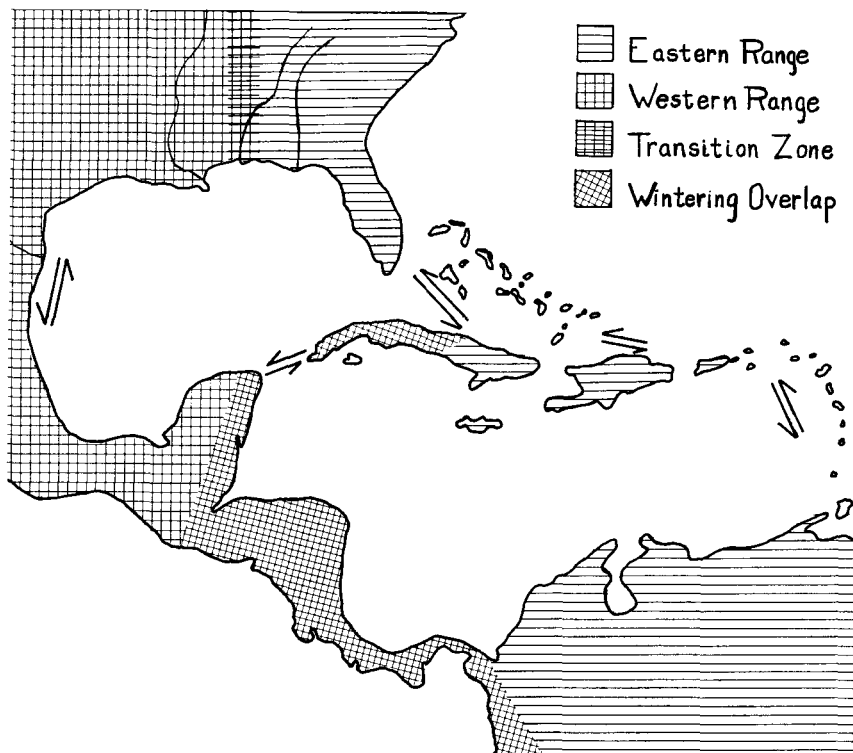


FIG. 2. Southward Migration Routes in Relation to Nesting and Wintering Areas.

two to three weeks to band later developing young, until finally diminishing returns made banding unprofitable.

In addition to the Fish and Wildlife service bands, some color bands have been used since 1963. These were the plastic Bandettes, size 4-906, obtained from the National Band and Tag Company, Newport, Kentucky. A different color combination was used for each colony, providing visual identification as to site of origin.

The recovery data as supplied by the Bird Banding Laboratory were placed in several categories: 1) recoveries dated the same summer as the banding and from localities north of, or at the same latitude as the nesting colony, were clearly dispersal records; 2) recoveries dated the same summer as the banding and from localities south of the nesting colony but still in the United States, could be either dispersal or early southward migration records and were thus of questionable value to this study; 3) recoveries from areas located south of the United States were considered southward migration

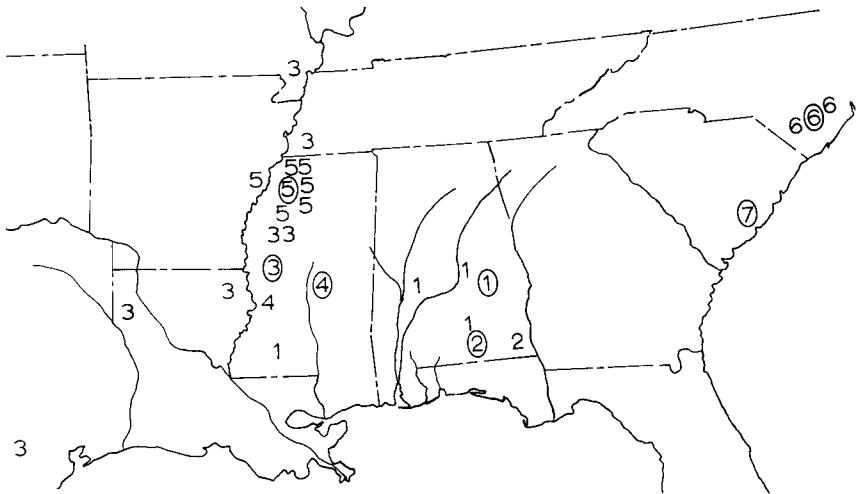


FIG. 3. Migration Northward to the Nesting Colonies. Each number represents a colony (circled) and the band recoveries from that colony (uncircled).

records; and 4) the late winter and spring records of birds in the United States were considered over-wintering records or spring migrational records of birds returning from wintering areas south of the United States.

#### RESULTS AND DISCUSSION

The dispersal recoveries for the young are listed in Table 1 and those for adults in Table 2. Those recoveries related to southward migration are given in Table 3. In Table 4 are listed the northward or return migration recoveries. Figure 1 contains the dispersal of young data plotted on a map. The southward migration routes are shown in Figure 2. Figure 3 contains the recovery data relating to the northward migration.

After leaving the nesting colonies, Little Blue Heron nestlings of the year apparently wandered in all directions and especially to the north, east, and west. The recovery data of Coffey (1943) and Dusi (1958) especially show this (Table 1 and Fig. 1). Apparently the birds tended to disperse along major waterways. The movements from the Tuskegee, Alabama colony (Dusi, 1958) showed no highly obvious pattern of dispersal. No prominent physiographic features such as mountain ranges or large rivers were very near the colony. Large rivers such as the Chattahoochee or Alabama were almost 40 miles away. Coffey's data, however, show a definite tendency of the herons to follow the Mississippi River or its tributaries. In a few instances the birds dispersed with no apparent reference to the Mississippi.

Recorded dispersal distances varied from a few miles to more than 600 miles. The longest dispersal recorded, started at Glen Allan, Mississippi, probably followed the Mississippi River northward to Cairo, then eastward along the Ohio River to Portsmouth and across to Wellston, Ohio. By this route the flight would have been over 600 miles. Most of the dispersal distances recorded were much shorter, averaging less than 100 miles.

Dispersal of the adults (Table 2) was similar to that of the young.

The autumnal southward migration of adults and young, for the Mississippi River area of Mississippi, has been adequately described by Coffey (1943, 1948). He concluded that they followed the mainland westwardly and south-westwardly through Louisiana, Texas, Mexico, and Central America. He interpreted the recoveries from western Cuba as probably having arrived there by the route of the mainland to the Yucatan Peninsula and then across the intervening water to Cuba. Coffey's single recoveries each, from the French West Indies, Haiti, and Puerto Rico, could be explained by migration from Yucatan to Cuba and thence to the destination. They could also and more likely have dispersed eastward from Mississippi, southward through Florida, and thence to their island destinations.

Data from the writer's banding in Alabama, showed a much different picture. These herons apparently migrated south and eastward through Florida to Cuba, or along the Bahamas to Puerto Rico, then along the Lesser Antilles to Trinidad, Venezuela, and British Guiana. The aberrant bird, banded at Tuskegee, Alabama, on 27 May 1955 was recovered from British Honduras, the January after it was banded. Its appearance far west of the usual wintering range of herons banded in Alabama might be explained by several possibilities: 1) it might have dispersed far enough west in Mississippi, that it joined a group of immatures born in that area and had migrated southward with them over their usual route; 2) it might have migrated through Florida to Cuba, to the Yucatan Peninsula and then to British Honduras; or 3) it might have migrated through Florida and the islands to Venezuela and then to British Honduras. All three are possible explanations, although the first two seem most probable.

From the data at hand, it appears that herons reared in the Mississippi River vicinity and westward migrate by the western route described by Coffey while those from central Alabama and eastward migrate by the eastern route. There are almost no data to describe the migrations of Little Blue Herons which nest between the two areas studied by Coffey and Dusi. In all probability it is an area of migrational transition, with the random dispersal of the young making it possible for them to join the young of colonies using either of the main migration routes.

The spring northward migration is the least known and is at present a

subject of intensive study by the writer. Conventional banding of nestlings with the subsequent recoveries of dead birds has provided most of the small amount of presently available information. These recoveries are listed in Table 4, and Figure 3 shows the banding and recovery locations. These data are an indication that the Little Blue Herons tended to return to the general region of their birth. The records are misleading because they show a recovery site which is not necessarily the destination of the migration or the breeding colony destination. During the 1963 and 1964 nesting seasons, plastic color bands were used to mark the nestlings so that their place of birth could be determined visually. In 1963, 222 nestlings were color-banded at three colonies in Alabama: one located near Decatur, Limestone County; one near Opp, Covington County; and one at Pansey, Houston County. Observations of returned birds of the Opp and Pansey colonies in mid-March, 1964 and 1965, showed only birds in adult plumage were present. The Opp colony was not successful and the population decreased to only about 12 pairs by 21 May 1964. Therefore, no further observational data were collected relating to site-faithfulness at this area. The Pansey area contained three birds in mottled plumage on 13 May 1964, one of which bore color bands for that colony. Because only 32 nestlings were banded there in 1963 and because the first-year mortality is so great (Dusi, 1963), it was felt that this single returning individual was a preliminary indication of a rather high degree of site-faithfulness to the nesting colony of origin. However, in 1964, 464 nestlings were color-banded and none was seen in the colony in 1965. Unfortunately, an unusually small nesting population in 1965 may have altered the value of these data. Insufficient observations were made at Decatur colony to provide reliable data. None of the color-banded birds was seen at any of the other colonies studied by the writer.

The one returning bird at the Pansey colony provided some data of additional interest. The literature (Bent, 1926 and Palmer, 1962) contains many references to the mottled plumage and nesting the summer after birth but no concrete evidence is presented to establish precisely the age of the birds. The color-marked returnee to the Pansey area had a few blue feathers in the white plumage and was incubating eggs in its nest when it was first disturbed and observed. Therefore, validity is given to the idea that Little Blue Herons will nest the season after birth, that they start to acquire mottled plumage at that age and will breed in mottled plumage.

#### SUMMARY

Migration in the Little Blue Heron is composed of a dispersal from the nesting colony area, a southward autumnal movement, and a return northward to breeding colony areas in the spring.

Data from banded nestlings show that they dispersed in all directions from the breed-

ing areas and apparently tended to follow major waterways, traveling as far as 600 miles but usually less than 100 miles.

The southward migration of young and adults followed two major pathways. Those from the Mississippi River area and most of its drainage, migrated westward and south along the Gulf of Mexico to Mexico, Central and South America. Those from Central Alabama and to the east, migrated to the east and south through Florida and to the island chains, Trinidad and South America. A few went to Cuba. It was suggested that herons from the area between Central Alabama and the Mississippi River probably migrated either way, probably depending upon the direction of their dispersal prior to the southward migration. A migration between Cuba and Yucatan is a suggested solution to the appearance of a few aberrant individuals whose bands were recovered from wintering areas opposite to the expected distribution.

The northward or spring migration is incompletely known. Data indicated a tendency to return to the general region of birth of the nestling. The return of one color-banded nestling to the site of its birth to breed provided concrete evidence that Little Blue Herons breed in their first year, that they start to acquire their mottled plumage at that age, and that they will breed in white or mottled plumage.

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