

THE MIGRANT

A QUARTERLY JOURNAL
DEVOTED TO TENNESSEE BIRDS

Published by
THE TENNESSEE
ORNITHOLOGICAL
SOCIETY



Alphans
36

JUNE, 1981
VOL. 52, NO. 2

THE MIGRANT

Published by the Tennessee Ornithological Society,
to Record and Encourage the Study of Birds in Tennessee.
Issued in March, June, September, and December.

VOL. 52

JUNE 1981

NO. 2

EASTERN BLUEBIRD POPULATION FLUCTUATIONS IN TENNESSEE DURING 1970-1979

T. DAVID PITTS

Eastern Bluebirds (*Sialia sialis*) have long been noted for their drastic population changes (e.g., Cooke 1913, Forbush 1905). James (1960) used the term "disaster species" to describe bluebirds on the basis of their population declines following severe winters. The purposes of this paper are to describe bluebird population changes that occurred during the years 1970-1979 in Tennessee, to consider the type of winter weather with which higher than normal bluebird mortality was associated, and to estimate the size of the breeding population of bluebirds in Tennessee.

POPULATION CHANGES INDICATED BY BREEDING BIRD SURVEYS AND NEST BOX DATA

Breeding Bird Survey (BBS) data provide the best statewide evidence of population changes. Forty-two BBS routes are normally run in Tennessee, although in some years one or more of these routes are not run. Each route consists of 50 stops, one-half mile apart, at which an observer records the numbers of each bird species seen or heard within 0.25 mile. BBS's are designed to serve as an index to populations, so that increases or decreases can be detected by comparing results from different years. Since the same number of routes is not run each year, it would not be valid to compare the total number of bluebirds seen in different years; a more accurate comparison can be made by considering the average number of bluebirds seen per route. This calculation is made by adding the number of bluebirds seen on all routes for a particular year and dividing this sum by the number of routes run that year. Table 1 summarizes BBS data for each year. Figure 1 graphically illustrates the changes in the average number of bluebirds per route during the 1970's.

Bluebird population changes are also made apparent by comparing data obtained over several years from groups of nest boxes. I chose for comparison three nest box trails that are located at approximately the same latitude, are monitored on a regular basis, and have been established for several years. The nest box trail of Gordon Hall is located on the Norris Dam reservation in Anderson County. This trail was established in 1973 and normally has 33 to 35 nest boxes. The nest box trail of Mrs. Martha Herbert is located in the Neptune community in Cheatham County. This trail was established in the 1960's and normally has about 70 nest boxes. The third trail used for comparisons is my trail of 40 boxes in Obion County. This trail was established in the late 1960's, although some boxes were present as early as 1958.

TABLE 1. Comparison of Tennessee Breeding Bird Survey data and estimated June populations for Eastern Bluebirds during 1970-1979.

Year	Total No. Counted on all BBS's	No. BBS routes run	Avg. No. Bluebirds/ BBS route	Estimated June* population
1970	201	41	4.9	105,531
1971	298	42	7.1	152,729
1972	354	42	8.4	181,430
1973	268	42	6.4	137,354
1974	247	42	5.9	126,591
1975	298	42	7.1	152,729
1976	306	42	7.3	156,829
1977	205	42	4.9	105,065
1978	76	40	1.9	40,899
1979	101	40	2.5	54,352

*Approximately 50% of the June population are probably juveniles from first nesting attempts.

These trails can be compared in several ways. Probably the most accurate method of making comparisons would be to consider the number of pairs of bluebirds present each year on each trail. However, this information is difficult to obtain, especially on the trails that have a high density of bluebirds, and is not available for all three trails. The next best method of comparison is to consider the number of nesting attempts each year. A nesting attempt is defined as a nest in which at least one egg is observed. While it is true that the number of nesting attempts is influenced by such things as the rates of nest predation and desertion, this comparison more accurately reflects the number of pairs present than would the total number of eggs laid or the number of young banded. Figure 2 shows the number of nesting attempts on each of the trails during 1970-1979.

RELATION BETWEEN MORTALITY AND WINTER WEATHER

Many factors can influence bluebird populations. While factors such as nest site availability, predators, diseases, parasites, pesticides, and land use patterns can influence bluebird numbers, there is no available evidence to indicate that the influence of any of these factors changed during the 1970's. A possible exception is the land use pattern involving conversion of pasture land into soybean production. This trend is especially noticeable in many areas of west and middle Tennessee (U.S. Department of Agriculture 1975, 1979), and, if continued, will result in reduced bluebird populations as suitable habitat, such as pasture land, declines. In view of the data presented in Figures 1 and 2 and data from other publications (e.g., James 1960, 1961, 1962), it seems that severity of winter weather is the major factor influencing nonmigratory bluebird populations in areas where suitable habitat is available. This certainly seems to be the case in Tennessee, where BBS data indicate a sharp decline followed the severe winters of 1976-1977 and 1977-1978. Data from two of the nest box routes (Obion County and Cheatham County) also indicate very drastic declines in 1977 and/or 1978.

Since winter weather is the most strongly implicated factor influencing bluebird populations in Tennessee, and since little information on other possible

influencing factors is available on a state-wide basis, emphasis will be placed on the role of weather in causing the population declines of 1977 and 1978. It should be noted, however, that winter weather patterns will probably not explain all noted population changes. For example, population fluctuations during the early 1970's appear to have been independent of weather changes.

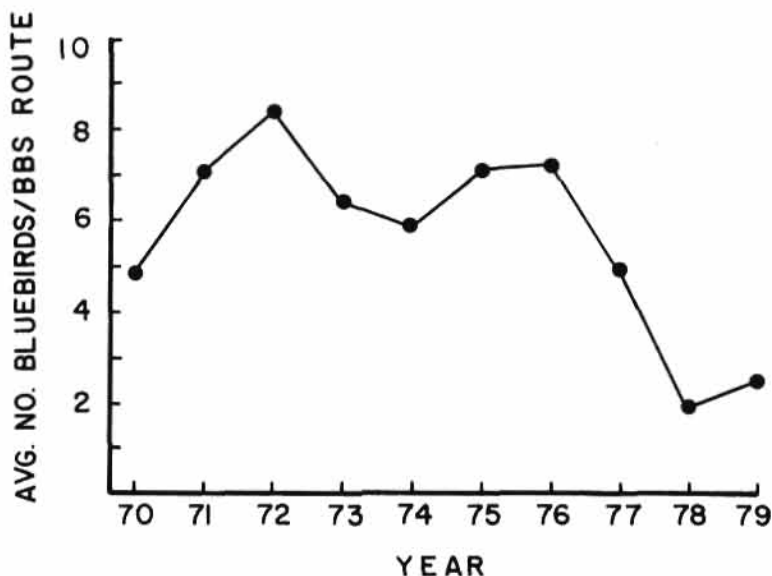


FIGURE 1. Variation in the average number of bluebirds recorded per Tennessee Breeding Bird Survey route during 1970-1979.

James (1962) found a good correlation in the mid-south states between the number of bluebirds on Christmas Bird Counts and the amount of freezing weather during the previous winter. The effects of the intervening breeding season complicated efforts to more specifically implicate a particular type of weather. The current study compares winter related mortality on the three previously described nest box trails in an effort to determine what type of weather resulted in deaths of bluebirds. The comparisons concentrated on the following observations: (1) during the winter of 1976-1977 mortality was high in Obion County, but normal in Cheatham County and Anderson County; and (2) during the winter of 1977-1978 mortality was again high in Obion County and also in Cheatham County, but not in Anderson County.

Evidence suggests that the European Robin (*Erithacus rubecula*), which has feeding habits similar to those of bluebirds, must consume some animal food on a daily basis in order to maintain normal weight (Berthold 1976). The primary animal foods of bluebirds during the winter are arthropods such as spiders (Beal 1915) which perched bluebirds detect as the arthropods move in short vegetation (Pinkowski 1977). Environmental conditions that restrict the availability of arthropods, either by restricting movement (temperatures below freezing) or concealment (snow cover), could influence bluebird survival. Environmental conditions, such as very low temperatures, that add additional stress would likely cause higher mortality.

TABLE 2. Summary of January and February weather data from different regions of Tennessee.

	Obion County		Cheatham County		Anderson County	
	1977*	1978*	1977	1978*	1977	1978
Degree days	2149	2939	1976	2190	1967	2071
Snowfall (inches)	13.4	33.3	18.5	22.4	6.0	18.0
Subfreezing days	20	32	12	19	9	7

*Mortality of Eastern Bluebirds was much higher than in other years.

Numerous specific weather factors possibly affect bluebird survival; I chose three criteria for comparisons between the areas. These criteria were chosen because of their likely influence on bluebirds and the availability of information from weather stations. The criteria used were: (1) number of degree days (which measures the coldness of days by the difference between the average daily temperature and 65 degrees F); (2) amount of snowfall; and (3) the number of days of subfreezing temperatures (days on which the maximum temperature did not rise above freezing). Table 2 presents those comparisons; all weather data were taken from U.S. Weather Bureau annual summaries (1977, 1978). Most bluebird winter mortality in Tennessee occurs during January and February (Pitts 1978), but most investigators do not check their boxes on a regular basis during the winter, so it is not possible to distinguish between mortality occurring in January from mortality occurring in February. Consequently, weather data are not separated by month but are reported as combined totals for January and February of each year.

The total amount of snowfall was the poorest indicator of mortality; for example, mortality was high in Obion County in 1977 when only 13.4 inches fell, while Cheatham County had normal mortality in 1977 with 18.5 inches and Anderson County had normal mortality in 1978 with 18.0 inches.

The number of degree days was correlated with winter mortality; sites with high mortality had more than 2100 degree days. While degree day totals are a predictor of normal and high mortality for the years considered here, it should be noted that only 78 degree days separated years of high mortality (Obion County in 1977) and normal mortality (Anderson County in 1978). This relatively small difference causes me to doubt the validity of this criterion as a reliable predictor of mortality in other years. These doubts are increased by the fact that a particular period of time with a smaller number of degree days may be more stressful to birds than a comparable length period with more degree days. For example, a 10 day period with an average temperature of 25 degrees F would have 400 degree days; another 10 day period might have 5 days with an average temperature of 40 degrees F and 5 days with an average temperature of 15 degrees F for a total of 375 degree days. Even though the second period has a lower total of degree days, bluebird mortality would probably be higher in the second period due to the extremely low temperatures.

The number of days with subfreezing maximum temperatures was strongly correlated with bluebird mortality. Table 2 shows that high mortality occurred in areas with 19 or more days of subfreezing temperatures, while normal mortality was associated with areas having 12 or fewer days of subfreezing temperatures.

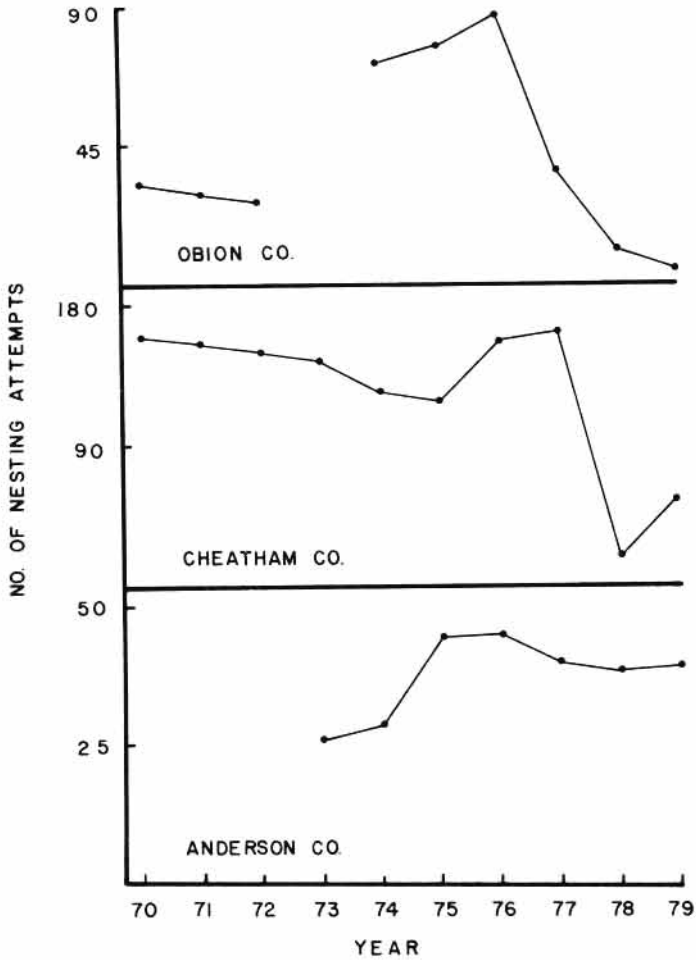


FIGURE 2. Comparison for 1970-1979 of the number of annual nesting attempts on three bluebird trails, one in West Tennessee (Obion County), one in Middle Tennessee (Cheatham County), and one in East Tennessee (Anderson County).

Consequently, I have chosen 15 as the minimum number of subfreezing days necessary for a high rate of bluebird winter mortality. While this is a useful predictor it is an unrefined criterion; a more detailed analysis of weather characteristics and patterns would likely result in better prediction of mortality. For example, the number of consecutive subfreezing days may be more important than the total number.

A comparison of BBS data with the number of subfreezing days supports the use of 15 days of subfreezing temperatures as a reliable predictor of bluebird mortality. Figure 3 (A and B) shows the portion of Tennessee subjected to 15 or more subfreezing days in 1977 and 1978. Figure 3C shows the location of BBS routes that had normal numbers of bluebirds in 1977 and 1978. This was deter-

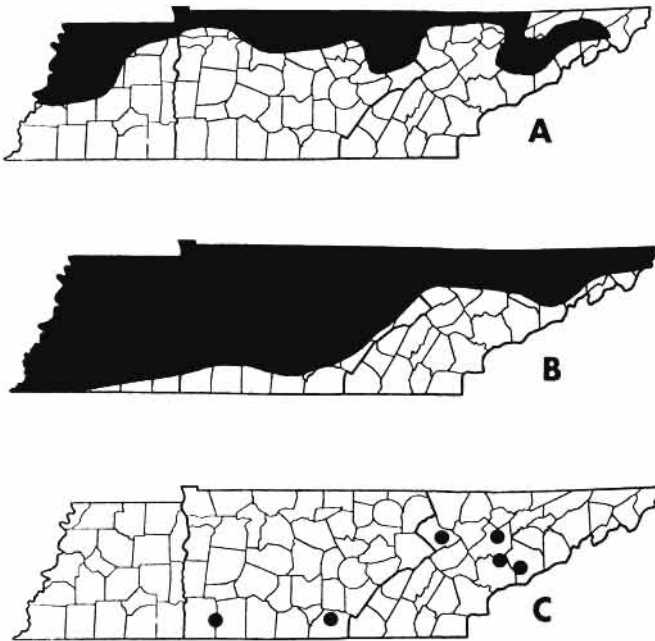


FIGURE 3. A. Darkened area represents portion of state having 15 or more subfreezing days during January and February of 1977. B. Darkened area represents portion of state having 15 or more subfreezing days during January and February of 1978. C. Location of Breeding Bird Survey routes having normal numbers of bluebirds in both 1977 and 1978.

mined by calculating the average number of bluebirds counted on each route in 1977 and 1978 and comparing this with the average number counted during the years 1966 through 1976. If the average of the 1977 and 1978 counts was 50 per cent or more of the 11 year average then the counts were considered to be normal. Only routes with an 11 year average of 3.0 or more bluebirds per year were considered; this eliminated 16 routes. Many of the remaining routes still had such low numbers that calculation of a two year mean and comparing this to an 11 year mean was statistically unreliable. However, the use of the 50 per cent reduction criterion helped to more accurately detect areas that had real population declines. Note in Figure 3C that the BBS routes that had an 11 year mean of 3.0 or more bluebirds per year and that still reported normal numbers in 1977 and 1978 were in the part of the state not having 15 days of subfreezing weather in 1977 or 1978. Generalizations of this type are rarely without exceptions; it is very likely that small areas within the portion of the state having 15 or more subfreezing days did have better bluebird survival than surrounding areas. Casual observations indicate the Tennessee portion of Land-Between-the-Lakes may have been one such area with a higher than predicted bluebird survival rate.

USE OF BREEDING BIRD SURVEYS AND AN INDEX OF CONSPICUOUSNESS TO ESTIMATE JUNE POPULATIONS

The conversion of BBS data into actual population estimates must be done cautiously and with the realization that a high degree of error may exist since

BBS's were not designed to give population estimates. In spite of these limitations the use of BBS data to estimate population size seems justified since no other comparable data exist.

An assumption that must be made in order to convert BBS data into population estimates is that observers detect a known percentage of the bluebirds present on the routes. Howell (1951) made one of the earliest attempts to measure conspicuousness by comparing roadside census data with known populations for 26 species of woodland and farmland birds. He calculated an index of conspicuousness for each species by dividing the number of individuals of a species detected on a roadside census by the number of individuals of the species known to be present. These indices ranged from 1 to 28 per cent; indices were greater for species living in farmland. Since Howell's techniques for censusing were not the same as used for BBS's, his results should not be directly compared with BBS's. However, his censuses were apparently more intensive, and therefore, likely to lead to indices larger than for comparable work with BBSs.

Wallace (1970) determined an index of conspicuousness for 18 species living in woodland or at the edge of woodland. He used standard BBS procedures. The indices of conspicuousness he calculated ranged from 4.1 to 12.2 per cent, with an average of 8.1 per cent. Since bluebirds are generally found in somewhat more open habitat, they would presumably be more easily detected, as Howell found for farmland birds. Also, the presence of young bluebirds would probably increase detectability. Therefore I believe an index of conspicuousness for bluebirds would be greater than the 8.1 per cent average obtained by Wallace or the 11.4 per cent obtained by Howell, but it is probably less than the 28 per cent maximum observed by Howell. Therefore, I have arbitrarily chosen 20 per cent as the index of conspicuousness for bluebirds in Tennessee.

Each BBS route covers an area of 9.8125 square miles. If all 42 routes are run, a total of 412.125 square miles are censused. The actual number of bluebirds on each route can be calculated by dividing the observed number by the index of conspicuousness (0.20). For example, in 1976 306 bluebirds were reported from 42 routes; since this is estimated to represent 20 per cent of the bluebirds present, 1530 bluebirds were estimated to be present on an area of 412.125 square miles. A simple proportion may then be set up where:

$$\frac{\text{total number of bluebirds on BBS's (1530)}}{412.125} = \frac{\text{total number of bluebirds in Tennessee}}{42,244 \text{ (area of Tn.)}}$$

The resulting calculation shows 156,829 bluebirds were present in the state. As many as 50 per cent of these may have been juveniles, since most pairs had produced first broods by the time of the BBS's (Pitts 1976:107-128). This leaves approximately 75,000 adults or 37,500 pairs of bluebirds in Tennessee during the 1976 breeding season. One possible check on the validity of these numbers, even though it is very crude, is to consider the density if 37,500 pairs were present. Approximately 5.8 million acres of suitable habitat were available to bluebirds in Tennessee (U.S. Department of Agriculture 1978); if bluebirds occupied the available habitat uniformly the density would be one pair per approximately 155 acres. Since each pair normally utilizes less than 20 acres (Krieg 1971:73), this density could exist. Whether or not such a density did exist cannot be verified with the existing data.

Statewide June population totals have been calculated in the same manner for each of the other years (Table 1). These calculations indicate a drop from the peak of approximately 45,000 pairs in 1972 to a low of 10,000 pairs in 1978.

SUMMARY

1. Breeding Bird Survey data indicate the largest declines in Tennessee bluebird populations during the 1970's were in 1977 and 1978.

2. Nest box data indicate high mortality in West Tennessee during the winters of 1976-1977 and 1977-1978, and in Middle Tennessee during the winter of 1977-1978.

3. Comparison of BBS and nest box data with weather records indicates areas having 15 or more subfreezing days (days when the maximum temperature was below 32 degrees F) had high bluebird mortality.

4. Assuming that BBS's detect 20 per cent of the bluebirds present, and that 50 per cent of the population consists of juveniles at the time of the BBS's, it is estimated that approximately 45,000 pairs of adult bluebirds were present in Tennessee during the peak year of 1972; approximately 10,000 pairs were present in 1978, the smallest number for any year of the decade.

ACKNOWLEDGMENTS

I wish to thank all of the persons who have participated in Breeding Bird Surveys; their contributions have built the most valuable and reliable source of information on breeding birds in Tennessee. In addition I would like to offer special thanks to Martha Herbert and Gordon Hall for allowing me to use unpublished data they gathered. As is appropriate for any publication on Tennessee bluebirds, I wish to pay tribute to the late Amelia Laskey for her uncountable contributions.

LITERATURE CITED

- BEAL, F. E. 1915. Food of the robins and bluebirds of the United States. U.S. Dept. Ag. Dept. Bull. 171.
- BERTHOLD, P. 1976. The control and significance of animal and vegetable nutrition in omnivorous songbirds. *Ardea* 64:140-154.
- COOKE, W. W. 1913. Local decrease in bluebirds. *Bird-Lore* 15:9-10.
- FORBUSH, E. H. 1905. The decrease of certain birds in New England. *Auk* 22:25-31.
- HOWELL, J. C. 1951. Roadside census as a method of measuring bird populations. *Auk* 68:334-357.
- JAMES, D. 1960. The changing seasons. *Audubon Field Notes* 14:288.
- 1961. The changing seasons. *Audubon Field Notes* 15:306-308.
- 1961. The changing seasons. *Audubon Field Notes* 16:308-311.
- KRIEG, D. C. 1971. The behavioral patterns of the Eastern Bluebird (*Sialia sialis*). New York State Museum Bull. No. 415.
- PINKOWSKI, B. C. 1977. Foraging behavior of the Eastern Bluebird. *Wilson Bull.* 89:404-414.
- PITTS, T. D. 1976. Nesting habits of Eastern Bluebirds in northwest Tennessee. Unpub. Ph.D. dissertation, Univ. Tennessee, Knoxville.

- 1978. Eastern Bluebird mortality at winter roosts in Tennessee. *Bird-Banding* 49:77-78.
- U.S. DEPT. AG. 1975, 1978, 1979. Agricultural statistics. U.S. Govt. Printing Office. Washington, D.C.
- U.S. WEATHER BUREAU. 1977. Climatological data, annual summary. Vol. 82, No. 13. U.S. Government Printing Office. Washington, D.C.
- 1978. Climatological data, annual summary. Vol. 83, No. 13. U.S. Government Printing Office. Washington, D.C.
- WALLACE, G. O. 1970. An evaluation of the roadside count technique utilized in the breeding bird survey. Unpub. Ph.D. dissertation, Univ. Tennessee, Knoxville.
- Biology Department, University of Tennessee at Martin, Martin, TN 38238.
Accepted 1 December 1980.
-

Correction: *The Migrant*. Vol. 51, No. 4.

p. 78, par. 3 reads: "and descended to the west." It should read: "and descended to the nest."

p. 79, par. 2 reads: "edge of the specie's range." It should read: "edge of the species' range."

NOTES ON THE RAPTOR MIGRATION AT CHILHOWEE MOUNTAIN

BARBARA H. STEDMAN AND STEPHEN J. STEDMAN

One of the more productive raptor migration lookouts in Tennessee for the past three years has been on and near Chilhowee Mountain in Blount and Sevier Counties, including the Chilhowee Dam area at the southwestern end of the mountain. In the autumns of 1978, 1979, and 1980, as well as the spring of 1980, we, as well as other cooperating observers recorded raptors of 13 species passing along this migration corridor. High numbers of Broad-winged Hawks (*Buteo platypterus*) and notable records of uncommon species such as Golden Eagle (*Aquila chrysaetos*) and Peregrine Falcon (*Falco peregrinus*) were also taken. Additionally, the first sight record of Swainson's Hawk (*Buteo swainsoni*) in Tennessee appears to have occurred recently at Chilhowee Mountain.

Chilhowee Mountain is a long ridge running along the northern boundary of Great Smoky Mountain National Park for about 50 km from near Chilhowee Dam in the southwest to near the Slate Top Mountains in the northeast. Its altitude averages about 900 m, and on its northwestern side it juts up sharply from the adjacent lowlands which rise up from nearby the Tennessee River Valley. Its almost unbroken ridgeline and great length make it an ideal site for observing migrating raptors almost anywhere along its length, but especially southwest of the intersection of Foothills Parkway and Route 73. Since the ridge is largely owned by the Department of the Interior which maintains Foothills Parkway, it is both easily accessible and very little disturbed. The ridge is also part of the long chain of Appalachian ridges leading northeasterly to the Mendota Fire Tower in Virginia and eventually to Hawk Mountain in Pennsylvania.

As is the case at both of those two hawk lookouts, Broad-winged Hawks are the most numerous species sighted along Chilhowee Mountain in the fall (Table 1). High numbers of Broad-wings for 1978, 1979, and 1980 were 441 (on 23 Sep), 3726 (on 29 Sep), and 1679 (on 20 Sep), respectively. Though these totals have been exceeded elsewhere in the state on several occasions, notably at Elder mountain (Finucane 1961), Gate City (Finucane 1969), and Fall Creek Falls State Park (Finucane 1971), the consistently high numbers of Broad-winged Hawks which occur along Chilhowee Mountain make it an area worthy of coverage during every fall migration.

As if the Broad-wing spectacle were not enough enticement to observe hawks at Chilhowee Mountain, the attractiveness of the area is increased by the regular occurrence of uncommon, endangered, or very rare raptors (Table 1). During the early fall of 1979 a Golden Eagle was sighted by Barbara Stedman near Look Rock, one of the few reports of the species migrating through Tennessee that year. Furthermore, in the fall of 1978 and 1979 Peregrine Falcons were sighted near Look Rock; it is encouraging to know that this endangered species uses the Great Smoky Mountain National Park area as a migratory pathway and might once again recolonize it with nesting pairs. Finally, persistent hawk-watching along the Ridge has resulted in the addition of at least one species to the list of birds sighted in Tennessee.

On 27 September 1980, at 1215 Marc and Laurie Armstrong and Barbara Stedman, who have all previously seen Swainson's Hawk in the western United States, observed a larger *Buteo* break away from a group of migrating Broad-

TABLE 1.
 RAPTOR SIGHTINGS AT CHILHOWEE MOUNTAIN AREA, 1978-80

	Fall 1978	Fall 1979	Spring 1980	Fall 1980
Days of Coverage	1	10	4	11
Hours of Coverage	5	34	9	35
Species				
Unidentified Vulture	—	—	—	4
Turkey Vulture	6	75	32	145
Black Vulture	1	15	14	36
Unidentified Accipiter	—	27	4	18
Sharp-shinned Hawk	1	25	1	31
Cooper's Hawk	—	2	1	3
Unidentified Buteo	11	100	5	522
Red-tailed Hawk	5	11	11	19
Red-shouldered Hawk	—	—	1	2
Broad-winged Hawk	441	5077	—	2054
Swainson's Hawk	—	—	—	1
Golden Eagle	—	1	—	—
Marsh Hawk	—	3	—	10
Osprey	1	9	5	4
Unidentified Falcon	—	4	1	2
Peregrine Falcon	1	1	—	—
American Kestrel	—	5	1	3
Unidentified Raptor	—	24	1	16
Total Raptors for Season	467	5379	77	2870
Raptors per Hour of Coverage	93	158	8	82

winged Hawks over Chilhowee Mountain. The bird was first observed about 400 m away in good light. It then flew to within about 200 m, slowly circling and giving the observers a good view of its field marks. Marc and Laurie Armstrong were using 8.5 x 44 binoculars as they perused the bird, while Barbara Stedman used 8 x 40 Leitz binoculars and a Balscope with a 25x eyepiece. These observers watched the hawk for about five minutes before it glided southwest down the ridge. They had earlier seen several Red-tailed Hawks (*Buteo jamaicensis*), but the appearance of the bird in question was so different that they knew immediately that it was not a Red-tail. The Swainson's Hawk flew more like a Marsh Hawk (*Circus cyaneus*) than like a Red-tail, and the dark breast patch stood out against a clear white belly. The dark bands on the tail, especially the heavy subterminal band, were well seen as the bird flared its tail several times. The wing linings were light with dark on the flight feathers, and a dark area behind the "wrist" was noted. All three observers agreed the bird could be no other species except a Swainson's Hawk.

While Tennessee seems to have had no previous record of this species, there is no shortage of nearby sightings. The species breeds as close as Illinois (Bent 1961). Migration records in the East are not uncommon. For instance, a bird of this species was banded in Virginia on 20 October 1979 (Scott 1980). Also, Cape May, New Jersey, hawk-watchers have recorded Swainson's Hawk almost every

year in recent times. Further, nine were reported in Louisiana in the fall of 1979 (Purrington 1980), while there were at least nine records in Alabama prior to 1976 (Imhof 1976), all of which were sight records only. One of these was quite close to the Tennessee line. A winter population of Swainson's Hawk has been known to occur for some years in South Florida (Stevenson 1976). It is worth mentioning also that in Central America Swainson's Hawks are frequently seen migrating over mountainous areas, often with large groups of Broad-wings (Heintzelman 1975).

Chilhowee Mountain is an easily accessible area which offers hawk-watchers considerable variety and numbers of migrating raptors, as well as a chance to view some species not otherwise easily observed in Tennessee. It deserves continued coverage every autumn season in the future.

LITERATURE CITED

- BENT, ARTHUR CLEVELAND. 1961. Life Histories of North American Birds of Prey. Vol. 1. Dover Publications, Inc., New York.
- FINUCANE, THOMAS W. 1961. Annual Autumn Hawk Count 1961. *Migrant* 32:22-28.
- 1969. Annual Autumn Hawk Count 1968. *Migrant* 40:28-31.
- 1971. Annual Autumn Hawk Count [1970]. *Migrant* 42:1-4.
- HEINTZELMAN, DONALD S. 1975. Autumn Hawk Flights. Rutgers University Press, New Brunswick, New Jersey.
- IMHOF, THOMAS A. 1976. Alabama Birds, 2nd ed. The University of Alabama Press, University, Alabama.
- PURRINGTON, ROBERT D. 1980. Central Southern Region. *American Birds* 34:170-172.
- STEVENSON, HENRY M. 1976. Vertebrates of Florida. University Presses of Florida, Gainesville, Florida.
- 738 Greymont Drive, Nashville, TN 37217. Accepted 26 Jan. 1981.

EDITOR'S NOTE—Swainson's Hawks were reported from several states east of their normal range during the fall of 1980 (Hall, *Amer. Birds* 35:150-156, 1981). In addition to occurring in several midwestern states, Swainson's Hawks were recorded at Hawk Cliff, Ontario on 15 Sept., at Cape May on 23 and 29 Sept., and at Seabrook Island, South Carolina on 9 Nov. Observations from Look Rock have appeared in previous "Autumn Hawk Count" and "Season" reports.

MINUTES OF THE ANNUAL BOARD OF DIRECTORS' AND BUSINESS MEETING, 1981

Editor's Note: An unabridged copy of the minutes is available from the Editor or the Curator. Please send a legal-sized self-addressed stamped envelope.

BOARD OF DIRECTORS' MEETING

The 66th Annual Meeting of the Board of Directors of the Tennessee Ornithological Society was called to order by President Nelle Moore at 1430 on 2 May 1981 at Norris Dam State Park. Copies of the minutes of the Board of Directors' meeting held 18 October 1980 were distributed and approved as written.

REPORTS OF OFFICERS

There were no reports from the 3 Vice Presidents, Directors-at-Large, or the Secretary.

The TREASURER, Martha Waldron, recommended an increase in foreign and library dues be considered at the fall meeting, and reported as follows:

Income	\$6736.17
Expenses	5488.42
Savings (4/17/81)	5101.33
Checking (4/17/81)	1152.04

The EDITOR of *The Migrant*, Gary Wallace, announced he was declining renomination after serving as Editor for 10 years, and suggested the formation of a search committee to facilitate selection of future Editors.

The Season Editor, Fred J. Alsop III, thanked the Society for the opportunity of working with Gary Wallace.

The CURATOR, James T. Tanner, reported income of \$462.19 from sales of back issues of *The Migrant* and the "Index," and expenses of \$184.52, mostly for photocopying out-of-print issues.

REPORTS OF COMMITTEES

FINANCE: The records of the Treasurer were approved. The committee recommended authorizing the transfer of funds now held in the bank savings account to the InterCapital Liquid Asset Fund, Inc., through Dean Witter Reynolds, and that the Endowment Fund be increased in the next 5 years to \$50,000. Both recommendations were approved.

CONSERVATION: Issues reported included a farmer assistance program for soil erosion control in West Tennessee; funding for toxic waste controls; oil companies obtaining drilling options; a proposed Wolf River Greenbelt in Shelby County; a decline in the Purple Martin population in the Chattanooga area; the termination of TWRA's Raptor Rehabilitation Program; and the need to write congressmen protesting easing of strip mining and forest timber cutting regulations.

Resolutions presented and passed were to commend the TVA Office of Natural Resources for their decision to establish a Wildlife Observation Area at Savannah Bay near Ooltewah; and to petition Alexander Haig, U.S. Secretary of State, to initiate programs in cooperation with Latin American countries to slow depletion of tropical rainforests.

NOMINATING: Chairman Tom Guschke reported the following nominations for officers:

President: Michael L. Bierly
 Vice Presidents: East Tennessee — Richard L. Knight
 Middle Tennessee — Dan Gray
 West Tennessee — Robert L. Browne
 Directors at Large: East Tennessee — Mrs. Howard Young
 Middle Tennessee — Robbie Hassler
 West Tennessee — David Pitts
 Secretary: Pat Stallings
 Treasurer: George Payne, Jr.
 Editor of *The Migrant*: Charles P. Nicholson
 Curator: James T. Tanner

James T. Tanner asked for elucidation from the nominating committee as to their method of selecting the Editor, and the chairman and President described telephone communications between committee members, and requests for recommendations from people familiar with the duties of the Editor.

Fred J. Alsop, III, was nominated from the floor for the position of Editor of *The Migrant*. The committee's nominations, as well as the nomination from the floor, were accepted and action was delayed until the evening annual business meeting.

SPECIAL ASSIGNMENT REPORTS

There was no report from the newsletter editor, and the report of the Foray Director was postponed until the business meeting. Lil Dubke reported \$133.25 from sale of patches, decals, and Avifaunas.

OLD BUSINESS

Ken Dubke reported plans for the fall meeting had not been finalized, and would be reported in *The Tennessee Warbler*.

NEW BUSINESS

Jon Koella volunteered to arrange special life insurance policies to benefit the TOS Endowment Fund, and to donate his commission to this fund.

ANNOUNCEMENTS

Announcements concerned the 1982 Spring Meeting to be held in Nashville, and recognition of Arlo Smith's efforts in preserving Overton Park.

The Board of Director's meeting adjourned at 1630.

BUSINESS MEETING

Following a buffet-style dinner at Norris Dam State Park, Knoxville Chapter President Linda Turner called the group to order, made announcements, and introduced Nelle Moore, State President, who opened the business meeting at 1940 with over 100 present.

President Moore reported on business transacted by the Board of Directors, and expressed appreciation to the current officers, and to the Knoxville Chapter for hosting the meeting. The group then stood for a moment of silence in memory of John Sellers of Lebanon, who passed away this year.

Recognition was given to Gary Wallace for 10 years service as Editor of *The Migrant*, and to Martha Waldron for serving as Treasurer. The report of the Nominating Committee and the nomination from the floor of the Directors' meeting were announced. All candidates to uncontested positions were then elected.

A motion was then made to authorize the President to appoint an Editor's Committee to review the responsibilities of *The Migrant* editorship, report on qualifications of editor candidates at the 1981 Fall Meeting, and empower the Board of Directors to elect an editor at the 1981 Fall Meeting. After discussion, the motion was amended to elect Gary Wallace as Editor pro tem for six months. A standing vote was taken and the motion failed.

Gary Wallace was nominated for Editor of *The Migrant*. A vote on editor candidates Alsop, Nicholson and Wallace was taken by secret ballot, and the election of Charles P. Nicholson was announced following the program.

The evening program was introduced by Marcia Davis, Program Chairman. Ben and Lula Coffey discussed experiences in recording bird songs in North and South America, and illustrated their talk with tapes of bird songs.

Nelle Moore then presented the gavel to incoming President Bierly. Announcements were made concerning the 1982 Spring Meeting in Nashville, with probable dates of 7-9 May 1982, and the 1981 Foray, 22-25 May, in McNairy County. The meeting was then adjourned.

CAROLYN H. BULLOCK, *Acting Secretary*

ROUND TABLE NOTES

A PAST GREEN HERONRY COLONY IN MEMPHIS—Nesting colonies of the Green Heron (*Butorides striatus*) have been reported in these pages as of special interest. In this area I haven't seen any in the last 45 years, therefore, I should put on record, our one and only colony. This was near "East Junction" in south Memphis, a wet place with a few trees and about 67 m from the railroad junction. The nests were originally 1 to 2 m above ground, in buttonbushes (*Cephalanthus occidentalis*), in 1933. Subsequently the WPA worked through the spot, ditching for draining, and the nests were then built 4 to 5 m above the ground in oaks. For the last decade, Interstate 55 has crossed through the site.

In 1933 we found two nestfuls ready for banding on 17 May; on 20 May a third nestful. On 25 May we banded at two more nests and found four other nests of young not ready for banding. No birds remained on our next visit, 17 June. Of 25 young at five of the nine nests, 23 were banded, two being too small.

On 3 June 1934 we banded 4 at each of two nests (about 8 and 12 days old); too young to band at a third nest and about six to eight nests with eggs. All were in oak trees, not easy to check closely. Three nestfuls were banded 10 June; four, 7 days old; four and three, 12 days old. On 16 June, four, 12 days old, and four, 14 days old, were banded. A nest with two eggs hatched that day; the young were banded 27 June. Two nest with eggs were found on 16 June and checked again on 27 June. The two eggs at one nest were gone; one nest with two eggs now had three, but these latter were still there 11 July, and evidently no good. A total of 29 young were banded at eight nests; 5 eggs in two nests produced no young.

In 1935 it was harder still to check the nests, and we tried for minimum disturbance. On 22 May, two nests had no eggs, one had 5 and one had 2 eggs. On 12 June we checked ten nests—two of which had no eggs yet, two with the young gone (heavy "whitewash" at one), one with 5 eggs, two with 4 eggs each, and one with a single egg. Four young (12 days old) and two young (over 15 days old) were banded. On 22 June, I found five nests with 5 eggs each, two with 5 young each; these were 2 to 5 days old, not banded. One of these was banded 29 June, the only one. Nests on latter date were four with 5 eggs each, one with 2 eggs, and two with young only 2-4 days old. On 8 July one nest had 2 young (banded) and another with 2 young only a few days old and an older one dead on the ground below. One unused nest and several used and abandoned nests remained. Only 9 were banded. The eight nests checked, eventually had 31 eggs.

It would seem that in 1933 eggs were laid about 10 April to 30 April and the last young left the nest about 7 June. In 1934, eggs were laid approximately 30 April to 17 June, and most young were gone by 1 July. In 1935 eggs were apparently laid from 11 May to 17 June and the last young should have left by 18 July.

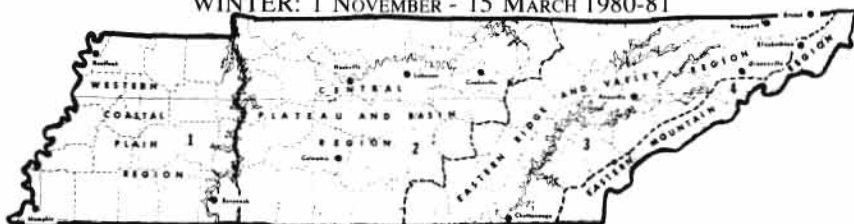
Elsewhere we have banded 27 in 1935 and 1936 in the Yazoo-Mississippi Delta, all in low, single nests at the edge of large heronries occupied by other species of herons. One nest contained 7 young. On 3 July 1949, two, 2 weeks old, were banded at the former Boy Scout Camp, Hardy, Arkansas. This nest was 4 m up, in a post oak (*Quercus stellata*) among red cedars (*Juniperus virginiana*).

No reports were ever received from any of the ninety Green Herons banded.

BEN B. COFFEY, JR., 672 North Belvedere, Memphis 38107. Accepted 17 Feb. 1981.

THE SEASON

WINTER: 1 NOVEMBER - 15 MARCH 1980-81



This winter was milder than several of the last few winters, and reports of lingering birds such as Common Nighthawk, Yellow-billed Cuckoo, House Wren, Gray Catbird, Common Yellowthroat, and Indigo Bunting were received. Among the notable observations this season were the fourth state record on an Eared Grebe at Radnor Lake in November, and the fifth record, on Fort Loudon Lake in January. Two Western Grebes were found on Chickamauga Lake during the Chattanooga Christmas Bird Count, and one was observed there in mid-January. Oldsquaws were recorded both from the Central Plateau and Basin and the Eastern Ridge and Valley Regions. Scoter reports included 2 Surf Scoter reports from Nashville, and White-winged Scoters from the central, Eastern Ridge and Valley, and the Mountain regions. A Franklin's Gull was reported from the Hiwassee River area. The results of the statewide mid-winter eagle survey are shown in Table 1.

Several interesting fringillids were reported, including Dickcissels in the western and central regions, a wintering Snow Bunting near Nashville, and Lapland Longspurs in the Eastern Ridge and Valley Region. House Finches were widespread except in the Eastern Mountain Region. Pine Siskins staged one of their largest invasions in the Memphis area, and were present in smaller numbers in the rest of the state. Evening Grosbeaks were reported in modest numbers from all regions.

In this and future "Season" reports, the lists of observers from the four regions are consolidated into a single listing, which follows the Eastern Mountain Region report.

WESTERN COASTAL PLAIN REGION—The winter months were unseasonably mild and dry. Pine Siskin and Evening Grosbeak were seen in unusually high numbers throughout West Tennessee. Many feeding stations recorded from 20 to 1,000 Pine Siskins; although the number of Evening Grosbeaks was lower, their daily attendance was common.

Ruddy Duck: 26 Jan (1800) Robco Lake, Southwest Shelby Co. (BBC, LCC). Common Egret: 20 Nov (1) BHP (JH). Great Blue Heron: 20 Nov (8) BHP (JH). Cooper's Hawk: 15 Dec (1) OP (JS), 8 Jan (1) M (DV), 14 Feb (1) OP (JS). Sharp-shinned Hawk: reported disturbing birds at three feeding stations in Memphis area. Osprey: 20-27 Nov (1) BHP (JH). Least Sandpiper: 12 Jan (1) Mississippi River near Heloise (WGC). Western Sandpiper: 12 Jan (1) Mississippi River near Heloise (WGC). Red-headed Woodpecker: 2 Nov (81) SFSP (MTOS). House Wren: 3 Jan (1) Mud Island (JG, JW). Winter Wren: 26 Nov (1) M (DAD). Common Yellowthroat: 3 Jan (1) Mud Island (JG, JW). Dickcissel: 6 Jan (1) M, stayed several days (CB, JL). Evening Grosbeak: 19 Nov (1 female) M (JM), 3 Dec (26) M (WB), 2 Feb (3-20) M (DB, WJB), 2-10 Jan (1-39) Somerville (JS),

TABLE 1. 1981 MIDWINTER EAGLE SURVEY

Location	Bald Eagle				Golden Eagle	Date	Obs
	Ad	Imm	Unk	Total			
<u>West Tennessee</u>							
Reelfoot Lake area, including Lake Isom, Mississippi River in Lake Co. Lauderdale Co. - Open Lake, Chisholm Lake	97	66	1	164		9 Jan	FWS
Kentucky Lake, Stewart Co.	2	4		6		12 Jan	TWRA
Tennessee NWR - Henry, Benton Decatur Cos.	2	3		5		9 Jan	TVA
Pickwick Lake	2	12		14		8 Jan	FWS
	2			2		8 Jan	TWRA
Totals	105	85	1	191	-		
<u>Middle Tennessee</u>							
Dale Hollow Lake	18	16		34	1 ad	9 Jan	COE
Cordell Hull Lake	1			1	1 imm	9 Jan	COE
Center Hill Lake	2	2		4		8 Jan	COE
Cheatham Lake	1	2		3		9 Jan	COE
Barkley Lake, Stewart Co.	1			1		9 Jan	TVA
Cross Creeks NWR	3	4		7		9 Jan	FWS
Tennessee NWR - Stewart, Humphreys Cos.		17		17	1 ad	8 Jan	FWS
Totals	26	41	-	67	3		
<u>East Tennessee</u>							
Holston Army Ammunition Plant	1			1		10 Jan	TWRA
Cherokee Lake	1	1		2		10 Jan	TOS-TWRA
Jefferson City	1			1		10 Jan	
Douglas Lake	1			1		15 Jan	TWRA
Norris Lake	8	2		10		9 Jan	TVA
Melton Hill Lake	1			1		9 Jan	TVA
Watts Bar Lake	9	1		10		9 Jan	TVA
Chickamauga Lake	8	2		10		9 Jan	TVA
Nickajack Lake	4	2		6		9 Jan	TVA
Guntersville Lake	1			1		9 Jan	TVA
Totals	35	8	-	43	-		
GRAND TOTALS	166	134	1	301	3		

Abbreviations: Ad - adult; Imm - immature; Unk - unknown age; Obs - observing agency
 FWS - U.S. Fish & Wildlife Service; TWRA - Tennessee Wildlife Resources Agency; TVA -
 Tennessee Valley Authority; COE - U.S. Army Corps of Engineers.

28 Feb (28) LaGrange (JF), (3-4) Roadside between LaGrange and Somerville (JF), 3-23 Mar (max 30) Stanton (BA), Jan - Feb common at Henderson (TC). House Finch: 5 Jan - 13 Mar (1 female), 20 Jan (1 male) M (CAW). Pine Siskin: reported at most feeding stations ranging in numbers from 20 to 1,000. Tree Sparrow: 7 Feb (1) AI (JC). Chipping Sparrow: 15 Nov (3) M (RP). Harris's Sparrow: 14 Jan (1) PI (CB, HBD, NS). Lincoln's Sparrow: 27 Nov (1) PF (HBD).

Locations: AI—Airpark Inn Reelfoot, TN Lake Co.; BHP—Big Hill Pond State Park, McNairy Co.; M—Memphis; OP—Overton Park, Memphis; PF—Penal Farm, northeast Shelby Co.; PI—west Shelby Co.; SFSP—Shelby Forest State Park, northwest Shelby Co.

MARTHA WALDRON, 1626 Yorkshire Drive, Memphis, TN 38119.

CENTRAL PLATEAU AND BASIN REGION—The winter of 1980-81 was about average with less rain and snow than usual. Winter finches were present though not in large numbers, and the Pine Siskin was the most widespread.

Loon-Merganser: Common Loon: 2, 14 Nov (52, 57) Woods Res (DTC, JPC), denotes migration. Horned Grebe: fewer winter than usual Nash area (NTOS). *EARED GREBE*: 1-21 Nov (1) Radnor L (MLB, *et al.*), fourth Tenn and third Nash record. Great Egret: 11-20 Nov Gallatin (DTC, JPC, MPS). American Bittern: 9 Nov (1) Percy Priest L (ADP). *WHISTLING SWAN*: 7 Dec - 22 Feb (3) Franklin Res, Williamson Co (CHS, HMW), seventh Nash area record. Ring-necked Duck: 9 Nov (700) Gallatin Steam Plant (DTC, JPC), peak fall migration; 7 Feb (300) Gallatin Steam Plant (DTC, JPC), peak winter. Common Goldeneye: 5 Nov (1) Radnor L (MLB), earliest Nash five days. *OLDSQUAW*: 31 Dec - 12 Jan (1) Radnor L (MLB, *et al.*), first Nash record in five years. *WHITE-WINGED SCOTER*: 9-10 Jan (1) Radnor L (AKJ, CHS); *SURF SCOTER*: 26 Nov - 10 Dec (1) Radnor L (MLB, *et al.*); 3 Jan (1) Percy Priest L (RDP, ADP, TNH). Common Merganser: 31 Dec - 6 Jan (2) Radnor L (MLB); 3 Jan (6) Old Hickory L (MLB, CDC, DFV). Denotes a light movement into area.

Vultures-Dunlin: Vultures: During winter, roost 275 Black, 25 Turkey Gallatin Steam Plant (DTC, JPC). Sharp-shinned Hawk: scattered reports Nash all winter, encouraging (NTOS). Cooper's Hawk: several reports Nash during winter; one individual flew into and shattered plate glass window at school, bird stunned, released unharmed (VLP). Rough-legged Hawk: 27 Dec (1 dk ph) Nash area (MRD, ANC); 11-12 Jan (2 lt ph) Franklin (MLB, JCM, VLP); 13 Jan (1 dk ph) near White House (DTC, JPC). Annual Nash since 1974. Bald Eagle: 9 Nov (3 ad, 1 im) Cordell Hull L (JDP); 16 Nov (2 ad) Normandy L (JDP); two adults wintered Cheatham L, Ashland City. MERLIN: 1 Mar (1) Bledsoe Creek St Pk (DTC, JPC), only occasionally seen. Sandhill Crane fall migration reports: 1 (90), 2 (12, 85, 17), 4 (heard, 10 PM), 22 (45, 98, flock heard) Nov Byrdstown (JDH, RH); 2 Nov (7) Cookeville (RWS); 22 (three groups heard), 25 (flock heard) Nov Pickett State Forest (DAH). No spring reports. American Golden Plover: 9 Nov (1) beach, Old Hickory L (MLB, *et al.*), few Nov dates locally. American Woodcock: decline in singing territories Nash area (NTOS). Dunlin: 9 Nov (5) Gallatin (DTC, JPC); 7 Dec (1) Percy Priest L (DTC, JPC, *et al.*), few winter dates locally.

Nighthawk-Snow Bunting: Common Nighthawk: 8 Nov (1) Nash (DFV), limited Nov records Nash. Red-breasted Nuthatch: a small invasion in Middle Tennessee (TOS). Gray Catbird: 22 Nov (1) Nash (JCA, MDA), few dates this late for area. Indigo Bunting: 9 Nov (1) Nash (JCA). Dickcissel: 22 Oct - 8 Nov (1) Gallatin (DTC, JPC); 20 Dec (1) Ashland City (CE); 3 Mar (1) Nash (HR, JNR). Evening Grosbeak: small flocks at scattered locations most of winter Middle Tennessee. Some observable movement into area late Feb and early Mar. Purple Finch: small numbers during winter Nash area. Peak of 100 at Gallatin mid-Feb (DTC, JPC). House Finch: up to 30 at feeders all winter at Nash (MLB, DFV, DH, JRB); 12-15 at Gallatin (DTC, JPC); several reported at Clarksville (AHH, EJW), Woodbury (FB) and Murfreesboro (ALH). Pine Siskin: a good invasion over much of Middle Tennessee with birds at most feeders, some up to 40 birds (TOS). *SNOW BUNTING*: 6 Dec - 16 Feb (1) Percy Priest L (RVM, MRM), fourth Nash area record and second time to completely winter.

MICHAEL LEE BIERLY, 3825 Bedford Avenue, Nashville, TN 37215.

EASTERN RIDGE AND VALLEY REGION—Waterfowl numbers for the

period hinted at nothing out of the ordinary. On Douglas Lake, 24 January, Tony Koella observed 4000 puddle ducks in very poor light. Most of the birds appeared to be Mallards, Black Ducks and Green-winged Teal. The wintering of up to 50 Common Mergansers on Norris Lake, as reported by J. C. Howell, is unusual.

The wintering Dunlin on Douglas Lake, as reported by Tony Koella, are worthy of comment. He first reported them last year, and this season he counted from 230 to 260 individuals. In contrast, Steve Stedman reported no shorebirds from the Kingston area.

It appears that Brown Thrashers are wintering more commonly in the Elizabethton-Johnson City area with as many as 4 or 5 being observed.

The reports received on wintering northern finches varied from one locality to another. In our opinion, it would not be considered a "heavy invasion" year.

Unusual out-of-range birds included Eared and Western Grebes, Franklin's Gull and a Lapland Longspur.

Loon-Bittern: Com. Loon: thru 26 Jan (1-4) BL (RLK); unusual numbers of 1-17 ChL (KHD, LHD, JWS). Horned Grebe: low numbers to 4 Feb BL (LHTOS); (2-42) ChL (KLD). *EARED GREBE*: 9 & 10 Jan (1) Concord, KCo (found by MWA, then observed by AH, RDH, BHS, SJS). *WESTERN GREBE*: 19 Jan (1) ChL (LHD & RCS). Pied-billed Grebe: usual numbers of 12-80 ChL (KHD, LHD). Double-crested Cormorant: 21 Dec (1) KNC (PDH); 1 Nov - 3 Feb (1-8) HRA (KHD, LHD). Great Blue Heron: Regular with max counts: 21 Dec (67) Knox CBS (KTOS); 9 Nov (205) DL (JAK); 1 Dec (110) HRA (KHD, LHD). Green Heron: 21 Dec (1) KCo (ABS). Great Egret: 1 Nov (1) HRA (TOS); 2 Nov (3) DL (JAK); 21 Nov (1) Yellow Cr., Rhea Co. (WKJ). American Bittern: 3 Nov (1) SB (KHD, LHD, RCS).

Swan-Merganser: Whistling Swan: 21 Dec (1 imm) MHL, in same location as the 2 swans reported last year (CPN). Canada Goose: (max 350) HRA (TOS); 4-9 regular Erwin (GS). Snow Goose: 9 & 22 Feb (1) HRA (KHD, LHD); 2 Nov & 8 Mar (1) DL (JAK). Mallard: (max 2000) HRA (KHD, LHD). Black Duck: (Max 70) KSP (CPN); (max 150) HRA (KHD, LHD); 2 Nov (120) DL (JAK). Gadwall: (max 220) ChL (KHD, LHD); 24-40 all period JCo (JAK). Pintail: (max 125) ChL (KHD, LHD & RCS); 2-4 all season DL (JAK). Green-winged Teal: (max 150) HRA (KHD, LHD, & RCS); consistent thru season 2 Nov (50) DL (JAK). American Wigeon: (max 100) HRA (KHD, LHD); 35-45 all period DL (JAK). Northern Shoveler: 22 Nov (1) DL (JAK); 19 Jan (1) MHL (CPN); seven scattered records ChL & HRA of 1-7 birds (KLD, LHD). Wood Duck: 2 Nov (10) DL (JAK). Redhead: small numbers, max 18 Nov (25) ChL (KHD, LHD); 9 Nov (2) & 8 Mar (4) DL (JAK). Ring-necked Duck: max 19 Jan (65) ChL (KHD, LHD, RCS). Canvasback: six reports (1-6) ChL & HRA (KHD, LHD); 9 Nov (2) & 5 Dec (5) DL (JAK); 12 Jan Knox (Robert Lowe & J. B. Owen); 21 Jan (10) OR (WKJ); 28 Feb (1) OR (BHS, AH). Greater Scaup: usual regular numbers ChL of 150-230 (KHD, LHD). Lesser Scaup: 18 Nov (175) ChL (KHD, LHD); then 6 others records of up to 91 individuals ChL (KHD, LHD). Common Goldeneye: very few sightings, 28 Dec (65) ChL (KHD, LHD). Bufflehead: small numbers to 20 ChL (KHD, LHD). Oldsquaw: 3 Jan (6) Nickajack Lake (Gary Hartman). White-winged Scoter: 22 Nov (1) KSP (ABS, BHS); 24 Jan (1) ChL (JWS). Ruddy Duck: 1-12 thru period ChL (KHD, LHD); 13 on pond JEC all season (JAK). Hooded Merganser: 9 Nov (6) DL (JAK); low numbers with max 8 Dec (130) HRA (KHD, LHD, RCS). Common Merganser: regular all winter on Norris Lake with max 15 Jan (50) (Joseph C. Howell).

Hawk-Gull: Marsh Hawk: 6 Nov (2) Tellico Lake (WKJ); 26, 30 Dec (1) SB (KHD, LHD); 18 Jan (6) Rogersville (Dave Turner); 2 Feb (2) SB (KHD, LHD); 4 Feb (1) KNC (PDH); 6 reports Eliz-JC (LHTOS); 3 usually present JEC (JAK). Peregrine Falcon: 3 Jan (1) DL (Dave Etnier). Sandhill Crane: lower than average fall total of 465 birds. Included only 43 from HRA (KHD, LHD *et al.*). Other reports: 1 Nov (31, 45, 85 landing), 2 Nov (9) Tellico Lake near Citico (CH); 2 Nov (100) Dayton (Jeff Lavender); 5 Nov (15) Glendale, Loudon Co. (WKJ); 11 Nov (110) (CH), 20 Nov (4 on ground) Watts Bar Lake, Roane Co. (Greg Reed); 28 Nov (23 on ground) Tellico Lake near Rose Island (Sam Venable). For the spring movement a total of 1281 were counted between 2 and 10 March at Soddy, Chatt, SB, HRA & Col (Gene Ryther, KHD, LHD, RBW, Carl Campbell, Gertrude Fleming). Common Gallinule: 1 Nov (1 imm) HRA (RCS *et al.*). American Coot: regular with max 6 Jan (1200) ChL (KHD, LHD). Killdeer: regular with max 1 Dec (330) HRA (KHD, LHD). Black-bellied Plover: 1 Nov (3) HRA (KHD, LHD, RCS). American Woodcock: 19 Feb (1 in courtship flight) SB (KHD, LHD). Common Snipe: regular with max 3 Nov (200) HRA (KHD, LHD, RCS); "very abundant" after 1 Jan Eliz-JC (LHTOS); regular with max 8 Mar (50) DL (JAK). Greater Yellowlegs: 1 Nov (5) HRA (KHD, LHD, RCS); 2 Nov (3) DL (JAK). Lesser Yellowlegs: 2 & 9 Nov (1) DL (JAK); 9 Mar (1) HRA (KHD, LHD, RCS); 11 Mar (1) JB (RLK). Pectoral Sandpiper: 3 Nov (2) HRA (KHD, LHD, RCS); 9 Mar (26) HRA (KHD, LHD, RCS); 13 Mar (50) SB (KHD, LHD); 14 Mar (2) JB (RLK). Least Sandpiper: 2 Nov (20) DL (JAK). Dunlin: 50-100 regular SB (KHD, LHD); 3 Nov (177) HRA (KHD, LHD, RCS); regular DL with varying numbers, max on 30 Nov (260), 4 Jan (230) (JAK). The Douglas Lake birds are an all time high winter count as well as the farthest north wintering populations found within the state. Semipalmated Sandpiper: 9 Nov (1) DL (JAK). Wilson's Phalarope: 2 & 9 Nov (1) DL (JAK). Herring Gull: 1-6 regular ChL (CTOS). Ring-billed Gull: regular with max 8 Mar (1600) DL (JAK); 20-600 regular ChL (CTOS). *FRANKLIN'S GULL*: 1 Nov (1 imm) HRA (KHD, LHD, RCS). Bonaparte's Gull: 5 records of 1-58 birds ChL (CRH *et al.*); 28 Nov (1) BL (RLK).

Cuckoo-Shrike: Yellow-billed Cuckoo: 5 Nov (1) AS (RLK). *SHORT-EARED OWL*: 15 & 22 Feb (1) NV (JAK). Red-headed Woodpecker: 1-2 all period Johnson City (KB); 24 Jan (1) only report from KNC (PDH). Horned Lark: two flocks of 50-75 all period JB (RL, *et al.*); 20+ all period JEC (JAK); 80 all period NV (JAK). Red-breasted Nuthatch: common throughout Knox area (KTOS); widely scattered but not as common at Chat as some years (CTOS). Winter Wren: common KNC with higher numbers than previous winters (KTOS). Long-billed Marsh Wren: 1 Nov (1) HRA (ABS). Short-billed Marsh Wren: 9 Dec (1) Eastern State Wildlife Management Area KNC (found by MWA, then seen by LNA, BHS, SJS). Brown Thrasher: apparently 4 or 5 individuals wintered Eliz-JC; this is more than ever recorded for this period in this area (LHTOS); 8 Feb (1) JEC (JAK). Hermit Thrush: 5 Jan (6) Hoss Cove (RLK). Golden-crowned Kinglet: abundant Knox area (CPN). Water Pipit: 2-9 Nov (20) NV (JAK); 10 Nov (25) AS (RLK); 20 Dec (60+) JB (RLK); 8 Feb (1) NV (JAK); 28 Feb (30+) JB (RLK); 1-82 scattered SB & HRA (KHD, LHD). Cedar Waxwing: abundant Eliz-JC after Dec (LHTOS); uncommon JEC (JAK); low numbers in Dec & Jan and increasing in Feb Knox area (KTOS); few reports Chat (KHD, LHD). Loggerhead Shrike: more normal sightings this winter Eliz-JC after low counts last several years (LHTOS); only two reports KNC, 27 Nov (CPN), 10 Jan (PDH).

Warbler-Longspur: Yellow-rumped Warbler: "abundant" thru mid-Feb Eliz-JC (LHTOS). Pine Warbler: 16 & 17 Dec (1) KNC (SJS, BHS); up to 6 all period coming to a feeder in Harrison (Elena Killian) and 5 at another feeder in

Chatt (JP). Palm Warbler: 17 Dec (1) Chester Frost Park (CRH). Rusty Blackbird: 20 Feb (75+) JB (RLK). Evening Grosbeak: several small flocks Eliz-JC after first report 15 Nov (SG); scattered small flocks Knox area (KTOS); 13 Feb (20) Maryville (JAK); few scattered reports Chat (CTOS). House Finch: increasing in Washington Co. with 3-4 flocks of 15-25 all period (LHTOS); 20 Dec (15) CPC, Norris CBC (DAH, CPN, LJT); first CPC report; seem to be about as common in KNC this winter as last with a total of 210 banded (BHS, SJS); one banded bird moved 6.5 miles between 10 Jan and 26 Mar (BHS, SJS). Pine Siskin: 10 Nov (8) AS (RLK); 1-13 Jan (25) JB (RLK); 15 Feb (1) Johnson City (KB); "fair numbers" KNC with 200 banded (BHS, SJS); regular at a feeder in Col after 12 Jan with 96 banded (REL); 17-20 regular at a feeder in Chat after 1 Feb (JP). American Goldfinch: good numbers at feeders KNC with about 150 banded including one that moved 8.5 miles between 26 Feb and 21 Mar (BHS, SJS). Savannah Sparrow: reduced numbers this winter JEC (JAK); a similar report from SB (KHD, LHD). *HENSLOW'S SPARROW*: 2 Nov (1) NV (JAK). Vesper Sparrow: 7 Nov (1) AS (RLK); notable winter records: 20 Dec (3) CPC, Norris CBC (DAH, CPN, LJT); 6, 19 Jan (5, 6) HRA (KHD, LHD, RCS); 20 Feb (1) HRA (KHD, LHD). Chipping Sparrow: 3 Nov (1) SB (KHD, LHD); 2 Dec to end of period (2-6) Col (REL); 6 Feb (1) Kingsport (MD). White-crowned Sparrow: very common NV (JAK); present 3 locations JEC (JAK). Fox Sparrow: several reports Eliz-JC (LHTOS). *LAPLAND LONGSPUR*: 9 Nov (4), 31 Jan (1) NV (JAK).

Locations: AS—Austin Springs; BL—Boone Lake; Chat—Chattanooga; CPC—Campbell Co.; Col—Collegedale; DL—Douglas Lake; Eliz-JC—Elizabethton-Johnson City Area; HRA—Hiwassee River Area; JB—Jonesboro; JEC—Jefferson Co.; KNC—Knox Co.; Knox—Knoxville; MHL—Melton Hill Lake; NV—Nolichucky Valley, Greene Co.; OR—Oak Ridge; SB—Savannah Bay; TL—Tellico Lake.

KENNETH H. DUBKE AND LILLIAN H. DUBKE, 8139 Roy Lane, Ooltewah, TN 37363.

EASTERN MOUNTAIN REGION—The pleasant fall weather lasted until the last week of November when winter cold prevailed. December, January and February had below normal temperatures and precipitation. The heaviest snowfall of the winter fell on 30 January. Warmer weather arrived during last week of February. Waterfowl reports were below average for the period. Northern finch reports were only slightly below normal, but House Finch reports for the adjoining areas are numerous compared to practically no sightings in our region. Several sightings of Common Raven at low elevations of 1500-1800 feet were reported throughout the area during the period. Carolina Wren and Eastern Bluebird populations are above normal in our winter observations.

Few reports were received from the southern portion of the Eastern Mountain Region, and the observations here reflect the status of birds from Greenville northward.

Loon-Owl: Common Loon: 1st, 1 Nov (1) WatL (GDE). Gadwall & Redhead Duck were more numerous this year than previously but Wigeon & Ringneck Ducks were less numerous (LHTOS). Wood Duck: 1st, 8 Mar (2) SV (HF). Greater Scaup: 4 Feb (2) WatR (RLK). *WHITE-WINGED SCOTER*: 3 Jan (1) WatR (GDE). Sharp-shinned Hawk: 5 sightings thru-out the period (LHTOS). Cooper's Hawk: 6 sightings during period (LHTOS). Marsh Hawk: 7 Nov (1) RM (EHS), 18 Nov (1) E (GDE). Bobwhite: below average totals during period

(LHTOS). Great Horned Owl: 2 active nest sites, 1 near WibL (RLK *et al.*) and 1 near SHL (RL). Barred Owl: 19 Nov (1) Greeneville (RN), 9 Jan (1) E (GDE), 21 Feb (2) RM (RLK).

Raven-Thrush: Common Raven: regular thru-out period on RM & IM with several low elevation reports thru-out the area (LHTOS). *BLACK-CAPPED CHICKADEE*: 29 Dec (2 carefully identified) RM (RL, VL, GS). Red-breasted Nuthatch: no reports from high elevations near E, 15 Nov (3) Greeneville (RN). *GRAY CATBIRD*: 29 Dec (1) RM at elevation 2500' on CBC (SG & HD). Brown Thrasher: 2-3 birds wintered in the area (LHTOS). Carolina Wren, Eastern Bluebird: above normal all winter (LHTOS). Hermit Thrush: 3 Jan (2) WatL (RLK & DL) and 15 Jan (1) E (GDE).

Pipit-Sparrow: Water Pipit: 2 Nov (11) Yellow Mtn (EHS) and 9 Nov (10) RM (EHS). Loggerhead Shrike: 4 separate sightings during period (LHTOS). Myrtle Warbler: abundant during Jan & Feb (LHTOS). Evening Grosbeak: 1st, 8 Nov (5) E (GDE) several small flocks in area, smaller flocks seen in Greeneville by Marion & Elizabeth Edens. Purple Finch: abundant throughout the period (LHTOS). Pine Siskin: 1 sighting, 14 Nov (2) WatL (SG & MD). Red Crossbill: 10 Jan (16) WatL (RLK). Fox Sparrow: 31 Dec (1) RMSP (GDE) and 23 Jan (1) RC (SG). Swamp Sparrow: 29 Dec (1) RM at elevation of 4000' on RM CBC (RLK & EHS).

Locations: E—Eliz. area; IM—Iron Mtn.; RC—Roans Creek; RM—Roan Mtn.; RMSP—Roan Mtn. State Park; SHL—South Holston Lake; SV—Siam Valley; WatL—Watauga Lake; WatR—Watauga River; WibL—Wilbur Lake.

GLEN D. ELLER, Route 3, Grandview Terrace, Elizabethton, TN 37643.

Observers: BA—Mrs. Bill Alexander; JCA—Jan C. Alexander; MDA—Mark D. Alexander; LNA—Laurie N. Armstrong; MWA—Marc W. Armstrong; DB—Diane Bean; WJB—William J. Bean; KB—Kat Bierly; MLB—Michael L. Bierly; JRB—Jessie R. Bilbrey; FB—Frances Bryson; CB—Carolyn Bullock; WB—Mrs. William Buxton; TC—Tiny Carpenter; JC—Jo Chickering; BBC—Ben B. Coffey, Jr.; LCC—Lula C. Coffey; CDC—C. Dwight Cooley; DTC—Dot T. Crawford; JPC—J. Paul Crawford; ANC—Annella Creech; WGC—William G. Criswell; DAD—Dolly Ann Daily; MD—Martha Dillenbeck; HBD—Helen B. Dinkelspiel; HD—Helenhill Dove; KHD—Kenneth H. Dubke; LHD—Lillian H. Dubke; MRD—Milbrey R. Dugger; GDE—Glenn D. Eller; CE—Craig Empson; HF—Harry Farthing; JF—Jim Ferguson; SG—Sally Goodin; JG—Joe Guinn; DOH—Donald A. Hammer; CRH—J. Chris Haney; DAH—David A. Hankins; CH—Craig Harned; JH—Jim Harrison; TNH—Tom N. Harston; PDH—Paul D. Hartigan; JDH—J. David Hassler; RH—Robbie Hassler; AHH—Annie H. Heilman; ALH—Anne L. Hettish; DH—Debbie Hill; AH—Audrey Hoff; RDH—Ron D. Hoff; WKJ—Wesley K. James; AKJ—Alan K. Justiss; RLK—Richard L. Knight; JAK—J. Anthony Koella; JL—Joe Levy; RL—Richard Lewis; VL—Vickie Lewis; DL—Dick Lura; REL—Mrs. R. E. Lynn; JCM—Jane C. Maynard; MRM—Mac R. McMillan; RVM—Ruth V. McMillan; JM—Mrs. John McRee; RN—Richard Nevius; CPN—Charles P. Nicholson; JDP—James D. Parrish; RP—Rob Peeples; ADP—Audrey D. Perry; RDP—R. Don Perry; JP—Janet Phillips; VLP—Virginia L. Price; HR—Heather Riggins; JNR—John N. Riggins; EHS—Edward H. Schell; ABS—A. Boyd Sharp; RWS—Richard W. Simmers; NS—Noreen Smith; JS—Mrs. J. W. Snowden; MPS—M. Pat Stallings; BHS—Barbara H. Stedman; SJS—Stephen J. Stedman; CHS—Carol H. Stewart; JS—John Stokes; JWS—Jowayne Stone; RCS—Randy Stringer; GS—Glenn

Swofford; LJT—Linda J. Turner; DV—Dave Vance; DFV—David F. Vogt; EJW—Ellen J. Walker; HMW—Henry M. Walker; CAW—Mrs. Charles A. West; RBW—R. Bruce Wilkey; JW—Jeff Wilson; CTOS—Chattanooga Chapter TOS; KTOS—Knoxville Chapter TOS; LHTOS—Lee Herndon Chapter TOS; MTOS—Memphis Chapter TOS; NTOS—Nashville Chapter TOS; TOS—Tennessee Ornithological Society.

ADDENDA TO "BIRDS OF DECATUR COUNTY"

Two species were left out of the annotated list in "Birds of Decatur County, including the 1978 foray" (Migrant 51:1-10, 1978). On p. 4, after the account for Eastern Kingbird, should be the following:

GREAT CRESTED FLYCATCHER—46, 47/42; (5 on 21 July 1977 by the Coffeys.)

EASTERN PHOEBE—6, 9/8; 1 on 29 December; (1 on 21 June 1977 by the Coffeys.)

More recent information is here presented for the following:

CLIFF SWALLOW—Additional nest sites observed since 1978: I-40 overpass at mi. 122 — 2 birds and 1 nest over old Barn Swallow nest on 4 May 1981 by the Coffeys; TN 69 overpass at I-40, mi. 126 — no birds present, 10 nests on 4 May 1981 by the Coffeys. Sites with changes in number of nests since 1978; TN 69 over Cub Creek — 60 birds, 115 nests on 9 June 1981 by the Coffeys; TN 69 over Doe Creek, Decatur Co. (east) side — 30 nests, traces of 300 old nests, Hardin Co. (west) side — 80 birds, 95 nests on 9 June 1981 by the Coffeys; TN 100 over Beech River, N of Decaturville (N side only) — 40 nests, traces of 300 old nests on 16 July 1981 by Nicholson.

The Acknowledgements should read: "and Morris Williams commented on the manuscript. . . ."

CHARLES P. NICHOLSON, Box 402, Norris, TN 37828.

PREPARATION OF COPY FOR PUBLICATION

The purpose of THE MIGRANT is the recording of observations and original information derived from the study of birds, primarily in the state of Tennessee or the area immediately adjacent to its borders. Articles for publication originate almost exclusively from T.O.S. members.

Contributors should prepare manuscripts and submit them in a form acceptable to the printer, after editorial approval. Both articles and short notes are solicited but their format should be somewhat different.

Some suggestions to authors for the preparation of papers for publication are given herewith.

MATERIAL: The subject matter should relate to some phase of Tennessee Ornithology. It should be original, factual, concise, scientifically accurate, and not submitted for publication elsewhere.

TITLE: The title should be concise, specific, and descriptive.

STYLE: Recent issues of THE MIGRANT should be used as a guide in the preparation of manuscripts. Where more detail is needed reference should be made to the *Style Manual for Biological Journals* available from the American Institute of Biological Sciences, 1401 Wilson Boulevard, Arlington, Virginia 22209.

COPY: Manuscripts should be typed double spaced on 8½ x 11" paper with adequate margins, for editorial notations, and should contain only entries intended for setting in type, except the serial page number. Tabular data should be entered on separate sheets with appropriate title and column headings. Photographs intended for reproduction should be sharp with good contrast on glossy white paper in black and white (not in color). Instructions to the editors should be given on a separate sheet. Weights and measurements should be in metric units. Dating should be in "continental" form (e.g., 7 March 1981).

NOMENCLATURE: Common names should be capitalized followed by binomial scientific names in italics only after the first occurrence in the text for both regular articles and ROUND TABLE NOTES, and should conform to the A.O.U. Check-list 5th edition, 1957 and its Thirty-second Supplement. Trinomial should be used only after the specimen has been measured or compared with typical specimens.

BIBLIOGRAPHY: When there are more than five references in an article, they should be placed at the end of the article, otherwise they should be appropriately included in the text.

SUMMARY: Articles of five or more pages in length should be summarized briefly, drawing attention to the main conclusions resulting from the work performed.

IDENTIFICATION: Rare or unusual species identification to be acceptable must be accompanied by verifying evidence. This should include: date, time, light and weather conditions, exact location, habitat, optical equipment, distance, behavior of bird, comparison with other similar species, characteristic markings, experience of observer, other observers verifying observation and reference works consulted.

REPRINTS: Reprints are available on request. Reprint requests should accompany article at the time of submission. Billing to authors will be through the state T.O.S. Treasurer.

Books for review and articles for publication should be submitted to the editor. Seasonal reports and items should be forwarded to the appropriate departmental editor whose name and address will be found on the inside front cover.

CONTENTS

EASTERN BLUEBIRD POPULATION FLUCTUATIONS IN TENNESSEE DURING 1970-1979. <i>T. David Pitts</i>	29
NOTES ON THE RAPTOR MIGRATION AT CHILHOWEE MOUNTAIN. <i>Barbara H. Stedman and Stephen Stedman</i>	38
MINUTES OF THE ANNUAL BOARD OF DIRECTORS' AND BUSINESS MEETING. <i>Carolyn H. Bullock, Acting Secretary</i>	41
ROUND TABLE NOTES	
A Past Green Heronry Colony in Memphis <i>Ben B. Coffey, Jr.</i>	44
THE SEASON. Winter: 1 November 1980 - 15 March 1981	45
Western Coastal Plain Region. <i>Martha Waldron</i>	45
Central Plateau and Basin Region. <i>Michael Lee Bierly</i>	47
Eastern Ridge and Valley Region. <i>Kenneth H. and Lillian H. Dubke</i>	47
Eastern Mountain Region. <i>Glen D. Eller</i>	50
ADDENDA TO "BIRDS OF DECATUR COUNTY." <i>Charles P. Nicholson</i>	52