

THE MIGRANT

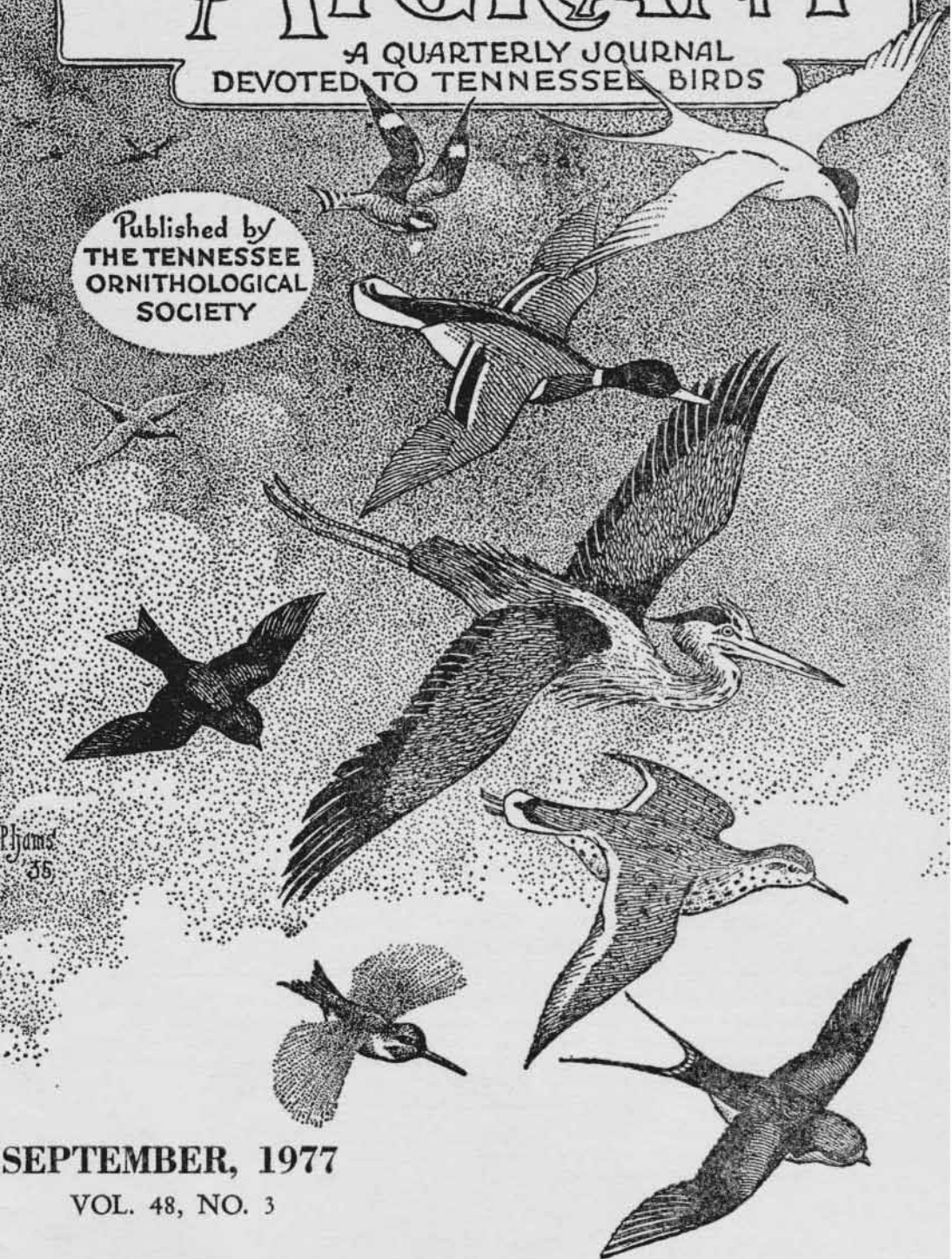
A QUARTERLY JOURNAL
DEVOTED TO TENNESSEE BIRDS

Published by
THE TENNESSEE
ORNITHOLOGICAL
SOCIETY

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SEPTEMBER, 1977

VOL. 48, NO. 3



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A QUARTERLY JOURNAL OF ORNITHOLOGY

FIRST PUBLISHED, JUNE 1930

PUBLISHED BY

THE TENNESSEE ORNITHOLOGICAL SOCIETY

Founded at Nashville, Tenn., 7 October 1915

A non-profit, educational, scientific, and conservation organization.

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Published quarterly (March, June, September, and December). Printed by Mallicote Printing Inc., 509-511 Shelby Street, Bristol, Tennessee 37620, U.S.A. Postage paid and mailed at Elizabethton, Tennessee 37643, U.S.A.

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. 48

SEPTEMBER, 1977

NO. 3

THE RED-COCKADED WOODPECKER IN TENNESSEE

CHARLES P. NICHOLSON

The Red-cockaded Woodpecker (*Picoides borealis*) is a non-migratory, social species, typically found in old growth stands of southern pine. It is unique in excavating nesting and roosting cavities in living pines, infected with the fungal red heart disease *Fomes pini*. Because of its exacting habitat requirements and the rapidly declining availability of suitable habitat, the Red-cockaded Woodpecker (Figure 1) as listed as a rare and endangered species (U. S. Dept. Interior 1973).

Red-cockaded Woodpeckers have been found in Tennessee at least since the time of Audubon (1839, in Jackson 1971). The species has historically been much more abundant in the deep south than in Tennessee, which is near the northern limit of its range (Jackson 1971). Based on reported sightings between 1959 and 1971, Jackson (1971) conservatively estimated the total range-wide population of Red-cockaded Woodpeckers to be 3,000 to 10,000 birds, and the Tennessee population to be 30 birds.

This paper reviews the past distribution of the Red-cockaded Woodpecker in Tennessee and describes the present distribution. New information on habitat and reproduction is presented.

METHODS

Nest tree diameters were measured with a diameter tape and heights with a Haga altimeter. Basal area was measured with a prism having a basal area factor of 10, the nest tree serving as the plot center. Tree age was determined by increment borings. Some trees could not be aged accurately because of advanced pith destruction by *F. pini*. Information on reproduction was obtained by observing the nest area and inspecting the nest with a small mirror and flashlight.

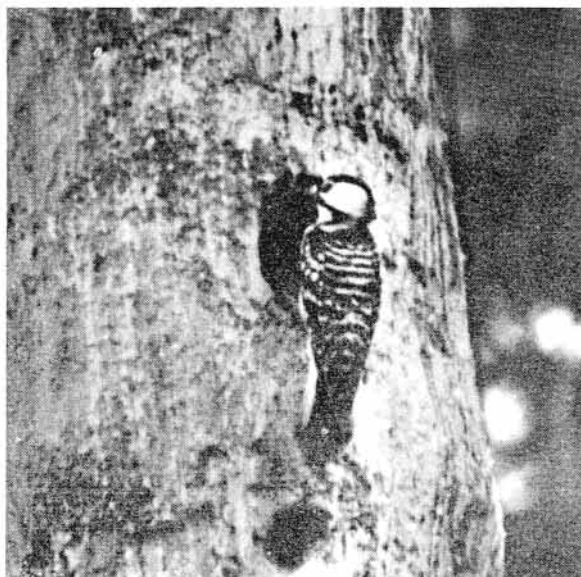


Figure 1. Red-cockaded Woodpecker at nest cavity on 7 June, 1972, at Daddy's Creek, Cumberland County, Tennessee.

RESULTS

PAST DISTRIBUTION.

Ganier (1962) reviewed records of the Red-cockaded Woodpecker in Tennessee, and discussed its range at that time. Locations described by Ganier, for which there are no recent reports, are as follows:

1) Roekwood, Roane Co. — 3 birds collected in 1884 and 1885 by W. H. Fox.

Allardt-Rugby area, Morgan and Fentress Co. — nesting birds found in 1895 by S. N. Rhoads.

3) Beersheba Springs, Grundy Co. — a single bird collected in December, 1921, by H. C. Fortner.

4) Athens, McMinn Co. — active nest found on 3 May, 1901, by Richard Gettys. Although numerous pines occurred in the area, the nest was in a branch of a living oak.

5) Chickamauga National Military Park, Catoosa Co., Ga. The Red-cockaded Woodpecker was first recorded in the park, which is near the Tennessee line near Chattanooga, in 1894 by Bradford Torrey. The next report was on 30 June, 1954, when Adele West found a family group of four. The species was regularly recorded up to April, 1964 (Bullard 1964). On 26 March, 1968, Kenneth H. Dubke found a pair a few miles north of Chickamauga, at the Prentiss Cooper Wildlife Management Area, Tennessee (Dubke pers. comm.). Although the area has been extensively searched since then, there are no recent area reports (Dubke pers. comm.).

6) Seven miles north of Dover, Stewart Co. — on 30 October, 1937, a single bird was recorded by a museum collecting expedition under the direction of Alexander Wetmore. Ganier (1962) mentions that there are few pines in this area and the bird was probably a wandering individual.

7) Red Sulphur Springs, Hardin Co. — a bird was observed on 31 March, 1946, by Cynthia C. Counce, in a mixed stand of pine and hardwoods. Ganier (1962) also lists records just to the south in northern Mississippi.

8) McNairy-Hardeman Co. area — a party led by John B. Calhoun found the birds near Pocahantas and at Red Top during the summer of 1939. Ben B. Coffey observed Red-cockaded Woodpeckers in the Ben Carr pines along Highway 57, near Pocahantas, on five occasions between June 1947, and 30 March, 1958 (Ganier 1962). The next and most recent sighting in the area was by Helen Dinkenspiel and Mrs. Ed Carpenter, who observed two birds on 24 November and one on 4 December, 1963 (Coffey 1963).

PRESENT DISTRIBUTION.

Red-cockaded Woodpeckers have been found at four separate locations in Tennessee since 1971. These are Pickett State Park, Pickett Co.; Great Smoky Mountains National Park, Blount Co.; Campbell Co.; and Catoosa Wildlife Management Area, Cumberland Co. and Morgan Co.

The colony in Pickett State Park was first recorded by Albert F. Ganier and others in June, 1935 (Ganier 1962). The birds were found in at least three different areas. They were again recorded in 1942 by G. R. Mayfield and in June, 1946, W. R. Spofford found four nest holes, one of which oozed fresh sap. The next year Spofford found an additional nest hole, but he saw no birds either year (Ganier 1962). During the mid-1960's, Mack Pritchard found a nest cavity near the Hidden Passage Trail and on 1 June, 1969, Robbie and Dave Hassler (pers. comm.) observed an adult feeding two fledged young. The Hasslers did not locate a nest cavity at that time, but found one on 6 June, 1971 (Parmer 1971b). Although some of the forest was leveled by tornadoes in 1973, extensive pine stands still occur in Pickett State Park.

Red-cockaded Woodpeckers have also been found recently in Campbell County, in a mixed stand of pine and oaks 1.9 km east of Interstate 75 on the Stinking Creek road at an elevation of 500 m. On 13 June, 1971, J. C. Howell observed two birds (Howell and Campbell 1972). In 1973 and 1974, Howell and James Campbell observed Red-cockaded Woodpeckers in the same area. The most recent sighting was on 31 August, 1975 (Howell, pers. comm.). No nest has been located in the Campbell County area.

The third location where Red-cockaded Woodpeckers have been recently recorded is in the Great Smoky Mountains National Park, Blount Co., between Cades Cove and the south-west park boundary. Stupka (1963) lists five records from this area between 1935 and 1953. On 22 March, 1965, James T. Tanner found a single woodpecker on Beard Cane Mountain, and on 16 May, 1965, a pair was observed feeding young in a nest (Tanner 1965). On 25 January, 1968, Brockway Crouch observed a single bird a few miles to the north at Seymour, Sevier Co. (Campbell 1968). The most recent area report is a record

of two birds seen by Napier Shelton, on 28 March, 1973, near Beard Cane Mountain, about 0.4 km from Cooper Road on the Abrams Falls Trail (D. H. DeFoe pers. comm.). On 6 April, 1974, Morris D. Williams and I made an unsuccessful effort to find the birds where Tanner had observed them. An extensive stand of large pines, infected with *F. pini*, still exists in the area. We found an old Red-cockaded Woodpecker nest cavity in a large dead pine.

The remaining location where Red-cockaded Woodpeckers still occur in Tennessee is in Catoosa Wildlife Management Area, near the Cumberland Co.-Morgan Co. line. The birds have been found in the area for at least 30 years (Paul Adams pers. comm.). In May, 1962, a party led by Ganier found at least three pairs in the area. All were observed along the road from Peavine, between Potters Farm and Daddy's Creek. One pair was on the bluff above Daddy's Creek, near a rock formation known as Devil's Breakfast Table. A second pair was along the road 6.2 km east of Potter Farm and the third pair was in a pine stand just west of Potter Farm (Ganier 1962).

Red-cockaded Woodpeckers have been found at the Daddy's Creek site continuously up to June, 1975 (Dubke 1967, Parmer 1968, 1969, 1970, 1971a, 1972, Williams 1973, Nicholson MS). In 1965, another nest was located near Mill Branch, 2.5 km west of the Daddy's Creek site, by Kenneth H. Dubke (Dubke 1967). Dubke and Roy Evenson found an additional occupied nest cavity on 25 April, 1967 near where the Peavine-Daddy's Creek road crosses Polecat Branch, 0.8 km east of the Mill Branch site (Dubke 1967). At that time the Mill Branch site was still active. No Red-cockaded Woodpeckers were reported in the Polecat Branch-Mill Branch region until 11 May, 1974, when I observed a pair about 200 m north of the road midway between Polecat Branch and Mill Branch. The birds were observed at what appeared, because of little resin flow present, to be a freshly excavated cavity. I observed the birds at the same cavity again in 1975, and noted much heavier resin flow.

According to D. William Yambert, Tennessee Wildlife Resources Agency (pers. comm.), there may be at least four more active sites in Catoosa, all between Peavine and Daddy's Creek. At one of these sites, along the dirt road to Obed Junction where a road branches off to the northeast, Fae P. Andrews and I observed at least one Red-cockaded Woodpecker on 18 May, 1975. The bird was in a second-growth shortleaf pine (*Pinus echinata*) stand and no nest was located. A second area mentioned by Yambert is near the junction of Otter Creek and Piney Branch, south of the road and 6 km northeast of Peavine Checking Station. The third area is adjacent to Dub's Field, 1.2 km north-northwest of the Mill Branch site. The fourth area is along the west bluff above Daddy's Creek, approximately midway between the bridge at Devil's Breakfast Table and Obed Junction.

CHARACTERISTICS OF NEST SITES.

On 11 May, 1974, I visited the Mill Branch and Daddy's Creek nest sites to measure nest tree and stand characters. Data are presented in Table 1 for the occupied nest tree at each site and for five old cavity trees at the Daddy's Creek site, all within 90 m of the occupied tree. Old cavity tree C (Table 1) had some sap flow around the cavity, but no birds were observed using it. Tree B (Table 1) contained two old cavities.

TABLE 1
CHARACTERISTICS OF CAVITY TREES

| | Active Nests | | Old Cavity Trees ³ | | | | |
|----------------------------|------------------|-----------------|-------------------------------|----------------|------|------|------|
| | MB ¹ | DC ² | A | B ⁴ | C | D | E |
| DBH, cm | 41 | 34 | 48 | 34 | 40 | 34 | 38.5 |
| Tree Ht, m | 22.4 | 23.2 | 21.3 | 22.6 | 21.2 | 24.4 | 20.1 |
| Live Crown Ht, m | 11.0 | 10.7 | 9.8 | — | — | — | — |
| Cavity Ht, m | 8.5 | 6.7 | 7.9 | 7.6 | — | — | 6.7 |
| | | 5 | | 6.4 | 5 | | |
| Age | 85+ | — | 70 | — | — | — | — |
| Cavity Direction | NW | SW | S | S | — | NNW | W |
| Basal Area, m ² | 5.6 | 4.7 | — | — | 4.7 | — | — |
| Species | SLP ⁶ | VP ⁷ | VP | VP | — | — | VP |

Note: 1—Mill Branch nest; 2—Daddy's Creek nest; 3—all at Daddy's Creek; 4—contained two cavities; 5—advanced heart rot, age not determinable; 6—Shortleaf Pine; 7—Virginia Pine.

The Mill Branch nest tree was in a stand of shortleaf pine, with many 8 cm DBH shagbark hickory (*Carya ovata*) in the understory. Other understory components were greenbriar (*Smilax* spp.), blueberries (*Vaccinium* spp.), oak (*Quercus* spp.), witch-hazel (*Hamamelis virginianus*), and dogwood (*Cornus florida*). Eleven m east of the nest tree was an infrequently traveled dirt road. The butt of the nest tree was slightly fire-charred and the area showed signs of fairly recent controlled burning.

The Daddy's Creek colony (Figure 2) was in a mixed stand containing shortleaf and Virginia (*P. virginiana*) pine, oak, and hickories. The understory was composed of eastern red-cedar (*Juniperus virginiana*), witch-hazel, dogwood, oak, hickory, and red maple (*Acer rubrum*) saplings, and greenbriar. A well-traveled gravel road bisects the colony, and the nest tree was adjacent to this road.

REPRODUCTION

There are published Tennessee nesting records for the Red-cockaded Woodpecker through 1973 (Ganier 1962, Tanner 1965, Anon. 1965 and 1966, Dubke 1967, Parmer 1968, 1969, 1970, 1971a, 1971b, and 1972, Williams 1972 and 1973). Most of these observations have been of birds which appeared to be incubating or were feeding young. Robbie Hassler (Parmer 1969) observed an adult feeding two fledged young at Pickett State Park on 1 June, 1969. Lee Shafer and Daniel Jacobson observed two adults with three fledged young on 11 June, 1972, at the Daddy's Creek site, Catoosa (Parmer 1972).

More detailed observations have been made by Williams (pers. comm.) and me during the 1972 to 1975 nesting seasons. On 20 May, 1972, Williams found three just-hatched young and an intact egg in the Daddy's Creek nest. Shell fragments of two eggs were still in the nest and each had been broken at the equator into two pieces. On 7 June, 1972, Andrew Morton and I observed an adult feeding large young still in this same nest. The young were very vocal.

On 19 May, 1973, I observed both adults feeding an unknown number of

young in the Daddy's Creek nest. On 25 May, 1973, Williams and I observed both adults feeding three vocal young about 10 days old.

On 11 May, 1974, I checked the Daddy's Creek and the Mill Branch nest. Below each nest I found fragments of two eggs, which did not appear to have hatched. The birds did not appear to be incubating at either site, although an adult entered the Daddy's Creek cavity at dusk. No birds were observed at the Mill Branch nest on 11 May, and two were observed at the cavity at dusk the following day, 12 May. One bird roosted in the cavity and the other appeared to roost in a nearby pine top. On 12 May, at about 10:00 CDT, three Red-cockaded Woodpeckers were observed in the nest tree at once. One bird gave an open-wing display (Ligon 1970:257-258).



Figure 2. The Daddy's Creek nest site, May 1974, Cumberland County, Tennessee.

in the Daddy's Creek cavity and several cicada wings were on the ground beneath the Mill Branch cavity.

On 18 May, 1975, Andrews and I visited the Mill Branch and Daddy's Creek sites. At the Mill Branch site, two Red-cockaded Woodpeckers were observed at the same cavity used in 1974. I checked the nest and it contained two young and several eggshell pieces. The young were very small, blind, and pteryiae were not visible. I estimated that they were one to two days old. The eggshells had been pipped about the equator into two pieces. Two adults were observed at the Daddy's Creek site, around the same tree used in 1974. I checked the nest and it was empty. A few woodpecker feathers adhered to the resin just below the cavity. In June, 1975, Jacobson (pers. comm.) observed adults feeding young in the Mill Branch nest. No birds were observed at the Daddy's Creek site, and it appeared that they did not nest in 1975.

DISCUSSION

Three pairs of Red-cockaded Woodpeckers were observed in Tennessee in

1975, and, if other areas reported in the 1970's are occupied, the state population may be as high as nine pairs, probably with a few unmated birds. I estimate that the Tennessee population is between six and 25 birds, somewhat less than the 30 birds estimated by Jackson (1971). Jackson's estimate was based on reports since 1961, and I believe some of these sites are no longer occupied.

The sites where the birds may still occur are in Catoosa Wildlife Management Area, Pickett State Park, Campbell County, and the Great Smoky Mountains National Park. The first three areas are on the Cumberland Plateau. All of these areas are similar in that they are characterized by an edaphic climax of shortleaf and Virginia pine or pine mixed with oaks and hickory, on comparatively dry ridge tops. This is similar to the habitat which the birds occupy in Kentucky, where they are restricted to parts of the western Cumberland Plateau (Mengel 1965).

To the south and east of Tennessee, Red-cockaded Woodpeckers use longleaf (*P. palustris*), slash (*P. ellioti*), loblolly (*P. taeda*), shortleaf and pond pine (*P. serotina*) (Lay *et al* 1971), Thompson and Baker 1971, Ligon 1970). In North Carolina, the birds have been found predominantly in longleaf pine, although loblolly, slash, and shortleaf pine were also used (Carter 1974). Stierly (1957), in Virginia, found heaviest use of loblolly pine for nest trees, although shortleaf and pond pine were also used. Mengel (1965) reported a nest in a pitch pine (*P. rigida*). I failed to find reports of Red-cockaded Woodpeckers nesting in Virginia pines, as I found at Catoosa. All of the pines listed above are susceptible to *F. pini*, and the birds are dependent on *F. pini*-infected trees for cavity excavation (Affeltranger 1971). I observed sporophores and punk knots of *E. pini* at all occupied sites I visited.

Red-cockaded Woodpeckers in Tennessee probably lay eggs in late April or the first half of May, with the young fledgling in early June. Ligon (1970) found eggs laid in Florida between 21 April and 4 June. In 1974, the 2 pairs at Catoosa probably laid eggs between the 15th and 20th of May. However, this may have been the second clutch for each pair, as white eggshell fragments, which may have been eggs of Red-cockaded Woodpeckers, were found below both nests on 11 May. It is possible that the eggshells were from an earlier nesting, but I have found no reference of double broods in Red-cockaded Woodpeckers. The eggs did not appear weathered and were probably from the 1974 season. They may have been removed from the cavity by predators, but it is curious that the same situation occurred at two different nest sites.

Little information is available on nesting success in Tennessee. Ligon (1970) found out of 3 to 4 eggs laid, 1.4 to 2.0 young fledged per nest. Fledging success was somewhat higher at nests with helpers. Neither Williams nor I have observed helpers at nests in Tennessee. On 12 May, 1974, I observed 3 birds at the Daddy's Creek site, and one bird gave an open-wing display (Ligon 1970: 257-258). This response is usually given by a pair to an intruding stranger or to a grown young the pair is trying to drive away (Ligon 1970). I have noted 3 nests with 2 young, and Williams and I noted 2 nests with 3 young. The Hasslers reported an adult feeding 2 fledged young (pers. comm.), and Shafer and Jacobson observed a pair feeding 3 fledged young (Parmer 1972).

I cannot explain the failure of the Daddy's Creek nest in 1975. The previ-

ous winter was comparatively mild. I do not believe human disturbance was a factor. Ligon (1970) found his visits to nests did not greatly disturb the adult birds and I noted adults returned quickly to nests I inspected, and fed the young while I sat on the ground 10 to 20 m from the nest.

THE FUTURE

Tennessee is fortunate that most of the known Red-cockaded Woodpecker sites are on state- or federally-controlled lands. Thus habitat loss by logging and development can be controlled. The greatest threat to the bird in Tennessee is probably the southern pine beetle (*Dendroctonus frontalis*). In recent years the beetle has increased to epidemic levels and is killing large tracts of pine. The beetle has been found in the vicinity of the Catoosa colonies. Control measures were begun in the winter of 1975-76, and involve removal of infected trees (Yambert pers. comm.). This will certainly reduce the habitat available to the birds, and may eliminate areas suitable for future colonization.

However, the beetle may create an abundant, readily available food source for the bird. Overgaard (1970) found Pileated (*Dryocopus pileatus*), Red-bellied (*Melanerpes carolinus*), and Downy (*Picoides pubescens*) Woodpeckers fed on southern pine beetle brood and caused a 24 percent reduction of brood in pine bark. Baldwin (1968) found increased density of Northern Three-toed (*Picoides tridactylus*) and Hairy (*P. villosus*) Woodpeckers in spruce (*Picea* spp.) infested by the Engelmann spruce beetle (*Dendroctonus obesus*). Neither Overgaard (1970) nor Baldwin (1968) found woodpeckers to be effective control agents, although some pressure may be exerted on declining infestations. For Red-cockaded Woodpeckers to increase their breeding population in response to the beetle would probably require several seasons. Nesting sites may become limiting and Ligon (1970) found cavities were excavated over a period of several months. The birds may also not breed until two years old (Ligon 1970).

In addition to controlling the southern pine beetle, management efforts should be taken to improve existing habitat and establish additional habitat. An inventory of all existing colonies should be made, and these areas then managed for the birds by periodic controlled burning. Large *F. pini*-infected pines should be maintained and encouraged, and stands should be thinned to maintain the open-pine forest.

SUMMARY

The Red-cockaded Woodpecker was once spread over much of Tennessee but is presently restricted to the Cumberland Plateau and part of the Great Smoky Mountains National Park. The present state population is probably between 6 and 25 birds. Shortleaf and Virginia pines, infected by *Fomes pini*, are used as nest sites. Eggs are laid in late April or early May and the young fledge in early June. Broods of 2 or 3 young have been observed. The future of the species is dependent upon control of the southern pine beetle and maintenance of suitable nesting habitat.

ACKNOWLEDGMENTS

I thank Morris D. Williams for allowing use of his unpublished field notes,

and for commenting on an early draft of the manuscript. Thanks are also due to Fae P. Andrews, for aiding in a literature search, and to the many birders across the state for providing unpublished records.

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SNOWY PLOVER ADDED TO TENNESSEE STATE LIST

DOT AND PAUL CRAWFORD

On 19 May 1977, we decided to make a quick check of the ash disposal pond at the Gallatin Steam Plant even though the area had attracted very few shorebirds this year.

The ash disposal area is essentially the same as previously described (*The Migrant* 43:90) except that the area of exposed ash is much larger, covering approximately half of the entire disposal area.



Figure 1. Ash disposal pond at GSP, looking northeast.
Photo by Paul Crawford.

As we drove along the west side of the pond at 16:50 CDT, Dot spotted a small, very pale shorebird far out on the ash but moving in our direction. We stopped and with 7 x 35 Bushnell binoculars identified the bird as a plover. Since there are five precious records of Piping Plover (*Charadrius melodus*) at this location, we assumed that this was, also, a "piping". As the bird moved closer, we set up our 20-45x Bushnell spotting scope and examined the bird more closely. We immediately saw that this was not a Piping Plover even though the size and over-all color pattern were quite similar.

We noted that this bird had a pale gray back, slightly darker on the crown, and pure white underparts as does the Piping Plover. However, the legs were gray; it had a broad black line extending from the eye to well back toward the nape; the beak was slender and black from tip to base; and the partial collar was narrow and straight with no forward curve at the throat. It was later noted that a narrow black line extended from the base of the beak back to the eye where it joined the broader line behind the eye and that the outer tail feathers were white while the middle of the tail shaded from the pale gray of the back to black at the tip. There was no band of white across the forward part of the tail.



Figure 2. Snowy Plover.
Photo by Paul Crawford.

The bird behaved in typical small plover fashion. While feeding, it darted very rapidly from place to place, pausing momentarily to peck at the surface of the ash, then darting on. At times, it moved several hundred meters in a surprisingly short time.

We identified the bird as a Snowy Plover (*Charadrius alexandrinus*). We are familiar with the Snowy Plover, having seen them in Florida, Texas, Kansas and New Mexico.

We kept the bird under observation for fifty minutes, hoping that it would come close enough to be photographed. At 17:40 when it had not moved within camera range, we rushed home to see if we could get other birders to the scene.

Calls were made, or attempted, to all regions of the state. However, Pat Stallings was the only birder who could get to Gallatin that afternoon. When Pat arrived, we returned to the ash pond and searched until dark but we could not find the plover. Assuming that the bird had left, we called off the "rare bird alert".

We returned to the ash pond at 06:00 on 20 May and searched for an hour but failed to find the plover. At 11:00, we continued the search for more than an hour with no success. By this time, we were certain that the bird had left. We decided to make one last attempt at 15:00 and found the bird!

This time, Pat Stallings came up immediately and saw the bird. Also, we were able to photograph it, using a Mamiya/Sekor camera with a Bushnell spotting scope and an adaptor.

Again, we tried to notify birders around the state that the bird was still present. We were partly successful as a total of 19 observers were able to see the bird before it departed on the night of 25 May.

The bird was seen on seven consecutive afternoons. For some unknown reason, we were never able to find it before noon. Most observations were made in bright sunlight with the sun behind the observers.

Other shorebirds that were on the ash pond at various times during the period the Snowy Plover was present were Semipalmated Plovers (*Charadrius semipalmatus*) Killdeer (*Charadrius vociferus*), Black-bellied Plovers (*Pluvialis squatarola*), Greater Yellowlegs (*Tringa melanoleucus*) and Semipalmated Sandpipers (*Calidris pusillus*). At various times, the Snowy Plover fed close to, but never with, the other shorebirds. It seemed to ignore all except the Semipalmated Plovers. When a Semipalmated Plover approached too closely, it was driven away, even though the "snowy" was somewhat smaller than the Semipalmated Plover.

So far as we are able to determine, this is the first record of a Snowy Plover for Tennessee.

Route 4, Gallatin 37066.

FALL BANDING AT BASIN SPRING, 1975

KATHERINE A. GOODPASTURE

Following is an account of the movement of birds through Basin Spring woods during the fall of 1975. Each migration season varies in some measure from every other whether analyzed by a carefully controlled scheme or subjectively. For whatever reasons, fall migration 1975 had a "feel" that was different and the biased view of a bird bander can describe it only in part.

Basin Spring designates a tract of deciduous woods with about 10 acres of weedy pastures in northeastern Williamson County, Tennessee. There are a few native pines in the banding area and red cedars grow in natural distribution. Bedford Creek and its tributary, Basin Spring Branch, make the area attractive to migrants. Basin Spring is surrounded by several thousand acres of the same kind of woodland lying in deep hollows and steep hills up to 1000 feet. Since there is no topographical funnel to concentrate moving birds, their flow is spread thin. Any banding operation will take only a small sample which could scarcely be called random.

The beginning and end of the season, 16 August and 16 November, were chosen arbitrarily: the first date designed to include possibly a late record of the Louisiana Waterthrush, the second to allow winter residents to settle in. Twelve-meter nets were set in lanes which, with one exception, had been used in previous years. Though net-hours cannot be calculated accurately, nets were in operation a few more days and longer hours than during past autumns.

Weather during September and October was mild, many days were overcast, fronts moved with low intensity and migrants seemed to proceed leisurely throughout the fall.

All told 1642 birds were taken from nets and annotated. The list breaks down to 1393 new-banded birds of 83 species, 41 returns and 208 repeats. No bird banded elsewhere was recovered nor was any new species added to the area's accumulated list. A White-eyed Vireo banded 27 October was 2 days later than the observed date for the Nashville area.

The following records of banded birds are presented in roughly chronological order in an attempt to describe a mobile population. The way components of a migrating stream shift and change tells us more about a migratory movement than a list of the number of birds banded ranked in AOU order which lets dates fall in unrelated sequence.

From 16 August to the end of the month 5 to 7 nets were in operation parts of 6 days. Thirty-five birds were banded but no transient tangled with the nets. A Louisiana Waterthrush banded in May 1972 returned 17 August 1975 with an accumulation of 3+ fat indicating it was ready to migrate. The last Louisiana Waterthrush of the season was a banded one that repeated 24 August with 1+ fat. Two Worm-eating Warblers were dated 16 and 17 August and the last Kentucky Warblers were banded 17 and 24 August. We see a pattern of migration being laid down; these locally nesting warblers usually disappear early in the season. Basin Spring banding does not reflect a later influx of more northern Louisiana Waterthrushes, Worm-eating or Kentucky Warblers though there have been significant numbers of Kentuckys in tower

kills the fourth week in September (41 on 26 September 1968 and 26 on 28 September 1970, Laskey personal papers).

During September nets were in operation only 10 days (for less than 1/2 day on 2 days). By the last week-end of the month the full complement of 12 nets was in operation along with two 6-meter nets across the streams. A total of 198 birds was banded. There were 6 returns and 16 repeats.

On the first day of September 2 transient species were caught. One Canada Warbler banded 1 September and a second banded on the 6th proved to be a low total for the season compared with 13 banded in the fall of 1970, 5 in 1973 and 10 in 1974. A Traill's Flycatcher, 1 September, was the only one for the season and the first since 1971. Three Yellow-bellied Flycatchers banded 7 and 27 September and 4 October, 3 Acadian Flycatchers (11, 13, 28 September) and a single Least Flycatcher (27 September) are low totals for all these little flycatchers and do not show that Least as well as Yellow-bellieds may migrate over the period of a month.

Northern Waterthrushes appeared for banding 7 and 13 September and 5 October indicating a leisurely movement. Seven and 13 September also tallied 3 Golden-winged Warblers.

Tennessee and Magnolia Warblers occur in banding records year after year in higher numbers than most other warblers. Tennessee Warblers, 13 September through 28 October, spanned 45 days or 6-1/2 weeks. A total of 102 banded Tennessees seems significantly higher than previous totals when we compare 35 banded in 1971, 36 in 1974, 20 in 1972 and 19 in 1973. Twenty-five banded 11 October and 19 on 19 October indicate a peak between the second and third weeks of October. A total of 69 Magnolias banded from 7 September through 26 October was the highest number in any fall at Basin Spring. Nine banded 4 October and the same number 5 October indicate a peak.

September 13th was a starred day with a beautiful adult male Mourning Warbler in hand. We sometimes get 2, sometimes 3 Mournings; a single is a good catch.

The first Swainson's Thrush was banded 7 September. A total of 15 (last date 19 September) may be compared with 26 banded in the fall of 1968. An average of 12.5 per year for the past 8 years makes 15 in 1975 usual. Only 1 Veery, 13 September, was banded. Usually Veeries appear before Swainson's. Six Gray-checked Thrushes were banded between 20 and 25 September. Basin Spring rarely sees "the woods full of thrushes" though they regularly make themselves obvious as migrating species.

Mid-September and mid-October brought to hand more Cape May Warblers than I had banded all told at Basin Spring during 16 years of banding there. Two were banded 14 September; two others appeared 19 October. Because of their rarity this seemed like an explosion of Cape Mays. The first ever for the station was banded 17 September 1971; in 1974 two were banded 26 and 28 September. Field observers do not see Cape Mays in this area in the fall.

In addition to the Cape Mays, Black-throated Green, Blackburnian and Bay-breasted Warblers all appeared in the nets first on 14 September. Fifteen

Black-throated Greens banded between 14 September and 19 October level with 10 in 1970 and 12 in 1971. The 14 September Blackburnian, always rare in the fall, proved to be the only one banded. Compare this with none banded in the falls of 1971, '72 or '74 and one each in 1970 and 1973. A banner year, 1968, yielded 3 banded Blackburnians. Bay-breasteds filtered through until 26 October. A total of 30 is twice the previous high of 14 in 1974.

The above suggests the flight of 14 September to be the first real migratory push through Basin Spring. Thirty-six new-banded birds was the highest one-day total to date and 9 species of warblers graced the list. One Black-and-white, 1 Blue-winged, 17 Tennessee and 8 Magnolia Warblers and 1 American Redstart helped make the day a good one. Twenty-nine birds banded 27 September and 48 banded 28 September, a two-day total of 77, made the last week of September normally active.

The first of 4 Nashville Warblers was banded 20 September and the first of 22 Rose-breasted Grosbeaks on 21 September. The first of 23 Ovenbirds was in the net 27 September. There seems no parallel between the large numbers of Ovenbirds that fall sometimes at Nashville television towers and the seeming thinness of the migratory flow through Basin Spring. Even though Gray Catbirds are resident and were banded through September and to 12 October one may sense an influx of "new" birds from time to time. Six Catbirds 27 and 28 September were judged part of such a flight.

Nets active on 15 days (1 day for only 2 hours) during October yielded 836 new-banded birds, 18 returns and 98 repeats. Waves of birds were tagged on the 5th (44), the 11th (89), the 19th (90), the 26th (141), tapering off to 61 on 31 October. Eleven Magnolias on the 5th, 25 Tennessees on the 11th, 32 Yellow-rumped (Myrtle) on the 19th, 30 Myrtles and 21 White-throated Sparrows on the 26th were the most-banded species on those wave days. These high counts for each species are the highest daily counts for them during the whole period.

October 2 found 3 White-throated Sparrows beginning a steady movement to the end of the season. A total of 119 was banded. Fifteen Winter Wrens, banded 2 October through 9 November, were twice the highest (8) for any previous fall.

Ruby-crowned Kinglets began to flow through the woods and into the nets 4 October. By 16 November 111 had been banded. Ninety banded during the same interval 1974 were thought to represent a remarkable flight. The average of 100 for the two falls is about 5 times that of other years. Close on the heels of the Ruby-crowneds came a sprinkle of Golden-crowned Kinglets. Eleven were banded between 11 October and 15 November.

The first Hermit Thrushes (3) were banded 5 October. There followed a steady stream of Hermits through 8 November for a total of 60. This amazing total stands in contrast to a former high count of 10 banded during the fall of 1963 and to 9 in both 1968 and 1971. The average number of Hermits banded during 14 previous years was 5.5 per year. Thirty-one of the 60 were judged birds of the year by examination of skulls; six others, not "skulled", had light covert spots.

October 11th also initiated an exciting run of 15 Orange-crowned Warblers. Twelve of the 15 were banded between 19 and 27 October with 5 of those tagged on 26 October. The last came 9 November. Twelve were called birds of the year by "skulling". Fifteen Orange-crowned Warblers was a remarkably high count. The only previous ones for the station were three banded in 1968 and 1 each year in '70 and '73.

A third species, Yellow-rumped (Myrtle), appeared first in the nets 11 October. Between that date and 16 November 150 Myrtles were banded. This was the highest incidence of any banded species. The peak of 32 Myrtles banded 19 October was noted above. Tower casualties do not show this high proportion of Myrtle Warblers. Field observers often see large numbers of them around Radnor Lake.

The first Dark-eyed Junco was banded 12 October. Ninety-one banded through 16 November may be compared with 51 banded over a like span in 1971. October 27th ushered in the first of 5 Fox Sparrows.

New birds banded on 10 days between 1 and 16 November numbered 324. There were 14 returns and 87 repeats.

The appearance of a Red-breasted Nuthatch and a Purple Finch 2 November pointed toward the conclusion of the fall movement. Swamp and Song Sparrows had settled in. Three Lincoln's Sparrows had been banded and released to continue their flights. A small flock of Chipping Sparrows contributed 8 to the banded list. Five Cedar Waxwings and 9 Pine Siskins hit the nets as small flocks moved through. The last bird in hand recognized as a true transient was the Orange-crowned Warbler netted 9 November. Permanent residents were represented by 1 Screech Owl, 4 Belted Kingfishers, 3 Mockingbirds, 71 American Goldfinches, 18 Rufous-sided Towhees and others.

If one attempts to define the "feel" distinguishing the 1975 banding season at Basin Spring he would mention first the pleasant excitement of bringing in 4 Cape May Warblers from the nets. Add to this surprise of having one Orange-crowned Warbler follow another until 15 had been banded. The third highlight was the amazing 60 Hermit Thrushes intercepted in the net lanes. Three Golden-winged Warblers, 15 Winter Wrens and 5 Fox Sparrows perked the spirits. One Screech Owl, 1 Loggerhead Shrike, 1 Red-breasted Nuthatch and a Mourning Warbler added interest to as many days. High counts of commoner species added to the counts of rarer ones contribute to the "feel" of the season. One hundred and fifty Yellow-rumped (Myrtle) Warblers, 122 Tennessees, 119 White-throated Sparrows, 111 Ruby-crowned Kinglets and 91 Dark-eyed Juncos help describe the composition of the migratory flow.

In addition to new-banded birds there were 41 return records, that is 41 birds previously banded at Basin Spring were recaptured at least 90 days after the date of banding. Four birds returned 5 years after they were banded: a Red-bellied Woodpecker, a Carolina Chickadee, a Common Yellowthroat and a Dark-eyed Junco. The first two are considered year-round residents; the other two had faced hazards of migration for at least 5 years. The Yellowthroat, banded 2 August 1970, was at that time an adult male in heavy molt and with worn feathers indicating it had hatched at least in 1969 and was at least

in its 6th year of life on 24 August 1975. The Junco was recognized as a bird of the year 22 October 1970 making it 5 years old in October 1975. Whether it spent intervening winters at Basin Spring we have no evidence.

Five birds of 4 species were 4-year returns: 1 Blue Jay, 2 Carolina Chickadees, 1 Tufted Titmouse and a White-eyed Vireo. Seven individuals of 6 species banded in 1972 returned in 1975: 1 Carolina Chickadee, 1 Tufted Titmouse, 1 Hermit Thrush, 1 Louisiana Waterthrush, 2 Cardinals, and 1 Field Sparrow. The return of migrants like the Hermit Thrush, Louisiana Waterthrush, the Yellowthroat, the White-eyed Vireo and the Junco are of special interest. Seven individuals returned after 2 years and 18 after 1 year.

The substantial assistance of Earl Bishop and Mel Garland made it possible to keep nets in operation longer hours and extra days. I am grateful for their careful attention to all the details of banding procedures. I appreciate the help of Ann Tarbell, Portia Macmillan, Lee Shafer and Daniel Jacobson and the interest expressed by others who visited the station from time to time. This story will never come to conclusion. Next fall we will be looking for Blackpolls, Black-throated Blues and Red Crossbills, but mainly we will hope for the return of these birds we already know.

3407 Hopkins Lane, Nashville, Tennessee.

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THE SIXTY-THIRD ANNUAL SPRING TOS MEETING

FONTANA VILLAGE, NORTH CAROLINA

28, 29 AND 30, APRIL 1978

A joint meeting including the TOS, Georgia Ornithological Society and the Carolina Bird Club. The entire Village facility will be reserved until 12 April. Rooms at the Inn (two people), \$21.00 per night and cottages (four to ten people), \$5.50 per person, per night. Make reservations directly with Fontana Village, Fontana Dam, North Carolina 28733 — Telephone (704) 498-2211. Additional information on room reservations and activities will be furnished later. If more information is needed at the present time contact Franklin McCamey, 4676 Andover Court, Atlanta, Ga. 30360 or Kenneth H. Dubke, Rt. 1, Box 134-D, Ooltewah, Tenn. 37363.

MURIEL BURNHAM MONROE

By J. C. HOWELL

Muriel B. (Mrs. Robert A.) Monroe took an active part in the affairs of the Tennessee Ornithological Society from 1937 until 1973. For most of those years she and her husband, Bob, were enthusiastic participants in the field trips and monthly meetings of the Knoxville Chapter of the society. She was an excellent field ornithologist who knew Tennessee birds by their songs as well as by their field marks. Her special interest was the warblers.

Mrs. Monroe was born in Sacramento, California, on 25 February 1890, and died in Knoxville, Tennessee, on 22 December 1976. In 1908 she entered the University of California at Berkeley where she majored in mathematics and served on occasion as an undergraduate tutor and reader. She was an outstanding student and was elected to Phi Beta Kappa. It was at the initiation banquet of this honor society that she met Bob.

She continued her education at Berkeley where she earned a Master of Science degree in mathematics and a teacher's certificate. For three years she taught high school mathematics at Lindsey, California. Then she moved to the Lick Polytechnical High School in San Francisco and taught drawing as well as mathematics.

Bob Monroe returned to California in August 1919 after service in World War I. They were married shortly thereafter. They remained in California until 1929 when they moved to Pittsburg. Later they resided in Denver. In 1937 Bob came to Knoxville as an engineer on the TVA staff. Knoxville remained their home.

Muriel and Bob had a daughter and a son. Their daughter, Ruth Agnes, is now deceased and their son, Robert R., is a Vice-Admiral in the U. S. Navy.

Muriel's earliest interest in birds was stimulated in the course of summer visits to Fallen Leaf Lodge high in the California Sierras. Here the lodge manager actively encouraged his guests to observe birds.

Shortly after coming to Knoxville her interest in ornithology led her to become acquainted with H. P. Ijams, Brockway Crouch, and Jim Trent. During this time she was an advisor to many Boy Scouts who were interested in earning a merit badge in bird study. Some of them became active members of the T.O.S. Often they would participate in the society's local field trips or those at the state meetings. A number of the scouts were often guests of the Monroes at these meetings.

The Monroe home at 1424 Tugaloo Drive in Sequoyia Hills was made attractive to birds through the maintenance of feeders, nest boxes and baths. In the yard there were numerous fine old oaks, and hickories, a few pines, and a thicket of saplings and bushes. A path wandered through the denser cover providing access to the brush-loving birds for the birders. Muriel kept a sharp eye out for birds and maintained a daily record of their arrivals, departures, and activities. Many a published bird note was based on an observation made in her yard. She was attentive when birds using nest boxes squabbled over who would have which box and when juveniles helped their parents feed a second brood.

For many years the Monroes were host to the Knoxville Chapter of the T.O.S. at its June meetings. The members ate a picnic lunch on the lawn in the late afternoon and as darkness came the speaker would show slides and present a supporting commentary. These meetings were for members and also for their families who were not always deeply interested in birds.

Beginning in the 1950's Muriel undertook a series of talks on birds. Her remarks were closely tied to a large collection of colored slides. She assembled five hundred of these illustrations. Many of her photographs were taken in the yard with the help of Bob. She supplemented these personal slides with others of high quality. Requests for her talks came chiefly from schools, garden clubs and church groups. She continued to respond to invitations until 1973 and presented over 400 talks.

Her support of the T.O.S. took numerous forms. She was a meticulous person in everything she undertook. The house, the yard, meals—all were given thoughtful attention. This concern for details enabled her to plan well for the programs of organizations. She held most of the offices of the Knoxville chapter and could be relied on to serve as a director for the regional area at state meetings. She was chapter president in 1949 and 1953. In 1953-1954 she served as state president. The T.O.S. was host to the Wilson Ornithological Society in 1952 and she served on the local committee.

It was in the summer of 1947 when I came to know Mrs. Monroe well. She enrolled as an auditor in my class in ornithology and yet (unlike most auditors) she took every examination and was tied with a graduate student who majored in ornithology for the top grade. I found during the field examination that she did indeed know our local birds by their songs and calls. There seemed to be no fact of text or lecture that she failed to learn.

During the late 1940's my primary research project was a study of the roadside count as a method of measuring bird populations. On each roadside count I required a cooperator who would record each individual bird that I saw or heard. In the warmer months I was able to find a reasonable number of willing helpers. But as the chill winds of late autumn came I decided that only those with a deep interest in birds could reasonably be expected to assist me. Most of my winter counts were made with Muriel's uncomplaining aid. To her my research was important.

In 1950 I undertook a different project. My objective was to visit all parts of Knox County in order to determine which species were there and also to learn the relative abundance and seasonal occurrence of each. By the middle 1950's it became apparent that I was becoming overwhelmed by the volume of information that had accumulated. To me it was a pleasure to gather field data, but a chore to tabulate and correlate it. Muriel volunteered to help. Our paper (*The Birds of Knox County, Tennessee 1957*, J. Tenn. Acad. Sci. 32:247-324) probably would never have appeared (certainly not with such an abundance of tables) had it not been for Muriel's enthusiasm for presenting all the information that could be derived from the data at our disposal. She was dedicated, efficient, and accurate in this task.

Our last venture in treating voluminous data was the preparation of a report on the changes in abundance of the more numerous species of birds in Knox County. The data consisted of contacts with birds recorded in the course of 200 roadside counts made in the years 1950 through 1959. Our presentation of these facts involved some tedious statistical treatments. Although I remain hopeful that this report will eventually be published the manuscript is still incomplete.

The serious study of birds has often benefitted from the careful observations of amateurs. Muriel Monroe developed the habit of writing down each ornithological event as it occurred. This record provided a document which is an essential part of the body of information we now have on the birds of Knox County.

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BOOK REVIEW

A GUIDE TO BIRD FINDING EAST OF THE MISSISSIPPI. Second Ed. By Olin Sewall Pettingill, Jr., Oxford University Press, New York. 689 p., 3 maps and 80 line drawings by George Miksch Sutton. 1977. \$15.95.—This is an updated version of the first edition (1951) which was a good guide to finding birds in the area east of the Mississippi River. The format of this book is essentially the same as the first edition. There is a chapter for each of the 26 states. Each chapter starts with an introduction that provides information on the physiography of the state, typical breeding species for various habitats, good birding locations and authorities (24 for Tennessee) who contributed information. Next is an alphabetical listing of locations with directions for reaching them and birding highlights by season and species.

In the 26 years since the first edition appeared there have been many changes in habitats and bird distribution. Pettingill reflects this in his second edition. Directions for locating some birding areas have been changed due to expanding cities and the development of new roads, particularly the interstate highway system. He takes into account changes in bird distribution, habitat and the development of parks, refuges and other good birding areas.

Information on museum and college collections of birds and most birding locations in private hands which could prove to be inaccessible in the future have been omitted. Pettingill used many of the older common names as listed by the Checklist Committee of the American Birding Association (A.B.A. Checklist: Birds of Continental United States and Canada, 1975). Thus, his use of bird names still reflect obvious differences among geographical populations.

In my opinion this is a very useful book for any birder who plans to travel and I highly recommend it.

GARY O. WALLACE

ROUND TABLE NOTE

A SMALL BREEDING COLONY OF GREEN HERONS IN HAWKINS COUNTY, TENNESSEE—On 20 May 1973, I located six active Green Heron (*Butorides striatus*) nests around a small pond (36°22'47"N; 82°58'30"W) in Hawkins County, Tennessee. The nests were scattered along a line 100m long through the woods around the pond.

Nest 1 was 9m up in a pine (*Pinus sp.*) tree. An adult heron flushed from the nest which held downy young. The bird flew a short distance before it perched and began to give many long, hoarse screams. In a short while, a Barred Owl (*Strix varia*) flushed from a nearby tree. When the owl had gone, the heron stopped screaming, even though I was still near the nest.

Nest 2 was 6m up in a cedar (*Juniperus virginiana*) tree. It contained five large young which were old enough to climb into the branches surrounding the nest.

Nest 3 was 6m from nest 2, and it was 7.5 up in a cedar. It contained three eggs.

Nest 4 was 7.5m up in a cedar. It held several downy young. The shells of about four eggs lay on the ground beneath the nest.

An adult flushed from Nest 5 which held very small birds. This nest was 9m up in a cedar.

Nest 6 was 7.5m up in a cedar. It held four large young.

The Green Heron, often a solitary nester, has previously bred colonially in East Tennessee. Wallace Coffey (1966. Colonial Nesting of the Green Heron. *Migrant*, 37:75) reported 10 nests in a Sullivan County colony.

MORRIS D. WILLIAMS, Department of Zoology, University of Tennessee, Knoxville. Present address: Department of Zoology, Louisiana State University, Baton Rouge, Louisiana 70893.

Correction: *The Migrant* 48:23, 1977. The location for the Sharp-shinned Hawk and Veery records of 15 Aug by DJ and MPS was not GSMNP but Stratton Meadows, Cherokee National Forest.

THE SEASON

FRED J. ALSOP, III, *Editor*

SPRING SEASON: 16 MARCH - 15 MAY

After one of the most severe winters on record we should be particularly alert to record any noticeable changes in the populations of several permanent resident species that may have suffered high mortality rates during the bitter cold, ice, sleet, and snow. Your records for such species as Carolina Wren, Eastern Bluebird, Belted Kingfisher, Loggerhead Shrike, Killdeer, and others are keenly sought by this editor (note the remarks in the introduction of the Eastern Mountain Region report).

Tennessee birders have been following their favorite avocation in spite of the weather conditions, however, and there are many notes of uncommon birds in addition to a good quantity of information on more expected species in the pages that follow. Unusual nesting species capture the limelight as being the most important finds and include: 67 nests of Yellow-crowned Night Heron at Memphis; the nesting of Brown-headed Nuthatches in the Eastern Ridge and Valley; and two interesting observations of Brown Creepers in the northwest corner of the State. Two Brown Creepers were seen carrying nesting materials southwest of Ro Ellen, and two more birds were located in the Walnut Log area of Reelfoot Lake on 6 May. The species is known to nest in wooded swamps in its breeding range north of Tennessee and an effort should be made to see if the same may be true in the Reelfoot area.

Some raptorial species of infrequent occurrence in the State are: a Swallow-tailed Kite at Collierville in the Western Coastal Plain; a Peregrine Falcon in the preceding region and two more at different locations in the Eastern Ridge and Valley Region.

Shorebirds were reported from all regions with the greatest variety of species being listed in the Eastern Ridge and Valley. The Avocet on Old Hickory Lake in the Central Plateau and Basin was, perhaps, the rarest member of this group seen. Cormorants were reported from all regions except the Western Coastal Plain. Two uncommon waterbirds were found in the Eastern Ridge and Valley Region on TVA impoundments; a Red-throated Loon on Boone Lake and an Eared Grebe on Patrick Henry Lake. In the Eastern Mountain Region a Virginia Rail was seen in Hampton.

A dead Long-eared Owl was found in the Ashland City Marsh near Nashville and constitutes the only record for this species in this season. Red-cockaded Woodpeckers are still to be found in the Catoosa Wildlife Management Area despite some recent cutting of mature pine trees in that area. The rare Bachman's Sparrow was located at two different sites in the Eastern Ridge and Valley Region.

Two reports of wintering finches warrant special mention. A House Finch was observed in Gallatin and becomes (to my knowledge) the westernmost record for the species in the State. Two Evening Grosbeaks were seen at Erwin in East Tennessee and constitute the only "flock" of this species—reported in good numbers in many areas of the State over the past 3 years, but virtually absent here this winter—in this and the report of the previous season.

Many more interesting and important observations fill the pages that follow. You are encouraged to send your records to your regional compiler EACH MONTH to help us to know and better understand the avifauna of Tennessee. Won't you please help by send your birding notes and suggestions today?

WESTERN COASTAL PLAIN REGION—This report will include two entries that should have been included in the preceding "Season's" report.

Heron-Creeper: Yellow-crowned Night Heron: 1 Mar (67 nests) M (MDW). American Bittern: 6 Apr (1) M (LC, HBD), 14 Apr (2) M (BC, LCC), 1 May (2) M (MC-TOS). Rough-legged Hawk: 29 Jan (1) R (DS). Broad-winged Hawk: 9 Apr (4) FSP (RJ). Peregrine Falcon: 30 Apr (1) R (DS). **SWALLOW-TAILED KITE**: 10 Apr (1) C (BM, EM). Black-bellied Plover: 15 May (1) PF (RJ, MC-TOS). Upland Sandpiper: 9 Apr (18) PF (HBD, MW). Short-billed Dowitcher: 9 May (43) Miss. River Levee, North of I-55 (GC). Great Horned Owl: 2 Mar (adult on nest) Forked Deer River Marsh, Gibson Co. (MDW). Chuck-wills-widow: 16 Apr (1) PF (RJ). Chimney Swift: 27 Mar (1) M (HBD). Great Crested Flycatcher: 6 Apr (1) SFSP (LCC, HBD). Least Flycatcher: 5 May (1) M (BC), 7 May (1) R (BC), (1) Miss. River Levee (DP). Barn Swallow: 16 Mar (3) M (CO). **BROWN CREEPER**: 29-30 Apr-1 May (2 carrying nesting material to loose bark on a tree) SE of Ro Ellen (GC). 6 May (2) R, Walnut Log Area (HD, HBD).

Wren-Sparrow: House Wren: 30 Apr (1) M (JGH). Short-billed Marsh Wren: 6 Apr (1) M (LCC). Swainson's Thrush: 11 Apr (3) M (BC). Veery: 14 May (1) casualty M (JD). Blue-gray Gnatcatcher: 22 Mar (2) M (RJ). Water Pipit: 24 Mar (1) PF (RJ). White-eyed Vireo: 28 Mar (2) M (LCC). Red-eyed Vireo: 7 Apr (1) FSP (RJ). Black-and-white Warbler: 1 Apr (1) M (JGH). Prothonotary Warbler: 27 Mar (2) HPL (BF). Swainson's Warbler: 11 Apr-3 May (1) M (BC). Golden-winged Warbler: 3 May (1) M (BC, LCC). Blue-winged Warbler: 9 Apr (1) FSP (RJ). Nashville Warbler: 9 Apr (1) FSP (RJ). Parula Warbler: 30 Mar (1) M (BC). Black-throated Green Warbler: 25 Mar (1) M (BC). Blackburnian Warbler: 8 Apr (2) SFSP (HBD, MW), 17 May-24 May M (2 different locations in M) (BC). Mourning Warbler: 13 May (1) M (LW). Hooded Warbler: 7 Apr (1) FSP (RJ). Louisiana Waterthrush: 16 Mar (1) M (OI). Orchard Oriole: 6 Apr (1) M (BC), 6 Apr (1) SFSP (LC, HBD). Grasshopper Sparrow: 16 Apr-15 May (6) PF (RJ).

Locations: C—Collierville, FSP—Fuller State Park, HPL—Herb Parson Lake, south Fayette Co. M—Memphis, PF—Penal Farm, R—Reelfoot, SFSP—Shelby Forest State Park.

Observers: BC—Ben Coffey, GC—Glen Criswell, LCC—Lula C. Coffey, HBD—Helen B. Dinkelspiel, HD—Henry Dinkelspiel, JD—Julian Darlington, BF—Bill Fowler, JGH—James G. Holt, OI—Oliver Irwin, RJ—Rusty Jones, MC-TOS—Memphis Chapter-TOS, EM—Ellen McGowan, BM—Bob McGowan, CO—Chuck Ogilvie, DP—David Pitts, DS—Dave Synder, LW—Lynn Wheeler, MDW—Morris D. Williams MW—Martha Waldron.

MARTHA WALDRON, 1626 Yorkshire Drive, Memphis 38117.

CENTRAL PLATEAU AND BASIN REGION—*Cormorant-Hummingbird:* Double-crested Cormorant: 15 May (1) GSP (DPC). Green Heron: 27 Mar (1) (Karen Ritter). Great Egret: 3 Apr (1) Marrowbone Creek (RJM). Yellow-crowned Night Heron: 21 Mar (2) ShB (MPS). American Bittern: 17 Mar (1) ShB (DRJ, MPS). Snow Goose: 19 Mar (1) ACM (RJM). Black Duck: 14 May (1) Gallatin (DPC). Blue-winged Teal: present thru period (8) (DPC). Northern Shoveler: 14 May (1) G (DPC). Redhead: 19 Apr (3) G (DPC). Canvasback: 4 May G (DPC). Red-breasted Merganser: 11 May (1) G (DPC). Osprey: 17 Apr (1) OHL (SWF); 5 May (2) RL (MLB). Pectoral Sandpiper: 19 Mar (140) AC (RJM); 15 May (5) G (DPC). *AMERICAN AVOCET:* 18 Apr (14) OHL (Bob Mann). Bonaparte's Gull: 26 March (87) OHL, 8 Apr (4) OHL (SWF). Forester's Tern: 19 Apr (3) OHL (MPS). Caspian Tern: 19 Apr (1) GSP (DPC). Black-billed Cuckoo: 14 May (1) ShB (DRJ). Barn Owl: 19 Mar (1) ShB (DRJ, MPS). *LONG-EARED OWL:* 19 Mar (1, casualty) ACM (RJM). Whip-poor-will: 29 Mar (1) BS (KAG). Ruby-throated Hummingbird: 26 Mar (1) BS (KAG, MG) one week earliest ever Nashville area.

Kingbird-Finch: Eastern Kingbird: 7 Apr (2) SHV (KAG). Least Flycatcher: 5 May (1) RL (MLB, DRJ). Tree Swallow: 19 Mar (2) AC (RJM). Bank Swallow: 2 Apr (1) RL (MLB); 10 May (20) OHL (MPS). Rough-winged Swallow: 24 Mar (1) SHV (KAG). Barn Swallow: 19 Mar (5) AC (RJM). Cliff Swallow: 7 Apr (4) Marrowbone Creek (RJM). Red-breasted Nuthatch: 18 Apr (1) NA (Jan Alexander). Wood Thrush: 3 Apr (1) RL (MLB). White-eyed Vireo: 29 Mar (1) NA (Ann Nichol). Yellow-throated Vireo: 7 Apr (1) BS (KAG). Solitary Vireo: 3 Apr (1) RL (MLB). Red-eyed Vireo: 10 Apr (1) RL (MLB). Prothonotary Warbler: 30 Mar (1) OHL (SWF) one day earliest. Golden-winged Warbler: 16 Apr (1) BS (KAG) 2 days early; last 22 May (1) RL (MLB). Blue-winged Warbler: 3 Apr (1) BS (KAG). Tennessee Warbler: 14 Apr (1) NA (MLB). Orange-crowned Warbler: 16, 17 Apr (1) Warner Park (MLB). Nashville Warbler: 16 Apr (1) Warner Park (MLB). Northern Parula Warbler: 2 Apr (1) BS (KAG). Cape May Warbler: 17 Apr (1) Warner Park (MLB). Yellow-rumped Warbler: 18 May (1) RL (KAG) to days latest. Northern Waterthrush: 3 Apr (1) OHL (SWF). Connecticut Warbler: 21 Apr (1) OHL (SWF), 9-12 May (1) NA (John Ellis). Mourning Warbler: 14 May (1) BS, 28 May (1) BS (KAG). Common Yellowthroat: 2 Apr (1) BS (ATT) three days early. *HOUSE FINCH:* 19 Mar (1) G (DPC).

Locations: AC—Ashland City; ACM—Ashland City Marsh; BS—Basin Springs; G—Gallatin; GSP—Gallatin Steam Plant; NA—Nashville Area; OHL—Old Hickory Lake; RL—Radnor Lake; ShB—Shelby Bottoms; SHV—South Harpeth Valley.

Observers: MLB—Michael Bierly; DPC—Dot and Paul Crawford; SWF—Salley and William Fintel; KAG—Katherine Goodpasture; MG—Mel Garland; DRJ—Daniel Jacobson; RJM—Rocky Milburn; MPS—Pat Stallings; ATT—Ann Tarbell.

DAVID PITTS, Dept. of Biological Sciences, University of Tennessee at Martin, Martin 38238.

EASTERN RIDGE AND VALLEY REGION—A large movement of waterfowl was noted in early April in the Chattanooga area with several species lingering into May. The Brown-headed Nuthatch nested in a bluebird box in McDonald.

Upper East Tennessee reported Red-throated Loon, Eared Grebe, Peregrine Falcon, and two RARE (for this year) Evening Grosbeaks. The seldom-found Bachman's Sparrow was present in two locations.

Loon-Merganser: Common Loon: through 29 Apr (1-2) BL (MD, SG, DL); 1 May (10) NL (LD, RBW). RED-THROATED LOON: 7 Apr (1) BL (MD, SG, DL). Eared Grebe: 3 Apr (1) Patrick Henry Lake (Fred Alsop). Double-crested Cormorant: 20 Mar (1) NL (Lee Shafer); 25 Apr (4) HRA (KLD). Cattle Egret: 25 Apr (1) HRA (KLD); 29 Apr (3) SB (KLD); 30 Apr (4) Whitwell (LD, DRJ). Least Bittern: 30 Apr (1) AM (LD, DRJ); 1 May (1) K (Bill and Alison McNutt, Bill and Mary Simpson). American Bittern: 19 Mar (1) AS (GW, DL); 11 Apr (3) AM (KLD); 30 Apr (1) AM (LD, DRJ). Green-winged Teal: 16-29 Mar (96) HRA (KLD). Blue-winged Teal: 4 Apr (126) ChL, SB, HRA (KLD); 10 May (10) HRA (KLD). American Wigeon: 4 Apr (34) SB (KLD); 1 May (2) ChL (LD). Northern Shoveler: 4 Apr (66) ChL, SB, HRA (KLD). Redhead: 30 Apr (5) ChL (LD, DRJ). Scaup species: 4 Apr (11,000) ChL, SB, HRA (KLD). Greater Scaup: 1 May (4) ChL (Jon DeVore). Bufflehead: 4 Apr (28) SB, HRA, (KLD). Ruddy Duck: 24 Mar (4) BL (DL); 4 Apr (76) SB, HRA (KLD); 30 Apr (1) NL (LD, DRJ). Hooded Merganser: 1 May (1) ChL (LD). Common Merganser: 30 Apr (2) TRG (LD, DRJ). Red-breasted Merganser: 1 May (2) ChL (LD).

Hawk-Sandpiper: Sharp-shinned Hawk: 12 Apr (1) Sullivan Co (LRH, ES); 25 Apr (1) HRA (KLD); 1 May (1) NL (DRJ). Cooper's Hawk: irregular through period (1-2) JC (SG, PR). Broad-winged Hawk: 29 Mar (1) ALM (GLB). Osprey: 5 records, 7 Apr-10 May. PEREGRINE FALCON: 15 Apr (1) AS (SG, MD) 1 May (1 adult) Kingsport (Fred Alsop). King Rail: 30 Apr (1) AM (LD, DRJ); 1 May (1) KCo (Boyd Sharp). Sora: 8 Apr (1) AS (GW, DL); 30 Apr (2) AM (LD, DRJ). American Woodcock: 1 May (6) AM (DRJ, VIS, RBW). Common Snipe: 22 Mar (174) SB, HRA (KLD). Greater Yellowlegs: 22 Mar (2) SB (KLD). Lesser Yellowlegs: 29 Mar (8) HRA (KLD). Pectoral Sandpiper: 22 Mar (13) SB, HRA (KLD). Least Sandpiper: 22 Mar (34) SB, HRA (KLD); 14 May (11) AM (LD, RBW). Dunlin: 22 Mar (117) SB, HRA (KLD); 6 Apr (2) SB (KLD). Stilt

Sandpiper: 3 Apr (1) SB (LD). Semipalmated Sandpiper: 22 Mar (1) SB (KLD). Western Sandpiper: 10 May (2) HRA (LD).

Gull-Kinglet: Herring Gull: 30 Apr (1) NL (LD, DRJ). Ring-billed Gull: 9 Apr (150) Tenn. River near AM (KD); 30 Apr (20) NL (LD, DRJ). Bonaparte's Gull: 4 Apr (61) ChL, SB (KLD). Forster's Tern 1 May (3) BL (HD). Common Tern: 14 May (28) HRA (LD, RBW). Barn Owl: 3 pairs (JC); 24 Apr (1) K (Craig and Keith Watson); 1 May (1) KCo (J. C. Howell); 15 May (5) AM (RBW). Whip-poor-will: 31 Mar (1) ALM (GLB). Chimney Swift: 29 Mar (1) JC (PR). *RED-COCKADED WOOD-PECKER*: 15 Mar (2) Catoosa Wildlife Management Area (Craig Watson, Ralph Dinnick). Eastern Kingbird: 5 Apr (1) SB (DRJ). Tree Swallow: 22 Mar (8) HRA (KLD); 10 May (5) SB (KLD). Bank Swallow: 10 May (10) HRA (KLD). Rough-winged Swallow: 22 Mar (2) SB (KLD). Barn Swallow: 22 Mar (1) SB (KLD). Purple Martin: 16 Mar (4) RR (GLB). Red-breasted Nuthatch: 1 May (1) TRG (DRJ, VJS). *BROWN-HEADED NUTHATCH*: 10 May (adult on 5 eggs) McDonald (DRJ). House Wren: 11 Apr (1) JC (MD); 16 Apr (1) RR (KD). Winter Wren: 11 Apr (1) ALM (GLB). Short-billed Marsh Wren: 30 Apr (1) Morse Pond, GA (GLB). Gray Catbird: 3 Apr (1) Erwin (GS). Wood Thrush: 5 Apr (1, C) CH (DRJ). Swainson's Thrush: 20 Apr (1) JC (Deril Dixon, Jake Slonaker). Veery: 2 May (2) ALM (GLB). Ruby-crowned Kinglet: 1 May (1) TRG (LD).

Vireo-Sparrow: Yellow-throated Vireo: 3 Apr (2) TRG (GLB). Solitary Vireo: 26 Mar (1) ALM (GLB); 17, 20 Apr (1) ALM (GLB); 1 May (1) TRG (DRJ, VJS). *SWAINSON'S WARBLER*: 14 May (1) RR (KD). Worm-eating Warbler: 13 Apr (1) ALM (GLB). Golden-winged Warbler: 30 Apr (1) JC (PR) 1 May (1) KCo (Adam Smith). Tennessee Warbler: 18 Apr (2) Point Park (KD). *ORANGE-CROWNED WARBLER*: 23 Apr (1) K (JMC); 29 Apr (1) ALM (GLB). Yellow Warbler: 10 Apr (1) TRG (DRJ). Cape May Warbler: 14 Apr (1) ALM (GLB). *BLACK-THROATED BLUE WARBLER*: 1 May (2) TRG (GLB). Yellow-throated Warbler: 3 Apr (10) TRG (GLB). Ovenbird: 9 Apr (1) ALM (GLB). Northern Waterthrush: 10 Apr (1) TRG (DRJ). Common Yellowthroat: 3 Apr (1) TRG (GLB). Canada Warbler: 1 May (1) TRG (DRI, VJS). American Redstart: 3 Apr (5) TRG (GLB). Rusty Blackbird: 1 May (3) CH (Jon DeVore). Rose-breasted Grosbeak: 15 May (1) ALM (GLB). *EVENING GROSBEAK*: 6 Apr (2) Erwin (GS). Purple Finch: 28 Apr (1) CH (Francis Barnwell). Red Crossbill: 20 Mar (15) JC (DL). Grasshopper Sparrow: 5 Apr (1, C) CH (DRJ); 30 Apr (9) Sequatchie Valley, HRA (LD, DRI). Vesper Sparrow: 19-25 Mar (1-3) AS (Elizabethton TOS). *BACHMAN'S SPARROW*: 30 Apr (1) HRA (LD, DRJ); 15 May (1) Peavine (JMC). Dark-eyed Junco: 25 Apr (1) HRA (KLD). White-crowned Sparrow: 11 May (1) SB (LD). White-throated Sparrow: 14 May (1) RR (GLB).

Additional symbol used: C—Casualty.

Locations: AM—Amnicola Marsh; AS—Austin Springs; BL—Boone Lake; CH—Chattanooga; ChL—Chickamauga Lake; HRA—Hiwassee River Area; JC—Johnson City; K—Knoxville; KCo—Knox Co.; ALM—Lookout Mountain, Ga; NL—Nickajack Lake; RR—Reflection Riding; SB—Savannah Bay; TRG—Tennessee River Gorge.

Observers: GLB—Gary L. Bayne; JMC—Jim Campbell; MD—Martha Dillenbeck; HD—Helenhill Dove; KD—Ken Dubke; KLD—Ken and Lil Dubke; LD—Lil Dubke; SG—Sally Goodin; LRH—Lee R. Herndon; DRJ—Daniel R. Jacobson; DL—Dick Lura; PR—Pete Range; ES—Ed Schell VJS—V. Jo Stone; GS—Glen Swofford; GW—Gary Wallace; RBW—R. Bruce Wilkey.

DANIEL R. JACOBSON, Route 1, Box 477, Wildwood, GA 30757.

EASTERN MOUNTAIN REGION—The previous cold winter weather may have caused the very noticeable decline in several species in this area during this reporting period. Species such as Belted Kingfisher, Eastern Phoebe, both species of nuthatches, Carolina Wren, Eastern Bluebird, both species of kinglets and the Loggerhead Shrike. The only northern species present in any numbers was the Purple Finch which had its best winter here out many previous ones.

Most spring migration activity was about normal and on time, with no major weather fronts establishing no really large pushes or concentrations of birds. The shorebird activity in the area was practically non-existent.

With the exception of the last days of March and the first week in April, the rainfall has been exceptionally low and far below normal for this time of year. The last measurable snowfall came late on the 6th of April and the last killing frost came on the 10th and 11th of May.

Loon-Osprey: Common Loon: no reports from this area during the period is unusual. Double-crested Cormorant: 17 Apr (2) WatL (PR). Green Heron: 1st returned on 17 Apr (PR). Black-crowned Night Heron: 3 Apr (2) HS (GW). Blue-winged Teal: 1st returned on 19 Mar (HF). Redhead: last seen on 19 Mar (LRH, GW). Bufflehead: at least 2 birds remained on WibL thru end of period. Hooded Merganser: last seen on 26 Mar (LRH, GW). Red-breasted Merganser: last seen on 30 Apr (PR). Sharp-shinned Hawk: 30 Apr (1) WatL (PR). Broad-winged Hawk: 1st returned on 12 Apr (HF). Osprey: 1st returned on 8 Apr (PR).

Turkey-Shrike: Turkey: 14 May (1) HM (LRH). Virginia Rail: 30 Apr (1) Hpt (PR). American Woodcock: 18 Mar (1) E (GE); 30 Apr (1) Hpt (PR). Spotted and Solitary Sandpipers were the only shorebirds reported from this area during the period. Black-billed Cuckoo: 4 May (1) Unic (RL), this is the 1st sighting since 1975 in this area. Barn Owl: at least 2 nesting pairs in the area. Chuck-will's-widow: 1st returned 19 Apr (GW). Common Nighthawk: 1st returned 19 Apr (GE). Yellow-bellied Sapsucker: last seen 30 Apr (GE, HF). Least Flycatcher: 1st returned 14 May (ES). Horned Lark: (2-5) seen irregularly near E thru-out (DD, GW). Tree Swallow: 30 Apr (100+) WatL (PR). Raven: 1-3 regular thru-out period on RM and IMG. Neither species of the nuthatches nor the Brown Creeper have been reported in this area since the end of March which is very unusual. Wood Thrush: 1st returned 17 Apr (HF). Swainson's Thrush: 6 thru 12 May (2) E (HF). Blue-gray Gnatcatcher: 1st returned 1 Apr (GW). Loggerhead Shrike: only 1 report all period on 12 Apr (1) SulCo (GE).

Vireo-Sparrow: Warbling Vireo: 1st returned 29 Apr (SG). Swainson's Warbler: 1st returned 30 Apr (SG, GS). Golden-winged Warbler: abundant

this period in elevations above 3000' on RM and IMG. Blue-winged Warbler: 12 May (1) IMG (SG). Magnolia Warbler: 30 Apr (1) RC (JM). Cerulean Warbler: several reported sightings during period and one possible nesting site. Rusty Blackbird: 16 Apr (1) RCP (SG). Blue Grosbeak: at least 3 possible nesting pairs in the area. Purple Finch: last seen 30 Apr (GE, HF). Grasshopper Sparrow: 1st returned 30 Apr (GW). Chipping Sparrow: 1st returned 29 Mar (HF). White-throated Sparrow: last seen 13 May (GE). Fox Sparrow: last seen 30 Apr (HF).

Locations: E—Elizabethton; Hpt—Hampton; HM—Holston Mtn.; HS—Hunter Swamp; IMG—Iron Mtn. Gap; RC—Roans Creek; RCP—Rock Creek Park; RM—Roan Mtn.; SulCo—Sullivan County; Unic—Unicoi Co.; WatL—Watauga Lake; WibL—Wilbur Lake.

Observers: DD—Deril Dixon; GE—Glen Eller; HF—Harry Farthing; SG—Sally Goodin; LRH—Lee Herndon; DL—Dick Lura; RL—Richard Lewis; JM—John Martin; PR—Pete Range; ES—Ed Schell; GS—Glen Swofford; GW—Gary Wallace.

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

NOTICE:

The Screech Owl (*Otus asio*) is frequently found dead along our highways. This small, eared owl (8" in length) comes in two color phases—red and grey. These road-kill specimens offer valuable information on the bird's life-history in Tennessee.

I am doing my Master's research on this bird and would appreciate any road-kill birds that are found. The bird does not have to be in good shape to be of value; a great deal of information can be extracted from severely damaged specimens.

Your help is appreciated.

LINDA DULEY, TVA FFWD ext. 320, Department of Forestry, University of Tennessee, Knoxville 974-7126.



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