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REVIEW OF BREEDING RECORDS OF RED CROSSBILL AND PINE SISKIN IN THE SOUTHERN APPALACHIAN MOUNTAINS AND ADJACENT REGIONS

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The breeding status of two Cardueline finches, Red Crossbill (*Loxia curvirostra*) and Pine Siskin (*Carduelis pinus*), in the southern Appalachian Mountains and adjacent regions is puzzling. Cardueline finches are unusual passerines in that they do not establish territories until after the nest-site has been chosen (Newton 1972). Thus, nest-building by the female or defense of the small nesting territory is the minimal acceptable evidence to indicate probable breeding. Courtship feeding, for example, evidence of probable breeding for most passerines, is only evidence of possible breeding for Cardueline finches. Nevertheless, probable and confirmed breeding evidence has accumulated for both Red Crossbill and Pine Siskin in the geographical area discussed herein. The purpose of this paper is to review these breeding records and interpret and discuss several aspects of Red Crossbill and Pine Siskin breeding biology, particularly in relation to habitat. I also analyze how these breeding records are related to irruptive flights of both species.

REVIEW OF RED CROSSBILL BREEDING RECORDS IN THE SOUTHERN APPALACHIAN MOUNTAINS AND ADJACENT REGIONS SOUTH OF PENNSYLVANIA

Table 1 lists all confirmed and probable breeding records of Red Crossbills in the southern Appalachian Mountains and adjacent regions south of Pennsylvania. I required that a record must state that young birds had uncrossed bills for the record to be considered proven breeding. Presumably, these young were seen at or near their natal localities. I call young with uncrossed bills juveniles, and young with crossed bills immatures. Records of immatures without further details are considered to be only possible breeding records at best because the young are most likely to have been post-breeding birds that dispersed or migrated an unknown distance away from their natal localities (see McNair 1988a). A list of records of immatures is available upon request from the author. This list undoubtedly underrepresents the actual number of records because some observers have not published details from their field notes. A few of these records may have been bonafide local breeding pairs, an assertion which is strengthened by other evidence of breeding cited in several of the original publications. However, I cannot use

TABLE 1. Proven and probable breeding records of the Red Crossbill in the Southern Appalachian Mountains and adjacent regions south of Pennsylvania.

State	Locality	Elevation (m)	Habitat	Breeding evidence	Date ¹	Irruptive flight ²	Reference
Southern Appalachian Mountains							
SC	Caesar's Head, Greenville Co.	976	White Pine	B ³ ; NY ⁴ ; 1 juv. coll.	14 Jul-30 Aug 88	1	Pitts 1988
NC	Highlands, Macon Co.	1,160	White Pine	B	27 July 63	1	Johnston 1963
NC	Highlands	1,160	White Pine	B	24 July 86	1	McNair 1988a
NC	Highlands	1,160	White Pine	Abandoned nest	24 Jul-8 Aug 86	1	McNair 1988a
NC	Highlands	1,160	White Pine	FL ⁵ ; 4 juv.	9 Sept 86	1	McNair 1988a
NC	Shining Rock W.A., Haywood Co.	1,751	Fir-Spruce	B	13 June 70	3	Simpson 1974
TN	Gatlinburg	397	Shortleaf Pine	FL; 2 juv.	10 April 38	u	Stupka 1938b
TN	Gatlinburg	397		FL	11-19 April 38	u	Stupka 1938b, 1963
TN	Gatlinburg	397		FL; 2 juv.	5 May 45	u	Stupka 1963
TN	GSMNP ⁶	445	Pine	FL; 2 juv.	26 April 52	2-3	Stupka 1963
TN	GSMNP, Cades Cove	565		FL; 1 juv.	29 March 39	u	Stupka 1963
TN-NC	GSMNP, Indian Gap	1,606	Fir-Spruce	FL; 1 juv.	19 April 38	u	Stupka 1938b, 1963
TN-NC	GSMNP, Newfound Gap	1,537	Fir-Spruce	FL; 3 juv.	14 June 65	1	Swindell 1974
NC	Linville Gorge W.A., Burke Co.	1,006	Table Mountain Pine	NY	19 August 86	1	Simpson 1987
NC	Boone, Watauga Co.	1,006	White Pine	B, NY; 3 juv. from previous nest	5 September-13 October 81	1	Haggerty 1982
VA	Whitetop Mtn.		Spruce	FL; 1 juv.	12 June 80	1	Scott 1982
VA	Mt. Rogers and Whitetop Mtn., Washington Co.		Fir-Spruce	B	1 June 32	u	Scott 1981
VA	Price Mtn.		Pitch & Table Mountain Pines	NY	February-March 84	1	J. Groth, in litt.

TABLE I. Continued.

State	Locality	Elevation (m)	Habitat	Breeding evidence	Date ¹	Irruptive flight ²	Reference
VA	Blacksburg, Montgomery Co.	634	Pine	FL	Late winter & Spring 83	1	Groth 1984; pers. comm.
VA	Shenandoah Mtn., ³ Tamarack Ridge, Highland Co.			FL; 2 juv.	21 June 75	1	Peake 1978
VA	Shenandoah Mtn.			FL; 1 juv.	15 July 78	1	Scott 1981
VA	Shenandoah Mtn.			FL; 1 juv.	6 April 79	1	Scott 1981
VA	Shenandoah Mtn.			FL; 3 juv.	3 April 80	1	Scott 1981
VA	Shenandoah Mtn., Rockingham Co.	671	Table Mountain Pine	B, NE ⁴ ; 4 juv.	8 May-11 June 80	1	Goetz 1981
Adjacent Regions South of Pennsylvania							
MS	Noxubee NWR, Winston Co.	100	Loblolly & Shortleaf Pines	B, NY	25 February- 8 April 76	2	Warren et al. 1977
AL	Gadsden, Etowah Co.	169		B	7-8 February 56	2	Imhof 1976
GA	Stone Mtn., Dekalb Co.	318	Pine	Abandoned nest	8 April-1 May 51	2	Burleigh 1958
NC	Southern Pines, Moore Co.	76	Pine	FL; 1 juv.	1 Sept 74	2-3	Carter 1976
NC	Southern Pines	76	Longleaf Pine	FL; 3 juv.	15 May 76	2	Teulings 1976
NC	Raleigh, Wake Co.	100	Loblolly Pine	FL; 1 juv. coll.	6 May 67	1	Payne 1987
NC	Raleigh	100		FL; 3 juv.	20 April 76	2	Teulings 1976
NC	Raleigh	100		FL; 1 juv.	24 May 76	2	Teulings 1976

¹ All dates are from the twentieth century.² Method modified from Bock and Lepthien (1976). See explanation in text.³ B, letter code from European Ornithological Atlas Committee (EOAC) (see Ibis 121:549). B, Building Nest.⁴ NY, letter code from EOAC. NY, Nest with Young seen or heard.⁵ FL, letter code from EOAC. FL, Recently Fledged Young.⁶ GSMNP is acronym for the Great Smoky Mountains National Park.⁷ For description of locality, see Scott (1981).⁸ NE, letter code from EOAC. NE, Nest containing eggs.

this material in my analyses below because I must rely on substantiated data only.

In the southeastern United States, breeding records for Red Crossbills are from February through October (Table 1), though crossbills may breed year-round depending on the seed crop (Bailey et al. 1953, Newton 1972). All but eight of 24 confirmed and probable breeding records from all habitats in the southern Appalachian Mountains occur from late winter to late spring, with estimated dates of egg-laying concentrated in March and April (Table 1). The eight mid-summer and early fall records are from white pine (*Pinus strobus*), Table Mountain pine (*P. pungens*), or unknown pine habitats. In regions adjacent to the southern Appalachian Mountains, all 8 breeding records of Red Crossbill occur in pine forests other than white pine from February to May (Table 1), except for one confirmed late summer record at Southern Pines, North Carolina (Carter 1976). Overall, though habitat data are incomplete, Red Crossbills not breeding in Fraser fir (*Abies fraseri*) and red spruce (*Picea rubens*) or white pine habitats only nested in other pine habitats at lower elevations, as high as 1,006 m in Table Mountain pines. A few breeding records have qualitative details on cone-crop production, in all cases called 'excellent' by the observer(s). However, anecdotal cone-crop production data are inadequate and not useful for correlating with the breeding records.

Red Crossbills often breed in small "colonies" (Newton 1972) and crossbills have almost certainly nested in "colonies" at Shenandoah Mountain (G. A. Hall, pers. comm.) and Highlands (McNair 1988a) in the southern Appalachian Mountains. Red Crossbills may also be double-brooded (Newton 1972). Only one record from the southeastern United States indicates that double-broodedness has occurred (Haggerty 1982). All well-described male Red Crossbills that have nested within their normal range or at extralimital localities within the southeastern United States have been adult birds, unlike extralimital probable first-year males breeding on Long Island, New York (Raynor 1983). However, few breeding records from the southeastern United States describe male plumages adequately (see Phillips 1977 for discussion of age and sex determination of Red Crossbills).

REVIEW OF PINE SISKIN BREEDING RECORDS IN THE SOUTHERN APPALACHIAN MOUNTAINS

Table 2 presents a summary of the eleven probable or confirmed and one uncertain breeding records of the Pine Siskin in the southern Appalachian Mountains south of Pennsylvania. Breeding evidence for all probable records, except for mine at Mt. Mitchell, one record at Roan Mountain, one record at Mountain Lake, Virginia, and at Morgantown, West Virginia, consists of juveniles seen without adults or being fed by them. Unlike Red Crossbills, juvenile siskins cannot be readily distinguished from immatures in the field. Consequently, I use the term juvenile to include immature siskins as well. Juvenile siskins may have dispersed an unknown distance away from their natal localities. Thus, locality, elevation, and habitat data given in Table 2 may be misleading and some of these records may more accurately represent possible, not probable or confirmed breeding. Nevertheless, the preponderance of the evidence suggests Pine Siskins occasionally breed in prime habitat of fir-spruce forest at high elevations of the southern Appalachian Mountains, or less frequently, in rural or suburban yards at lower elevations containing a mixture of coniferous and deciduous trees that provide natural foods in addition to seeds available at feeders. R. Lewis (pers. comm.) saw a female gathering nest material at Roan Mountain but did not locate the nest. A female apparently completed building a nest at Mountain Lake, Virginia, but then the pair abandoned the nest (Kain 1987). The adult female with brood patch netted at Morgantown, West Virginia, was a bird in breeding condition,

TABLE 2. Eleven proven or probable and one uncertain breeding records of the Pine Siskin in the Southern Appalachian Mountains south of Pennsylvania.

State	Locality	Elevation (m)	Habitat	Breeding evidence	Date ¹	Irruptive flight ²	Reference
NC	Transylvania Co.	915	White Pine and Hemlock in Rural Yard	FL ³	6 June-late June 86	2	Siebenheller and Siebenheller 1987
TN	GSMNP ⁴ , Near Cosby	824		Juv. female coll.	2 July 37	u	Wetmore 1939
TN-NC	GSMNP	1,606	Fir-Spruce	Two juv. seen	13 June 38	u	Stupka 1938a
TN-NC	GSMNP, Indian Gap	1,606	Fir-Spruce	FL	12 June 82	3	Hall 1982a, Eller 1982
NC	Asheville	680		One pre-flight fledgling	2 June 82	3	Williams 1987
NC	Black Mtn.		Fir-Spruce	FL	21 June 73	2-3	Hall 1973
TN-NC	Roan Mtn.		Fir-Spruce	FL	4 July 73	2-3	Hall 1973
TN-NC	Roan Mtn.			B ⁵	15-16 July 75	1	R. Lewis pers. comm. G. Eller
NC	Mt. Mitchell		Fir	Abandoned nest	Early June 86	2	pers. comm. McNair 1988b
VA	Mountain Lake	2,016		B	11-17 June 86	2	Kain 1987
WV	Near Cranberry Glades, Pocahontas Co.		Spruce	Nest found?			Hall 1983
WV	Morgantown, Monongalia Co.	272	Suburban Yard	I ⁶ -adult female netted	Late May 82	3	Hall 1982b

¹ See footnote 1 in table one.² See footnote 2 in table one.³ See footnote 3 in table one.⁴ See footnote 4 in table one.⁵ See footnote 5 in table one.⁶ I, letter code from EOAC. I, Brood Patch on adult examined in the hand; bird probably incubating.

and was banded earlier in February at the same locality in a suburban yard and garden with planted conifers (G. A. Hall, in litt.), though she may have possibly nested at another locality (see Yunick 1981 for comment on birds in breeding condition).

These breeding records of Pine Siskins in the southern Appalachian Mountains have an estimated range of egg-laying dates from early May through early to mid-June, given incubation and nestling periods of 13 and 15 days, respectively (Palmer 1968), though Lewis' record at Roan Mountain occurred much later. Though egg-laying in the northeastern United States is most frequent from mid-March through mid-May, clutches laid in May and June, occasionally as late as early July, have been recorded for a number of widely spaced localities, particularly in the Pacific Coast region south to California (Palmer 1968).

Numerous reports of Pine Siskins at moderate and high elevations in the southern Appalachian Mountains exist until late May through early to mid-June, but other than records tabulated in Table 2, only possible breeding evidence has been cited; most of these birds depart by mid-June (Stupka 1963, Palmer 1968; *Audubon Field Notes*, *American Birds*, and state ornithological journals). At Cashiers (1,065 m) and Highlands (1,160 m), North Carolina, for example, I saw about 40 Pine Siskins in at least six sites in white pine and Canadian hemlock (*Tsuga canadensis*) forest through June 1986 and 1987, when many of the siskins left. Until that time, several pairs or threesomes had shown evidence suggestive of breeding, i.e., singing, chasing, and courtship feeding. At the Highlands Country Club in white pine forest, a small group (8–12) of siskins continued to show some evidence of breeding through August. However, no territories around nest-sites were ever established and the siskins that remained in the Cashiers and Highlands area during the summer were not known to breed.

Pine Siskins may occasionally be found in fir-spruce forest from mid-June through the summer but reports and number of birds are then few in fir-spruce forest and other habitats. On rare occasions, siskins may be quite numerous though local (Stupka 1963, Pratt 1970, Simpson 1976, Herndon 1977, Hall 1983 and others). Unfortunately, almost all reports do not cite details on siskin behavior or give cone-crop production data.

IRRUPTIVE FLIGHTS OF BOTH CARDUELINE FINCHES AND THEIR RELATIONSHIP TO BREEDING RECORDS

I have relied upon regional reports, primarily from the Appalachian and Southern Atlantic Coast regions of *Audubon Field Notes* and *American Birds*, and from state ornithological journals, to form a gross qualitative measure on the magnitude of irruptive flights for both Cardueline finches, i.e., 1 = non-existent or poor flight, 2 = intermediate flight, and 3 = major flight (Tables 1–2) (after Bock and Lepthien 1976). Pertinent literature is adequate for me to assess if an irruptive flight has occurred since the 1950s (Tables 1–2). A U indicates data are incomplete or impossible to reliably assess before then.

Red Crossbill breeding records in the southern Appalachian Mountains have not usually occurred following intermediate or major irruptive flights (Table 1). In contrast, Red Crossbill breeding records in adjacent regions, except once, always followed an intermediate or major flight of the preceding fall and winter (Table 1). Despite the general improvement in intensity of field coverage in the southeastern United States since 1976, no breeding records of Red Crossbills in regions adjacent to the southern Appalachian Mountains have occurred since then, following the intermediate irruptive flight of 1975–76. No intermediate or major irruptive flights have occurred in the southeastern United States since 1976 (pers.

exam.). In contrast, many breeding records of Red Crossbill in the southern Appalachian Mountains exist since 1976 (Table 1).

All breeding records of Pine Siskin, except for one, have occurred following an intermediate or major irruptive flight of the preceding fall and winter (Table 2). A similar event has also occurred in southeast Nebraska, an extralimital breeding locality (Perry 1965).

Interestingly, evidence for synchronous winter movements of Red Crossbills in the southern Appalachian Mountains, and elsewhere, is weak (Bock and Lepthien 1976, Widrlechner and Dragula 1984, *Audubon Field Notes* and *American Birds*). A combination of rarity and flocking behavior, however, may prevent Christmas Bird Count (CBC) data from being able to reflect true abundance of Red Crossbills in any particular year. Ornithologists have emphasized that movements of Red Crossbills are erratic and local, so the characterization of these movements as weak or lacking may not be all that surprising. In contrast, Pine Siskin winter irruptions, as far as south-central and southeastern United States, are among the most synchronous of all boreal seed-eating birds (Bock and Lepthien 1976 and others).

These results indicate that Pine Siskins breeding in the southern Appalachian Mountains and Red Crossbills breeding in adjacent regions are erratic extralimital events, while Red Crossbills breeding in the southern Appalachian Mountains occur regularly though perhaps erratically within their normal range.

As an aside, breeding records for both species are concentrated into two periods, the late 1930's into the mid 1940's and the late 1960's to the present. The relative scarcity of breeding records from the late 1940's into the mid 1960's is difficult to assess. Old-school naturalists were responsible for the majority of the early breeding records, e.g., Stupka (1963), while the intensity of field coverage by modern observers in the southeastern United States has improved since the mid 1960's, e.g., on Shenandoah Mountain (Scott 1981).

CONE-CROP PRODUCTION DATA

Cone-crop production of Fraser fir is more frequent than red spruce, though of uncertain periodicity; good cone-crop production of red spruce usually occurs at intervals of 3-6 years in the southern Appalachian Mountains (Korstian 1937). Fir and spruce cones usually begin to develop as early as May, rapidly mature by mid-July through early October, and have shed their seeds by November (Korstian 1937). Korstian's observations are very general, however, and systematic information on cone-crop production for natural stands of fir-spruce and white pine in the southern Appalachian Mountains does not exist (S. G. Boyce, pers. comm.; Balmer and Williston 1983). Therefore, interrelationships of food supply, population size, and breeding records of Red Crossbills and Pine Siskins in the southern Appalachian Mountains and adjacent regions cannot be correlated with events occurring further north when irruptive movements of boreal seed-eating birds are triggered by wide-spread seed-crop reductions coupled with high population levels of the species involved (Bock and Lepthien 1976 and others).

CONCLUDING COMMENTS

Both Red Crossbills and Pine Siskins share many characteristics of breeding biology, i.e., they forage mainly on seeds, feed their young by regurgitation either on seeds alone or on a mixture of seeds and insects, nest alone or in loose "colonies" within which each pair defends a small territory around its nest, and forage away from the nest or nest 'colonies' in flocks (Newton 1972). Therefore, detection of breeding evidence for these two similarly conspicuous and audible species should

be roughly the same. Red Crossbills do have a longer breeding season than Pine Siskins in the southern Appalachian Mountains which may in part account for more numerous breeding records for the former species. However, Pine Siskin breeding records during springtime are far fewer than for Red Crossbills. In addition, Pine Siskins, like Red Crossbills, are adapted to breed under cold conditions (Perry 1965, Palmer 1968), but no suggestive breeding evidence exists from winter through mid-spring for siskins in the southern Appalachian Mountains. Furthermore, Pine Siskins are not known to breed in the southern Appalachian Mountains from mid-summer through October at all, when seeds from fir-spruce and white pine cones are available. Pine Siskins may breed in pine forests further north (Roberts 1936, Todd 1940, Palmer 1968, Johnsgard 1979 and others) and pine seeds are a preferred food. In contrast as previously documented, Red Crossbills do breed regularly in the southern Appalachian Mountains, though without adequate cone-crop production data and foraging data for each of these two species, what triggers seasonality of breeding readiness for Red Crossbills and Pine Siskins remains unknown.

Pine Siskins have occurred regularly in the southern Appalachian Mountains for at least the past 50–100 years (Stupka 1963, Bock and Lepthien 1976 and many others) and based on data reviewed herein, are apparently composed of migrant and winter visitor populations (see Yunick 1981). More intense field work may show that Pine Siskins breed less erratically in the southern Appalachian Mountains than presently known. Breeding pairs or populations of Pine Siskin in the southern Appalachian Mountains may be more poorly understood than the Red Crossbill.

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FIRST RECORD OF ROSS' GOOSE IN TENNESSEE

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At approximately 0800 on 20 November 1986, I discovered a white goose feeding with approximately 600 Canada Geese (*Branta canadensis*) in a winter wheat field along the Cumberland River within the Cross Creeks National Wildlife Refuge, Stewart County, Tennessee. While observing the white goose from a distance of about 120 m with a pair of 9 × 35 binoculars, I was immediately struck by the bird's noticeably smaller size in comparison to an adjacent adult blue phase Snow Goose (*Chen caerulescens*). I briefly left the site to obtain my Bushnell Spacemaster II spotting scope (20× lens) and window mount. Using these instruments, I was able to confirm my suspicions that the small white goose was a Ross' Goose (*C. rossii*). To my knowledge, the Ross' Goose has not previously been recorded in the state of Tennessee.

The bird was observed at 120 m from 0810 to 0824, at which times I noted that the bird had a small, stubby, pink bill which lacked the dark ridge or grinning patch of the Snow Goose; darkish mottling was present at the lower and upper bases of the mandibles. The body feathering was immaculately white (except for black primaries), indicating that this was an adult bird. Overall, the bird was approximately one-fourth smaller than the Snow Goose with which it was associating. The head was evenly rounded, and the neck and bill were notably shorter than the corresponding features on the Snow Goose. This was evident when, while on the water later in the day (1255-1313), both birds assumed an alert posture (necks fully vertically extended) while swimming adjacent to one another; at this time, the Ross' Goose was found to be at least a head length shorter in height than the Snow Goose. The bird was between one-fourth to one-third smaller than the Canada Geese which surrounded it at the time of discovery. Additionally, the bird was only imperceptibly longer than an American Black Duck (*Anas rubripes*) that was swimming adjacent to it in the afternoon. In flight, the smaller size of this goose next to the Snow Goose and Canada Geese was immediately evident. The leg color was not noted due to the height of the winter wheat. The eye color appeared dark at a distance.

The behavior of this bird was noteworthy in that it remained with the blue phase Snow Goose at all times: whenever the Snow Goose walked, swam or flew anywhere, the Ross' Goose was never far behind. This marked the second time I have noted this interaction between Ross' and Snow geese. Whether or not this behavior represents a pair bond (hybridization activities and intermediate forms of geese have been documented in the wild (Trauger et al., *Auk* 88:856-875, 1971)) I was unable to determine.

A thorough survey of the Cross Creeks Refuge on 22 November 1986 failed to locate the Ross' Goose (the bird was last seen on the afternoon of 20 November). However, additional occurrences of the Ross' Goose in Tennessee are not unlikely. On 1 February 1986, I found two adult birds in Massac County, Illinois (Kleen, *Illinois Birds and Birding* 2:74, 1986), in a flock of 6,000 Snow Geese which returned each evening to roost at the Ballard County Conservation Area, Kentucky; the Ballard County roost is approximately 81 km north of the Tennessee state line. On 30 November 1986, Brainard Palmer-Ball, Jr. (Palmer-Ball, personal communication) found an adult Ross' Goose at the Ballard County Conservation Area. On 7 December 1986, I visited the Ballard County site with Palmer-Ball

and, after examining a flock of 5,000–7,000 Snow Geese, we were able to locate three adult and one immature Ross' Geese. The presence of this species at this not-too-distant site, combined with the annual January–early March influx of Snow Geese into west Tennessee, makes future occurrences of Ross' Geese in Tennessee likely. Observers should carefully scan all Snow Goose flocks which are encountered. My experience (Frederick and Johnson, *Condor* 85:257–258, 1983; and Robinson, *Iowa Bird Life* 52(1):3–5, 1982) has been that a Ross' Goose can safely be identified in good light at about 185 m or less with modern 20× optical equipment.

Accepted 19 July 1987.

The Migrant, 59(4):115, 1988

APRIL 1987 SNOWSTORM-RELATED BIRD MORTALITY IN UPPER EAST TENNESSEE

GLEN D. ELLER

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In early April 1987, the Elizabethton and Johnson City areas, Carter and Washington Counties, Tennessee, experienced the heaviest snowfall ever recorded for the month of April. Sleet and snow began falling the evening of 2 April, and later that night it changed to a wet, heavy snow. The snowfall continued until mid-day on 5 April, at which time there were accumulations of 16 to 18 inches at the lower elevations, and over 2 feet in the higher mountains. Temperatures during this period ranged from 26 to 36 F. Clear skies and temperatures in the low 40's prevailed on 7 April, and most of the snow was melted from the lower elevations by 9 April.

At that time, other area Tennessee Ornithological Society members and I contacted Purple Martin (*Progne subis*) colony owners, and asked them to inspect their colonies for dead martins. Five colony owners reported a mortality rate of 17 percent. Similar mortality may have taken place with other swallow species, but I have no way of quantifying this. We also received numerous reports of Eastern Bluebirds (*Sialia sialis*) found dead on their nests or on the ground near nest boxes. Based on these reports, we estimated a bluebird mortality rate of 35–40 percent. On 26 April, the local TOS chapter conducted its annual spring bird count, and only 30 bluebirds were reported. This is many fewer than the average for the previous 10 years of 48 birds, and below the totals of 35 for both 1978 and 1979, when the population was recovering from heavy winter mortality (Pitts, *Migrant* 52:29–37, 1981).

Accepted 2 May 1988.

FLEDGING OF A RUBY-THROATED HUMMINGBIRD

GEORGE ANDREW AMMANN

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At approximately 1100 on 13 August 1987, I observed a young Ruby-throated Hummingbird (*Archilochus colubris*) leave its nest. The nest was on the lowermost, downsloping limb of a small (15–20 cm dbh) river birch (*Betula nigra*), about 4 m above a small rapids in Spivey Creek, Unicoi County, Tennessee. I had discovered the nest a week earlier when, as I sat on the deck of my home, a movement among the foliage attracted my attention. I had a clear view of the nest, which was about 30 m down a steep slope, on the opposite bank of the stream. I had a fleeting glimpse of the female perched on the rim of the nest, but I was not sure the nest was occupied until she returned about 30 minutes later and fed a single nestling.

Throughout the following week I observed the nest for several minutes at a time on numerous occasions; however, I saw the female feed its young only once more. Except while it was being fed, I was in doubt that the nestling was still there because it sat so low and remained motionless. Only by 11 August did I note the movement of the chick. On 12 August, there was more activity: the chick sat higher, occasionally stretched its wing, preened, and scratched its head.

Finally, on the morning of the 13th, the chick's activity increased and it appeared to be perching on the rim of the nest. I watched the nest more frequently, and was fortunate to have my binoculars trained on it just as a hornet or bumblebee approached and almost landed. The chick immediately flew horizontally 2 or 3 m, momentarily perched on a twig, then continued flying in the same direction 1 or 2 m. Then it abruptly reversed direction and angled upward for 3 or 4 m and disappeared into the foliage. Its flight seemed slow and laborious, compared to that of an adult, reminding me of a male American Woodcock (*Scolopax minor*) circling to gain altitude during courtship flight. During the next week, I did not see any activity on or in the immediate vicinity of the nest, although hummingbirds frequently visited the feeder and flowers on our deck, as well as the jewelweed (*Impatiens* sp.) along the stream.

Accepted 22 August 1987.

ANNOUNCEMENT

The 1989 Fall Meeting of the Tennessee Ornithological Society will be held at the Ramada Inn in Crossville on 13–15 October. Program Chairman is Dr. David Snyder (Biology Department, Austin Peay State University, Clarksville, TN 37044; 615/648-7781). Local arrangements are being handled by Dr. George R. Mayfield (999 Sunnyside Drive, Columbia, TN 38401). A block of rooms is being held for TOS members until Labor Day; please make lodging reservations with Ramada Inn (615/484-7581) prior to 1 September, if possible. When making reservations, indicate you are with TOS.

AUDUBON'S YELLOW-RUMPED WARBLER IN TENNESSEE

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On 15 March 1987, while conducting an Eastern Phoebe (*Sayornis phoebe*) survey in the Land-Between-the-Lakes recreation area in Stewart County, Tennessee, I encountered a warbler with a yellow throat. Upon examining the bird closer to determine if it was a Yellow-throated Warbler (*Dendroica dominica*), I discovered that it was a Yellow-rumped (Audubon's) Warbler (*Dendroica coronata auduboni*).

From a distance of approximately 23 m, I observed the warbler along a stream at the edge of a wooded forest overlooking the right-of-way of Fort Henry Road. The bird was similar in shape and size to a Yellow-rumped (Myrtle) Warbler (*D. c. coronata*) seen at a similar distance. The tail appeared dark with white tail spots visible in flight. The yellow rump was also seen in flight and could be observed when the bird was perched facing away from me. The back and forehead were dark and the crown was offset from the forehead by a yellowish wash. I also noted yellow on the throat and as two distinct patches on the sides of the breast; the yellow contrasted with a splotchy pattern of black beginning to come into the breast and flanks, leading me to believe the bird was a molting male. A slight eye ring was noted. The underparts consisted of a light, pale color, and the wing bars typical of the genus, *Dendroica*, were present.

The bird was active and periodically caught insects on the wing or gleaned them from the limbs of some of the smaller branches of the tree in which it was found. On three or four occasions it emitted a "chip" note almost identical to the call note of a Yellow-rumped (Myrtle) Warbler. The observation described above lasted for a period of three minutes (1100–1103 hours, time approximate) before the bird flew to a deeper section of the forest.

Tyler and Lyle (*Migrant* 23:51, 1952) reported an Audubon's Warbler (*D. auduboni*) from Johnson City; at that time, Audubon's Warbler was considered to be a species distinct from the Myrtle Warbler (*D. coronata*). Later, *D. auduboni* was merged with *D. coronata* (because of known interbreeding), with the two forms to be known as the Yellow-rumped Warbler (*Migrant* 44:29–33, 1973). Alsop (*Migrant* 43:57–64, 1972) did not include the Audubon's Warbler on his list of Tennessee birds because he felt the documentation given by Tyler and Lyle was inadequate. Consequently, the bird I have described here apparently represents the first documented record of *D. c. auduboni* in Tennessee.

Accepted 21 August 1987.

HERON AND EGRET ROOST DISCOVERED NEAR MEMPHIS

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During the summers of 1986 and 1987, herons and egrets were observed in and around the southwest Shelby County, Tennessee, area in sufficient numbers to suggest the existence of a nesting colony. After observing regular flights of herons in the Mud Lake area of Shelby County in July 1988, Jeff R. Wilson rented a small single-engine airplane and surveyed the area from the air on 5 August 1988. During the aerial survey, he observed a roost of herons and egrets in the southwest corner of Shelby County, just within the Memphis corporate boundary. Although it was not possible to obtain an accurate count of each species at the roost, he estimated that over 3,000 birds, including several White Ibis (*Eudocimus albus*), were present.

Jeff Wilson, Carolyn Bullock, Dollyann Daily and I approached the roost from the ground on 6 August 1988. It was necessary to access the area from the Arkansas side of the Mississippi River. We stationed ourselves on a dike approximately 450 m west of the roost and, during the last 2.5 hours of daylight, counted the birds as they approached the roost from daytime feeding areas. The birds arrived at the roost site from many directions, but it was possible to identify three major flight corridors and assign an observer to each; due to the large numbers of birds approaching the roost site, the fourth observer recorded the data that the other observers collected.

We counted over 6,100 birds, representing 10 different species (Table 1). The species observed included: Great Blue Heron (*Ardea herodias*), Great Egret (*Casmerodius albus*), Snowy Egret (*Egretta thula*), Little Blue Heron (*Egretta caerulea*), Tricolored Heron (*Egretta tricolor*), Cattle Egret (*Bubulcus ibis*), Green-backed Heron (*Butorides striatus*), Black-crowned Night-Heron (*Nycticorax nycticorax*), Yellow-crowned Night-Heron (*N. violaceus*) and White Ibis. Three subsequent, but incomplete, surveys of the roost were also made by Jeff Wilson and other birders later in August (Table 1). Wood Storks (*Mycteria americana*) were added to the species list on 27 August 1988.

The roost is located in a stand of black willow (*Salix nigra*) trees on a sandbar at the southwest corner of Ensley Bar in the channel of the Mississippi River at River Miles 719 and 720. Because of drought conditions throughout the year, the river was at a very low level and thus exposed the portion of Ensley Bar occupied by the roost. Although most of the Ensley Bar actually lies in Crittenden County, Arkansas, the roost itself is in Shelby County. Many of the birds arriving at the roost apparently came from feeding areas in Arkansas; others approached the roost from the Tennessee side of the river, including areas south and west of Mud Lake.

This roost is significant not only for the large numbers of birds that were found, but also because of the rare species which were present. The 1,219 Great Egrets (1,500 on 13 September 1988, fide Martha G. Waldron) and the 1,884 Cattle Egrets present on 6 August, as well as the 156 Snowy Egrets counted on 11 August, represent the highest one-day counts for these species in Tennessee. The count of 2,882 Little Blue Herons is eclipsed only by the 3,000 birds that were estimated to be at Dyersburg on 30 June 1962 (*Migrant* 33:47, 1962).

The White Ibis is a rare but regular post-breeding wanderer, and its occurrence at this roost site was not unexpected. However, prior to August 1988, there were

TABLE 1. Results of evening counts at the Memphis roost.

Species	Number of birds			
	6 August	11 August*	14 August*	27 August*
Great Blue Heron	50			
Great Egret	1,219			
Snowy Egret	85	156		
Little Blue Heron	2,882			
Tricolored Heron	12	26	25	6
Cattle Egret	1,884			
Green-backed Heron	3	11		5
Black-crowned Night-Heron	2	12	5	6
Yellow-crowned Night-Heron	2	6	3	3
Night-Heron, species	8		7	9
White Ibis	9	11	15	3
Wood Stork				70
Total:	6,156	222	55	102

* Data for selected species only were collected.

only about 13 records of Tricolored Herons in the state, all of which were of single birds. The totals for this species (Table 1) are thus quite surprising and causes one to wonder if Tricoloreds are not annual visitors to extreme southwest Tennessee. The 70 Wood Storks represented the largest one-day count of this species in Tennessee in 23 years.

Ensley Bar was possibly the site of a Cattle Egret nesting colony in 1987. U.S. Army Corps of Engineers personnel stated that about 1,000 Cattle Egrets were present during that year, but no nesting was observed in 1988; several eggs were reportedly collected between 1985 and 1987 (fide Martha G. Waldron). Additional surveys of Ensley Bar should be conducted because of: (1) the large numbers of herons and egrets observed at this site in 1988; (2) the rare species which were found; and (3) the possibility that the site is used for nesting by one or more species of herons. Although the level of the Mississippi River may affect the extent to which the site can be used for roosting or nesting in a given year, it is imperative that additional field data be collected in the event that a management proposal for the area is required.

Accepted 25 February 1989.

BOOK REVIEWS

The Migrant, 59(4):120-121, 1988

A FIELD GUIDE TO HAWKS: NORTH AMERICA—by William S. Clark with illustrations by Brian K. Wheeler, 1987. Houghton Mifflin Company, Boston, vi + 198 pp., 32 range maps, 24 color plates, 2 black-and-white plates, 241 black-and-white photographs, hardcover/paper, \$19.95/13.95.

HAWKS IN FLIGHT—by Pete Dunne, David Sibley, and Clay Sutton, 1988. Houghton Mifflin Company, Boston, xviii + 254 pp., 95 line drawings, 143 black-and-white photographs, hardcover, \$17.95.

HANDBOOK OF NORTH AMERICAN BIRDS, Vols. 4 and 5: DIURNAL RAPTOR—edited by Ralph S. Palmer, 1988. Yale University Press, New Haven and London, vii + 433/465 pp., 16/18 range maps, 43/28 line drawings, hardcover, \$48.00+/set.

Whether you are a fledgling hawk watcher, an advanced hawk migration observer, or a raptor biologist, one of the foregoing texts is a necessary addition to your library. Most of us will want to obtain copies of all three of these important contributions to the study of birds of prey.

Clark's *Hawks* is the 35th volume in the Peterson Field Guide series. It offers excellent color plates of most North American diurnal raptors, usually in a satisfying variety of plumages. The text is competently written, though less well-done than the plates, with species accounts containing sections on Description, Flight, Behavior, Status and Distribution, Fine Points (of identification), Unusual Plumages, Subspecies, Etymology (wholly unnecessary), and Measurements. Some glaring errors detract in a minor way from the achievement of this work, especially the transposition of the harrier and vulture silhouettes in the endpapers, as well as the reversal of the Turkey and Black Vulture accounts in the main text. The range maps are adequate from a continental perspective, though hardly so from the viewpoint of a Tennessee observer; the maps for Osprey, Northern Goshawk, Rough-legged Hawk, and Bald Eagle are especially misrepresentative of those species' ranges here. The photographs are generally fairly good, though a few (e.g., 25a) are quite worthless. All in all, neophyte hawk watchers can hardly do better than to start their field work with this text, which goes significantly beyond the general field guide in condensing identification tips and information about raptors.

Hawks in Flight is oriented toward hawk migration enthusiasts and is a fine contribution to the literature about this much-studied aspect of raptor biology. Dunne takes a "gestalt" (i.e., holistic) approach to identifying raptors in flight and writes with his usual flair (e.g., he calls *Accipiters* "artful dodgers" and the harrier "the great fooler"). The species accounts are variable in content but generally contain treatment of Migration, Identification, and Similar Species. Sibley's line drawings are my own favorite part of the text. These capture the profile and markings of nearly all the raptors with remarkable fidelity, although they are finally not quite so satisfying as the color plates found in *Hawks*. The photographs assembled by Sutton are better on average than those in *Hawks* in terms of depicting flight characteristics.

The 4th and 5th volumes of Palmer's *Handbook* series are devoted to diurnal raptors. Like their three predecessors, these volumes compress an awesome amount of material into a quite manageable number of pages. There are simply not enough accolades available to say just how excellent and important these volumes are. Nearly everything known about the biology of 42 species of raptors, as related to North America, is summarized by Palmer. Most of the species accounts contain an introduction and sections devoted to Description, Subspecies, Field Identifi-

cation, Voice, Habitat, Distribution, Migration, Banding Status, Reproduction, Survival, Habits, and Food. The style is telegraphic but quite readable; the contents exhaustive and fascinating. I was delighted to see works published in *The Migrant* by several Tennesseans, including Albert Ganier, Walter Spofford, and H. O. Todd, listed in the Literature Cited section, indicating that the complete set of our journal donated in 1983 to Dr. Palmer was put to good use. No professional biologist at all interested in birds of prey should be without a copy of these volumes; they are an incredible achievement.

Whatever your level of interest in hawks may be, one of these works will fit your needs, and probably all of them will find their way onto your bookshelf if you remain interested in raptorial birds for very long.—STEPHEN J. STEDMAN, Department of English, Box 5053, Tennessee Tech University, Cookeville, TN 38505.

Accepted 12 August 1988.

EDITORIAL

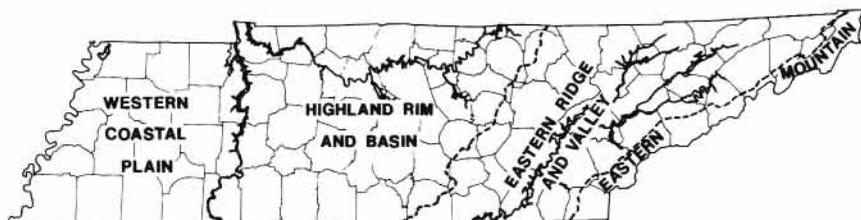
T. David Pitts

My general policy is to publish manuscripts in chronological order based on date of receipt and acceptance. Several factors make strict adherence to this policy difficult. To avoid having blank pages it is necessary that the total number of pages in each issue be a multiple of four; 28, 32, and 36 page issues are most common. It is easier to incorporate brief items than long articles. Consequently, some short notes may be published before a previously accepted, but longer, manuscript for which space is not available. Another reason a manuscript may be published out of chronological sequence is the presence of data or information that may influence management plans for rare and endangered species or critical habitats. This is the reason John Robinson's manuscript on wading birds is being published in this issue; John's manuscript on Bewick's Wrens, which was scheduled for publication in this issue, will be delayed.

The addition of a "Date of Issue" (see bottom of the Table of Contents) will help future readers understand how a manuscript accepted on 25 February 1989 could appear in the December 1988 issue. Your suggestions for improving *The Migrant* are always welcome.

THE SEASON

JOHN C. ROBINSON, Editor



SUMMER: 1 JUNE-31 JULY 1988

The weather—generally hot and dry—is specifically summarized in each of the 4 regional summaries in this report. Of significance, however, are the levels of the major rivers throughout the state. While the Mississippi River reached its lowest level in recorded history, the Cumberland (Barkley Lake) and Tennessee (Kentucky Lake) Rivers, which are usually lowered beginning in mid-July, were maintained at or above their summer pool elevations throughout August. Other lake and river levels in the state were also noted to be higher or lower than normal. The impact that these water levels had on shorebird and waterfowl migrations will be assessed in the fall report.

Breeding Bird Atlas work continued across the state this summer and resulted in the discovery of several species at new or unusual breeding season locations; in many cases, positive breeding evidence was obtained. Willow Flycatchers and Cedar Waxwings were well-represented in the Atlas data, with positive breeding evidence for the former species coming from areas as far east as Washington Co. and as far west as Henry Co.

Many observers across the state noted the presence of unusual water birds this summer. In west Tennessee, Black-bellied Whistling-Ducks were found for the second time in Shelby Co., and a Red-breasted Merganser lingered for over 2 weeks at Paris Landing State Park. In the Highland Rim and Basin Region, 6 species of waterfowl not usually found during the nesting season in middle Tennessee were observed in June in Stewart Co. The occurrence of an American Coot and other water birds in the Eastern Ridge and Valley is discussed by Richard L. Knight. A Lesser Scaup was present in early June in Carter Co. Many other notable and very important data were collected this summer and are reflected in each of the 4 regional summaries below.

Following the regional summaries and list of observers is a table showing the dates when field records are due. All observers are encouraged to mail their field records to the appropriate regional compiler by these dates to assure timely publication in this journal.—JOHN C. ROBINSON

The following abbreviations are used: ad—adult; im—immature; yg—young; max.—maximum 1-day count in 1 county during period; ers—earliest reported sighting; in.—inch; EOP—end of period; NWR—National Wildlife Refuge; WMA—Wildlife Management Area; S.P.—State Park.

WESTERN COASTAL PLAIN REGION—Observers braved the hot and very dry weather to run their breeding bird routes and to work on their atlas areas.

The Mississippi River was the lowest in its recorded history, which probably accounts for the widespread nesting of the Interior Least Tern. Mississippi Kites, shorebirds and Least Terns were well reported this season. The Mississippi Kite population was up from past years, perhaps as a result of a hacking program initiated by the Memphis Zoo. Since the beginning of the hacking program in 1983, 85 kites have been released in west Tennessee. All of the birds were taken from nests in Kansas by the Kansas Fish and Wildlife Agency.

Anhinga-Gallinule: Anhinga: 1 Jun–EOP (2 ad, 1 known nest) REL, LKC (Eagle Hacking personnel). Heron species: 22 Aug (200+ herons) Jct 79 and Great River Rd., LKC; this total includes 100 Great Egrets and moderate numbers of Snowy Egrets and ad and im Little Blue Herons; these birds could be from the Caruthersville, MO, heronry (WGC). Snowy Egret: 28 Jul (48) Island 21, DYC (WGC), max. TRICOLORED HERON: 31 Jul (1/1) ESL/Cockleburr Lake, SW SBC (JRW). BLACK-BELLIED WHISTLING-DUCK: 17–18 Jun (4) Ensley Bottoms, SW SBC (JRW); third state record. Red-breasted Merganser: 22 Jun/9 Jul (1 ad male) PLS (DJS, JCR); extremely rare in the summer. Mississippi Kite: 13 Jun (88) LHWR, Lauderdale Co. (CHB, MGW); 29 Jun (7/2) South Fork Obion River WEC/Middle Fork Obion River, WEC (Jerry Strom, Louis Bordenave); 29 Jun (1 nest, 2 yg) MEM (Knox Martin, MGW); summer count in DYC yielded 1–10 kites in each of 7 locations (WGC). Bald Eagle: 6 Jul (2 ad) REL, LKC (WGC); 1 ad and 1 im were observed the entire summer visiting the eagle hacking area in LKC (MGW). Cooper's Hawk: 15 Jun (1 ad) NW of Hillard, on county road 9921, Carroll Co. (CHB, DPB, MGW); 29 Jun (1) Middle Fork Obion River, WEC (Jerry Strom, Louis Bordenave). PEREGRINE FALCON: 13 Jun (1) LHWR, TIC (CHB, MGW). Purple Gallinule: 4 Jun (1) HWR (JRW, RPF).

Shorebirds: The Ensley Sewage Lagoons were checked about every 5 days during the summer season. The shorebird species have remained basically the same since 1982 with individual numbers varying very little. The following data reflect the lowest and highest numbers seen in the period. Lesser Golden-Plover: 18/20 Jun (1, non-breeding plumage) ESL (JRW, JCR/DJS, Todd B. Easterla), second June record for west Tennessee. Semipalmated Plover: 23 Jul–EOP (3–15) ESL (CHB, VBR, MGW). Lesser Yellowlegs: 7 Jul–EOP (1–27) ESL (CHB, VBR, MGW); 21 Jul (29) Heloise, DYC (WGC), max. Solitary Sandpiper: 7 Jul–EOP (2–31) ESL (CHB, VBR, MGW). Spotted Sandpiper: 4 Jun (1) 0.8 km E of TN 76 on Hatchie River, Haywood Co., and (1) W of TN 76 on Hatchie River, HWR (BBC, LCC, JBG, CHB); 18–28 Jul (1–4) Heloise, DYC (WGC); 21, 28 Jul (5) Island 21, DYC (WGC); 10–20 Jul (3–6) ESL (JRW); a pair nested for the first time in Shelby Co., fledging 1 yg (JRW, Marvin Davis, et al.). Sanderling: 9 Jul (3) Is 13 (JCR), ers. Semipalmated Sandpiper: 9 Jul (3) Is 13 (JCR), ers; 17 Jul–EOP (3–227) ESL (CHB, VBR, MGW); 4 Jun (1) HWR (JRW); 6 Jun (1) Is 13 (WGC). Western Sandpiper: 12 Jul–EOP (1–3) ESL (CHB, VBR, MGW). Least Sandpiper: 7 Jul–EOP (2–255) ESL (CHB, VBR, MGW); 18–28 Jul (25) Heloise, DYC (WGC). White-rumped Sandpiper: late spring reports: 5 Jun (14) ESL (JRW); 6 Jun (2) Is 13 (WGC). Pectoral Sandpiper: 7 Jul–EOP (1–540) ESL (CHB, VBR, MGW). Stilt Sandpiper: 17–26 Jul (1–6) ESL (CHB, VBR, JRW, MGW); 21 Jul (10) Heloise, DYC (WGC). American Woodcock: 18 Jun (1) Ensley Bottoms, SW SBC (JRW).

Terns: Least Tern: 1 Jun–EOP: with the lowest water level in the written history of the Mississippi river, most bars were attached and were sometimes 0.8 km wide and often 4.8 km long. This year the size of the nesting colonies was smaller, but the number of colonies per unit area was larger and spread over a wider area.

Many of the colonies were about 300 m from the water's edge and always on the highest point of the bar. The birds were found nesting in a variety of habitats: all sand with no vegetation; hardpan mud with surface scrapes; heavy gravel, with nests lined with pea-gravel; and the typical sand habitat—sparse vegetation with a stick near the nest. Three-wheel tracks were found on many of the sandbars connected to land, but most tracks were on the perimeter and not necessarily near the nesting sites. Numbers for 1988 are not yet available. However, surveys conducted during 2–4 day periods in 1985, 1986 and 1987 along the Mississippi River between River Miles 530 and 947 yielded as many as 2,967 terns at 61 sites, including 41 colonies (John Rumancik, Army Corps of Engineers). (Specific details should be published—Ed.) Black Tern: 9 Jul (1) Is 13 (JCR).

Goatsuckers: Very high numbers of Chuck-will's-widows (CWW) and Whip-poor-wills (WPW) were reported in May by BBC and LCC, as illustrated in the table below:

TABLE 1. Chuck-will's-widow and Whip-poor-will Survey in southern West Tennessee.

Date	County	Kilometers Surveyed	CWW		WPW	
			Total	No. per km	Total	No. per km
28 May	Hardeman	37.5	98	2.6	48	1.3
28/29 May	Haywood	9.6	15	1.6	10	1.0
30 May	McNairy	61.1	157	2.6	98	1.6
30 May	Chester	90.4	149	1.6	171	1.9

Flycatcher-Sparrow: Willow Flycatcher: 18 Jun (5) Ensley Bottoms, SBC (JRW); 26 Jun (1) SW of O'Neal Lake, HWR (JRW); 20 Jun (1) LHWR, TIC (CHB, MGW, Linda Waters); 23 Jul (ad feeding yg) BRF (JCR, Todd Fink, Doug Robinson). Scissor-tailed Flycatcher: 20 Jun (1) ESL (DJS, Todd B. Easterla). WESTERN KINGBIRD: 6 Jun (1) ESL (JRW); first June record in the state. Tree Swallow: 4 Jun (3, entering hole of dead tree) HWR (JRW). Cliff Swallow: 11 Jun (300 nests) on TN Hwy 20, DTC (BBC, LCC). Barn Swallow: 5 Jun (74 nests) I-55 overpass, Delaware St., MEM (BBC, LCC). House Wren: 8 Jun (nesting in hole under an house eave, 2 singing males near the home) Dyersburg (Joe R. Norman); 6 Jul (1) Is 13 (JCR). Sedge Wren: 23 Jul (3) BRF (JCR, Todd Fink, Doug Robinson), ers. Warbling Vireo: 11 Jun (2) Beech Bend, TVA Recreational Area, DTC (BBC, LCC); 10 Jun (1) Camden Landing, Benton Co.; other locations in Benton Co. that did not yield sightings were Granny's Branch Resort, Nathan Bedford State Forest, and the east end of US 70 at the Tennessee River (BBC, LCC). Cerulean Warbler: 4 Jun (1) HWR (BBC, LCC, JBG). Worm-eating Warbler: 11 Jun (1) Ponderosa Resort area, DTC (CHB). Swainson's Warbler: 5 Jun (1) near Middleburg, HDC (CHB); 27 Jun (1) Marshall Creek, Van Buren and Saulsbury Rds., HDC (BBC, LCC). Bachman's Sparrow: 1 Jun—EOP (14) Bruton Branch, HDC (DJS), and (5) Burnt Church community, HDC (DJS). Grasshopper Sparrow: 5 Jun (1) Middleburg, HDC (CHB); 26 Jun (12 ad, 3 yg) Ensley Bottoms, SBC (JRW); 23 Jul (1) BRF (JCR, Todd Fink, Doug Robinson).

Locations: BRF—Britton Ford, Henry Co.; DTC—Decatur Co.; DYC—Dyer Co.; ESL—Ensley Sewage Lagoons, Shelby Co.; HDC—Hardin Co.; HWR—Hatchie NWR, Haywood Co.; IS 13—Island 13, Lake Co.; LHWR—Lower Hatchie NWR,

Tipton and Lauderdale Cos.; LKC—Lake Co.; MEM—Memphis; PLS—Paris Landing S.P., Henry Co.; REL—Reelfoot Lake; SBC—Shelby Co.; TIC—Tipton Co.; WEC—Weakley Co.

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HIGHLAND RIM AND BASIN REGION—The weather pattern in June and July throughout most of the region was hot and dry. Temperatures frequently exceeded 90°F. Rainfall was scattered, varying noticeably between locations. At Cross Creeks NWR in Stewart Co., 4.42 in. of rain were recorded, but only about 6% (0.26 in.) of that total fell during June. At Nashville, where rainfall normally exceeds 7.50 in., only 3.71 in. were recorded.

Beginning with the fall 1988 report, the new Highland Rim and Basin Region compiler will be David F. Vogt (7818 Old Charlotte Pike, Nashville, TN 37209). All field observations should be mailed to David F. Vogt by the dates listed at the end of the "Observers" section of this report. Any notable records not included in the following summary should also be submitted for inclusion in an addendum in a later issue of *The Migrant*.

Grebe-Hawk: Pied-billed Grebe: 17 Jul (1 ad) BCWMA (DWB). Great Blue Heron: 30 Jul (60) SWC (DWB), max. Great Egret: 4, 24 Jun (1) CCNWR (JCR); 17 Jul (4) SWC (DWB); 30 Jul (8) CCNWR (DWB), max. Snowy Egret: 9 Jul (1) CCNWR (DWB); 19, 23 Jul (3, 4) CCNWR (JCR), max.; up to 2 birds lingered at this site through EOP (DWB). Little Blue Heron: 2, 16 Jun (3, 4) CCNWR (JCR); post-breeding dispersals arrived by mid-Jul; 31 Jul (121–49 ad, 68 im and 4 second-year birds) CCNWR (JCR), max. Green-backed Heron: 31 Jul (31) SWC (DWB), max. Black-crowned Night-Heron: 21 Jun (15) CCNWR (JCR); 17 Jul (52) CCNWR, Cumberland City Steam Plant, SWC (DWB, JCR), max. **GREEN-WINGED TEAL**: 2 Jun—EOP (1 male, capable of flight) CCNWR (JCR), second summer record for state. American Black Duck: 15 Jun (1) CCNWR (JCR), second consecutive year for summer record at this site. **NORTHERN PINTAIL**: 29 Jun (1, molting female) CCNWR (JCR). Blue-winged Teal: 1–10 Jun (1–2) CCNWR (JCR). **AMERICAN WIGEON**: 29 Jun (1 male) CCNWR (JCR). Hooded Merganser: 4–5 Jun (1–2) CCNWR (JCR). Osprey: 2 Jun (1) CCNWR (JCR), probably late spring migrant. **MISSISSIPPI KITE**: 24 Jun (1 ad) SWC (DWB), second county record. Bald Eagle: nesting continued at several of the sites discussed in last year's report, with 7 yg fledging from 4 nests in 1988; in SWC, 1, 2 and 2 yg successfully fledged from the Westvaco, LBL and Averitt nests; the nest in Jackson Co. near Cordell Hull Lake was also successful and produced 2 yg (fide Robert M. Hatcher). Red-shouldered Hawk: 16 Jun (nest with 2 yg) Shelby Bottoms, Davidson Co. (Mark S. Hackney, Don Morrow).

Yellowlegs-Finch: Lesser Yellowlegs: 24, 29 Jun (1) CCNWR (JCR), second consecutive year for late Jun record at this site. Spotted Sandpiper: 2, 25–26 Jun (1) CCNWR (JCR, DWB). Ring-billed Gull: 21 Jun (1) Percy Priest L. (Margaret L. Mann). Red-headed Woodpecker: 17–21 Jul (2–3) CCNWR (DWB, JCR). Eastern Wood-Pewee: 17 Jul (21) SWC (DWB), max. Willow Flycatcher: up to 4 active territories at CCNWR, with a nest and 2 eggs being found on 19 Jun in the Cumberland City Atlas block (JCR). Horned Lark: 22 May (1, juvenile plumage) Pool 2, CCNWR, and (2–3 ad) Barkley WMA, SWC (JCR), possible nesting; 19 Jun (2 ad) Pool 7, CCNWR (JCR); 4 Jul (1) Loretto, Lawrence Co. (DJS). Bank Swallow: 10 Jun (2) CCNWR (JCR); 10, 17 Jul (1) CCNWR (DWB). Cliff Swallow:

22 Jun (600) CCNWR (JCR). Barn Swallow: 17 Jul (108) SWC (DWB). Wood Thrush: 17 Jul (29) SWC (DWB). CEDAR WAXWING: there were many reports from throughout the region this summer, with multiple observations being made in the Nashville area and at LBL and CCNWR; a possible byproduct of the nomadic influx of birds during the late May–early July period is the establishment of breeding territories (see the Eastern Ridge and Valley Report for an account of active breeding sites in that Region); 24 Jun (2 ad) Model Fire Tower, LBL, with 2 im being fed by the ad mid-Jul through EOP (DWB); 2 Jun–EOP (2–3) CCNWR (JCR); 1 Jun (2) LBL, south entrance (DWB); 19 Jun (2) near Indian Mound, SWC (JCR); 27 Jun–9 Jul (2) Wiley's Spring Bay, SWC (DWB); 11 Jul (1) Standing Rock Creek, SWC (DWB); 17 July (2) BCWMA (DWB). Black-and-white Warbler: 14 Jun (1) Fort Donelson Shores, SWC (DWB); 16–17 Jul (1) Wiley's Spring Bay, SWC (DWB). Hooded Warbler: 19 Jun (6, including 1 ad feeding 2 yg in a nest) Long Creek, SWC, first nesting evidence for county (DWB). Summer Tanager: 10 Jun (2 ad feeding 1 recently fledged yg) LBL (DJS). Dickcissel: 22 Jun (1 recently fledged yg) CCNWR (DJS); 25, 30 June (3) South Harpeth Rd., Cheatham Co. (Ann T. Tarbell); 28 Jun (16) CCNWR (JCR), max. Song Sparrow: 6–22 May (2–3 singing males) Barkley WMA, new SWC territorial site; regular numbers reported from CCNWR (JCR, DWB). Bobolink: 10 Jun (1 ad male) CCNWR (JCR), late. Northern Oriole: 16 Jun (2) near Tim's Ford Lake, Franklin Co. (Ann T. Tarbell). House Finch: 2 Jun–EOP (2–3 ad) Dover, first SWC summer records.

Locations: BCWMA—Bear Creek Waterfowl Management Area, Stewart Co.; CCNWR—Cross Creeks NWR, Stewart Co.; LBL—Land-Between-the-Lakes, Stewart Co.; SWC—Stewart Co.

JOHN C. ROBINSON, P.O. Box 1024, Hayward, WI 54843.

EASTERN RIDGE AND VALLEY REGION—Drought and heat dominated the region this summer. June rainfall was only 20–25% of normal: 0.6 in. (2.7 in. deficient) at Chattanooga; about 1 in. at Knoxville, and 0.9 in. (2.6 in. deficient) at Johnson City. According to a TVA press release, this was the driest June in the Tennessee River valley since 1936, keeping the year on track to be the driest on record. July precipitation increased to near normal levels; 3.6 in. at Knoxville and 3.2 in. at Johnson City were about 1 in. below average, while a total of 5.8 in. at Chattanooga was 1.3 in. above average. However, much of this July rain came in the form of widely scattered thundershowers that missed some areas. Temperatures during both months were several degrees above normal and numerous record highs were set. Over half the days in both months had high temperatures exceeding 90°F, and a few 100°F highs were reached in July.

Because of the drought, most lakes were well below normal summer levels, except Boone and Chickamauga Lakes. Many ponds, springs and streams dried up completely. The impact of drought and heat on local birdlife was less obvious and little comment was received, except that shorebird habitat was scarce. Could the presence of some unusual water birds (loon, grebe, Least Bittern, Ring-billed Gull, Common Tern) in mid-summer have been drought-related? Perhaps Dickcissel and Lark Sparrow, also?

The second TOS Breeding Bird Foray of the year was held 24–26 June in Hancock and Hawkins Counties. Sixteen observers worked in 16 blocks, finding 106 species. The most common species (found in all 16 blocks) were: Mourning Dove, Chimney Swift, Eastern Kingbird, Barn Swallow, American Crow, Carolina Chickadee, Tufted Titmouse, Carolina Wren, Cedar Waxwing, Common Yellow-

throat, Northern Cardinal, Indigo Bunting, Chipping Sparrow, Field Sparrow, Song Sparrow, Brown-headed Cowbird and American Goldfinch. Another 11 species were found in 15 blocks.

Observations were reported from 30 (71%) of the 42 counties that are all or partly in the region, well above "normal" coverage and largely due to atlas work. Reports for Osprey (nesting in 4 areas), Sharp-shinned Hawk (10 reports) and Cooper's Hawk (7 reports) were encouraging. An "invasion" of nesting Cedar Waxwings was noteworthy. Other interesting reports follow.

Loon-Ibis: Common Loon: 19 Jun (1) CRL (RLK); 14 Jul (1) Clinton, ANC (Wesley K. James). Pied-billed Grebe: 21, 29 Jun (1) Bon Air, WHC (SJS), possibly breeding; 4 Jul (1/1) HRA/CHL (RJH), breeders, early migrants, or non-breeding summering birds? Least Bittern: 4, 9/9 Jul (3-4/1) CHL/HRA, MEC portion (RJH), "To my knowledge, these sightings are the first ever recorded during the nesting season on a main stream reservoir" (KHD). Great Blue Heron: no reports on the region's nesting colonies. Great Egret: 3 Jun (1) AUS (MD, GWS, BLC); 25 Jun (1) SAB (KHD, LHD); 26 Jun (1) CRL, HWC portion (CPN); 4-31 Jul (2-6) HRA (RJH, KHD, LHD); 14, 26 Jul (1) EBF (CPN); 17, 31 Jul (1) AUS (RLK); 25 Jul (10) Douglas Lake, Cocke Co. portion (JAK); 30 Jul (1) KSP (ARH). Little Blue Heron: 4, 9 Jul (1, 2) HRA (RJH); 21 Jul (2) SAB (KHD, LHD); 26 Jul (1) EBF (CPN). Cattle Egret: 12 Jun (1 ad) Russellville, HBC (RLK); 12 Jul (1 ad) near Cumberland Mountain S.P., CUC (Margaret L. Mann). Black-crowned Night-Heron: 60 active nests on lower Fort Loudoun Lake, near Lenoir City, Loudon Co. (RC); up to 75 seen on upper CRL, including reports from the foray (fide RLK), but no information concerning the nesting site of these birds; no reports about other colonies in the region. Yellow-crowned Night-Heron: 12 Jun (5 active nests) Brainerd Levee, Chattanooga (C. Del Blum), "only known local site continues to expand" (KHD). White Ibis: 30 Jul (4 im) Ooltewah, HLC (KHD).

Scaup-Grouse: Lesser Scaup: 1 male spent its second summer on a pond in JNC (RLK). Black Vulture: found in 6 of 16 blocks on HKC-HWC foray (fide RLK). OSPREY: a good year for this species: at Watts Bar Lake, MEC, Rhea and Roane Counties, 17 nests produced 35 yg, while an inaccessible nest fledged an undetermined number of yg and 5 additional pairs attempted to nest; a pair attempted to nest on the Hiwassee Light at HRA (all fide Bruce F. Anderson); 3 yg fledged near Clinton, for the first ANC nesting record (CPN, et al.); 1 yg fledged at the Holston Army Ammunition Plant, HWC (unsuccessful attempt last year) (Tom Bowman, FJA), first nesting record in area. Sharp-shinned Hawk: a large number of reports: 6 May (1, agitated behavior) Honey Creek area of Big South Fork, SOC (CPN); 25 Jun (1) near Kyle's Ford, HKC (JCR); 27 Jun (1, carrying food) SAB (KHD, LHD); 9 Jul (1, carrying food) Stinking Creek, CPC (CPN); 9 Jul (2) HRA (RJH); 15 Jul (1) Signal Mt., HLC (RLP); 2 active nests in McMinn Co., and 1 yg found in S Bradley Co. by raccoon hunters (Paul G. Mascuch); nest near Speedwell, CIC (GWM). Cooper's Hawk: several reports: 12 Jun (1) JNC (Sally Goodin); 25 Jun (1) near Bull's Gap, HWC (FJA, Dee Eiklor); 9 Jul (pair with 4 yg) near Chuck Swan WMA, Union Co. (ARH, RDH); 23 Jul (1 im) Bluff City, SLC (BLC); 27 Jul (1) CRL, HBC side (RLK); nest near Speedwell, CIC (GWM); birds present all period at Amnicola Marsh, HLC, near 1987 nest site, but no nest found (James D. Rowell, Jr.). Red-shouldered Hawk: 25 Jun (ad with yg) Pressmen's Home Lake, HWC (BHS), a rare breeder in NE Tennessee. Ruffed Grouse: yg found in 4 blocks on HKC-HWC foray (fide RLK).

Coot-Tern: American Coot: 9 Jul (1) CHL (RJH). Greater Yellowlegs: 12 Jul

(1) SAB (KHD, LHD), ers. Solitary Sandpiper: 14 Jul (1) KSP (Marc W. Armstrong), ers; 26 Jul (9) EBF (CPN), max. Spotted Sandpiper: 26 Jun (1) Limestone, WGC (RLK), ers. Least Sandpiper: 17 Jul (1) St. John's Pond, WGC (RLK), ers. Pectoral Sandpiper: 24 Jul (3) KSP (KHD, LHD), ers. Stilt Sandpiper: 26 Jul (1) EBF (CPN), only report. American Avocet: 13 Jul (1) EBF (BAF). American Woodcock: 6 Jun (1) Bon Air, WHC (BHS), only report. Ring-billed Gull: 11 Jun (2) CHL (KHD, LHD, et al.); 1/24-30 Jul (2/1) KSP (BAF/KHD, LHD, ARH); unusual in summer. Common Tern: 12 Jun (1) CRL (RLK); 24 Jul (2) KSP (KHD, LHD). Forster's Tern: 24 Jul (1) KSP (KHD, LHD).

Cuckoo-Shrike: BLACK-BILLED CUCKOO: 24, 30 Jun (1 seen and heard) Graysburg Knob, GNC (BLC, GWS), rare in summer. Common Barn-Owl: 15 Jun (ad with 3-4 im) Veteran's Administration campus, JNC (FJA, RLK), newly discovered nest site. Whip-poor-will and Chuck-will's-widow: found in 4 blocks each on HKC-HWC foray (fide RLK). Red-headed Woodpecker: a nest with yg in CPC (CPN); also reported from CUC, FTC, HBC and WGC. Willow Flycatcher: reported from HRA, MEC portion (Johnny T. Parks, Albert M. Jenkins); KSP (BAF); Clarkrange, FTC (new site, 2 males—SJS); near Jacksboro, CPC (new site, 3 males, nest with yg—CPN); OND (new site—CPN); HKC (new site, nest under construction—JCR); AUS and Limestone, WGC (RLK); plus "several other reports from previously reported locations" (CPN). LEAST FLYCATCHER: 12 Jun (1 singing male) near MTR at 300 m elevation (BHS). BANK SWALLOW: 25 Jun (180+ birds, including im, plus 25 nest holes in ash bank) John Sevier Steam Plant, HWC (RLK); FJA has seen birds in this area for several years, but found no nests. Cliff Swallow: colonies (some up to 200+ nests) under 6 bridges at CRL (CPN, RLK); colonies (30+ nests each) under 2 bridges at Boone Lake, SLC/WGC (RLK); 5+ nests under new bridge at AUS (RLK, BLC, FJA). House Wren: reported from Hixson, HLC; Cleveland, Bradley Co.; Jamestown, FTC; OND; CPC; Maryville, BLC; Knoxville; HKC; Rogersville, HWC; Greeneville, GNC; Jonesborough, WGC; and JNC; mostly in urban/suburban settings. CEDAR WAXWING: "Many more nesting reports than normal, some attributable to increased atlas coverage, but also several reports from areas previously well-worked" (CPN); nesting evidence from ANC, BLC, CPC, CUC, FTC, GNC, HLC, HKC, HWC, E. Putnam Co., SOC, Sevier Co., SLC and WGC. Loggerhead Shrike: reported from 2 sites in Knox Co., 2 in BLC, and 1 in Loudon Co. (ARH, RDH, RC); also in 3 blocks on HKC-HWC foray (fide RLK); and at 4 sites in WGC (BLC, GWS, MD, RLK).

Vireo-Siskin: Solitary Vireo: 3 Jun (1) Virgin Falls, WHC (SJS, BHS, Caroll and David Viera); 12 Jun (2) near MTR (BHS); unusual in these parts of Plateau; also found in 1 block in HKC (CPN). Yellow-throated Vireo: found in 10 of 16 blocks on HKC-HWC foray (fide RLK). Warbling Vireo: 26 Jun (1) HKC (ARH, RDH), very scarce in E Tennessee. Golden-winged Warbler: 7 Jun (1) Isoline, CUC (BHS); 14 Jun (ad carrying food) DeRossett, WHC (BHS). Chestnut-sided Warbler: 1 Jun (1) Pickett S.P., Pickett Co. (Robbie and David Hassler), unusual outside of higher mountainous part of Plateau, but possibly a late migrant. Black-throated Green Warbler: 3 Jun (10, including 1 yg) near Virgin Falls, WHC (SJS, BHS, Caroll and David Viera); 12 Jun (5) near MTR (BHS); 16 Jun (7) Scott Pinnacle, WHC (BHS). Prothonotary Warbler: absent from usual AUS site (RLK). Swainson's Warbler: 24 Jun (3) Big South Fork at Pine Creek, SOC (CPN); 26 Jun (1) HKC (ARH, RDH); 1 on territory at Stinking Creek, CPC (CPN). Canada Warbler: territorial bird on Cross Mt., CPC (CPN, ABS), first breeding season report from county. Rose-breasted Grosbeak: 26 June (1 male, did not appear

territorial) Newman Ridge, HKC (CPN); nest on Cross Mt., CPC (ABS, CPN). Blue Grosbeak: found in 13 of 16 blocks (12+ in 1 block) on HKC-HWC foray (fide RLK); common in WGC (RLK). Dickcissel: 21 May (2) Daus, Sequatchie Co. (RLP); 6 Jun (1) DeRossett, WHC (BHS), not found on later visits; 24-26 Jun (5 males in 3 blocks) HKC-HWC foray (RLK, FJA, SJS); 27 Jul (1) CRL, HBC side (RLK). LARK SPARROW: 27 Jul (1 singing male) CRL, HBC side (RLK). SAVANNAH SPARROW: 2 Jul (1) NW Cocks Co. (JAK), not seen on later visits, about 4th summer record in state. Grasshopper Sparrow: several reports from BLC, CPC, CIC, CUC, FTC, GNC, Jefferson Co., Knox Co., SE Overton Co., SOC, SLC, WGC, and HKC-HWC foray (10 of 16 blocks, 22 singing males in 1 block—fide RLK). Northern Oriole: 21 Jun (ad with yg) Bon Air, WHC (SJS); 25-26 Jun (ad at 1 site and pair with yg at another site) HKC (ARH, RDH). House Finch: 19 Jun (pair building nest near used nest) OND (CPN); 26 Jun (pair) Rogersville, HWC (RLK); other reports were from established locations. Pine Siskin: 2 Jun (1) Signal Mt., HLC (Jonnie Sue Lyons), late lingerer.

Locations: ANC—Anderson Co.; AUS—Austin Springs, Washington Co.; BLC—Blount Co.; CHL—Chickamauga Lake, Hamilton Co.; CIC—Claiborne Co.; CPC—Campbell Co.; CRL—Cherokee Lake, Hamblen and Hawkins Cos.; CUC—Cumberland Co.; EBF—Eagle Bend Fish Hatchery, Anderson Co.; FTC—Fentress Co.; GNC—Greene Co.; HBC—Hamblen Co.; HKC—Hancock Co.; HLC—Hamilton Co.; HRA—Hiwassee River Area, primarily Meigs Co., but also Bradley, McMinn and Rhea Cos.; HWC—Hawkins Co.; JNC—Johnson City; KSP—Kingston Steam Plant, Roane Co.; MEC—Meigs Co.; MTR—Monterey, Putnam Co.; OND—Oneida, Scott Co.; SAB—Savannah Bay, Hamilton Co.; SLC—Sullivan Co.; SOC—Scott Co.; WGC—Washington Co.; WHC—White Co.

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EASTERN MOUNTAIN REGION—The weather picture for the region this period was very hot and dry. High temperatures ranged from the high 80's into the low 90's during the entire period. June's rainfall total in Elizabethton was only 0.7 in., which is the lowest total ever recorded for the month of June since TVA began keeping records in 1939. July's rainfall was about 1 in. below the norm. The overall yearly deficit now stands at over 10 in. below average.

Young Purple Martins just out of the nest were the only heat related casualties which were reported; the loss from 3 colonies in the Elizabethton area was estimated at 10-15%.

The following observations include some out-of-the-ordinary sightings (but not really anything spectacular) by the few observers that did venture out in the field. Surely, there are more observations from within the Mountain Region than are being sent to this Compiler.

Heron-Flycatcher: Great Blue Heron: 2 Jul (2) WATL, and 12 Jul (6) RC (RLK, et al.). Yellow-crowned Night-Heron: entire period (3-4) WATR (GDE, GOW). Lesser Scaup: 3 Jun (1) WATR (FJA). BALD EAGLE: 16 Jun (3) Chota WMA, Monroe Co. (ABS). Sharp-shinned Hawk: 21 June (1) RM (RLK); 17 Jul (1) Laurel Lake, Blount Co. (JAK). Cooper's Hawk: 6 Jun (1) SDYV, and 21 Jun (1) RM (RLK); 30 Jul (1) Sullivan Co. (GDE). Ruffed Grouse: 15 Jun (1 ad with 3 yg) Little Pond Mt., Carter Co. (RLK). Northern Bobwhite: 21 Jun (2 calling) Round Bald, RM, elevation 1830 m (RLK). Wild Turkey: 29 Jun (1 pair with 6 yg) Cross Mt., JHC (RLK). Northern Saw-whet Owl: 1 Jul (1 calling) GSMNP (CPN).

Solitary Sandpiper: 12 Jul (1) RC (RLK). Spotted Sandpiper: 12 Jul (6) RC (RLK). Caspian Tern: 8 Jun (3) WATL (FJA), late. Chuck-will's-widow: entire period (1-2) Milligan College, Carter Co. (FJA). Black-billed Cuckoo: 11 Jun (1) Chilhowee Mt., Sevier Co. (Susan Hoyle). Willow Flycatcher: 2 Jun (1) SDYV, JHC, and 8 Jun (1) Butler, JHC (RLK). Alder Flycatcher: 17-24 Jun (8 singing males and 1 nest with 4 eggs) RM, above 1,525 m elevation (Brenda Hull, et al.). OLIVE-SIDED FLYCATCHER: 10 Jun (1) Citico Creek, Monroe Co. (BHS). Least Flycatcher: 2 Jun (1) Cross Mt., JHC, and 27 Jun (1 ad feeding 2 yg) RM (RLK).

Swallow-Vireo: Tree Swallow: pair reported last period present at Butler, JHC, nest site through mid-Jun (RLK, et al.). Common Raven: 2 Jun (2 ad with 2 large yg) Cross Mt., JHC (RLK, et al.); 20, 29 Jun (1) Iron Mt., JHC, and 21, 27 Jun (1) RM (RLK, et al.). Red-breasted Nuthatch: 3+ present on Little Pond Mt., JHC, and 6+ present on RM entire period (RLK, FJA). BEWICK'S WREN: 7 Jun (1) Cherokee Nat'l Forest, Monroe Co. (BHS). Winter Wren: 6 Jun (1) McQueen Knob, JHC, at elevation of 1,065 m (RLK); 10+ present on RM all period (RLK, FJA). Brown Creeper: 7 Jul (1) Cherokee Nat'l Forest, Monroe Co. (BHS). Golden-crowned Kinglet: 20, 29 Jun (pair, at 850 m elevation) SDYV, and 15+ present on RM all period (RLK, FJA). RUBY-CROWNED KINGLET: 21 Jun (1 singing male) RM (RLK), could not be found on 27 Jun despite extensive search. Cedar Waxwing: common throughout period; 6 Jun (nest with 5 eggs) SDYV (RLK); 8 Jun (nest) WIBL (FJA). Warbling Vireo: at least 2 pair along WATR near Eliz throughout period (GDE, GOW).

Warbler-Crossbill: Golden-winged Warbler: 3-5 pair all period in RMSP (FJA). MAGNOLIA WARBLER: 21 Jun (1 singing male) RM, above 1,830 m elevation (RLK), could not be found after extensive search on 27 Jun. BLACKBURNIAN WARBLER: month of Jun (1 pair) McQueen Knob, JHC, 1,100 m elevation (RLK). Pine Warbler: 1 Jun (1) Little Pond Mt., JHC (RLK); 8 Jun (2) WIBL (FJA). Swainson's Warbler: 9 Jun (3) Citico Creek, Monroe Co. (BHS); 10 Jun (1) SDYV (RLK). Canada Warbler: fairly common all period on RM, Cross Mt. and McQueen Knob (RLK, et al.). Rose-breasted Grosbeak: all period on RM, McQueen Knob and Little Pond Mt. (JHC) and Unaka Mt. (Unicoi Co.) (RLK, FJA). DICKCISSEL: 11 Jun (1 singing male) Siam Valley, Carter Co., near Eliz. (FJA). Vesper Sparrow: 20, 29 Jun (1-2) SDYV (RLK). Red Crossbill: 27 Jun (25) RM (FJA); 10 Jul (30) Newfound Gap, GSMNP (ABS).

Locations: Eliz—Elizabethton area; GSMNP—Great Smoky Mountains National Park; JHC—Johnson Co.; RC—Roans Creek, Johnson Co.; RM—Roan Mt., Carter Co.; RMSP—Roan Mt. S.P., Carter Co.; SDYV—Shady Valley, Johnson Co.; WATL—Watauga Lake, Carter Co.; WATR—Watauga River, Carter Co.; WIBL—Wilbur Lake, Carter Co.

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OBSERVERS

FJA—Fred J. Alsop, III
 DPB—Diane P. Bean
 DWB—Donald W. Blunk
 CHB—Carolyn H. Bullock
 WGC—William G. Chriswell
 RC—Richard Clark
 BBC—Ben B. Coffey, Jr.
 LC—Lula C. Coffey
 BLC—Brian L. Cross
 MD—Martha Dillenbeck
 KHD—Kenneth H. Dubke
 LHD—Lillian H. Dubke
 GDE—Glen D. Eller
 BAF—Barry Fleming
 RPF—Robert P. Ford
 JBG—Joe B. Guinn
 RJH—R. John Henderson

ARH—Audrey R. Hoff
 RDH—Ron D. Hoff
 RLK—Richard L. Knight
 JAK—Jon A. Koella
 GWM—George W. McKinney
 CPN—Charles P. Nicholson
 RLP—Robert L. Pierce
 VBR—Virginia B. Reynolds
 JCR—John C. Robinson
 ABS—A. Boyd Sharp
 DJS—Damien J. Simbeck
 BHS—Barbara H. Stedman
 SJS—Stephen J. Stedman
 GWS—Glen W. Swofford
 MGW—Martha G. Waldron
 GOW—Gary O. Wallace
 JRW—Jeff R. Wilson

Observers are requested to use the following schedule when submitting records for publication in *The Migrant*:

Season		Date reports due to compiler
Spring	1 March–31 May	12 June
Summer	1 June–31 July	12 August
Fall	1 August–30 November	12 December
Winter	1 December–28 February	12 March

SPECIES INDEX TO VOLUMES 57-59, 1986-1988

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