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## RECENT BREEDING INFORMATION ON BIRDS IN A PORTION OF THE SOUTHERN APPALACHIAN MOUNTAINS

DOUGLAS B. MCNAIR

This paper documents breeding or "breeding-season" information on 31 bird species which I observed in the southern Appalachian Mountains in 1986 and 1987. These observations include information on nest records, nest sites, macrohabitat, high counts, and modest latitudinal or altitudinal range extensions or reoccupations. Most of my observations are from North Carolina in the southern Blue Ridge Mountains and nearby higher mountain ranges, e.g., Great Balsams, Black Mountains. My other records are from South Carolina. All uncited records in this paper are mine.

I also provide a terse historical review, where pertinent, for each of the 31 species in the southern Appalachian Mountains, herein defined as that region south of Kentucky and Virginia, though this boundary is not a natural one. I occasionally append remarks on extralimital records. Reviews for each species vary in length, depending on the useful material available. This material on breeding information is scattered in the literature which I have pulled together to clarify our knowledge for these 31 species. For example, use of census data, rather than sole reliance on anecdotal accounts, has allowed me to improve our understanding of the distribution and abundance for some species. Misleading information has also been clarified, i.e., some careless, unsupported, or inadequately documented statements on the distribution and abundance of species in the literature which have been perpetuated by subsequent investigators. A particularly poor practice is presentation of "breeding-season" records as evidence of breeding when no such evidence has been documented. This practice is particularly prevalent for observations during the breeding season at high elevations (>1525 m).

Elevations of records are given in meters which have been converted directly from the original observations given in feet. Many elevations have been precisely determined within less than 6 m, by myself or other observers, but other elevations have been generally estimated to within 30.5 m. For the reader's convenience as reference, frequently used elevations are 915 m (3000 feet), 1068 m (3500 feet), 1220 m (4000 feet), 1525 m (5000 feet), and 1830 m (6000 feet).

Several localities with long names are mentioned repeatedly and I list their names and acronyms here: Black Balsam Knob (hereafter BBK), Blue Ridge Parkway (BRP), Great Smoky Mountains National Park (GSMNP), and Shining Rock Wilderness Area (SRWA).

I do not compare material for these 31 species in the southern Appalachian Mountains herein defined to Appalachian regions further north, e.g., West Virginia (Hall 1983), for comparison of avifaunal breeding information is beyond the purpose of the present paper. Hall (1983) presents information, including census data, on the abundance and distribution of many breeding species in different habitats, e.g., Blackburnian Warbler, and these results may be somewhat different from the region reviewed herein. Also, consult Hall (1984) for results on the only long-term population study conducted in the southern Appalachian Mountains, in a second growth red spruce forest on Gaudineer Knob (1335 m) in West Virginia.

Records in "Briefs for the Files" of *The Chat*, "From the Field" of *The Oriole*, "The Season" of *The Migrant*, and regional reports of *American Birds* are cited in the text by volume and page number, and not listed in the "Literature Cited" section.

**SHARP-SHINNED HAWK** (*Accipiter striatus*). — An immature of unknown sex flew upslope rapidly, from below Pisgah Inn and then over the BRP, to 'move-on' an immature Broad-winged Hawk (*Buteo platypterus*) on 8 June 1986. The Sharp-shinned Hawk then flew rapidly back downslope to a patch of Table Mountain pines (*Pinus pungens*) within an expanse of northern hardwood forest about 75 m lower in elevation than Pisgah Inn (1495 m). My observation of the Sharp-shinned Hawk is consistent with defense of an active nest.

Another Sharp-shinned Hawk, of unknown age and sex, flew over Craggy Knob (1708 m) on 26 June 1986. One of 4 Northern Rough-winged Swallows (*Stelgidopteryx serripennis*) in the area pursued it from above. I have no breeding evidence for this hawk.

Probable or confirmed breeding records for the Sharp-shinned Hawk in North Carolina are scarce and most of the records in the mountains are from intermediate to high elevations (Cairns 1889, Pearson *et al.* 1959, Stupka 1963, Phillips 1979, Meyer and Mueller 1982, Lee *et al.* 1985; see comments by LeGrand in *Chat* 47:28; see also Yeatman 1974, Parmer *et al.* 1985, *Migrant* 57:113, 1986 and Nicholson 1987 for information on breeding Sharp-shinned Hawks in Tennessee). As discussed by Meyer and Mueller (1982), most "breeding-season" records of Sharp-shinned Hawks from May to mid-July cite no breeding evidence. Perhaps the best areas to search for breeding Sharp-shinned Hawks in the mountains during May and June are in pine woods where the hawks may occupy old crow's nests (see Cairns 1889).

**NORTHERN BOBWHITE** (*Colinus virginianus*). — Three birds sang from below the parking lot for the SRWA at elevations of 1708 m to 1739 m from 31 May to 13 June 1986. I later flushed 1 adult male on 19 August. The next year, 1 bird sang from below the parking lot for the SRWA on 14 July. On 15 July 1987, 2 birds sang at Graveyard Fields at an elevation of 1555 m. Habitat was upland shrub thicket with large grassy patches. H. LeGrand (pers. comm.) has heard bobwhites at both localities in June.

In the Black Mountains, 1 bird sang at 1769 m alongside the Old Commissary Trail near Camp Alice below the peak of Mt. Mitchell on 16 June 1987. Habitat was similar to that above although with a heavy admixture of young fir and spruce trees.

Bobwhites have been proven to breed above 1525 m only twice (chicks seen), on 24-25 August 1951 at 1769 m in the GSMNP (Stupka 1963), and on 29 June 1970 at 1722 m in the Great Balsam Mountains (Simpson 1971). All other breeding-season records of bobwhites above 1525 m are of singing males or otherwise of birds of unknown status from May through September, and these records have been accumulating. Localities are: Great Balsams (Simpson 1971, this paper), Plott Balsams (Simpson 1976), Pisgah Ridge (Stevenson 1957), Unicoi Mountains (McConnell and McConnell 1983), GSMNP (Stupka 1963), Mt. Mitchell (Brewster 1886, Simpson 1972b, this paper), Roan Mountain (1 singing male on 7 July 1979 at 1708 m, R. Knight and C. Nicholson, pers. comm.), and Grandfather Mountain (LeGrand 1976). Bobwhites have been seen as high as 1922 m at Mt. LeConte lodge, GSMNP, and at the summit of Mt. Mitchell (2039 m). Bobwhites require grassy patches for foraging but otherwise have been seen in a variety of habitats: red spruce (*Picea rubens*) and Fraser fir (*Abies fraseri*) forest, open northern hardwood forest and scrub, shrub balds, and grassy balds.

**CHIMNEY SWIFT** (*Chaetura pelagica*). — Three swifts prospected for a nest site at the new latrine site beside the parking area leading to the SRWA (1769 m) on 31 May 1986. I checked this site later and found no evidence of breeding.

Rhoads (1895) stated Chimney Swifts nested in chimneys of the Cloudland Hotel near the summit of Roan Mountain, but did not cite actual evidence of breeding. Similarly, Wetmore (1939) stated swifts nested in hollow trees from 19-30 June 1937 on Mt. Guyot, Inadu Knob, and Old Black Mountain in the GSMNP. Swifts prospected for a nest site in a hollow tree on Silers Bald, GSMNP, on 30 May 1925 (Stupka 1963). Otherwise, swifts are not known to breed or possibly breed above 1525 m.

**NORTHERN FLICKER** (*Colaptes auratus*). — One adult female flushed from a cavity of a dead 5 m yellow birch (*Betula lutea*) snag, alongside a trail at 1586 m, about 2 km from the parking lot for the SRWA, on 31 May 1986. The female soon returned and stayed within the cavity, indicating she was incubating (see Jackson 1976). The nest cavity was located 0.3 m from the top of the snag and faced SW. Habitat was open second-growth northern hardwood forest with adjacent thickets.

A pair fed young in the cavity of an 11 m spruce snag, at 1708 m, below the parking lot for the SRWA, in June 1987. The nest cavity was located 2 m from the top of the snag and faced SW. The pair had been present since late March. A pair of flickers was on territory at this site in 1986. Habitat was open second-growth spruce and northern hardwoods forest adjacent to an extensive burn with numerous grassy areas and thickets.

An adult female flushed from a cavity of a dead 7 m spruce snag, alongside a trail at 1769 m at Shining Rock Gap, SRWA, on 30 June 1987. Subsequent observations indicated the female was incubating eggs within the cavity. The nest cavity was located 1.5 m from the top of the snag and

faced E. Habitat was open second growth spruce and northern hardwood forest with numerous partial clearings and thickets.

Aside from the 2 confirmed 1987 breeding records of flickers, I had an estimated 12-14 drumming males or pairs on territory in the Great Balsams above 1525 m, with the center of abundance in the BBK, SRWA, and Graveyard Fields area. I saw numerous unoccupied old cavities in spruce or yellow birch apparently excavated by flickers, and also saw several new incompletely excavated cavities.

Breeding flickers are not scarce between 1200 and 1525 m (Ganier and Clebsch 1946, pers. obs.; *contra* Hamel *et al.* 1982), but probable, presumed, or confirmed breeding records above 1525 m are scarce. Stupka lists 1 confirmed record, at 1700 m, and 1 probable record, above 1525 m, for the GSMNP. Burleigh (1941) stated scattered pairs nested each year in cut-over areas above 1525 m on Mt. Mitchell. Ganier and Clebsch (1946) found parents feeding young at several nests in the Unicoi Mountains at unspecified elevations from a possible range of 1220-1669 m. Otherwise, all other published records of flickers at high elevations from May through July are of individuals of undetermined breeding status, at the Unicoi Mountains (Ganier and Clebsch 1946), Great Balsams (pers. obs.), Pisgah Ridge (Stevenson 1957), Mt. Mitchell (Stevenson 1957, Simpson 1972b), Roan Mountain (Rhoads 1895, Ganier 1936, Stevenson 1957, Potter and LeGrand 1980), and Beech Mountain (pers. obs.). The highest elevations at which flickers have been seen from May through July were 3 at BBK at 1891 m on 20 June 1983 and 1 at Mt. Mitchell at 1952 m on 14 June 1956 (Stevenson 1957).

**OLIVE-SIDED FLYCATCHER** (*Contopus borealis*). — One male sang for 45 min at or near the tops of spruce and deciduous trees at the margin of Flat Laurel Gap Bog at Mt. Pisgah Campground (1495 m) on 8 June 1986. The flycatcher once pursued a Blue Jay (*Cyanocitta cristata*) and drove it away from a favorite perch in a spruce tree. I did not see the flycatcher prior to or after 8 June.

The only confirmed breeding record for the Olive-sided Flycatcher in the Southern Appalachians from the GSMNP at 1350 m where an active nest was found on 30 June to 5 July 1974 by Williams (1976). Williams found 2 present at the same locality the following year on 25 July. Subsequently, several published (*Migrant* 50:90, 52:99, 55:95) and unpublished reports exist since 1975 from the Alum Cave Trail area at the site of Williams' observations and also near Newfound Gap (C. Nicholson, pers. comm.). Earlier, Burleigh (1935) had but 2 breeding-season records for the GSMNP, 1 a probable breeding pair in 1933 near Newfound Gap, Tennessee (1525 m), and the other a singing male the previous year on 10 July at the same locality. Stupka (1963) stated this flycatcher was an "uncommon summer resident" in the GSMNP from 1934 to 1961, but his documentation of breeding evidence is difficult to interpret and it is unknown whether this species was present at any more than several breeding localities in suitable habitat at higher elevations in the spruce-fir forest. In fact, it is unclear whether or not this flycatcher was regularly present at the GSMNP during the breeding season, though the evidence, i.e., 49 records in June and 37 records in July, suggests that it was. Ganier and Clebsch (1938) had a high count of 8 in the GSMNP at 1068-1830 m from 13-20 June 1938.

In the late nineteenth century, this flycatcher was presumed to breed at several localities in North Carolina: uncommon at the margins of hemlock (*Tsuga* spp.) or white pine (*P. strobus*) ravines along streams and at white pine swamps above 1068 m in the Highlands area (Brewster 1886, Ogburn 1931, Pearson *et al.* 1959, Simpson 1980), rare in hemlock woods of the Blue Ridge Mountains (Jeffries and Jeffries 1889), rare in spruce-fir forest of the Black and Craggy mountains (Cairns 1889), and rare in hemlock ravines at 1220 m on Roan Mountain (Rhoads 1895).

The apparent decline of breeding records since the turn of the century parallels this species' breeding range recession from many other localities in the eastern United States (see Forbush 1927, Williams 1976, Hall 1983). Since the turn of the century, this flycatcher has been a very rare breeding bird in the southern Appalachians, not discounting the possible significance of breeding evidence from the GSMNP, and to suggest that this species is even a rare and local breeder is misleading (*contra* Lee 1985). All breeding-season records (which undoubtedly include some migrants) over at least the last 25 years, with the exception of Williams' records, are usually of single birds, occasionally 2, once 4, either singing or silent, present on 1 or 2 days only, and sometimes in unsuitable habitat (Marsh *et al.* 1974, Phillips 1979, Lee 1985, *Chat* 23:90, 44:24, 46:23, *Migrant* 48:107, 52:99, 55:95, 56:82). No breeding evidence exists for any of these records.

W. Smith (*Chat* 33:28) reported seeing 3 young Olive-sided Flycatchers begging for food at North Wilkesboro on 12 September 1968. The submitted details are insufficient to provide reliable documentation of breeding. The young birds were perhaps Eastern Wood-Pewees (*C. virens*), which regularly fledge at this late date (pers. obs.).

**YELLOW-BELLIED FLYCATCHER** (*Empidonax flaviventris*). — One male sang the diagnostic 'kil'lic' song 4 times within 30 sec from within stunted moist fir-spruce and northern hardwood forest on a steep slope with extensive downed timber and moss-covered rocks near the Old Commissary Trail below Mt. Mitchell, at 1793 m on 10 June 1987. I never located the bird again on subsequent days, despite intensive searches. Though my observation of this flycatcher constitutes a breeding-season record, and the bird was in habitat suitable for breeding, I have no breeding evidence.

Lee (1985) stated he observed an adult Yellow-bellied Flycatcher in spruce-fir forest at Grandfather Mountain on 16 July 1985. He based his identification on the yellow underparts, including the throat, and did not describe how he determined the bird was an adult. He did not describe the vocalizations he heard, other than to state it was not the Yellow-bellied Flycatcher's diagnostic song. In my opinion, Lee's published details fail to reliably document the occurrence of this species.

**ALDER FLYCATCHER** (*E. alnorum*). — Seventeen were singing (and some mates seen) within a 3 km radius of the parking lot for the SRWA on 31 May 1986 and approximately the same number was present on 8-9 June 1987. The center of abundance for the flycatchers was the pull-over area at the top of Forest Service Road 816. Habitat was upland deciduous thicket and open immature spruce-fir forest from 1647 to 1830 m. My previous high count for this locality was 8 singing males plus a pair on 20 June 1983. Breeding was confirmed at this locality at 1804 m in mid-June 1984 and in 1986 (Young 1984 *Am. Birds* 40:1204). Presumptive breeding flycatchers

have been reported at this locality since 1976 (LeGrand 1979) and as early as 16 May (pers. obs.).

Alder Flycatchers have been reported at Roan Mountain since 1977, with a maximum of 7 singing males recorded in 1978 and 1984 from 1678 m to 1830 m (LeGrand 1979, Knight 1982, *Migrant* 55:95, *Chat* 49:25). Breeding was proven in 1978 (Lura *et al.* 1979). The earliest record for Roan Mountain is 15 May (*Migrant* 56:82).

Presumptive breeding flycatchers have also been seen at Beech Creek Bog (1403 m) in Watauga Co. (Haggerty 1980, D. McNair, H. LeGrand, and M. Lynch, pers. obs.), and at Mt. Mitchell State Park (*Chat* 48:23). I again saw Alder Flycatchers at Mt. Mitchell State Park, a pair and 2 singing males on the Old Commissary Trail, below Big Tom and Mt. Craig peaks at 1769 m on 2 June 1986. Information on exact site, elevation, and habitat given in *The Chat* is incorrect. The breeding sites are the same for both 1983 and 1986 and the correct habitat information is deciduous saplings, scrub, and forbs of many species, especially blackberries (*Rubus* spp.). No tag alders (*Alnus serrulata*) are present. Spruce-fir forest exists upslope though not within the flycatchers' territories.

Evidence of breeding by Alder Flycatchers is insufficient at Price Park (1068 m) near Blowing Rock, Watauga Co., in 1972 and 1974, and at the confluence of Howard Creek and the South Fork New River (927 m), Watauga Co., in 1982 (*Chat* 46:121) unless further details are published.

EASTERN PHOEBE (*Sayornis phoebe*). — One pair each nested at areas A and C of the Pisgah Campground next to the BRP at an elevation of 1495 m in May and June of 1987. Both pairs built their nests on top of outside concrete walls or ledges of lavatory facilities. The pair at area A began egg-laying on 4 May; the clutch of 4 was complete on 7 May and the 3+ nestlings were about to fledge on 8 June. The pair at area C had completed egg-laying by 8 June; the clutch of 4 was started later than 17 May. Both males sang vigorously on 4 May though the male at area C was unmated at this time, which may explain the delay in nesting of this pair compared to the other. Neither pair re-nested though the nest at area A was relined. Neither I, nor M. Simpson, nor maintenance personnel of the BRP had discovered phoebes nesting at the Pisgah Campground before.

I also found a pair of phoebes nesting on a rock ledge of a rock face cut of the BRP near the Cradle of Forestry Overlook, at 1434 m, about 3 km from Pisgah Campground, on 8 June 1987. The nest was 4.3 m above ground and contained 5 eggs. I also found an old phoebe nest on the ground beside the base of a rock face cut of the BRP about 100 m away from the active nest. No other pairs of phoebes were on territory in the vicinity and I have no adequate explanation for the existence of this old nest.

I had a male phoebe, apparently on territory throughout May and June of 1987, at a different site on the BRP at 1373 m. This male apparently failed to obtain a mate.

Normally, phoebes nest as high as elevations of 1281 m in the southern Appalachian Mountains (Stevenson 1941, pers. obs.). Other than my 3 nests discovered in 1987, confirmed breeding at higher elevations is known from only 3 sites, at 1684 m in the Great Craggies (Simpson 1968b), and at 1373 m



and 1491 m in the GSMNP (Stupka 1963). Stupka presents little evidence that phoebes "breed regularly" at Cataloochee Ranch (1491 m).

**NORTHERN ROUGH-WINGED SWALLOW.** — A pair of swallows repeatedly entered the end of an open pipe drilled into the rock face of the BRP near the Cradle of Forestry Overlook, at 1434 m, on 8 June 1987. The pipe entrance was located but 0.3 m above the ground. An adult swallow shielded its' nest, 1.5 m from the pipe entrance, by a defensive posture when I shined a flashlight into the pipe. The nest site was located but 10 m away from the Eastern Phoebe nest on the rock ledge.

Two more pairs nested nearby during May and June at high elevations in the Great Balsams, both within cavities of rock face cuts, 1 pair on NC 215 1.6 km S of the BRP at 1525 m, and the other pair on the BRP near mile post 425 at 1647 m. I watched adults repeatedly enter cavities 3.5 m above ground at both sites, and 1 adult stayed inside each cavity a long time, indicating the birds were nesting. Vegetation partially obscured the entrance to both cavities.

Just south of Craggy Pinnacle tunnel (1708 m), Great Craggies, I watched an adult swallow feed 1 recently fledged young for 1 hr. The young swallow perched on top of a tall snag on a ridge continuous with the tunnel and frequently begged, uttering plaintive calls and quivering its' wings, while the adult foraged nearby. The adult often ignored the young, but when it fed it did so briefly while hovering or perched beside the young. The young only flew once, with the adult. The young's flight was clumsy; it banked awkwardly, its' flight speed was slow, and it was "afraid" of passing cars, which the adult was not. The young's wings appeared short and the tail was not sharply notched, the rectal flanges were still slightly swollen, also indicating it had not completed its' morphological development. The plumage was also less distinct than the adults, though the gray overcast sky made it difficult to discern differences in plumage color between the two. Earlier in May and June, 4 adults were on territory at this site, also noted by R. Ruiz (pers. comm.). I was unable to locate a nest site, but much of the rocky outcrop is inaccessible to viewers without specialized climbing equipment. I also saw adults at this site in 1983 and 1986.

Elsewhere, in the Plott Balsams, 2 adults prospected for a nest site on a rock face cut of the BRP at 1647 m on 20 May 1987, but did not remain to breed. Swallows probably nest at 1434-1495 m on Whitesides Mountain, Macon Co., N.C. I lack positive evidence because it is difficult to examine the huge rock face of this mountain.

Usually, Northern Rough-winged Swallows breed no higher than elevations of 1281 m in the southern Appalachian Mountains (pers. obs.). My above breeding records provide the first published evidence of confirmed breeding at higher elevations.

**RED-BREASTED NUTHATCH (*Sitta canadensis*).** — I saw a singing male in white pine woods during June 1986 in Cashiers at 1068 m, a pair in white pine woods during July 1986 at High Hampton Inn (1068 m), Cashiers, 2 km from the aforementioned locality, and 1 individual in white pine and hemlock forest on 7 June 1986 at Camp Toxaway near Cold Mountain, Jackson and Transylvania Counties, at 1190 m. I again saw nuthatches in

white pine woods at the same sites in Cashiers and High Hampton Inn in May and June of 1987, plus additional pairs or individuals at 3 different sites at these same localities, all in white pine woods. Two birds, 1 inspecting a cavity, were seen in white pine and hemlock forest on 26 May 1986 at the Walhalla Fish Hatchery, Oconee Co., South Carolina, at 763 m (C. Wooten *vide* LeGrand). Possible or probable breeding nuthatches had not been reported from the Cashiers Valley or the southern Blue Ridge Mountains east of Highlands where they are fairly common breeding birds down to an elevation of 1068 m (Stevenson 1941, Simpson 1976; H. LeGrand pers. comm.; pers. obs.).

No breeding censuses exist for Red-breasted Nuthatch in white pine habitat for the southern Appalachian Mountains, though both Stevenson (1957) and Simpson (1976) state that breeding occurs in this habitat at Highlands. Censuses do exist for other habitats, however, and I provide a summary (Table 1), listing the estimated number of pairs (usually based on counts of singing males) per 40 ha. The censuses indicate that breeding densities do differ depending on habitat and the preponderance of the evidence shows that nuthatches are most numerous in spruce-fir forest, followed in order by hemlock forest, hemlock and northern hardwood forest, and pine woods, which agrees with anecdotal observations by many observers. The census data, as well as anecdotal data, also indicate that numbers of breeding nuthatches may fluctuate greatly. Nuthatches may be absent some years in spruce-fir forest (*contra* Burleigh 1941, Stupka 1963; Phillips 1979, pers. obs.), though they are not believed to have ever been absent during the breeding-season in the spruce-fir forest of the GSMNP (C. Nicholson, pers. comm.).

Simpson (1976) summarizes specific breeding records for Red-breasted Nuthatches for each habitat in the North Carolina mountains. One possibly overlooked record, at an unspecified habitat, was an adult feeding 1 young at Blowing Rock (ca. 1068 m) on 16 June 1968 (*Chat* 32:81), at a low elevation for this species in North Carolina. One nuthatch at nearby Linville Falls in white pine habitat at 946 m on 23 May 1984 may have been breeding (*Chat* 48:100), and I saw 4 here on 11 August 1986 and 2 on 12 June 1987. An individual in unspecified habitat at 885 m, near Cades Cove, Tennessee, on 12 June 1958, was not known to breed (Stupka 1963).

Only 2 proven breeding records exist for the Red-breasted Nuthatch beyond the southern Appalachian Mountains, both at lower elevations than heretofore recorded, at Knoxville, Tennessee, in 1977 (Owen 1979), and in mature scrub pine woods (*P. virginiana*) at Eden, Rockingham Co., North Carolina (Burroughs 1976). An individual in a yard during the entire summer at Goldsboro, North Carolina, was not known to breed (*Chat* 50:26).

In South Carolina, I had 1 or 2 nuthatches at the edge of a beaver pond in pine woods near the Whitewater Falls area at 763 m from 17-22 July 1986, and 1 in white pine woods at the Walhalla Fish Hatchery (763 m) on 28 July 1986. I saw no evidence of breeding at either locality.

**BROWN CREEPER** (*Certhia americana*). — Four males sang on territory at or near Cashiers from 961-1068 m during May and June 1986 and 6 males sang here during May and June of 1987. Habitat was white pine and hemlock woods, or hemlock woods, sometimes mixed with northern hardwoods. H. LeGrand (pers. comm.) has 1 or 2 summer records of creepers from

Table 1. Breeding bird census data for selected species in the southern Appalachian Mountains.

SPECIES	PAIRS 40 HA	HABITAT, LOCATION	ELEV., M	YEARS	REFERENCE
Red-breasted Nuthatch	7-8	Table mountain pitch pine heath, GSMNP	1220-1344	1947-48	Kendeigh & Fawver 1981
	13-17	Hemlock-hardwoods, GSMNP	1011-1357	1947-48	"
	5-8	Hemlock-hardwoods, Highlands	1190	1946-47	Holt 1974 (Odum 1950)
				1959-60	"
				1971-72	"
	4-17	Virgin hemlock, Highlands	ca. 1220	1946-47	"
				1959-60	"
	9-31	Spruce-fir, GSMNP	1761-1792	1947-48	Kendeigh & Fawver 1981
	40	Spruce-fir, GSMNP-Mt. Collins	1700-1800	mid-1970s	Rabenold 1978
	6	Fir, GSMNP	2013-2025	1948	Kendeigh & Fawver 1981
	8	Fir, GSMNP-Mt. Guyot	1757-1830	1969	Alsop 1969
20	Fir, Mt. Mitchell	1983-2013	1959	Adams 1959	
5	Fir, Mt. Mitchell	1983-2013	1985	Hammond & Adams 1986	
Black-throated Green Warbler	4-11	Chestnut red oak hardwoods, GSMNP	817-1452	1947-48	Kendeigh & Fawver 1981
	5-22	Cove hardwoods, GSMNP	641-1251	1947-48	"
	14-18	Hardwoods-coniferous, GA	537-561	1969-78	Mullinger 1969-75, 1977-79
	34-70	Hemlock-hardwoods, GSMNP	874-1357	1947-48	Kendeigh & Fawver 1981
			1700-1800	mid-1970s	Rabenold 1978
	12	Spruce-fir, GSMNP-Mt. Collins	1757-1830	1969	Alsop 1969
	75	Fir, Mt. Mitchell	1983-2013	1959	Adams 1959
	none	Fir, Mt. Mitchell	1983-2013	1985	Hammond & Adams 1986
Blackburnian Warbler	6	Cove hardwoods, GSMNP	732-802	1948	Kendeigh & Fawver 1981
	3-10	Hardwoods-hemlock, Highlands	1190	1946-47	Holt 1974 (Odum 1950)
				1959-60	"
				1971-72	"
	13-60	Hemlock-hardwoods, GSMNP	874-1357	1947-48	Kendeigh & Fawver 1981
	8-49	Virgin hemlock, Highlands	ca. 1220	1946-47	Holt 1974 (Odum 1950)
				1959-60	"
	trace	Spruce-fir, GSMNP-Mt. Collins	1700-1800	mid-1970s	Rabenold 1978
	3-3	Fir, GSMNP-Mt. Guyot	1757-1830	1969	Alsop 1969
35	Fir, Mt. Mitchell	1983-2013	1959	Adams 1959	
none	Fir, Mt. Mitchell	1983-2013	1985	Hammond & Adams 1986	

\*Standardized from census plot area given in original source; effects of plot shape and area may influence the breeding density.

the Cashiers Valley. The only other breeding evidence for creepers in the southern Blue Ridge Mountains east of Highlands was a pair building a nest on the side of an unoccupied house at High Hampton Inn in Cashiers from 13-15 May 1960 (Chamberlain 1960). Creepers are uncommon to fairly common at Highlands down to an elevation of 1068 m in hemlock swamps and woods, and white pine woods to a lesser extent (Brewster 1886, Stevenson and Stupka 1948, Holt 1974; H. LeGrand, pers. comm.; pers. obs.), though creepers are most numerous at higher elevations in spruce-fir forest where they may breed on the highest peaks (Stupka 1963, Kendeigh and Fawver 1981, pers. obs. and many others).

The only breeding evidence for creepers outside the southern Appalachian Mountains are 1 proven breeding record at Nashville, Tennessee (Criswell 1979, Parmer *et al.* 1985), 1 proven and several probable records from western Tennessee (Criswell 1979, Ford 1987), and several possible records at Nashville and from western Tennessee (*Migrant* 48:74, 51:92, 56:107, 57:82, Parmer *et al.* 1985).

**CAROLINA WREN** (*Thryothorus ludovicianus*). — Three males sang from the understory of spruce-fir and northern hardwoods forest and from roadside thickets dominated by *Rhododendron* spp. along the BRP in 1986 at Richland Balsam (1830 m) on 1 June, at Devil's Courthouse (1647 m) on 1 June, and near Devil's Courthouse, 1 km away from the previous site, at 1739 m, on 8 June. I saw no evidence of breeding for any of these wrens. Carolina Wrens regularly disperse to elevations above 1525 m from July through November (Burleigh 1941, Stupka 1963, Simpson 1976, pers. obs. and many others), but the only other records from April to June, both also without breeding evidence, are of 1 singing from spruce-fir and northern hardwoods forest along the BRP on 19 May 1982 near Bearpen Gap, Jackson Co., at 1617 m (*Chat* 46:121) and 1 at the parking area of Clingman's Dome (1925 m), GSMNP, on 8 June 1944 (Stupka 1963).

**HOUSE WREN** (*Troglodytes aedon*). — Three males sang in the BBK area at 1769 m on 31 May 1986. At least 1 male was paired, his mate prospecting for a nest site on 13 June, and the pair was seen together through at least 27 July. Habitat was upland deciduous thicket. In the BBK and Graveyard Fields areas during May and June 1987, 11 males sang at elevations of 1525-1830 m. At least 5 males were paired. On 29 June, I flushed an incubating female from an old flicker cavity, located 0.3 m from the top of a 3.7 m yellow birch snag. The cavity entrance faced N. On 14 July, both parents fed 4, possibly 5 nestlings. The snag was located at 1708 m at the border of a thicket and large grassy meadow.

Records of House Wrens during the breeding season above 1525 m are scarce. McConnell and McConnell (1983) had 1 singing at Bob Bald (1629 m) in the Unicoi Mountains on 19 June 1981, and another nearby at Whigg Meadow (1513 m), just below 1525 m, on 17 June, at the edge of a meadow and mountain laurel (*Kalmia latifolia*) thicket. The preceding year, D. Jacobson and G. Mayfield (*vide* Nicholson) had 1 bird at Whigg Meadow on 25 May 1980. Lee *et al.* (1985) stated they recorded House Wrens in meadow and shrub balds on Grandfather Mountain, but submitted no details on their observations. H. LeGrand, M. Lynch and I had several singing males in rural yards on Beech Mountain, above 1525 m, from late April through mid-June of 1987.

**GOLDEN-CROWNED KINGLET** (*Regulus satrapa*). — C. Wooten (*vide* LeGrand) found 1 singing bird on 12 June 1986 at the Walhalla Fish Hatchery, Oconee Co., South Carolina, at 763 m. Later, Wooten saw this individual male carry food to a grove of white pines but was unable to obtain any further evidence of breeding. Earlier, on 26 May, Wooten had 2 kinglets at this locality. These observations document the first breeding-season record for South Carolina.

Slightly further north in North Carolina, I had 2 pairs in June 1986 and 5 singing males in June 1987 in white pine woods at Cashiers (1068 m). These reports are the first probable breeding records in the Cashiers Valley, east of Highlands (see reviews in Simpson 1972a, also Stevenson and Stupka 1948 and Stevenson 1957). I also had 1 kinglet at Cashiers on 5 May 1984. At Highlands, kinglets have apparently not nested as regularly as Red-breasted Nuthatches and Brown Creepers (Simpson 1972a, *op. cit.*), but have increased recently and are now uncommon though widely distributed in hemlock and white pine woods down to 1068 m (Holt 1974; H. LeGrand, pers. comm.; pers. obs.). In May and June of 1987, I had 41 singing males or pairs in the Highlands area. At Linville Falls, kinglets may breed at an even lower elevation; 4 were singing at 946 m on 23 May 1984 (*Chat* 48:101). I saw 1 here on 11 August 1986 and 6 were singing in late April and June of 1987. Nearby at Cone's Lake, Blowing Rock, Murray (1946) had a pair feeding 2 young in a spruce grove on 5-7 August 1932 at an elevation of about 1113 m.

Kinglets are abundant breeding birds in spruce-fir forest at high elevations (*op. cit.*), less common in hemlock and deciduous forest (7 pairs/40 ha, 1971-1972, Holt 1974; 10 pairs/40 ha, Fawver 1950, Kendeigh and Fawver 1981), and probably least numerous in white pine woods though no censuses exist for this habitat.

**BLUE-GRAY GNATCATCHER** (*Pilioptila caerulea*). — Gnatcatchers are locally uncommon near Lake Glenville, Jackson County, up to an elevation of 1065 m. One to 2 gnatcatchers were present in moist open second-growth deciduous woods besides Cashiers Pond (1068 m) from 15 May through June 1986 and 1987, as was 1 on 3 July 1985, and 1 on 5 May 1984.

Hamel *et al.* (1982) state that gnatcatchers are fairly common breeders in the mountains up to 1050 m, rarely to 1200 m, but cite no specific records. Other sources I have located state that gnatcatchers breed up to elevations of 950-975 m. Tate and Smith (1974) state they heard a gnatcatcher on the BRP, Jackson Co., at 1403 m, on 21 May 1973, but cite no breeding evidence.

**EASTERN BLUEBIRD** (*Sialia sialis*). — A pair of bluebirds nested near the parking lot for the SRWA at 1769 m in 1986. Habitat was deciduous thicket alongside a recently burned area, adjacent to spruce-fir forest. The pair nested in a 3 m yellow birch snag. The nest cavity, originally drilled by a flicker, was 0.5 m from the top of the snag, and faced SW. The snag was not firmly anchored, and swayed side-to-side about 0.3 m in a 16 km wind or when gently pushed by hand. Very few other suitable cavities were present in the general area (pers. obs.). On 31 May, the female was incubating and the male was guarding the nest and feeding nearby in the burned area, where the female occasionally joined him. On 13 June, the pair was bringing food to the nestlings. No bluebirds were present on 27 July and the top of

the snag was broken off just below the bottom of the nest cavity. In 1987, a male was on territory at this site but failed to obtain a mate.

However, another pair of bluebirds nested at nearby Graveyard Fields at 1540 m on 8-9 June 1987. Both parents fed 3+ nestlings in a cavity 0.3 m below the top of a 1.7 m yellow birch stub. The cavity was formed by natural decay of the wood; most of the bark at the cavity entrance was intact. The cavity entrance faced E. Habitat was an extensive grassy glade and numerous thickets with some northern hardwoods and a few spruce.

Later in 1987, I also found bluebirds nesting on Mt. Mitchell at 1891 m on 22-23 June. Both parents fed nestlings in a cavity of a 10 m coniferous snag. The cavity entrance was 7 m above ground and faced SE. The snag was located in a small glade near the Mt. Mitchell restaurant and living quarters. The adults foraged on or adjacent to the Old Commissary Trail at Camp Alice in an extensive spruce and yellow birch glade with dense grassy cover, along a powerline right-of-way, and in thin yellow birch woods.

Only 1 other published nest record for bluebirds exists above 1525 m. Ganier (1936) found 1 pair feeding 5 nearly fledged young in the cavity of a buckeye (*Aesculus octandra*) on 25 June 1936 at the top of Little Roan Mountain (1769 m). R. Knight (pers. comm.) saw bluebirds prospecting for nest sites on the balds of Roan Mountain at 1769-1830 m in June 1983. Stupka (1963) saw a family in mature deciduous trees near Gregory Bald (1509 m), GSMNP, on 19 June 1936. Similar to Stupka, I saw a family of 4 bluebirds in an open shrubby area near Sam's Knob, Great Balsams, at 1586 m on 29 July 1987, but am uncertain if the birds nested locally. I did not see them at this site earlier in the year. Other reports of bluebirds at high elevations during the breeding season, without details, do not constitute evidence of breeding (e.g., see Burleigh 1941; pers. obs.). As an example, a bluebird I saw at Craggy Pinnacle (1797 m) on 26 June 1986 was flying NE and calling until lost from view at least a km away. The bird was obviously dispersing or migrating.

**HERMIT THRUSH** (*Catharus guttatus*). — Five males were singing within Mt. Mitchell State Park during June 1986, 3 near the summit of Mt. Mitchell, 1 at Mt. Hallback, and 1 between Balsam Cone and Mt. Tom, all above 1891 m. In May and June of 1987, I had additional males singing in the Mt. Mitchell area, on Clingman's Peak and from below Steppes Gap; the latter bird was singing at the low elevation of 1647-1708 m. Previous high counts of singing males were 4 on 16 June 1985 (*Chat* 50:26) and 3 or 4 on 26 June 1983 (*Chat* 48:24). Habitat is predominantly Fraser fir forest with some spruce.

Hermit Thrushes have also been recorded on territory during the breeding season, at Roan Mountain in 1979, 1983 and 1986 where breeding is probable (Potter and LeGrand 1980, *Migrant* 54:92, *Chat* 48:24; G. Eller and R. Knight, pers. comm.), at Grandfather Mountain in 1984 and 1987, where breeding is also now probable (Lee *et al.* 1985; H. LeGrand and M. Lynch, pers. comm.; pers. obs.), and at Peck's Corner on the Appalachian Trail within the Great Smoky Mountains National Park where breeding is also possible (G. Ellison in lit.).

**BROWN THRASHER** (*Toxostoma rufum*). — One sang from near the top of BBK at 1861 m on 13 June 1983. I also had 1 pair at this site from May

through July of 1987. Stupka (1963) and Hamel *et al.* (1982) state that the thrasher occurs sparingly during the breeding season up to 1586 m and 1650 m respectively. Stevenson (1957) had many records of thrashers from 1525 m to 1650 m, as I have had recently. In addition, I had about 7 singing males or pairs above 1650 m at other sites in the Great Balsams during May and June of 1987. Other high elevation records of note are 1 at Roan Mountain at 1830 m on 29 June 1946 (Stevenson and Stupka 1948) and 1 on 7 June 1979 (Potter and LeGrand 1980). At least 1 pair of thrashers have usually been present at Carvers Gap (ca. 1708 m) of Roan Mountain during summer in recent years (G. Eller and R. Knight, pers. comm.). Thrashers were present in summer to 1891 m on Mt. Mitchell (Burleigh 1941). Still no cited proven breeding records of thrashers exist above 1525 m.

**CEDAR WAXWING (*Bombycilla cedrorum*).** — One male sang for 30 min from a snag within a beaver pond surrounded by second-growth coniferous and deciduous forest in South Carolina near the Whitewater Falls area at 763 m on 17 July 1986. Four adults were present in rural yards next to a pond near Mountain Rest at 519 m from 28-30 July 1986. Three other adults were present 6 km away in a tag alder swamp at Mountain Rest (500 m) on 30 July 1986. These waxwings were territorial, though I have no other breeding evidence. Habitat was similar to recent proven breeding records (McNair and Gauthreaux 1984). Only 2 other breeding-season records exist for South Carolina not cited by Sprunt and Chamberlain (1970) or McNair and Gauthreaux (1984). No breeding evidence was cited for a record of 2 birds seen near York on 22 June 1984 (*Chat* 49:26). Two adults I saw at Clemson in second-growth coniferous and deciduous woods alongside Lake Hartwell on 28-29 June 1985 were not known to breed.

Waxwings nested in North Carolina at Delany Bog, just 2 km beyond the South Carolina state line, in Jackson Co., in a tag alder swamp and adjacent moist coniferous and deciduous woods at 945 m in 1985 and 1986 (pers. obs.) and possibly at Crowders Mountain, Gaston County (*Chat* 49:26).

Many other possible, probable, and proven breeding records have accumulated since 1970 in North Carolina (see review of previous records in Simpson *et al.* 1970), accelerating in the 1980s, especially in the Piedmont, east to the Sandhills and the northern Coastal Plain (e.g., *Chat* 42:18, 46:24, 48:100, 49:25, 50:26, 50:129, Snively and Witherington 1986). This expansion of the waxwing's breeding range to lower elevations in North Carolina is consistent with breeding evidence from South Carolina, Georgia (e.g., Burleigh 1958, *Oriole* 49:83), Tennessee (Bierly 1980, Parmer *et al.* 1985, *Migrant* 55:92, 57:111 and 114; G. Eller, R. Knight, and C. Nicholson, pers. comm.), and Alabama (Imhof 1976), at the southeastern limits of its range. Nests with eggs or young have been regularly found through late July, occasionally as late as late August (*op. cit.*, Murray 1930). Waxwings may nest into October. I saw 2 adults with 2 fledged young, dependent and with the juvenile rectrices incompletely developed, on 14 October 1986 at Cashiers, North Carolina.

**WHITE-EYED VIREO (*Vireo griseus*).** — From 7-14 May 1986, an adult sang from a tag alder swamp at Cashiers Pond (1068 m). In July, 1 adult sang from the same alder swamp from 3 July to 21 September 1985, 1 adult sang at the same locality again on 17 July 1986, 1 adult sang from Delany Bog (945 m), Jackson Co., near the South Carolina state line on 28 July 1986,

and 1 sang at Highlands Falls Country Club (1220 m) from streamside scrub on 28 July 1986. I did not see or hear any of these birds on territory before or after the above dates. In 1987 at Cashiers Pond, 1 or 2 adults sang from streamside shrubbery on 3 May, 5 June, and 20-27 July. I did not detect the birds on any other dates. I did have other White-eyed Vireos in the Highlands and Cashiers area above 945 m from mid-summer to early fall but these birds were not singing on territory.

Since Brewster's (1886) first visit to the North Carolina mountains in 1885, White-eyed Vireos have usually been reported to breed up to elevations of 850-950 m (Stevenson 1941 and 1957, Stupka 1963, Simpson 1976, Horn 1984, Eller and Wallace 1984 and many others). Hamel *et al.* (1982) state that these vireos may breed up to 1200 m but cite no specific records. Hamel *et al.* (H. LeGrand, pers. comm.) disregarded breeding data at high elevations (>1220 m) on Grandfather Mountain in Alexander (1973) because of the belief the observations are wrong, based on habitat information (unlikely habitat), dates of first observations (too early), and abundance (too numerous), a decision I concur with. Lee *et al.* (1985) recorded this vireo in meadow and scrub balds at Grandfather Mountain at 1525-1769 m, but cite no details nor even mention that these observations are unusual.

Johnston (1964) stated this vireo was an uncommon breeder at Highlands (ca. 1220 m) and Holt (1974) found 7 pairs/40 ha at ca. 1220 m in mesic shrub from 15-30 June 1959 and 22 May to 16 June 1960. Earlier, Stevenson (1941) found no records prior to 1937 and then that year and in 1941 he saw it occasionally up to 1159 m. Specifically, he stated this vireo was scarce at Highlands, 1 pair probably nesting at Mirror Lake (1129 m) in June of 1937 and 1941 and he saw 1 singing male at Sequoyah Lake (1159 m) on 23 June 1937 (Highlands Biol. Sta. biota files; H.M. Stevenson, pers. comm.). T. Howell had a vireo on 26 May 1945 at Highlands and perhaps a different bird on 8 July. T. Crunkleton had at least 1 pair nesting at Highlands at 1129 m in 1950, 1953, and 1954 (Highlands Biol. Sta. biota files), perhaps also at Mirror Lake. Horn (1984) did not find this species breeding at Highlands in 1975 and 1976 above 950 m in Horse Cove Valley, where Stevenson (1941) had them earlier and where I have also had them in recent years. Horn did have 1 pair nesting in 1975 and 1976 in a clearcut at 1037 m. H. LeGrand (pers. comm.) has had many records of singing vireos in moist thickets in June (average of 3-5 a day) during the mid 1970s to the early 1980s on the Highlands Plateau west of Lake Glenville at elevations from 1068-1220 m. Evidently, this vireo has intermittently nested on or near the Highlands Plateau from the late 1930s to the present, though fluctuations in populations above 950 m should be fully documented. That this vireo should first expand its breeding range to the higher elevations of the southern Blue Ridge Mountains before other southern Appalachian mountains should not be surprising because this species favors breeding in moist thickets in a humid, warm climate.

CHESTNUT-SIDED WARBLER (*Dendroica pensylvanica*). — Based on the accounts of Loomis (1890, 1891), this warbler was presumably an uncommon to locally common breeder above 763 m in the Blue Ridge Mountains of South Carolina in the late nineteenth century. H. LeGrand recorded from 1 to 2 singing males at Sassafras Mountain at around 915 m, apparently on territory, in 1974 and 1977 from late May to 16 June but not thereafter. This locality is probably now unsuitable because its shrubby



thickets have become second-growth woodlands. In addition, LeGrand (pers. comm.) had 1 singing in northern Oconee County on 9 June 1974. I. Pitts (*vide* LeGrand) had a singing male throughout June and into July of 1986 at Caesar's Head State Park around 915 m. Pitts also saw a female several times. In Georgia, Odum and Burleigh (1946; see also Burleigh 1958) found this warbler nesting south to the end of the main Blue Ridge Mountains (Pickens Co.) in blighted chestnut (*Castanea dentata*) and other deciduous scrub. Their claim that breeding in Pickens County was a range extension, rather than range reoccupation, is weak because comparative habitat information was not presented, few surveys were conducted prior to 1945, and the records of Loomis indicate this warbler did breed at the edge of its breeding range in the southern Blue Ridge Mountains prior to 1900. In Georgia, this species breeds at elevations as low as 839 m (see Denton 1975) and in North Carolina apparently as low as 610-641 m (Brewster 1886, Stupka 1963), though usually above 915 m. Stupka (1963) had no evidence that a male singing from 4-6 June 1951 at 445 m at GSMNP headquarters nested. Chestnut-sided Warblers will presumably breed again in South Carolina when large tracts of suitable habitat, e.g., clear-cuts, become available above 763 m (see Horn 1984).

Outside the southern Appalachian Mountains, Simpson (1968a) had 1 male singing in an orchard at 763 m in June 1963 and 1965 in the Brushy Mountains in the Piedmont of North Carolina, for a possible breeding record. This species is a common breeder at the higher elevations of the Cumberland Mountains, is rare on the Cumberland Plateau, but is not known to breed in the Eastern Ridge and Valley Province of Tennessee *contra* Bierly (1980) (Nicholson 1987 and pers. comm.).

**BLACK-THROATED GREEN WARBLER (*D. virens*).** — Following the procedures used before in the account of the Red-breasted Nuthatch, I provide (Table 1) the available census data from the southern Appalachian Mountains and 1 census from the adjacent upper Piedmont. These census data indicate that Black-throated Green Warblers are most numerous in coniferous habitat, either spruce or hemlock, and are also widespread in mature, moist, hardwood forests, but that their numbers fluctuate greatly between years and within habitats. Brewster (1886), Burleigh (1941), and several other anecdotal sources agreed with Adams (1959) that this species was abundant during the breeding season in spruce-fir forest on Mt. Mitchell or at the higher elevations of some other mountain ranges. Hammond and Adams (1986), repeating the earlier survey, had no warblers near the summit of Mt. Mitchell in 1985. I had none of these warblers on the higher peaks of the Black Mountains in 1983, 1986, and 1987 though I did find them locally distributed at lower elevations around 1596-1800 m in spruce-fir and northern hardwoods forests here and in the Great Balsams, which agrees with observations made by Cairns (1889). Fawver (1950) and Noon and Able (1978) have similar observations for the GSMNP though Alsop (1969) and Rabenold (1978) had moderate numbers of warblers present in the GSMNP at the higher elevations, as has C. Nicholson (pers. comm.) in recent years. Phillips (1979) saw no Black-throated Green Warblers in spruce-fir habitat at Roan Mountain in 1977. This species also fluctuates in abundance and distribution in hemlock or hemlock and hardwood forest. Mellinger (*op. cit.*) had birds on his census plot every year in a mountain ravine at 537-561 m (see also Odum 1950, Stupka 1963, Simpson 1972, and Denton 1975). H.

LeGrand and I have found this species to be fairly common and locally distributed in the southern Blue Ridge Mountains up to elevations of 945 m. Yet nearby at Highlands, Brewster (1886), Odum (1950), Johnston (1964), Holt (1974), H. LeGrand (pers. comm.) and I have failed to find this species breeding. Stevenson (1941) states this warbler is absent in the Highlands area from 961-1190 m prior to 15 June; birds seen afterwards were apparently post-breeding birds from lower elevations. Ogburn (1931) suggests that this species may breed on the Highlands Plateau but does not document any evidence. It is puzzling that this species is not known to breed here, for the area has prime habitat of moist mature hemlock forest.

Black-throated Green Warblers have been scarce to, at best, fairly common in spruce-fir habitat at the higher elevations for approximately the last 10 years, though unexplained fluctuations in relative abundance and distribution have occurred for the past 100 years, in this habitat and others. It is not at all apparent in which habitat, spruce-fir or hemlock, that Black-throated Green Warblers may be most numerous in a given year. Local changes in habitat, e.g., maturation of the forest, clear-cutting, disease, air pollution, may be responsible for changes in relative abundance and distribution on several of the censuses and some of the anecdotal accounts, but the preponderance of the evidence indicates that changes in distribution and relative abundance have occurred while prime habitat has remained unchanged. The distribution and abundance within and between habitats over time in the southern Appalachian Mountains needs further elucidation.

**BLACKBURNIAN WARBLER (*D. fusca*).** — Following earlier procedures, I provide (Table 1) the available census data from the southern Appalachian Mountains. These census data indicate that the Blackburnian Warbler is usually most numerous in coniferous habitat, either spruce or hemlock, but that their numbers fluctuate greatly within the same habitats and in different years. Stupka (1963) stated this warbler was most numerous in the GSMNP in spruce-fir forest and that it nested on the highest peaks, which agrees with data from Alsop (1969) and C. Nicholson (pers. comm.) in recent years at GSMNP, Adams (1959) at Mt. Mitchell, and anecdotal data from some other mountain ranges. However, Brewster (1886), Burleigh (1941), Fawver (1950), Noon and Able (1978), and Rabenold (1978) found Blackburnian Warblers nesting at GSMNP and Mt. Mitchell only in spruce-fir forest where it began to mix with hardwoods at lower elevations, around 1525 m, where these sources considered the warblers to be locally common to uncommon. Stevenson (1957) found but 1 singing male at Mt. Mitchell, at 1922 m, on 14 June 1956, though he found these warblers much more numerous in previous years in spruce-fir forest of the southern Appalachian Mountains. Cairns (1889) never saw Blackburnian Warblers above 1068 m on the Black Mountains nor did Hammonds and Adams (1986) find any warblers near the summit of Mt. Mitchell in 1985. I found Blackburnian Warblers absent from Mt. Mitchell and the Great Balsams in 1983, 1986, and 1987 in spruce-fir forest except at the lowest elevations where I saw only about 6 pairs. Phillips (1979) saw none in spruce-fir habitat on Roan Mountain in 1977 nor did Lee *et al.* (1985) on Grandfather Mountain.

Brewster (1886, see Simpson 1980) did, however, find Blackburnian Warblers numerous in the southern Blue Ridge and Cowee mountains in

Jackson and Macon counties in mature hemlock, and hemlock, oak (*Quercus* spp.), and chestnut forest, and less numerous in hardwood forest, usually above 915 m, and occasionally as low as 824 m. This generally agrees with observations by Stevenson (1941), Holt (1974) and later observations of H. LeGrand and me from this region, though the species may also be numerous in white pine forests (H. LeGrand, pers. comm.). Ogburn (1931) stated that this warbler was scarce at Highlands in 1928 and 1929. The Blackburnian Warbler has been uncommon in the Cashiers Valley and at Highlands in recent years (pers. obs.). Lee *et al.* (1985) found this warbler to be fairly common on Grandfather Mountain in mixed mesophytic forests to elevations as low as 671 m. I only found this warbler to be uncommon here in mid-June of 1987.

In summary, Blackburnian Warblers have been periodically absent or scarce in spruce-fir forest for undetermined lengths of time during a 100 year period since the first explorations of Brewster. When present in this habitat, some observers (e.g. Stupka 1963) have stated this species is more abundant in spruce-fir forest than in hemlock or hemlock and deciduous forest at lower elevations. However, the observations of Brewster (1886), Fawver (1950), Lee *et al.* (1985), H. LeGrand and me, and other cited sources do not agree with Stupka's generalization, and in many years these warblers may be most numerous in hemlock forest as the census data clearly support. Unlike in spruce-fir forest, Blackburnian Warblers have always been reported at the middle elevations in hemlock forest, in varying abundance, though they may have been scarce at Highlands in 1928-1929.

Other general qualitative comments on the distribution and relative abundance of the Black-throated Green Warbler are also largely applicable to the Blackburnian Warbler.

In South Carolina, Loomis (1890) collected 2 males and 1 female Blackburnian Warblers in hardwoods in the southern Blue Ridge Mountains of Pickens County at 763-915 m during mid-June 1889. A male was collected at Walhalla, Oconee County, on 24 June 1940 (Sprunt and Chamberlain 1970). LeGrand and others had 1 singing male on 5 June 1975 near Rocky Bottom, Pickens County, which was at an exceptionally low elevation of 602 m, and again near the same location on 21 May 1977. Habitat was hardwoods with some hemlocks for LeGrand's records. However, no breeding evidence exists for any of these reports. In the southern Blue Ridge Mountains of Georgia, these warblers breed south to Pickens County in coniferous and hardwood forest or in hardwood forest down to elevations of 823 m (Burleigh 1958). In North Carolina, Stupka (1963) reported an individual in the GSMNP as low as 732 m on 11 June 1948 but cited no breeding evidence. In Tennessee, this warbler is not known to breed at the higher elevations of the Eastern Ridge and Valley Province *contra* Bierly (1980) (G. Eller, R. Knight and C. Nicholson, pers. comm.). Breeding of the Blackburnian Warbler has been confirmed at Frozen Head Mountain in the Cumberland Mountains (Nicholson 1987), and Nicholson (1980; pers. comm.) had a male apparently on territory in mid-May, only to disappear the first of June, in an area of mature oaks at another site in the Cumberland Mountains.

YELLOW-THROATED WARBLER (*D. dominica*). — Nine singing males were on territory at Sapphire and Cashiers from 946-1098 m from 30 April through at least early July 1986 in mature open white pine woods; 5 were

singing on territory in 1987. Single singing birds were previously found in Cashiers during May of 1983 and 1984. Single singing birds in the Highlands area at the Highlands Country Club, Highlands Falls Country Club, and below Satula Head at elevations of 1159-1220 m in mature open white pine woods from 8-10 May 1987, were not seen or heard before or after these dates during May. Possible breeding records at 976 m are of 1 at Fontana in June 1948 (Stevenson and Stupka 1948) and 1 singing at 915 m at Roaring Gap, Allegheny County, N.C., on 19 May 1984 (*Chat* 48:101). All other possible, probable or proven breeding records from the southern Appalachian Mountains are from less than 915 m in elevation, usually less than 715-763 m (Stevenson and Stupka 1948, Stupka 1963, Simpson 1976, Hamel *et al.* 1982, Eller and Wallace 1984 and others). Johnston (1964) listed only post-breeding individuals above 915 m in the Highlands area; 1 singing at Mirror Lake, near Highlands, at 1144 m was the earliest, on 19 June (Stevenson 1941). Stupka's (1963) highest record was of 1 bird at 1068 m on 8 July 1936, almost certainly a post-breeding visitor also.

Yellow-throated Warblers have increased in numbers and expanded their range northward in West Virginia recently (Smith 1978). The warblers frequently favor settling on breeding territories in mature open white pine woods.

**PINE WARBLER** (*D. pinus*). — Two very recently fledged young, with incompletely developed rectrices and remiges, were fed by 2 adults in a mature open white pine woodland at the Linville Falls Picnic Area, Avery County, just off the BRP, at 988 m on 11 August 1986. Approximately 10 other Pine Warblers were present in the pine grove, either adults or completely fledged young; several of the adult males were singing. No other breeding records from the southern Appalachian Mountains above 915 m exist. Johnston (1964) did state that Pine Warblers were rare breeders at Highlands, presumably based on Stevenson's (1941) observations. Stevenson (1941) found males, females, and immatures in white pines on the streets of Highlands at 1160 m from 24 June through August 1937, though otherwise he found this species breeding in the southern Appalachian Mountains no higher than 763 m, which agrees with the reports of other observers. Pine Warblers are uncommon post-breeding visitors to the Highlands and Cashiers area from late June to early October (pers. obs.), and males may sing into October. Therefore, while Stevenson's records suggest rare local breeding at Highlands in 1937, the evidence is insufficient for positive documentation. The status of 2 singing Pine Warblers at 915 m along a pine ridge at Caesar's Head on 29 June 1891 is conjectural (Loomis 1891).

**PROTHONOTARY WARBLER** (*Protonotaria citrea*). — I saw a singing male at Camp Toxaway along a mountain stream and man-made pools in fairly open coniferous and northern hardwood forest in a gap near Cold Mountain, Jackson and Transylvania Counties, at 1174 m on 18 June 1986. Aside from Cairns' 1 undetailed record in spring of 1895 (Simpson 1980), all other Prothonotary Warbler records in the mountains have occurred since 1974 in the valleys only, usually of singing males that have overshot their breeding range, from 21 April to 1 May (*Chat* 38:80, 40:20-21 and 90-91, and 43:100). One male singing on 14 June 1981 at West Buffalo Creek where it enters Lake Santeehlah in Graham County, North Carolina, may have been on territory (*Chat* 46:24).

LOUISIANA WATERTHRUSH (*Seiurus motacilla*). — Many waterthrushes were on territory below 1068 m in Cashiers. Waterthrushes on territory occurred up to elevations of 1174 m in a hemlock ravine near Little Panthertail Mountain, Transylvania County. My observations agree with the literature (Brewster 1886, Stevenson and Stupka 1948, Stupka 1963, Johnston 1964, Hamel *et al.* 1982 and others). This species is scarce above 1220 m. The highest cited records are 3 at 1281 m and 2 at 1296 m during June in the Unicoi Mountains (Ganier and Clebsch 1946, McConnell and McConnell 1983), 1 singing at 1342 m on 13 June 1987 in a hemlock ravine at Little Grassy Creek, Grandfather Mountain (pers. obs.), 1 at 1373 m in a *Rhododendron* swamp near Highlands (Brewster 1886), and most unusual was 1 shot at 1525 m on 22 June 1939 at Rocky Ridge, Macon Co., near Franklin (Wetmore 1941). Cairns' (1889) statement that these waterthrushes are found "nearly to the tops of the Black Mountains" is difficult to interpret.

YELLOW-BREASTED CHAT (*Icteria virens*). — Chats are usually reported during the breeding season up to elevations of 915 m, frequently as high as 1100 m (Brewster 1886, Stevenson 1941, Burleigh 1958, Stupka 1963, Denton 1975, Simpson 1976, Horn 1984, pers. obs. and many others). On the Highlands Plateau, Stevenson (1941) had the chat casually at 1220 m and 1342 m, but cited no breeding evidence. Johnston (1964) stated the chat was an uncommon summer resident here. At about 1220 m, Holt (1974) had 28 pairs/40 ha in 1959-1960 in mesic shrub and 3 pairs/40 ha in 1971-1972 in young, shrubby, second-growth forest. Neither I nor Horn (1984) has found chats breeding in Highlands or the Cashiers Valley above 1100 m in recent years.

At the GSMNP, Stupka's (1963) only breeding records above 1100 m are individuals up to 1525 m on the Appalachian Trail near Cosby Knob on 29 June 1936, singing on Mt. LeConte at 1627 m on 9 June 1948, and on Hemphill Bald at 1700 m on 11 June 1935. At Mt. Mitchell, Burleigh (1941) had 1 singing male in a cutover area at 1525 m on 8 May 1930. None of these records mentioned any evidence of breeding. On Roan Mountain, numbers of breeding chats have fluctuated greatly since 1970 but chats usually are regular up to 1220 m in years when they are fairly common, and are vagrants on balds up to 1678 m (Eller and Wallace 1984; G. Eller and R. Knight, pers. comm.). Earlier, Stevenson (1957) found chats apparently established on territory on balds at Roan Mountain from 1464-1617 m but gave no evidence of breeding. H. LeGrand (pers. comm.) has heard a few chats singing near the parking lot for the SRWA (1769 m) and near Graveyard Fields (1525 m) in summer but found no evidence of breeding. I heard a chat sing from a grassy burn and blackberry thicket at Graveyard Fields at 1586 m on 9 June 1987. The sources for the statement of Pearson *et al.* (1959) that the chat is a "common summer visitor....including some mountainsides up to 5000 feet" are unknown. Any breeding evidence for chats above 1100 m should be documented to clarify their distribution and abundance.

INDIGO BUNTING (*Passerina cyanea*) — A female was feeding nestlings on 19 August 1986 at 1769 m just beside the parking lot for the SRWA. The nest was located in a blackberry thicket. Not far away, another female fed nestlings at 1708 m on 19 August. This nest was in a blackberry and forb thicket, at the edge of a large grassy field and adjacent thicket, composed principally of blueberries (*Vaccinium* spp.) and tag alder. In addition, other

pairs of adults undoubtedly nested here; I saw family groups with their fledged young (12 females and young plus 3 adult males). Later, on 10 September, 1 fledgling was heavily streaked on the upper breast and had slightly swollen rectal flanges, indicating it still had not completed its morphological development. A third breeding female, on 9 August, fed nestlings alongside the BRP near Richland Balsam in Jackson County at 1833 m. This nest was in a blackberry thicket located among numerous *Rhododendron* and deciduous scrub at the edge of open spruce-fir forest. The young had fledged by 19 August when they were seen at the site with their parents. For all 3 cases of confirmed breeding, the adult male warned the female of intruders. Males had been singing at these sites since June, though they were not singing on the days breeding was confirmed.

Only 1 Indigo Bunting nest has previously been reported above 1525 m. Simpson (1977) found an almost completed nest, on 30-31 May 1975, in the heart of a blackberry thicket at 1585 m along the BRP near Mt. Pisgah, Henderson County.

In the Great Balsams, I had several pairs of Indigo Buntings on territory above 1525 m along the BRP from Richland Gap to Elk Pasture Gap on 20 June 1983, and likewise during June of 1986. I saw a pair in the Black Mountains at Balsam Gap at 1517 m in mid-to-late June of 1983 and 1986. I also had a pair on Mt. Mitchell at 1861 m on 26 June 1986. In the Unicoi Mountains, McConnell and McConnell (1983) saw pairs on grassy balds of the highest summits, at Huckleberry Knob (1696 m) and Haw Knob (1669 m) in mid-June 1981 and 1982. C. Nicholson (pers. comm.) has had at least several pairs in recent years in spruce-fir habitat at high elevations of the GSMNP. These records are the only other evidence of breeding above 1525 m in the southern Appalachian Mountains except for singing males on territory.

Hamel *et al.* (1982) state that records of Indigo Bunting above 1525 m during the breeding season are infrequent. This statement is not supported by Simpson's (1977) records or those of others (Cairns 1889, Rhoads 1895, Ganier 1936, Burleigh 1941, Fawver 1950, Stevenson 1957, Stupka 1963, Eller and Wallace 1984). Indigo Buntings may be numerous up to elevations of 1449 m, locally common up to 1830 m, and locally uncommon above 1830 m on the Great Balsams (pers. obs.), GSMNP (Stupka 1963; C. Nicholson, pers. comm.), Black Mountains (Cairns 1889, Stevenson 1957, pers. obs.), and Roan Mountain (Rhoads 1895, Ganier 1936, Eller and Wallace 1984; G. Eller and R. Knight, pers. comm.). Singing males have been seen at elevations as high as 1922-1952 m on Mt. Mitchell in June of 1983 and 1986 (pers. obs.); 2 singing males were present at 1983 m on Clingman's Peak in the Black Mountains during June of 1987 (pers. obs.).

Representative counts of singing male Indigo Buntings above 1525 m in recent years are: 20 along the BRP from Richland Gap to Elk Pasture Gap on 20 June 1983 in the Great Balsams, 10 along the BRP from Richland Balsam to the Pisgah Inn on 31 May 1986, 7 at BBK on 31 May 1986, 13 along the BRP from Richland Balsam to BBK on 27 July 1986, and 30 from Mt. Mitchell to Craggy Gardens on 26 June 1983. At Mt. Mitchell alone in 1986, I had 3 on 2 June, 2 on 8 June, 12 on 13 June, and 7 on 26 June. In 1987, buntings were even more numerous. I heard about 45 singing in the Great Balsams on 8-9 June and 40 singing from Mt. Mitchell to Craggy Gardens

on 10-11 June. Indigo Buntings have therefore been fairly numerous above 1525 m by mid-June in recent years (see also McConnell and McConnell 1983). Unfortunately, the limited data do not allow determination of the temporal sequence and duration of territorial establishment.

Territorial establishment of Indigo Buntings above 1525 m during the breeding season is not a recent phenomenon but regularity of occurrence above this elevation is poorly known (*op. cit.*, see Simpson 1977). Certainly, creation of favorable habitat, e.g., roadside edge of the BRP, provide sites for occupation but this species may be present at natural sites as well, e.g., balds. Adequate annual censuses to determine this species' distribution and abundance do not exist but some evidence suggests temporal changes in distribution during a single breeding season over time. In contrast to my recent records, Burleigh (1941) only found singing males of this species above 1525 m on the Black Mountains from 5-31 July and explicitly stated the species did not breed here as Cairns (1889) also stated, but it almost certainly does breed at present. At Roan Mountain above 1525 m, Rhoads (1895) stated buntings nested at the summit though he did not cite any evidence. Ganier (1936) saw buntings on Roan Mountain at 8 locations while Stevenson and Stupka (1948) saw none in 1946. Confirmation of breeding in recent years at the higher elevations of the southern Appalachian Mountains is most likely an artifact of the effort required to search for nests, though undoubtedly absence or scarcity of pairs above 1525 m during the breeding season in certain years has contributed to the scarcity of more positive breeding evidence. A major increase in breeding populations of Indigo Buntings above 1525 m has probably occurred since the late 1970s. Annual censuses are needed to document changes in populations at the higher elevations for the Indigo Bunting. Censuses should begin around 18 May as this species rarely arrives before then at the higher elevations no matter how numerous it may be in a given year.

**DARK-EYED JUNCO** (*Junco hyemalis*). — C. Wooten (*vide* LeGrand) found a pair of juncos in hemlock forest on 26 May 1986 at the Walhalla Fish Hatchery, Oconee Co., at 763 m. At the identical site, Wooten later confirmed breeding when he found the pair feeding 3 juveniles on 12 June. This record is the third breeding locality for South Carolina. I later found 1 junco at this site on 28 July and saw another in hemlock, white pine, and hardwoods forest on 16 July at 854 m near the junction of US 107 and SC 130.

Previous breeding and breeding-season records for South Carolina are reviewed by McNair (1985) and in *Chat* 50:27. In addition to this information, I. Pitts (*vide* LeGrand) found several nests of juncos at Caesar's Head in 1985 and 1 nest in 1986.

Across the state line in the southern Blue Ridge Mountains of North Carolina, pairs of juncos are locally uncommon at elevations of 915-976 m, which generally agrees with the observations of Stupka (1963) in the GSMNP where he saw them as low as 793 m. I also had 2 juncos singing on territory (at 793 m) from 7-20 May 1987 at the Chimney's Picnic Area, GSMNP. Juncos have been seen lower during the breeding season down to elevations of 610 m (Jeffries and Jeffries 1889, Pratt 1970), but no breeding evidence has been cited.

Outside the southern Appalachian Mountains, the only breeding-season records are of individuals at Poore's Knob in the Brushy Mountains of

North Carolina at 793 m and 671 m in May and June of 1963, 1 at the same locality at 580 m in late July 1966, and 1 at 610 m near the Brushy Mountain Community Center on 10 July 1962 (Simpson 1968a).

AMERICAN GOLDFINCH (*Carduelis tristis*). — One female, in fresh condition, was killed by a car on Mt. Mitchell at 1922 m on 8 June 1986. Its brood patch was fully developed, indicating that it was probably breeding or preparing to breed. Several pairs of goldfinches were present at this site later in the breeding season.

Burleigh (1941) found a nest with 4 eggs in a yellow birch sapling on Mt. Mitchell at 1769 m on 1 September 1932 and stated that the goldfinch was regular to 1891 m and casual to the summit. Stupka (1963) had breeding season records from June through early October at 1739-1922 m in the GSMNP but cited no evidence of breeding. Stevenson and Stupka (1948) reported goldfinches near the summit of Roan Mountain.

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## BOOK REVIEWS

**BIRDS WORTH WATCHING**, by George Miksch Sutton. 1986. 207 pp., 60 color photos. Univ. Oklahoma Press, Norman.

George Sutton had essentially completed the manuscript for this book shortly before his death in 1982. With the combined efforts of the University of Oklahoma Press, the Oklahoma Ornithological Society, and others, the book has now been published. The result is a delightful collection of short essays on 60 species of birds, from Common Loon to House Sparrow. The writing style is lively and non-technical. Sutton's intimate knowledge of his subject shows in each account, as he describes his personal experiences from the arctic to the desert southwest. As might be expected, many of the accounts deal with birds in Oklahoma. Sutton describes anecdotal observations as well as the results of research he or his students carried out. Many of his observations were made around his house in Norman and on the university campus. A recurring theme in the accounts is how much we do not yet know about birds, including common species. For example, why does the male Painted Bunting not have a dull winter plumage, as do other members of its genus? Why do the males of some vireos, such as the Warbling Vireo, sing while on the nest? What is the purpose of the Mockingbird's wing-flashing? Sutton's description of the Northern Cardinal as the leading producer of Brown-headed Cowbirds in Oklahoma surprised me, as did some of the other information in these accounts. A color photograph illustrates each species account. A few are by well-known photographers; several other photographers were new to me. All of the photos are very good. I enthusiastically recommend this entertaining book. — CHARLES P. NICHOLSON.

**COLLINS FIELD NOTEBOOK OF BRITISH BIRDS**, by Roger Lovegrove with illustrations by Philip Snow. 1986. 130 pp., numerous illustrations. \$21.95, softbound. Collins, London.

Lovegrove and Snow have teamed up to produce a pocket-sized field guide, which comes with a notepad and BTO checklist in a plastic binder. According to the introduction, this set was designed for the beginning to intermediate British birdwatcher. The introduction includes a primer on bird identification, a discussion on sketching birds by the artist, and a birdwatcher's code of conduct. The user of the book is encouraged to use the pages of the notepad to record and sketch his observations. The species accounts consist of annotated color sketches of 4 or 5 species per page, facing text accounts. Together the sketch annotations and text provide information on where and when to look for the bird, vocalizations and other behaviors, and field marks. Some rare and most accidental species are omitted. This package seems quite useful, but, for North Americans visiting Europe, I do not recommend it as a substitute for a regular field guide. — CHARLES P. NICHOLSON.

## THE SEASON



SUMMER: 1 JUNE — 31 JULY 1987

The second summer of the Tennessee Breeding Bird Atlas project was exciting. The weather resembled that of the summers of 1985 and 1986 — hot and below average rainfall. June in eastern Tennessee was an exception to this, as temperatures and rainfall were near normal. This was not the case there during July, when virtually no rain fell during the last 3 weeks and daily high temperatures were consistently above 90°F. Despite these conditions, the only adverse weather-related effect on nesting birds mentioned in the following reports is mortality from heat stress at the Duck River Unit heronry.

Despite the weather, which may have affected birders more than the birds, numerous exciting breeding records were reported. A Savannah Sparrow was found with fledglings at Limestone in upper east Tennessee, providing the second state breeding record of this species. A pair of cormorants attempted to build a nest at the Duck River Unit, and a single cormorant was present at Reelfoot Lake. Numbers of wintering and migrant cormorants have greatly increased in recent years, and now it appears that the reestablishment of this species as a breeding bird in Tennessee is at hand. Bald Eagles had a good year, fledging 9 young from 5 nests. Ospreys continued their increase in eastern Tennessee, but their nesting results were mixed in middle Tennessee. Bewick's Wrens and Bachman's Sparrows were both reported in higher than normal numbers, and many of the Bewick's Wrens were in a habitat not previously searched for the species. Atlasers are slowly filling in the gaps in our knowledge of the breeding distribution of many species. See, for example, the accounts of the Cedar Waxwing in the following reports. Breeding evidence for this species was reported from middle and eastern Tennessee. Numerous other examples are found in the following reports. — CHARLES P. NICHOLSON.

Abbreviations used in the following reports include: ad — adult; EOP — end of period; ers — earliest fall migrant reported; imm — immature; max — maximum number reported in 1 county in 1 day; m.ob. — many observers; y — young.

**WESTERN COASTAL PLAIN REGION** — The season was marked with mild temperatures and very little rain. Shorebirds were the birds of the season. A new state record, the Pomarine Jaeger, was first seen in June at Paris Landing and remained through the end of the period.

*Loon* — *Falcon*: Common Loon: 20 Jun (1) Pace Point, HNC (JCR). Double-crested Cormorant: 15 Jun (1) REL (Paul Brown, Jim Johnston); 27 Jun (5) Upper Blue Basin, REL (RPF). Anhinga: 1 Jun (1 nest with y) REL

(Steve Pardue, Jimmy Cox); 28 Jun (3) REL (John L. Stokes). Yellow-crowned Night-Heron: 6 Jun (13 nests, 2 to 5 y each) Whitehaven, MEM; 1 nest near New Horn Lake Rd., SBC (BBC, LCC). Ruddy Duck: 7 Jun (9), 20 Jun, 4 Jul (8), 25 Jul (6) Robco Lake, SBC (BBC, LCC); 12 Jul (1 male) Tiptonville Sewage Lagoon, LKC (JCR). Osprey: 1 Jun (2 on nest) REL, Obion Co. (WGC). Mississippi Kite: 23 May (1) TN 104, Gibson Co. (WGC); 13 Jun (11 ad, 2 imm) Lauderdale Co. (JCR *et al.*); 6, 18 Jul (nest, 1 y) Chucalissa Museum, SBC (Kay Smith); 7 Jul (nest, 2 y) near Overton Park, MEM (BBC, LCC). Bald Eagle: 1 y fledged from nest in Benton Co. portion of Duck River Unit, Tenn. Nat. Wildl. Refuge (fide RMH). Northern Harrier: 7 Jul (1) Blue Bank, LKC (Walter Cook, Charles Gagen). Cooper's Hawk: 15 Jun (1) N of Savannah, HDC (BHS). Peregrine Falcon: 12 Jul (1) I13 (JCR).

*Plover — Tern*: 14 Jun (1) I13 (WGC). Lesser Golden Plover: 14 Jun (1) I13 (WGC). Semipalmated Plover: 24-28 Jul (1-4) ESL (GRP, VBR, JEW, MGW). Killdeer: 7 Jun — EOP (10-200) ESL (CHB, GRP, VBR, JEW, MGW). Black-necked Stilt: 7 Jun — 24 Jul (up to 10 ad, 3 nests, only 1 successful with 1 young) ESL (CHB, GRP, VBR, JEW, MGW). Lesser Yellowlegs: 5-28 Jul (8-34) ESL (CHB, VBR, MGW). Solitary Sandpiper: 5-26 Jul (2-15) ESL (CHB, VBR, JEW, MGW). Spotted Sandpiper: 28 Jun — 28 Jul (1-9) ESL (CHB, GRP, VBR, JEW, MGW); 4-30 Jul (1-4) I13 (WGC). Semipalmated Sandpiper: 22 May (60), 31 May (100), 1 Jun (1), 27, 31 Jul (25) I13 (WGC); 24-28 Jul (15 to peak of 233 on 28 Jul) ESL (GRP, VBR, JEW, MGW). Western Sandpiper: 14, 18 Jul (1, 3) ESL (CHB, VBR, MGW). Least Sandpiper: 28 Jun — 30 Jul (6-20) I13 (WGC); 5-28 Jul (3-255) ESL (CHB, GRP, VBR, JEW, MGW). White-rumped Sandpiper: 31 May (4) I13 (WGC). Pectoral Sandpiper: 14-28 Jul (17-431) ESL (CHB, GRP, VBR, JEW, MGW). Stilt Sandpiper: 4-24 Jul (1-2) ESL (CHB, VBR, MGW). Short-billed Dowitcher: 24-26 Jul (5) ESL (VBR, JEW, MGW). Wilson's Phalarope: 25 Jul (1 male, 2 females) Allen Steam Plant near ESL (BBC, LCC, Floy Barfield). **POMARINE JAEGER**: 28 Jun to end of period (1) Paris Landing State Park, HNC (Don Manning); details to be published. Ring-billed Gull: 12 Jul (1) I13 (JCR). Common Tern: 27 Jun (5) REL (RPF). Forster's Tern: 25 Jul (1) North Lake, SBC (BBC, LCC). Least Tern: 12 Jul (87, many fledglings) I13 (JCR). Black Tern: 5, 8 Jul (8, 3) Allen Steam Plant near ESL (CHB, VBR).

*Flycatcher — Swallow*: Willow Flycatcher: 31 May (1) North Fork of Obion River, WEC (JCR). SCISSOR-TAILED FLYCATCHER: 30 Jun (1) REL near New Markham (Jerry Coates, RPF). Horned Lark: 16 Jun (30, most juveniles) TN River bottomland between Pickwick State Park and Savannah, HDC (DJS). Purple Martin: 13 Jul (650) TN 78, Phillipy to Tiptonville, LKC (WGC). Cliff Swallow: 8 May (16+ new nests, no birds) I-40/Birdsong Exit, BNC; 3 Jun (30) US 641 and Birdsong Creek, mile 5, BNC; 4 Jun (20) Lick Creek in Big Sandy WMA, BNC, new location; 4 Jun (25) new US 70 bridge, east of Birdsong Rd./Cypress Creek, BNC; 3 Jun (12) TN 69A at Big Sandy, HNC; 11 Jun (200) Beech Bend, south of Perryville, DTC; 26 Jun: (12 fledglings) Pickwick State Park marina, HDC, (10) west of Counce, (12) TN 22/Snake Creek bridge, HDC, (300 nests and large number of imm) Pickwick Dam, HDC (all by BBC, LCC); 14 Jun (115+ birds, 100+ nests) TN 128, HDC (BHS).

*Creeper — Warbler*: Brown Creeper: 11 Jun (1) Old Cranetown, REL, Obion Co. (RPF). House Wren: 13 May (1) Martin, WEC (JCR); 12 Jul (1) levee at Phillipy Pits, LKC (JCR), same location as 25 May record. Eastern

Bluebird: 16 Jun (1 nest with 5 eggs) REL State Park, first nest "for quite some time" in Lake County as reported to RPF. Warbling Vireo: numbers lower in Decatur and Benton Counties, better in Shelby Co. (BBC, LCC). Yellow Warbler: 5 Jun (1) Mud Island, SBC (BBC, LCC); 28 Jun (1) Pickwick, HDC (BBC, LCC). Black-throated Green Warbler: 4 Jun (1 singing) 3 mi NE of Camden, BNC (BBC, LCC), latest transient in West TN by 7 days. Prairie Warbler: 31 May (1) Busselton NWR, DTC (CHB); 1 Jun (6) BNC (DPB); 4 Jun (2 at 2 stops) Whiteville BBS (CHB); 7 Jun (5) Buena Vista, Carroll Co. (DPB); 23 Jun (2) NW Henderson Co. (BBC, LCC). Cerulean Warbler: 6 Jun (3) HNWR (BBC, LCC); 11 Jun (1) Lower Hatchie NWR (CHB, VBR, MGW); 16 Jun (1) Shelby Forest State Park, SBC (BBC, LCC). Black-and-white Warbler: uncommon to rare in lower West TN (BBC, LCC); 31 May — 8 Jun (1-2) Buena Vista, CLC (DPB). Swainson's Warbler: lower numbers in region, 10 on HNWR survey on 6 Jun (BBC, LCC).

*Tanager — Goldfinch:* Scarlet Tanager: 6 Jun (1) HNWR (BBC, LCC, Joe B. Guinn). Painted Bunting: found at 6 sites in Shelby County, 3 of the sites new (BBC, LCC). Dickcissel: 16 Jun (19 males, 1 female) TN River bottom-land between Pickwick State Park and Savannah, HDC (DJS). **BACHMAN'S SPARROW:** 16 Jun (12 ad, 1 imm) Benton Branch Rd., HDC (DJS). Grasshopper Sparrow: 4 Jul (1 ad, 3 imm) floodplain N of Pickwick Dam, HDC (DJS). Song Sparrow: 4-5 Jul (1) ESL (BBC, LCC, CHB). House Finch: 25 May — end of period (pair feeding young, then 1-2 males, 2-3 females) Dyer Co. (Celia W. Hudson); nesting for the first time at Coffey Grounds, MEM (BBC, LCC). American Goldfinch: 6 Jun (22) HNWR (MTOS).

*Locations:* BNC — Benton Co.; CLC — Carroll Co.; DTC — Decatur Co.; ESL — Ensley Sewage Lagoons, Shelby Co.; HNWR — Hatchie National Wildl. Refuge, Haywood Co.; HDC — Hardin Co.; HNC — Henry Co.; I13 — Island 13, Lake Co.; LKC — Lake Co.; MEM — Memphis; REL — Reelfoot Lake; SBC — Shelby Co.; WEC — Weakley Co.;

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**HIGHLAND RIM AND BASIN REGION:** An extremely productive nesting season followed one of the less exciting spring migrations in some years. Weather conditions were generally hotter and drier than normal, like those in the summers of 1985 and 1986; June rainfall in Nashville was 2.25 in. (1.45 in. deficient), while that in July was 2.56 in. (1.15 in. deficient).

Many significant breeding records were established during the season. Perhaps the most exciting news concerns Bachman's Sparrow and Bewick's Wren. Damien Simbeck and John Robinson systematically searched for the former species in clearcut areas of many counties in the western half of the region and registered sparrows in four of them. An unexpected by-product of their search was the discovery of many Bewick's Wrens in clearcut habitat. The wrens frequented clearcuts where brushpiles were formed in the process of preparing the clearcut area for pine seedlings. The number of wrens found in Stewart County, in particular, was impressive.

Breeding Bird Surveys (BBS) in the region provided data on 96 species (average 1966-1986 was 93.8; average 1977-1986 was 95.3; range 1966-1986 was 88-99). No new BBS species was added during 1987, so the regional BBS species total remains 118. As in 1986, only 14 of the region's 15 BBS routes



were covered; thus, the lowest-ever totals cited below are once again slightly less significant than they would be had all 15 routes been run, while the highest-ever totals are somewhat more significant. Reported in lowest-ever numbers (an asterisk indicating species trending downward over the past 20 years) were Green-backed Heron (8), Horned Lark (0\*), Gray Catbird (27), Loggerhead Shrike (14\*), and Yellow Warbler (9). Highest-ever totals (an asterisk indicating species trending upward) were recorded for Canada Goose (86\*), Turkey Vulture (73), Red-shouldered Hawk (8), Great Horned Owl (4), Eastern Phoebe (84), Purple Martin (86), Carolina Chickadee (114), White-breasted Nuthatch (36\*), American Robin (331\*), Yellow-throated Vireo (29), Northern Parula (13), Northern Cardinal (614), Blue Grosbeak (97\*), and Brown-headed Cowbird (248).

Many rare or uncommon species breeding in the region were inadequately monitored this season, although they have received reasonably good attention in recent years. In particular this was true of Black-crowned Night-Heron, Willow Flycatcher, Tree Swallow, Cliff Swallow, Dickcissel, Lark Sparrow, and Grasshopper Sparrow. A greater consistency of reporting about these species, many of which are "Blue-listed," is desirable in the future. Let it be remembered that the price of knowing what is happening to bird species, like the price of freedom, is eternal vigilance. More positively, several species received much better coverage than during any recent breeding season, including Red-headed Woodpecker and Northern Oriole, as well as the aforementioned Bewick's Wren and Bachman's Sparrow.

I thank all the observers noted below for submitting data, the regional BBS cooperators for running routes and reporting results, and John C. Robinson for reviewing an early draft of this report.

*Cormorant — Ibis*: **DOUBLE-CRESTED CORMORANT**: 3 Jun (2) DRU (EB), this presumed pair engaged in nest-building behavior for several hours but failed to erect a platform; species formerly nested at this site and may do so again; see Western Coastal Plain Region. Least Bittern: 30-31 May (2 calling) MOP (O. Bedford Lochridge, William N. Jernigan, *et al.*), only report. Great Blue Heron: 19 Mar (187 active nests) Sinking Creek, Arnold Engineering and Development Center, FKC (*fide* Burline P. Pullin); 20 Apr (230 active nests) DRU (EB), the number of active nests declined to 189 on 18 May and to 163 (with many containing dead young) on 3 June; the primary reason for reduction in number of nests was heat stress; secondary reason was disturbance to nest site caused by maintenance work on flood-damaged dikes adjacent to the nests; it would appear that this maintenance work could have been timed to better accommodate the nesting needs of this and another rare breeder in the region (see entry for Osprey). Great Egret: by EOP very small numbers present in LWC (DJS), SUC (DTC, JPC), and SWC (JCR, DWB). **SNOWY EGRET**: 14-30 Jul (up to 4, including 3 imm and 1 ad) CCNWR (JCR, DWB), only report. Little Blue Heron: 20 Jul (48) CCNWR (DWB), max; also reported in MUC (DTC, JPC) and RUC (ALH). **TRICOLORED HERON**: 26-31 Jul (1 imm) CCNWR (JCR, Todd Fink, m.ob.), first SWC record and one of very few in region. Cattle Egret: 2 Jul (1 ad) 5 km SE of Carlisle, SWC (DWB); 9 Jul (1) CCNWR (JCR); 3 Jul-19 Aug (pair with nest and 2 young — photos) GSP (SJS, BHS, DTC, JPC), first NA breeding record and first fully documented regional breeding record; details will be published. Black-crowned Night-Heron: 6 Jul (100+ nests) GSP (JPC, SJS), 3rd year this rookery active; the Bordeaux, DVC, rookery was active

(PBH), but no details were reported; by EOP birds had dispersed and were reported from SWC (JCR, DWB), RUC (ALH), and RBC (DJHS). Yellow-crowned Night-Heron: 9 Jun (1 ad, 1 imm) Burgess Falls State Natural Area, PUC (BHS, SJS); 28 Apr-29 Jul (2 ad, 2 imm) Rock Creek in Tullahoma, CFC (Marjory B. Harper, Ruth Luckado, Chloe Peebles, Lillie Willard, MDH); only reports. WHITE IBIS: 20, 28-31 Jul (1 imm) CCNWR (JCR, DWB, m.ob), only report. Ibis sp.: 15 Jul (1) Childer's Creek, Woods Reservoir (Brian James, Douglas Pelren).

*Duck — Vulture:* American Black Duck: 30 Jun — 30 Jul (pair) Wartrace Lake, RBC (DJHS); 5 Jul (1) CCNWR (JCR); only reports. Blue-winged Teal: 5 Jun (pair) MOP (BHS), no nesting evidence secured; only report. Ring-necked Duck: all period (1 male) MOP (BHS, m.ob.). Hooded Merganser: 6 May (female with 4 small young) MOP (DJS, SJS), young were  $\frac{3}{4}$  grown by 5 Jun (BHS); very few regional breeding records. Black Vulture: 10, 30 Jun (2 ad tending 1 hatchling) LBL (David H. Snyder, Michael Dinsmore), only breeding report; 15 Jun (2) FTC (RCH), considered unusual there.

*Osprey — Eagle:* Osprey: The DRU pair arrived on territory 24 Feb and was plagued by problems for the rest of the season. These birds built 4 nests but produced no young. Apparently maintenance work performed on flood-damaged dikes near their nests disturbed the birds and caused them to abandon 2 nests. The female incubated at the third nest for 6 weeks, but no young hatched. A fourth nest started late in the season was also unsuccessful. This pair had similar problems in 1986, though it successfully fledged young in 1984 and 1985 (EB), if the same male and female are still involved. Ospreys were active on Percy Priest Lake early in the season (Maxey H. Irwin), but results of their nesting efforts went unreported. Ospreys also built 2 nests on transmission towers in Old Hickory Lake, SUC; at least 1 of these was successful, as a begging juvenile was seen at the site 19 Aug (DTC, JPC — photos); this record constitutes the first successful nesting in the NA. Two birds were successfully hacked on Old Hickory Lake (C. Wick Comer); other hacking results were not made available. Bald Eagle: This species had a productive breeding season with 4 pairs fledging 8 young birds. The Westvaco, SWC, pair fledged 3 young for the second consecutive year (Sarah McClellan, JCR), while the LBL and Averitt, SWC, pairs fledged 2 and 1 young, respectively (*vide* JCR, RMH). On 9 Apr the nest of the Cordell Hull, JAC, pair was finally located (Richard Stark, Dale Massengill); this pair fledged 2 young later in the season (*vide* RMH). The Normandy Lake, CFC, pair was active around the nest from November, 1986, through early March, 1987 (B.J. Jenkins, MDH) but then vacated the area for reasons which probably include too much human disturbance; TWRA should rigidly enforce a no-entry zone for at least half a km around this nest. The only other eagle-related news involved sightings of adult birds on the lower reaches of the Duck River (*vide* RMH); see the Western Coastal Plain Region for other news about DRU eagles. Hacking at LBL continued this year with at least 8 birds involved; three were hacked at the newly inaugurated hacking site on Dale Hollow Lake, Clay Co. (*vide* RMH), although 1 of these died shortly after leaving the hack site.

*Kite — Tern:* MISSISSIPPI KITE: 14 Jun (1 imm) 1 km SW Milldale, RBC, near the South Fork of the Red River (JCR, DJHS), 4th NA record; together with the sighting of an immature in LWC during the spring of this year, this record suggests the species might be breeding along one or more of the

region's river systems. Sharp-shinned Hawk: 19 Jul (nest with 1 fledged young and 1 ad nearby) NW PYC (SJS, JCR), first published nesting record in region since 1978 (*Migrant* 49:92, 1978; but see Addenda). Cooper's Hawk: 18 Jun (1 ad) Union Hill BBS, Clay County (RCH, J. David Hassler); 8 Jul (1) CCNWR (JCR); 17 Jul (1) JAC (BHS, SJS); 18 Jul (1) Leatherwood Rd., SWC (JCR); only reports. Wild Turkey: 15 Jul (25) Keith Springs Mt., FKC (Philip L. Medley), max; 25 Jul (5 ad, 3 young) FCMR, SWC (JCR); only reports. Northern Bobwhite: BBS total of 435 was highest since 1980; an "increase over the last few years" was also noted in SWC (DWB). KING RAIL: 3, 22, 25 Jun (1 ad, nest with 10 eggs — photos) DRU (Carl Dowdy, Mark Musaus), rarely reported in region away from Goose Pond, GYC, especially with breeding evidence. American Coot: 21 Jun (1 ad) SW WYC (DJS, JCR), only report. Killdeer: 31 Jul (83) GSP (DTC, JPC), max. American Woodcock: 6 Jun (2) CCNWR (JCR); 14 Jun (1) Clarksville, MTC (JCR); 26 Jul (1) MOP (BHS, SJS, DTC, JPC); only reports. Least Tern: 8-14 Jun (1-2 ad) CCNWR (JCR), certainly a suggestive report, like a similar one in 1986; this species formerly nested along the Tennessee River and may still do so on Kentucky Lake and/or Lake Barkley.

*Cuckoo — Swallow*: Yellow-billed Cuckoo: 8 Jun (1 egg laid on the deck at observer's home, presumably not as a social comment) Love Lady, PIC (Jessie Baker, *vide* RCH). Ruby-throated Hummingbird: 19 Jul (18) PYC (JCR, SJS), feeding at blooms of *Mimosa* sp. in many locales. Red-headed Woodpecker: 20 reports from 13 counties; increasing in LWC (DJS), but considered down in SWC and elsewhere in the region (JCR). Willow Flycatcher: 14-30 May (up to 11 singing) CCNWR (JCR, DWB); 6 Jun — 20 Jul (up to 6 singing) CCNWR (JCR, DWB); 5 Jun (1 singing) Bear Creek WMA, SWC (DWB); 15 May (2) Lock B Rd., MTC (Annie H. Heilman); 27 May, 15 Jun (up to 4 singing) MOP (BHS); 25 Jun (1 singing) FTC (RCH); only reports; species not well monitored and reported at many traditional sites. Purple Martin: 22 Jul (790) SWC (DWB, JCR), max. Tree Swallow: 1 Jun/24 Jun (2/2) CCNWR (JCR/DWB); 20 Jun (15) DRU (JCR); 3 Jul (pair) GSP (DTC, JPC, SJS); also poorly monitored at several sites where nesting has occurred in recent years. Bank Swallow: 5 Jul (14) GSP (JCR). Cliff Swallow: 10 Jun (832) SWC (JCR), max; this record also involved many nests, most on the west-facing exposure of bridges, at 5 sites; 27 Jun (40) 8 km S Clarksville, MTC (EJW); 17 Jul (100) 3 sites along Cumberland R. in JAC (SJS, BHS); many sites not well monitored, especially in Cheatham County.

*Bewick's Wren*: 10 May — 7 Jun (7 singing/nest with y — photos) Tennessee Ridge, HOC (JCR/Donette Sellers), all birds found in typical suburban sites; 21 May — 31 Jul (2) Rt. 231 N of Hwy 70, WLC (Earline Berry, Vernon Berry); 14 Jun (1 singing) EWMC (SJS); 15-16 Jun (1 singing) headquarters, CCNWR (JCR); 21 Jun (3 singing) Bromley Rd. and Bear Creek Rd., WYC (JCR, DJS), found in brush piles created during fairly recent — 1-5 years old — clearcut operations; these birds were discovered as a serendipitous result of a search for Bachman's Sparrow; 15-24 Jul (21) 7 fairly recent Westvaco clearcuts, SWC (JCR); JCR recorded 11 birds in 4 different clearcuts while searching for Bachman's Sparrows; when he made a concerted effort to locate wrens in 3 other clearcuts, he found 10 more, resulting in the highest density of Bewick's Wrens per county recorded in the region and state in 2 decades. Part of this species' decline over the past 30 years may in fact be attributable to its using relatively unmonitored clearcut brushpiles for

nesting habitat instead of the more traditional suburban clutter sites most observers associate with the species, though it is unlikely that all of its decline can be attributed to this newly discovered habitat preference. In any event, JCR has certainly opened a new chapter in the history of Bewick's Wren biology in Tennessee.

*Wren — Warbler:* House Wren: 17 May, 7 Jun (1 singing) same site in Tennessee Ridge, HOC (JCR); 14 Jun (2 singing) Springfield, RBC (JCR, DJHS); 21 Jun (9) 3 locations in MTC (DWB); 26 Jun (1) Erin, HOC (DWB); 26 Jun (1) Burns Fire Tower, Dickson Co. (DWB); species continues to be recorded in new locations in the northern half of the region, mainly in urban or suburban habitats. Wood Thrush: 19 Jul (23 singing, from 0645-1500 despite temperatures above 90°F) PYC (SJS, JCR), max. Cedar Waxwing: 6 Jun (1) CCNWR (JCR); 6 Jun (2 ad) Wiley's Spring Bay, SWC (DWB); 9 Jun (1) Cookeville Lake, PUC (SJS); 1 Jul (2 ad) Model Fire Tower, LBL (DWB); 17 Jul (2 juveniles persistently pursuing 1 ad) Wartrace Creek Boat Ramp, JAC (SJS); only reports. White-eyed Vireo: 19 Jul (26) PYC (SJS, JCR), max. Black-and-white Warbler: 19 Jul (5) PYC (JCR, SJS), max. American Redstart: 6 Jun (1 singing) CCNWR (JCR), only report; none on BBS routes. Hooded Warbler: May-Jun (1 singing) Pinewood Rd., WMC (BHS, SJS), first bird in 5 years to remain in area during breeding season, following partial timbering (i.e., all trees greater than 40 cm in diameter) of the area in 1986; it was independently noted (RWS) that partial timbering in PUC resulted in fewer Hooded Warblers immediately around the observer's house and more in the partially timbered area somewhat farther away. Yellow-breasted Chat: 199 on regional BBS routes, a slight increase over totals for 1983-1986.

*Dickcissel:* 7 Jun (7) Glen BBS, GYC (DRJ); 14, 28 Jun (at least 37) NW and central RBC (JCR); 19 Jun (2) Belotes Bend BBS, SUC (PBH); 20 Jun (1) FCMR, SWC (JCR); 12 Jul (1 singing) central WMC (SJS); only reports. This species is monitored much less carefully than it deserves, since several authorities consider it to be declining in the eastern portion of its range, which includes this region. Fretwell (*Am. Birds* 31:923-932, 1977) and Robbins *et al.* (1986. The breeding bird survey: its first fifteen years, 1965-1979, USDI, Washington, DC, p. 108) noted the species' declining numbers through the late 1970's; there is no evidence to suggest that decline has ended. Observers in the region are urged to report all sightings, preferably along with county maps showing locations of birds during a given season. Such maps are available from the compiler on request.

*Bachman's Sparrow:* Apr-Jul (3) SE of Fall River, LWC, in Giles County (DJS), 3rd year at this site; 8 Apr (1) Loretto, LWC (DJS); 16 Jun (2 males) Lewis County DJS, Ed D. Crouch, Michael A. Beuerlein); 21-26 Jul (2 males) 1-year-old and 2-year-old Westvaco clearcuts in W SWC (JCR); see Western Coastal Plain Region. DJS cautions that these sightings do not mean that Bachman's Sparrows are increasing in the region, but only that persistent searching of proper habitat — recent clearcuts — will produce the birds in many counties throughout Tennessee. Bachman's Sparrow appears fated to exist in the state primarily where timbering practices create suitable habitat for short periods of time; however, rotational clearcutting may ensure the species a place in Tennessee for many years to come.

*Sparrow — Finch:* Lark Sparrow: 5 Jul (1) entrance to Cedars of Lebanon State Park, WLC (JCR); 28 Jul (1) CCNWR (JCR), probable migrant; only

reports. Grasshopper Sparrow: 7 Jun (12) Glen BBS, GYC (DRJ), max; species not well monitored or reported. Song Sparrow: 19-20 Jun (10) Green Creek in Waynesboro, WYC (JCR, DJS); 28 Jun (2 ad, 1 juvenile) Misery Swamp, MTC (JCR); WYC and MTC are the 28th and 29th of the region's 40 counties where Song Sparrows have been reported during the breeding season. White-throated Sparrow: all season (1 ad male) Murfreesboro, RUC (Clarence Greever, Helen Greever, John Patten); into June (1) South Tunnel, SUC (Bessie Hagan, *vide* JPC); rare but regular summer visitor to the NA. Northern Oriole: 11 Mar (used nest) E WMC (DJS, SJS), at site where pair occurred in June, 1985 (*Migrant* 56:112, 1985); 27 May (1 female) rest stop (west) on I-40, DIC (Ann T. Tarbell); 5 Jun (1 male) Bradyville BBS, CFC (SJS); 7 Jun (1 male) Tennessee Ridge, HOC (JCR); 8 Jun (1 male) N DIC (Ellen J. Walker); 14 Jun (1 male) RBC (JCR, DJHS); 15, 22 Jun (pair) Stewart State Forest, SWC (DWB); only reports, but more than usual; see Addenda. House Finch: 3 Mar (singing male), 6 Mar (nest material collected), 10 Mar (nest complete), 17 Mar (nest with eggs), 1 Apr (nest with young) downtown Nashville (DJHS); these sightings would make a fine sequence for the Cornell nest record program; 10-31 May (pair) Springfield, RBC (DJHS); 31 May+ (pair) Columbia, MUC (Anne R. Lochridge); 5 Jul (1) Tullahoma, CFC (MDH); throughout Jul (up to 19) Gallatin, SUC (DTC); species continues to expand as a breeder in the region.

*Addenda:* Sharp-shinned Hawk: 29 December 1984 (used nest) near Little Buffalo River, NW LWC (Morris D. Williams); early June 1985 (same nest with 5 eggs — photographed and measured) same site and observer; early July 1985 (several young in nest) same site and observer; site not active in 1986; not visited in 1987. Northern Oriole: 10 December 1986 (used nest) Hogan X Franklin Rds., DVC (Melissa A. Tucker, John Froeschauer).

*Corrigenda:* *Migrant* 57:110, 1986: in the entry for Song Sparrow change "This species seem" to "This species seems" and "the eastern edge of its range" to "the western edge of its range."

*Locations:* CCNWR — Cross Creeks National Wildlife Refuge, Stewart Co.; CFC — Coffee Co.; DIC — Dickson Co.; DRU — Duck River Unit, Tennessee National Wildlife Refuge, Humphreys Co.; DVC — Davidson Co.; FCMR — Ft. Campbell Military Reservation, Montgomery and Stewart Cos.; FKC — Franklin Co.; FTC — Fentress Co.; GSP — Gallatin Steam Plant, Sumner Co.; GYC — Grundy Co.; HOC — Houston Co.; JAC — Jackson Co.; LBL — Land Between the Lakes, Stewart Co.; LWC — Lawrence Co.; MOP — Monsanto Ponds, Maury Co.; MTC — Montgomery Co.; MUC — Maury Co.; NA — Nashville Area (includes Cheatham, Davidson, Robertson, Rutherford, Sumner, Williamson, and Wilson Cos., as well as parts of Dickson and Trousdale Cos.); PIC — Pickett Co.; PUC — Putnam Co.; PYC — Perry Co.; RBC — Robertson Co.; RUC — Rutherford Co.; SUC — Sumner Co.; SWC — Stewart Co.; WLC — Wilson Co.; WMC — Williamson Co.; WYC — Wayne Co.

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EASTERN RIDGE AND VALLEY REGION — Weather patterns in the region this summer created the impression of two seasons — one near normal, and the other desert-like, beginning the second week of July. Rain-

fall during June was slightly below average in the Johnson City area (2.6 inches, -0.8 inch) and about 50% above average at Knoxville (6 inches), and Chattanooga (5.1 inches, +1.8 inches). June temperatures were near normal. Rainfall during July was above average at Knoxville (5 inches), but considerably below average at Johnson City (1.9 inches, -2.3 inches) and Chattanooga (1.9 inches, -2.7 inches). Essentially all of this rain fell during the first week, leaving the last three weeks of July bone dry (this drought continued into early September). July temperatures were well above normal throughout the region, with highs reaching the low to mid-90's almost every day (also continued through August). As one observer noted, "being outdoors was no fun at all." The impact of this hot, dry spell on birdlife in the region received little comment; however, the near normal conditions in June apparently were conducive to successful breeding for most species. Moderate to heavy, but very localized, outbreaks of 17-year cicadas were reported.

The second TOS Breeding Bird Foray of the summer was held 19-21 June in Bledsoe County. About 20 observers participated in this Atlas "block-busting" weekend. Several findings are included in this report.

As expected, the southward migration of shorebirds began in early July. The water level in Chickamauga Lake was not greatly fluctuated by TVA this summer, resulting in no available shorebird habitat. At Kingston Steam Plant the habitat is improving, but is still far short of its former conditions. Farm ponds provided the only shorebird sites in the Johnson City area.

Reporters are reminded that the Cumberland Plateau is included in this region, for the purposes of this report.

*Loon* — *Ibis*: Common Loon: 28 Jun (1) NRL (JCH). Pied-billed Grebe: 1 Jun (1) HRA (JTP); 23 Jul (1) CHA (AMJ, EMR). American Bittern: 19 Jul (1) CHA (LHD), an early migrant? Great Blue Heron: 1002 pairs in 14 colonies in RNC, Rhea Co., MEC, McMinn Co., and HLC, with most colonies showing increases; Tennessee's largest, at Armstrong Bend (MEC), increased 18% to 520 active nests (counted from aerial photographs (*vide* BPP)). Great Egret: 3 Jul — EOP (1-6) HRA (m.ob.); 7 Jul (2) NRL (JCH); 9, 28 Jul (2,1) AUS (RLK); 13 Jul — EOP (1-2) SAB (KHD, LHD); 14-20 Jul (up to 19) EBF (CPN, JBO), an unusually large number there and at least 3 birds were color-marked from the Alabama Game and Fish/Tennessee Valley Authority stocking program at Scottsboro, AL; 17 Jul (15) CRL (RLK); 22, 26 Jul (1) Speedwell, Claiborne Co. (George W. McKinney); 27 Jul (1) KNC (*vide* JBO). Snowy Egret: 25, 25 Jul (2, 1) HRA (AMJ, JTP, CDB, LHD). Little Blue Heron: 5 Jul — EOP (3-25) HRA (m.ob.); 15 Jul — EOP (3) EBF (CPN); 16-22 Jul (1) SAB (KHD, LHD); 17 Jul (4) CRL (RLK). Cattle Egret: 21 Jul (1) HRA (AMJ, EMR). Black-crowned Night-Heron: discouraging news — the relocation site for the large CRL colony has not been found yet (German Creek site last used in 1985); the large Sevierville, SVC, colony was inactive, abandonment possibly due to nearby construction; the Pigeon Forge, SVC, colony was forced to relocate (from one privately owned tract to another about a mile away); 2 colonies near Fort Loudoun Lake, Loudon Co. did nest, one with about 60 pairs on TVA property and the other with about 100 pairs on private land nearby (forced relocation anticipated next spring); status unknown at the Long Island, RNC colony (5 active nests in 1985) (all *vide* BPP); elsewhere, 22 Jun — EOP (2 ad, 5 imm) AUS (RLK, GDE *et al.*), first

local nesting likely. Yellow-crowned Night-Heron: 4 nests produced 17 y at CHA (m.ob.). White Ibis: 26 Jul (1 imm) HRA (CDB, KHD, LHD).

*Scaup — Grouse:* Lesser Scaup: all summer (1 male) pond in JNC (RLK, MD) Osprey: 17 nests on Watts Bar Lake fledged 33 y (*vide* Ed Beddow, Bruce Anderson), continuing increase there; 3 Jul (3) Rankin Bottoms, COC (JAK). Sharp-shinned Hawk: reported from Union Co. (ARH, RDH) and BSC (KHD, LHD); 23-24 May (1 carrying food) Cross Mountain, CPC (CPN *et al.*). Cooper's Hawk: 4 y fledged Amnicola Marsh, HLC (James D. Rowell, Jr.); nest with 1 egg, ad. incubating, but later abandoned at Charleston, BYC (JDL); reported from 2 locations in BSC (RLK/SJS, BHS); single birds at 2 locations during Jun in WGC (RLK). American Kestrel: 3 active nests in BYC (JDL), "most ever reported in 1 year in CHA area" (*vide* KHD). Ruffed Grouse: 20 Jun (hen with 5 y) BSC (RLK, CPN); 12 Jul (1) Powell, KNC (ARH, RDH), not a regular location.

*Shorebirds:* Black-bellied Plover: 18 Jul (1) KSP (LHD). Semipalmated Plover: 25 Jul (2) KSP (AMJ, JTP), ers. American Avocet: 25 Jul (5) KSP (AMJ, JTP). Greater Yellowlegs: 3 Jul (3) KSP (KHD, LHD), ers. Lesser Yellowlegs: 3 Jul (2) KSP (KHD, LHD), ers. Solitary Sandpiper: 10 Jul (1) LST (RLK), ers. Spotted Sandpiper: 11 Jul (1) KSP (*vide* KHD), ers. Sanderling: 25 Jul (1) KSP (AMJ, JTP). Semipalmated Sandpiper: 17 Jul (1) KSP (*vide* KHD), ers. Western Sandpiper: 17 Jul (3) KSP (*vide* KHD), ers. Least Sandpiper: 11 Jul (3) KSP (*vide* KHD), ers. Baird's Sandpiper: 25 Jul (2) KSP (AMJ, JTP). Pectoral Sandpiper: 11 Jul (2) KSP (*vide* KHD), ers. Stilt Sandpiper: 3 Jul (1) KSP (KHD, LHD). American Woodcock: ad with 4 y in Mar at Crossville, Cumberland Co. (Gene West); 10 Jun — 18 Jul (1) AUS (RLK).

*Cuckoo — Lark:* BLACK-BILLED CUCKOO: 12 Jul (1) Straight Fork, SOC (CPN). Common Barn-Owl: 10 Jun (1) BOL (RLK); 11 Jun (nest with 1 y) JNC (RLK); nest with 3 y along Melton Hill Lake, near Knoxville (CPN, John Byrd); 29 Jun (pair with 5 y in silo) HRA (Carl Campbell *et al.*); 28 Jul (2) CHA (RAR). Barred Owl: 6 Jun (1) AUS (GWS), unusual in upper east Tennessee outside of mountains. Red-headed Woodpecker: 15 Jun (4 family groups) Ketner's Mill, MAC (RAR); 3 pairs in WGC (RLK *et al.*). Willow Flycatcher: 3 singing males, 22 Jun (nest with 4 eggs) AUS (RLK); 2 singing males LST (RLK); singing male Doake's Pond, CPC (JCH); pair White Pine, JEC (JAK); 19 Jul (pair with fledglings) Alcoa, BLC (JAK); 2 singing males HRA (JTP). LEAST FLYCATCHER: 7 Jun (2) near Oneida, SOC, on Smoky Jct. BBS route (CPN), 1 bird at same site last year; 20-21 Jun (1 territorial male in grove of red cedars) northern BSC, elevation 960 ft. (RLK, CPN); 20 Jun (pair) Rankin, COC, elevation 1200 ft. (JAK). Horned Lark: 17 Jul (13, including 4+ imm) LST (RLK).

*Swallow — Vireo:* Tree Swallow: 2 pairs at last year's nest site DOL (JAK). Bank Swallow: KSP site active (36 nest holes on 3 Jul) (KHD, LHD). Cliff Swallow: expanding and increasing — 2 bridges over BOL, 1 occupied several years (20+ birds, several nests), the other first used last year (30 nests this year) (RLK); Alfred Taylor Bridge over Nolichucky River, WGC (6 birds, 1+ nests) (RLK), new site; 2 barns near JNC, 1 along Knob Creek used previously (6 nests), the other in SLC, not far from AUS (3 nests) (RLK); 18 nests on Solway bridge, Knox-Anderson Cos., first Anderson Co. record (CPN); Cherokee Dam plus 6 bridges over lake and 3 bridges over DOL (1 new site) (JAK). Brown-headed Nuthatch: nested in birdhouse

Hixson, HLC (RAR). Eastern Bluebird: very scarce in JNC area after spring snowstorm (*vide* GDE, RLK). Cedar Waxwing: 26 Apr (ad feeding y) southeast KNC (JAK); 14 Jun (pair building nest) Cumberland Heights, Grundy Co. (DRJ, Kathy Jacobson); 20 Jun (ad with y) BSC (KHD, LHD); 6 Jul (pair building nest) Conklin, WGC (RLK); 24 Jul (pair with 4 y) JNC (RLK), fairly common in JNC area all summer; also breeding evidence from SOC (CPN). Loggerhead Shrike: 25 May (4 y) Sequatchie Co. (RAR); 10 Jun (pair with 3 y) SLC (RLK); 15 Jun (broods of 3, 1, and 4 y) BSC (RAR); 2 pairs (1 with 2 y on 11 Jul) GNC (Richard and W. Ruth Nevius); breeding in BLC (ARH, RDH), JEC (Marcia L. Davis), and KNC (CPN); 2 single birds in WGC (RLK); population increase or better coverage/reporting? Solitary Vireo: 20-21 Jun (1) plateau portion of BSC (GRP, DPB, VBR).

*Warbler — Siskin*: Golden-winged Warbler: breeding evidence at several locations on plateau and in mountains in SOC and CPC (CPN). Chestnut-sided Warbler: 20-21 Jun (singing males at 2 locations) plateau portion of BSC (CPN, RLK, GRP *et al.*). Cerulean Warbler: 21 Jun (pair with 3 y) plateau escarpment in BSC (CPN, RLK). Summer Tanager: 1 territorial pair (no breeding evidence found) and 2 single sightings in WGC, where this species is rather scarce (*vide* RLK). DICKCISSEL: 7 Jun — 17 Jul (5 singing males, 1+ female, but no positive breeding evidence found) 2 sites at LST (RLK *et al.*), first JNC area summer record. LARK SPARROW: 15 Jun (1 ad, 1 y) Ketner's Mill, MAC (RAR), first CHA area breeding record. SAVANNAH SPARROW: 14 Jun — 27 Jul (pair, 2 y on 10 Jul) LST (RLK), second state breeding record, details to be published. Grasshopper Sparrow: fairly common in WGC (3 broods found) (RLK *et al.*), JEC (JAK), and valley portion of BSC (m.ob.). Northern Oriole: 19 Jun, 6 Jul (2 imm) WGC (RLK); 22 Jun (1) GNC (JoAnne Routledge). Pine Siskin: 1 Jun (1) Signal Mountain, HLC (Jonnie Sue Lyons), last lingerer.

*Locations*: AUS — Austin Springs, Washington Co.; BLC — Blount Co.; BOL — Boone Lake, Sullivan and Washington Cos.; BSC — Bledsoe Co.; BYC — Bradley Co.; CHA — Chattanooga; COC — Cocke Cos.; CPC — Campbell Co.; CRL — Cherokee Lake, Grainger, Hamblen and Hawkins Cos.; DOL — Douglas Lake, Jefferson and Cocke Cos.; EBF — Eagle Bend Fish Hatchery, Anderson Co.; GNC — Greene Co.; HLC — Hamilton Co.; HRA — Hiwassee River Area, primarily Meigs Co., but also Bradley, McMinn and Rhea Cos.; JEC — Jefferson Co.; JNC — Johnson City; KNC — Knox Co.; KSP — Kingston Steam Plant, Roane Co.; LST — Limestone, Washington Co.; MAC — Marion Co.; MEC — Meigs Co.; NRL — Norris Lake, Union Co.; RNC — Roane Co.; SAB — Savannah Bay, Hamilton Co.; SOC — Scott Co.; SLC — Sullivan Co.; SVC — Sevier Co.; WGC — Washington Co.

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EASTERN MOUNTAIN REGION — The weather for the period can be summed up in two words — hot and dry. June precipitation was 0.5 inches below average, and July precipitation was 3 inches below average. Extremely hot temperatures, in the mid-90's, were experienced from mid-July through the end of the month, which is unusual for the East Tennessee mountains. This weather pattern did not seemingly affect any of our nesting species. The Purple Martin reproduction rate more than made up for the



mortality suffered in early April. However, the bluebird population remains low, and will take at least another breeding season to recover.

*Grebe — Woodcock:* Pied-billed Grebe: 20 Jul (1) WTR (GDE), first fall report, early. Great Egret: 31 Jul (2) RNC (RLK, CFW, MD). Black-crowned Night-Heron: 22 Jun (1 ad), 27 Jun (1 ad, 1 imm) SHL (RPL). Canada Goose: 19 Jul (47) WTL (GDE); 31 Jul (54) RNC (RLK, CFW, MC). Northern Harrier: 21 Jun (1) Hump Mtn., RNM (EHS), breeding bird? Sharp-shinned Hawk: 22 Jun (1 ad carrying food) Limestone Cove (RLK, Brian Cross). Cooper's Hawk: 26 Jun (1) Unicoi, Unicoi Co. (GWS); 7 Jul (1) Siler's Bald, GSMNP (BHS). Ruffed Grouse: 28 Jun (1 ad, 3 imm) RNM (RLK). AMERICAN AVOCET: 28 Jun (1) Parksville Lake, Polk Co. (J. Craig Watson, Susan L. Watson). Solitary Sandpiper: 3 Jul (1, early) SJP (GDE). Least Sandpiper: 15 Jul (3) SJP (RLK), first fall report. Pectoral Sandpiper: 28 Jul (2) SJP (RLK), first fall report. American Woodcock: 30 Jun, 6 and 14 Jul (1 each day) Carver's Gap, RNM, elev. 5500 ft. (FJA, RP).

*Gull — Flycatcher:* Ring-billed Gull: 6 Jun (1), 17 Jul (1) WTL (GDE), unusual in summer. Forster's Tern: 31 Jul (6) RNC (RLK, CFW, MD). Black-billed Cuckoo: 4 Jun (1) RNM (FJA); 17 Jun (1) Cades Cove, GSMNP (BHS). Common Barn-Owl: nest reported in spring that fledged 3 y in mid Jun (GDE); 22 Jul (1 road kill) ELI (GDE). Great Horned Owl: 1-4 regular at SHL (RPL *et al.*). NORTHERN SAW-WHET OWL: 7 Jul (1 singing) Siler's Bald, GSMNP (BHS). Chimney Swift: 1 Jul (3 birds going in and out of hollow snag in dead tree) Clingman's Dome, GSMNP (BHS). Willow Flycatcher: 10 Jun — 12 Jul (pair) Siam Valley, ELI (GDE); 24 Jun (2) Shady Valley, JHC (GDE, RLK). Least Flycatcher: 7 Jul (ad feeding y) Siler's Bald, GSMNP (BHS), first reported evidence of breeding in the park in several years. Alder Flycatcher: 2 Jun to EOP (5 singing males) Carver's Gap, RNM (LHTOS).

*Swallow — Crossbill:* Cliff Swallow: 19 Jun (3-5) SJP (GDE). Brown Creeper: 9 Jun (1), 2 Jul (1) RNM (FJA, RP). HOUSE WREN: 7 Jul (1 nest) Carver's Gap, RNM, elev. 5500 ft. (FJA, RP). Golden-crowned Kinglet: 24 Jun (3 nests) Carvers Gap, RNM (FJA, RP). Cedar Waxwing: 24 Jun (4 nests) above Carver's Gap, RNM (FJA, RP). Loggerhead Shrike: 29 Jul (1) SJP (GDE), only report. Warbling Vireo: 10 Jun (pair) SJP, 24 Jun (pair) Siam Valley, ELI (RLK, GDE *et al.*). Golden-winged Warbler: 9 Jun (2 nests) RNM State Park (FJA). Parula Warbler: 23 Jun (1 nest) RNM State Park (FJA), fledged 4 Jul. Swainson's Warbler: 24 Jun (2 singing males) Backbone Rock, JHC (RLK, GDE). Canada Warbler: 2 Jun (4 singing males) RNM (GDE, GWS). Blue Grosbeak: 1 Jun — EOP (3-4 pairs) Carter Co. (GDE *et al.*), unusual in county. Vesper Sparrow: 21 Jun (2-4) Hump Mtn., RNM (EHS); 4 Jul (2) Round Bald, RNM (JTP); 5 Jul (2) JHC (EHS); 6 Jul (1) RNM (FJA). House Finch: numerous reports of y throughout area, many probably second and third broods (*vide* GDE). Red Crossbill: 1-30 Jun (3-7) Carver's Gap, RNM (FJA, RP *et al.*); 18 Jul (1) Clingman's Dome, GSMNP (JTP).

*Locations:* ELI — Elizabethton; GSMNP — Great Smoky Mountains National Park; JHC — Johnson Co.; RNC — Roan Creek, Johnson Co.; RNM — Roan Mountain, Carter Co.; SHL — South Holston Lake, Sullivan Co.; SJP — St. John's Pond, Carter Co.; WTL — Watauga Lake, Carter Co.; WTR — Watauga River, Carter Co.

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