

230 Black-throated Blue Warblers, 68 Prothonotary Warblers, and 79 Summer Tanagers!

**SPSC** - Spartanburg, SC. 34°54'n 81°57'w, intersection of County Roads SC 539 and SC 590. May 20, 0600 - 2000. Temp 51° - 78°F, precipitation, none. Wind 2-10 mph, a little gusty in early morning, sky mostly clear.

**Participants:** Compiler - Lyle Campbell, 126 Greengate Lane, Spartanburg, SC 29307; Robbie Allen, Tom Allen, Lyle Campbell, Sarah Campbell, Marion Clark, John Green, J.B. Hines, Gill Hooper, Flip Jones, Mickey Marotte, Gibbs Patton, Marian Murph, Mac Shealey.

**Compiler's Comments:** Our late date (May 20) and smaller number of counters undoubtedly affected our count. Some common species proved impossible to find. Notable finds included two active Blue-gray Gnatcatcher nests, a pair of nesting Killdeer and a Black Duck with six ducklings. Unusual species included a Double-crested Cormorant, Little Blue Heron, a late Kestrel and a Barn Owl.

## Summary of Twenty-nine Years of Breeding Bird Survey Results

Harry E. LeGrand, Jr.

### ABSTRACT

A 29-year summary of Breeding Bird Survey data is analyzed for species that nest in the Carolinas. The continental trends indicate that nearly all grassland-nesting species are declining significantly throughout their ranges. Most old field species are also declining. However, trends are mixed for most forest-dwelling species, both for those species that winter in the tropics and those that winter in North America. Many of the permanent resident forest species seem to be increasing, as are many other partial migrants that winter north of the tropics. Some of the Neotropical wintering species are showing declines since 1980, and not earlier, perhaps a consequence of large-scale forest clearing in the tropics since that date.

### INTRODUCTION

The North American Breeding Bird Survey (BBS) has been in operation since 1966. It provides trends in populations for breeding birds across North America, both on a year-to-year basis and over a span of years. The BBS also provides distributional data, such that breeding-season maps can be plotted; densities of populations (birds/route) can also be portrayed on these maps. However, the main value of the BBS is its trend data, which can be calculated over one or more decades. This paper summarizes continental trend data from 1966-1994 for species that nest in North

Carolina and South Carolina. Speculations about reasons for increases and decreases in the trends are also provided.

### METHODS

The BBS relies on roadside counts (routes) of birds. The starting point and direction of a BBS route is chosen at random by the BBS office. The office then hand-draws a 24.5-mile route onto secondary roads (avoiding interstate highways, U.S. highways, and state highways), in order to minimize traffic noise, which interferes with an observer's ability to detect birds. Each survey begins 30 minutes before sunrise. The survey consists of 50 stops along this route, 0.5-mile apart. The birder conducts a 3-minute count from outside his car and tallies all birds seen or heard within a 0.25-mile radius onto a count form. Each survey route generally lasts about 4 hours and is run once each year. The observer chooses the date he or she wishes to conduct the survey; most routes in the Carolinas are run between late May and mid-June.

### RESULTS

Table 1 is a listing of selected species — those "landbirds" that breed in the Carolinas — from the entire list of breeding species on the continent. The table shows the yearly change (increase or decrease) in populations and the level of significance of the change, if any. Because the BBS is a roadside survey of bird populations, waterbirds are infrequently tallied on BBS routes; thus, I have not included such species in the table. Trends in waterbirds are best done with specific surveys, such as counts of colonial waterbird nesting colonies.

Several species of widespread breeding landbirds are missing from the BBS trend data. When the survey started in the 1960's, the Yellow-bellied Sapsucker had not been split into three separate species; however, since that time, it has been split into the Yellow-bellied, Red-breasted, and Red-naped sapsuckers. The data from the early years of the survey combined all three forms, and the BBS office has not separated the Yellow-bellied Sapsucker (*sensu strictu*) data for the 1966-1994 period. Likewise, the Willow and Alder flycatchers are missing from the trend analysis because they were considered as one species — Traill's Flycatcher — for much of the first half of the survey period.

### DISCUSSION

A number of trends are apparent from these results. These trends are discussed below, generally by nesting habitats.

Grassland Species. The most obvious population trend is the severe declines in bird populations of grassland species, not only those in the Carolinas (see Table 1), but also of species nesting in the prairie/plains regions of central and western North America. The Loggerhead Shrike, Eastern Meadowlark, Horned Lark, Grasshopper Sparrow, Henslow's Sparrow, Bobolink, and Dickcissel are all declining at the 0.01 degree confidence level. Savannah and Vesper sparrows are also declining across their ranges. Conversion of native grasslands in the central and western regions of the continent to cropland has been a major factor in this decline. In the East, the decline in dairy farming is almost certainly one cause of the avian declines. Many former pastures

and other grassy fields are now being developed for housing or industry. Some farms are simply abandoned, and the vegetation is too overgrown for grassland species.

**Old-Field Species.** Another group of species showing alarming declines are those that breed in shrub and sapling habitats. Old fields, clearcuts, and abandoned pastures are typical habitats for these species. With the exception of the Blue Grosbeak, nearly all species inhabiting old fields in North America are showing statistical declines. These include Northern Bobwhite, Brown Thrasher, Golden-winged Warbler, Prairie Warbler, Common Yellowthroat, Rufous-sided Towhee, Field Sparrow, and others. Unlike the grassland species, which are also declining in the Carolinas, many of these old field species seem to be faring well in the Carolinas, especially as considerable land exists in early succession pine plantations and young clearcuts. These habitats have almost certainly increased in acreage during the past two decades in the Carolinas, especially in the coastal plain province. However, over the continent as a whole, old field habitat appears to be declining. As with grassland species, the decline in farming in the eastern half of the continent seems to be the main culprit; old fields are now grown up in woodlands, or have been used for housing and other development.

**Forest Species.** This is a large group of many diverse species. Within this group, species can be subdivided according to Neotropical migrants versus non-Neotropical migrants (i.e., those that winter primarily in the United States and Canada), forest-interior species versus forest-edge species, suburban forest species versus non-suburban species, coniferous-canopy species versus hardwood-canopy species, and so forth.

1. Neotropical migrants. There are numerous qualitative or subjective reports that suggest a large-scale decline in Neotropical migrant birds. The Partners in Flight multi-agency conservation project was formed to slow or to halt this supposed decline in migrant bird species. However, a review of the continental trends on Table 1 indicates that there is not an "across-the-board" decline among most of these species, at least over the 1966-1994 period. Some of these species do show highly significant declines—Yellow-billed Cuckoo, Chuck-will's-widow, Olive-sided Flycatcher, Eastern Wood-Pewee, Wood Thrush, Veery, and Cerulean Warbler. However, these are the only forest-dwelling species of Neotropical migrants that nest in the Carolinas that show a decline at the 0.01 Degree of Confidence level.

Most of the other forest-nesting species that winter in the Neotropics show few or no significant declines, over the 28-year period. Interestingly, a few species that are not showing an obvious 28-year decline do show a significant decline since 1980. For example, the Rose-breasted Grosbeak is declining at the 0.01 level in the 1980-1994 period, as is the Canada Warbler. Some of those declining significantly over the 1966-94 period listed above showed no declines from 1966-1979 but showed significant declines since 1980 (i.e., Wood Thrush and Veery). These declines since 1980 might be attributable to the large-scale clearing of forests that has been taking place in the tropics in the last 15 years.

Some Neotropical migrant species that nest in forests show increases. These include Yellow-throated Vireo, Red-eyed Vireo, and Ovenbird. Are these species capable of utilizing disturbed habitats in winter, such as cut-over forests or thickets? Do they winter primarily in regions not undergoing rapid declines in forest land? Reasons for these increases are not obvious; detailed analyses of their wintering ranges, their habitats, and other information about their wintering behavior are needed.

2. Non-Neotropical Migrants. As a general rule, forest-dwelling species that winter in the United States and Canada are not showing significant declines. These species can be divided into two groups—permanent residents, and short-distance migrants. Permanent residents, such as most woodpeckers, tend to be stable or increasing; those that are increasing significantly include Red-bellied Woodpecker, Hairy Woodpecker, Pileated Woodpecker, Black-capped Chickadee, Tufted Titmouse, and White-breasted Nuthatch. Many of these have taken advantage of mild winters since the mid-1970's and feeding stations during the winter months. Their apparent increases can be attributed probably to increased winter survivability. A number of short-distance migrants of forested habitats, such as the Blue-gray Gnatcatcher, Solitary Vireo, and Pine Warbler are also increasing. Mild winters are clearly responsible for these increases.

Within this group of non-Neotropical migrants, a few species are showing declines. Carolina Chickadee, Northern Flicker, and Red-headed Woodpecker are significantly declining. These are all cavity nesters, and perhaps their decline can be attributed to increases in other cavity-nesting species, such as Tufted Titmouse, Red-bellied Woodpecker, Pileated Woodpecker, and Black-capped Chickadee, which compete for nesting cavities or suitable dead trees and stubs for nest placement.

Urban and Suburban Species. The most unexpected results of the 29-year trend data are the noticeable "apparent" declines in urban and suburban birds. Despite an ever-increasing human population on the continent, with larger towns and cities and more suburban yards, populations of many of the bird species of these habitats show a significant decline, according to BBS data. Northern Mockingbird, European Starling, Song Sparrow, Common Grackle, Brown-headed Cowbird, and House Sparrow all show highly significant declines at the 0.01 level! I question whether these species are truly declining in North America. If so, is cat predation, or automobile collisions, a contributing factor? Of course, not all such urban/suburban species are declining. Rock Doves are remaining steady, as are Mourning Doves, Barn Swallows, and Chipping Sparrows. American Robins are significantly increasing, as are American Crows, Common Ravens, and House Wrens.

Other Trends. In addition to grouping species by habitat type, one should also look at species groups at the taxonomic level. In this regard, there is a striking array of declines in nearly all sparrows and blackbirds in North America. Many of these declines can be explained in terms of habitat loss on the breeding grounds, as most sparrows nest in grasslands, shrublands, deserts, and other open country that is being converted rapidly to cropland or development. Even so, some of these species nest in close proximity to man, such as the Song Sparrow, the Common Grackle, and the Brown-headed Cowbird. Such declines are difficult to comprehend.

Trends for Neotropical migrants as a whole, no matter the breeding habitat, are mixed. Flycatchers, thrushes, vireos, and warblers comprise most of the Neotropical migrants, and there is no obvious trend for them as a whole, at least over the 1966-94 period. However, there is some indication of a downward trend for many of these from 1980-94, and I suspect that there will be a downward trend for more species in these groups in the foreseeable future. The continued high rate of deforestation in the tropics, coupled with the loss of habitat, especially through fragmentation by roads and utility corridors, should mean that, eventually, most of the species in these Neotropical migrant groups will decline in numbers.

## ACKNOWLEDGMENTS

I thank Bruce Peterjohn, the U.S. Coordinator for the Breeding Bird Survey, for providing the BBS data used in this paper. I especially thank the several thousand volunteers who run the BBS routes across the continent; without their service, the BBS program and the data that are generated would not be possible.

*N.C. Natural Heritage Program, Division of Parks and Recreation, P.O. Box 27687, Raleigh, NC 27611*

Table 1. Continental breeding population trends of landbird species that nest in the Carolinas, 1966-1994, using Breeding Bird Survey (BBS) results; data courtesy of the National Biological Service, Patuxent, Maryland. Trend = average percent annual change. P = statistical significance of the trend. (\* = 0.05 < P < 0.1; \*\* = 0.01 < P < 0.05; \*\*\* = P < 0.01). Absence of asterisks implies either a zero trend or inability to detect a trend at existing levels of measurement precision. N = sample size; number of BBS routes used in the analysis.

<u>Species</u>	<u>Trend</u>	<u>P</u>	<u>N</u>
Black Vulture	2.1	**	411
Turkey Vulture	0.9	*	1476
Osprey	6.2	***	277
American Swallow-tailed Kite	5.9	**	24
Mississippi Kite	0.2		121
Bald Eagle	9.1	***	93
Northern Harrier	-0.7		796
Sharp-shinned Hawk	1.4		166
Cooper's Hawk	5.5	**	282
Red-shouldered Hawk	1.6	*	627
Broad-winged Hawk	1.6	*	587
Red-tailed Hawk	3.2	***	2206
American Kestrel	0.3		1944
Ruffed Grouse	-2.9	**	401
Wild Turkey	5.9		393
Northern Bobwhite	-2.4	***	1298
Rock Dove	0.4		2020
Mourning Dove	-0.2		2920
Common Ground-Dove	-2.7	**	167
Black-billed Cuckoo	-1.1	*	1036
Yellow-billed Cuckoo	-1.3	***	1516
Barn Owl	3.9	*	24
Eastern Screech-Owl	-7.2		95
Great Horned Owl	1.3		930
Barred Owl	4.6	**	469
Common Nighthawk	-0.9	*	1263
Chuck-will's-widow	-1.4	***	479

<u>Species</u>	<u>Trend</u>	<u>P</u>	<u>N</u>
Whip-poor-will	-1.0		419
Chimney Swift	-1.0	***	1776
Ruby-throated Hummingbird	1.1	*	1124
Belted Kingfisher	-1.9	***	1610
Red-headed Woodpecker	-1.9	***	1064
Red-bellied Woodpecker	0.6	***	1235
Downy Woodpecker	0.0		2058
Hairy Woodpecker	1.2	***	1661
Red-cockaded Woodpecker	-1.5		22
N. (Yellow-shafted) Flicker	-2.9	***	2047
Pileated Woodpecker	2.0	***	1317
Olive-sided Flycatcher	-3.6	***	606
Eastern Wood-Pewee	-1.7	***	1699
Acadian Flycatcher	0.5		730
Least Flycatcher	-0.8	**	1025
Eastern Phoebe	0.9	***	1552
Great Crested Flycatcher	-0.2		1804
Eastern Kingbird	-0.4	**	2237
Horned Lark	-0.9	***	1646
Purple Martin	0.1		1406
Tree Swallow	0.6		1533
N. Rough-winged Swallow	-0.3		1754
Bank Swallow	-1.1		944
Cliff Swallow	1.3	**	1511
Barn Swallow	-0.1		2796
Blue Jay	-1.6	***	2041
American Crow	0.7	***	2623
Fish Crow	1.3	*	419
Common Raven	3.4	***	1173
Black-capped Chickadee	1.5	***	1372
Carolina Chickadee	-0.8	***	876
Tufted Titmouse	0.8	***	1287
Red-breasted Nuthatch	3.2	***	799
White-breasted Nuthatch	2.1	***	1438
Brown-headed Nuthatch	-1.7	*	265
Brown Creeper	-0.4		387
Carolina Wren	0.9	***	1082
Bewick's Wren	-0.3		493
House Wren	1.6	***	1846
Winter Wren	1.9		594
Marsh Wren	3.6	**	289
Golden-crowned Kinglet	-0.8		443
Blue-gray Gnatcatcher	1.2	**	1098
Eastern Bluebird	2.3	***	1526

<u>Species</u>	<u>Trend</u>	<u>P</u>	<u>N</u>
Veery	-1.4	***	871
Hermit Thrush	1.5	**	841
Wood Thrush	-1.8	***	1467
American Robin	0.8	***	2757
Gray Catbird	-0.4	**	1836
Northern Mockingbird	-1.0	***	1623
Brown Thrasher	-1.3	***	1902
Cedar Waxwing	1.8	***	1486
Loggerhead Shrike	-3.6	***	1218
European Starling	-1.1	***	2817
White-eyed Vireo	0.0		865
Solitary Vireo	3.1	***	805
Yellow-throated Vireo	1.1	***	981
Warbling Vireo	1.1	***	1592
Red-eyed Vireo	1.0	***	1973
Blue-winged Warbler	0.4		365
Golden-winged Warbler	-2.7	***	227
Northern Parula	0.5		812
Yellow Warbler	0.6	***	2029
Chestnut-sided Warbler	-0.7		720
Magnolia Warbler	1.9	***	442
Black-throated Blue Warbler	0.4		336
Black-throated Green Warbler	-0.1		546
Blackburnian Warbler	0.9		426
Yellow-throated Warbler	0.8		363
Pine Warbler	1.6	***	708
Prairie Warbler	-2.7	***	676
Cerulean Warbler	-4.3	***	202
Black-and-white Warbler	0.5		940
American Redstart	-0.5		1073
Prothonotary Warbler	-1.7	**	369
Worm-eating Warbler	1.0		275
Swainson's Warbler	1.7		79
Ovenbird	0.6	***	1167
Louisiana Waterthrush	0.4		430
Kentucky Warbler	-1.0	*	582
Common Yellowthroat	-0.4	***	2375
Hooded Warbler	0.4		485
Canada Warbler	-1.9	*	413
Yellow-breasted Chat	-0.5	*	1102
Summer Tanager	-0.2		709
Scarlet Tanager	0.0		1113
Northern Cardinal	-0.1		1649
Rose-breasted Grosbeak	-0.5		1045

<u>Species</u>	<u>Trend</u>	<u>P</u>	<u>N</u>
Blue Grosbeak	1.4	***	949
Indigo Bunting	-0.6	***	1691
Painted Bunting	-3.3	***	249
Dickcissel	-1.6	***	724
Rufous-sided Towhee	-1.7	***	1892
Bachman's Sparrow	-2.6		149
Chipping Sparrow	-0.2		2293
Field Sparrow	-3.4	***	1498
Vesper Sparrow	-0.6	**	1328
Lark Sparrow	-3.4	***	816
Savannah Sparrow	-0.6	**	1318
Grasshopper Sparrow	-3.6	***	1298
Henslow's Sparrow	-8.3	***	144
Song Sparrow	-0.7	***	2091
Dark-eyed (Slate-col.) Junco	-1.4	***	448
Bobolink	-1.6	***	1050
Red-winged Blackbird	-1.1	***	2918
Eastern Meadowlark	-2.6	***	1755
Common Grackle	-1.5	***	2280
Brown-headed Cowbird	-0.9	***	2933
Orchard Oriole	-1.9	***	1170
Northern (Baltimore) Oriole	-0.2		1526
House Finch	1.7	*	1407
Red Crossbill	0.8		275
Pine Siskin	-0.4		612
American Goldfinch	-1.0	***	2116
House Sparrow	-1.9	***	2612

---



---

**CBC Rare Bird Alert**  
**(704) 332-BIRD**

---



---