BREEDING BIRD SURVEY REVEALS SIGNIFICANT DECLINES IN SOME POPULATIONS OF ALABAMA BIRDS

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The Breeding Bird Survey, begun in 1966, now consists of approximately 3,000 randomly selected routes throughout the United States and Canada of which approximatsely 2000 are run each breeding season. It is roadside survey starting 1/2 hour before sunrise that uses a standardized technique consisting of recording all birds heard or seen in three minutes at 50 stops, each 1/2 mile apart. The survey is described in Robbins, C.S., D. Bystrak and P.H. Geissler, *The Breeding Bird Survey: Its First Fifteen Years, 1965-1979, USF&W Resource Publ. 157 (1986).*

A "route regression" method is used to estimate the population trends in percent of change per year. Individual route estimates of slope are weighted as to the number of birds on the route, the area of the state, or other geographic region, and the sample size of routes within that region. Weighted estimates are then converted to percent change per year. The method is described in greater detail on pages 13 and 177 of the above publication.

The biological strata, or regions, covered in the survey are described below and are adapted from J.W. Aldrich's, "Life Areas of North America," *Journal of Wildlife Management 27:530-31 (1963).*

The **Coastal Plain**, in which there are approximately 200 routes, runs from Southwestern Kentucky, Western Tennessee and Mississippi around the base of the Appalachians and Piedmont north to Southern New Jersey. It is the largest biological stratum in Alabama, containing approximately 22 routes, and consists here of the commonly known Upper and Lower Coastal Plain, excluding the coastal strip along the Gulf of Mexico.

The **Piedmont** (the Southern Piedmont in the BBS biological strata), in which there are approximately 55 routes, runs from East Central Alabama through North Central Georgia and the Carolinas to Central Virginia. In Alabama, it is a small region at the extreme East Central portion of the state containing only 3 routes.

The **Mountain Region**, otherwise known as the Ridge and Valley Region, in which there are approximately 95 routes, runs from

North Alabama up the Appalachian chain into Central Pennsylvania and East Central New York. It is the second largest stratum in Alabama, containing approximately 12 routes.

The **Tennesse Valley Region** is actually a portion of the Highland Rim, in which there are approximately 50 routes, that extend north through Central Tennessee and Western Kentucky to Central South Indiana. In Alabama, it contains 4 routes.

Southeast Region – This region is the USF&W Region IV covering the states from Louisiana, Arkansas, Tennessee, Kentucky and North Carolina east and south.

Table 1 on page 9 lists Alabama species by region which have decreased between 1966 and 1987.

Suggested Causes of Declines

It will be noted that, of the 13 species presented, eight are tropical or subtropical migrants. Three (the Wood Pewee and Yellow and Cerulean Warblers — the latter now found with any regularity in Alabama only in the Bankhead Forest) winter in South America, two (the Blue-winged Warbler and Orchard Oriole) in Central America and Northwest South America, and the other three (the Wood Thrush, Prairie Warbler and Chat) in Central American and the West Indies. Five might be classed as edge or scrub species and three as birds of the forest. The major causes for their decline appear to be forest fragmentation on the breeding range and deforestation in the wintering range. The latter is considered the primary cause since, during the last 10 years of the Breeding Bird Survey (1978-87), which coincides with the greatest increase in tropical deforestation, (i) neotropical migrants have decreased more than species that winter north of Central American, and (ii) forest-wintering tropical migrants have decreased at a greater rate than migrants that winter in open habitats. For details see Robbins, C.S., J.R. Sauer, R.S. Greenberg and S. Droege, "Population Declines in North American Birds that Migrate to the Neotropics," USF&W Bulletin (1988).

The increase of Blue-winged Warblers and Yellow-breasted Chats in the Piedmont and, in the case of the latter, a significant increase in the Coastal Plain, plus the smaller decreases of the Prairie Warbler in those regions, are probably due to the increase in even-age forest management (clear-cutting); and it has been said that the Grasshopper Sparrow benefits from strip-mine reclamation, which may account for its increase in the Piedmont, although that cause would leave the decreases in other mountainous regions unexplained.

TABLE 1. POPULATIONS OF ALABAMA BIRDS SHOWING A SIGNIFICANT DECREASE IN NUMBERS (1966 - 1987).

	Alabama (state)	Coastal Plain	Piedmont	Mountain Region	Tenn. Valley	Southeast Region	Continental U.S.
Yellow-shafted Flicker	- 3.423 **	- 3.398 **	- 3.074 *	- 5.133 **	- 2.304 *	- 2.882 **	- 2.825 **
Eastern Wood Pewee	- 2.914 **	- 3.353 **	- .307	- 2.547 **	- .460	- 1.879 **	- 1.394 **
Wood Thrush	- 3.329 **	- 2.371 **	- 2.541**	- 2.530 **	- 1.034	- 2.351 **	- 1.713 **
Loggerhead Shrike	- 6.706 **	- 4.273 **	-11.684 **	- 5.309 **	- 6.644 **	- 4.130 **	- 1.138 **
Blue-winged Warbler	- 3.786 **	- .144	+ .645 **	- 1.000	- .614	- 1.302	+ .465
Yellow Warbler	- 2.449 **	- .818	- .080	+ .551	+ .348	- 1.578	+ .567 *
Prairie Warbler	- 6.504 **	- 3.332 **	- .084	- 5.931 **	- 2.570 **	- 3.377 **	- 2.234 **
Cerulean Warbler	SS	SS	SS	+ .648	- 3.362 **	- 5.938 **	- 3.375**
Yellow-breasted Chat	- .306	+ 1.183 *	+ .357	- 6.045 **	- 4.079 **	- 1.441 **	- 1.476 **
Rufous-sided Towhee	- 1.984 **	- 2.062 **	- 3.979 **	- 4.062 **	- 2.300**	- 2.332 **	- 2.256**
Field Sparrow	- 5.185 **	- 2.967 **	- 2.375 **	- 3.870 **	- 3.242 **	- 3.735 **	- 3.689 **
Grasshopper Sparrow	- 8.243	- 5.186 **	+ 8.126 *	- 6.375 **	- 6.627 **	-10.158 **	-3.246 **
Orchard Oriole	- 1.990	- 1.277 *	+ 2.122	- 4.927 **	- .198	- 1.234 **	- 1.781 **

Trends are expressed in percent of change per year. Significance of trends is indicated by asterisks: * = significant at P less than 0.05 level; ** = highly significant at P less than 0.01 level. SS indicates too small a sample to be statistically significant. The decrease in Grasshopper Sparrows in Alabama, although large, is not classed as highly significant because of the low number of routes (11), but the decreases in broader areas are highly significant. In addition, the decrease in Orchard Orioles in Alabama is significant at the P less than 0.10 level. The BBS compiles data separately for the various races of Northern Flicker; however, the Rufous-sided Towhee includes both the eastern and western spotted races.

The decrease in the Flicker population is attributed largely to competition for existing nest holes with Starlings and perhaps to pesticide residues and a reduction in the number of dead trees left standing in edge and woodlot areas. The Shrike appears to be suffering from a multiplicity of changes in land-use practices, including surburban sprawl, roadside spraying and loss of pastureland, as are all grassland species.

The Rufous-sided Towhee is thought to be suffering seriously from Brown-headed Cowbird parasitism and, in addition, that species and the Grasshopper Sparrow from a loss of pastureland.

Declines in Alabama Migrants

Highly significant continent-wide annual percentage declines have also been shown by the BBS over a 20-year period (1966-85) for the following species that winter in Alabama or migrate through it: Yellow-bellied Sapsucker (-3.886), Olive-sided Flycatcher (-3.754), Golden-crowned Kinglet (-3.782), Golden-winged Warbler (-3.208), White-throated Sparrow (-2.032) and White-crowned Sparrow (-2.690).

The above information compiled by Robert R. Reid, Jr., with assistance from Sam Droege, BBS Coordinator, U.S. Fish and Wildlife Service. Requests for other information regarding North American breeding species might be made to Mr. Droege. Many thanks are extended to the numerous route observers who have made possible the collection of these data over these many years and without whose efforts such analyses of our breeding bird populations would not be possible. *Robert R. Reid, 2616 Mountain Brook Pkwy., Birmingham, AL. 35223 and Sam Droege, BBS Coordinator, Office of Migratory Bird Management, U.S. Fish and Wildlife Service, Laurel, Maryland 20708*