

TABLE 2

ANNUAL FLUCTUATIONS OF BIRD POPULATIONS IN NORTHEASTERN OHIO SWAMP SERE

	1932	1933	1934	1936	1937	1938	1939	Aver.
Loosestrife-Cattail	343	352	267	124	171	476	428	323
Buttonbush-Alder	390	268	561	1073	536	555	400	526
Maple-Elm-Ash	—	88	175	75	165	127	174	121

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PART 3

BIRDS OF THE DECIDUOUS FOREST¹

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THE (broad-leaved) deciduous forest biome, as mapped by Pitelka (1941), approximates the forested region of Merriam's Carolinian zone, the humid eastern section of the Upper Austral zone. It includes, in addition, an oak-pine subclimax (made up of Carolinian and Austroriparian elements) and a pine subclimax (equivalent to the rest of the Austroriparian zone east of the Mississippi). The degree of control exercised on bird distribution by these types of vegetation has not yet been well studied. In *Florida Bird Life*, Howell follows the over-generalized bird communities of the life-zone scheme, while the specific communities of birds governed by water and vegetation are given by the

¹ Part of the author's remarks have been separately published in *A Guide to Bird Watching* (Oxford University Press, N. Y., 1943, pp. 106-118).

book's illustrator, F. L. Jaques. So many other avifaunal lists have been marked by an emphasis on bird distribution according to political subdivisions that an ecological analysis of the lists is now virtually impossible.

In Europe, a marked distinction between birds of the coniferous and deciduous forest was brought out by Palmgren (1928). Later, Lack and Venables (1939) compared the habitats used by English and Finnish birds. For the most part, species common to the two regions select the same forest types. However, seven species that select coniferous woods in Finland show no such tendency in Britain, where there is a much greater variety of broad-leaved woodland types. In the survey by Lack and Venables of 45 kinds of birds, 11 species were found to be almost entirely confined to broad-leaved woods, and 5 to coniferous woods. Such restrictions were correlated with geographical distribution, the former species being mainly southern and the latter northern.

In America, surveys and comparisons of this type are still needed. The marked effect of forest vegetation on the distribution of bird life has been studied by Hicks (1933), who has described six successive stages in the development of deciduous forest in northeastern Ohio, each with its own recognizable avian community. In New York, some 80 miles to the east, a virtually identical ecological succession of birds has been outlined by Saunders (1939), whose careful censuses have led him to postulate that the density of bird populations increases with the height of the forest canopy. This theory of bird numbers was earlier advanced in Germany by Schiermann (1934).

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