HOW VALUABLE ARE WOODLAND CLEARINGS TO BIRDLIFE?

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Ecological field work conducted between June 1 and September 30, 1936, in Walker County, Texas, permitted a limited census of bird populations in several types of interior woodland and corresponding margins of clearings. Most of the counts were made in or near second-growth pine-oak-hickory woodland. This association includes shortleaf and loblolly pine, red oak, post oak, water oak, sweetgum, winged elm, and black hickory. The younger types of cut-over are quite open and contain many of the developmental species which occur in recently abandoned fields.

Kashkarov (Acta Universitatis Asiae Mediae, Series VIII-a, Zoologia, Fasc. 1, 1927), whose method follows closely that used by Grinnell and Storer (Animal Life in the Yosemite, 1924, pp. 22-35), has discussed rather thoroughly quantitative methods of analyzing bird associations. Space units are difficult to define when one is working with birds, so time-unit methods which involve listing and counting all birds seen on a two- or three-hour excursion in one type are recommended. Census trips are made afoot. The above workers take census records only for the nesting season in determining resident associations; but counts of bird populations at all seasons of the year have been found useful to show important seasonal changes.

An expression of relative abundance was the object of the present census which is based upon thirty-minute time-unit counts of individuals as well as of species observed. In making the counts the observer walked slowly and recorded all birds seen during each thirty-minute period. With field glasses in hand, stops were made whenever birds were heard or glimpsed. Usually only the birds actually seen were recorded; but occasionally, when the unmistakable song of a familiar bird was heard in nearby cover, time was not consumed in stalking for sight of the individual. Individuals not readily recognized were listed as unidentified. The path of the observer followed no definite line. Interior counts were made more than one hundred yards from margin; usually they were much deeper within the woodland. Marginal counts were made along the edges of clearings. No bird more than twenty-five yards from the edge was included in these marginal counts. Nearly all the counts were made before 10 A. M. This served to make the counts more comparable; however, weather may have as much effect on the counts as the time of day. Generally, two or four counts were made during a morning, alternating between a

margin and its corresponding interior. This further reduced variation in census conditions.

A summary of thirty such counts follows:

TABLE 1. Relative abundance of Birds in Margins and Interiors. (From counts made in Walker County, Texas, between July 1 and September 30, 1936).

TYPE OF INTERIOR	MARGIN			INTERIOR		
	No. of Counts	Ave. No. Species	Ave. No. Birds	No. of Counts	Ave. No. Species	Ave. No. Birds
Oak-palmetto river bottom	3	6	17	2	3.5	4.5
Oak-elm river bottom	3	6.7	19	4	4.25	6.25
1-4 year cutover pine	2	6.5	15.5	3	5.3	13.3
10-14 year cutover pine	3	3.3	10.3	5	4.4	8.2
15 and older cutover pine	3	9.7	20.7	2	6	11
Summary of all counts	14	6.5	16.6	16	4.6	8.5

The summary of thirty counts, showing that margins of clearings averaged 16.6 birds of 6.5 species and that interiors average 8.5 birds and 4.6 species per thirty-minute period, apparently gives a true picture of the relative value of margins and interiors for birdlife.

All of the very common species appeared in both margins and interiors. Some of them, however, were more than twice as numerous in margins as in interiors. Among these were the Cardinal, Mourning Dove, Blue Jay, Red-headed Woodpecker, and Sparrow Hawk.

Species that were found only in margins include Blue Grosbeak, Orchard Oriole, Mockingbird, Blue-gray Gnatcatcher, Red-cockaded Woodpecker, Turkey Vulture, Red-winged Blackbird, Scissor-tailed Flycatcher, Migrant Shrike, Ruby-throated Hummingbird, and Sycamore Warbler. The last two species were found once in fourteen counts so their appearance only in the margin may not show true relative abundance. Several others in this list frequently may be found in interiors but they are, nevertheless, characteristic of the margins.

Characteristic birds of the interiors were the Tufted Titmouse, Pine Warbler, White-breasted Nuthatch, Brown-headed Nuthatch, Red-eyed Vireo, and the Barred Owl. With the exception of the Tufted Titmouse, which was more than twice as numerous in interiors as in margins, these species were not observed in margins.

Common species which were not distinctly more numerous in either margins or interiors were the Chickadee, Carolina Wren, Red-bellied Woodpecker, and Yellow-billed Cuckoo.

The relations of birds to marginal vegetation have long been recognized by ornithologists. The present study serves merely to empha-

size with numerical examples the value of clearings to birdlife. The margins of clearings were found to contain 41 per cent more species and 95 per cent more individual birds than the corresponding woodland interiors. There is abundant evidence, also, that mammals are attracted to the margins of clearings.

Obviously a primary essential to the management of woodland areas for wildlife, especially for birdlife, is the provision of clearings with extensive margins. The influence of a clearing usually extends less than a hundred yards into the interior of the woodland, consequently maximum development of an area for wildlife requires numerous, well located clearings. The interior of a large clearing is as depleted of wildlife as is the interior of the woodland, hence the need for small but numerous clearings.

Summary

(1) Thirty-minute time-unit bird counts are useful for expressing the relative abundance of birds in two or more types.

(2) An average thirty-minute walk in the margin of a Walker County, Texas, pine woodland clearing may be expected to disclose 16 or 17 birds of 6 or 7 species. A similar walk in the interior of woodland more than 100 yards from the edge of a clearing discloses 8 or 9 birds of 4 or 5 species.

(3) The margins of clearings have 95 per cent more birds representing 41 per cent more species than the interiors of corresponding woodland.

(4) In the management of pine woodland the provision of well scattered, small (less-than-thirty-acre) clearings is distinctly favorable to birdlife.

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