

SAMPLING PASSERINE BIRDS IN A WOODED SWAMP IN SOUTHEASTERN MASSACHUSETTS

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DURING the summer of 1960, small passerine birds of the understory of a red maple-white cedar swamp in southeastern Massachusetts were sampled by means of Japanese mist nets. Results of the sampling provided data on a habitat not previously investigated in this manner. Blood samples were obtained from the netted birds as part of an ecologic study of eastern encephalitis. The investigation was part of a joint study sponsored by the Communicable Disease Center, United States Public Health Service, and the Division of Communicable Diseases, Massachusetts Department of Public Health; and was supported in part by research grant 4242-00-00(03) from the National Institute of Allergy and Infectious Diseases of the National Institutes of Health, Public Health Service, U.S. Department of Health, Education, and Welfare.

Pine Swamp is located in Raynham (Bristol County), Massachusetts, about 30 miles south of Boston on the northeast outskirts of the city of Taunton. The area is 55 feet above sea level and is drained by the Pine Swamp Brook that flows eastward across its northern portion to enter the Taunton River. The swamp is roughly oval in shape and contains 658 acres. The water level in the swamp fluctuates seasonally, inundating the area during the winter and spring. During the remainder of the year, the substratum is generally saturated with water. There has been no significant disturbance of the swamp's vegetation by man, either by cutting or burning, for many years.

Red maple (*Acer rubrum*) and white cedar (*Chamaecyparis thycides*) occupied the swamp as codominant species. The height of the overstory was about 30 feet. The understory was composed largely of species of the genus *Vaccinium*, predominantly highbush blueberry (*V. corymbosum*). Cinnamon fern (*Osmunda cinamomea*) was the dominant fern, and ground cover was club (*Lycopodium* spp.) and sphagnum (*Sphagnum* spp.) mosses.

METHODS

Two trails each 1,032 feet long were laid out by hand compass. One trail was oriented north and south, the other east and west, and intersected at their midpoints. Eight Japanese mist nets, each about 7 by 40 feet, were placed in cleared areas at 100-foot intervals on each trail (Low, 1957). This was a modification of the method used by Stamm et al. (1960). The netting area was at least 1,000 feet from the nearest edge of the swamp. There were 10 netting periods beginning 17 May and occurring every 14 days until 22 September 1960. A netting period consisted of two collecting days. The

TABLE 1
BIRDS CAPTURED WITHIN A MASSACHUSETTS FRESH-WATER SWAMP
17 MAY-22 SEPTEMBER 1960

Species	Individual birds taken	Repeats in subsequent netting periods*	Birds dying	Males		Females		Sex unknown	
				Adults	Immature	Adults	Immature	Adults	Immature
Hairy Woodpecker	2	1		1		1			
Downy Woodpecker	4	1		1		2	1		
Blue Jay	6			1					6
Black-capped Chickadee	35	15	6	1		7		6	6
Catbird	4								4
Robin	34	1	1	6	3	5	1		18
Wood Thrush	17	1		2		2		3	6
Veery	23	3	2	6		4		4	7
Black-and-white Warbler	4			2		1			1
Black-throated Green Warbler	1					1			
Ovenbird	11	2		1		2		1	7
Northern Waterthrush	13	2	2	5		1		3	3
Yellowthroat	2				1				1
Canada Warbler	7	2	1	4		2			3
American Redstart	1				1				
Baltimore Oriole	1								1
Common Grackle	11			5	2	1		1	2
Rufous-sided Towhee	1								1
Totals	177	28	12	35	7	28	3	18	66

* These figures do not include birds recaptured more than once in a single netting period. Therefore, the totals of columns 1 and 2 do not equal the actual number of birds captured.

first day began at noon and ended shortly after dark. Nets were left in place and the second day lasted from shortly before dawn until noon. Captured birds were banded and bled for serologic tests and then released.

RESULTS

A total of 176 individual birds was recorded in 2,280 net-hours. Repeat captures raised the total nettings to 218 for an average of nine birds per 100 net-hours.

The total captures of each species recorded by the study are shown in Table 1, as is the number of immature birds netted. Figure 1 shows that over 50 per cent of the captures in July and August were immature birds of the year. Post-juvinal molt caused some difficulty in age determination, especially with chickadees and waterthrushes.

SIGNIFICANCE AND LIMITATIONS OF STUDY

This is believed to be the first sampling of small passerine birds of a red maple-white cedar swamp in which the edge effects from surrounding habitats were negligible. Those species of birds living or traveling in the tree crowns were infrequently sampled. For example, Cooper's Hawk, Common Crow, Great Crested Flycatcher, Black-throated Green Warbler, and other species

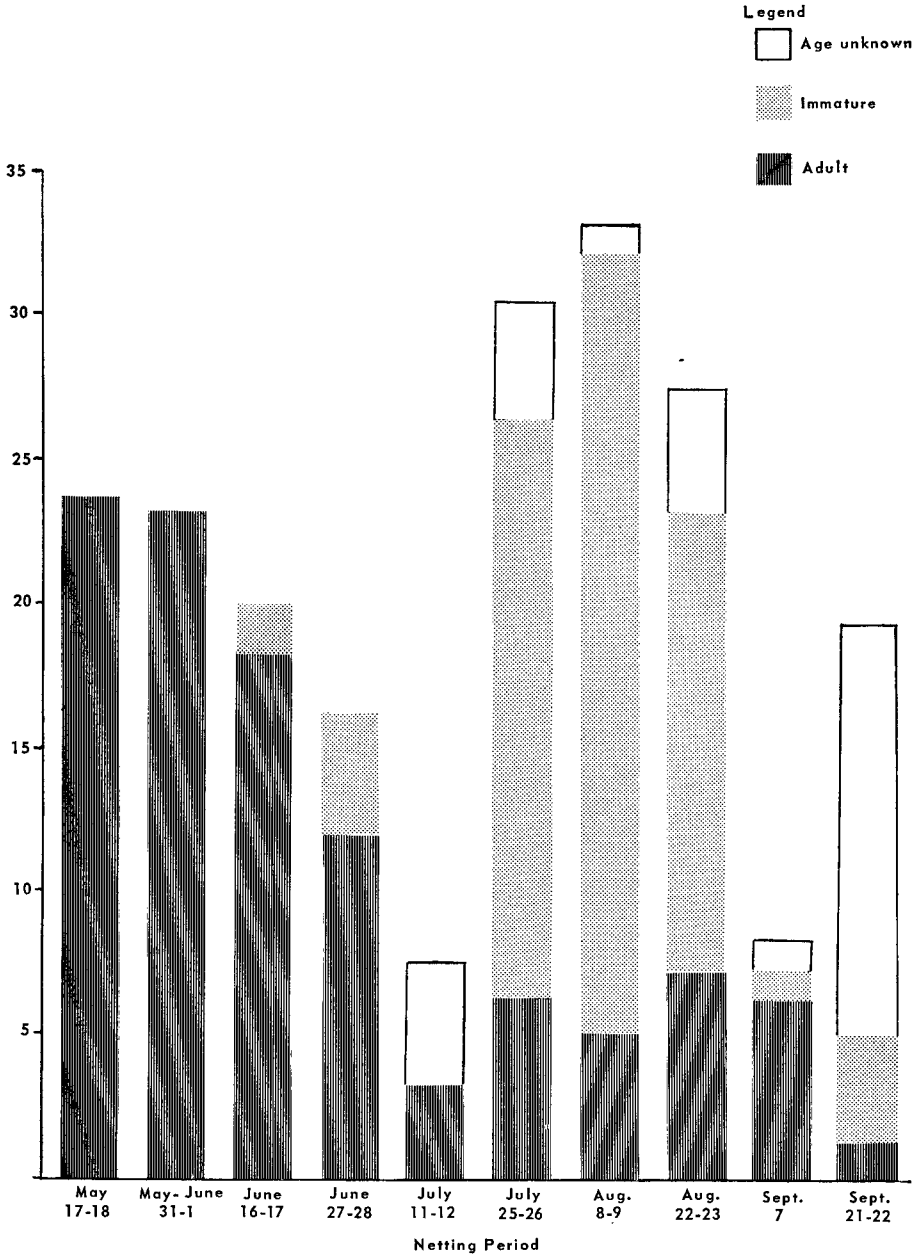


FIG. 1. Age distribution of wild birds captured per netting period within a red maple-white cedar swamp in southeastern Massachusetts during 1960.

were observed but were seldom snared in the nets. Some of the larger birds frequently bounced off the nets and escaped. Ruffed Grouse, Yellow-shafted Flickers, Common Grackles, Red-winged Blackbirds, and Blue Jays were seen to avoid capture in this manner. Blue Jays, Common Grackles, and Red-winged Blackbirds were often seen deliberately avoiding the nets. The number of these species collected did not seem to be indicative of the numbers present in the swamp.

It was not possible to assess any influence in the mist-net collections resulting from either recruitment or the development of net-shyness; in spite of the two-week interval between the relatively short netting periods, these phenomena may have occurred.

Based on captures, singing males, nests, and recently fledged young, the following species were determined to be breeding residents of the swamp: Ruffed Grouse, Hairy Woodpecker, Downy Woodpecker, Blue Jay, Black-capped Chickadee, Catbird, Robin, Wood Thrush, Veery, Black-and-white Warbler, Ovenbird, Northern Waterthrush, Yellowthroat, Canada Warbler, and Common Grackle. The American Redstart, Baltimore Oriole, and Rufous-sided Towhee were all immature birds taken in late summer and were probably wanderers into the swamp.

The data gathered contribute additions to the knowledge of the frequency and distribution of certain species. The summaries of the status of several species in 1925 (Forbush, 1929) and in 1955 (Griscom and Snyder, 1955) favor a theory of range extension over an explanation of the possible lack of field work. The Northern Waterthrush was recorded only once in the four counties of southeastern Massachusetts prior to 1925 (Forbush, 1929). It had become a common summer resident in western and northern Massachusetts in 1955 (Griscom and Snyder, 1955). The Northern Waterthrush probably was the commonest breeding warbler of this southeastern Massachusetts swamp in 1960. The Canada Warbler was listed as an occasional summer resident in eastern Massachusetts in 1925 (Forbush, 1929). Fifty miles north of the study area, an increase of this species was recorded in maple swamps, a new habitat, from 1928–1948 (Griscom, 1949). Many singing males plus seven netted birds indicated that Canada Warblers were present in numbers in this study area. The Ovenbird was last netted on 23 August. Such departure dates agree with statements of Forbush (1929).

The abundance of the Black-capped Chickadee netted was regarded as an indication of its abundance. As many as 11 per day were netted for a total of 35 individuals banded in this study. Forbush (1929) considered the chickadee to be an open woodland breeder. The present study in Pine Swamp indicated that chickadees were common to abundant in red maple–white cedar swamps.

The Robin owed its large number of nettings to an influx of immature birds during the fourth week of July, when the blueberries ripened. The five adult Robins taken prior to this invasion may have represented a more realistic picture of the population.

CONCLUSIONS AND SUMMARY

Birds of the understory of a red maple-white cedar swamp in southeastern Massachusetts were sampled by mist nets from 17 May to 22 September 1960. By arranging the mist nets along two 1,032-foot lines that bisected each other at right angles, a modification of a method developed by Stamm et al. (1960), 176 individual birds were netted for an average of nine birds per 100 net-hours. The netting was done at least 1,000 feet from the swamp's edge, so border habitat effect was minimized. There was evidence that the ranges of the Northern Waterthrush and Canada Warbler have extended to the study area and that the Black-capped Chickadee breeds in red maple-white cedar swamps.

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