

GENERAL NOTES

Age-specific differences in habitat selection by the American Redstart.—The American Redstart (*Setophaga ruticilla*) is unusual among parulids because males retain immature plumage until after the first breeding season. On the basis of this character, age-specific differences in habitat occupation have been reported (Ficken and Ficken 1967, Wilson Bull. 79: 188). In 1969 I sampled some redstart habitats near Pellston, Michigan. The age-specific differences I found in the habitats were not the same preferences the Fickens noted. The present report may be a useful step toward describing the habitats redstarts use across their entire range as a species.

Fieldwork consisted of weekly censuses of singing males between 22 May and 12 August 1969 and analyzing vegetation in territories where I found nests. The Grapevine Point study tract included 25 acres of maple (*Acer saccharum*) forest on the southeast shore at Douglas Lake at the University of Michigan Biological Station. The Maple River study area included about 75 acres of alder (*Alnus rugosa*) and aspen (*Populus grandidentata*) swamp along the Maple River 2 miles east of Pellston and 3 miles west of Douglas Lake.

In the censuses, 76 to 81 male redstarts showed definite territorial behavior (circles, fights, continued singing in one area; Ficken 1962, Auk 79: 607). I recorded between 48 and 53 adult males in the densely-populated Grapevine Point area. No first-year males were seen, although one did hold a territory and raise four young in a stand of aspen (*Populus tremuloides*) approximately 150 m from the study tract. In the Maple River area I found 28 males, of which 21 (75%) were adults while 7 (25%) were first-year birds. While Ficken and Ficken (ibid.) pooled data from their own field work and the literature to show that age-specific differences in habitat occupation do occur, my study is unique in demonstrating such differences (Fisher exact probability test: $P < 0.05$) in two large populations from a single geographical area.

Importance values listed in Table 1 indicate differences in vegetation at Grapevine Point and Maple River. Based on eight sample plots in each tract, these values represent the sum of the relative frequency, relative dominance, and relative density of each tree species (see Curtis and McIntosh 1951, Ecology 32: 476). Tree size also differed. Mean diameter at breast height, an index of forest maturity, was 4.2 inches at Grapevine Point and 2.4 inches at Maple River. Although these

TABLE 1
IMPORTANCE VALUES OF TREES IN MICHIGAN HABITATS

Species	Maple River	Grapevine Point
Sugar maple (<i>Acer saccharum</i> Marsh.)	—	224.7
Alder (<i>Alnus rugosa</i> Du Roi)	125.0	—
Amelanchier (<i>Amelanchier</i> sp. Spreng.)	104.5	14.1
Birch (<i>Betula papyrifera</i> Marsh.)	32.1	51.7
Ash (<i>Fraxinus</i> sp. L.)	10.9	25.2
Bigtooth aspen (<i>Populus grandidentata</i> Mich.)	—	13.8
Trembling aspen (<i>Populus tremuloides</i> Mich.)	147.0	4.9
Black cherry (<i>Prunus serotina</i> L.)	99.4	—
Basswood (<i>Tilia americana</i> L.)	10.7	106.8
Red oak (<i>Quercus rubra</i> L.)	—	74.1

TABLE 2
 FREQUENCY OF TERRITORIAL FIRST-YEAR MALES IN MIXED "DECIDUOUS" AND
 ALDER HABITATS

Habitat and location	Total no. of males	No. of first-year males
Mixed "deciduous" (Michigan) ¹	51	0
Mixed "deciduous" (Maine) ²	14	3
Alder (Michigan) ¹	28	7
Alder (Maine) ²	14	1

¹ Present study.

² Ficken and Ficken (1967, *Wilson Bull.* 79: 188).

measurements do not necessarily reflect features of the environment most important to redstarts, they do offer an easily-applied means of identifying habitats to the biologist. Such an analysis allows an objective comparison of habitats; this was not attempted in earlier studies (reviewed by Ficken and Ficken *ibid.*).

Table 2 compares the frequency of first-year male redstarts in the two Michigan study areas with two roughly comparable habitats studied by the Fickens in Maine. The mixed "deciduous" woods in Maine consisted of "some trees taller than 30 feet, an understory of saplings to twenty feet and sometimes up to 10% conifers." By comparison, the Grapevine Point area was a more mature forest. The difference in the maturity of the vegetative community may explain why first-year males were more common in mixed "deciduous" habitats in Maine than in Michigan. Most interesting was the relative abundance of immature males in alder habitats in Michigan. In Maine an analysis of five habitats used by redstarts showed that immature males were least common in alder swamps (Ficken and Ficken *ibid.*).

Taken together, the present report and the Fickens' study document in part the diversity of habitats used by first-year and adult male redstarts in different regions. If, as the Fickens have reported, adult males exclude first-year males from "optimal" habitats, comparative study of the species' ecology in different geographical regions should yield a clearer definition of the "optimal" habitat than now exists.

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Further observations of nectar feeding by orioles.—A recent note (Fisk 1973, *Auk* 90: 208) reported on nectar feeding in the Hooded Oriole (*Icterus cucullatus*) and suggested that nectar might be important in the diet of many orioles. I have neotropical observations on six species to support this supposition.

On 4 June 1971, I saw both Hooded Orioles and Scott's Orioles (*Icterus parisorum*) taking red sugar-water at feeders of the Santa Rita Lodge, Madera Canyon, Arizona (south of Tucson). According to canyon residents, both orioles visit the feeders frequently through the summer.

On its winter range in Panama the Orchard Oriole (*Icterus spurius*) is a regular visitor to the 40-mm orange flowers of *Erythrina glauca* (a common tree); I counted up to eight Orchard Orioles feeding in one tree in January 1969. The Baltimore Oriole (*Icterus galbula*) was an infrequent nectar feeder at the large