THE INFLUENCE OF AREA AND HABITAT ON THE AVIAN COMMUNITY IN RED MAPLE SWAMPS OF SOUTHERN RHODE ISLAND

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ABSTRACT

Red maple swamps are common throughout the glaciated Northeast and, along with other wetland types, are protected for their wildlife habitat and other functions. Yet there are few descriptions of red maple swamp wildlife communities, and little research on how the wildlife are influenced by habitat features. Several states define jurisdictional wetlands on the basis of wetland size, but the influence of area on wetland wildlife communities is largely unknown.

Birds were censused in 12 mature, very poorly drained red maple swamps in southern Rhode Island. Swamps ranged from 0.49 to 19.24 ha and were placed in four size categories. Avian community composition was described and the influence of area and habitat on the avian community were examined.

Five species made up the majority (66%) of singing bird observations: Canada Warbler, Gray Catbird, Black-and-white Warbler, Veery, and Northern Waterthrush. The avian association was similar in composition to that observed by other researchers in red maple swamps in west-central Massachusetts.

Species richness at individual sites ranged from 3 to 15 singing bird species and from 7 to 24 total species. Richness was strongly ($P<0.0001$) related to swamp area: for

singing birds, R^2=0.81, and for all species observed, R^2=0.84. Wetlands in either of the two larger size categories supported significantly more species than wetlands in either of the two smaller categories. Area did not relate significantly to avian relative abundance.

The smallest swamps studied, down to 0.5 ha, supported several breeding species, including the Northern Waterthrush, an obligate wetland species. Thus red maple swamps down to at least 0.5 ha have significant wildlife habitat value and support "wetland species." There was a rapid increase in the number of species in swamps up to about 6-8 ha in size, and a slower increase in species richness beyond this size.

In stepwise regression models, swamp area and measures of shrub structure were significantly related to species richness. Avian relative abundance was significantly related only to the thickness of the organic soil layer; the nature of the relationship between these variables is unknown.