EFFECTS OF EARLY SUCCESSIONAL HABITAT RESTORATION ON AVIAN POPULATIONS IN RHODE ISLAND

BY

LINDA VANDERVEER

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ABSTRACT. Early successional habitats, such as grassland and shrubland, have long been integral to the historic landscape of southern New England. A large body of evidence suggests the region has supported populations of avian specialists for thousands of years. However, anthropogenic influences during the past 200 years have significantly impacted the amount of early successional habitat in the region. In particular, suburbanization and control of stochastic events, such as fire, have reduced the amount of early successional habitat. As a result, many bird species that specialize in early successional habitats have experienced substantial population declines. To reverse these trends, the Rhode Island Department of Environmental Management and Natural Resources Conservation Service recently began grassland and shrubland restoration efforts in the Big River Management Area of central Rhode Island.

From January to March 2006, restoration efforts were initiated at 12 sites to clear trees and invasive shrubs. I studied the effects of this habitat alteration on local breeding bird populations in the summer of 2006, and compared my results with baseline data collected in 2005 at 19 sites. A total of 50 bird species were detected at these sites in 2005, and 52 species in 2006. The most frequently observed species were habitat generalists such as American Robin and Black-capped Chickadee. Seventeen species that breed in early successional scrub habitat were observed in 2005, while 19 were observed in 2006.

I conducted intensive analyses on several early successional specialists with regionally declining populations, including Prairie Warbler, Blue-winged Warbler, Indigo Bunting, Eastern Towhee, and Field Sparrow. Two-way ANOVA for each species showed significant interactions between site and treatment, indicating inconsistent patterns of abundance between years and sites. Overall species richness did not increase with patch size, but early successional species richness increased significantly in larger patches. I also used linear regression to examine the relationship between abundance of target species and field patch size in both years. Prairie Warblers were more abundant in larger patches in the baseline year, while Field Sparrows were more abundant at larger patches in both years. Blue-winged Warbler, Indigo Bunting, and Eastern Towhee showed virtually no area sensitivity either year, indicating a greater potential to adapt to smaller openings in the forest canopy.