



Patuxent Wildlife Research Center Science Brief for Resource Managers

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Science Brief PWRC 2003-21

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Response of avian communities to forest management on Moosehorn NWR

Description:

Evidence from many recent studies indicate that populations of some neotropical migrant landbirds are declining (Holmes et al. 1986, Askins and Philbrick 1987, Holmes and Sherry 1988, Robbins et al. 1989, Askins et al. 1990). Several authors have proposed that tropical deforestation has caused declines (Hutto 1988, Robbins et al. 1989, Askins et al. 1990); other evidence supports the alternative hypothesis that habitat degradation on breeding areas in North America is responsible (Sherry and Holmes 1992, Litwin and Smith 1992, Witham and Hunter 1992). Several populations of species that migrate to the Neotropics declined in recent decades within North American landscapes where breeding habitat became fragmented (Robbins 1979, Askins et al. 1990). Nest success of many species suffers in small habitat patches because of parasitism by brown-headed cowbirds and nest predation along edges (Chasko and Gates 1982, Brittingham and Temple 1983, Wilcove 1985). Small forest fragments may not provide adequate forest-interior habitat or special micro habitats such as streams and steep slopes (Bond 1957, Whitcomb et al. 1981, Lynch and Whigham 1984). Moosehorn National Wildlife Refuge (MNWR) in eastern Maine was established in 1936 as a management area for American woodcock (*Scolopax minor*). The 6,580 ha area is 90% forested and has had an active program to harvest wood since 1979. During 1978-81, Derleth et al. (1989) used point counts to determine species richness and relative abundance of birds in conifer, hardwood, and mixed-wood control (uncut) and treatment (clearcut 0-8 yrs. old) sites on MNWR. Increases in estimated richness and diversity were noted in treated hardwood and mixed growth stands, but not in conifer stands. Stand treatment was associated with changes in the composition of the bird community. Derleth et al. (1989) reported that the avian community benefitted and that early-successional

species did not increase at the expense of species requiring undisturbed forest.

Progress to Date:

We surveyed 110 points in 1995 and 112 points in 1996. Because of delays in the refuge cutting program only 6 sites were available for recent cuts in hardwood and conifer types. In all other types we established 10 permanent points. All points have been located using a GPS unit and are being added as a layer in the Moosehorn NWR GIS system. We recorded 83 different species of woodland birds. Species richness, species diversity, and total number of individuals heard differed by treatment. Only 2 species were only recorded in the wilderness plots whereas 18 species were recorded in plots in the managed areas and not in the wilderness plots. Stand treatment was associated with changes in avian species composition. The increased patchiness seemed to benefit many species, while few, if any, seemed adversely affected.

Management Implications:

Results of this study will allow managers to evaluate the effects of early successional habitat management on neo-tropical songbirds.

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