



Patuxent Wildlife Research Center Science Brief for Resource Managers

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Avian colonization of planted or coppiced hardwood forests

Description:

Opportunities for restoration of bottomland forests in the Mississippi Alluvial Valley have increased dramatically in recent years. Some of this landbase has been converted to forests through active reforestation methods but other areas have simply been removed from annual tillage with little or no reforestation effort. Benefits resulting from these efforts depend upon colonization of sites by desirable plant species, restoration of natural hydrologic patterns, and use by wildlife, but progress towards these benefits may be difficult to discern. There is a need to document the "success" of reforestation at providing wildlife habitat, particularly breeding bird use of these sites. Our objectives are to: (1) estimate density of each breeding bird species within planted (or coppiced) hardwood forests within ten years of planting, or before trees reach harvestable size, using standard Breeding Bird Censuses; (2) assess vegetation (tree species composition, basal areas, canopy cover, stem density, herbaceous cover density, and visual obstruction densities) within each of these reforested areas; and (3) relate avian species composition and density in planted bottomland hardwood forests to the physical characteristics of the forests.

Progress to Date:

Reforestation of bottomland hardwood sites in the southeastern United States has markedly increased in recent years due in part to financial incentives provided by conservation programs. Currently >250,000 ha of marginal farmland have been returned to hardwood forests. I observed establishment of trees and shrubs on 205 reforested bottomlands: 133 sites were planted primarily with oak species (*Quercus* spp.), 60 sites were planted with pulpwood producing species (*Populus deltoides*, *Liquidambar styraciflua*, or *Platanus occidentalis*), and 12 sites were not planted (i.e., passive regeneration). Although oak sites were planted with more species, sites planted with pulpwood species

were more rapidly colonized by additional species. The density of naturally colonizing species exceeded that of planted species but density of invaders decreased rapidly with distance from forest edge. Trees were shorter in height on sites planted with oaks than on sites planted with pulpwood species but within a site, planted trees attained greater heights than did colonizing species. Thus, planted trees dominated the canopy of reforested sites as they matured. Planted species acted in concert with natural invasion to influence the current condition of woody vegetation on reforested sites.

Management Implications:

Because colonization by forest birds is dependant on tree height, I recommend the inclusion of at least one fast-growing tree species (e.g., cottonwood or sycamore) in the planting stock to encourage rapid avian colonization of these sites. Thinning planted trees promoted increased diversity of co-dominate canopy trees within reforested stands by releasing naturally colonizing species within canopy gaps. Silvicultural manipulations should be undertaken to create canopy gaps for the development of woody understory vegetation and concurrently provide access to the canopy for colonizing tree species.

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