Patuxent Wildlife Research Center
Science Brief for Resource Managers

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Enhancement of hardwood plantation diversity by incorporation of mast-producing trees

Description:

Restoration of bottomland hardwood forests has increased dramatically in recent years through acquisition of public lands and through implementation of the USDA's Wetland Reserve Program. Historically, most reforested sites have been planted predominantly to heavy-seeded mast-producing species, such as oaks and pecans. Unfortunately, most of these species are slow growing and provide only limited habitat for forest wildlife for the first 20 years after planting. Conversely, fast-growing, early-successional tree species can provide habitat for forest wildlife <10 years after planting. However, unless heavy-seeded, mast-producing trees are included in the planting, they will be scarce within the maturing forest. The number of mast-producing trees within hardwood plantation forests may be markedly increased through enrichment plantings and silvicultural manipulations. Even so, the impact of enhancing forest tree diversity on forest wildlife is unclear. Recently acquired plantation forests on Clarks River National Wildlife Refuge offer an excellent opportunity to test our ability to successfully incorporate mast-producing trees into existing hardwood plantations and to monitor its impact on forest wildlife.

Progress to Date:

Pre-study transects to acertain species of breeding birds and to quantify vegetation conditions were conducted during summers of 1999 and 2000. During March 2001, eighteen hardwood plantations (American scyamore or sweetgum) were under-planted with 1-year old bare root seedlings. Four species were under-planted within each hardwood plantation. The species planted within any particular stand varied, as we tried to match tree species to soil and hydrologic conditions. Species planted included pin oak, sweet pecan, overcup oak, swamp chestnut oak, persimmon, red mulberry, Washington hawthorn, American plum, and deciduous holly. Seedlings were planted within every other row across all stands. 100 seedlings within each plantation stand were marked with numbered tags to assess their sruvival. The bird community was again assessed via point counts during June 2001, and 2002. As of June 2001, survival of seedlings, based on survial of 100 marked seedlings, was >90%. Timber was marked for harvest during March 2002 to remove forest canopy. Actual harvest will be schedlued by Clarks River National Wildlife Refuge personnel.

Management Implications:

Survival of seedlings under-planted within hardwood plantations was good and should diversify these forests. However, opening the canopy through timber harvest is likely required to ensure their continued development.

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