



Patuxent Wildlife Research Center Science Brief for Resource Managers

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Science Brief PWRC 2003-27

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Digital Data and Metadata for Landscape Level Reforestation Priorities in the Mississippi Alluvial Valley

Description:

Thousands of ha of cleared wetlands are being reforested annually in the Mississippi Alluvial Valley (MAV). Despite the expansive and long-term impacts of reforestation on the biological communities of the MAV, there is generally a lack of landscape level planning in its implementation. To address this deficiency we propose to use raster-based digital data to assess the 'value' of forest restoration based of the benefits conveyed to different constituencies within the MAV. Specifically, we will prioritize reforestation that benefits (1) migratory forest birds, (2) black bears, (3) flood abatement, (4) water quality, and (5) economic development. Through examination of these different priorities, we will identify those areas where reforestation will provide the greatest benefit to the majority of constituents.

Progress to Date:

National Land Cover Data were merged within selected Bird Conservation Regions and made available via the Internet. After incorporating the location of reforestation within the Mississippi Valley, new reforestation priorities were determined.

Historic forest cover in the Mississippi Alluvial Valley has been reduced by >75%. Remaining forests are fragmented, hydrologically altered, and impacted by human activities. Because well drained forests were easily cleared, most remaining large forest fragments are comprised of wet forest types. Forest fragmentation and altered hydrology have negatively impacted forest bird populations. We developed a spatially explicit decision support model for bird conservation that established priority areas for forest restoration that de-fragmented the bottomland hardwood forests. Our primary objective was to increase the number of forest patches that harbored >2000 ha of interior area (core) that is at least 1 km from a hostile edge. We also sought to

increase the number of forest cores that were >5000 ha and to add additional forest core to larger contiguous forest areas. Forest restoration within local (10 km) landscapes was targeted to achieve at least 60% forest cover. Finally, within priorities that defragmented forest cover, we emphasized restoration of high-site (well drained) bottomland hardwood forests. The Lower Mississippi Valley Joint Venture has established a restoration objective of 800,000 ha of bottomland forest by 2020. If linked to our forest restoration priorities, achievement of this objective, by reforesting <10% of priority lands, would result in an area of forest core equivalent to that which was present in the early 1950s. Targeting reforestation based on this conservation model resulted in >8 times more forest core than did restoration within randomly located fields.

Management Implications:

Reforestation targets are being used by USDA Natural Resources Conservation Service as part of selection criteria for enrollment in the Wetland Reserve Program. Public land managers and private enterprise are using these restoration priorities to guide placement of restoration within the Mississippi Valley.

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