

New Bioassessment Models for Monitoring Ecological Restoration in Hardwood Bottomlands

Matthew J. Gray, *Department of Forestry, Wildlife, and Fisheries, University of Tennessee, Knoxville, TN 37996*

Elizabeth A. Summers, *Department of Forestry, Wildlife, and Fisheries, University of Tennessee, Knoxville, TN 37996*

Abstract: Restoration of hardwood bottomland ecosystems is a growing practice in the southeastern United States. To date, no standard monitoring protocol has been developed to evaluate the state of ecological restoration in forested wetlands. Index of biotic integrity models are commonly used to evaluate ecological function by assigning scores based on biological characteristics measured at disturbed sites compared to reference sites. We used this procedure to develop bioassessment models for monitoring ecological restoration in hardwood bottomlands. We built our models using data collected from 17 restoration and four reference sites across 10 counties in western Tennessee, from March–August 2008. Vegetation and bird assemblages were used as indicators of ecological restoration, and 26 community metrics were measured. Metrics retained in the vegetation model included density of snags, logs and overstory trees, tree basal area, and percent vertical cover measured using a profile board. The bird model contained relative abundance of bark feeding, branch nesting, and twig nesting guilds. Metrics in both models were strongly correlated with a restoration gradient. Our models can be used to assign bottomland sites to four practical restoration categories: early restoration, mid restoration, late restoration, and reference condition. Our approach to using bioassessment models for evaluating state of ecological restoration is novel. We encourage other researchers to evaluate this approach in other wetland types and ecosystems.

Proc. Annu. Conf. Southeast. Assoc. Fish and Wildl. Agencies 64:193