

2009 Midwest Jack Pine Symposium

Presentation Abstracts

Title: A Kirtland's Warbler Management at Regional, Landscape, and Local Scales

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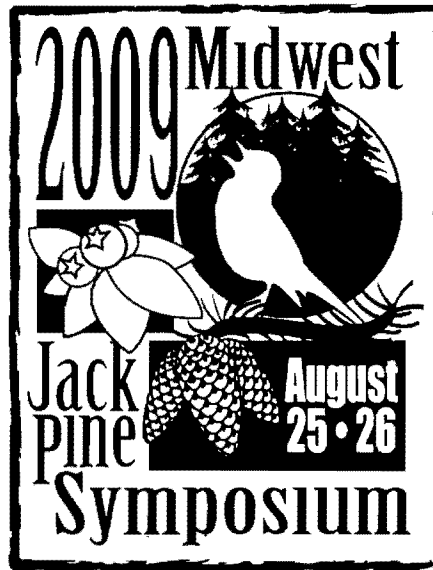
Abstract: The Kirtland's Warbler breeds in young, densely-stocked jack pine forests of northern Lower Michigan, and more recently limited areas in the Upper Peninsula of Michigan, Wisconsin and Ontario. Because almost all the known population and potential nesting habitat can be surveyed and monitored, this species provides an outstanding opportunity for research on long-term dynamics. Historically, the necessary habitat conditions were provided by 5-23 yr-old wildfire-regenerated scrublands on sandy outwash areas. Plantations and unburned naturally-regenerated areas are used when jack pine stocking is greater than 1000 stems per acre, which is the case commonly found in the Lake States ecosystems where conditions are somewhat cooler and wetter than the core breeding range in Lower Michigan. When the Kirtland's Warbler population became protected under the Endangered Species Act, a habitat restoration program was started to reverse a declining to stable population. The immediate goal was to provide enough critical nesting habitat area to support over 1,000 males, and to increase productivity. Brown-headed Cowbird decoy trapping (designed by the late N. Cuthbert) implemented by USFWS was enormously successful at increasing productivity, yet the population did not increase leading USFWS to believe winter conditions were limiting the population. However, male density decreased within core breeding areas even though the amount of suitably-aged breeding habitat had increased suggesting habitat quality limitations. An opportunity to test this idea presented itself when a prescribed burn escaped (Mack Lake Fire) at the same time as plantations established specifically for the Kirtland's Warbler were becoming suitably-aged thereby greatly increasing the amount of suitable breeding habitat. We predicted a 3-fold population increase initially in response to the added habitat, but a five-fold increase in males was found due to greater total area and better quality habitat than predicted, and a favorable landscape structure of managed plantations. At the landscape scale, recommendations on chronology of stands helped overlap patches to reduce the need for male re-colonization and build-up. The regional habitat area targets were based initially on historical male densities found in high quality habitats, but were later found insufficient when more comprehensive occupancy patterns were examined at multiple scales. Specifically, we found only 30-50% of available habitat was occupied, especially by females, and these patterns varied temporally within the context of total habitat area and male population size. Further, at landscape and local scales, the duration of use for wildfire-regenerated and especially plantation habitat was shorter than expected in the initial Recovery Plan. Thus, approximately 50-60,000 acres has been added to habitat planning in recent years. Additionally, we found patch size, isolation, habitat type, and landscape factors such as rate of habitat creation and fraction of occupied patches influenced the timing of patch colonization and abandonment, thereby influencing the duration habitat areas are used. Recently, the majority of males (75 – 90%) are using plantation habitat that resembles larger wildfire-regenerated habitat due to landscape planning. At the local scale, oak coppice, snags and some residual trees was recommended to improve conditions, but management has been especially successful in increasing the stocking density of jack pine with or without fire for site preparation. Regenerating habitat without fire was critical to keeping habitat management plans on schedule following the Mack Lake Fire in the 1980s and 1990s such that enough suitably-aged habitat would be available once the wildfire-regenerated habitat became unsuitable. Current management emphases are on establishing habitat without expensive full-scale planting, especially outside the Lower Peninsula of Michigan. It is important to note that the Kirtland's Warbler research-management program was developed within the context of a Regional Openlands Program proposed in the early 1990's to benefit many rare or declining openland plants and animals, especially area-sensitive species such as Sharp-tailed Grouse and Upland Sandpiper.

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Indeed, managing for these other species on the Hiawatha and Wisconsin National Forests has created initial opportunities for Kirtland's Warblers in those places, and now Kirtland's Warbler habitat management is facilitating the return of Sharp-tailed Grouse and other area-sensitive species.

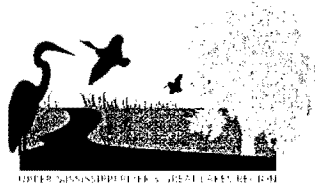
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