

Analysis of the Jack Pine Ecosystem and Potential Kirtland's Warbler Habitat within the Hiawatha National Forest

Objective: 1) Describe, refine, and map existing and potential Kirtland's Warbler habitat within key Land-type Associations (LTA's) of the Hiawatha National Forest (HNF). 2) Make research and management recommendations.

Methodology: KW nest occupancy in the Lower Peninsula has been shown to be related to jack pine height and stocking density, which is based on glacial geology, physiography, microclimate, and soil nutrients. The 4 key LTA's (currently being updated) to investigate are; Beaton Lake Outwash (BLO), Whitefish Delta (WD), Wetmore Outwash Plain (WOP), Raco Plains (RP). .

Available digital maps

LTAs of U.P. and HNF

Wigger/Burkhart Landform map of the Hiawatha NF (currently being scanned)

Great Lakes Assessment (GLA) broad scale maps Providence 212 (www.ncfes.umn.edu/gla/index.html)

KW census locations (need to finish digitizing)

Forest Stand Type (BLO/WD/WOP)

Orthophotos and Topographic contours

Available paper maps

Soils Survey by County

Forest Stand Type (RP)

Preliminary landscape ecosystems by D. Gerdes (RP)

Ecological Land-type Phase (in progress for BLO, WD, WOP)

Collect field data as needed to supplement the above maps and information. Describe ecosystem characteristics that may influence KW nesting (for example, physiography and landform, soil types and depth to water table, nutrients, and banding, climatic factors, length of growing season, site index for jack pine, stand condition, characteristic ground flora, etc.).

Estimate jack pine growth rates as influenced by ecosystem characteristics in each LTA to determine general length of KW habitat suitability.

Describe the landscape context of Kirtland's Warbler habitat on the HNF at several scales (for example, landform, LTA, UP, entire breeding range). In general terms compare occupied (BLO, WD) and un-occupied (WOP, RP) HNF habitat, and compare habitat on HNF to central breeding range habitat.

Prepare written report and maps to document findings and relate ecological properties to potential KW occupancy.

Logistics:

Hiawatha would contract with Glenn, Wayne or other qualified student working with Dr. Barnes for field work this summer (June) and report by late summer/fall. The HNF currently has \$2,300 in the budget for this analysis.

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