MANITOBA-MINNESOTA TRANSMISSION PROJECT

ENVIRONMENTAL MONITORING PLAN

GOLDEN-WINGED WARBLER MONITORING REPORT 2017-2020

Prepared for

Licensing and Environmental Assessment Department Manitoba Hydro

By Wildlife Resource Consulting Services MB Inc.

October 2020

SENSITIVE DATA REDACTED

This report should be cited as follows:

Wildlife Resource Consulting Services MB Inc. 2020. Golden-winged warbler monitoring report 2017-2020. A report prepared for Licensing and Environmental Assessment Department, Manitoba Hydro, Winnipeg by Wildlife Resource Consulting Services MB Inc., October 2020. 17 pp.

STUDY TEAM

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INTRODUCTION

The golden-winged warbler (*Vermivora chrysoptera*) is listed as Threatened under the federal *Species at Risk Act* and under *The Endangered Species and Ecosystems Act* of Manitoba. Hybridization and competition with the blue-winged warbler (*Vermivora cyanoptera*) is a primary threat to golden-winged warbler populations (Edie *et al.* 2003; Environment and Climate Change Canada 2016). Other important threats include habitat loss, nest parasitism by the brown-headed cowbird (*Molothrus ater*), and mortality due to collisions with human-made structures (Environment and Climate Change Canada 2016).

The golden-winged warbler is an inhabitant of shrubby or early successional habitats near forest edges (Environment and Climate Change Canada 2016), it can be found in the Project regional assessment area (RAA), as indicated in the *Manitoba–Minnesota Transmission Project Environmental Impact Statement* (Manitoba Hydro 2015). The Manitoba–Minnesota Transmission Project (the Project) right-of-way (ROW) crosses through five critical habitat grid squares that have been delineated by Environment and Climate Change Canada 2014). Right-of-way clearing, which occurred during the winter of 2019/2020 was estimated to affect 475 hectares (ha) of critical golden-winged warbler habitat. Of this, 473 ha are expected to regenerate into shrubby habitat that will likely be suitable for golden-winged warbler. Additionally, vegetation management prescriptions were developed prior to ROW clearing as part of the mitigation strategy, in an attempt to maintain or enhance golden-winged warbler habitat on the ROW (Manitoba Hydro N.D.). As described in the Environmental Monitoring Plan (Manitoba Hydro 2019), pre-construction, construction, and operation monitoring will identify changes in golden-winged warbler habitat and monitor for potential effects on the local golden-winged warbler population.

The objectives of the golden-winged warbler monitoring are to:

- monitor the response of the local golden-winged warbler population along the ROW;
- assess effectiveness of mitigation measures implemented;
- identify unexpected environmental effects of the project, if they occur; and
- identify additional mitigation measures to address unanticipated environmental effects, if required.

This report outlines the findings of two pre-construction monitoring surveys, conducted in 2017 and 2019, and one operation monitoring survey, conducted in 2020.

METHODS

Golden-winged-warbler surveys were conducted twice prior to Project construction (preconstruction surveys) and once during operation. Pre-construction surveys for golden-winged warbler were conducted from June 8 to 12, 2017, and from June 17 to 19, 2019. Operation surveys were conducted from June 16 to 19, 2020. During all surveys, point counts with and without playback recordings were used to detect golden-winged warbler (Kubel and Yahner 2007). Survey sites were initially identified using a desktop analysis of available remotely-sensed data. Suitable golden-winged warbler habitat was identified in the area that overlaps five goldenwinged warbler critical habitat grids that intersect the ROW using a habitat model (Stantec 2015; WRCS 2017a) and verified with high-resolution imagery. Survey sites were selected on the ROW and near the ROW (reference sites), spaced a minimum of 400 m apart, in potential high-quality habitat, that consisted of a mixture of shrubs and grassland near forest edge (Photo 1). The majority of sites were consistently surveyed during all survey years. However, the number of survey sites varied slightly among surveys due to permission access on private land (Table 1). Landowners off the ROW were contacted and permission to access their property was obtained prior to the survey.

Year	Site Type	No. Sites Surveyed	Total Sites
2017	ROW	44	64
2017	Reference	20	04
2040	ROW	44	50
2019	Reference	14	58
2020	ROW	53	60
2020	Reference	15	00

Table 1:Site types and numbers surveyed during the pre-construction surveys (2017
and 2019) and operation (2020) periods

Surveys were conducted between 5:00 a.m. and 9:30 a.m. At each site surveyors listened for three minutes, played a recording of golden-winged warbler song for five minutes, and then listened for another two minutes. Recordings were played at 100 decibels with an MP3 player and speaker (Photo 2) (Artuso 2009). Broadcasting golden-winged warbler songs were conducted under Species at Risk Permit conditions issued by Manitoba Sustainable Development. All visual and aural detections of golden-winged warbler were noted over the 10-minute period. Incidental observations of other rare bird species were also noted during surveys.

A Fisher's exact test was used to compare the occupancy rates of ROW sites and the reference sites during the pre-construction surveys in 2017 and 2019 to the occupancy rates observed during the post-construction survey in 2020.



Photo 1: Golden-winged warbler habitat at a reference site, June 2020



Photo 2: MP3 player (right) and speaker (left)

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Map 1:Golden-winged warbler survey sites during the pre-construction (2017 and
2019) and operation (2020) periods

RESULTS AND DISCUSSION

Sixteen golden-winged warblers were observed at 13 sites in 2017, 27 were observed at 20 sites in 2019, and 14 were observed at 13 sites in 2020 (Table 2). Additionally, nine golden-winged warblers were observed incidentally in 2017, 28 were observed incidentally in 2019, and 2 were observed incidentally in 2020.

During all survey years most of the detections occurred in the northern portion of the study area, and relatively few were detected south of Highway 1 (Map 2; WRCS 2017b; WRCS 2019), indicating a potentially high abundance of golden-winged warblers and the presence of goodquality habitat in this area.

Many of the sites where golden-winged warblers were observed consistently during the survey years were in the northern portion of the study area. One site supported golden-winged warblers during all three years of the study, 12 sites that supported them during two of the study years, and 19 sites that supported birds for a single year (Map 2).

The occupancy rates of surveyed sites in 2020 (during operation) were between the values observed during the pre-construction surveys in 2017 and 2019 (Map 2). The occupancy rates observed in 2020 were not significantly different from those during the pre-construction surveys in 2017 (P = 0.66) or 2019 (P = 1.00). This suggests that ROW clearing did not impact goldenwinged warbler numbers and no unanticipated local population effects were present.

As prescribed in the Golden-winged Warbler Vegetation Management Plan, a feathered edge containing a mixture of shrubs and perch trees was to remain to the extent possible in the ROW and mitigate for changes in habitat availability (WRCS 2017a). Although many sites retained perch trees along the periphery of the ROW edge, few locations had perch trees distributed in the middle of ROW. In addition, shrub growth did not appear to be retained as expected and typically remained only around small wetlands (Szwaluk 2020; Photo 5-Photo 5). Based on subjective evaluation of shrub and forb density on the ROW, the vegetation often appeared to be too sparse to be used as nesting habitat by golden-winged warblers in June 2020. The detection of most birds in the vegetation at the edge of the ROW corroborated where most of the suitable habitat remained. As a result, although habitat mitigation did not appear to meet all the objectives of immediately enhancing or maintaining golden-winged warbler habitat throughout the ROW, it did not affect population abundance. It is expected that by next growing season (2021), tall shrub cover (>4 m) will be increase in numerous areas along the ROW (Szwaluk 2020), increasing habitat suitability over the entire ROW for breeding golden-winged warblers.

Year	Site Type	No. Sites Surveyed	No. Birds Detected	No. Sites w. Detections	Site Occupancy (%)
2017	ROW	44	11	8	18
	Reference	20	5	5	25
2019	ROW	44	19	15	34
	Reference	14	8	5	36
2020	ROW	53	11	10	19
	Reference	15	3	3	20

Table 2:Percent occupancy of surveyed sites during pre-construction (2017 and 2019) and
operation (2020)

No incidental observations of other rare bird species (*e.g.*, least bittern, short-eared owl) occurred during the surveys in 2017, 2019, or 2020.

Map 2:Number of years golden-winged warbler were detected at each site from the
2017, 2019, and 2020 surveys



Photo 3: Feathered edge and perch trees left along the right-of-way, May 2020



Photo 4: Shrubs remaining along the right-of-way, June 2020



Photo 5: Example of limited shrub and perch tree retention on the Manitoba-Minnesota Transmission Project ROW, June 2020

RECOMMENDATIONS

No additional mitigation actions appear to be required at this time. It is anticipated that as vegetation regrows on the ROW it will become more suitable for golden-winged warblers and should attract more individuals. If unanticipated effects are evident that would reduce the quality of golden-winged warbler habitat (e.g., substantially limited shrub and forb growth on the ROW), additional mitigation measures such as shrub planting would be prescribed at that time. As recommended in the Manitoba-Minnesota Transmission Project Environmental Monitoring Plan, further monitoring will occur in 2021 to examine for this possible outcome. Further analyses will also be required to assess the magnitude of predicted effects on golden-winged warbler habitat in the ROW, in particular the hypothesis that:

- H₀ (null): The construction and installation of the transmission line does not affect the habitat quality or density of golden-winged warbler.
- H₁ (alternate): The construction and installation of the transmission line does affect the habitat quality or density of golden-winged warbler.

This may include development of golden-winged warbler habitat models from remotely-sensed imagery and ground-based vegetation surveys.

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Map 1: Golden-winged warbler observations, June 2017

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Map 2: Golden-winged warbler observations, June 2019

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Map 3: Golden-winged warbler observations, June 2020

Available in accessible formats upon request