

APPENDIX C WILDLIFE

APPENDIX C1: METHODS

Data Collection and Analysis

The Project Study Area requires a range of considerations based on physical and biological characteristics (including wildlife and aquatic resources), as well as socio-economic and land use characteristics (including locations of communities, conservation areas, economic land uses (e.g., agriculture), and archaeological and heritage resources). Study area characterization, although broadly focused on all aspects of the environment, was guided by prior Site Selection and Environmental Assessment (SSEA) project experiences through which Manitoba Hydro has established an understanding of the environmental issues and concerns associated with the development of transmission facilities.

In 2013, SSEA studies were conducted to gather information on a variety of wildlife groups and species using the habitats on the proposed transmission line routes. Information gained through these wildlife studies, together with other environmental study results will be used to assist understanding constraints in the route assessment process and for environmental assessment that will be submitted to Manitoba Conservation and Water Stewardship (MCWS) for licensing approval.

This section provides information gathered in 2013 on wildlife communities using various habitats throughout areas proposed for transmission line development. Wildlife abundance and diversity were described for the various habitat types that could be affected by the Project.

Gap Analysis and Literature Review

Assessment of the wildlife community composition and of the abundance and distribution of individual species within the Project Study Area was conducted using a variety of methods. Wildlife studies began with desktop exercises, including a review of Manitoba Hydro studies, peer-reviewed literature, other reports, discussions with government and non-government organizations, and field surveys. Data were collected from studies completed by the Manitoba Model Forest and from the Manitoba Breeding Bird Atlas. Data from the Manitoba Breeding Atlas are currently being entered and analyzed, and the results reported are from four of five survey years (2010 to 2013) and are subject to revision or review.

Data collections for wildlife species and habitats focused on species of regulatory or conservation concern, and on potentially rare habitat types found in the Project Study Area. Detailed field studies were not conducted for moose because existing population data sources were considered adequate to conduct an assessment. Considerations were made for sampling to fill small gaps in knowledge for the effects assessment that included a late winter aerial survey for moose that was proposed to consider moose distribution in the Project Study Area. Wildlife use of existing habitats and specific habitat features were measured using techniques

conforming to accepted professional standards and practices. A variety of methods, including breeding bird surveys, amphibian surveys, and aerial surveys for sensitive sites were used to describe relative abundance and distribution, relative habitat use and seasonality (Schemnitz 1980; Elzinga *et al.* 2001).

Breeding Bird Survey with Focus on Listed Bird Species

The construction and operation of transmission lines could affect migratory birds such as **Neotropical migrants** in a number of ways, both positively and negatively (Maurer *et al.* 1981). In order to assess the occurrence and distribution of birds near the preferred transmission line route, point counts were conducted in 2013 to identify birds by songs and calls recorded on Tascam DR-100 audio recorders. Survey methods generally followed Ralph *et al.* 1993, Hobson *et al.* 2002, and Rempel *et al.* 2005.

Point counts were conducted at 225 plots (Appendix Map C4-1) between June 11 and 15, which is in the optimal timing window suitable to conduct breeding bird surveys. Plots were placed a minimum of 250 metres (m) from adjacent plots to avoid double counting individuals. Plots were selected and distributed in clusters to improve sampling efficiency.

Plot locations were determined based on habitat types according to Forest Resource Inventory (FRI) data on crown lands. Vegetation cover data were converted to a broad habitat classification and then grouped into habitat classes (Appendix Table C3-4). Plots were distributed proportionally to the area of each habitat class. The number of plots was increased for some habitat classes to improve sample size. Emphasis was placed on the potential habitat of federally or provincially listed species (i.e., olive-sided flycatcher and Canada warbler) to provide validation and verification where feasible; however, the total number of plots to be sampled was limited to a degree by budget and access constraints. Literature and other data were available from the region that were used to describe bird communities and habitat use for environmental assessment purposes.

Surveys began approximately a half hour before sunrise and continued until 10:00 a.m. Each observer used a Global Positioning System (GPS) to locate the pre-determined position of the plot and waited for the birds to settle into normal behaviours after being disturbed before beginning the survey. Audio recorders were set up and oriented upwards at about 1 m agl at each plot. Bird songs and calls were recorded for a period of 10 minutes. Data were analyzed later in the laboratory. Processing occasionally included amplification and/or the filtering of ambient noise using Adobe Audition 2.0. Species were identified from the recordings of bird songs and calls by experienced ornithologists using high fidelity equipment.

Remote Automated Recorders

Twelve remote automated recorders were deployed near wetland habitats in the Study Area (Appendix Map C4-2) to detect wetland birds that are typically nocturnal (e.g., yellow rail, a species of special concern). The Canadian Wildlife Service Standardized Protocol for surveying

yellow rail (Bazin and Baldwin 2007) were not followed because they involved broadcast calling; however, remote automated recorder were deployed in appropriate habits, in the correct season, and were programmed to record at times when yellow rails are actively calling (Bookhout 1995, Holland and Taylor 2003a), which is consistent with Bazin and Baldwin's (2007) protocol. The recorders were deployed for ten days, from 5 June to 15 June, 2013. Automated recorders were programmed to record for two ten-minute periods in the evening at 9:37 PM and 11:07 PM and during two ten-minute periods at 4:37 AM and 6:07 AM. In addition to bird sounds, mammal and amphibian sounds were also recorded opportunistically. Following the initial recording period, the recorders were relocated to other sites within the Study Area and left *in situ* to record ambient sounds for ten days, from 15 June to 25 June, 2013 (Appendix Map C4-2). In total, 48 hours of ambient sound was recorded. Due to the large volume of recordings, only one evening and one morning recording made at 11:37 PM and 4:37 AM on June 5, 9, 14, 16, 21, and 26 were analysed. This subsample was comprised of a total of 17 hours and 40 minutes of sound recordings.

Amphibian surveys were also used incidentally to collect nocturnal bird data (e.g., yellow rail) which could be present in wetland areas. One hundred and fourteen sites in various wetland habitats were visited over a three-night period May 23/24, 24/25, and May 31/June 1.

Amphibian and Reptile Surveys

Amphibians are common throughout the Project Study Area and generally require wet habitat. As the Project could potentially affect amphibian habitat, surveys were completed in the Project Study Area along waterbodies such as creeks, canals, ponds and rivers, which would be used to characterize the amphibian community. Ninety-three sites in various wetland habitats (Appendix Map C4-3) were visited over a three-night period May 29/30, June 3 and June 4, 2013. Visits on June 3 and 4 ended before midnight due to low ambient temperatures. Sites were identified via satellite imagery and topographical data available through Geographic Information System (GIS) and Google Earth. Once identified, each site was visited by a biologist during the day to verify that a wetland type was actually at each site. Survey methods generally followed Konze and McLaren (1997). Field technicians visited each site one-half hour after sunset to identify calling amphibians during a three-minute point count survey. Amphibian calls were recorded with a Tascam DR-100 digital recorder to ensure survey results could be verified and documented. Recordings of amphibians were analysed using Adobe Audition 2.0 and compared to known samples of amphibian species.

Reptiles use a variety of habitats including forests, rocky areas, and wetlands. Because snake mortalities commonly occur on roads near hibernacula in spring, the wetland habitat site reconnaissance visit and other site visits were used incidentally to detect snakes and nearby garter snake hibernacula.

Aerial Wildlife Survey

A systematic aerial survey for large ungulates (i.e., moose, white-tailed deer) and predators (i.e., gray wolf) in the Project Study Area was completed on April 8, 2013. A Bell 206L LongRanger was used to fly the survey. The total observation flying time was three hours 30 minutes. The survey was conducted during high visibility weather and 100% ground snow cover conditions. Systematic north-south transects were established every 2 km (Appendix Map C4-4), and transects were flown following a Global Positioning System (GPS, Garmin GPSMAP 60 CSx) at 80 m AGL (range 70-100 m AGL) and 80-140 km/h, depending on topography and forest cover density. A crew chief managed the survey and recorded data, while two biologists acted as observers on either side of the aircraft. Viewing distance extended to approximately 250 m to either side of the aircraft. Co-ordinates of sensitive sites were collected with a Garmin GPSmap 60CSx Global Positioning System unit. Because waypoints were collected from a moving helicopter, the geographic positional accuracy associated wildlife sign observations is estimated to be +/- 200 metres. Observations of other wildlife signs (e.g., beaver lodges, red fox tracks, river otter tracks, etc) were recorded incidentally.

PW75 Preferred Route Evaluation of Wildlife Sensitive Sites

Sensitive sites for wildlife and habitat may include physical features such as uncommon, rare or critical wildlife habitat, concentrations of rare or listed species, nests, or other wildlife features that may be sensitive to disturbance. Spatial and temporal wildlife sensitivities should be identified for environmental protection planning purposes.

Four sources of information were used for planning purposes and to identify potentially sensitive wildlife sites: available data in the region between Lac du Bonnet and Pointe du Bois (i.e., Manitoba Conservation Data Center (MCDC) data), habitat information data provided by ECOSTEM (2013), an overview of PW75 using Google Earth and field studies near the proposed route.

A reconnaissance aerial survey was completed on August 23, 2013 using a Bell 206L LongRanger to validate identified sensitive sites along the Final Preferred Route that was selected for evaluation purposes. The total observation flying time was 69 minutes including the return trip along the entire length of the transmission lines. The survey was conducted under suitable weather conditions. A crew chief managed the survey and recorded data while two observers recorded observations on either side of the aircraft. Co-ordinates of sensitive sites were collected with a Garmin GPSmap 60CSx Global Positioning System unit. Because waypoints were collected from a moving helicopter, the geographic positional accuracy associated with the sensitive site is estimated to be +/- 200 metres. Follow-up ground surveys were not conducted to confirm the habitat values of potentially sensitive sites or to improve the positional accuracy of the data collected at this time.

Locations of Wildlife Observed during 2013 Field Studies

The following series of Appendix maps were produced from observations collected during the 2013 field season. Data displayed includes VECs and other wildlife observations used for supporting topics:

- Aerial observations of moose individuals and sensitive site mammal sign collected April 8 and August 23, 2013 (Appendix Map C4-5);
- Aerial observations of mustelid sign collected April 8, 2013 (Appendix Map C4-6);
- Aerial observations of gray wolf, white-tailed deer, lynx, red fox, river otter and beaver collected April 8 and August 23, 2013 (Appendix Map C4-7);
- Aerial and ground observations of bald eagle, ruffed grouse and Canada warbler collected April 8, and August 23, 2013 and in June 2013 respectively (Appendix Map C4-8);
- Aerial and ground observations of American bittern, American white pelican, black tern, Canada goose, common loon, Franklin's gull, great blue heron, mallard, pied-billed grebe, sandhill crane, sora and Virginia rail collected April 8, and August 23, 2013 and in June 2013 respectively (Appendix Map C4-9);
- Aerial and ground observations of large stick nests collected April 8, and August 23, 2013 and in June 2013 respectively (Appendix Map C4-10);
- Aerial and ground observations of birds species listed and scheduled by SARA and listed by MESA including Canada warbler, common nighthawk, eastern whip-poor-will, golden-winged warbler, olive-sided flycatcher, trumpeter swan and yellow rail, collected August 23, 2013 and in June 2013 respectively (Appendix Map C4-11); and
- Ground observations of listed amphibian and reptile species including northern leopard frog and common snapping turtle, collected between June and August, 2013 (Appendix Map C4-12).

APPENDIX C2: HABITAT MODELS

Moose

Moose prefer early successional forests, shrubs, and wetlands, which provide important forage species (Coady 1982; Dussault *et al.* 2006). Burned areas are also used due to the abundance of high-quality browse, particularly in deciduous burn stands (Irwin 1975). Moose density tends to peak between 11-30 years after a fire as browse species growth peaks (Maier *et al.* 2005). Moose will also use mature habitat for protection from weather and predators (Coady 1982; Dussault *et al.* 2006).

The primary habitat model included the following broad habitat types where broadleaf species were less than 35 years old:

- Ash on all ecosites, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam poplar on all ecosites, Beaver flood and riparian peatland, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Emergent on lower beach, Emergent on upper beach, Low vegetation on mineral, Low vegetation on wet peatland, Tall shrub on mineral, Tall shrub on wet peatland, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen dominant on unclassified, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White birch on all ecosites, Young regeneration on mineral, Young regeneration on non-mineral, Young regeneration on outcrop, Young regeneration on shallow peatland, Young regeneration on unclassified, Young regeneration on wet peatland.

The secondary habitat model included the following broad habitat types where broadleaf species were greater than 35 years old:

- Ash on all ecosites, Balsam fir dominant on mineral, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on non-mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on outcrop, Black spruce dominant on shallow peatland, Black spruce dominant on swamp, Black spruce dominant on wet peatland, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixedwood on wet peatland, Black spruce mixture on mineral, Black spruce mixture on outcrop, Black spruce mixture on shallow peatland, Black spruce mixture on unclassified, Black spruce mixture on wet peatland, Bur oak on all ecosites, Cedar on all ecosites, Jack pine dominant on mineral, Jack pine dominant on shallow peatland, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop,

Jack pine mixedwood on shallow peatland, Jack pine mixture on mineral, Jack pine mixture on outcrop, Jack pine mixture on shallow peatland, Manitoba maple on all ecosites, Red, white pine on all ecosites, Scots pine on all ecosites, Tamarack dominant on mineral, Tamarack dominant on shallow peatland, Tamarack dominant on swamp, Tamarack dominant on wet peatland, Tamarack mixedwood on thin peatland, Tamarack mixedwood on wet peatland, Tamarack mixture on mineral, Tamarack mixture on shallow peatland, Tamarack mixture on swamp, Tamarack mixture on unclassified, Tamarack mixture on wet peatland, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen dominant on unclassified, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixedwood on unclassified, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White spruce on all ecosites

American Marten

American marten prefer contiguous, mature, or old forest (Chapin *et al.* 1998). Optimum habitat includes old growth spruce/fir with a minimum of 30% canopy cover with a well-established understory of fallen logs and stumps for denning and dense shrub and forb vegetation able to support small mammal prey (Clark *et al.* 1987).

The primary habitat model included the following broad habitat types that were greater than 60 years old:

- Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on non-mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on outcrop, Black spruce dominant on shallow peatland, Black spruce dominant on swamp, Black spruce dominant on wet peatland, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixedwood on wet peatland, Black spruce mixture on mineral, Black spruce mixture on outcrop, Black spruce mixture on shallow peatland, Black spruce mixture on unclassified, Black spruce mixture on wet peatland, Cedar on all ecosites, Jack pine dominant on mineral, Jack pine dominant on shallow peatland, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixedwood on shallow peatland, Jack pine mixture on mineral, Jack pine mixture on outcrop, Jack pine mixture on shallow peatland, Red, white pine on all ecosites, Scots pine on all ecosites, Tamarack dominant on mineral, Tamarack dominant on shallow peatland, Tamarack dominant on swamp, Tamarack dominant on wet peatland, Tamarack mixedwood on thin peatland, Tamarack mixedwood on wet peatland, Tamarack mixture on mineral, Tamarack mixture on

shallow peatland, Tamarack mixture on swamp, Tamarack mixture on unclassified, Tamarack mixture on wet peatland, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Unclassified, White birch on all ecosites, White spruce on all ecosites

The secondary habitat model included the following broad habitat types where broadleaf species were greater than 35 years old and any age of needleleaf species:

- Ash on all ecosites, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on non-mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on outcrop, Black spruce dominant on shallow peatland, Black spruce dominant on wet peatland, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixedwood on wet peatland, Black spruce mixture on mineral, Black spruce mixture on outcrop, Black spruce mixture on shallow peatland, Black spruce mixture on unclassified, Black spruce mixture on wet peatland, Bur oak on all ecosites, Cedar on all ecosites, Jack pine dominant on mineral, Jack pine dominant on shallow peatland, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixedwood on shallow peatland, Jack pine mixture on mineral, Jack pine mixture on outcrop, Jack pine mixture on shallow peatland, Manitoba maple on all ecosites, Red, white pine on all ecosites, Scots pine on all ecosites, Tamarack dominant on mineral, Tamarack dominant on shallow peatland, Tamarack dominant on wet peatland, Tamarack mixedwood on thin peatland, Tamarack mixedwood on wet peatland, Tamarack mixture on mineral, Tamarack mixture on shallow peatland, Tamarack mixture on unclassified, Tamarack mixture on wet peatland, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen dominant on unclassified, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixedwood on unclassified, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White spruce on all ecosites

Bald Eagle

Bald eagles prefer to nest along edges of mature forests, usually within 2 km of a waterbody, likely associated with prey availability in the area (Buehler 2000). Nests are usually constructed in large trees that are capable of supporting stick nests and that provide the pair with a view of the surrounding area (Buehler 2000). Bald eagles perch in trees close to waterbodies suitable

for foraging; however, these roosts are generally located much further from waterbodies than nests (Buehler 2000).

The primary habitat model included the following broad habitat types within 500 m of waterbodies greater than 10 ha, and where broadleaf species were greater than 50 years old and needleleaf species were greater than 60 years old for the production of tall trees for nests. Secondary habitat was not classified:

- Ash on all ecosites, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on non-mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on outcrop, Black spruce dominant on shallow peatland, Black spruce dominant on swamp, Black spruce dominant on wet peatland, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixedwood on wet peatland, Black spruce mixture on mineral, Black spruce mixture on outcrop, Black spruce mixture on shallow peatland, Black spruce mixture on unclassified, Black spruce mixture on wet peatland, Bur oak on all ecosites, Cedar on all ecosites, Jack pine dominant on mineral, Jack pine dominant on shallow peatland, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixedwood on shallow peatland, Jack pine mixture on mineral, Jack pine mixture on outcrop, Jack pine mixture on shallow peatland, Manitoba maple on all ecosites, Red, white pine on all ecosites, Shallow water, Tamarack dominant on shallow peatland, Tamarack dominant on wet peatland, Tamarack mixture on mineral, Tamarack mixture on shallow peatland, Tamarack mixture on wet peatland, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixedwood on unclassified, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Unclassified, White birch on all ecosites, White spruce on all ecosites.

Ruffed Grouse

Ruffed grouse prefer deciduous and mixedwood forests and are closely associated with aspen (*Populus tremuloides*) (Rusch et al. 2000).

The primary habitat model included the following broad habitat types on uplands:

- Ash on all ecosites, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam poplar on all ecosites, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Manitoba maple on all ecosites, Trembling aspen dominant on mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites

The secondary habitat model included the following broad habitat types:

- Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on non-mineral, Balsam fir mixture on outcrop, Bur oak on all ecosites, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixedwood on shallow peatland, Jack pine mixture on mineral, Jack pine mixture on outcrop, Jack pine mixture on shallow peatland, Unclassified, White spruce on all ecosites, Young regeneration on mineral, Young regeneration on outcrop, Young regeneration on shallow peatland, Young regeneration on wet peatland

Canada Warbler

Canada warblers prefer moist, mixedwood forests with dense and diverse understory growth, often near open water such as lakes or rivers (Conway 1999). Nesting habitat is usually associated with wet, mossy, forested areas; the nest itself is located in tree stumps, fallen logs, and dense ferns (Conway 1999).

The primary habitat model included the following broad habitat types. Secondary habitat was not classified:

- Ash on all ecosites, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam poplar on all ecosites, Black spruce mixture on shallow peatland, Black spruce mixture on wet peatland, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Jack pine mixture on outcrop, Manitoba maple on all ecosites, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites

Little Brown Myotis and Northern Long-eared Myotis

No habitat model was constructed. A wide variety of habitat types are used by these species including forests, wetlands and human development (Wund 2006).

Yellow Rail

Yellow rails prefer wet-sedge meadows and may also use emergent marsh habitat (Bookhout and Stenzel 1987; Bookhout 1995).

The primary habitat model included the following broad habitat types. Secondary habitat was not classified:

Low vegetation on wet peatland, Beaver flood and riparian peatland, Emergent on lower beach, Emergent on upper beach

Least Bittern

Least bitterns prefer small wetlands containing dense, tall, emergent vegetation, with some small areas of open water and woody vegetation (Gibbs *et al.* 1992) and particularly tall shrubs (Hay 2006).

The primary habitat model included the following broad habitat types:

- Emergent on lower beach, Emergent on upper beach
- The secondary habitat model included the following broad habitat types:
- Beaver flood and riparian peatland

Horned Grebe

Horned grebes prefer permanent and semi-permanent ponds with beds of emergent vegetation for nesting and foraging. Marshes and shallow water bays in larger waterbodies are also used (Sugden 1977; Ferguson and Sealy 1983).

The primary habitat model included the following broad habitat types, where shallow water was limited to lakes:

- Emergent on lower beach, Emergent on upper beach, Shallow water

The secondary habitat model included the following broad habitat types, where shallow water was limited to rivers:

- Beaver flood and riparian peatland, Shallow water

Trumpeter Swan

Trumpeter swans prefer permanent ponds for nesting and foraging. Marshes and shallow water bays in larger waterbodies are also used (Hansen et al. 1971; Koes 2003).

The primary habitat model used the following broad habitat classes:

- Emergent on lower beach, Emergent on upper beach, Shallow water (lakes)
- The secondary habitat model used the following broad habitat classes:
- Beaver flood and riparian peatland, Shallow water (rivers)

Short-eared Owl

Short-eared owls prefer open areas, including grasslands, wetland, and occasionally hayland habitats where they prey on small mammals (Holt and Leasure 1993).

The primary habitat model used the following broad habitat classes:

- Human infrastructure (hayland), Low vegetation on mineral, Low vegetation on wet peatland

The secondary habitat model used the following broad habitat classes:

- Human infrastructure (cropland), Beaver flood and riparian peatland

Common Nighthawk

Common nighthawks use a variety of habitats. They will nest on sand dunes, beaches, logged or burned areas of forests, forest clearings, prairies, farmlands, rock outcrops and gravel rooftops (Poulin *et al.* 1996). Common nighthawks are most often seen overhead foraging for insects at dusk and dawn in urban and wilderness environments.

The primary habitat model used the following broad habitat classes that were in uplands and less than 10 years old:

- Ash on all ecosites, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on outcrop, Barren on bedrock outcrop, Black spruce dominant on mineral, Black spruce mixedwood on outcrop, Black spruce mixture on outcrop, Broadleaf mixture on all ecosites, Human infrastructure, Jack pine dominant on mineral, Jack pine mixedwood on outcrop, Jack pine mixture on outcrop, Low vegetation on mineral, Trembling aspen dominant on mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on outcrop, Unclassified, White birch on all ecosites, White spruce on all ecosites, Young regeneration on mineral, Young regeneration on outcrop

The secondary habitat model used the following broad habitat classes that were in low lying areas and less than 10 years old:

- Ash on all ecosites, Balsam poplar on all ecosites, Beaver flood and riparian peatland, Black spruce dominant on shallow peatland, Black spruce dominant on wet peatland, Black spruce mixedwood on shallow peatland, Black spruce mixture on shallow peatland, Black spruce mixture on wet peatland, Emergent on lower beach, Emergent on upper beach, Low vegetation on wet peatland, Tamarack dominant on wet peatland, Tamarack mixture on shallow peatland, Tamarack mixture on wet peatland, Trembling aspen dominant on non-mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixture on non-mineral, Young regeneration on shallow peatland, Young regeneration on wet peatland

Eastern Whip-poor-will

Eastern whip-poor-wills prefer dry, deciduous or mixedwood, or coniferous forests with little to understory (Cink 2002; COSEWIC 2009c). The amount of openness in the understory is more important than forest composition (Wilson 1985). Due to the importance of the understory, the whip-poor-will habitat model represents the maximum amount of potential habitat as no understory data were available.

The primary habitat model used the following broad habitat classes that were located on dry uplands. Secondary habitat was not classified:

- Ash on all ecosites, Balsam fir dominant on mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on outcrop, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixture on mineral, Black spruce mixture on outcrop, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Jack pine dominant on mineral, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixture on

mineral, Jack pine mixture on outcrop, Jack pine mixture on outcrop, Manitoba maple on all ecosites, Trembling aspen dominant on mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White spruce on all ecosites

Olive-sided Flycatcher

Olive-sided flycatchers are found nesting and foraging near boreal forest bogs, wet areas, or recently burned stands (Altman and Sallabanks 2000; Koonz and Taylor 2003). In northern conifer forests, they are most commonly found in edge habitats such as meadows, bogs, and clear-cuts, which appears to correspond to the availability of standing dead trees and remnant live trees that are important for singing and foraging perches (Altman and Sallabanks 2000).

The primary habitat model used the following broad habitat classes that were adjacent to open areas, such as agriculture, wetlands, barren areas, human developments, and low vegetation. Secondary habitat was not classified:

- Ash on all ecosites, Balsam fir dominant on mineral, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on non-mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on shallow peatland, Black spruce dominant on wet peatland, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixedwood on wet peatland, Black spruce mixture on mineral, Black spruce mixture on outcrop, Black spruce mixture on shallow peatland, Black spruce mixture on wet peatland, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Cedar on all ecosites, Jack pine dominant on mineral, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixedwood on shallow peatland, Jack pine mixture on mineral, Jack pine mixture on outcrop, Manitoba maple on all ecosites, Tall shrub on mineral, Tall shrub on wet peatland, Tamarack dominant on shallow peatland, Tamarack dominant on wet peatland, Tamarack mixture on shallow peatland, Tamarack mixture on wet peatland, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White spruce on all ecosites, Young regeneration on mineral, Young regeneration on outcrop, Young regeneration on shallow peatland, Young regeneration on wet peatland

Golden-winged Warbler

Golden-winged warblers prefer forest edges, shrubby fields, bogs, and marshes (Confer 1992). Bur-oak woodland, young tamarack and willow stands, and other shrubby habitat are also used (Edie *et al.* 2003). Favoured nesting habitat consists of abandoned farmland in early stages of succession, and recently cut forest areas such as clear cut mature forest and transmission line rights-of-way that are not mowed, recent forest fires and blowdowns (Buehler *et al.* 2007).

The primary habitat model used the following broad habitat classes, where broadleaf and needleleaf species were less than 10 years old:

- Ash on all ecosites, Balsam fir dominant on non-mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam poplar on all ecosites, Beaver flood and riparian peatland, Black spruce dominant on mineral, Black spruce dominant on wet peatland, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixture on wet peatland, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Human infrastructure, Jack pine dominant on mineral, Jack pine mixedwood on outcrop, Jack pine mixture on outcrop, Manitoba maple on all ecosites, Tall shrub on mineral, Tall shrub on wet peatland, Tamarack dominant on wet peatland, Tamarack mixture on shallow peatland, Trembling aspen dominant on mineral, Trembling aspen dominant on non-mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on non-mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on non-mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White spruce on all ecosites, Young regeneration on mineral, Young regeneration on outcrop, Young regeneration on shallow peatland, Young regeneration on wet peatland

The secondary habitat model used the following broad habitat classes:

- Human infrastructure (agriculture)

Bank Swallow

Bank swallows prefer steep banks along rivers, streams, and reservoirs, where they will construct nests on vertical cliffs or create burrows in loose soil or gravel (Garrison 1999). Habitat models were not constructed the bank swallow as no suitable habitat (i.e. steep mud cliffs, gravel pits) was identified in the Local Study Area.

Barn Swallow

Barn swallows prefer to nest on artificial structures such as barns, outbuildings, garages, houses, bridges, with nearby open habitats for foraging, including grassy fields, pastures, various kinds of agricultural crops, lake and river shorelines, cleared rights-of-way, cottage areas and farmyards, islands, and wetlands (COSEWIC 2011).

The primary habitat model used the following broad habitat classes that were within 500 m of townsites or residential sites. Secondary habitat was not classified:

- Human infrastructure, Low vegetation on mineral, Low vegetation on wet peatland, Beaver flood and riparian peatland, Emergent on lower beach, Shallow water

Eastern Wood-pewee

The Eastern wood-pewee will use both deciduous and coniferous forests where it forages and nests below the tree canopy (MCarty 1996).

The primary habitat model used the following broad habitat classes that were located on dry uplands. Secondary habitat was not classified:

- Ash on all ecosites, Balsam fir dominant on mineral, Balsam fir mixedwood on mineral, Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Balsam fir mixture on outcrop, Balsam poplar on all ecosites, Black spruce dominant on mineral, Black spruce dominant on outcrop, Black spruce mixedwood on mineral, Black spruce mixedwood on outcrop, Black spruce mixture on mineral, Black spruce mixture on outcrop, Broadleaf mixture on all ecosites, Bur oak on all ecosites, Jack pine dominant on mineral, Jack pine mixedwood on mineral, Jack pine mixedwood on outcrop, Jack pine mixture on mineral, Jack pine mixture on outcrop, Manitoba maple on all ecosites, Trembling aspen dominant on mineral, Trembling aspen dominant on outcrop, Trembling aspen mixedwood on mineral, Trembling aspen mixedwood on outcrop, Trembling aspen mixture on mineral, Trembling aspen mixture on outcrop, Trembling aspen mixture on unclassified, Unclassified, White birch on all ecosites, White spruce on all ecosites

Rusty Blackbird

Rusty blackbirds prefer wet, coniferous and mixedwood forests, particularly in open wet areas such as lake and stream edges and beaver floods. Rusty blackbirds also use open areas in forests caused by burns (Avery 1995; Nero and Taylor 2003).

The primary habitat model included the following broad habitat classes:

- Beaver flood and riparian peatland, Emergent on lower beach, Emergent on upper beach

The secondary habitat model included the following broad habitat classes, where needleleaf species were less than 10 years old and young regeneration was found on wet peatlands:

- Balsam fir mixedwood on outcrop, Balsam fir mixture on mineral, Black spruce dominant on mineral, Black spruce dominant on wet peatland, Black spruce mixedwood on outcrop, Black spruce mixedwood on shallow peatland, Black spruce mixture on wet peatland, Jack pine dominant on mineral, Jack pine mixedwood on outcrop, Jack pine mixture on outcrop, Tamarack dominant on wet peatland, Tamarack mixture on shallow peatland, Unclassified, White spruce on all ecosites, Young regeneration on shallow peatland, Young regeneration on wet peatland

Northern Leopard Frog (Amphibians)

The northern leopard frog breeds in shallow water areas, such as wetlands, roadside ditches, borrow pits, stream backwater, and flooded meadows (Eddy 1976; Gilbert et al. 1994; Corkran and Thoms 1996). This habitat must have contiguity between winter habitats, which are well oxygenated waterbodies that do not freeze to the bottom (Hine et al. 1981; Russel and Bauer 2000).

The primary habitat model included the following broad habitat classes within 1,600 m of large waterbodies:

- Beaver flood and riparian peatland, Emergent on lower beach, Emergent on upper beach, Shallow water

The secondary habitat model included the following broad habitat classes greater than 1,600 m from large waterbodies:

- Beaver flood and riparian peatland, Emergent on lower beach, Emergent on upper beach

Common Snapping Turtle

Common snapping turtles prefer slow-moving water, with a sand or mud bottom, and dense aquatic vegetation (Ernst et al. 1994; Harding 1997). The periphery of large lakes or rivers may also be used, particularly in winter for hibernation (Brown and Brooks 1994).

A habitat model was not constructed for common snapping turtle.

APPENDIX C3: TABLES

Table C3-1 : Mammal Species in the Project Study Area

Group	Common Name	Scientific Name	Nature of Occurrence^a	Breeding Status^b	Animal or sign observed during field studies
Small mammals	Masked shrew	<i>Sorex cinereus</i>	Resident	Breeding	No
	Water shrew	<i>Sorex palustris</i>	Resident	Breeding	No
	Arctic shrew	<i>Sorex arcticus</i>	Resident	Breeding	No
	Pygmy shrew	<i>Sorex hoyi</i>	Resident	Breeding	No
	Northern short-tailed shrew	<i>Blarina brevicauda</i>	Resident	Breeding	No
	Star-nosed mole	<i>Condylura cristata</i>	Resident	Breeding	No
	Little brown bat	<i>Myotis lucifugus</i>	Resident	Breeding	No
	Northern long-eared bat	<i>Myotis septentrionalis</i>	Migratory	Breeding	No
	Silver-haired bat	<i>Lasionycteris noctivagans</i>	Migratory	Breeding	No
	Big brown bat	<i>Eptesicus fuscus</i>	Resident	Breeding	No
	Eastern red bat	<i>Lasiurus borealis</i>	Migratory	Breeding	No
	Hoary bat	<i>Lasiurus cinereus</i>	Migratory	Breeding	No
	Eastern chipmunk	<i>Tamias striatus</i>	Resident	Breeding	No
	Least chipmunk	<i>Tamias minimus</i>	Resident	Breeding	No
	Red squirrel	<i>Tamiasciurus hudsonicus</i>	Resident	Breeding	Yes
	Northern flying squirrel	<i>Glaucomys sabrinus</i>	Resident	Breeding	No
	Deer mouse	<i>Peromyscus maniculatus</i>	Resident	Breeding	No
	Southern red-backed vole	<i>Clethrionomys gapperi</i>	Resident	Breeding	No
	Southern bog lemming	<i>Synaptomys cooperi</i>	Resident	Breeding	No
	Northern bog lemming	<i>Synaptomys borealis</i>	Resident	Breeding	No

Group	Common Name	Scientific Name	Nature of Occurrence ^a	Breeding Status ^b	Animal or sign observed during field studies
	Heather vole	<i>Phenacomys intermedius</i>	Resident	Breeding	No
	Meadow vole	<i>Microtus pennsylvanicus</i>	Resident	Breeding	No
	House mouse	<i>Mus musculus</i>	Resident	Breeding	No
	Meadow jumping mouse	<i>Zapus hudsonius</i>	Resident	Breeding?	No
	Woodland jumping mouse	<i>Napaeozapus insignis</i>	Resident	Breeding	No
Aquatic furbearers	American beaver	<i>Castor canadensis</i>	Resident	Breeding	Yes
	Muskrat	<i>Ondatra zibethicus</i>	Resident	Breeding	No
	River otter	<i>Lontra canadensis</i>	Resident	Breeding	Yes
	American mink	<i>Mustela vison</i>	Resident	Breeding	No
Terrestrial furbearers	Snowshoe hare	<i>Lepus americanus</i>	Resident	Breeding	No
	White-tailed jack rabbit	<i>Lepus townsendii</i>	Resident?	Non-breeding?	No
	Woodchuck	<i>Marmota monax</i>	Resident	Breeding	No
	American porcupine	<i>Erethizon dorsatum</i>	Resident	Breeding	No
	Red fox	<i>Vulpes vulpes</i>	Resident	Breeding	Yes
	Raccoon	<i>Procyon lotor</i>	Resident	Breeding	No
	American marten	<i>Martes americana</i>	Resident	Breeding	Yes
	Fisher	<i>Martes pennanti</i>	Resident	Breeding	Yes
	Ermine	<i>Mustela erminea</i>	Resident	Breeding	No
	Long-tailed weasel	<i>Mustela frenata</i>	Resident?	Non-breeding?	No
	Least weasel	<i>Mustela nivalis</i>	Resident	Breeding	No
	Wolverine	<i>Gulo gulo</i>	Resident	Breeding	No
	American badger	<i>Taxidea taxus</i>	Resident?	Non-breeding?	No

Group	Common Name	Scientific Name	Nature of Occurrence^a	Breeding Status^b	Animal or sign observed during field studies
	Striped skunk	<i>Mephitis mephitis</i>	Resident	Breeding	No
	Lynx	<i>Lynx canadensis</i>	Resident	Breeding	Yes
	Bobcat	<i>Lynx rufus</i>	Resident?	Breeding?	No
	Coyote	<i>Canis latrans</i>	Resident	Breeding	No
Large carnivores	Gray wolf	<i>Canis lupus</i>	Resident	Breeding	Yes
	American black bear	<i>Ursus americanus</i>	Resident	Breeding	Yes
	Cougar	<i>Puma concolor</i>	Resident	Breeding?	No
Ungulates	White-tailed deer	<i>Odocoileus virginianus</i>	Resident	Breeding	Yes
	Moose	<i>Alces alces</i>	Resident	Breeding	Yes

^a Question mark (?) indicates uncertainty

^b Breeding data derived from Banfield (1987), Feldhamer et al. (1982) and professional judgement.

Table C3-2 : Bird Species in the Project Study Area

Group	Common Name	Scientific Name	Breeding Status^a	Observed During Field Studies	Present in Project Region^b
Waterfowl	American black duck	<i>Anas rubripes</i>	Breeding?		
	American wigeon	<i>Anas americana</i>	Breeding		
	Blue-winged teal	<i>Anas discors</i>	Breeding		Breeding/Yes
	Bufflehead	<i>Bucephala albeola</i>	Breeding?		Breeding
	Canada goose	<i>Branta canadensis</i>	Breeding	Yes	Breeding/Yes
	Canvasback	<i>Aythya valisineria</i>	Breeding?		
	Common goldeneye	<i>Bucephala clangula</i>	Breeding		Breeding
	Common loon	<i>Gavia immer</i>	Breeding	Yes	Breeding/Yes
	Common merganser	<i>Mergus merganser</i>	Breeding		Breeding/Yes
	Gadwall	<i>Anas strepera</i>	Breeding?		Breeding
	Greater scaup	<i>Aythya marila</i>	Non-Breeding?		
	Greater white-fronted goose	<i>Anser albifrons</i>	Non-Breeding		
	Green-winged teal	<i>Anas crecca</i>	Breeding		Observed
	Hooded merganser	<i>Lophodytes cucullatus</i>	Breeding		Breeding/Yes
	Lesser scaup	<i>Aythya affinis</i>	Breeding		Breeding
	Mallard	<i>Anas platyrhynchos</i>	Breeding	Yes	Breeding/Yes
	Northern pintail	<i>Anas acuta</i>	Breeding?		Breeding
	Northern shoveler	<i>Anas clypeata</i>	Breeding		Breeding
	Red-breasted merganser	<i>Mergus serrator</i>	Breeding?		
	Redhead	<i>Aythya Americana</i>	Breeding?		
Ring-necked duck	<i>Aythya collaris</i>	Breeding		Breeding/Yes	

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	Ross's goose	<i>Chen rossii</i>	Non-Breeding		
	Ruddy duck	<i>Oxyura jamaicensis</i>	Breeding?		
	Sandhill crane	<i>Grus canadensis</i>	Breeding	Yes	Observed/Yes
	Snow goose	<i>Chen caerulescens</i>	Non-Breeding		
	Trumpeter swan	<i>Cygnus buccinators</i>	Non-Breeding	Yes	Breeding
	Tundra swan	<i>Cygnus columbianus</i>	Non-Breeding		
	White-winged scoter	<i>Melanita fusca</i>	Breeding?		
	Wood duck	<i>Aix sponsa</i>	Breeding		Breeding/Yes
Waterbirds	American avocet	<i>Recurvirostra Americana</i>	Non-Breeding		
	American bittern	<i>Botaurus lentiginosus</i>	Breeding	Yes	Observed/Yes
	American coot	<i>Fulica americana</i>	Breeding		
	American golden plover	<i>Pluvialis dominica</i>	Non-Breeding		
	American white pelican	<i>Pelicanus erythrorhyncos</i>	Breeding?		Breeding/Yes
	Arctic tern	<i>Sterna paradisaea</i>	Non-Breeding		
	Baird's sandpiper	<i>Calidris bairdii</i>	Non-Breeding		
	Black crowned night-heron	<i>Nycticorax nycticorax</i>	Non-Breeding?		
	Black tern	<i>Chlidonias niger</i>	Breeding	Yes	Observed
	Black-bellied plover	<i>Pluviaws squatarola</i>	Non-Breeding		

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	Bonaparte's gull	<i>Larus philadelphia</i>	Breeding		Breeding
	Buff-breasted sandpiper	<i>Tryngites subruficollis</i>	Non-Breeding		
	California gull	<i>Larus californicus</i>	Non-Breeding		
	Caspian tern	<i>Sterna caspia</i>	Breeding?		Yes
	Common tern	<i>Sterna hirundo</i>	Breeding		Breeding/Yes
	Double-crested cormorant	<i>Phalacrocorax auritus</i>	Breeding?		Breeding/Yes
	Dunlin	<i>Calidris alpina</i>	Non-Breeding		
	Eared grebe	<i>Podiceps nigricollis</i>	Non-Breeding?		
	Forster's tern	<i>Sterna forsteri</i>	Breeding?		
	Franklin's gull	<i>Larus pipixcan</i>	Breeding?		
	Glaucous gull	<i>Larus hyperboreus</i>	Non-Breeding		
	Great blue heron	<i>Ardea Herodias</i>	Breeding		Breeding/Yes
	Great egret	<i>Casmerodius albus</i>	Non-Breeding		
	Greater yellowlegs	<i>Tringa melanoleuca</i>	Breeding		
	Green heron	<i>Butorides virescens</i>	Non-Breeding?		
	Herring gull	<i>Larus argentatus</i>	Breeding		Breeding/Yes
	Horned grebe	<i>Podiceps auritus</i>	Non-Breeding?		
	Hudsonian godwit	<i>Limosa haemastica</i>	Non-Breeding		

Group	Common Name	Scientific Name	Breeding Status^a	Observed During Field Studies	Present in Project Region^b
	Killdeer	<i>Charadrius vociferus</i>	Breeding	Yes	Breeding/Yes
	Least bittern	<i>Ixobrychus exilis</i>	Non-Breeding?		
	Least sandpiper	<i>Calidris minutilla</i>	Non-Breeding		
	Least tern	<i>Sterna antillarum</i>	Non-Breeding?		
	Lesser yellowlegs	<i>Tringa flavipes</i>	Non-Breeding?		
	Long-billed dowitcher	<i>Limnodromus scolopaceus</i>	Non-Breeding		
	Long-tailed jaeger	<i>Stercorarius longicaudus</i>	Non-Breeding		
	Marbled godwit	<i>Limosa fedoa</i>	Breeding?		Observed
	Parasitic jaeger	<i>Stercorarius parasiticus</i>	Non-Breeding		
	Pectoral sandpiper	<i>Calidris melanotos</i>	Non-Breeding		
	Pied-billed grebe	<i>Podilymbus podiceps</i>	Breeding	Yes	Observed/Yes
	Piping plover	<i>Charadrius melodus</i>	Breeding		
	Red knot	<i>Calidris canutus</i>	Non-Breeding		
	Red phalarope	<i>Phalaropusfulicaria</i>	Non-Breeding		
	Red-necked grebe	<i>Podiceps grisegna</i>	Breeding		Observed
	Red-necked phalarope	<i>Phalaropus lobatus</i>	Non-Breeding		
	Ring-billed gull	<i>Larus delawarensis</i>	Breeding	Yes	Breeding/Yes
	Ruddy turnstone	<i>Arenaria interpres</i>	Non-		

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
			Breeding		
	Sanderling	<i>Calidris alba</i>	Non-Breeding		
	Semipalmated plover	<i>Charadrius semipalmatus</i>	Non-Breeding		
	Semipalmated sandpiper	<i>Calidris pusilla</i>	Non-Breeding		
	Short-billed dowitcher	<i>Limnodromus griseus</i>	Non-Breeding		
	Snowy egret	<i>Egretta thula</i>	Non-Breeding		
	Solitary sandpiper	<i>Tringa solitaria</i>	Breeding	Yes	Yes
	Sora	<i>Porzana carolina</i>	Breeding	Yes	Observed/Yes
	Spotted sandpiper	<i>Atitis macularia</i>	Breeding		Breeding/Yes
	Stilt sandpiper	<i>Calidris himantopus</i>	Non-Breeding		
	Fvirginia	<i>Larus thayeri</i>	Non-Breeding		
	Upland sandpiper	<i>Bartramia longicauda</i>	Breeding?		
	Virginia rail	<i>Rallus limicola</i>	Breeding	Yes	Breeding/Yes
	Western grebe	<i>Aechmophorus occidentalis</i>	Non-Breeding		
	Whimbrel	<i>Numenis phaeopus</i>	Non-Breeding		
	White-rumped sandpiper	<i>Calidris fuscicollis</i>	Non-Breeding		
	Willet	<i>Catoptrophours semipalmatus</i>	Non-Breeding		
	Wilson's phalarope	<i>Phalaropus tricolor</i>	Breeding?		Observed

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	Wilson's snipe	<i>Gallinago gallinago</i>	Breeding	Yes	Observed/Yes
	Yellow rail	<i>Coturnicops noveboracensis</i>	Breeding	Yes	Observed
Birds of prey	American kestrel	<i>Falco sparverius</i>	Breeding		Breeding/Yes
	Bald eagle	<i>Haliaeetus leucocephalus</i>	Breeding	Yes	Breeding
	Barn owl	<i>Tyto alba</i>	Non-Breeding		
	Barred owl	<i>Strix varia</i>	Breeding	Yes	Breeding/Yes
	Boreal owl	<i>Aegolius funereus</i>	Breeding		Observed
	Broad-winged hawk	<i>Buteo platypterus</i>	Breeding	Yes	Breeding
	Cooper's hawk	<i>Accipiter cooperii</i>	Breeding		Observed/Yes
	Eastern screech owl	<i>Otus asio</i>	Breeding?		
	Ferruginous hawk	<i>Buteo regalis</i>	Non-Breeding		
	Golden eagle	<i>Aquila chrysaetos</i>	Non-Breeding?		
	Great gray owl	<i>Strix nebulosa</i>	Breeding		Breeding/Yes
	Great horned owl	<i>Bubo virginianus</i>	Breeding		Breeding/Yes
	Gyrfalcon	<i>Falco rusticolus</i>	Non-Breeding		
	Long-eared owl	<i>Asio otus</i>	Breeding	Yes	Observed/Yes
	Merlin	<i>Falco columbarius</i>	Breeding	Yes	Breeding/Yes
	Northern goshawk	<i>Accipiter gentilis</i>	Breeding		Yes
	Northern harrier	<i>Circus cyaneus</i>	Breeding		Observed/Yes
Northern hawk owl	<i>Surnia ulula</i>	Breeding		Breeding	

Group	Common Name	Scientific Name	Breeding Status^a	Observed During Field Studies	Present in Project Region^b
	Northern saw-whet owl	<i>Aegolius acadicus</i>	Breeding	Yes	Observed
	Osprey	<i>Pandion haliaetus</i>	Breeding		Observed
	Peregrine falcon	<i>Falco peregrinus</i>	Non-Breeding		
	Prairie falcon	<i>Falco mexicanus</i>	Non-Breeding		
	Red-tailed hawk	<i>Buteo jamaicensis</i>	Breeding		Breeding/Yes
	Rough-legged hawk	<i>Buteo lagopus</i>	Non-Breeding		
	Sharp-shinned hawk	<i>Accipiter striatus</i>	Breeding		Breeding
	Short-eared owl	<i>Asio flammeus</i>	Breeding?		Observed
	Snowy owl	<i>Nyctea scandiaca</i>	Non-Breeding		
	Swainson's hawk	<i>Buteo swainsoni</i>	Non-Breeding		
Upland game	American woodcock	<i>Scolopax minor</i>	Breeding	Yes	Observed
	Gray partridge	<i>Perdix perdix</i>	Non-Breeding?		
	Ruffed grouse	<i>Bonasa umbellus</i>	Breeding	Yes	Breeding
	Sharp-tailed grouse	<i>Tympanuchus phasianellus</i>	Breeding		Observed
	Spruce grouse	<i>Dendragapus canadensis</i>	Breeding		Observed/Yes
	Wild turkey	<i>Meleagris gallopavo</i>	Non-Breeding?		
Woodpeckers	Black-backed woodpecker	<i>Picoides arctus</i>	Breeding	Yes	Observed/Yes
	Downy woodpecker	<i>Picoides pubescens</i>	Breeding	Yes	Breeding/Yes

Group	Common Name	Scientific Name	Breeding Status^a	Observed During Field Studies	Present in Project Region^b
	Hairy woodpecker	<i>Picoides villosus</i>	Breeding	Yes	Breeding
	Northern flicker (yellow-shafted)	<i>Colaptes auratus</i>	Breeding	Yes	Breeding
	Pileated woodpecker	<i>Dryocopus pileatus</i>	Breeding	Yes	Breeding
	Red-bellied woodpecker	<i>Melanerpes carolinus</i>	Non-Breeding?		
	Red-headed woodpecker	<i>Melanerpes erythrocephalus</i>	Breeding		Observed/Yes
	Three-toed woodpecker	<i>Picoides tridactylus</i>	Breeding		Yes
	Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	Breeding	Yes	Breeding
Songbirds and other birds	Alder flycatcher	<i>Empidonax alnorum</i>	Breeding	Yes	Observed/Yes
	American crow	<i>Corvus brachyrhynchos</i>	Breeding	Yes	Breeding/Yes
	American goldfinch	<i>Carduelis tristis</i>	Breeding	Yes	Breeding/Yes
	American pipit (water)	<i>Anthus rubescens</i>	Non-Breeding		
	American redstart	<i>Setophaga ruticilla</i>	Breeding	Yes	Breeding/Yes
	American robin	<i>Turdus migratorius</i>	Breeding	Yes	Breeding/Yes
	American tree sparrow	<i>Spizella arborea</i>	Non-Breeding		
	Baird's sparrow	<i>Ammodramus bairdii</i>	Non-Breeding?		
	Baltimore oriole	<i>Icterus galbula</i>	Breeding	Yes	Observed
	Bank swallow	<i>Riparia riparia</i>	Breeding		Breeding
	Barn swallow	<i>Hirundo rustica</i>	Breeding	Yes	Breeding/Yes
	Bay-breasted warbler	<i>Dendroica castanea</i>	Breeding	Yes	Observed/Yes

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	Belted kingfisher	<i>Ceryle alcyon</i>	Breeding		Breeding/Yes
	Black-and-white warbler	<i>Mniotilta varia</i>	Breeding	Yes	Breeding/Yes
	Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	Breeding	Yes	Observed/Yes
	Black-billed magpie	<i>Pica pica</i>	Breeding	Yes	Breeding
	Blackburnian warbler	<i>Dendroica fusca</i>	Breeding	Yes	Breeding
	Black-capped chickadee	<i>Poecile atricapillus</i>	Breeding	Yes	Breeding
	Blackpoll warbler	<i>Dendroica striata</i>	Non-Breeding?		
	Black-throated blue warbler	<i>Dendroica caerulescens</i>	Non-Breeding?		
	Black-throated green Warbler	<i>Dendroica virens</i>	Breeding	Yes	Observed
	Blue jay	<i>Cyanocitta cristata</i>	Breeding	Yes	Breeding/Yes
	Bobolink	<i>Dolichonyx oryzivorus</i>	Breeding		Observed
	Bohemian waxwing	<i>Bombycilla garrulus</i>	Non-Breeding?		
	Boreal chickadee	<i>Poecile hudsonicus</i>	Breeding	Yes	Observed/Yes
	Brewer's blackbird	<i>Euphagus cyanocephalus</i>	Breeding		Breeding/Yes
	Brown creeper	<i>Certhia americana</i>	Breeding	Yes	Observed/Yes
	Brown thrasher	<i>Toxostoma rufum</i>	Breeding		Breeding
	Brown-headed cowbird	<i>Molothrus ater</i>	Breeding	Yes	Breeding/Yes
	Canada warbler	<i>Wilsonia canadensis</i>	Breeding	Yes	Observed
	Cape May warbler	<i>Dendroica tigrina</i>	Breeding		Observed/Yes
	Cedar waxwing	<i>Bombycilla cedrorum</i>	Breeding	Yes	Breeding/yes

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	Chestnut-collared longspur	<i>Calcarius ornatus</i>	Non-Breeding?		
	Chestnut-sided warbler	<i>Dendroica pensylvanica</i>	Breeding	Yes	Breeding
	Chimney swift	<i>Chaetura pelagica</i>	Breeding?		
	Chipping sparrow	<i>Spizella passerina</i>	Breeding	Yes	Breeding/Yes
	Clay-colored sparrow	<i>Spizella pallida</i>	Breeding	Yes	Breeding/Yes
	Cliff swallow	<i>Petrochelidon pyrrhonota</i>	Breeding		Breeding/Yes
	Common grackle	<i>Quiscalus quiscula</i>	Breeding		Breeding/Yes
	Common nighthawk	<i>Chordeiles minor</i>	Breeding	Yes	Observed/Yes
	Common raven	<i>Corvus corax</i>	Breeding	Yes	Breeding
	Common redpoll	<i>Carduelis flammea</i>	Non-Breeding	Yes	
	Common yellowthroat	<i>Geothlypis trichas</i>	Breeding	Yes	Breeding/Yes
	Connecticut warbler	<i>Oporornis agilis</i>	Breeding	Yes	Observed/Yes
	Dark-eyed junco	<i>Junco hyemalis</i>	Breeding	Yes	Observed/Yes
	Dickcissel	<i>Spiza americana</i>	Non-Breeding		
	Eastern bluebird	<i>Sialia sialis</i>	Breeding		Breeding
	Eastern kingbird	<i>Tyrannus tyrannus</i>	Breeding	Yes	Breeding/Yes
	Eastern meadowlark	<i>Sturnella magna</i>	Non-Breeding?		
	Eastern phoebe	<i>Sayornis phoebe</i>	Breeding	Yes	Breeding
	Eastern towhee	<i>Pipilo erythrophthalmus</i>	Breeding?		
	Eastern wood-pewee	<i>Contopus virens</i>	Breeding	Yes	Observed/Yes

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	European starling	<i>Sturnus vulgaris</i>	Breeding		Breeding/Yes
	Evening grosbeak	<i>Coccothraustes vespertinus</i>	Breeding		Observed/Yes
	Fox sparrow	<i>Passerella iliaca</i>	Breeding?		
	Golden-crowned kinglet	<i>Regulus satrapa</i>	Breeding	Yes	Observed/Yes
	Golden-winged warbler	<i>Vermivora chrysoptera</i>	Breeding?	Yes	
	Grasshopper sparrow	<i>Ammodramus savannarum</i>	Non-Breeding?		
	Gray catbird	<i>Dumetella carolinensis</i>	Breeding	Yes	Breeding/Yes
	Gray jay	<i>Perisoreus canadensis</i>	Breeding	Yes	Breeding/Yes
	Gray-cheeked thrush	<i>Catharus minimus</i>	Non-Breeding		
	Gray-crowned rosy-finch	<i>Leucosticte lephrocotis</i>	Non-Breeding		
	Great crested flycatcher	<i>Myiarchus crinitus</i>	Breeding	Yes	Breeding/Yes
	Harris' sparrow	<i>Zonotrichia querula</i>	Non-Breeding		
	Hermit thrush	<i>Catharus guttatus</i>	Breeding	Yes	Observed/Yes
	Hoary redpoll	<i>Carduelis hornemanni</i>	Non-Breeding		
	Horned lark	<i>Eremophila alpestris</i>	Breeding?		
	House finch	<i>Carpodacus mexicanus</i>	Breeding?		Observed
	House sparrow	<i>Passer domesticus</i>	Breeding		Breeding
	House wren	<i>Troglodytes aedon</i>	Breeding	Yes	Breeding/Yes
	Indigo bunting	<i>Passerian cyanea</i>	Breeding		Observed
	Lapland longspur	<i>Calcarius lapponicus</i>	Non-		

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
			Breeding		
	Lark sparrow	<i>Chondestes grammacus</i>	Non-Breeding?		
	Lazuli bunting	<i>Passerian amoena</i>	Non-Breeding		
	Le Conte's sparrow	<i>Ammodramus leconteii</i>	Breeding	Yes	Breeding
	Least flycatcher	<i>Empidonax minimus</i>	Breeding	Yes	Observed/Yes
	Lincoln's sparrow	<i>Melospiza lincolni</i>	Breeding	Yes	Observed/Yes
	Loggerhead shrike	<i>Lanius ludocicianus</i>	Non-Breeding?		
	Magnolia warbler	<i>Dendroica magnolia</i>	Breeding	Yes	Breeding/Yes
	Marsh wren	<i>Cistothorus palustris</i>	Breeding	Yes	Observed
	Mountain bluebird	<i>Sialia currucoides</i>	Breeding?		
	Mourning dove	<i>Zenaida macroura</i>	Breeding	Yes	Breeding/Yes
	Mourning warbler	<i>Oporornis philadelphia</i>	Breeding	Yes	Breeding/Yes
	Nashville warbler	<i>Vermivora ruficapilla</i>	Breeding	Yes	Breeding/Yes
	Nelson's sharp-tailed Sparrow	<i>Ammodramus nelsoni</i>	Breeding?		
	Northern cardinal	<i>Cardinalis cardinalis</i>	Non-Breeding?		Observed
	Northern mockingbird	<i>Mimus polyglottos</i>	Breeding?		
	Northern parula	<i>Parula americana</i>	Breeding	Yes	Observed/Yes
	Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	Breeding?		
	Northern shrike	<i>Lanius excubitor</i>	Non-Breeding		
	Northern waterthrush	<i>Seiurus</i>	Breeding	Yes	Observed/Yes

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
		<i>noveboracensis</i>			
	Olive-sided flycatcher	<i>Contopus borealis</i>	Breeding	Yes	Observed/Yes
	Orange-crowned warbler	<i>Vermivora celata</i>	Breeding	Yes	Yes
	Orchard oriole	<i>Icterus spurius</i>	Non-Breeding?		
	Ovenbird	<i>Seiurus aurocapillus</i>	Breeding	Yes	Observed/Yes
	Palm warbler	<i>Dendroica palmarum</i>	Breeding	Yes	Observed/Yes
	Philadelphia vireo	<i>Vireo philadelphicus</i>	Breeding	Yes	Observed/Yes
	Pine grosbeak	<i>Pinicola enucleator</i>	Breeding?		Yes
	Pine siskin	<i>Carduelis pinus</i>	Breeding	Yes	Breeding/Yes
	Pine warbler	<i>Dendroica pinus</i>	Breeding		Yes
	Purple finch	<i>Carpodacus purpureus</i>	Breeding		Breeding/Yes
	Purple martin	<i>Progne subis</i>	Breeding		Breeding/Yes
	Red crossbill	<i>Loxia curvirostra</i>	Breeding	Yes	Yes
	Red-breasted nuthatch	<i>Sitta canadensis</i>	Breeding	Yes	Breeding/Yes
	Red-eyed vireo	<i>Vireo olivaceus</i>	Breeding	Yes	Breeding/Yes
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	Breeding	Yes	Breeding/Yes
	Rock dove	<i>Columba livia</i>	Breeding	Yes	Observed
	Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	Breeding	Yes	Breeding/Yes
	Ruby-crowned kinglet	<i>Regulus calendula</i>	Breeding	Yes	Observed/Yes
	Ruby-throated hummingbird	<i>Archilochus colubris</i>	Breeding		Breeding/Yes
	Rusty blackbird	<i>Euphagus carolinus</i>	Breeding		Yes
	Savannah sparrow	<i>Passerculus</i>	Breeding	Yes	Breeding

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
		<i>sandwichensis</i>			
	Scarlet tanager	<i>Piranga olivacea</i>	Breeding	Yes	Observed
	Sedge wren	<i>Cistothorus platensis</i>	Breeding	Yes	Observed
	Smith's longspur	<i>Calcarius pictus</i>	Non-Breeding		Yes
	Snow bunting	<i>Plectrophenax nivalis</i>	Non-Breeding		
	Solitary vireo (blue-headed)	<i>Vireo solitarius</i>	Breeding	Yes	Yes
	Song sparrow	<i>Melospiza melodia</i>	Breeding	Yes	Breeding/Yes
	Sprague's pipit	<i>Anthus spragueii</i>	Breeding?		
	Swainson's thrush	<i>Catharus ustulatus</i>	Breeding	Yes	Observed
	Swamp sparrow	<i>Melospiza georgiana</i>	Breeding	Yes	Breeding/Yes
	Tennessee warbler	<i>Vermivora peregrina</i>	Breeding	Yes	Observed/Yes
	Townsend's solitaire	<i>Myadestes townsendi</i>	Non-Breeding		
	Tree swallow	<i>Tachycineta bicolor</i>	Breeding	Yes	Breeding/Yes
	Turkey vulture	<i>Cathartes aura</i>	Breeding	Yes	Observed/Yes
	Veery	<i>Catharus fuscescens</i>	Breeding	Yes	Observed/Yes
	Vesper sparrow	<i>Pooecetes gramineus</i>	Breeding		Observed
	Warbling vireo	<i>Vireo gilvus</i>	Breeding		Observed/Yes
	Western kingbird	<i>Tyrannus verticalis</i>	Breeding		Breeding
	Western meadowlark	<i>Sturnella neglecta</i>	Breeding		Observed
	Western wood-pewee	<i>Contopus sordidulus</i>	Breeding?		Yes
	Whip-poor-will	<i>Caprimulgus vociferus</i>	Breeding	Yes	Observed/Yes
	White-breasted	<i>Sitta carolinensis</i>	Breeding		Breeding/Yes

Group	Common Name	Scientific Name	Breeding Status ^a	Observed During Field Studies	Present in Project Region ^b
	nuthatch				
	White-crowned sparrow	<i>Zonotrichia leucophrys</i>	Non-Breeding?		Yes
	White-throated sparrow	<i>Zonotrichia albicollis</i>	Breeding	Yes	Breeding/Yes
	White-winged crossbill	<i>Loxia leucoptera</i>	Breeding	Yes	Observed/Yes
	Willow flycatcher	<i>Empidonax traillii</i>	Non-Breeding?		
	Wilson's warbler	<i>Wilsonia pusilla</i>	Breeding	Yes	Observed/Yes
	Winter wren	<i>Troglodytes troglodytes</i>	Breeding	Yes	Observed/Yes
	Wood thrush	<i>Hylocicla mustelina</i>	Non-Breeding?		
	Yellow warbler	<i>Dendroica petechia</i>	Breeding	Yes	Breeding/Yes
	Yellow-bellied flycatcher	<i>Empidonax flaviventris</i>	Breeding	Yes	Observed/Yes
	Yellow-headed blackbird	<i>Xanthocephalus xanthocephalus</i>	Breeding		Observed
	Yellow-rumped warbler	<i>Dendroica coronata</i>	Breeding	Yes	Breeding/Yes
	Yellow-throated vireo	<i>Vireo flavifrons</i>	Non-Breeding?		Observed

^a Question mark (?) indicates uncertainty

^b Observed or breeding: data is from Manitoba Breeding Bird Atlas 2013

Yes Data from Manitoba Model Forest (1997).

Table C3-3: Amphibian and Reptile Species in the Project Study Area

Group	Common Name	Scientific Name	Nature of Occurrence ^a	Breeding Status ^a	Observed During Field Studies
Amphibians	Mudpuppy	<i>Necturus maculosus</i>	Resident	Breeding	No
	Blue-spotted salamander	<i>Ambystoma laterale</i>	Resident	Breeding	No
	American toad	<i>Bufo americanus</i>	Resident	Breeding	Yes
	Spring peeper	<i>Hyla crucifer</i>	Resident	Breeding	Yes
	Gray treefrog	<i>Hyla versicolor</i>	Resident	Breeding	Yes
	Boreal chorus frog	<i>Pseudacris triseriata</i>	Resident	Breeding	Yes
	Wood frog	<i>Lithobates sylvatica</i>	Resident	Breeding	Yes
	Northern leopard frog	<i>Lithobates pipiens</i>	Resident	Breeding	Yes
	Green tree frog	<i>Hyla cinerea</i>	Resident	Breeding	Yes
	Mink frog	<i>Lithobates septentrionalis</i>	Resident	Breeding	Yes
Reptiles	Common snapping turtle	<i>Chelydra serpentina</i>	Resident	Breeding	Yes
	Western painted turtle	<i>Chrysemys picta</i>	Resident	Breeding	Yes
	Red-sided garter snake	<i>Thamnophis sirtalis</i>	Resident	Breeding	Yes
	Red-bellied snake	<i>Storeria occipitomaculata occipitomaculata</i>	Resident	Breeding	No

^a Question mark (?) indicates uncertainty.

Table C3-4: Area (ha) and number of breeding bird survey plots per habitat class

Habitat Class	Area (ha)	Percentage of Total Area	Number of Plots Based on Percentage of Total Area	Adjusted Number of Plots
Ash on all ecosites	757	6%	12	12
Balsam fir mixedwood on outcrop	340	2%	6	10
Sparse treed pasture (bur oak and balsam poplar)	346	3%	6	10
Beaver flood and riparian peatland	372	3%	6	10
Conifer on wet peatland	1,742	13%	29	29
Emergent on lower beach	179	1%	3	10
Jack pine dominant on mineral	955	7%	16	16
Jack pine mixed on outcrop	1,756	13%	29	29
Low vegetation on mineral	347	3%	6	10
Non-treed vegetation on wet peatland	1,250	9%	20	20
Trembling aspen dominant	736	5%	12	17
Trembling aspen mixedwood	4,359	32%	71	50
White spruce on all ecosites	583	4%	10	10
Totals	13,722	100%	226	233

Table C3-5 : Bird Species Number per Plot per Broad Habitat Class

Species	Broad Habitat Class														
	Ash on all ecosites	Balsam fir mixture on outcrop	Beaver flood and riparian peatland	Conifer on wet peatland	Emergent on lower beach	Human infrastructure	Jack pine dominant on mineral	Jack pine mixed on outcrop	Low vegetation on mineral	Non treed vegetation of wet peatland	Sparse Treed Pasture	Trembling aspen dominant	Trembling aspen mixedwood	White spruce on all ecosites	Young regeneration on shallow peatland
Alder Flycatcher	0.08	0.00	0.67	0.00	0.67	0.09	0.00	0.00	0.27	0.40	0.25	0.00	0.02	0.08	1.00
American Bittern	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
American Crow	0.23	0.00	0.00	0.05	0.22	0.45	0.10	0.10	0.64	0.10	0.38	0.35	0.13	0.23	0.00
American Goldfinch	0.23	0.00	0.00	0.15	0.22	0.18	0.20	0.19	0.45	0.00	0.13	0.04	0.06	0.08	0.00
American Redstart	0.15	0.00	0.17	0.35	0.11	0.27	0.40	0.35	0.27	0.60	0.50	0.43	0.51	0.77	0.00
American Robin	0.00	0.00	0.00	0.05	0.33	0.18	0.40	0.39	0.27	0.10	0.25	0.04	0.17	0.46	0.00
Baltimore Oriole	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Barn Swallow	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Black-and-white Warbler	0.38	0.40	0.67	0.00	0.11	0.27	0.30	0.29	0.36	0.30	0.38	0.35	0.55	0.92	0.00
Black-billed Cuckoo	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Bay-breasted Warbler	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.15	0.38	0.00
Black-backed Woodpecker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Black-capped Chickadee	0.08	0.00	0.17	0.10	0.00	0.00	0.10	0.19	0.00	0.00	0.00	0.04	0.06	0.00	0.00
Brown-headed Cowbird	0.00	0.00	0.00	0.00	0.00	0.27	0.10	0.00	0.36	0.10	0.13	0.00	0.06	0.08	0.00
Blue-headed Vireo	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.08	0.00
Blackburnian Warbler	0.23	0.20	0.00	0.10	0.00	0.18	0.30	0.16	0.00	0.00	0.00	0.43	0.47	0.38	0.00
Blue Jay	0.00	0.00	0.17	0.05	0.11	0.18	0.10	0.16	0.09	0.10	0.13	0.17	0.15	0.15	0.00
Black Tern	0.08	0.00	0.17	0.00	0.33	0.00	0.00	0.00	0.18	0.10	0.00	0.00	0.00	0.00	0.00
Boreal Chickadee	0.00	0.00	0.00	0.05	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Brown Creeper	0.00	0.20	0.00	0.05	0.00	0.00	0.00	0.06	0.00	0.10	0.00	0.04	0.00	0.23	0.00
Black-throated Green Warbler	0.46	0.00	0.17	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.22	0.11	0.00	0.00
Broad-winged Hawk	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.02	0.00	0.00
Canada Goose	0.15	0.00	0.00	0.15	0.44	0.45	0.10	0.16	0.36	0.00	0.63	0.09	0.11	0.00	0.00
Canada Warbler	0.08	0.00	0.00	0.05	0.00	0.00	0.00	0.06	0.00	0.10	0.00	0.17	0.13	0.08	0.00
Clay-coloured Sparrow	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.45	0.00	0.00	0.00	0.00	0.00	0.00
Cedar Waxwing	0.23	0.40	0.83	0.30	0.33	0.27	0.30	0.29	0.55	0.30	0.63	0.09	0.17	0.38	0.00
Chipping Sparrow	0.00	0.20	0.17	0.05	0.11	0.18	0.20	0.87	0.00	0.00	0.13	0.00	0.06	0.15	0.00
Common Loon	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.06	0.00	0.00
Common Nighthawk	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Connecticut Warbler	0.00	0.20	0.00	0.40	0.00	0.00	0.00	0.32	0.00	0.10	0.00	0.04	0.00	0.00	0.00
Common Raven	0.23	0.20	0.00	0.00	0.33	0.00	0.20	0.06	0.00	0.10	0.13	0.26	0.11	0.08	1.00
Common Redpoll	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Common Yellowthroat	0.31	0.20	0.83	0.15	0.89	0.36	0.20	0.03	0.82	0.80	0.50	0.13	0.13	0.31	1.00
Chestnut-sided Warbler	0.15	0.00	0.50	0.05	0.00	0.09	0.30	0.29	0.00	0.00	0.00	0.30	0.49	0.15	0.00
Dark-eyed Junco	0.00	0.20	0.00	0.05	0.00	0.00	0.00	0.16	0.00	0.00	0.00	0.00	0.00	0.23	0.00

Species	Broad Habitat Class														
	Ash on all ecosites	Balsam fir mixture on outcrop	Beaver flood and riparian peatland	Conifer on wet peatland	Emergent on lower beach	Human infrastructure	Jack pine dominant on mineral	Jack pine mixed on outcrop	Low vegetation on mineral	Non treed vegetation of wet peatland	Sparse Treed Pasture	Trembling aspen dominant	Trembling aspen mixedwood	White spruce on all ecosites	Young regeneration on shallow peatland
Downy Woodpecker	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00
Eastern Kingbird	0.00	0.00	0.17	0.05	0.11	0.09	0.00	0.00	0.18	0.10	0.13	0.00	0.00	0.08	0.00
Eastern Phoebe	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.10	0.00	0.00	0.00	0.00	0.00
Eastern Wood-pewee	0.08	0.00	0.00	0.05	0.00	0.00	0.20	0.00	0.00	0.10	0.00	0.09	0.04	0.00	0.00
Eastern Whip-poor-will	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Franklin's Gull	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Great Crested Flycatcher	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Golden-crowned Kinglet	0.00	0.00	0.00	0.15	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.02	0.08	0.00
Gray Jay	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.10	0.00	0.00	0.02	0.08	0.00
Gray Catbird	0.08	0.20	0.00	0.00	0.00	0.00	0.10	0.03	0.00	0.10	0.00	0.09	0.04	0.08	0.00
Golden-winged Warbler	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.20	0.00	0.00	0.00	0.00	0.00
Hairy Woodpecker	0.00	0.00	0.00	0.05	0.00	0.09	0.00	0.00	0.00	0.00	0.13	0.00	0.04	0.00	0.00
Hermit Thrush	0.15	0.20	0.00	0.45	0.22	0.00	0.60	0.32	0.00	0.30	0.13	0.22	0.17	0.08	0.00
House Wren	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.00
Killdeer	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Le Conte's Sparrow	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Least Flycatcher	0.23	0.00	0.33	0.50	0.00	0.09	0.00	0.19	0.09	0.30	0.50	0.09	0.13	0.31	0.00
Lincoln's Sparrow	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mallard	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Magnolia Warbler	0.00	1.00	0.17	0.00	0.00	0.09	0.00	0.03	0.00	0.00	0.00	0.17	0.06	0.46	0.00
Marsh Wren	0.00	0.00	0.17	0.00	0.44	0.09	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.00
Merlin	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mourning Warbler	0.15	0.00	0.17	0.00	0.00	0.00	0.10	0.06	0.00	0.00	0.00	0.00	0.19	0.15	0.00
Myrtle's Warbler	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nashville Warbler	0.46	1.00	1.17	1.10	0.00	0.09	0.70	1.35	0.18	0.50	0.00	0.52	0.62	1.38	1.00
Northern Parula	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.04	0.62	0.00
Northern Waterthrush	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.27	0.40	0.00	0.00	0.00	0.08	0.00
Northern Saw-whet Owl	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
Orange-crowned Warbler	0.00	0.00	0.00	0.05	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Olive-sided Flycatcher	0.00	0.20	0.33	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.04	0.31	0.00
Ovenbird	0.62	0.20	0.17	0.15	0.11	0.36	0.20	0.48	0.18	0.10	0.38	0.91	1.21	0.92	2.00
Palm Warbler	0.00	0.00	0.00	0.25	0.00	0.09	0.10	0.06	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Philadelphia Vireo	0.15	0.00	0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.04	0.09	0.23	0.00
Pine Siskin	0.00	0.00	0.00	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Pileated Woodpecker	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.06	0.00	0.10	0.13	0.13	0.04	0.15	0.00
Rose-breasted Grosbeak	0.08	0.00	0.50	0.05	0.11	0.00	0.10	0.10	0.09	0.30	0.00	0.22	0.21	0.62	0.00
Ring-billed Gull	0.00	0.00	0.00	0.00	0.33	0.09	0.00	0.06	0.00	0.00	0.00	0.04	0.04	0.00	0.00

Species	Broad Habitat Class														
	Ash on all ecosites	Balsam fir mixture on outcrop	Beaver flood and riparian peatland	Conifer on wet peatland	Emergent on lower beach	Human infrastructure	Jack pine dominant on mineral	Jack pine mixed on outcrop	Low vegetation on mineral	Non treed vegetation of wet peatland	Sparse Treed Pasture	Trembling aspen dominant	Trembling aspen mixedwood	White spruce on all ecosites	Young regeneration on shallow peatland
Red-breasted Nuthatch	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.09	0.08	0.00
Ruby-crowned Kinglet	0.00	0.40	0.00	0.50	0.00	0.00	0.20	0.35	0.00	0.00	0.13	0.04	0.02	0.23	0.00
Red Crossbill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.02	0.00	0.00
Red-eyed Vireo	0.69	0.40	0.83	0.25	0.33	0.82	0.50	0.39	0.91	0.40	0.75	0.70	1.00	1.00	1.00
Ruffed Grouse	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.04	0.04	0.00	0.00
Red-winged Blackbird	0.00	0.00	1.00	0.05	1.00	0.27	0.00	0.00	0.55	0.30	0.25	0.00	0.02	0.08	0.00
Sandhill Crane	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.09	0.00	0.13	0.00	0.00	0.00	0.00
Savannah Sparrow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.00	0.00
Scarlet Tanager	0.08	0.00	0.00	0.00	0.00	0.09	0.00	0.00	0.00	0.00	0.00	0.04	0.00	0.00	0.00
Sedge Wren	0.15	0.00	1.00	0.00	0.56	0.18	0.00	0.00	0.55	0.30	0.00	0.09	0.04	0.00	0.00
Sora	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Song Sparrow	0.00	0.00	0.17	0.00	0.00	0.09	0.00	0.00	0.18	0.10	0.13	0.00	0.00	0.00	0.00
Swamp Sparrow	0.31	0.00	0.67	0.10	0.89	0.18	0.00	0.00	0.55	0.60	0.38	0.00	0.02	0.00	0.00
Swainson's Thrush	0.00	0.80	0.17	0.00	0.11	0.00	0.00	0.19	0.00	0.00	0.00	0.09	0.04	0.38	0.00
Tennessee Warbler	0.00	0.00	0.17	0.15	0.00	0.00	0.00	0.06	0.00	0.10	0.00	0.00	0.09	0.15	1.00
Tree Swallow	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.08	0.00
Trumpeter Swan ¹	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.08	0.00
Turkey Vulture	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Veery	0.00	0.00	0.17	0.00	0.00	0.00	0.10	0.10	0.00	0.10	0.00	0.17	0.19	0.31	0.00
Virginia Rail	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Wilson's Snipe	0.00	0.00	0.50	0.15	0.11	0.18	0.00	0.10	0.36	0.30	0.25	0.04	0.06	0.15	0.00
Wilson's Warbler	0.00	0.00	0.17	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	0.00	1.00
Winter Wren	0.08	0.00	0.17	0.10	0.00	0.00	0.20	0.32	0.00	0.00	0.00	0.17	0.06	0.15	0.00
White-throated Sparrow	0.54	0.80	0.83	0.45	0.11	0.27	1.00	1.39	0.73	0.50	0.25	0.65	0.85	0.85	0.00
White-winged Crossbill	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow-bellied Flycatcher	0.00	0.40	0.00	0.05	0.00	0.00	0.00	0.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Yellow-bellied Sapsucker	0.00	0.00	0.00	0.05	0.00	0.00	0.10	0.06	0.00	0.00	0.00	0.00	0.04	0.00	0.00
Yellow-rumped Warbler	0.00	0.40	0.00	0.00	0.00	0.00	0.00	0.39	0.00	0.00	0.00	0.00	0.00	0.08	0.00
Yellow-shafted Flicker	0.00	0.00	0.17	0.00	0.00	0.00	0.00	0.06	0.00	0.10	0.00	0.04	0.02	0.08	0.00
Yellow Warbler	0.00	0.00	0.33	0.00	0.89	0.18	0.00	0.00	0.55	0.10	0.38	0.09	0.02	0.00	0.00

¹ - heard at terrestrial plots coming from Rice Lake.

Bird VECs and listed species densities by habitat type are shaded

Table C3-6 : Amphibian Species Occurrence by Habitat Type

Species	Sites (n) With Calling Anurans	Percent (%) Sites Present							Sites (%) with calling Anurans
		Creek (n=9)	Ditch (n=11)	Fen (n=10)	Large River (n=15)	Marsh (n=34)	Pond (n=4)	Small River (n=10)	
American toad	48	33.3	45.5	80.0	40.0	55.9	50.0	50.0	51.6
Spring peeper	77	77.8	72.7	100.0	60.0	88.2	100.0	90.0	82.8
Gray treefrog	64	77.8	63.6	100.0	60.0	70.6	75.0	40.0	68.8
Boreal chorus frog	20	11.1	18.2	40.0	26.7	20.6	25.0	10.0	21.5
Wood frog	1	0.0	9.1	0.0	0.0	0.0	0.0	0.0	1.1
Northern leopard frog	37	11.1	9.1	60.0	26.7	55.9	50.0	40.0	39.8
Green frog	0	0	0	0	0	0	0	0	0
Mink frog	0	0	0	0	0	0	0	0	0
None	5	22.2	0	0	20.0	0	0	0	5.3
Total	88	77.8	100.0	100.0	80.0	100.0	100.0	100.0	94.6

Table C3-7 : Results of Automated Recorders from 24 Wetlands

Common Name	Scientific Name	Number of Individuals			Plots (n) with calling birds	Plots (%) with calling birds
		Evening (11:07 PM)	Morning (4:37 AM)	Total		
Alder flycatcher	<i>Empidonax alnorum</i>	4	32	36	12	50.0
American bittern	<i>Botaurus lentiginosus</i>	1	19	20	11	45.8
American crow	<i>Corvus brachyrhynchos</i>	0	5	5	4	16.7
American goldfinch	<i>Spinus tristis</i>	0	1	1	1	4.2
American redstart	<i>Setophaga ruticilla</i>	0	4	4	3	12.5
American robin	<i>Turdus migratorius</i>	2	30	32	15	62.5
American woodcock	<i>Scolopax minor</i>	0	1	1	1	4.2
Baltimore oriole	<i>Icterus galbula</i>	0	3	3	1	4.2
Barred owl	<i>Strix varia</i>	2	1	3	3	12.5
Barn swallow	<i>Hirundo rustica</i>	0	3	3	2	8.3
Black-and-white Warbler	<i>Mniotilta varia</i>	0	7	7	4	16.7
Black-billed cuckoo	<i>Coccyzus erythrophthalmus</i>	3	1	4	3	12.5
Blue jay	<i>Cyanocitta cristata</i>	0	1	1	1	4.2
Black tern	<i>Chlidonias niger</i>	0	3	3	2	8.3
Canada goose	<i>Branta canadensis</i>	9	24	33	16	66.7
Canada warbler	<i>Wilsonia canadensis</i>	0	1	1	1	4.2
Clay-colored sparrow	<i>Spizella pallida</i>	0	3	3	2	8.3
Cedar waxwing	<i>Bombycilla cedrorum</i>	1	1	2	2	8.3
Chipping sparrow	<i>Spizella passerina</i>	0	7	7	4	16.7
Common Loon	<i>Gavia immer</i>	2	2	4	3	12.5
Common nighthawk	<i>Chordeiles minor</i>	5	4	9	6	25.0
Connecticut warbler	<i>Oporornis agilis</i>	0	3	3	2	8.3
Common raven	<i>Corvus corax</i>	0	2	2	2	8.3
Common yellowthroat	<i>Geothlypis trichas</i>	3	67	70	22	91.7
Eastern kingbird	<i>Tyrannus tyrannus</i>	0	7	7	4	16.7
Eastern wood-pewee	<i>Contopus virens</i>	0	1	1	1	4.2
Eastern whip-poor-will	<i>Antrostomus vociferus</i>	9	5	14	10	41.7
Great crested flycatcher	<i>Myiarchus crinitus</i>	0	1	1	1	4.2
Gray Catbird	<i>Dumetella carolinensis</i>	0	8	8	5	20.8
Hairy woodpecker	<i>Picoides villosus</i>	0	1	1	1	4.2
Hermit thrush	<i>Catharus guttatus</i>	0	36	36	17	70.8
Killdeer	<i>Charadrius vociferus</i>	6	2	8	2	8.3
Le Conte's sparrow	<i>Ammodramus leconteii</i>	2	12	14	6	25.0
Least flycatcher	<i>Empidonax minimus</i>	5	19	24	9	37.5
Long-eared owl	<i>Asio otus</i>	0	1	1	1	4.2
Lincoln's sparrow	<i>Melospiza lincolni</i>	0	15	15	8	33.3

Common Name	Scientific Name	Number of Individuals			Plots (n) with calling birds	Plots (%) with calling birds
		Evening (11:07 PM)	Morning (4:37 AM)	Total		
Mallard	<i>Anas platyrhynchos</i>	5	13	18	12	50.0
Marsh wren	<i>Cistothorus palustris</i>	2	10	12	4	16.7
Mourning dove	<i>Zenaida macroura</i>	0	2	2	1	4.2
Mourning warbler	<i>Oporornis philadelphia</i>	0	6	6	3	12.5
Nashville warbler	<i>Vermivora ruficapilla</i>	0	16	16	11	45.8
Northern waterthrush	<i>Seiurus noveboracensis</i>	1	1	2	1	4.2
Orange-crowned warbler	<i>Vermivora celata</i>	0	1	1	1	4.2
Ovenbird	<i>Seiurus aurocapillus</i>	0	1	1	1	4.2
Pied-billed grebe	<i>Podilymbus podiceps</i>	0	2	2	1	4.2
Philadelphia vireo	<i>Vireo philadelphicus</i>	0	1	1	1	4.2
Pileated woodpecker	<i>Dryocopus pileatus</i>	0	2	2	2	8.3
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	0	13	13	7	29.2
Ring-billed gull	<i>Larus delawarensis</i>	0	5	5	3	12.5
Red-eyed vireo	<i>Vireo olivaceus</i>	0	6	6	6	25.0
Red-winged blackbird	<i>Agelaius phoeniceus</i>	2	30	32	13	54.2
Sandhill crane	<i>Grus canadensis</i>	2	4	6	6	25.0
Sedge wren	<i>Cistothorus platensis</i>	6	17	23	9	37.5
Sora	<i>Porzana carolina</i>	7	4	11	7	29.2
Solitary sandpiper	<i>Tringa solitaria</i>	2	5	7	3	12.5
Song sparrow	<i>Melospiza melodia</i>	1	16	17	7	29.2
Swamp sparrow	<i>Melospiza georgiana</i>	2	86	88	24	100.0
Tree swallow	<i>Tachycineta bicolor</i>	0	1	1	1	4.2
Virginia rail	<i>Rallus limicola</i>	2	5	7	5	20.8
Wilson's snipe	<i>Gallinago gallinago</i>	17	36	53	19	79.2
Winter wren	<i>Troglodytes troglodytes</i>	0	5	5	2	8.3
White-throated sparrow	<i>Zonotrichia albicollis</i>	4	97	101	22	91.7
Yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	0	1	1	1	4.2
Yellow rail	<i>Coturnicops noveboracensis</i>	1	1	2	2	8.3
Yellow warbler	<i>Dendroica petechia</i>	1	12	13	7	29.2

Bird VECs and listed species occurrences in or adjacent to wetland habitat are shaded.

Table C3-8: Results of habitat models for Valued Environmental Components (VEC) and other species listed by SARA and/or MBESA

Group	Species	Area (ha) of habitat in each study area						Percent of habitat in each study area						Percent of habitat in Project study area affected by Project Footprint	Total percent of habitat in Project study area affected by Project Footprint
		Regional	Project	Intactness Local	Habitat Local	Habitat ZOI	Project Footprint	Regional	Project	Intactness Local	Habitat Local	Habitat ZOI	Project Footprint		
VEC	Moose (primary)	253,718.54	15,398.10	2,573.81	408.56	165.91	52.27	18.14	18.23	26.24	24.45	22.39	18.80	0.02*	0.02*
	Moose (secondary)	885,080.71	47,374.63	5,615.26	1,047.20	436.87	133.46	63.30	56.09	57.25	62.68	58.96	48.01	0.02*	
	American marten (primary)	294,763.21	13,974.49	1,938.57	317.79	126.69	32.01	21.08	16.55	19.76	19.02	17.10	11.51	0.01*	0.02*
	American marten (secondary)	275,980.73	17,124.92	2,093.68	492.49	215.70	73.80	19.74	20.28	21.35	29.48	29.11	26.55	0.03*	
	Bald Eagle	158,004.59	13,284.34	1,116.44	147.79	59.45	20.32	11.30	15.73	11.38	8.85	8.02	7.31	0.01	0.01
	Ruffed grouse (primary)	NA	14,816.95	2,285.08	494.10	209.79	67.27	NA	17.54	23.30	29.57	28.31	24.20	0.45	0.38
	Ruffed grouse (secondary)	NA	13,172.08	1,513.95	291.07	129.44	39.25	NA	15.60	15.44	17.42	17.47	14.12	0.30	
	Canada warbler	NA	20,244.38	2,996.01	643.70	275.85	90.02	NA	1.45	30.55	38.53	37.23	32.38	0.44*	0.44
Listed species	Yellow rail	109,641.04	5,001.39	650.10	83.78	31.47	8.78	7.84	5.92	6.63	5.01	1.18	3.16	0.18*	0.18*
	Least bittern (primary)	6,107.95	694.62	111.26	16.02	5.20	0.81	0.44	0.82	1.13	0.96	0.11	0.29	0.12*	0.18*
	Least bittern (secondary)	22,217.21	3,602.71	427.71	58.52	22.62	6.74	1.59	4.27	4.36	3.50	0.91	2.42	0.19	
	Horned grebe (primary)	NA	1,899.95	273.61	16.02	5.20	0.81	NA	2.25	2.79	0.96	0.11	0.29	0.04	0.08
	Horned grebe (secondary)	NA	10,851.70	962.09	80.09	31.15	9.88	NA	12.85	9.81	4.79	1.33	3.55	0.09	
	Trumpeter swan (primary)	79,573.11	1,899.95	273.61	16.02	5.20	0.81	5.69	2.25	2.79	0.96	0.11	0.29	0.00*	0.01*
	Trumpeter swan (secondary)	40,782.44	10,851.70	962.09	80.09	31.15	9.88	2.92	12.85	9.81	4.79	1.33	3.55	0.02*	
	Short-eared owl (primary)	NA	6,288.99	412.58	16.27	4.91	1.41	NA	7.45	4.21	0.97	0.19	0.51	0.02	0.09
	Short-eared owl (secondary)	NA	6,454.30	567.33	74.03	30.13	10.44	NA	7.64	5.78	4.43	1.41	3.76	0.16	
	Common nighthawk (primary)	NA	11,651.16	824.74	92.30	36.81	12.32	NA	13.79	8.41	5.52	4.97	4.43	0.11	0.11
	Common nighthawk (secondary)	NA	13,701.26	1,436.08	163.51	59.39	15.87	NA	16.22	14.64	9.79	8.01	5.71	0.12	
	Eastern whip-poor-will	NA	30,629.79	4,054.64	849.94	360.37	109.88	NA	36.26	41.34	50.87	14.83	39.52	0.36	0.36
	Olive-sided flycatcher	NA	22,251.07	2,377.36	306.84	140.01	72.71	NA	1.59	24.24	18.37	18.89	26.15	0.33	0.33
	Golden winged-warbler (primary)	NA	40,757.05	5,410.36	1,040.47	470.19	195.38	NA	48.26	55.16	62.28	26.37	70.28	0.48	0.43
	Golden winged-warbler (secondary)	NA	4,779.98	173.26	4.66	0.24	0.00	NA	5.66	1.77	0.28	0.00	0.00	0.00	
	Barn swallow	NA	12,989.15	851.50	113.71	54.96	22.50	NA	15.38	8.68	6.81	3.04	8.09	0.17	0.17
	Eastern wood-pewee	NA	30,629.79	4,054.64	849.94	360.37	109.88	NA	36.26	41.34	50.87	48.63	39.52	0.36	0.36
	Rusty blackbird (primary)	NA	4,297.33	538.97	74.54	27.82	7.55	NA	5.09	5.49	4.46	1.02	2.71	0.18	0.14
	Rusty blackbird (secondary)	NA	12,213.90	1,204.86	144.45	54.89	15.26	NA	14.46	12.28	8.65	2.06	5.49	0.12	
	Leopard frog (primary)	NA	11,153.26	1,077.53	60.20	16.38	5.97	NA	13.21	10.99	3.60	0.81	2.15	0.55**	0.86**
Leopard frog (secondary)	NA	1,598.39	158.16	35.91	19.98	4.72	NA	1.89	1.61	2.15	0.64	1.70	2.99**		

* Compared to Regional study area

** Compared to Local study area