

# Rook I Project

## Environmental Impact Statement

Annex VIII.2: Wildlife Baseline Report 2 (Amphibians, Birds,  
and Bats)

**WILDLIFE BASELINE REPORT 2  
(AMPHIBIANS, BIRDS, AND BATS)  
FOR THE ROOK I PROJECT**

*Final Report*

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*Project No. 3008*

June 2024

## EXECUTIVE SUMMARY

The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project would be located in northwestern Saskatchewan, approximately 40 kilometres (km) east of the Alberta-Saskatchewan border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon. The wildlife baseline program is a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. Information obtained through database searches and field surveys will be used alongside Indigenous knowledge in the Environmental Assessment and cumulative effects assessment, to inform Project planning, and for developing future monitoring programs and reclamation plans.

The program was designed to obtain comprehensive information characterizing wildlife, including species of conservation concern, and their habitats within near vicinity to the Project (Site Study Area [SSA] and a broader Local Study Area [LSA]). The SSA consisted of an area 25 square kilometres (km<sup>2</sup>) in size that encompasses the Project footprint, and the LSA consisted of an area 225 km<sup>2</sup> in size that surrounds the SSA. To meet study objectives, species of conservation concern database searches, amphibian auditory surveys, breeding bird surveys, common nighthawk (*Chordeiles minor*) surveys, yellow rail (*Coturnicops noveboracensis*) surveys, and acoustic bat detection surveys were completed. Wildlife surveys were completed using a combination of in-situ and Autonomous Recording Units (ARU) methods.

A list of 15 species with conservation concern was compiled from database searches and by assessing biogeographical range for species potentially occurring in the region. The HABISask database search identified 11 wildlife species previously recorded within 30 km of the centre of the SSA, including 10 bird species and one mammal. A further two mammal species and two amphibian species were added to database search results based on biogeographical range and habitat potential within the LSA.

Two species of amphibians were detected in the study area, including Canadian toads (*Anaxyrus hemiophrys*) and wood frogs (*Lithobates sylvaticus*). Canadian toads were the only species of conservation concern detected, and the total number of detection locations, including survey results and incidental observations, included two sites in the SSA and five sites in the LSA.

During the breeding bird surveys, 100 point count locations were surveyed, including 53 in the SSA and 47 in the LSA using a mix of in-situ and ARU surveys. A total of 95 bird species were recorded, including 11 species of conservation concern. These included four species listed under the *Species at Risk Act* (SARA): common nighthawk, olive-sided flycatcher (*Contopus cooperi*), rusty blackbird (*Euphagus carolinus*), and barn swallow (*Hirundo rustica*). An additional 7 species with provincial activity restriction guidelines were observed, including Bonaparte's gull (*Chroicocephalus piladelphia*), common loon (*Gavia immer*), bald eagle (*Haliaeetus leucocephalus*), herring gull (*Larus argentatus*), osprey (*Pandion haliaetus*), American white pelican (*Pelicanus erythrorhynchos*), and great gray owl (*Strix nebulosa*).

A total of 27 locations were surveyed for common nighthawks and 15 wetlands for yellow rail using in-situ field surveys and ARU recordings. Detection rates per survey for common nighthawks ranged from zero to six individuals, and numerous incidental observations of common nighthawks were also recorded during other survey types completed in the SSA and LSA. No yellow rails were recorded during the surveys or incidentally, and the study area was determined to have minimal habitat suitable for this species.

Five bat detectors were installed in the SSA, and were designed to detect bats in three frequency groups: high frequency, low frequency, and myotis species. A total of 4,312 bat passes were recorded, including 4,206 in the high frequency and myotis groups, and 106 in the low-frequency group. Based on biogeographical range, abundance, call characteristics, and habitat suitability, bat passes categorized into either the high frequency or the Myotis groups are expected to be primarily composed of little brown myotis (*Myotis lucifugus*), and those individuals in the low frequency group are expected to be primarily composed of silver-haired (*Lasionycteris noctivagans*) or hoary bats (*Lasiurus cinereus*).

Overall, 19 sensitive species were detected during targeted field surveys and incidentally, including six species listed under SARA: common nighthawk, olive-sided flycatcher, rusty blackbird, barn swallow, boreal woodland caribou (*Rangifer tarandus caribou*), and bat species (potentially two species listed as endangered). An additional 12 species with provincial activity restriction guidelines were detected including Canadian toad, Bonaparte's gull, common loon, bald eagle, herring gull, osprey, American white pelican, great gray owl, and four bat species in the Family *Vespertilionidae*. One additional provincially rare insect species, luna moth (*Actias luna*), was also observed.

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Abbreviations	Definition
ARU	Autonomous recording unit
BCR	Bird Conservation Region
CanNorth	Canada North Environmental Services
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
EA	Environmental Assessment
EIS	Environmental Impact Statement
HABISask	Hunting, Angling and Biodiversity Information of Saskatchewan
LSA	Local Study Area
NexGen	NexGen Energy Ltd.
Project	Rook I Project
RSA	Regional Study Area
SARA	<i>Species at Risk Act</i>
SC	Study components
SCDC	Saskatchewan Conservation Data Centre
SOCC	Species of conservation concern
SSA	Site Study Area
TLU	Traditional Land Use
VC	Valued component

Units	Definition
cm	centimetres
dB	decibels
kHz	kilohertz
km	kilometres
km <sup>2</sup>	square kilometres
km/h	kilometres per hour
m	metres
ms	milliseconds
%	percent

## 1.0 INTRODUCTION

The Rook I Project (Project) is a proposed new uranium mining and milling operation that is 100% owned by NexGen Energy Ltd. (NexGen). The Project would be located in northwestern Saskatchewan, approximately 40 kilometres (km) east of the Alberta-Saskatchewan border, 130 km north of the town of La Loche, and 640 km northwest of the city of Saskatoon (Figure 1.0-1). The Project would reside within Treaty 8 territory and within the Métis Homeland. At a regional scale, the Project would be situated within the southern Athabasca Basin adjacent to Patterson Lake, and along the upper Clearwater River system (Figure 1.0-2). Access to the Project would be from an existing road off Highway 955. The Project would include underground and surface facilities to support the extraction and processing of uranium ore from the Arrow deposit, a land-based, basement-hosted, high-grade uranium deposit.

The wildlife baseline report represents a component of a comprehensive baseline program that documents the natural and socio-economic environments in the anticipated area of the Project. The wildlife baseline program was undertaken to provide context from which Project wildlife effects could be assessed in the Environmental Impact Statement (EIS).

Since exploration at the Project commenced in 2013, NexGen has engaged regularly and established relationships with local First Nations and Métis Groups (collectively referred to as Indigenous Groups) and northern communities, specifically those closest and with greatest access to the proposed Project. NexGen respects the rights of Indigenous Peoples and the unique relationship Indigenous Peoples have with the environment, and recognizes the importance of full and open discussion with interested or potentially affected Indigenous communities regarding the development, operation, and decommissioning of the proposed Project. Engagement activities to date, as well as future planned engagement activities, reflect the value NexGen places on meaningful engagement with Indigenous and northern communities who could be potentially affected by the proposed Project. Engagement mechanisms have included, but are not limited to: meetings with leadership, workshops and community information sessions, Project site tours, establishing Joint Working Groups to support the gathering and incorporation of Indigenous and Métis Knowledge throughout the Environmental Assessment (EA) process, and providing funding for Traditional Land Use (TLU) Studies<sup>1</sup> to understand how the proposed Project may interact with the Indigenous communities' traditional use of the anticipated area of the Project.

Feedback received during engagement activities was documented for contribution to the EIS for the Project; examples of feedback received include discussion of concerns, interests, potential adverse effects, mitigation, and design alternatives. Many baseline studies were initiated in advance of formal engagement on the EA for the Project; however, engagement during the execution of baseline studies has helped inform the understanding of baseline conditions and confirmed components of the natural and socio-economic environments that required study. A summary of feedback related to the terrestrial baseline program is presented in Appendix A of the Wildlife Baseline Road Map (Annex VIII).

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<sup>1</sup> Traditional Land Use (TLU) Studies include all land use studies developed by the Project's affected Indigenous Groups, including Traditional Land Use and Occupancy studies, Traditional Knowledge and Use studies, and Indigenous Rights and Knowledge studies, henceforth referred collectively as TLU Studies.

Canada North Environmental Services (CanNorth) was retained to complete baseline investigations for select study components (SCs) for the Project. The details of studies conducted in 2018 to characterize aspects of the terrestrial environment, specifically amphibians, birds, and bats, are presented herein.

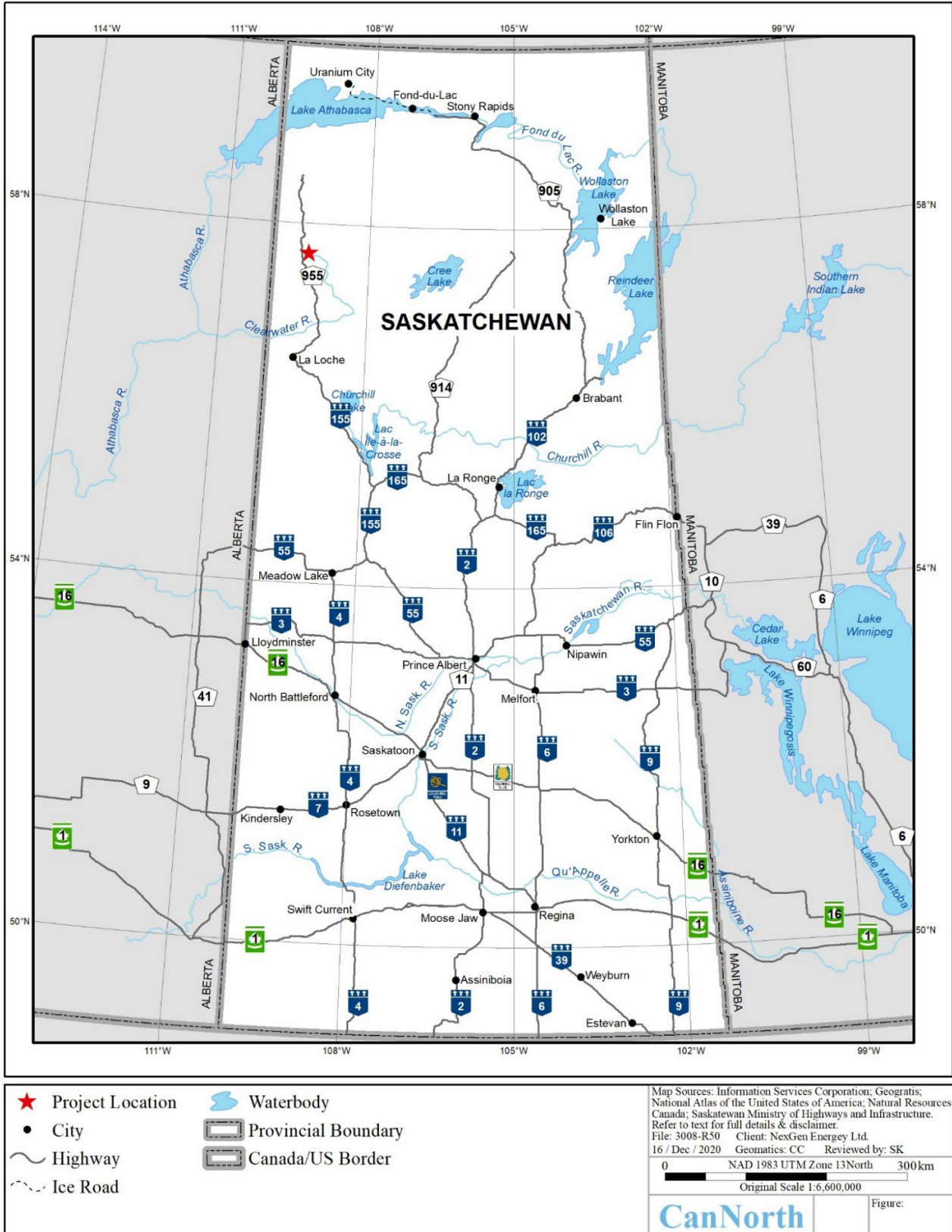


Figure 1.0-1: Location of the Rook I Project Within Saskatchewan

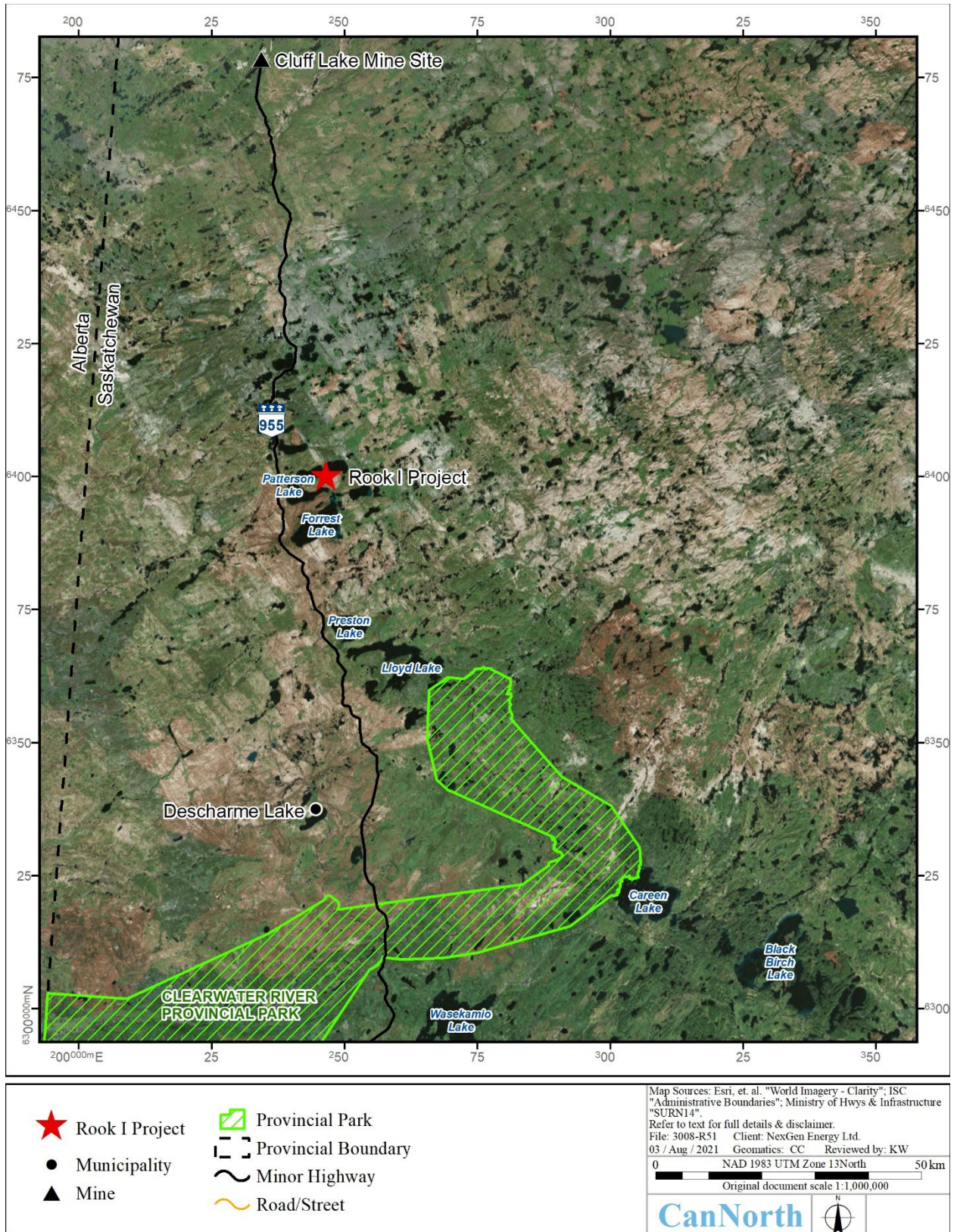


Figure 1.0-2: Location of the Rook I Project Within the Region

## 1.1 Study Objectives

The objective of the wildlife baseline program was to obtain comprehensive information to characterize wildlife, including species of conservation concern (SOCC) and the associated habitats within the area of the Project. Study components were chosen for the potential to be selected as a valued component (VC) during the EA process, based on best practices for baseline characterization (ENV 2014a; IAAC 2019; CNSC 2020). Valued components are those attributes that are scientifically, ecologically, historically, economically, socially, and culturally important to the government, Indigenous Groups, the public, the proponent, and other stakeholders (BC EAO 2013; ENV 2014a). Additionally, “the applicant or licensee should identify all biological species at risk (i.e., endangered, threatened, special concern, extirpated at a federal, provincial, or municipal level) known to occur in the area or where the site is within the range of the species” (CNSC 2020).

Collecting comprehensive baseline information on wildlife and wildlife habitat in the vicinity of the Project will provide valuable information for the EA, and planning mitigation measures, which aligns with items identified as important to Indigenous and Métis peoples in the region (Firelight Research Inc. 2019 a,b; WD Lewis & Associates Ltd. 2019; YNLR 2020; Origins Heritage Consulting Inc. 2020). Documenting wildlife species presence, as well as providing abundance estimates, will aid in determining which species to use as VCs for the EA, alongside Indigenous Knowledge gained through TLU studies and joint working group meetings held between NexGen and local community members.

A lifecycle approach was undertaken for the development and implementation of the Project baseline program that factored in data needs in the short and long term. The studies were designed to thoroughly prepare the Project for an EA, risk assessment and pathways modelling, as well as to establish long-term stations that can be sampled throughout the life of the mine. Studies completed provide quantitative data collected using accepted standards of good scientific practice and up-to-date sampling procedures and equipment. The study design involved sampling site, local, and regional study areas that included areas that can be used as reference sites during the operational phase of the Project.

To meet study objectives, the following desktop and field studies were completed as part of the wildlife baseline investigations for the Project:

- species of conservation concern database searches;
- autonomous recording units for detection of amphibians, birds, and bats;
- amphibian auditory surveys;
- breeding bird surveys;
- common nighthawk (*Chordeiles minor*) surveys;
- yellow rail (*Coturnicops noveboracensis*) surveys; and
- bat detection surveys.

The study design and objectives, methods, and results of each component of the wildlife baseline program conducted by CanNorth in 2018 are detailed in each section. Species nomenclature and common names used in this report follow the Saskatchewan Conservation Data Centre (SKCDC) taxa lists for vertebrates and invertebrates (SKCDC 2018a,b).

## 1.2 Study Area

### 1.2.1 Ecoregion Description

The Project footprint lies in the Boreal Plain Ecozone, with some portions of LSA (described below) extending into the Boreal Shield Ecozone. The Project footprint is within the Firebag Hills landscape area of the Mid-boreal Uplands Ecoregion, whereas the LSA is encompassed by two Ecoregions; the Mid-boreal Uplands Ecoregion plus the McTaggart Plain landscape area of the Athabasca Plain Ecoregion.

The Firebag Hills landscape area of the Mid-Boreal Upland Ecoregion is characterized by variable elevational gradients, ranging from 480 metres (m) to 580 m, with both strong and gentle rolling morainic hills (Acton et al. 1998). All water in this landscape area drains westward through the Clearwater River and associated watercourses. Regosolic soils are found predominantly on the eroding slopes of watercourses, whereas Dystric Brunisolic soils are found on more stable slopes and in the upland sections on top of sandy glacial till and glaciofluvial deposits. The vegetation on the northern part of this area is characterized by shrubby jack pine (*Pinus banksiana*) forests that possess lichen understoreys, a consequence of frequent forest fires and the sandy soils that lie beneath (Acton et al. 1998). Conversely, the poorly drained depression areas consist of tamarack (*Larix laricina*) and black spruce (*Picea mariana*) peatlands.

The McTaggart Plain landscape area of the Athabasca Plain Ecoregion has northward sloping hills from the southern point of this area, ranging from 540 m to 450 m (Acton et al. 1998). Sandy glaciofluvial deposits and eskers are abundant in the area, where Brunisolic soils can be found on these well-drained slopes and overtop the glacial till plains. Organic soils, Gleysolic soils, and Cryosolic soils dominate the poorly drained depression areas as well as large flat bogs, with permanently frozen Cryosols occasionally present. Jack pine and black spruce stands dominate the slopes of many eskers whereas open jack pine forests are exclusive to sandy glaciofluvial areas. The depression/boggy flat areas are covered in dense black spruce forests with stunted trees (Acton et al. 1998).

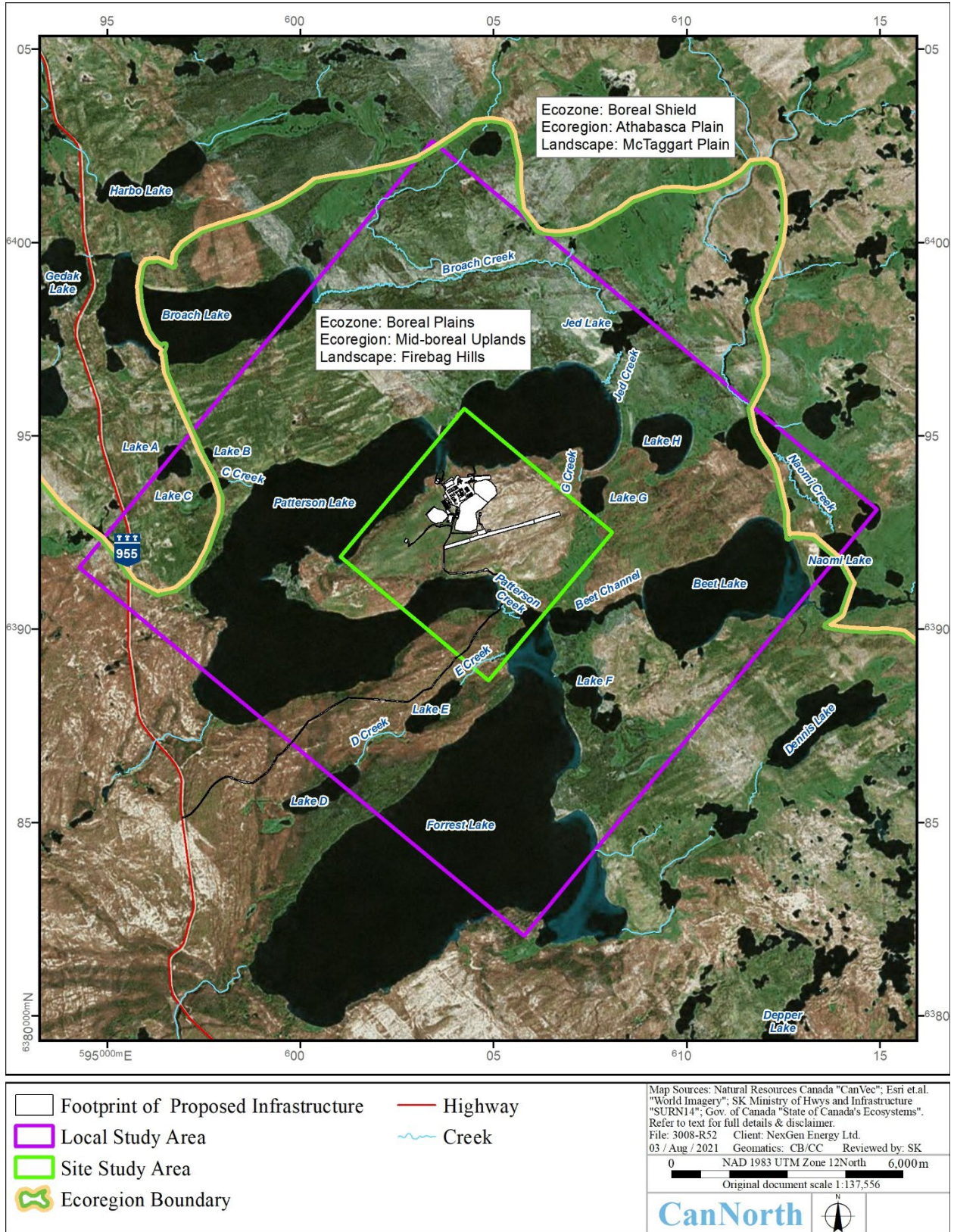
### 1.2.2 Wildlife Study Area

Study areas established for the wildlife baseline studies conducted by CanNorth in 2018 were determined based the deposit location, the preliminary site layout, regulatory requirements (provincial [GS 2014] and federal [IAAC 2019]), and study area sizes for other baseline investigations completed for similar northern mining developments (e.g., CanNorth 2010; 2013 a,b; AREVA 2016). Wildlife investigations were focused in a Site Study Area (SSA), as well as a broader Local Study Area (LSA), which are centred on the Arrow deposit (Figure 1.2-1).

The SSA included the area where the deposit and ultimately the construction and mine operations would occur. The SSA is where effects (i.e., total area subject to vegetation and soil disturbance which may have direct and indirect effects on wildlife) are expected to occur on the terrestrial environment (GS 2014) and consisted of an area 25 square kilometres (km<sup>2</sup>) (5 km x 5 km) that encompasses the entire Project footprint (Figure 1.2-1). The LSA included the area outside the SSA where there is reasonable potential of direct and/or indirect effects on the terrestrial environment from project activities (GS 2014). The LSA was centered on the SSA and consisted of an area 225 km<sup>2</sup> (15 km x 15 km). The SSA and LSA boundaries are of an appropriate scale and location for assessment of effects on potential VCs resulting from existing and planned activities (CanNorth 2010; 2013 a,b; GS 2014; IAAC 2019).

Due to the focus of these wildlife baseline investigations on select SCs, a regional study area (RSA) was not identified as such areas are generally used for assessing the potential for direct/indirect and/or cumulative effects on wildlife that have large home ranges or spatial movements, such as woodland caribou (*Rangifer tarandus caribou*) (McLoughlin et al. 2016).

Note that these baseline study boundaries were defined at the beginning of the baseline field studies to inform the field study designs; however, the SSA and LSA vary from those chosen for the effects assessment conducted when the Project design was finalized.



**Figure 1.2-1: Overview of the Site Study Area and Local Study Area Sampled for Wildlife Baseline Studies, 2018**

## 2.0 CONSERVATION DATABASE SEARCH AND EXISTING INFORMATION

### 2.1 Study Objectives

To meet regulatory guidance and scientific best practices, desktop database and information searches were completed prior to field baseline studies to aid in describing conditions in the terrestrial environment (ENV 2014a; IAAC 2019; CNSC 2020). The objective of the database searches was to summarize historical and geographical data on wildlife SOCC previously recorded or potentially found in the SSA and LSA. Species of conservation concern are likely to be considered VCs, as SOCC are scientifically, ecologically, historically, economically, and culturally important to the government, Indigenous groups, the public, the proponent, and other stakeholders (BC EAO 2013; GS 2014; IAAC 2019). Data provided by the database search results were used to plan in-field wildlife surveys, as well as inform field biologists of habitats which are likely to contain SOCC within the SSA and LSA.

### 2.2 Methods

Prior to field surveys, a list of wildlife SOCC was compiled. To identify habitats and SOCC that may occur within the SSA and LSA, provincial and federal databases were searched (IAAC 2019). Database searches were completed using the Hunting, Angling and Biodiversity Information of Saskatchewan (HABISask) mapping application (ENV 2018a) and the Species at Risk Public Registry (SARPR 2018). Search areas used for the HABISask database results encompassed a 30-km radius from the centre of the SSA. The Important Bird Areas (IBAs) of Canada Database (BSC 2015) was also accessed to determine if the LSA overlapped with any IBAs.

Search results for SOCC included federally listed species at risk and species considered provincially rare or sensitive that are expected to occur in the SSA and LSA, as well as previously recorded occurrences of rare, at-risk, and protected species in the vicinity of the LSA. Federally listed species at risk include species given a designation by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) and/or by the Species at Risk Act (SARA; SARA 2002; SARPR 2018). Provincially rare or sensitive species are designated S1 (critically imperiled/extremely rare), S2 (imperiled/very rare), S3 (vulnerable/rare to uncommon), SH (historically present without recent verification), SNR (species not yet provincially ranked), or SU (provincial status uncertain due to insufficient information) by SKCDC (2018a,b).

### 2.3 Results

No amphibian SOCC were found in the HABISask database search results; however, the range of northern leopard frog (*Lithobates pipiens*) and Canadian toad (*Anaxyrus hemiophrys*) overlap the SSA and LSA (Hamilton et al. 1998; SARPR 2018). Northern leopard frog is listed as a species of special concern under SARA and COSEWIC and is provincially-ranked S3 (Table 2.3-1). Canadian toad is not federally listed as a species at risk and is provincially ranked S4 (apparently secure), but does have a provincially-recommended setback distance associated with breeding and overwintering habitats.

Ten avian SOCC have been previously documented in HABISask within the 30-km radius search area (Table 2.3-1). Common nighthawk, olive-sided flycatcher (*Contopus cooperi*), and barn swallow (*Hirundo rustica*) are all listed as threatened by COSEWIC and SARA (SARPR 2018). Seven additional bird species, including common goldeneye (*Bucephala clangula*), Bonaparte's gull (*Chroicocephalus piladelphia*), common loon (*Gavia immer*), bald eagle (*Haliaeetus leucocephalus*), herring gull (*Larus argentatus*), American white pelican (*Pelicanus erythrorhynchos*), and common tern (*Sterna hirundo*) are not listed

federally but have provincially-recommended setbacks and/or are ranked S3M (vulnerable/rare to uncommon and transient) by SKCDC (ENV 2017; SKCDC 2018a).

Two bat species at risk were identified by the HABISask database search to have ranges that are within 30 km of the Project (Table 2.3-1). Little brown myotis (*Myotis lucifugus*) and northern myotis (*Myotis septentrionalis*), have breeding ranges overlapping the SSA and LSA (SARPR 2018). These species are listed as endangered by COSEWIC and SARA and are provincially-ranked S4 and S3, respectively (Table 2.3-1) (SARPR 2018; SKCDC 2018a). In addition, all bat species have an activity restriction setback for medium and high disturbance activities from their roost/foraging sites of 500 m year-round under the Saskatchewan Ministry of Environment's Activity Restriction Guidelines for Sensitive Species (ENV 2017).

The boreal population of woodland caribou is designated as threatened by COSEWIC and SARA and is provincially-ranked S3 (Table 2.3-1)(SARPR 2018; SKCDC 2018a). Habitat potential for this species is classified as medium to high throughout the majority of the SSA and LSA (ENV 2018a).

## 2.4 Existing Information

There is a paucity of existing information concerning amphibians, bats, and breeding birds in the area of the Project and in the region of northwest Saskatchewan. The HABISask mapping application (ENV 2018a) contains data on wildlife species submitted to the province as part of industrial and research activities. The HABISask application is the best place to look for existing wildlife information in the province (Dr. R. Fisher, Royal Saskatchewan Museum, pers. comm.).

No known amphibian surveys have occurred in the area of the Project due to its remote location in the northwest corner of the province (A. Didiuk, Canadian Wildlife Service, pers. comm.). Additionally, bats remain one of the least studied groups in Saskatchewan and to our knowledge, no studies have been completed within the area of the Project (Dr. M. Brigham, University of Regina, pers. comm.). A bat research project has just been initiated in the vicinity of Uranium City, Saskatchewan which is approximately 200 km north of the area of the Project (Dr. J. Lane, University of Saskatchewan, pers. comm.). Breeding bird surveys have increasingly been completed in the northwest part of the province as part of the ongoing Saskatchewan breeding bird atlas (SBBA 2021). In addition, the Canadian Wildlife Service has been completing aerial waterfowl surveys along pre-determined transects in strata 21 in northwest Saskatchewan since 1955 (USFWS 2021) focused on select species of diving and dabbling ducks. However, currently, no breeding bird surveys or aerial waterfowl surveys occur in the area of the Project (USFWS 2021; NABBS 2021; SBBA 2021).

To provide existing information on these three groups, a review of general species accounts or regional group summaries was completed below, along with descriptions of habitat types preferred by the species known to occur in the region.

### *Amphibians*

There is the potential for four amphibian species to occur within the area of the Project; boreal chorus frog (*Pseudacris maculate*), wood frog (*Lithobates sylvaticus*), Canadian toad, and northern leopard frog. Canadian toads and northern leopard frogs are both sensitive species that have been observed as far north as Lake Athabasca in Saskatchewan, and both species have undergone population declines across their range (Browne 2009; Wagner 1997). Boreal chorus frogs and wood frogs are secure within the province.

Northern leopard frogs generally require three habitat types during their yearly cycle, including breeding wetlands, wintering habitat, and vegetated uplands used primarily for feeding during the late summer period in-between breeding and overwintering (COSEWIC 2009). Overall, in order to support northern leopard frogs, these habitat types must be spaced reasonably close together on the landscape. Their overwintering habitat is typically cold, well oxygenated waterbodies that do not freeze solid. After emergence from overwintering habitat, frogs begin their migration to breeding habitats in the spring between April and June. Adult frogs can travel up to 1.6 km to breed in shallow, warm waters of wetlands, margins of lakes, marshes, dugouts, springs, beaver ponds, flooded ditches, borrow pits, and slow moving waters of streams and rivers; in general suitable wetland habitat is signified by emergent and submergent vegetation where they can deposit eggs.

Canadian toads are most active at night hunting for food from May to October. They rest during the day and hide underneath leaves, rocks, logs or in patches of tall grass. In late fall they dig into soft ground by digging their back feet and burying down deep past the frost line where they spend the winter hibernating. Their breeding habitat consists of shallow lakes, ponds, or temporary bodies of water (Nature North 2021).

Boreal chorus frogs prefer forest openings surrounding woodland ponds for their preferred habitat. They will breed in fishless ponds with at least 10 cm of water, including shallow lakes, swamps, marshes, beaver ponds, roadside ditches, and flooded areas (Nature Watch 2021). Their overwintering strategy is hibernation and adults are freeze tolerant. They overwinter in underground rodent burrows, underneath vegetation or debris, and in crevices of rocks and logs (Government of Montana 2021).

Finally, wood frogs inhabit moist woodlands and vernal woodland pools for breeding. They are the early breeders and can begin calling when there is still ice present on the ponds in the spring. They are also freeze tolerant and hibernate underneath logs or leaf litter on the forest floor (Nature Watch 2021).

### *Bats*

There is the potential for six bat species to occur within the area of the Project; big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasiurus borealis*), hoary bat (*Lasiurus cinereus*), little brown bat, and northern myotis.

Big brown bat, little brown bat, and northern myotis all have an overwinter strategy of hibernating and their preferred habitats include caves and abandoned mines (AFWD 2006; Nature Serve 2009). These species tend to overwinter in caves and abandoned mines with densities up to 300,000 individuals in a single cave; they prefer large cavities a few degrees above freezing with a humidity level close to 80 %. All three species tend to return to the same overwintering site year after year. Little to no research has been completed on hibernating bats in caves in Saskatchewan. Dr. Mark Brigham, a Professor of Biology at the University of Regina who is an expert bat researcher, is unaware of any active hibernaculum in caves in Saskatchewan (Brigham pers. comm.). During the spring, females move to daytime roosts or maternity colonies to give birth; these may be areas such as the attics of buildings (Forsyth 1999; COSEWIC 2013). On the other hand, males are typically solitary and spread out from overwintering sites using temporary roosts in cavities near foraging areas (Forsyth 1999; COSEWIC 2013). Summer roosting habitat includes tree cavities, beneath exfoliating bark on trees, tree cavities and branches, and rock crevices (AFWD 2006). Mating occurs in the late summer and early fall, with males often perching in caves to produce echolocation calls

to court females. Old mines have also been known to be used as temporary roosts for courtship and mating or to raise their young (Tuttle et al. 1998).

Hoary bats are solitary, migratory, and overwinter in southern California, southeastern United States, Mexico, and Guatemala, although some have been known to overwinter in their northern range. They migrate and raise their young throughout Canada and the northern United States. Usually, only females and their young inhabit Canada while the males typically spend their summer in the western United States. They inhabit treed areas, including edges of clearings, heavy forests, open wooded areas, and shade trees along urban streets and in city parks. Hoary bats roost three to five metres above the ground during the day, usually in the foliage of trees, preferring dense leaf coverage. They may also be found roosting in tree cavities, under driftwood planks, overhangs of buildings and in caves (Anderson 2002; AEP 2009).

Silver-haired bats are colonial, migratory and overwinter in the southern United States. They migrate and raise their young throughout Canada and the United States. They inhabit coniferous or mixed coniferous and deciduous forest and summer roost in near the tops of trees, under tree bark or in tree cavities. Silver-haired bats feed in disturbed areas, tree-top level, small clearings and along roadways or watercourses. (BCI 2021a).

Eastern red bats are solitary, migratory and overwinter in the eastern part of North America. They inhabit foliage of deciduous or evergreen trees and tend to feed around forest edges, in clearings or around street lights (BCI 2021b).

#### *Breeding Birds*

The area of the Project spans two large bird conservation regions consisting of Boreal Taiga Plains (Boreal Plains) and Boreal Softwood Shield (Prairie Northern Region). Numerous bird species breed in these areas of the boreal forest. In Bird Conservation Region (BCR) 8 (boreal soft shield), there are approximately 215 bird species (upland breeding landbirds, shorebirds, waterbirds, and waterfowl) known to occur with 67 species that have been identified as priority species based on their distribution and abundance, their threats, their federal and provincial status, their inclusion in regional and continental conservation/stewardship plans, or based on expert opinion (EC 2014). Landbirds are the most represented species out of the 215 known bird species, representing approximately 152 species. Wetlands are some of the most important habitat features for birds in this region, with one third of the priority species using this cover type. Additionally, forests and shrub/early successional habitat are also used widely by priority species in this region. In BCR 6 (boreal plains), there are approximately 288 bird species known to occur, with 120 species that have been identified as priority species based on their distribution and abundance, their threats, their federal and provincial status, their inclusion in regional and continental conservation/stewardship plans, or based on expert opinion. Landbirds are the most represented species out of the 288 known bird species, representing approximately 150 species. The majority of the priority species (66%) prefer wetland habitat, with the second favored habitat being shrub/early successional forest (EC 2013).

Table 2.3-1: Database Search Results for Wildlife Species of Conservation Concern Potentially Occurring in the Local Study Area

Scientific Name	Common Name	Federal Rank and Activity Restriction Guidelines					Provincial Rank and Activity Restriction Guidelines				Habitat
		COSEWIC Status	SARA Status	Protected Aspect	Restricted Activity Dates	Setback Distance (m)	SKCDC Rank	Protected Aspect	Restricted Activity Dates	Setback Distance (m)	
<b>Amphibians</b>											
<i>Anaxyrus hemiophrys</i>	Canadian toad	-	-	-	-	-	S4	Breeding and overwintering habitat	Year round	90	Breeds in shallow areas of ponds, lakes and marshes. Winters in uplands in areas with sandy soil (NatureServe 2018).
<i>Lithobates pipiens</i>	Northern leopard frog	Special Concern	Special Concern	Breeding pond, wintering site	Year round	400	S3	Breeding and overwintering habitat	Year round	500	Breeds in pools, ponds, marshes, lakes, and slow-moving streams and creeks. Overwinters in large, well oxygenated waterbodies that do not freeze to the bottom (SARPR 2018).
<b>Birds</b>											
<i>Bucephala clangula</i>	Common goldeneye	-	-	Nest	During nesting period	10-30 up to 50+	S5B,S3M	-	-	-	Nests in tree cavities or infrequently, rock crevices, near wetlands, lakes, and rivers (Rodewald 2018).
<i>Chordeiles minor</i>	Common nighthawk	Threatened	Threatened	Nest	May 1 to August 31	200	S4B,S4M	Breeding bird	May 1 to August 31	200	Nests in a wide variety of open habitats including dunes, beaches, burns, logged areas, rocky outcrops, clearings, grasslands, and open forests (Rodewald 2018).
<i>Chroicocephalus piladelphia</i>	Bonaparte's gull	-	-	-	-	-	S4B,S4M	Nesting colony	May 1 to July 15	400	Nests in openings or edges of boreal forests, typically in coniferous trees adjacent to lakes, marshes, or muskegs (Rodewald 2018).
<i>Contopus cooperi</i>	Olive-sided flycatcher	Threatened	Threatened	Nest	May 1 to August 31	300	S4B,S4M	Breeding bird	May 1 to August 31	300	Nests in montane and northern open coniferous forests, typically preferring forest edges and riparian areas (Rodewald 2018).
<i>Euphagus carolinus</i>	Rusty Blackbird	Special concern	Special concern	Nest	May 1 to July 31	300	S3B,SUN,S3M	Breeding bird	May 1 to July 31	300	Nests close to water in wet coniferous and mixed-wood forests, fens, bogs, muskegs, and forest openings (Rodewald 2020).
<i>Gavia immer</i>	Common loon	Not at Risk	-	-	-	-	S5B,S5M	Breeding bird	May 15 to July 15	200	Nests on islands and in sheltered coves of large, clear lakes (Rodewald 2018).
<i>Haliaeetus leucocephalus</i>	Bald eagle	-	-	-	-	-	S5B,S4M	Nest site	March 15 to July 15	1000	Nests in forested areas or cliff faces adjacent to waterbodies supporting large-bodied fish (Rodewald 2018).
<i>Hirundo rustica</i>	Barn swallow	Threatened	Threatened	Active nest	May 1 to August 31	100	S5B,S5M	-	-	-	Nests almost exclusively on human-made structures such as barns, houses, or bridges, with a sheltering overhang and nearby open areas for foraging (Rodewald 2018).
<i>Larus argentatus</i>	Herring gull	-	-	-	-	-	S5B,S5M	Nesting colony	May 1 to July 15	400	Nests on dry, well-drained islands or other sites inaccessible to predators, often with some vegetative cover (Rodewald 2018).
<i>Pandion haliaetus</i>	Osprey	-	-	-	-	-	S2B,S2M	Nest site	May 1 to August 15	1000	Nests in trees or elevated structures near shallow, fish-bearing waters (Rodewald 2020).
<i>Pelicanus erythrorhynchos</i>	American white pelican	Not at Risk	-	-	-	-	S5B,S5M	Nesting colony	April 1 to July 31	1000	Nests colonially on isolated islands in freshwater lakes and rivers. Feeds in shallow lakes, rivers, and marshes (Rodewald 2018).
<i>Sterna hirundo</i>	Common tern	Not at Risk	-	-	-	-	S5B,S5M	Nesting colony	May 1 to July 15	400	Nests on treeless islands with rocky or gravelly substrate (Rodewald 2018).

Scientific Name	Common Name	Federal Rank and Activity Restriction Guidelines					Provincial Rank and Activity Restriction Guidelines				Habitat
		COSEWIC Status	SARA Status	Protected Aspect	Restricted Activity Dates	Setback Distance (m)	SKCDC Rank	Protected Aspect	Restricted Activity Dates	Setback Distance (m)	
<i>Strix nebulosa</i>	Great Grey Owl	-	-	-	-	-	S3	Nest site	March 1 to July 15	400	Nests in mixed-wood to coniferous forests and treed bogs (Rodewald 2020).
<b>Mammals</b>											
<i>Eptesicus fuscus</i>	Big Brown Bat	-	-	-	-	-	S5	Roost/Foraging Site	Year round	500	Forages in tree foliage, over water, or in urban areas. Roosts in buildings, structures, tree hollows or crevices, and rock crevices (NatureServe 2020).
<i>Gulo gulo</i>	Wolverine	Special concern	Special concern	Den	Year round	500	S2	Protected Vertebrata	-	-	Dens in caves, rock crevices, fallen trees, and thickets in boreal, arctic, and montane coniferous forests and tundra (NatureServe 2020).
<i>Lasiurus borealis</i>	Eastern Red Bat	-	-	-	-	-	S4B	Roost/Foraging Site	Year round	500	Forages in woodlands, in pastures, in urban parks, and over water. Roosts in foliage or bark of hardwood trees (NatureServe 2020).
<i>Lasiurus cinereus</i>	Hoary Bat	-	-	-	-	-	S5B	Roost/Foraging Site	Year round	500	Forages over water and along riparian corridors. Roosts in deciduous or coniferous trees (NatureServe 2020).
<i>Lasionycteris noctivagans</i>	Silver-haired Bat	-	-	-	-	-	S5B	Roost/Foraging Site	Year round	500	Forages over small waterbodies or within forested areas. Roosts in snags, tree foliage, tree cavities, and sometimes buildings (NatureServe 2020).
<i>Lontra canadensis</i>	River Otter	-	-	-	-	-	S3	Protected Vertebrata	-	-	Dens in hollow logs, burrows, or shrubby thickets along streams, lakes, ponds, marshes, estuaries, and coasts (NatureServe 2020).
<i>Myotis lucifugus</i>	Little brown myotis	Endangered	Endangered	-	-	-	S4	Roost and foraging site	Year round	500	Forages in lake and stream margins and in woodlands near water. Uses caves, hollow trees, and anthropogenic structures for roosting and raising young (NatureServe 2018).
<i>Myotis septentrionalis</i>	Northern myotis	Endangered	Endangered	-	-	-	S3	Roost and foraging site	Year round	500	Forages in forests, forest edges, and clearings, and occasionally over ponds. Roosts in dead or dying trees, crevices, and caves (NatureServe 2018).
<i>Rangifer tarandus caribou</i>	Woodland caribou	Threatened	Threatened	-	-	-	S3	-	-	-	Mature coniferous forests and forested peatlands rich in lichens (NatureServe 2018).
<b>Insects</b>											
<i>Actias luna</i>	Luna Moth	-	-	-	-	-	S2	-	-	-	Mixedwood and hardwood forests, usually containing its preferred host, white birch ( <i>Betula papyrifera</i> ) (UofA 2018).

### 3.0 AUTONOMOUS RECORDING UNITS

#### 3.1 Study Objectives

To meet regulatory guidance and scientific best practices, field surveys were completed to assist in describing terrestrial environmental conditions (ENV 2014a; IAAC 2019; CNSC 2020). The objective of the field surveys was to summarize wildlife species distribution, habitat preferences, and identification of wildlife SOCC in the SSA and LSA. Objectives of specific field surveys are described in more detail in relevant sections below, with the value of acoustic surveys highlighted in this section. Acoustic surveys can be used to sample a large variety of taxa, including breeding birds, amphibians, and bats. This survey type can be conducted passively by listening for species-specific vocalizations during a set time interval, or these surveys may be supplemented with the use of a call broadcast (i.e., playing vocalizations of target species through speakers to elicit a behavioural response).

Another option for acoustic surveys is autonomous recording units (ARUs), which can be used as a cost-effective method for increasing sampling intensity for a variety of acoustic wildlife surveys especially in remote areas. Using ARUs can increase temporal sampling effort in areas with poor accessibility and may provide multiple improvements to sampling techniques, especially nocturnal surveys. In general, benefits of ARUs include increased observer safety, reduced human disturbance during sampling, the ability to sample multiple time intervals at each location to encompass temporal variation in peak detection periods, and detecting species that vocalize infrequently or inhabit remote areas (Goyette et al. 2011; Digby et al. 2013; Sidie-Slettedahl et al. 2015). Overall, ARUs are comparable to acoustic surveys with human observers in terms of target species detection probability (Shonfield et al. 2017; Van Wilgenburg et al. 2017). However, ARUs generate permanent records of acoustic surveys, which can be used to confirm identification of rare or sensitive species (Jones et al. 2007; Swiston and Mennill 2009) and the ARU recordings generate large volumes of baseline data, which can be stored digitally and used for future monitoring programs. ARUs are considered an acceptable alternative to a variety of in-situ surveys by ENV (2014b,c,d; 2015). Here, ARUs were used during field surveys for birds and amphibians to supplement in-situ human observer survey effort for several survey types throughout the SSA and LSA.

#### 3.2 Methods

Fifteen ARUs (Wildlife Acoustics Model SM4) were deployed within the SSA (5 units) and LSA (10 units) in May 2018. Deployment sites were selected to ensure adequate coverage of various habitat types within the SSA and LSA, and consisted of areas with high habitat potential for multiple taxa (i.e., sensitive nocturnal bird species and amphibians; Figure 3.2-1; Table 3.2-1). Additionally, ARUs were primarily deployed in locations difficult or unsafe to access under nocturnal conditions, or prohibitively time-consuming to access within required survey timing intervals. To ensure consistency across sampling stations, ARUs were mounted at a height of 1.5 m (i.e., approximately head height) on the north side of trees such that microphones would have an east/west orientation. The diameter of selected trees did not exceed a width of 13 centimetres (cm) to reduce microphone obstruction (Appendix A, Photo 1).

Prior to deployment, all ARUs were programmed to facilitate auditory detection of multiple taxa. A dawn schedule was programmed to supplement breeding bird survey data and a dusk schedule was programmed to optimize detection of amphibians, and nocturnal birds (common nighthawks, yellow rails, and owl species). Schedules were programmed as follows:

- Dawn schedule: 30 minutes before sunrise – 4 hours after sunrise. Recording for 10 minutes every hour (i.e., on for 10 minutes, off for 50 minutes).
- Dusk chorus: 30 minutes before sunset – 5 hours after sunset. Recording for 10 minutes every hour (i.e., on for 10 minutes, off for 50 minutes).

ARUs were programmed to record to two 32 GB secure digital (SD) cards in uncompressed stereo WAV format with a sample rate of 44100 hertz (Hz) and microphone acoustic gain was set at 16.00 decibels (dB) with a preamplifier setting of 26 dB. Recordings were scheduled to start on 23 May 2018 and to run on the programmed schedule until the ARUs were retrieved in mid-July. ARU status was checked on subsequent visits to ensure proper function and to download data as required.

### **3.3 Results**

All ARU's were functional throughout the survey periods for amphibians, breeding birds, and nocturnal birds (deployed 21 May and retrieved 10 July 2018) with no damage or malfunctions recorded. The total number of files successfully recorded was 8,932 ranging from 519 to 674 files per ARU, with a mean of 595 files per ARU. Total recorded data amounted to 1,488 hours.

Results specific to each survey are presented in detail in the following sections:

- Amphibian – Section 4.3
- Common nighthawk – Section 5.3
- Yellow rail – Section 6.3
- Breeding bird – Section 7.4



Figure 3.2-1: Autonomous Recording Unit Locations, May to July 2018

**Table 3.2-1: Autonomous Recording Unit Locations, May to July 2018**

ARU ID	UTM Location <sup>a</sup>		Project Study Area <sup>b</sup>	Habitat Description
	Easting	Northing		
ARU 01	601313	6398648	LSA	Mature jack pine adjacent burned forest and young conifer.
ARU 02	605792	6398598	LSA	Young and mature jack pine.
ARU 03	609906	6395870	LSA	Burned forest and bog, and mature conifer.
ARU 04	608183	6396958	LSA	Mature jack pine and creek with bridge.
ARU 05	603794	6394437	SSA	Mature jack pine adjacent to Patterson Lake shoreline.
ARU 06	599235	6391405	LSA	Mature jack pine adjacent to Patterson Lake shoreline.
ARU 07	606541	6385407	LSA	Mature jack pine and birch adjacent to Forest Lake shoreline.
ARU 08	603388	6391742	SSA	Black spruce bog adjacent to temporary drill trail.
ARU 09	605602	6393303	SSA	Young jack pine.
ARU 10	607388	6394103	LSA	Mature jack pine adjacent to Patterson Lake shoreline.
ARU 11	605113	6390534	SSA	Mature jack pine and birch adjacent to Patterson Lake and Patterson Creek opening.
ARU 12	602685	6387383	LSA	Mature jack pine and birch adjacent to small lake.
ARU 13	606593	6388821	LSA	Mature jack pine adjacent to bog and Forest Lake.
ARU 14	608124	6390784	LSA	Burned forest and bog adjacent to Beet Lake Channel.
ARU 15	601850	6391262	SSA	Black spruce bog adjacent to mature jack pine.

a) UTM = NAD 83 Zone 12U.

b) LSA = Local Study Area; SSA = Site Study Area.

## 4.0 AMPHIBIAN ACOUSTIC SURVEYS

### 4.1 Study Objectives

To meet regulatory guidance and scientific best practices, amphibian acoustic surveys were completed in the summer of 2018 to assist in describing terrestrial environmental conditions (ENV 2014a; IAAC 2019; CNSC 2020). The objectives of the amphibian acoustic surveys were to document distribution, abundance, and species composition of amphibians potentially occurring within the SSA and LSA, including SOCC. As amphibian SOCC are a potential VC, resulting data will assist in identifying amphibian populations and habitat features that may be protected under provincial or federal legislation, including activity restriction guidelines and/or SARA (EC 2009; ENV 2017; SARA 2002). Habitat features that support breeding or over-wintering amphibian SOCC, such as wetlands used as breeding and over-wintering sites, may also be considered as VCs.

### 4.2 Methods

Amphibian acoustic surveys were completed to determine the presence and distribution of amphibian species in the area of the Project. Two sensitive species (i.e., Canadian toad and northern leopard frog) have biogeographical ranges that are known to overlap the area of the Project, and both species have been observed as far north as Lake Athabasca in Saskatchewan. Population declines have been observed across the respective habitat ranges of both the Canadian toad and northern leopard frog (Browne 2009; Wagner 1997). Survey timing was designed to maximize detection of these species.

A total of sixteen survey sites in the SSA (6 sites) and LSA (10 sites) were surveyed using either in-situ observers (7 instances) or ARUs (9 instances). Survey locations were situated in areas with high habitat potential for breeding amphibians, such as slow-moving shallow streams, semi-permanent wetlands, marshes, and shallow lake margins with emergent vegetation. Wetlands at which amphibian surveys were completed were classified during daylight hours using habitat field guides by McLaughlan et al. (2010) and Smith et al. (2007) (see Annex VII.2 Vegetation Baseline Report 2).

Amphibian surveys were conducted in accordance with the CanNorth Standard Operating Procedure (SOP) for amphibian acoustic surveys, which was adapted from Kendell's methods for surveying northern leopard frogs (Kendell 2002) and ENV's species detection survey protocol for amphibian auditory surveys (ENV 2014b). This SOP conforms to ENV guidelines, accounts for potential VCs, and meets Canadian Nuclear Safety Commission (CNSC) standards for characterizing baseline environments (ENV 2014a,b; CNSC 2020). A Species Detection Research Permit (#18SD005) was obtained from ENV, Fish and Wildlife Branch.

At each location, in-situ surveys consisted of a one-minute acclimation period to allow for amphibians to resume normal activities after being potentially disturbed by the observers' arrival, followed by a five-minute listening period, during which all amphibians heard were recorded. Amphibian acoustic observations were categorized utilizing a call intensity index on a four-point scale (below):

- 0: No amphibians of a given species calling;
- 1: Individuals counted - no overlapping calls (1-5 individuals calling);
- 2: Calls overlapping, but distinguishable (6-10 individuals calling); and
- 3: Full continuous chorus - calls not distinguishable (>10 individuals calling).

Surveys were completed within the nightly peak calling period for most amphibian species (i.e., between 30 minutes before sunset and 1:00 a.m.) and were only completed under suitable weather conditions as outlined by ENV protocols (i.e., suitable water temperatures, no or minimal precipitation, and wind speeds below 20 kilometres per hour [km/h]). Habitat details, UTM coordinates, survey time, and ambient weather conditions were additionally recorded. Surveys were repeated three times and were performed from 21 May 2018 to 24 May 2018, 10 June 2018, and from 19 June 2018 to 21 June 2018, to encompass seasonal variation among species. ARU recordings were analyzed in the office, after unit retrieval, using the same listening intervals (i.e., 5 minutes per site) and the same sampling effort per site (i.e., 3 recordings spaced from 21 May 2018 to 21 June 2018).

To supplement survey efforts, automated recognition of northern leopard frog and Canadian toad calls were also completed on the entirety of audio recordings from ARUs that fell within protocol conditions (e.g., date, time of day). Species specific recognizers were built using known amphibian calls and were analyzed against all requisite ARU recordings using Kaleidoscope Pro (Ver. 5.1.4). Results were reviewed manually to remove false positives.

### 4.3 Results

Sixteen nocturnal acoustic surveys, including field visits and ARU data recordings, were completed for amphibian species with three surveys being completed at each location (Figure 4.3-1; Appendix A, Photo 2; Appendix B, Table 1).

Two species of amphibians were detected in the area of the Project, including Canadian toads and wood frogs (*Lithobates sylvaticus*). Canadian toads were the most commonly detected amphibians heard during the in-situ and ARU surveys and were found at four of the survey locations (Figure 4.3-2; Appendix B, Table 1). Detection was highest during the first round of surveys (at 4 locations), and dropped to one and two locations in the subsequent two surveys, respectively.

Canadian toads were found incidentally in three additional locations during other surveys completed in the area of the Project. Two Canadian toads were observed in amplexus (i.e., mating posture) during aquatic field surveys at Naomi Lake in May 2018 (Figure 4.3-2; Appendix A, Photo 3; Appendix B, Table 2). Another two individual Canadian toads were detected during yellow rail surveys completed at two separate wetlands in late July 2018 (one field survey and one ARU survey; Figure 4.3-2; Appendix B, Table 2). Additionally, Canadian toads were detected within recordings analyzed for yellow rails and common nighthawks at two of the ARU stations where Canadian toads had been previously recorded during the targeted amphibian surveys. All observations from in-situ and ARU recordings were categorized with a calling index of 1 (i.e., a single individual heard) (Figure 4.3-2; Appendix B, Tables 1 and 2). Finally, Canadian toads were detected within automated recognition of ARU data at two stations where the species had been previously recorded during targeted surveys and at a third station that had no previous detections (Figure 4.3-2; Appendix B, Table 2). The total number of detection locations for Canadian toads, including survey results and incidental observations, included two sites in the SSA and six sites in the LSA. Canadian toads are listed as apparently secure (S4) by the SKCDC, but have a provincial activity restriction guideline recommending a 90-m setback from breeding and overwintering habitat for medium or high disturbance activities year-round (ENV 2017; SKCDC 2018a). Canadian toads are not listed under SARA (SARPR 2018).

Wood frogs were detected during the 24 May 2018 surveys at 2 (at AMPA02 and AMPA04) of the 16 survey sites. An individual wood frog was also detected incidentally in the LSA (at Survey Location YERA\_01) during yellow rail surveys. The timing of wood frog observations in the area of the Project (i.e., during the first survey only) reflects the natural phenology of these species, with a significant reduction in breeding activity towards the end of the season (ENV 2014b). Wood frogs are ranked as secure/common (S5) in Saskatchewan (SKCDC 2018a) and are not listed under SARA or COSEWIC (SARPR 2018). No provincial or federal activity restriction guidelines pertain to wood frogs in Saskatchewan.

Northern leopard frogs were not detected during the amphibian auditory surveys nor incidentally during the 2018 field season. Additionally, there was no indication of northern leopard frogs from the automated recognition of data from ARU recordings. No amphibian acoustic surveys were conducted in 2020.

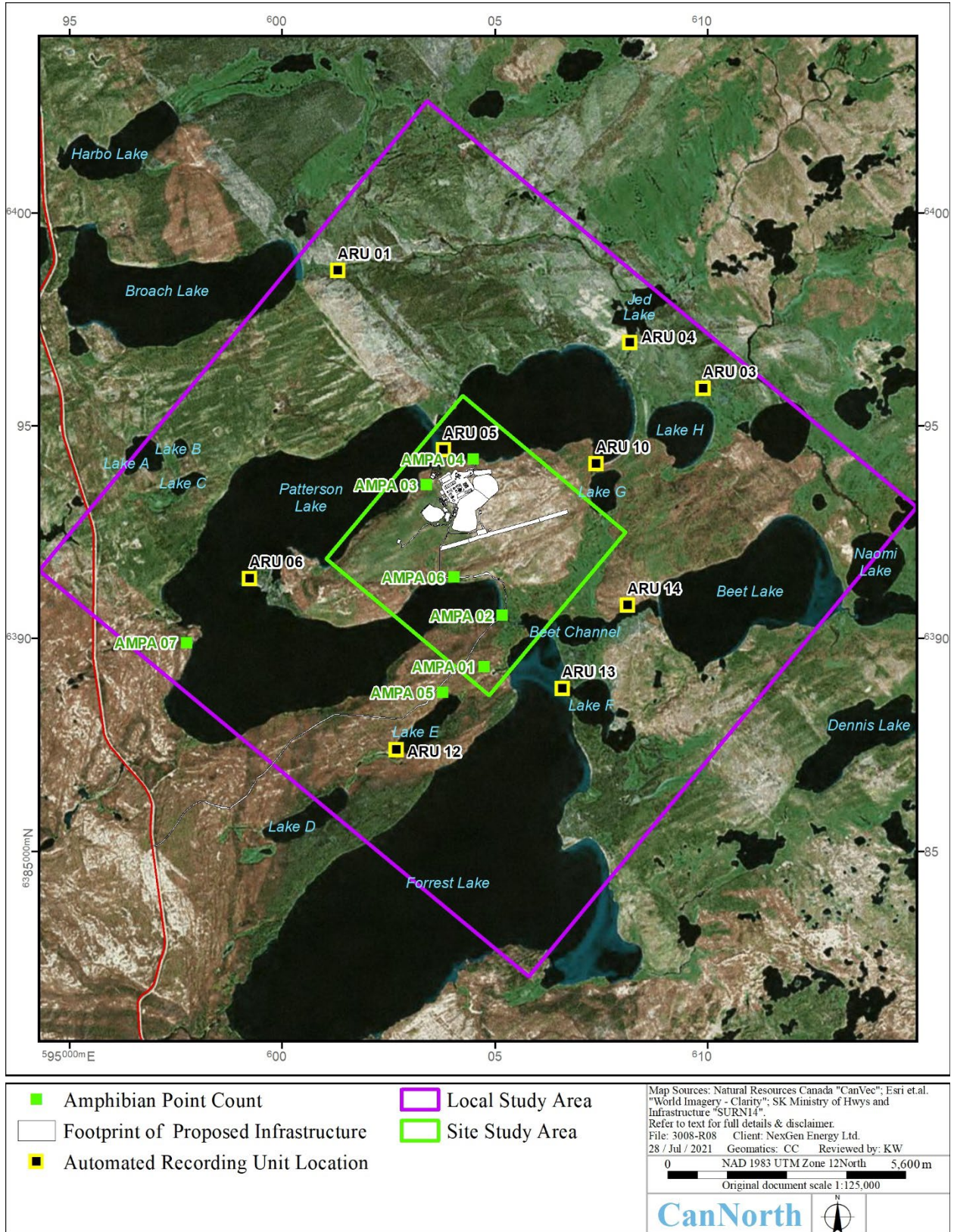
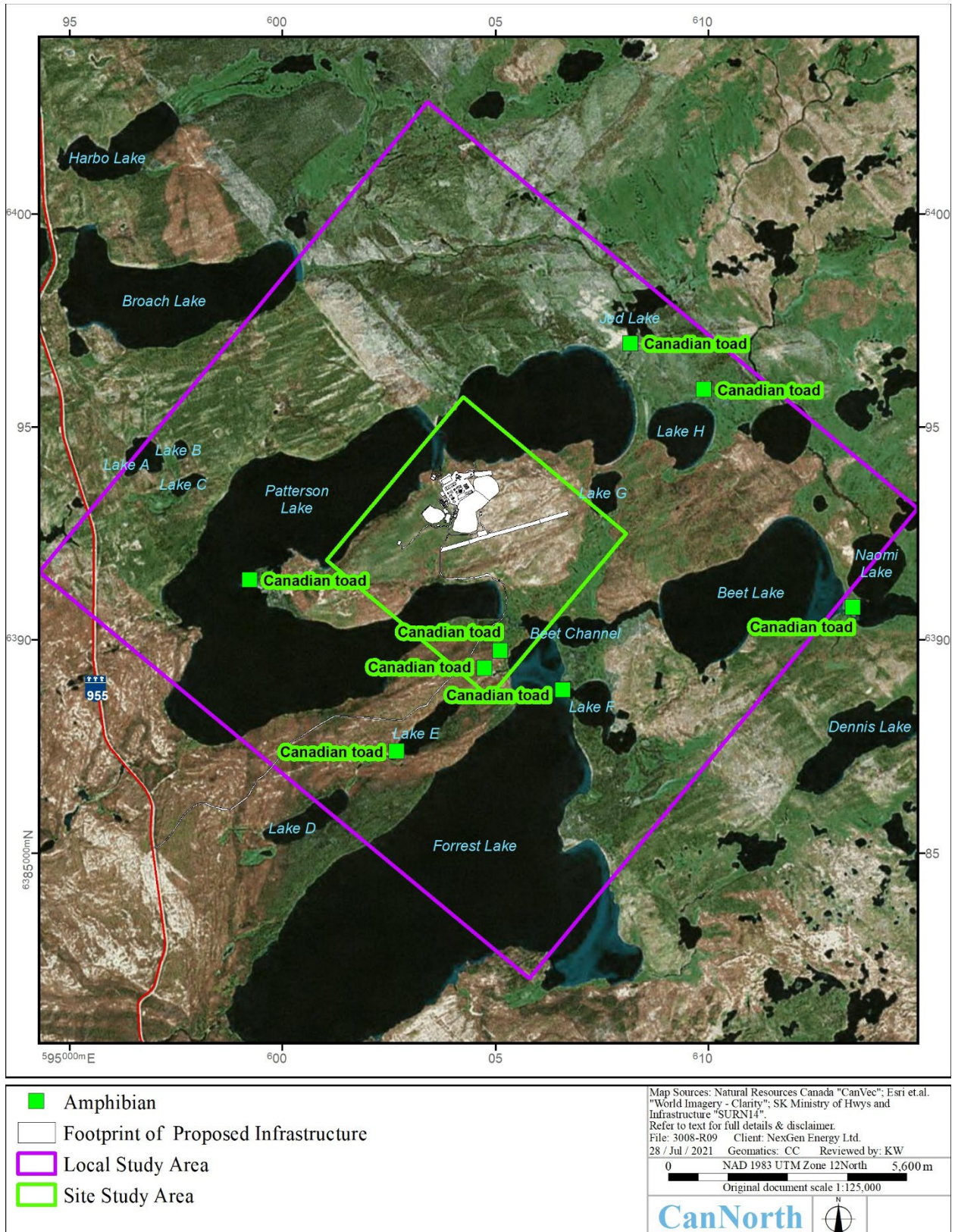


Figure 4.3-1: Amphibian Acoustic Survey Locations, May and June 2018



**Figure 4.3-2: Locations of Amphibian Species of Conservation Concern Detected During Amphibian Acoustic Surveys and Incidentally, 2018**

## 5.0 COMMON NIGHTHAWK SURVEYS

### 5.1 Study Objectives

To meet regulatory guidance and scientific best practices, common nighthawk surveys were completed in the summer of 2018 to support description of the terrestrial environmental conditions (ENV 2014a; IAAC 2019; CNSC 2020).

The objectives of the surveys were to document distribution, abundance, and habitat potential for common nighthawks within the SSA and LSA. As SOCC, common nighthawks are a potential VC. Survey data were used to assist in identifying common nighthawk breeding status and habitat features that may support breeding birds, which are protected under provincial and federal legislation including SARA, provincial activity restriction guidelines, and the *Migratory Birds Convention Act* (MBCA 1994; SARA 2002; ENV 2017).

### 5.2 Methods

Common nighthawk surveys were completed to determine presence and distribution in the area of the Project. A total of 27 locations were surveyed in the SSA (17 locations) and LSA (10 locations) including both in-situ type (12 surveys) and ARU type (15 surveys). Surveys were conducted in accordance with the CanNorth SOP for common nighthawk surveys, which conforms to ENV guidelines and meets CNSC standards for characterizing baseline environments (ENV 2015, CNSC 2020). A Species Detection Research Permit (#18SD005) was obtained from the ENV, Fish and Wildlife Branch.

Survey locations were situated near suitable habitat for foraging or breeding (e.g., open areas, bogs, shorelines, rocky outcrops, and open mixed-wood and coniferous forest; Rodewald 2018). Two rounds of surveys were completed in accordance with ENV's species detection survey protocol for common nighthawk surveys (ENV 2015); surveys were conducted from 19 June 2018 to 20 June 2018 and from 26 June 2018 to 27 June 2018. Based on protocols established by ENV, subsequent survey visits were not required if common nighthawks were detected in the first round of surveys (ENV 2015); however, two rounds of surveys were analyzed for all ARU data to provide additional documentation regarding common nighthawk abundance.

Surveys were completed within optimal detection windows for common nighthawks as outlined by ENV 2015 (i.e., between one hour before sunset and 30 minutes after sunset) and under suitable weather conditions (i.e., winds speeds below 20 km/h, temperatures above 7°C, and no precipitation). Survey locations were spaced a minimum of 800 m apart. At each location, surveys consisted of a 3-minute passive observation period, followed by a 3-minute call-broadcast period. The call broadcast period consisted of alternating 30 second broadcasts of common nighthawk "peent" calls interspersed with 30 seconds of silence (i.e., three repetitions over three minutes) for a total survey period of 6 minutes per site. Any common nighthawks observed or heard throughout the survey were recorded. ARU recordings were analyzed in the office after unit retrieval using the same listening intervals (i.e., 6 minutes per site) and sampling effort per site (2 recordings spaced from within early and late detection periods from 19 June 2018 to 27 June 2018); however, use of ARUs precluded the use of the call broadcast method (ENV 2015).

### 5.3 Results

A total of 27 common nighthawk locations were surveyed in the area of the Project (Figure 5.3-1; Table 5.3-1; Appendix A, Photo 4). Survey results indicated that common nighthawks are common and widespread as the species was detected at every survey location. In-situ and ARU surveys resulted in detection at 70% of survey locations during the first survey round. All survey locations sampled during the second round of surveys resulted in detection of common nighthawks except for one ARU location where a common nighthawk had been recorded during the first survey interval (Table 5.3-1). In most cases, more than a single individual was detected per survey location. Detection rates per survey ranged from zero to six individuals, with detection of two individuals per site being the most common result (i.e., 30% of surveys) (Table 5.3-1).

Numerous incidental observations of common nighthawks were also recorded during breeding bird surveys or incidentally during other surveys in the area of the Project. Common nighthawks were heard at eight different breeding bird point count stations, and were observed incidentally at nine different locations during amphibian acoustic surveys and yellow rail surveys (Table 5.3-1). These observations consisted of a single individual with the exception of one instance where two individuals were detected. Common nighthawks were additionally detected in ARU recordings during analysis for amphibians and yellow rails; however, all of these ARU stations had previous positive detections during the common nighthawk species targeted survey (Table 5.3-1; Appendix B, Table 2).

Common nighthawks are listed as threatened under Schedule 1 of SARA, and federal and provincial activity restriction guidelines recommend a 200-m setback from breeding birds from 1 May to 31 August (ENV 2017; SARPR 2018; P. Gregoire pers. comm.). The SKCDC ranks common nighthawks as apparently secure breeders (S4B) in Saskatchewan (SKCDC 2018a).

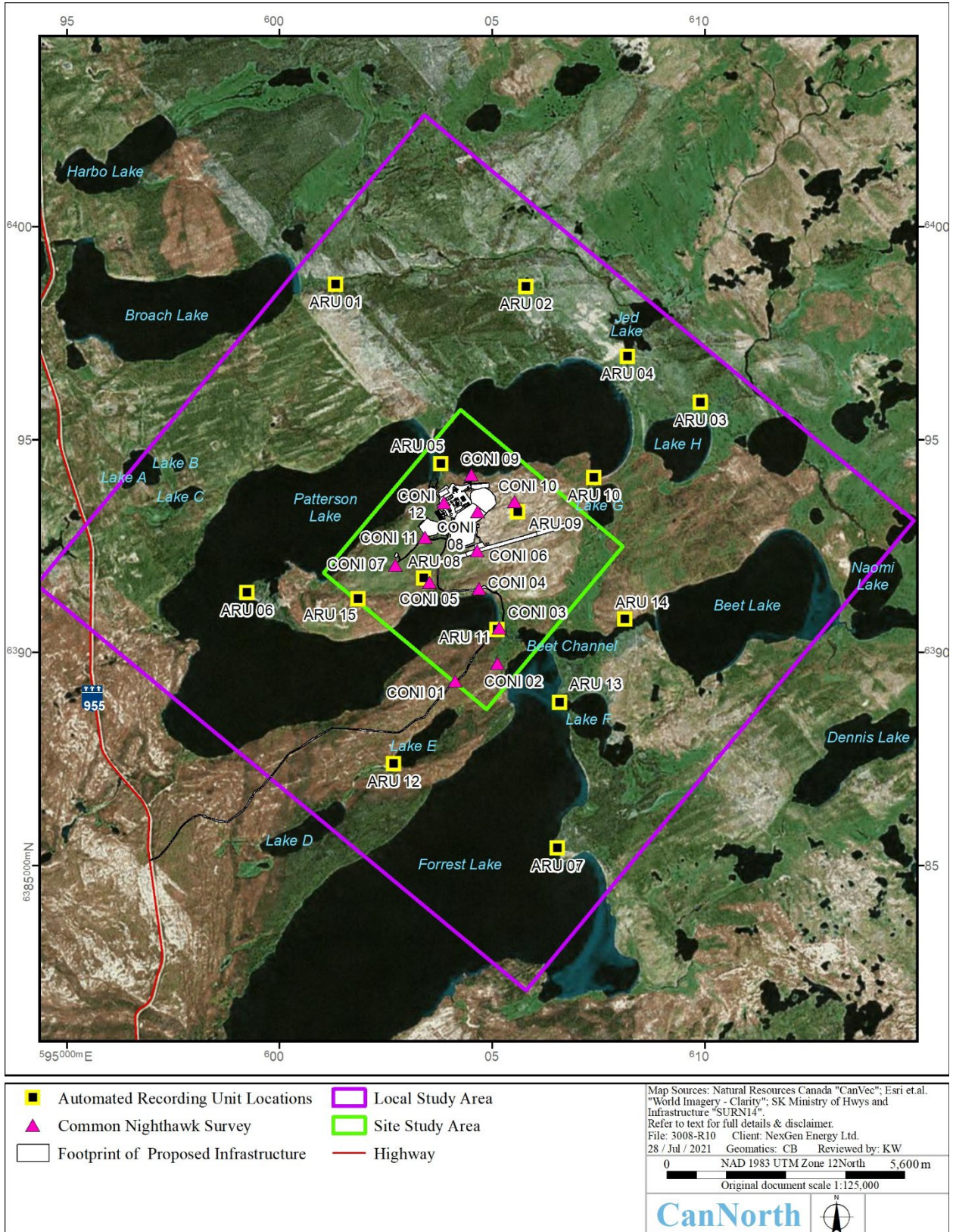


Figure 5.3-1: Common Nighthawk Survey Locations, June 2018

Table 5.3-1: Results of the Common Nighthawk Surveys, June 2018

Survey Location	UTM Coordinates <sup>a</sup>		Project Study Area <sup>b</sup>	Survey Number	Survey Date	Common Nighthawks Detected
	Easting	Northing				
CONI 01	604138	6389331	SSA	1	20-Jun-2018	3
CONI 02	605124	6389747	SSA	1	20-Jun-2018	0
				2	26-Jun-2018	3
CONI 03	605174	6390583	SSA	1	20-Jun-2018	0
				2	26-Jun-2018	2
CONI 04	604697	6391500	SSA	1	20-Jun-2018	2
CONI 05	603527	6391653	SSA	1	20-Jun-2018	0
				2	26-Jun-2018	1
CONI 06	604647	6392394	SSA	1	20-Jun-2018	1
CONI 07	602723	6392051	SSA	1	19-Jun-2018	0
				2	26-Jun-2018	2
CONI 08	604664	6393314	SSA	1	19-Jun-2018	3
CONI 09	604512	6394176	SSA	1	19-Jun-2018	1
				2	26-Jun-2018	1
CONI 10	605532	6393542	SSA	1	19-Jun-2018	3
				2	27-Jun-2018	4
CONI 11	603423	6392705	SSA	1	19-Jun-2018	2
CONI 12	603866	6393520	SSA	1	19-Jun-2018	4
ARU 01	601313	6398648	LSA	1	20-Jun-2018	5
				2	27-Jun-2018	6
ARU 02	605792	6398598	LSA	1	20-Jun-2018	3
				2	29-Jun-2018	2
ARU 03	609906	6395870	LSA	1	19-Jun-2018	6
				2	28-Jun-2018	3
ARU 04	608183	6396958	LSA	1	19-Jun-2018	1
				2	27-Jun-2018	4
ARU 05	603794	6394437	SSA	1	20-Jun-2018	0
				2	27-Jun-2018	1
ARU 06	599235	6391405	LSA	1	20-Jun-2018	1
				2	28-Jun-2018	1
ARU 07	606541	6385407	LSA	1	19-Jun-2018	1
				2	27-Jun-2018	2
ARU 08	603388	6391742	SSA	1	20-Jun-2018	0
				2	27-Jun-2018	2
ARU 09	605602	6393303	SSA	1	19-Jun-2018	3
				2	28-Jun-2018	2
ARU 10	607388	6394103	LSA	1	19-Jun-2018	2
				2	29-Jun-2018	3
ARU 11	605113	6390534	SSA	1	20-Jun-2018	1
				2	30-Jun-2018	1
ARU 12	602685	6387383	LSA	1	20-Jun-2018	1
				2	29-Jun-2018	2
ARU 13	606593	6388821	LSA	1	20-Jun-2018	2
				2	29-Jun-2018	2
ARU 14	608124	6390784	LSA	1	19-Jun-2018	5
				2	29-Jun-2018	3
ARU 15	601850	6391262	SSA	1	20-Jun-2018	1
				2	28-Jun-2018	0

a) UTM = NAD 83 Zone 12U.

b) LSA = Local Study Area; SSA = Site Study Area.

## 6.0 YELLOW RAIL SURVEYS

### 6.1 Study Objectives

To meet regulatory guidance and scientific best practices, yellow rail surveys were completed in the summer of 2018 to support the description terrestrial environmental conditions (ENV 2014a; IAAC 2019; CNSC 2020). The objectives of the surveys were to document distribution, abundance, and habitat potential for yellow rails within the SSA and LSA. As SOCC, yellow rails are a potential VC. Survey data were used to assist in identifying yellow rail breeding status and habitat features that may support breeding birds, which are protected under provincial and federal legislation including SARA, provincial activity restriction guidelines, and the *MBCA* (MBCA 1994; SARA 2002; ENV 2017).

### 6.2 Methods

Sixteen locations were surveyed for yellow rail to document presence and distribution in the area of the Project. Surveys consisted of both in-situ field surveys (7 locations) and ARU surveys (9 locations) in the SSA (6 in-situ survey locations) and LSA (1 in-situ survey location). Surveys were conducted in accordance with the CanNorth SOP for yellow rail surveys, which conforms to ENV guidelines and meets CNSC standards for characterizing baseline environments (ENV 2014a,c, CNSC 2020). A Species Detection Research Permit (#18SD005) was obtained from the ENV Fish and Wildlife Branch.

Two rounds of surveys were completed from 19 June 2018 to 21 June 2018 and from 26 June 2018 to 27 June 2018, as per ENV's species detection survey protocol for yellow rail (ENV 2014c). Survey rounds were separated by a time interval of at least four days between surveys (ENV 2014c). Survey locations focused on waterbodies with suitable yellow rail habitat, particularly shallow marshes or bogs dominated by sedges or grasses (Rodewald 2018). All surveys were completed within the peak nightly calling periods for yellow rail to maximize detection (i.e., between one hour after sunset to 02:00 a.m.) and during suitable weather conditions (i.e., wind speeds less than 20 km/h, temperatures above 0°C, no precipitation). Survey locations were spaced a minimum of 350 m apart.

At each location, in-situ surveys consisted of a mix of call broadcast and passive listening periods. The call broadcaster was placed approximately 1 m above the ground or water, and was pointed toward the centre of the wetland. Surveys were initiated with a 5-minute passive listening period, followed by a 3-minute call broadcast of the yellow rail recording, consisting of 5 seconds of calls followed by 5 seconds of silence. After the 3-minute call broadcast period, surveys were ended with a 2-minute passive listening period for a total survey time of 10 minutes. All yellow rails observed or heard during the survey were recorded along with habitat details, UTM coordinates, survey times, and ambient weather conditions. ARU recordings were analyzed in the office using the same listening intervals, but without the passive listening period (i.e., 5 minutes per site) and without use of call broadcast methodology. Additionally, ARU recordings were analyzed using the same sampling effort per site (i.e., 2 recordings spaced within early and late detection periods from 19 June 2018 to 27 June 2018).

To supplement survey effort, automated recognition of yellow rail calls was completed on the entirety of ARU recordings that fell within protocol conditions (e.g., date, time of day). Species specific recognizers were built using known yellow rail calls and analyzed against all requisite ARU recordings. Results were reviewed manually to remove false positives.

### 6.3 Results

A total of 15 wetlands were surveyed for yellow rail using in-situ field surveys and ARU recording analysis (Figure 6.3-1; Table 6.3-1). No yellow rails were heard at any of the target wetlands during surveys. Further, none were detected using automated recognition for yellow rail from suitable ARU recordings or incidentally observed during any of the 2018 field surveys.

Yellow rail prefer to breed in marshes featuring large expanses of grasses and sedges (*Carex* sp.) with minimal shrub cover (Rodewald 2018). The area of the Project was found to contain limited suitable habitat for yellow rail. Survey results and habitat observations in the area of the Project indicated that there is low potential to support breeding yellow rail.

Yellow rail are listed as special concern under Schedule 1 of SARA, and provincial activity restriction guidelines recommend a 350-m setback from breeding birds for high disturbance activities from 1 May to 15 July (ENV 2017; SARPR 2018). Yellow rail are ranked as vulnerable/rare to uncommon breeders (S3) in Saskatchewan by the SKCDC (2018a).

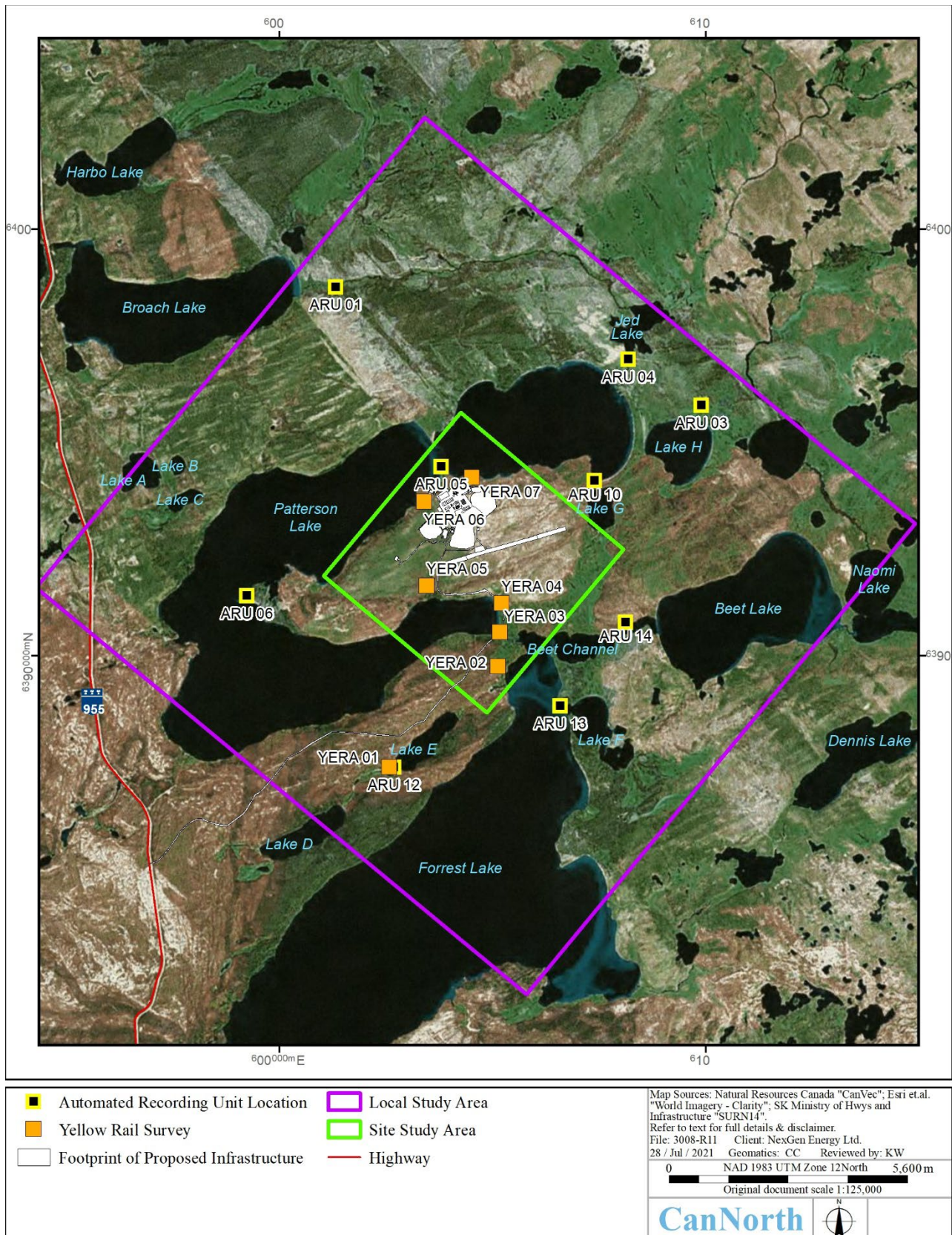


Figure 6.3-1: Yellow Rail Survey Locations, June 2018

**Table 6.3-1: Results of the Yellow Rail Surveys, June 2018**

Survey Location	UTM Coordinates <sup>1</sup>		Project Study Area <sup>2</sup>	Survey Number	Survey Date	Yellow Rails Detected
	Easting	Northing				
YERA 01	602582	6387381	LSA	1	20-Jun-2018	0
				2	26-Jun-2018	0
YERA 02	605124	6389747	SSA	1	21-Jun-2018	0
				2	26-Jun-2018	0
YERA 03	605173	6390546	SSA	1	21-Jun-2018	0
				2	26-Jun-2018	0
YERA 04	605214	6391227	SSA	1	21-Jun-2018	0
				2	26-Jun-2018	0
YERA 05	603457	6391645	SSA	1	21-Jun-2018	0
				2	26-Jun-2018	0
YERA 06	603390	6393612	SSA	1	19-Jun-2018	0
				2	27-Jun-2018	0
YERA 07	604512	6394176	SSA	1	19-Jun-2018	0
				2	26-Jun-2018	0
ARU 01	601313	6398648	LSA	1	21-Jun-2018	0
				2	27-Jun-2018	0
				3	1-Jul-2018	0
ARU 03	609906	6395870	LSA	1	22-Jun-2018	0
				2	28-Jun-2018	0
				3	3-Jul-2018	0
ARU 04	608183	6396958	LSA	1	19-Jun-2018	0
				2	25-Jun-2018	0
				3	30-Jun-2018	0
ARU 05	603794	6394437	SSA	1	19-Jun-2018	0
				2	26-Jun-2018	0
				3	1-Jul-2018	0
ARU 06	599235	6391405	LSA	1	19-Jun-2018	0
				2	26-Jun-2018	0
				3	1-Jul-2018	0
ARU 10	607388	6394103	LSA	1	19-Jun-2018	0
				2	27-Jun-2018	0
				3	2-Jul-2018	0
ARU 12	602685	6387383	LSA	1	19-Jun-2018	0
				2	27-Jun-2018	0
				3	2-Jul-2018	0
ARU 13	606593	6388821	LSA	1	19-Jun-2018	0
				2	28-Jun-2018	0
				3	2-Jul-2018	0
ARU 14	608124	6390784	LSA	1	19-Jun-2018	0
				2	25-Jun-2018	0
				3	30-Jun-2018	0

a) UTM = NAD 83 Zone 12U.

b) LSA = Local Study Area; SSA = Site Study Area.

## 7.0 BREEDING BIRD SURVEYS

### 7.1 Study Objectives

To meet regulatory guidance and scientific best practices, breeding bird surveys were completed in the summer of 2018 to assist in describing terrestrial environmental conditions (ENV 2014a; IAAC 2019; CNSC 2020). The objectives of the surveys were to document distribution, abundance, and species composition of birds potentially occurring within the SSA and LSA, including SOCC. As avian SOCC are potential VCs, resulting data will assist in identifying populations and habitat features that may be protected under provincial or federal legislation, including activity restriction guidelines, SARA, and/or the *MBCA* (*MBCA* 1994; EC 2009; ENV 2017; SARA 2002).

### 7.2 Methods

Breeding bird point count surveys using variable radius point counts were completed in the SSA and LSA to document species richness and distribution in the area of the Project. Surveys were conducted in accordance with the CanNorth SOP for breeding bird surveys, which is based on methodology provided by ENV (2014d, 2018b), Bibby et al. (2000), Hamel et al. (1996), and Ralph et al. (1993). This protocol conforms to ENV guidelines, accounts for potential VCs, and meets CNSC standards for characterizing baseline environments (ENV 2014a,d, 2018b; CNSC 2020). A Species Detection Research Permit (#18SD005) was obtained from ENV, Fish and Wildlife Branch.

Two rounds of in-situ field surveys were completed from 5 June 2018 to 12 June 2018 and from 22 June 2018 to 27 June 2018. All accessible habitat types in the SSA and LSA were sampled. Survey timing was consistent with the ENV species detection survey protocol for forest bird surveys (ENV 2014d) and ARU recording data was analyzed in the office using the same daily and seasonal time windows as the in-situ surveys, and 10-minute listening intervals (i.e., similar to in-situ surveys minus the acclimation period). However, for the ARU data, three rounds of surveys were analyzed as per guidance from ENV species detection survey protocol for forest bird surveys (ENV 2014d).

At each point count location, data collection consisted of a 2-minute acclimation period followed by a 10-minute observation period, during which all birds detected were recorded. Detected birds were recorded into 1 of 5 categories: within a 50 m radius of the observer, 50 to 100 m from the observer, >100 m from the observer (unlimited distance), flying overhead, or as an incidental observation (e.g., detected before or after the survey but not during the survey). Habitat details, UTM coordinates, survey time, and ambient weather conditions were additionally recorded. Point counts were completed between sunrise (i.e., ~03:30 a.m.) and four hours after sunrise (i.e., ~07:30 am) to capture the peak activity period for the majority of avian species. Point counts were only completed during acceptable weather conditions (e.g., wind speeds less than 20 km/h, no precipitation). Surveys were spaced at a distance of approximately 400 m or more to avoid re-sampling of previously detected birds.

### 7.3 Data Analysis

For each habitat type, breeding bird population data were summarized using four measures: abundance (number of birds observed), species richness, diversity, and equitability. A diversity index such as “Shannon’s H” is a mathematical measure of species diversity in a community. The Shannon-Weiner index of diversity (H) was calculated for each point count location to allow diversity comparisons between habitats found in the LSA. Shannon’s H index of diversity was calculated using the equation:

$$H' = \sum_{i=1}^s \frac{n_i}{N} \ln \frac{N}{n_i}$$

Where S is the total number of species in a community (species richness) calculated as the proportion of individuals of a given species ( $n_i$ ) to the total number of individuals in the community (N). This diversity index provides information about bird community composition because it takes the relative abundance of different species into account, along with the number of species observed (Magurran 1988; Rosenzweig 1995). As such, diversity indices provide important information about rarity or ubiquity of species in a community. Following the calculation of H, Shannon's equitability ( $E_H$ ) was calculated using the following equation:

$$E_H = \frac{H}{H_{\max}} = \frac{H}{\ln S}$$

Equitability assumes a value between 0 and 1, with 1 being complete evenness (i.e., roughly equivalent numbers of birds belonging to each species recorded). Equitability is defined as the degree to which species are equally abundant (Reitz and Wing 1999) and also provides information about bird community composition within the LSA. Areas with an even distribution of abundance between taxa have a higher diversity than samples with the same number of taxa, but with disproportionately high abundance of a few taxa. More taxonomic categories lead to greater diversity values when samples show the same degree of equitability in abundance (Reitz and Wing 1999). For all the above analyses, only observations of birds within a 100 m of the observer during point count surveys were used; flyovers detected during point counts, incidental observations, and ARU data were excluded.

Finally, a species richness curve (i.e., rarefaction curve) was generated to ascertain if sampling was adequate to estimate species richness within the LSA. In general, rarefaction curves flatten as they move to the right (of the graph) given fewer new species are detected per number of individuals observed and indicates that additional sampling would only identify a few new species.

## 7.4 Results

A total of 100 point count locations were assessed in the SSA (53 locations) and the LSA (47 locations) and this included both in-situ surveys (85 locations) and ARU surveys (15 locations; Figure 7.4-1; Appendix B, Table 3). Overall, the species accumulation curve, for all birds detected in the LSA, indicated a reasonable number of surveys were conducted to detect the majority of species using the LSA because the curve trajectory reached an asymptote indicating that adequate sampling was achieved (Figure 7.4-2).

A total of 3,213 individuals comprised of 95 bird species were detected across the survey period within the LSA (Appendix B, Table 4). Detailed results of the breeding bird surveys are presented in Appendix B, Table 5. The most commonly detected bird species across the survey period was the Canada goose (*Branta canadensis*; 516 detections at 19 locations) followed by dark-eyed junco (*Junco hyemalis*; 313 detections at 92 locations), yellow-rumped warbler (*Setophaga coronata*; 263 detections at 90 locations), and white-throated sparrow (*Zonotrichia albicollis*; 237 detections at 67 locations). Most of the species detected during the 2018 surveys (98%) are protected under the MBCA (1994) and/or the provincial *Wildlife Act* (GS 1998), and several SOCC were identified. These included four species listed under SARA: common nighthawk; olive-sided flycatcher; rusty blackbird (*Euphagus carolinus*); and barn swallow. Common nighthawks, olive-sided flycatchers, and barn swallows are all listed as threatened under SARA, whereas rusty

blackbirds are listed as special concern (SARPR 2018). Abundance estimates for SOCC are based on location specific data only and duplicate counts across survey periods were not included. Common nighthawks were detected at 11 locations during breeding bird surveys, with at least a single individual observed at each site (Appendix B, Table 4). There were a total of 44 detections of common nighthawks throughout the SSA and LSA during targeted surveys or incidentally, as previously discussed in Section 5.3 (Figure 7.4-3; Appendix B, Table 2). Thirteen olive-sided flycatchers were detected, including six in the SSA and seven in the LSA (Figure 7.4-4; Appendix B, Table 4). Three rusty blackbirds were detected during ARU data analysis, all of which were located in the LSA (Figure 7.4-4; Appendix B, Table 4). Barn swallows were detected at nine locations with a total of 16 individuals detected in the SSA and six in the LSA. An additional barn swallow was heard incidentally during a common nighthawk survey in the LSA (Figure 7.4-4; Appendix B, Table 4).

Seven additional species with provincial activity restriction guidelines (ENV 2017) were observed during the breeding bird surveys, including Bonaparte's gull, common loon, bald eagle, herring gull, osprey (*Pandion haliaetus*), American white pelican, and great gray owl (*Strix nebulosa*) (Figure 7.4-4; Appendix B, Table 4). Bonaparte's gulls (1 individual) and a pair of bald eagles were observed at Beet Lake, and also at Patterson Lake. Multiple Bonaparte's gulls and five bald eagles were observed in both the LSA and SSA. Three herring gulls, one American white pelican, and four osprey were also observed singly at Patterson Lake. The American white pelican was observed in the SSA, and herring gulls and osprey were observed in both the SSA and LSA. Common loons were detected frequently throughout the survey and were observed in numbers from one to three individuals at lakes located in the SSA and LSA including Patterson Lake, Forrest Lake, Lake G, Lake H, Beet Lake, and Broach Lake. One great gray owl was detected in the LSA, and two additional incidental observations of single great gray owls were documented in the SSA. Species at risk and sensitive species detected in both the SSA and LSA, and the habitats that support these species are discussed further in Section 10.0.

Habitat in the area of the Project is fairly homogeneous and most boreal birds do not respond to fine-scale habitat features (Bayne et al. 2010); therefore, habitats surveyed for breeding birds were grouped into four general habitat types for breeding bird data analysis based on field-level coarse habitat data (i.e., dominant habitat in point count; mature conifer, regeneration conifer, mixedwood/deciduous, and treed wetland) (Table 7.4-1). Bird species richness, abundance, diversity and equitability were tallied for each habitat group.

Abundance was highest in mature conifer forest (361), followed by treed wetland (279) and regeneration forest (271), and mixedwood/deciduous forest (69). Mature conifer forests also had the highest species richness (53), followed by treed wetland (42); whereas richness was lowest in regeneration forests (33) and mixedwood/deciduous forest (33). Diversity indices ( $H'$ ) were highest in mixedwood (4.13) followed by regeneration forests (3.62), treed wetland (3.06), and lowest in mature conifer (2.90). Finally, equitability ( $E_H$ ) indices were highest in mixedwood (0.91) followed by treed wetland (0.82), and were lowest in mature conifer (0.73) and regeneration forests (0.72). Caution should be used in interpreting these results as fewer surveys were performed in mixedwood/deciduous ( $n=4$ ) versus the other habitats. Avian species diversity, richness, and abundance is generally highest within the mixedwood portions of the boreal region relative to other habitats (Cumming et al. 2014).

**Table 7.4-1: Breeding Bird Diversity Indices by Habitat Type from Point Count Locations in the LSA, May to July 2018**

Habitat Type <sup>a</sup>	General Description	Species Richness (Number of Species)	Shannon-Weiner Diversity Index (H)	Equitability (E <sub>H</sub> )	Total Abundance of Individuals	Point Counts Completed (n)
Mature conifer	Conifer forest >40 years old (jack pine, black spruce)	53	2.90	0.73	361	37
Mixed wood	Mixed wood/deciduous forest ~10 - 40 and/or >40 years old (paper birch, jack pine, black spruce)	23	4.13	0.91	69	4
Regeneration forest	Recently burned and up to 40 years) conifer forest (snags, young jack pine)	33	3.62	0.72	270	24
Treed wetland	Treed fen, bog, or swamp; shoreline/lakeshore forest (jackpine, black spruce, tamarack, paper birch)	42	3.06	0.82	279	21

a) Dominant habitat type recorded in point count survey location; does not account for fine-scale changes in habitat within point count and is considered a coarse scale classification.

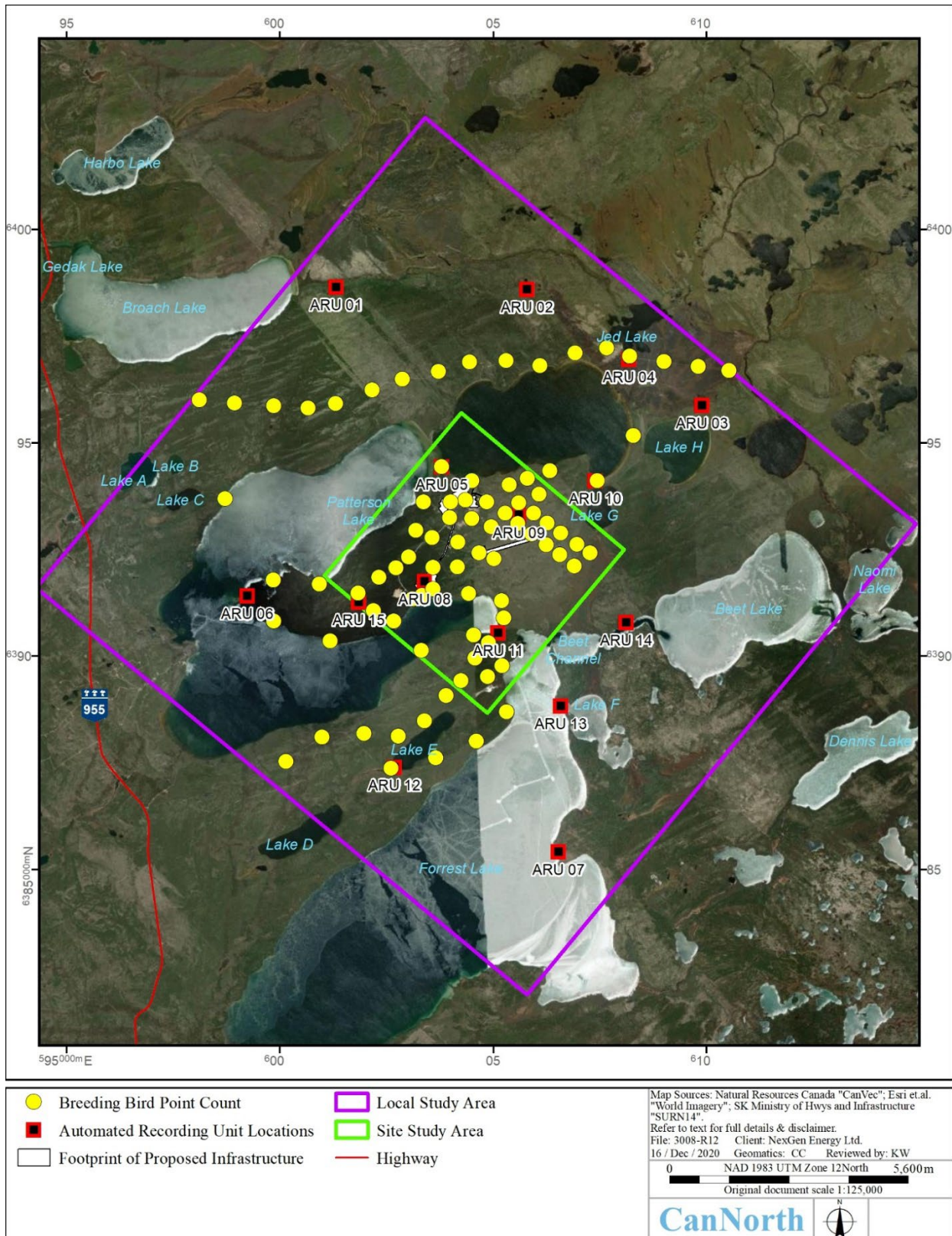
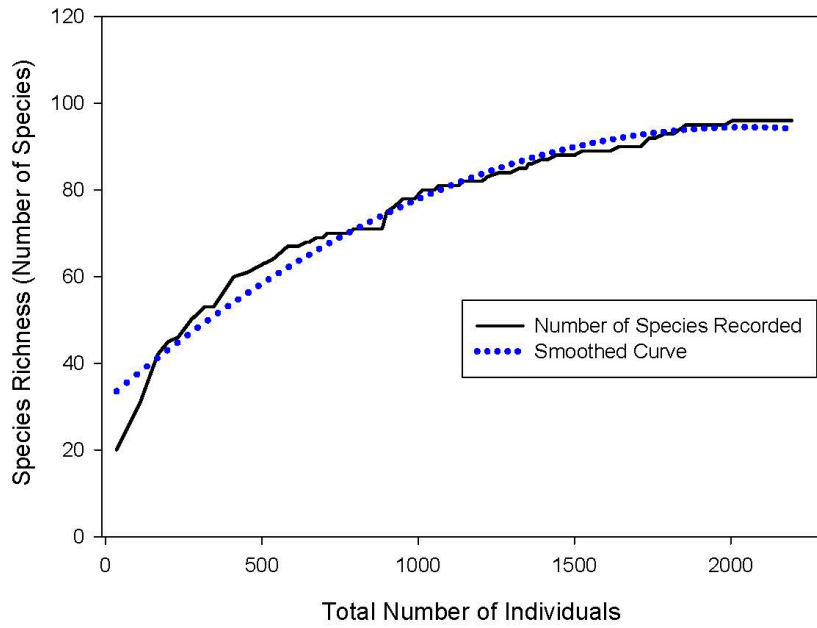
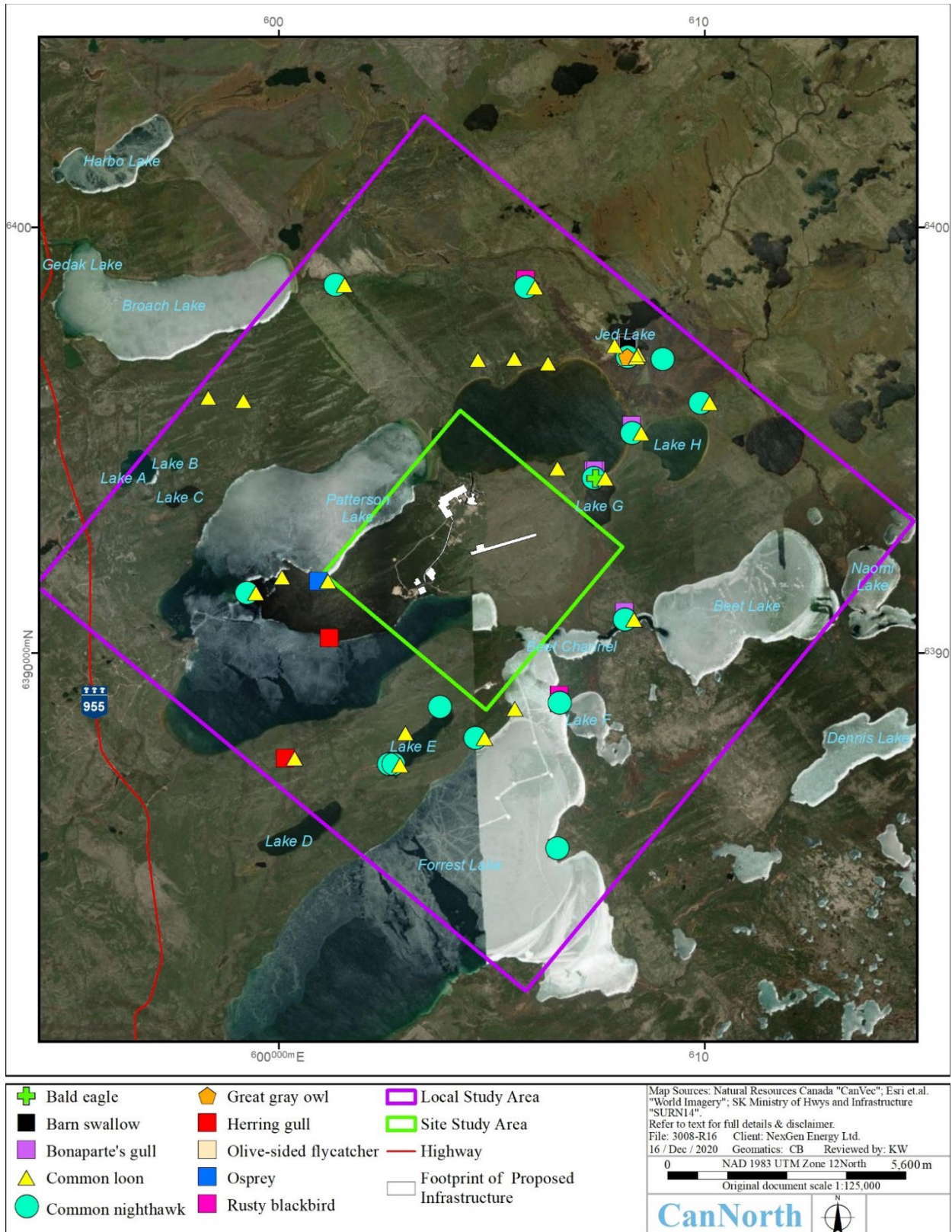


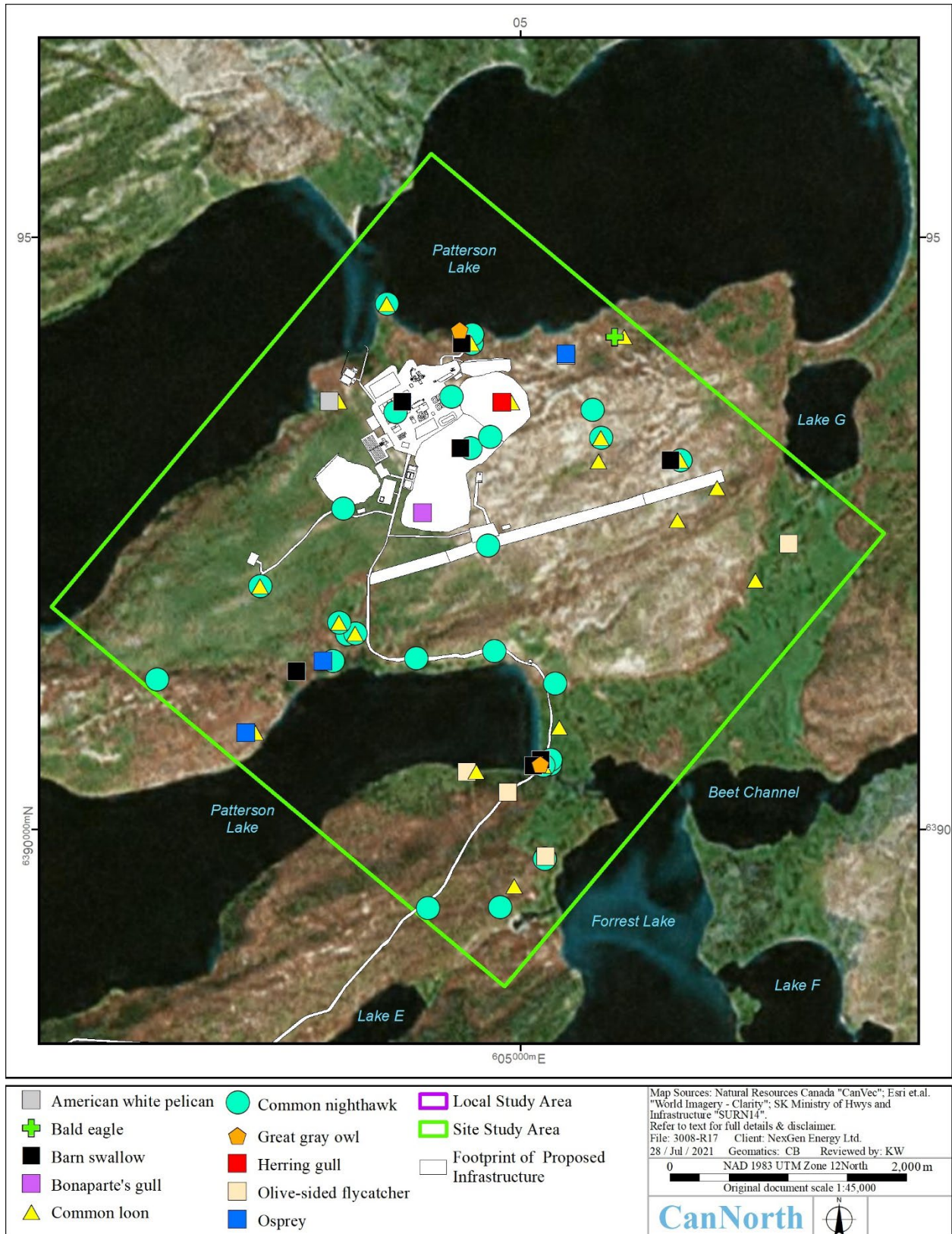
Figure 7.4-1: Breeding Bird Survey Locations, May to July 2018



**Figure 7.4-2: Species Accumulation Curve for all Breeding Bird Surveys Completed in the LSA, May to July 2018**



**Figure 7.4-3: Locations of Breeding Bird Species of Conservation Concern Detected During Targeted Bird Surveys and Incidentally – LSA, May to July 2018**



**Figure 7.4-4: Locations of Breeding Bird Species of Conservation Concern Detected During Targeted Bird Surveys and Incidentally – SSA, May to July 2018**

## 8.0 BAT SURVEYS

### 8.1 Study Objectives

To meet regulatory guidance and scientific best practices, bat surveys were completed in the summer of 2018 to support the description of terrestrial environmental conditions (ENV 2014a; IAAC 2019; CNSC 2020). The objectives of the surveys were to document distribution and abundance of bats present in the SSA and LSA, and to provide information on potential species composition. As bat species are a potential VC, resulting data will assist in identifying populations and habitat features that may be protected under provincial or federal legislation, including activity restriction guidelines and/or SARA (MBCA 1994; ENV 2017; SARA 2002).

### 8.2 Methods

Five bat detectors (i.e., Wildlife Acoustics SM4BAT Full Spectrum bioacoustic recorders) were installed in late May 2018; these installations were within the SSA in areas with high habitat potential for breeding or foraging bats (i.e., mature and regenerating forest, lake shorelines, wetlands, and stream systems; Figure 8.2-1; Table 8.2-1). Sound categories created to identify bats in the area of the Project were based on specific audio signatures as typically calls cannot be conclusively identified to species. Uncertainty exists in differentiating calls of big brown bat (*Eptesicus fuscus*) and silver-haired bat (*Lasionycteris noctivagans*); eastern red bat (*Lasiurus borealis*) and little brown myotis; and species in the *Myotis* genus. Note that two bat species, little brown myotis and northern myotis, were listed in two species groups. While it can be difficult to distinguish between both species in the *Myotis* genus, call features can exist that enable observers to rule out the eastern red bat when considering all species in the high frequency group. In consideration of all the above variables, vocalizations of bat species were grouped into the following three categories following Vonhof (2017):

- **High frequency bats:** Eastern red bat, northern myotis, and little brown myotis
- **Low frequency bats:** Big brown, silver-haired, and hoary bat (*Lasiurus cinereus*)
- **Myotis species:** Northern myotis and little brown myotis

Collection and analysis of recordings was conducted in accordance with the CanNorth SOP for bat surveys, which adheres to the Wildlife Siting Guidelines for Saskatchewan Wind Energy Projects (ENV 2016), the Plant and Wildlife Pre-Constructions Surveys for Renewable Energy Projects (ENV 2018c), the Wildlife Directive for Alberta Wind Energy Projects (GA 2018), and the Bat Mitigation Framework for Wind Power Development (GA 2013). Methods used accounted for potential VCs, and met CNSC standards for characterizing baseline environments (ENV 2014a; CNSC 2020).

Bat detectors were programmed prior to deployment and set to record ultrasonic sound at 10-minute intervals (i.e., 10 minutes on, 10 minutes off) beginning 30 minutes after sunset and continuing until 30 minutes before sunrise. To increase data collection quality and reduce extraneous noise files, the detectors were programmed with a minimum recording duration of 1.5 milliseconds (ms) with trigger frequency of 16 kilohertz (kHz), and a trigger level of 12 dB. All detectors were equipped with two 32 GB SD memory cards. Ultrasonic microphones were mounted to 5 cm x 5 cm x 243 cm wooden posts and secured to trees at a height of 2 m using cable ties and screws, resulting in a microphone deployment height of approximately 5 m (Appendix A, Photo 5). One detector (i.e., BAT 03) was mounted to a meteorological (MET) tower at a height of approximately 7 m (Appendix A, Photo 6).

In the analysis, the standard units of measure used were bat call sequences (i.e., bat passes) and the primary measurement for reporting activity rates were bat passes per detector night (i.e., at one detector over a one-night period). This reporting measurement was used as a relative measure of bat activity in the vicinity of any given bat detector. Echolocation analysis was conducted using Kaleidoscope Pro (Version 5.1.4) to determine the number of bat passes per night and to correlate the bat call sequences to species group. Files were analyzed based on parameters such as call frequency, shape, slope, and duration, and were broadly matched to the calls of species with biogeographical ranges overlapping the area of the Project (Table 8.2-2). Manual vetting of results was completed to remove false positives.

**Table 8.2-1: Bat Detector Locations, May to October 2018**

Detector ID	UTM Location <sup>a</sup>		Deployment Description	Habitat Description
	Easting	Northing		
BAT 01	605211.53	6389780.89	Mounted to a black spruce at a height of approximately 5 m	Bog
BAT 02	605164.26	6390519.56	Mounted to a jack pine at a height of approximately 5 m	Creek
BAT 03	604498.04	6393439.26	Mounted to MET tower at a height of approximately 7 m	Conifer regeneration
BAT 04	604060.77	6391419.04	Mounted to a jack pine at a height of approximately 5 m	Mature pine near Patterson Lake
BAT 05	601850.21	6391261.99	Mounted to a jack pine at a height of approximately 5 m	Mature pine adjacent to conifer regeneration

a) UTM = NAD 83 Zone 12U.

**Table 8.2-2: Bat Species Known to Occur in the Biogeographical Region of the Project**

Scientific Name	Common Name	SKCDC Rank	COSEWIC	SARA Status	Schedule
<i>Eptesicus fuscus</i>	Big brown bat	S5	-	-	-
<i>Lasionycteris noctivagans</i>	Silver-haired bat	S5B	-	-	-
<i>Lasiurus borealis</i>	Eastern red bat	S4B	-	-	-
<i>Lasiurus cinereus</i>	Hoary bat	S5B	-	-	-
<i>Myotis lucifugus</i>	Little brown myotis	S4	Endangered	Endangered	Schedule 1
<b><i>Myotis septentrionalis</i></b>	<b>Northern myotis</b>	<b>S3</b>	<b>Endangered</b>	<b>Endangered</b>	<b>Schedule 1</b>

Source: All scientific and common names from SKCDC (2018a); Federal rank as per SARPR (2018).

SKCDC = Saskatchewan Conservation Data Centre; S1 = critically imperiled/extremely rare, S2 = imperiled/very rare, S3 = vulnerable/rare to uncommon, S4 = apparently secure, S5 = secure/common, B = breeders

**Bold** text indicates rare (S1 to S3) species.



Figure 8.2-1: Bat Detector Locations, May to October 2018

### 8.3 Results

Detectors deployed in the SSA recorded a total of 4,312 bat passes from May 24 to October 15 2018 (Appendix B, Table 6). Bat activity rates for all detectors ranged from 2.49 (324 recordings) to 17.81 (2,315 recordings) bat passes per detector night with a combined average of 7.66 bat passes per detector night (4,312 recordings). Detector BAT 02 recorded significantly more bat passes relative to other detectors, and accounted for approximately 53% of the total recorded files from all detectors (2,315 recordings). Detector BAT 04 malfunctioned in early July with the last recording made on 4 July 2018. Despite the malfunction, Detector BAT 04 recorded the second highest number of bat passes per detector night (i.e., 10.02), with more than 431 recorded passes in 43 detector nights. While the interaction of habitat variables (i.e., prey or roost availability, foraging conditions, and predator avoidance) is difficult to quantify, bats (*Myotis* especially) tend to forage over still water, rivers, forest edges/trails, and generally select larger diameter trees for roosting (COSEWIC 2013). Detectors BAT 02 and BAT 04 were located in stands of mature jack pine dominated habitats, in proximity to water (Patterson Creek and Patterson Lake), and were within 30 m of access roads.

All three bat groups were detected at bat detector stations. Bats in the high frequency group (i.e., eastern red bats, little brown myotis, and northern myotis) and the myotis subset group (i.e., little brown myotis and northern myotis) accounted for the vast majority of recorded bat passes (4,206 recordings; 97.5%). Bats in the low-frequency group (i.e., big brown, silver-haired, and hoary bats) were recorded much less frequently than the other groups (106 recordings; 2.5%). In consideration of known species ranges and abundance, call characteristics, and habitat suitability, bat passes categorized into either the high frequency or the *Myotis* groups were expected to be primarily composed of little brown myotis; likewise, those individuals in the low frequency group were expected to be primarily composed of silver-haired or hoary bats (M. Brigham, University of Regina, pers. comm.).

Bat activity in the SSA increased in the second week of June 2018 and this likely coincided with the establishment of foraging areas or hatches of aerial insects in the vicinity of bat detectors (Figure 8.3-1). Near the end of the season, bat activity levels decreased around 12 August 2018, which may have resulted from individuals initiating migration (COSEWIC 2013). Both little brown myotis and northern myotis mate during a late summer or autumn “swarming period” prior to hibernation (COSEWIC 2013). None of the detectors recorded a spike indicative of swarming activity; however, detection ranges of recorders vary based on a number of factors and, under optimal conditions, a detection range of only 25 m is expected (Agranat 2014).

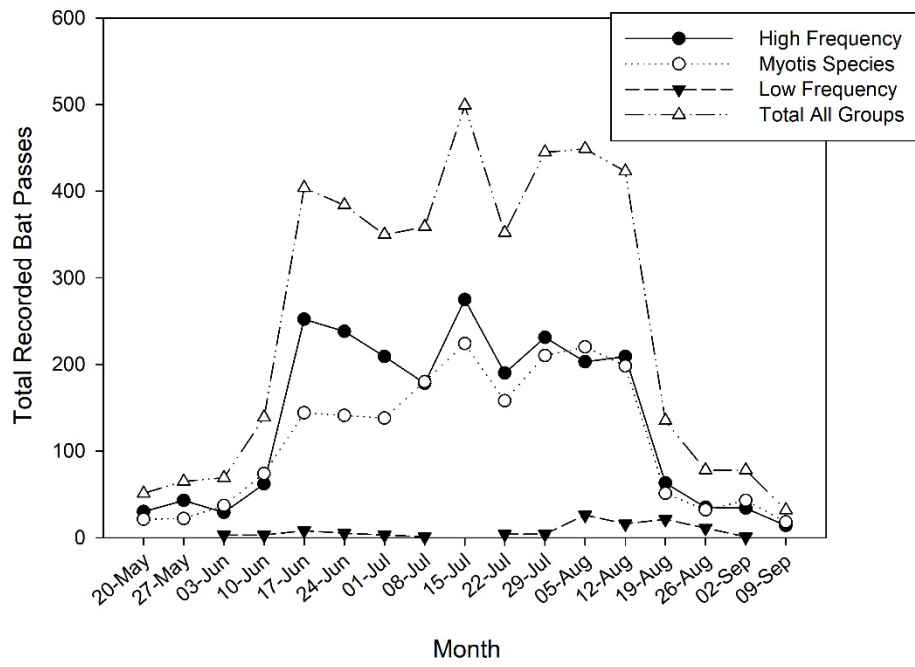


Figure 8.3-1: Total Number of Bat Passes per Month, May to October 2018

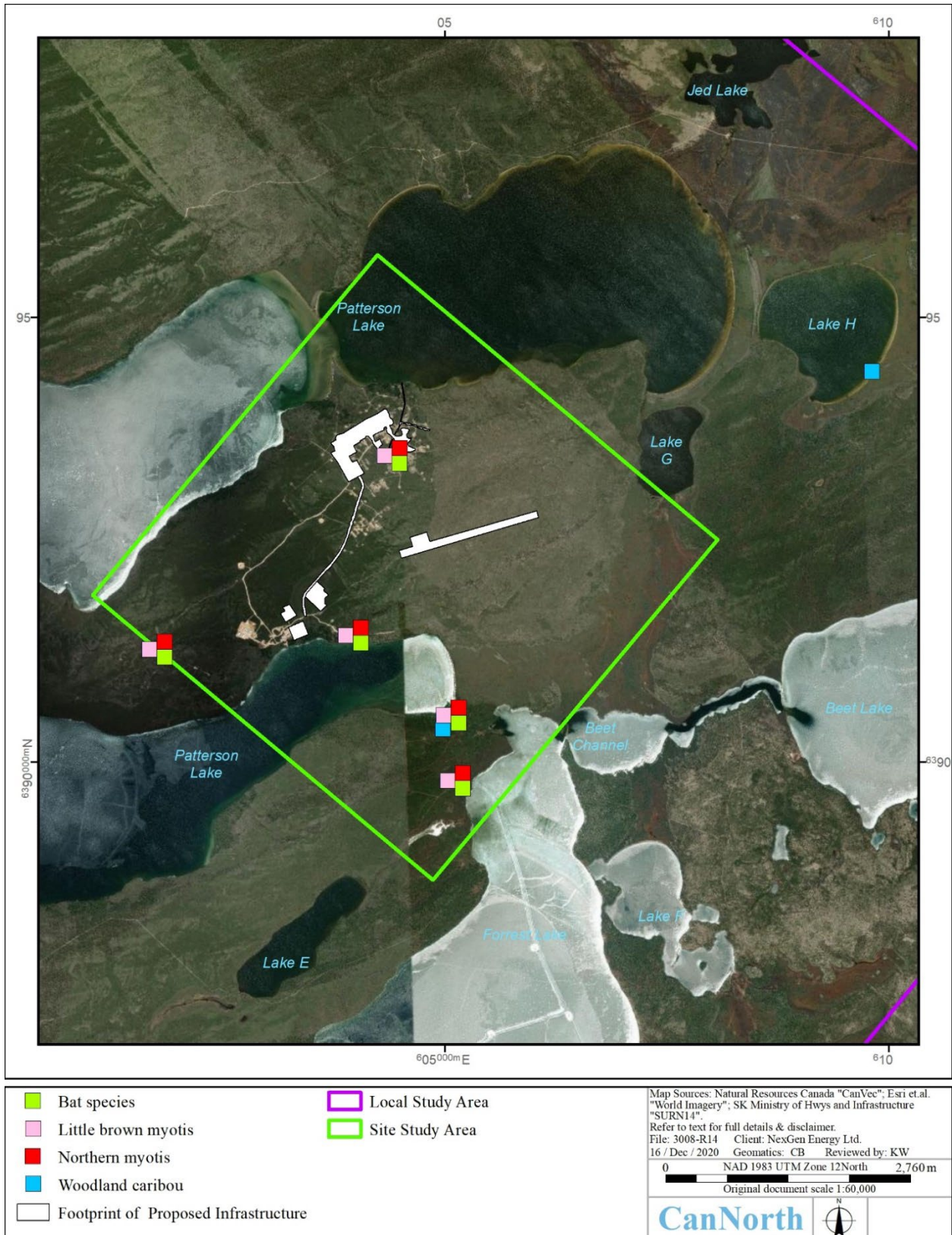
## 9.0 INCIDENTAL WILDLIFE OBSERVATIONS

During the 2018 field program, incidental wildlife observations were recorded for SOCC, species not detected during surveys in the area of the Project, and for non-target species (e.g., mammals). Information related to incidental bird, amphibian, and bat observations are discussed in the respective sections above. The information presented in this section is focused on species lacking targeted field surveys during the 2018 field program.

Mammalian species recorded incidentally in the area of the Project included moose (*Alces americanus*), black bear (*Ursus americanus*), northern grey wolf (*Canis lupus occidentalis*), beaver (*Castor Canadensis*), American mink (*Neovison vison*), muskrat (*Ondatra zibethicus*), snowshoe hare (*Lepus americanus*), least chipmunk (*Tamias minimus*), red squirrel (*Tamiasciurus hudsonicus*), and woodland caribou. All of these species, with the exception of woodland caribou, are ranked as apparently secure (S4) to secure/common (S5) by the SKCDC, and all of these species are not listed under SARA (SARPR 2018; SKCDC 2018a). There are no provincial activity restriction guidelines applicable to any of these species, but all are protected provincially under *the Wildlife Act* (GS 1998; ENV 2017).

Woodland caribou are the only mammalian SOCC observed in the LSA and are listed as threatened under Schedule 1 of SARA (SARPR 2018). The SKCDC ranks woodland caribou as vulnerable/rare to uncommon (S3) in Saskatchewan. Two observations of woodland caribou were recorded in the area of the Project. One individual caribou was observed on the shore of Lake H in August 2018 during aquatic field surveys (Figure 9.0-1; Appendix B, Table 2). Vocalizations of a second individual were detected at ARU 11 in the SSA during breeding bird surveys (Figure 7.4-4; Appendix B, Table 2).

One rare insect species, luna moth (*Actias luna*), was also observed in the area of the Project during 2018 field surveys. Luna moths are ranked as imperiled/very rare (S2) by the SKCDC; however, the luna moth is not listed under SARA or COSEWIC and have no applicable activity restriction guidelines (ENV 2017; SARPR 2018; SKCDC 2018b).



**Figure 9.0-1: Locations of Mammal Species of Conservation Concern Detected During Bat Surveys and Incidentally, 2018**

## 10.0 SPECIES OF CONSERVATION CONCERN (SOCC)

The 2018 field surveys resulted in detection of several SOCC. As wildlife species often have specific habitat requirements, some habitat types in the SSA and LSA had a higher probability of providing habitat for rare or sensitive species than others. The following section provides a summary of typical habitat requirements for all SOCC documented during the 2018 field surveys. These include species listed under SARA or COSEWIC, species with provincial or federal setback guidelines, or species ranked as rare or uncommon by the SKCDC (S1 to S3).

A total of 19 sensitive species were detected during targeted field surveys and incidentally (Figure 4.3-2, Figure 7.4-3, and Figure 9.0-1). Six of these species are listed federally under SARA including: common nighthawk (threatened), olive-sided flycatcher (threatened), rusty blackbird (special concern), barn swallow (threatened), boreal woodland caribou (threatened), and bat species (potentially two species listed as endangered; confirmation is not possible without capture) (SARPR 2018). An additional 12 species were observed that are not listed under SARA or COSEWIC, but have provincial activity restriction guidelines. These include Canadian toad, Bonaparte's gull, common loon, bald eagle, herring gull, osprey, American white pelican, great gray owl, and four bat species in the Family *Vespertilionidae* (ENV 2017; SKCDC 2018a). One additional provincially rare insect species, luna moth, was also observed. Information on special management guidelines relating to activity restrictions near habitat features (e.g., nests) of these species is provided in Table 2.3-1.

Details regarding each SOCC listed by order of highest conservation rank discussed below.

### 10.1 Listed Species under the Species at Risk Act

#### ***Common Nighthawk***

During the 2018 field program, common nighthawks were documented at a total of 44 locations in the SSA (30 locations) and LSA (14 locations). Common nighthawks breed in a variety of open, sparsely vegetated habitats, including sand dunes and beaches, recently cut or burned forests (i.e., both mixed-wood and coniferous), outcrops of rock or gravel, grasslands, and low vegetation adjacent to wetlands and other water features (Rodewald 2018). The distribution and frequency of common nighthawk observations recorded during targeted and non-targeted surveys suggests that high quality breeding habitat occurs throughout the area of the Project, and that this species is widespread and locally abundant within the SSA and LSA.

Federal and provincial legislation pertinent to common nighthawks is discussed in Section 5.3.

#### ***Olive-sided Flycatcher***

Olive-sided Flycatchers were identified in 12 locations in the SSA (6 locations) and LSA (6 locations). Olive-sided flycatchers defend relatively large territories and prefer to nest along the edges of open habitats with tall snags or trees, including bogs and riparian zones, burned areas, clear cuts, and open canopy forests (COSEWIC 2007; Rodewald 2018). Both early and late successional stage forests may be used by this species; however, patchy mature forest that has been modified by natural disturbance or with natural openings is generally preferred (Rodewald 2018). The majority (83%) of observations of olive-sided flycatcher within the area of the Project were noted near large waterbodies (i.e., Patterson Lake and Forrest Lake) or along creeks and bogs with sparse vegetation in the adjacent uplands. Habitat types that meet

this description and have the potential to support olive-sided flycatchers were fairly common and widespread in the SSA and LSA.

Olive-sided flycatchers are listed as threatened under SARA (SARPR 2018) and are provincially ranked as S4B (apparently secure breeding population) in Saskatchewan by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines and federal guidelines recommend a setback of 300 m from birds exhibiting breeding behaviour from 1 May to 31 August for high-disturbance activities (ENV 2017; P. Gregoire pers. comm.).

### ***Rusty Blackbird***

Rusty Blackbirds were identified at three locations in the LSA. This species breeds almost exclusively in the Canadian boreal forest, with preferred habitat including bogs, fens, marshes, and swamps within wet coniferous and mixed forest stands, often near open water (COSEWIC 2006; Rodewald 2018). Suitable habitat for nesting rusty blackbirds was fairly common and widespread in the SSA and LSA.

Rusty Blackbirds are listed as a species of special concern under SARA (SARPR 2018) and are provincially ranked as S3B (rare to uncommon breeding populations) by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines and federal guidelines recommend a setback of 300 m from birds exhibiting breeding behaviour from 1 May to 31 July for high-disturbance activities (ENV 2017; P. Gregoire pers. comm.).

### ***Barn Swallow***

Barn swallows were identified at a total of 10 locations in the SSA (7 locations) and LSA (3 locations). Prior to European settlement, barn swallows predominantly nested in caves and on cliff faces; however, post-colonial populations nest almost exclusively on anthropogenic structures including barns, out-buildings, bridges, and industrial equipment (SARPR 2018). Foraging occurs in open areas with an abundance of aerial insects, as well as over lakes, pastures, cropland, suburban parks, riparian edges, or disturbed areas (SARPR 2018). In the SSA and LSA, barn swallows were identified at ARU stations near bridge crossings. Breeding habitat within the area of the Project was likely limited to areas with existing infrastructure, such as bridges and construction camps, although this species may be observed elsewhere during foraging or migration.

Barn swallows are designated as Threatened under SARA (SARPR 2018) and are provincially ranked as S5B (secure/common breeding population) in Saskatchewan by the SKCDC (2018a). Federal guidelines recommend a setback of 100 m from active nest sites from 1 May to 31 August for high disturbance activities (P. Gregoire pers. comm.). There are no pertinent provincial activity restriction guidelines relevant to barn swallows in Saskatchewan (ENV 2017).

### ***Myotis Bat Species***

Bat species identified in the area of the Project are described in Section 8.3. The majority of recordings were attributed to little brown myotis due to biogeographical range and habitat characteristics of the area of the Project (M. Brigham, University of Regina, pers. comm.). Both the little brown myotis and northern myotis are federally listed as endangered under SARA (SARPR 2018), and the roosts and foraging sites for all bat species (*Vespertilionidae*) are listed under the Saskatchewan Activity Restriction Guidelines,

recommending a 500-m setback from high disturbance activities year-round. While there is some uncertainty in species identification in recordings, there is near certainty that little brown myotis occurs in the area of the Project, and a reasonable likelihood that northern myotis occurs as well (M. Brigham, University of Regina, pers. comm.). Little brown myotis is provincially ranked as S4 (apparently secure), while northern myotis is ranked as S3 (rare to uncommon) in Saskatchewan. The remaining four species of bats potentially detected are ranked as either apparently secure (S4) or secure/common (S5) by the SKCDC.

Considerable range overlap exists between little brown myotis and northern myotis, with northern myotis being less widely distributed and generally less abundant (COSEWIC 2013). The habitat used by myotis species in temperate regions varies seasonally and is limited by the presence of suitable hibernacula (i.e., locations where bats hibernate over the winter) (COSEWIC 2013). Movements of little brown myotis and northern myotis are poorly understood; however, neither species is believed to partake in large migrations away from wintering hibernacula (Havens 2006). Myotis species typically select caves or abandoned mines for hibernacula and look for caverns having a stable ambient temperature, typically between 2°C and 10°C, and a humidity level of >80% (COSEWIC 2013). Specific hibernacula requirements can vary by species and region, with observed hibernacula temperatures as low as -4°C being documented for little brown myotis (COSEWIC 2013). Additional factors including running water features, cave size, number of cave openings, and the availability of adjacent fall foraging habitat are often important in hibernacula selection. Abandoned buildings and man-made structures are not known to be used as hibernacula by either species (COSEWIC 2013). Hibernacula mapping is deficient in Canada, particularly in the western provinces. No historic wintering locations have been previously identified in the area of the Project and the likelihood of hibernacula existing within this area is estimated to be low as discussed in Section 8.3.

Summer habitat selection is likely determined as a function of the availability of roosting structures in relation to accessible foraging grounds; however, current habitat models are incomplete (COSEWIC 2013). Individual bats may utilize a wide variety of physical structures for summer roosting including deeply furrowed tree bark, tree cavities, moderately decomposed snags, rock crevices, buildings, bridges, and other man-made structures (COSEWIC 2013). Myotis species form maternal colonies in the spring with little brown myotis prioritizing warm man-made environments (e.g., attics and bridges) while northern myotis selecting large-diameter trees and snags associated with mature forests (COSEWIC 2013). Northern myotis are far less social than little brown myotis and often roost alone or in smaller maternal colonies (Havens 2006). Myotis species typically return to historic maternal roosts each year (Havens 2006). Finally, both species of myotis are known to forage over water features and along forest edges, but avoid large clearings including large burn overs and clear cuts (COSEWIC 2013).

The most productive bat detector installation was ARU station 02, which was situated adjacent to the Patterson Creek Bridge. This infrastructure could serve to provide habitat for both maternal colonies and/or mixed sex groups that often congregate at night when cool temperatures persist (Havens 2006). An incidental observation of an individual bat foraging over Patterson Creek was noted near this location in early October. Bats also frequented an area adjacent the NexGen Road directly east of the NexGen camp at ARU station 04. This area is characterized by mature mixed wood forest and proximity to Patterson Lake; features that likely provide natural roosting opportunities near suitable foraging habitat.

### ***Boreal Woodland Caribou***

Woodland caribou were recorded incidentally on two occasions in the SSA (1 location) and LSA (1 locations). Woodland caribou occur at low densities in the Canadian boreal forest, with a national average of 2 – 3 animals per 100 km<sup>2</sup> (ECCC 2012). Preferred habitat includes large expanses of intact mature to old-growth coniferous forests (e.g., black spruce and jack pine) interspersed with conifer-dominated peatlands or muskegs (Rettie and Messier 2000; COSEWIC 2012; ECCC 2009; SARPR 2011). Mature and old growth forests provide both terrestrial and arboreal lichens, the primary food source for woodland caribou (Rettie and Messier 2000; ECCC 2009; SARPR 2011; COSEWIC 2012). Early seral stage forests, or recent burns and cuts are avoided, due to the lack of forage (Rettie and Messier 2000; COSEWIC 2012). Disturbed areas may also be more attractive to predators as a result of other ungulates (including deer and moose) being present in these habitat types (COSEWIC 2012). During calving season, habitat with reduced predation risk, such as islands within waterbodies, complex lake shorelines, and peatlands are preferred (SARPR 2011). The area of the Project is estimated to contain a moderate amount of highly suitable habitat for boreal woodland caribou, particularly in treed wetlands, and mature jack pine stands.

Woodland Caribou are listed as threatened under SARA (SARPR 2018) and are provincially ranked as S4 (apparently secure) in Saskatchewan by the SKCDC (2018a). There are no provincial or federal activity restriction guidelines relevant to woodland caribou in Saskatchewan.

## **10.2 Species with Provincial Activity Restriction Guidelines**

### ***Canadian Toad***

Canadian toads were documented in a total of seven locations in the SSA (2 locations) and LSA (5 locations). All detections were auditory with the exception of a single incidental observation at Naomi Lake, where two breeding individuals were confirmed. Canadian toads breed in wetlands within a variety of habitat types, including grassland, aspen parkland, and boreal forest, with a range extending as far north as Fort Smith, NWT (GNWT 2018). Canadian toads are often found in association with large bodies of water or river valleys. Adult toads are primarily a terrestrial amphibian species that only spend a few weeks, at most, associated with their aquatic breeding site and can travel into upland areas to elevations of 1200 m above sea level; however, as they are not tolerant of dry conditions as other toad species they generally remain in areas close to water or moist environments (ACA 2002). For the duration of the fall and winter, Canadian toads burrow in the earth so they typically depend on areas with sandy soils that allow ease of burrowing. Thus, preference may be given to sandy upland habitats adjacent to large waterbodies as they are likely to provide important wintering grounds (ACA 2002). Canadian toads are found in highest densities during the breeding between May and July near shallow riparian areas of lakes and slow moving rivers, as well as small seasonal and temporary wetlands (ACA 2002). The numerous wetlands, creeks, and lakes shouldered by sandy, wooded upland habitats noted within the area of the Project provide suitable habitat for all life stages of this species.

Federal and provincial legislation pertinent to Canadian toads is discussed in Section 4.3.

### ***Bonaparte's Gull***

Bonaparte's gulls were identified at a total of seven locations in the SSA (3 locations) and LSA (4 locations). This small species of gull prefers nesting in trees or riparian vegetation along the edges of lakes and

marshes in the boreal forest (Rodewald 2018). Nests are typically situated near water to best facilitate foraging for insects, crustaceans, and small fish (Rodewald 2018). Almost all observations of Bonaparte's gulls were noted as being adjacent to the shore of large waterbodies (e.g., Patterson Lake) except for individuals observed in flight. The habitat potential for this species throughout the area of the Project is estimated to be high due to the prevalence of lakes and wetlands with wooded riparian margins.

Bonaparte's gulls are not protected under SARA or COSEWIC (SARPR 2018) and are listed provincially as an S4B (apparently secure breeding population) by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines recommend a 400-m setback from gull colonies for high disturbance activities from May 1<sup>st</sup> to July 15<sup>th</sup> (ENV 2017).

### ***Common Loon***

Common loons were documented in a total of 42 locations in the SSA (18 locations) and LSA (24 locations). Common loons are aquatic birds requiring large permanent water bodies that are fish-bearing, including lakes and slow-moving rivers in forested areas (Rodewald 2018). Preferred nesting habitat is typically along the shore of lakes with coves and islands with steep drop-offs that provide areas of refuge from predators. Nests are constructed of aquatic plants and are always adjacent to water as loons cannot traverse long distances over land (Rodewald 2018). Common loons were found to be fairly abundant throughout the area of the Project, which is estimated to contain a moderate amount of highly suitable lakeshore habitat.

Common loons are not protected under SARA or COSEWIC and are listed provincially as S5B (secure/common breeding population) by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines recommend a 200-m setback from nesting loons for high disturbance activities from 1 May to 15 July (ENV 2017).

### ***Bald Eagle***

Bald eagles were documented at a total of five locations in the SSA (3 locations) and LSA (2 locations). Preferred breeding habitat for bald eagles typically consists of forested areas adjacent (i.e., within 2 km) to permanent fish-bearing waterbodies that provide adequate foraging opportunities and tall trees for perching and nesting (Rodewald 2018). Nest sites are often situated beneath the crown of the tallest available old-growth conifers, often overlooking water within tracts of forest isolated from human development (Rodewald 2018).

Early seral stage forest and regenerating burnt forest accounted for large portions in the area of the Project. These habitats are not generally preferred by nesting bald eagles, although bald eagles may occasionally use marginal-quality nesting sites such as rocky islands. High quality habitat in the area of the Project was confined to unburned areas of mature spruce and pine that remain near the lake shores. A potential breeding pair of bald eagles was observed at Beet Lake within the LSA, but no active nest site was found.

Bald eagles are not protected under SARA or COSEWIC and are ranked as S5B (secure/common breeding population) by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines recommend a 1,000-m setback from bald eagle nests for high disturbance activities from 15 March to 15 July (ENV 2017).

### **Herring Gulls and Other Large Gull Species**

Herring gulls were documented at a total of three locations in the SSA (1 location) and LSA (2 locations). There were several additional observations of large gulls (*Larus spp.*) in the LSA; however, these were not identified to species. Herring gulls typically nest on sparsely-vegetated islands with gravelly substrate (Rodewald 2018), form colonies during the breeding season, and are frequently found in the company of other gull and waterbird species (Rodewald 2018). Herring gulls, along with many other gull species, often utilize a diverse range of habitats during foraging and are opportunistic foragers. It is estimated that the area of the Project provides moderate habitat potential for herring gull colonies, although this species is often noisy and conspicuous and none were observed during the 2018 field program.

Herring gulls are not protected under SARA or COSEWIC (SARPR 2018); however the colonies of herring gulls and other gull species (except for ring-billed and California gulls) have a 400-m setback recommended by Saskatchewan Activity Restriction Guidelines for high disturbance activities (ENV 2017).

### **Osprey**

Osprey were documented at a total of four locations in the SSA (3 locations) and LSA (1 location) and no active nest sites were found during the 2018 field program. Osprey breed in a variety of forested habitats and generally select sites relatively close to fish-bearing waterbodies; however, travel up to 20 km from nests may occur while foraging (Rodewald 2018). Preferred nesting sites typically have open surroundings and often include tall snags, exposed cliff faces, man-made structures, and mature trees (Rodewald 2018). As much of the area of the Project is comprised of burned and regenerating forest, availability of sufficient nest platforms was somewhat limited; suggesting that high quality habitat for osprey in the area of the Project is primarily located in areas with mature trees or other structures capable of supporting nests. Overall, breeding habitat potential in the area of the Project is considered to be moderate.

Osprey are not protected under SARA or COSEWIC and are ranked as S2B (imperiled/very rare breeding population) by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines recommend a 1,000-m setback from osprey nests for high disturbance activities from 1 May to 15 August (ENV 2017).

### **American White Pelican**

One American white pelican was identified in the SSA and no evidence of breeding colonies were observed during the 2018 field program. American white pelicans nest colonially, preferring sparsely-vegetated islands with level ground and sand or gravel substrate (Rodewald 2018). The American white pelican will typically form large and conspicuous breeding colonies, often mixing with other colonial species such as double crested cormorants and gulls (Rodewald 2018). During the nesting season, American white pelicans may fly up to 50 km from nesting grounds while foraging for fish, often travelling in groups; therefore, sightings of individuals do not necessarily indicate the presence of a colony nearby (Rodewald 2018). Large lakes including Patterson Lake and Forest Lake have potential to provide seasonal foraging areas; however, the availability of nesting habitat for American white pelicans in the area of the Project is estimated to be low.

American white pelicans are not protected under SARA or COSEWIC and are ranked as S5B (secure/common breeding population) by the SKCDC (2018a). Saskatchewan Activity Restrictions

Guidelines recommend a 1,000-m setback from pelican colonies for high disturbance activities from 1 April to 31 July (ENV 2017).

***Great Gray Owl***

Great gray owls were detected in three locations in the SSA (2 locations) and LSA (1 location) during the 2018 field program. Great gray owls typically inhabit mature stands of coniferous trees with adjacent meadows, burn-overs, fields, or bogs (Rodewald 2018). Nest sites typically include the abandoned stick nests of ravens or raptors, or the broken tops of snags (Rodewald 2018). Open bogs, fens, burned areas, and meadows shouldered by mature jack pine and black spruce were widely distributed throughout the area of the Project and likely provide sufficient structures to support nesting. Therefore, habitat potential for great gray owls in the area of the Project is fairly high. Density of great gray owl on the landscape is highly variable among years and often fluctuates markedly in response to prey availability (Rodewald 2018); thus, the presence and distribution of great gray owls in the area of the Project may vary significantly among years, despite the availability of suitable habitat.

Great gray owls are not protected under SARA or COSEWIC and are ranked as S3B (vulnerable/rare to uncommon) by the SKCDC (2018a). Saskatchewan Activity Restrictions Guidelines recommend a 400-m setback from great gray owl nest sites for high disturbance activities from 1 May to 15 August (ENV 2017).

## 11.0 SUMMARY

The wildlife baseline program was designed to obtain comprehensive information to characterize wildlife, to include species of conservation concern (SOCC), and the associated habitats in near vicinity to the Project (Site Study Area [SSA]) and a broader Local Study Area [LSA]). Information obtained through database searches and field surveys was used alongside Indigenous Knowledge in the Environmental Impact Statement (EIS) and cumulative effects assessment, to inform Project planning, and support development of future monitoring programs and reclamation plans. To meet study objectives, the following studies were completed as part of the terrestrial wildlife baseline environment investigations for the Project:

- species of conservation concern database searches;
- autonomous recording units for detection of amphibians, birds, and bats;
- amphibian auditory surveys;
- breeding bird surveys;
- common nighthawk surveys;
- yellow rail surveys; and
- bat detection surveys.

A list of 15 species with conservation concern was compiled from database searches and by assessing biogeographical range for species potentially occurring in the region. The Hunting, Angling and Biodiversity Information of Saskatchewan (HABISask) database search identified 11 wildlife species previously recorded within 30 km of the centre of the SSA, including 10 bird species and one mammal. A further two mammal species and two amphibian species were added to database search results based on biogeographical range and habitat potential within the LSA.

Wildlife surveys were completed in the LSA and SSA for amphibians, common nighthawks, yellow rails, breeding birds, and bats. These surveys were completed by a combination of in-situ and ARU surveys. Sixteen nocturnal amphibian acoustic surveys were completed using a combination of ARU and in-situ surveys. Two species of amphibians were detected in the SSA, including Canadian toads and wood frogs. Canadian toads were the only SOCC detected, and the total number of detection locations, including survey results and incidental observations, included two sites in the SSA and six sites in the LSA.

During the breeding bird surveys, 100 point count locations were surveyed, including 53 in the SSA and 47 in the LSA using a mix of in-situ and ARU surveys. A total of 95 bird species were recorded, including 11 SOCC. These included four species listed under SARA: common nighthawk, olive-sided flycatcher, rusty blackbird, and barn swallow. An additional 7 species with provincial activity restriction guidelines (ENV 2017) were observed, including Bonaparte's gull, common loon, bald eagle, herring gull, osprey, American white pelican, and great gray owl.

A total of 27 locations were surveyed for common nighthawks and 15 wetlands for yellow rail using in-situ field surveys and ARU recordings. Detection rates per survey for common nighthawks ranged from zero to six individuals, and numerous incidental observations of common nighthawks were also recorded during other survey types completed in the SSA and LSA. No yellow rails were recorded during the surveys or incidentally, and the SSA was determined to have minimal habitat suitable for this species.

Five bat detectors were installed in the SSA and were designed to detect bats in three frequency groups: high frequency, low frequency, and myotis species. A total of 4,312 bat passes were recorded, including 4,206 in the high frequency and myotis groups, and 106 in the low-frequency group. Based on biogeographical range, abundance, call characteristics, and habitat suitability, bat passes categorized into either the high frequency or the *Myotis* groups are expected to be primarily composed of little brown myotis and those individuals in the low frequency group are expected to be primarily composed of silver-haired or hoary bats (M. Brigham University of Regina, pers. comm.).

Overall, a total of 19 sensitive species were detected during targeted field surveys and incidentally, including six species listed under SARA with restriction guidelines including: common nighthawk (200 m, 1 May to 31 August), olive-sided flycatcher (300 m, 1 May to 31 August), rusty blackbird (300 m, 1 May to 31 July), barn swallow (100 m, 1 May to 31 August), boreal woodland caribou, and bat species (potentially two species listed as endangered). An additional 12 species with provincial activity restriction guidelines were detected including Canadian toad (90 m year round), Bonaparte's gull (400 m, 1 May to 15 July), common loon (200 m, 15 May to 15 July), bald eagle (1000 m, 15 March to 15 July), herring gull (400 m, 1 May to 15 July), osprey (1000 m, 1 May to 15 August), American white pelican (1000 m, 1 April to 31 July), great gray owl (400 m, 1 May to 15 August), and four bat species in the Family *Vespertilionidae* (500 m year round). One additional provincially rare insect species, luna moth, was also observed.

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APPENDIX A

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WILDLIFE TERRESTRIAL ENVIRONMENT  
PHOTOGRAPHS

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Photo 1. Automated Recording Unit (ARU) mounted on tree in mature jack pine stand, May 2018



Photo 2. Representative wetland habitat for amphibian acoustic surveys, May 2018



Photo 3. Canadian toads (*Anaxyrus hemiophrys*) mating pair at Naomi Lake, May 2018



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Photo 5. Bat detector mounted on tree in mature jack pine stand, May 2018



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APPENDIX B

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DETAILED DATA TABLES

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Results of the Amphibian Auditory Survey, May and June 2018

Survey Location	UTM Coordinates <sup>a</sup>		Project Study Area <sup>b</sup>	Survey Number	Survey Date	Scientific Name	Common Name	Call Index <sup>c</sup>
	Easting	Northing						
AMPA 01	604750	6389338	SSA	1	24-May-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1
				2	10-Jun-2018	-	-	-
				3	20-Jun-2018	-	-	-
AMPA 02	605174	6390544	SSA	1	24-May-2018	<i>Lithobates sylvaticus</i>	Wood frog	1
				2	10-Jun-2018	-	-	-
				3	20-Jun-2018	-	-	-
AMPA 03	603393	6393612	SSA	1	24-May-2018	-	-	-
				2	10-Jun-2018	-	-	-
				3	19-Jun-2018	-	-	-
AMPA 04	604491	6394217	SSA	1	24-May-2018	<i>Lithobates sylvaticus</i>	Wood frog	1
				2	10-Jun-2018	-	-	-
				3	19-Jun-2018	-	-	-
AMPA 05	603778	6388734	LSA	1	25-May-2018	-	-	-
				2	10-Jun-2018	-	-	-
				3	20-Jun-2018	-	-	-
AMPA 06	604039	6391441	SSA	1	24-May-2018	-	-	-
				2	10-Jun-2018	-	-	-
				3	20-Jun-2018	-	-	-
AMPA 07	597754	6389900	LSA	1	21-May-2018	-	-	-
				2	10-Jun-2018	-	-	-
				3	21-Jun-2018	-	-	-
ARU 01	601313	6398648	LSA	1	23-May-2018	-	-	-
				2	3-Jun-2018	-	-	-
				3	19-Jun-2018	-	-	-
ARU 03	609906	6395870	LSA	1	25-May-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1
				2	4-Jun-2018	-	-	-
				3	17-Jun-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1
ARU 04	608183	6396958	LSA	1	28-May-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1
				2	5-Jun-2018	-	-	-
				3	18-Jun-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1

### Appendix B, Table 1

#### Results of the Amphibian Auditory Survey, May and June 2018

Survey Location	UTM Coordinates <sup>a</sup>		Project Study Area <sup>b</sup>	Survey Number	Survey Date	Scientific Name	Common Name	Call Index <sup>c</sup>
	Easting	Northing						
ARU 05	603794	6394437	SSA	1	27-May-2018	-	-	-
				2	7-Jun-2018	-	-	-
				3	15-Jun-2018	-	-	-
ARU 06	599235	6391405	LSA	1	25-May-2018	-	-	-
				2	9-Jun-2018	-	-	-
				3	20-Jun-2018	-	-	-
ARU 10	607388	6394103	LSA	1	28-May-2018	-	-	-
				2	7-Jun-2018	-	-	-
				3	14-Jun-2018	-	-	-
ARU 12	602685	6387383	LSA	1	30-May-2018	-	-	-
				2	8-Jun-2018	-	-	-
				3	16-Jun-2018	-	-	-
ARU 13	606593	6388821	LSA	1	27-May-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1
				2	6-Jun-2018	<i>Anaxyrus hemiophrys</i>	Canadian toad	1
				3	17-Jun-2018	-	-	-
ARU 14	608124	6390784	LSA	1	27-Jun-2018	-	-	-
				2	9-Jun-2018	-	-	-
				3	18-Jun-2018	-	-	-

a) UTM = NAD83 Zone 13V.

b) LSA = Local Study Area; SSA = Site Study Area.

c) Auditory surveys used a call intensity index based on the following:

0: No calls heard.

1: Individual calls, not overlapping (1 to 5 individuals calling simultaneously).

2: Calls overlapping, but individuals distinguishable (6 to 10 individuals calling simultaneously).

3: Chorus consistent and overlapping (more than 10 individuals).

Appendix B, Table 2

Species of Conservation Concern Observations and Locations, 2018

Scientific Name	Common Name	SARA Status	SARA Schedule	COSEWIC Status	SKCDC Rank	Survey Location	Survey Type	Observation Type	Project Study Area <sup>a</sup>	Date of Observation	Highest Abundance Detected	UTM Coordinates <sup>b</sup>	
												Easting	Northing
<b>Amphibians</b>													
<i>Anaxyrus hemiophrys</i>	Canadian toad	-	-	Not at risk	S4	AMPH 01	Auditory amphibian	Auditory	SSA	May, 2018	1	604750	6389338
						ARU 03	ARU amphibian, yellow rail (Inc), Common nighthawk (Inc)	Auditory	LSA	May/June, 2018	1	609906	6395870
						ARU 04	ARU amphibian	Auditory, Automated recognition	LSA	May/June, 2018	1	608183	6396958
						ARU 06	ARU Yellow rail (Inc)	Auditory	LSA	July, 2018	1	599235	6391405
						ARU 12	ARU Amphibian	Automated recognition	LSA	June, 2018	1	602685	6387383
						ARU 13	ARU Amphibian, Yellow rail (Inc), Common nighthawk (Inc)	Auditory, Automated recognition	LSA	May/June, 2018	1	606593	6388821
						YERA 02	Yellow rail (Inc)	Auditory	SSA	June, 2018	1	605124	6389747
						Naomi Lake	Incidental	Visual	LSA	May, 2018	2	613406	6390768
<b>Birds</b>													
<i>Chordeiles minor</i>	Common nighthawk	Threatened	Schedule 1	Special concern	S4B, S4M	AMPH 05	Auditory amphibian (Inc)	Auditory	SSA	May/June, 2018	1	603778	6388734
						AMPH 01	Auditory amphibian (Inc)	Auditory	LSA	June, 2018	1	604750	6389338
						AMPH 06	Auditory amphibian (Inc)	Auditory	SSA	June, 2018	1	604039	6391441
						YERA 01	Yellow rail (Inc)	Auditory	SSA	June, 2018	1	602582	6387381
						YERA 02	Yellow rail (Inc)	Auditory	SSA	June, 2018	1	605124	6389747
						YERA 03	Yellow rail (Inc)	Auditory	SSA	June, 2018	1	605173	6390546
						YERA 04	Yellow rail (Inc)	Auditory	SSA	June, 2018	1	605214	6391227
						YERA 05	Yellow rail (Inc)	Auditory	SSA	June, 2018	1	603457	6391645
						YERA 07	Yellow rail (Inc)	Auditory	SSA	June, 2018	2	604512	6394176
						BBS 04	Breeding bird	Auditory	SSA	June, 2018	1	606274	6393113
						BBS 13	Breeding bird	Auditory	LSA	June, 2018	1	608291	6395164
						BBS 17	Breeding bird	Auditory	LSA	June, 2018	1	604615	6388003
						BBS 19	Breeding bird	Auditory	LSA	June, 2018	1	609013	6396900
						BBS 57	Breeding bird	Auditory	SSA	June, 2018	1	604335	6393652
						BBS 66	Breeding bird	Auditory	SSA	June, 2018	1	603336	6391420
						BBS 71	Breeding bird	Auditory	SSA	June, 2018	1	604508	6394101
						BBS 72	Breeding bird	Auditory	SSA	June, 2018	1	604497	6393215
						CONI 01	Common nighthawk	Auditory	SSA	June, 2018	3	604138	6389331
						CONI 02	Common nighthawk	Auditory	SSA	June, 2018	3	605124	6389747
						CONI 03	Common nighthawk	Auditory	SSA	June, 2018	2	605174	6390583
						CONI 04	Common nighthawk	Auditory	SSA	June, 2018	2	604697	6391500
						CONI 05	Common nighthawk	Auditory	SSA	June, 2018	1	603526	6391652
						CONI 06	Common nighthawk	Auditory	SSA	June, 2018	1	604647	6392394
						CONI 07	Common nighthawk	Auditory	SSA	June, 2018	2	602723	6392051
CONI 08	Common nighthawk	Auditory	SSA	June, 2018	3	604664	6393314						
CONI 09	Common nighthawk	Auditory	SSA	June, 2018	1	604512	6394176						
CONI 10	Common nighthawk	Auditory	SSA	June, 2018	4	605531	6393542						
CONI 11	Common nighthawk	Auditory	SSA	June, 2018	2	603423	6392705						
CONI 12	Common nighthawk	Auditory/Nest	SSA	June, 2018	4	603866	6393520						

Appendix B, Table 2

Species of Conservation Concern Observations and Locations, 2018

Scientific Name	Common Name	SARA Status	SARA Schedule	COSEWIC Status	SKCDC Rank	Survey Location	Survey Type	Observation Type	Project Study Area <sup>a</sup>	Date of Observation	Highest Abundance Detected	UTM Coordinates <sup>b</sup>	
												Easting	Northing
<i>Chordeiles minor</i>	Common nighthawk	Threatened	Schedule 1	Special concern	S4B, S4M	ARU 01	ARU Common nighthawk, ARU Amphibian (Inc), ARU Yellow rail (Inc)	Auditory	LSA	June/July, 2018	6	601313	6398648
						ARU 02	ARU Common nighthawk	Auditory	LSA	June, 2018	3	605792	6398598
						ARU 03	ARU Common nighthawk, ARU Breeding bird, ARU Amphibian (Inc), ARU Yellow rail (Inc)	Auditory	LSA	June/July, 2018	6	609906	6395870
						ARU 04	ARU Common nighthawk, ARU Amphibian (Inc)	Auditory	LSA	June, 2018	4	608183	6396958
						ARU 05	ARU Common nighthawk, ARU Breeding bird, ARU Yellow rail (Inc)	Auditory	SSA	June, 2018	1	603794	6394437
						ARU 06	ARU Common nighthawk	Auditory	LSA	June, 2018	1	599235	6391405
						ARU 07	ARU Common nighthawk	Auditory	LSA	June, 2018	2	606541	6385407
						ARU 08	ARU Common nighthawk	Auditory	SSA	June, 2018	2	603388	6391742
						ARU 09	ARU Common nighthawk, ARU Breeding bird	Auditory	SSA	June/July, 2018	3	605602	6393303
						ARU 10	ARU Common nighthawk, ARU Amphibian (Inc), ARU Yellow rail (Inc)	Auditory	LSA	June/July, 2018	4	607388	6394103
						ARU 11	ARU Common nighthawk	Auditory	SSA	June, 2018	1	605113	6390534
						ARU 12	ARU Common nighthawk, ARU Yellow rail (Inc)	Auditory	LSA	June/July, 2018	3	602685	6387383
						ARU 13	ARU Common nighthawk, ARU Yellow rail (Inc)	Auditory	LSA	June/July, 2018	2	606593	6388821
						ARU 14	ARU Common nighthawk, ARU Amphibian (Inc), ARU Yellow rail (Inc)	Auditory	LSA	June, 2018	5	608124	6390784
						ARU 15	ARU Common nighthawk	Auditory	SSA	June, 2018	1	601850	6391262
<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	-	-	-	S4B,S4M	BBS 12	Breeding bird	Auditory	LSA	June, 2018	1	607446	6394107
						BBS 13	Breeding bird	Auditory	LSA	June, 2018	1	608291	6395164
						BBS 58	Breeding bird	Visual	SSA	June, 2018	5	605216	6389768
						BBS 77	Breeding bird	Visual	SSA	June, 2018	8	604178	6392670
						ARU 10	ARU Breeding bird	Auditory	LSA	June, 2018	1	607388	6394103
						ARU 11	ARU Breeding bird	Auditory	SSA	June, 2018	3	605113	6390534
						ARU 14	ARU Breeding bird	Auditory	LSA	June, 2018	1	608124	6390784
<i>Contopus cooperi</i>	Olive-sided flycatcher	Threatened	Schedule 1	Threatened	S4B, S4M	BBS 20	Breeding bird	Auditory	LSA	June, 2018	1	608210	6397027
						BBS 51	Breeding bird	Auditory	SSA	June, 2018	1	604896	6390311
						BBS 53	Breeding bird	Auditory	SSA	June, 2018	1	605389	6394000
						BBS 58	Breeding bird	Auditory	SSA	June, 2018	1	605216	6389768
						BBS 61	Breeding bird	Auditory	SSA	June, 2018	1	607272	6392410
						BBS 67	Breeding bird	Visual	SSA	June, 2018	1	604549	6390482
						BBS 80	Breeding bird	Auditory	SSA	June, 2018	1	603110	6391329
						ARU 01	ARU Breeding bird	Auditory	LSA	June, 2018	1	601313	6398648
						ARU 03	ARU Breeding bird	Auditory	LSA	May, 2018	2	609906	6395870
						ARU 04	ARU Breeding bird	Auditory	LSA	July, 2018	1	608183	6396958

Appendix B, Table 2

Species of Conservation Concern Observations and Locations, 2018

Scientific Name	Common Name	SARA Status	SARA Schedule	COSEWIC Status	SKCDC Rank	Survey Location	Survey Type	Observation Type	Project Study Area <sup>a</sup>	Date of Observation	Highest Abundance Detected	UTM Coordinates <sup>b</sup>	
												Easting	Northing
<i>Contopus cooperi</i>	Olive-sided flycatcher	Threatened	Schedule 1	Threatened	S4B, S4M	ARU 07	ARU Breeding bird	Auditory	LSA	June, 2018	1	606541	6385407
						ARU 13	ARU Breeding bird	Auditory	LSA	July, 2018	1	606593	6388821
<i>Euphagus carolinus</i>	Rusty blackbird	Special concern	Schedule 1	Special concern	S3B, SUN, S3M	ARU 02	ARU Breeding bird	Auditory	LSA	June, 2018	1	605792	6398598
						ARU 10	ARU Breeding bird	Auditory	LSA	June, 2018	1	607388	6394103
						ARU 13	ARU Breeding bird	Auditory	LSA	June, 2018	1	606593	6388821
<i>Gavia immer</i>	Common loon	-	-	Not at risk	S5B,SUN,S5M	BBS 01	Breeding bird	Auditory	SSA	June, 2018	2	606250	6392607
						BBS 04	Breeding bird	Auditory	SSA	June, 2018	1	606274	6393113
						BBW 09	Breeding bird	Auditory	SSA	June, 2018	1	605582	6393105
						BBS 11	Breeding bird	Auditory	LSA	June, 2018	1	606327	6394341
						BBS 12	Breeding bird	Auditory	LSA	June, 2018	1	607446	6394107
						BBS 13	Breeding bird	Auditory	LSA	June, 2018	1	608291	6395164
						BBS 17	Breeding bird	Auditory	LSA	June, 2018	1	604615	6388003
						BBS 18	Breeding bird	Auditory	LSA	June, 2018	1	605321	6388688
						BBS 20	Breeding bird	Auditory	LSA	June, 2018	1	608223	6397016
						BBS 21	Breeding bird	Auditory	LSA	June, 2018	1	607663	6397223
						BBS 23	Breeding bird	Auditory	LSA	June, 2018	1	606100	6396806
						BBS 24	Breeding bird	Auditory	LSA	June, 2018	1	605304	6396921
						BBS 25	Breeding bird	Auditory	LSA	June, 2018	1	604450	6396895
						BBS 32	Breeding bird	Visual	LSA	June, 2018	2	602746	6388110
						BBS 35	Breeding bird	Auditory	LSA	June, 2018	1	602615	6387362
						BBS 38	Breeding bird	Auditory	LSA	June, 2018	1	600138	6387519
						BBS 39	Breeding bird	Auditory	LSA	June, 2018	1	598106	6395998
						BBS 40	Breeding bird	Auditory	LSA	June, 2018	1	598933	6395930
						BBS 43	Breeding bird	Auditory	LSA	June, 2018	1	599842	6391779
						BBS 45	Breeding bird	Flyover	LSA	June, 2018	3	600925	6391681
						BBS 47	Breeding bird	Auditory	SSA	June, 2018	2	605253	6390857
						BBS49	Breeding bird	Auditory	SSA	June, 2018	1	604872	6389516
						BBS 54	Breeding bird	Auditory	SSA	June, 2018	1	605801	6394159
						BBS 55	Breeding bird	Auditory	SSA	June, 2018	1	606910	6392102
						BBS 63	Breeding bird	Auditory	SSA	June, 2018	2	606585	6392882
						BBS 67	Breeding bird	Visual	SSA	June, 2018	1	604551	6390484
						BBS 70	Breeding bird	Flyover	SSA	June, 2018	1	602723	6392053
						BBS 71	Breeding bird	Auditory	SSA	June, 2018	1	604508	6394101
						BBS 74	Breeding bird	Auditory	SSA	June, 2018	1	603387	6393613
						BBS 76	Breeding bird	Auditory	SSA	June, 2018	1	604849	6393604
BBS 81	Breeding bird	Auditory	SSA	June, 2018	1	602683	6390813						
CONI 05	Common nighthawk (Inc)	Auditory	LSA	June, 2018	1	603526	6391652						
ARU 01	ARU Breeding bird	Auditory	LSA	June, 2018	1	601313	6398648						
<i>Gavia immer</i>	Common loon	-	-	Not at risk	S5B,SUN,S5M	ARU 02	ARU Breeding bird	Auditory	LSA	May/July, 2018	1	605792	6398598
						ARU 03	ARU Breeding bird	Auditory	LSA	May/June/July, 2018	2	609906	6395870
						ARU 04	ARU Breeding bird	Auditory	LSA	July, 2018	1	608183	6396958
						ARU 05	ARU Breeding bird	Auditory	SSA	June, 2018	1	603794	6394437

Appendix B, Table 2

Species of Conservation Concern Observations and Locations, 2018

Scientific Name	Common Name	SARA Status	SARA Schedule	COSEWIC Status	SKCDC Rank	Survey Location	Survey Type	Observation Type	Project Study Area <sup>a</sup>	Date of Observation	Highest Abundance Detected	UTM Coordinates <sup>b</sup>	
												Easting	Northing
<i>Gavia immer</i>	Common loon	-	-	Not at risk	S5B,SUN,S5M	ARU 06	ARU Breeding bird	Auditory	LSA	May, 2018	1	599235	6391405
						ARU 08	ARU Breeding bird	Auditory	SSA	June, 2018	1	603388	6391742
						ARU 09	ARU Breeding bird	Auditory	SSA	June, 2018	1	605602	6393303
						ARU 11	ARU Breeding bird	Auditory	SSA	June, 2018	2	605113	6390534
						ARU 14	ARU Breeding bird	Auditory	LSA	June/July, 2018	1	608124	6390784
<i>Haliaeetus leucocephalus</i>	Bald eagle	-	-	Not at risk	S5B, S5N, S4M	BBS 12	Breeding bird	Visual	LSA	June, 2018	2	607446	6394107
						BBS 54	Breeding bird	Visual	SSA	June, 2018	1	605801	6394159
						BBS 66	Breeding bird	Visual breeding pair	SSA	June, 2018	2	603336	6391420
						ARU 11	ARU Breeding bird	Auditory	SSA	June, 2018	1	605113	6390534
						Beet Lake	Incidental	Visual	LSA	May/Aug./Sept., 2018	2	6391114	608938
<i>Hirundo rustica</i>	Barn swallow	Threatened	Schedule 1	Threatened	S5B,S5M	BBS 04	Breeding bird	Auditory	SSA	June, 2018	2	606274	6393113
						BBS 20	Breeding bird	Auditory	LSA	June, 2018	4	608223	6397016
						BBS 66	Breeding bird	Visual/nest	SSA	June, 2018	6	603336	6391420
						BBS 71	Breeding bird	Auditory	SSA	June, 2018	1	604508	6394101
						BBS 72	Breeding bird	Visual	SSA	June, 2018	2	604497	6393215
						BBS 73	Breeding bird	Visual	SSA	June, 2018	2	604005	6393610
						BBS 80	Breeding bird	Visual	SSA	June, 2018	1	603110	6391329
						CONI 03	Common nighthawk (Inc)	Visual	LSA	June, 2018	1	605174	6390583
						ARU 04	ARU Breeding bird	Auditory	LSA	June, 2018	1	608183	6396958
						ARU 11	ARU Breeding bird	Auditory	SSA	June, 2018	2	605113	6390534
<i>Hirundo rustica</i>	Herring gull	-	-	-	S5B,S5M	BBS 34	Breeding bird	Auditory	LSA	June, 2018	1	601177	6390348
						BBS 38	Breeding bird	Auditory	LSA	June, 2018	1	600138	6387519
						BBS 76	Breeding bird	Auditory	SSA	June, 2018	1	604849	6393604
<i>Pandion haliaetus</i>	Osprey	-	-	-	S2B,S2M	BBS 45	Breeding bird	Visual	LSA	June, 2018	1	600925	6391681
						BBS 53	Breeding bird	Visual	SSA	June, 2018	1	605387	6394012
						BBS 66	Breeding bird	Visual/Flyover	SSA	June, 2018	1	603336	6391420
						BBS 81	Breeding bird	Visual	SSA	June, 2018	1	602683	6390813
<i>Pelecanus erythrorhynchos</i>	American white pelican	-	-	Not at risk	S5B,S5M	BBS 74	Breeding bird	Visual	SSA	June, 2018	1	603387	6393613
<i>Strix nebulosa</i>	Great grey owl	-	-	Not at risk	S3	AMPH 04	Auditory amphibian (Inc)	Auditory	SSA	May, 2018	1	604491	6394217
						YERA 04	Yellow rail (Inc)	Flyover	SSA	June, 2018	1	605173	6390546
						ARU 04	ARU Breeding bird	Auditory	LSA	June, 2018	1	608183	6396958
<b>Mammals</b>													
<i>Rangifer tarandus caribou</i>	Woodland caribou	Threatened	Schedule 1	Threatened	S3	Lake H	Incidental	Visual	RSA	August, 2018	1	609943	6394558
						ARU 11	ARU Breeding bird (Inc)	Auditory	SSA	June, 2018	1	605113	6390534
<i>Myotis lucifugus</i>	Little brown myotis	Endangered	Schedule 1	Endangered	S4	BAT 01	ARU Bat	Auditory	SSA	May - Oct., 2018	-	605212	6389781
						BAT 02	ARU Bat	Auditory	SSA	May - Oct., 2018	-	605164	6390520
						BAT 03	ARU Bat	Auditory	SSA	May - Oct., 2018	-	604498	6393439
<i>Myotis lucifugus</i>	Little brown myotis	Endangered	Schedule 1	Endangered	S4	BAT 04	ARU Bat	Auditory	SSA	May - Oct., 2018	-	604061	6391419
						BAT 05	ARU Bat	Auditory	SSA	May - Oct., 2018	-	601850	6391262
<i>Myotis septentrionalis</i>	Northern myotis	Endangered	Schedule 1	Endangered	S3	BAT 01	ARU Bat	Auditory	SSA	May - Oct., 2018	-	605212	6389781
						BAT 02	ARU Bat	Auditory	SSA	May - Oct., 2018	-	605164	6390520
						BAT 03	ARU Bat	Auditory	SSA	May - Oct., 2018	-	604498	6393439
						BAT 04	ARU Bat	Auditory	SSA	May - Oct., 2018	-	604061	6391419

**Appendix B, Table 2**

Species of Conservation Concern Observations and Locations, 2018

Scientific Name	Common Name	SARA Status	SARA Schedule	COSEWIC Status	SKCDC Rank	Survey Location	Survey Type	Observation Type	Project Study Area <sup>a</sup>	Date of Observation	Highest Abundance Detected	UTM Coordinates <sup>b</sup>	
												Easting	Northing
<i>Myotis septentrionalis</i>	Northern myotis	Endangered	Schedule 1	Endangered	S3	BAT 05	ARU Bat	Auditory	SSA	May - Oct., 2018	-	601850	6391262
Genus <i>Vespertilionidae</i> <sup>c</sup>	Bat species	-	-	-	S4B - S5B	BAT 01	ARU Bat	Auditory	SSA	May - Oct., 2018	-	605212	6389781
						BAT 02	ARU Bat	Auditory	SSA	May - Oct., 2018	-	605164	6390520
						BAT 03	ARU Bat	Auditory	SSA	May - Oct., 2018	-	604498	6393439
						BAT 04	ARU Bat	Auditory	SSA	May - Oct., 2018	-	604061	6391419
						BAT 05	ARU Bat	Auditory	SSA	May - Oct., 2018	-	601850	6391262

a) LSA = Local Study Area; SSA = Site Study Area.

b) UTM = NAD83 Zone 13V.

c) Genus *Vespertilionidae* includes big brown bat (*Eptesicus fuscus*), silver-haired bat (*Lasionycteris noctivagans*), eastern red bat (*Lasirurus borealis*), and hoary bat (*Lasirurus cinereus*).

Inc = Incidental observation of non-targeted species.

**Appendix B, Table 3**

Breeding Bird Point Count Locations, May to June 2018

Survey Location	UTM Coordinates <sup>a</sup>		Project Study Area <sup>b</sup>	Habitat	Survey Dates		
	Easting	Northing			Round 1	Round 2	Round 3
BBS 01	606250	6392607	SSA	Mature conifer	07-Jun-18	23-Jun-18	-
BBS 02	609820	6396787	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 03	606566	6392365	SSA	Mature conifer	07-Jun-18	23-Jun-18	-
BBS 04	606274	6393113	SSA	Mature conifer	07-Jun-18	23-Jun-18	-
BBS 05	605954	6393341	SSA	Young conifer	07-Jun-18	23-Jun-18	-
BBS 06	605602	6393590	SSA	Mature conifer	06-Jun-18	23-Jun-18	-
BBS 07	606080	6393794	SSA	Young conifer	06-Jun-18	23-Jun-18	-
BBS 08	605292	6393339	SSA	Mature conifer	06-Jun-18	23-Jun-18	-
BBS 09	605588	6393102	SSA	Young conifer	07-Jun-18	23-Jun-18	-
BBS 10	605915	6392855	SSA	Young conifer	07-Jun-18	22-Jun-18	-
BBS 11	606336	6394338	LSA	Young conifer/lakeshore	06-Jun-18	22-Jun-18	-
BBS 12	607446	6394107	LSA	Mature conifer/deciduous/lakeshore	10-Jun-18	22-Jun-18	-
BBS 13	608291	6395164	LSA	Burned forest/lakeshore	10-Jun-18	22-Jun-18	-
BBS 14	603319	6390132	LSA	Mature mixed wood/lakeshore	11-Jun-18	22-Jun-18	-
BBS 15	610535	6396688	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 16	603654	6387610	LSA	Mature mixed wood	06-Jun-18	25-Jun-18	-
BBS 17	604609	6388003	LSA	Mature conifer	08-Jun-18	25-Jun-18	-
BBS 18	605321	6388688	LSA	Young conifer	08-Jun-18	25-Jun-18	-
BBS 19	609013	6396900	LSA	Burned forest	08-Jun-18	24-Jun-18	-
BBS 20	608210	6397027	LSA	Young conifer/creek	08-Jun-18	24-Jun-18	-
BBS 21	607663	6397223	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 22	606927	6397104	LSA	Young conifer/burned forest	08-Jun-18	24-Jun-18	-
BBS 23	606100	6396806	LSA	Mature conifer/lakeshore	08-Jun-18	24-Jun-18	-
BBS 24	605304	6396921	LSA	Mature conifer/lakeshore	08-Jun-18	24-Jun-18	-
BBS 25	604450	6396895	LSA	Mature conifer/lakeshore	08-Jun-18	24-Jun-18	-
BBS 26	603715	6396664	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 27	602869	6396490	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 28	602159	6396237	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 29	603901	6389071	LSA	Mature conifer	05-Jun-18	24-Jun-18	-
BBS 30	603396	6388471	LSA	Mature conifer	05-Jun-18	24-Jun-18	-
BBS 31	603596	6392075	LSA	Mature conifer/bog	09-Jun-18	24-Jun-18	-
BBS 32	602780	6388111	LSA	Young conifer/burned forest	05-Jun-18	24-Jun-18	-
BBS 33	599858	6390817	LSA	Mature conifer/lakeshore	10-Jun-18	22-Jun-18	-
BBS 34	601177	6390348	LSA	Mature conifer	10-Jun-18	27-Jun-18	-

**Appendix B, Table 3**

Breeding Bird Point Count Locations, May to June 2018

Survey Location	UTM Coordinates <sup>a</sup>		Project Study Area <sup>b</sup>	Habitat	Survey Dates		
	Easting	Northing			Round 1	Round 2	Round 3
BBS 35	602607	6387362	LSA	Mature mixed wood	07-Jun-18	25-Jun-18	-
BBS 36	601971	6388176	LSA	Young conifer	07-Jun-18	24-Jun-18	-
BBS 37	600991	6388098	LSA	Mature conifer	07-Jun-18	24-Jun-18	-
BBS 38	600138	6387519	LSA	Young conifer	07-Jun-18	24-Jun-18	-
BBS 39	598106	6395998	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 40	598933	6395930	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 41	599860	6395861	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 42	600665	6395809	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 43	599842	6391779	LSA	Young conifer/lakeshore	10-Jun-18	22-Jun-18	-
BBS 44	598711	6393679	LSA	Mixed wood/lakeshore	10-Jun-18	22-Jun-18	-
BBS 45	600925	6391681	LSA	Lakeshore	10-Jun-18	22-Jun-18	-
BBS 46	601307	6395914	LSA	Mature conifer	08-Jun-18	24-Jun-18	-
BBS 47	605260	6390887	SSA	Mature conifer/bog	05-Jun-18	24-Jun-18	-
BBS 48	604254	6389420	SSA	Mature conifer	05-Jun-18	24-Jun-18	-
BBS 49	604872	6389516	SSA	Mature conifer	05-Jun-18	24-Jun-18	-
BBS 50	604582	6389943	SSA	Mature conifer	10-Jun-18	24-Jun-18	-
BBS 51	604896	6390311	SSA	Mature conifer/deciduous	05-Jun-18	24-Jun-18	-
BBS 52	603981	6393233	SSA	Conifer/industrial site	09-Jun-18	24-Jun-18	-
BBS 53	605387	6394012	SSA	Conifer/lakeshore	06-Jun-18	23-Jun-18	-
BBS 54	605801	6394159	SSA	Young conifer	09-Jun-18	23-Jun-18	-
BBS 55	606910	6392102	SSA	Treed wetland	07-Jun-18	23-Jun-18	-
BBS 56	603795	6394434	SSA	Conifer/deciduous/ lakeshore	10-Jun-18	22-Jun-18	-
BBS 57	604351	6393648	SSA	Conifer/industrial site	09-Jun-18	23-Jun-18	-
BBS 58	605216	6389768	SSA	Mixed wood/lakeshore	12-Jun-18	24-Jun-18	-
BBS 59	604673	6392416	SSA	Young conifer	06-Jun-18	23-Jun-18	-
BBS 60	605020	6392275	SSA	Young conifer	06-Jun-18	23-Jun-18	-
BBS 61	607277	6392411	SSA	Treed wetland	07-Jun-18	23-Jun-18	-
BBS 62	606967	6392619	SSA	Mature conifer	07-Jun-18	23-Jun-18	-
BBS 63	606585	6392882	SSA	Mature conifer	07-Jun-18	23-Jun-18	-
BBS 64	604960	6393029	SSA	Young conifer	06-Jun-18	23-Jun-18	-
BBS 65	604164	6392081	SSA	Young conifer	06-Jun-18	23-Jun-18	-
BBS 66	603336	6391420	SSA	Conifer/industrial site	08-Jun-18	23-Jun-18	-
BBS 67	604549	6390482	SSA	Mixed wood/lakeshore	05-Jun-18	24-Jun-18	-
BBS 68	602328	6391846	SSA	Young conifer	06-Jun-18	24-Jun-18	-

**Appendix B, Table 3**

Breeding Bird Point Count Locations, May to June 2018

Survey Location	UTM Coordinates <sup>a</sup>		Project Study Area <sup>b</sup>	Habitat	Survey Dates		
	Easting	Northing			Round 1	Round 2	Round 3
BBS 69	601838	6391472	SSA	Young conifer/burned forest	06-Jun-18	24-Jun-18	-
BBS 70	602727	6392060	SSA	Young conifer	06-Jun-18	24-Jun-18	-
BBS 71	604508	6394101	SSA	Mixed wood/lakeshore	06-Jun-18	22-Jun-18	-
BBS 72	604503	6393217	SSA	Mature conifer	06-Jun-18	23-Jun-18	-
BBS 73	604005	6393610	SSA	Mature conifer/industrial site	06-Jun-18	24-Jun-18	-
BBS 74	603373	6393607	SSA	Treed wetland/lakeshore	06-Jun-18	24-Jun-18	-
BBS 75	603195	6392942	SSA	Conifer/Industrial site	06-Jun-18	24-Jun-18	-
BBS 76	604849	6393604	SSA	Young conifer	07-Jun-18	23-Jun-18	-
BBS 77	604178	6392670	SSA	Conifer/industrial site	06-Jun-18	23-Jun-18	-
BBS 78	603574	6392770	SSA	Young conifer	06-Jun-18	24-Jun-18	-
BBS 79	603023	6392321	SSA	Young conifer	06-Jun-18	24-Jun-18	-
BBS 80	603110	6391329	SSA	Mixed wood/lakeshore	06-Jun-18	23-Jun-18	-
BBS 81	602675	6390818	SSA	Mixed wood/industrial site	06-Jun-18	22-Jun-18	-
BBS 82	602198	6391056	SSA	Young conifer	06-Jun-18	24-Jun-18	-
BBS 83	604431	6391459	SSA	Mature conifer	05-Jun-18	24-Jun-18	-
BBS 84	605199	6391291	SSA	Mature conifer	05-Jun-18	24-Jun-18	-
BBS 85	603594	6391571	SSA	Mature conifer	05-Jun-18	23-Jun-18	-
ARU 01	601313	6398648	LSA	Mature conifer/burned forest	31-May-18	17-Jun-18	07-Jul-18
ARU 02	605792	6398598	LSA	Young and mature conifer	31-May-18	18-Jun-18	06-Jul-18
ARU 03	609906	6395870	LSA	Mature conifer/burned forest and bog	31-May-18	19-Jun-18	09-Jul-18
ARU 04	608183	6396958	LSA	Mature conifer/creek	10-Jun-18	22-Jun-18	08-Jul-18
ARU 05	603794	6394437	SSA	Mature conifer/lakeshore	01-Jun-18	15-Jun-18	12-Jul-18
ARU 06	599235	6391405	LSA	Mature conifer/lakeshore	30-May-18	13-Jun-18	07-Jul-18
ARU 07	606541	6385407	LSA	Mature Conifer/deciduous/ lakeshore	09-Jun-18	19-Jun-18	01-Jul-18
ARU 08	603388	6391742	SSA	Mature conifer/bog	10-Jun-18	20-Jun-18	09-Jul-18
ARU 09	605602	6393303	SSA	Young conifer	08-Jun-18	16-Jun-18	04-Jul-18
ARU 10	607388	6394103	LSA	Mature conifer/lakeshore	03-Jun-18	13-Jun-18	27-Jun-18
ARU 11	605113	6390534	SSA	Mature conifer/lakeshore/creek	06-Jun-18	15-Jun-18	30-Jun-18
ARU 12	602685	6387383	LSA	Mature deciduous/conifer/lakeshore	10-Jun-18	17-Jun-18	25-Jun-18
ARU 13	606593	6388821	LSA	Mature conifer/bog/lakeshore	03-Jun-18	15-Jun-18	12-Jul-18
ARU 14	608124	6390784	LSA	Burned forest and bog/creek	06-Jun-18	25-Jun-18	08-Jul-18
ARU 15	601850	6391262	SSA	Mature conifer/bog	08-Jun-18	23-Jun-18	07-Jul-18

a) All UTM coordinates are in NAD 83 Zone 12V.

b) LSA = Local Study Area; SSA = Site Study Area.

**Appendix B, Table 4**

Results of the Breeding Bird Surveys, May to July 2018

Scientific Name	Common Name	SKCDC Rank	COSEWIC status	SARA status	Abundance <sup>a</sup>	Detection Locations <sup>b</sup>
<i>Actitis macularius</i>	Spotted sandpiper	S4B,S4M	-	-	6	6
<i>Agelaius phoeniceus</i>	Red-winged blackbird	S5B,SUN,S5M	-	-	1	1
<i>Ammodramus leconteii</i>	LeConte's sparrow	S5B,S5M	-	-	5	2
<i>Anas acuta</i>	Northern pintail	S5B,S4N,S5M	-	-	1	1
<i>Anas americana</i>	American wigeon	S5B,S2N,S5M	-	-	1	1
<i>Anas platyrhynchos</i>	Mallard	S5B,S5M	-	-	1	1
<i>Aythya affinis</i>	Lesser scaup	S5B,S3N,S5M	-	-	1	1
<i>aythya americana</i>	Redhead	S5B,S2N,S5M	-	-	4	1
<i>Bartramia longicauda</i>	Upland sandpiper	S5B,S5M	-	-	43	3
<i>Bombycilla cedrorum</i>	Cedar waxwing	S5B,S5M	-	-	3	3
<i>Branta canadensis</i>	Canada goose	S5B,S2N,S5M	-	-	516	19
<i>Buteo jamaicensis</i>	Red-tailed hawk	S5B,S1N,S5M	Not at Risk	-	1	1
<i>Cardellina pusilla</i>	Wilson's warbler	S5B,SUM	-	-	18	11
<i>Catharus guttatus</i>	Hermit thrush	S5B,S5M	-	-	118	54
<i>Catharus ustulatus</i>	Swainson's thrush	S5B,S5M	-	-	78	36
<i>Charadrius vociferus</i>	Killdeer	S5B,S5M	-	-	1	1
<b><i>Chordeiles minor</i><sup>c</sup></b>	<b>Common nighthawk</b>	S4B,S4M	Threatened	Threatened	18	18
<b><i>Chroicocephalus philadelphia</i><sup>c</sup></b>	<b>Bonaparte's gull</b>	S4B,S4M	-	-	24	7
<i>Cistothorus palustris</i>	Marsh wren	S4B,S4M	-	-	1	1
<i>Colaptes auratus</i>	Northern flicker	S5B,SUN,S5M	-	-	6	4
<b><i>Contopus cooperi</i><sup>c</sup></b>	<b>Olive-sided flycatcher</b>	S4B,S4M	Special Concern	Threatened	16	12
<i>Contopus sordidulus</i>	Western wood-pewee	S4B,S4M	-	-	3	2
<i>Corvus brachyrhynchos</i>	American crow	S5B,S4N,S5M	-	-	21	15
<i>Corvus corax</i>	Common raven	S5	-	-	19	13
<i>Dumetella carolinensis</i>	Gray catbird	S5B,S5M	-	-	1	1
<i>Empidonax alnorum</i>	Alder flycatcher	S5B,S5M	-	-	38	22
<i>Empidonax alnorum</i>	Yellow-bellied flycatcher	S5B,S5M	-	-	14	10
<i>Empidonax minimus</i>	Least flycatcher	S5B,S5M	-	-	2	4
<i>Empidonax traillii</i>	Willow flycatcher	S4B,S4M	-	-	1	1
<b><i>Euphagus carolinus</i><sup>c</sup></b>	<b>Rusty blackbird</b>	S3B,SUN,S3M	Special Concern	Special Concern	4	3
<i>Falciennis canadensis</i>	Spruce grouse	S5	-	-	4	4
<i>Gallinago delicata</i>	Wilson's snipe	S5B,S5M	-	-	20	17
<b><i>Gavia immer</i><sup>c</sup></b>	<b>Common loon</b>	S5B,SUN,S5M	Not at Risk	-	62	41
<i>Geothlypis philadelphia</i>	Mourning warbler	S5B,S5M	-	-	3	3
<i>Grus canadensis</i>	Sandhill crane	S5B,S5M	-	-	9	6
<b><i>Haliaeetus leucocephalus</i><sup>c</sup></b>	<b>Bald eagle</b>	S5B,S5N,S4M	-	-	6	4

Appendix B, Table 4

Results of the Breeding Bird Surveys, May to July 2018

Scientific Name	Common Name	SKCDC Rank	COSEWIC status	SARA status	Abundance <sup>a</sup>	Detection Locations <sup>b</sup>
<i>Hirundo rustica</i>	<b>Barn swallow</b>	S5B,S5M	Threatened	Threatened	29	9
<i>Junco hyemalis</i>	Dark-eyed junco	S5B,S4N,S5M	-	-	313	92
<i>Larus argentatus</i> <sup>c</sup>	<b>Herring gull</b>	S5B,S5M	-	-	3	3
<i>Larus californicus</i>	California gull	S4B,S4M	-	-	21	9
<i>Larus delawarensis</i>	Ring-billed gull	S5B,S5M	-	-	44	21
<i>Larus sp.</i> <sup>c</sup>	<b>Gull sp.</b>	-	-	-	8	3
<i>Loxia curvirostra</i>	Red crossbill	S4B,S5N	-	-	64	16
<i>Loxia leucoptera</i>	White-winged crossbill	S4B,S3N	-	-	43	13
<i>Megaceryle alcyon</i>	Belted kingfisher	S4B,S4M	-	-	5	4
<i>Melospiza georgiana</i>	Swamp sparrow	S5B,S5M	-	-	20	14
<i>Melospiza lincolni</i>	Lincoln's sparrow	S5B,S5M	-	-	26	14
<i>Melospiza melodia</i>	Song sparrow	S5B,S5M	-	-	66	21
<i>Mergus merganser</i>	Common merganser	S5B,S2N,S4M	-	-	37	9
<i>Mniotilta varia</i>	Black-and-white warbler	S5B,S5M	-	-	3	3
<i>Oreothlypis celata</i>	Orange-crowned warbler	S5B,S5M	-	-	50	28
<i>Oreothlypis peregrina</i>	Tennessee warbler	S5B,S5M	-	-	40	27
<i>Oreothlypis ruficapilla</i>	Nashville warbler	S5B,S5M	-	-	3	3
<i>Pandion haliaetus</i> <sup>c</sup>	<b>Osprey</b>	S2B,S2M	-	-	4	4
<i>Parkesia noveboracensis</i>	Northern waterthrush	S5B,S5M	-	-	5	5
<i>Passerella iliaca</i>	Red fox sparrow	S5B,SUM	-	-	71	39
<i>Pelecanus erythrorhynchos</i> <sup>c</sup>	<b>American white pelican</b>	S5B,S5M	-	-	1	1
<i>Perisoreus canadensis</i>	Gray jay	S5	-	-	66	43
<i>Petrochelidon pyrrhonota</i>	Cliff swallow	S5B,S5M	-	-	6	2
<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak	S5B,S5M	-	-	1	1
<i>Piciformes</i>	Woodpeckers	-	-	-	11	8
<i>Picoides arcticus</i>	Black-backed woodpecker	S4	-	-	12	9
<i>Picoides dorsalis</i>	American three-toed woodpecker	S4	-	-	1	1
<i>Picoides villosus</i>	Hairy woodpecker	S5	-	-	2	2
<i>Pinicola enucleator</i>	Pine grosbeak	S2B,S4N	-	-	6	1
<i>Plectrophenax nivalis</i>	Snow bunting	S5N,S5M	-	-	1	1
<i>Podiceps grisegena</i>	Red-necked grebe	S5B,S5M	Not at Risk	-	3	2
<i>Poecile atricapillus</i>	Black-capped chickadee	S5	-	-	1	1

**Appendix B, Table 4**

Results of the Breeding Bird Surveys, May to July 2018

Scientific Name	Common Name	SKCDC Rank	COSEWIC status	SARA status	Abundance <sup>a</sup>	Detection Locations <sup>b</sup>
<i>Poecile hudsonicus</i>	Boreal chickadee	S4	-	-	2	2
<i>Regulus calendula</i>	Ruby-crowned kinglet	S5B,S5M	-	-	60	36
<i>Regulus satrapa</i>	Golden-crowned kinglet	S5B,S4N,S5M	-	-	3	3
<i>Seiurus aurocapilla</i>	Ovenbird	S5B,S5M	-	-	2	2
<i>Setophaga castanea</i>	Bay-breasted warbler	S5B,S5M	-	-	3	1
<i>Setophaga coronata</i>	Yellow-rumped warbler	S5B,S5M	-	-	263	90
<i>Setophaga magnolia</i>	Magnolia warbler	S5B,S5M	-	-	21	16
<i>Setophaga palmarum</i>	Palm warbler	S5B,S5M	-	-	219	69
<i>Setophaga petechia</i>	Yellow warbler	S5B,S5M	-	-	15	12
<i>Setophaga striata</i>	Blackpoll warbler	S5B,S4M	-	-	2	2
<i>Sitta canadensis</i>	Red-breasted nuthatch	S5B,S5N,S5M	-	-	1	1
<i>Spinus pinus</i>	Pine siskin	S5	-	-	19	6
<i>Spizella pallida</i>	Clay-coloured sparrow	S5B,S5M	-	-	11	7
<i>Spizella passerina</i>	Chipping sparrow	S5B,S5M	-	-	188	71
<b><i>Strix nebulosa</i><sup>c</sup></b>	<b>Great gray owl</b>	S3	Not at Risk	-	1	1
<i>Tachycineta bicolor</i>	Tree swallow	S5B,S5M	-	-	7	5
<i>Tringa flavipes</i>	Lesser yellowlegs	S4B,S4M	-	-	5	5
<i>Tringa melanoleuca</i>	Greater yellowlegs	S5B,S5M	-	-	9	8
<i>Tringa semipalmata</i>	Willet	S4B,S4M	-	-	1	1
<i>Tringa solitaria</i>	Solitary sandpiper	S5B,S4M	-	-	3	2
<i>Troglodytes hiemalis</i>	Winter wren	S5B,S5M	-	-	2	2
<i>Turdus migratorius</i>	American robin	S5B,SUN,S5M	-	-	98	43
<i>Vireo olivaceus</i>	Red-eyed vireo	S5B,S5M	-	-	13	10
<i>Vireo philadelphicus</i>	Philadelphia vireo	S5B,S5M	-	-	4	4
<i>Vireo solitarius</i>	Blue-headed vireo	S5B,S5M	-	-	10	10
<i>Zenaidura macroura</i>	Mourning dove	S5B,S5M	-	-	1	1
<i>Zonotrichia albicollis</i>	White-throated sparrow	S5B,S5M	-	-	237	67
<i>Zonotrichia leucophrys</i>	White-crowned sparrow	S4B,S4M	-	-	14	10

Provincially rare or sensitive breeding species denoted in bold text.

Source: Scientific and common names and SKCDC rank from SKCDC (2018a).

S3 = vulnerable/rare to uncommon; S4 = apparently secure; S5 = secure/common; B = breeding population; M = migratory population.

SKCDC = Saskatchewan Conservation Data Centre; COSEWIC = Committee on the Status of Endangered Wildlife in Canada; S2 = imperiled/very rare;

a) Abundance = total abundance summed across all survey periods.

b) Detection locations indicate the total number of point count locations each species was detected.

c) Species with provincial activity restriction guidelines (MOE 2017a).

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 01	2018-06-07	606249.761	6392607.116	<i>Turdus migratorius</i>	American robin	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Poecile hudsonicus</i>	Boreal chickadee	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Branta canadensis</i>	Canada goose	80
BBS 01	2018-06-07	606249.761	6392607.116	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Gavia immer</i>	Common loon	2
BBS 01	2018-06-07	606249.761	6392607.116	<i>Gavia immer</i>	Common loon	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Corvus corax</i>	Northern raven	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 01	2018-06-07	606249.761	6392607.116	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 01	2018-06-23	606245.576	6392611.907	<i>Turdus migratorius</i>	American robin	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Gavia immer</i>	Common loon	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Spinus pinus</i>	Pine siskin	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 01	2018-06-23	606245.576	6392611.907	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 02	2018-06-08	609819.527	6396786.965	<i>Branta canadensis</i>	Canada goose	160
BBS 02	2018-06-08	609819.527	6396786.965	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 02	2018-06-08	609819.527	6396786.965	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 02	2018-06-08	609819.527	6396786.965	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 02	2018-06-08	609819.527	6396786.965	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 02	2018-06-24	609823.205	6396789.85	<i>Picoides arcticus</i>	Black-backed woodpecker	1
BBS 02	2018-06-24	609823.205	6396789.85	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 02	2018-06-24	609823.205	6396789.85	<i>Junco hyemalis</i>	Dark-eyed junco	2

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 02	2018-06-24	609823.205	6396789.85	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 02	2018-06-24	609823.205	6396789.85	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 03	2018-06-07	606566.052	6392365.387	<i>Anas platyrhynchos</i>	Mallard	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Grus canadensis</i>	Sandhill crane	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 03	2018-06-07	606566.052	6392365.387	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Corvus brachyrhynchos</i>	American crow	2
BBS 03	2018-06-23	606560.35	6392366.573	<i>Turdus migratorius</i>	American robin	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 03	2018-06-23	606560.35	6392366.573	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Loxia curvirostra</i>	Red crossbill	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 03	2018-06-23	606560.35	6392366.573	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Mergus merganser</i>	Common merganser	3
BBS 04	2018-06-07	606273.527	6393113.299	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Gavia immer</i>	Common loon	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 04	2018-06-07	606273.527	6393113.299	<i>Catharus guttatus</i>	Hermit thrush	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 04	2018-06-07	606273.527	6393113.299	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 04	2018-06-23	606275.689	6393108.233	<i>Turdus migratorius</i>	American robin	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Hirundo rustica</i>	Barn swallow	2
BBS 04	2018-06-23	606275.689	6393108.233	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Gavia immer</i>	Common loon	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 04	2018-06-23	606275.689	6393108.233	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 05	2018-06-07	605954.096	6393341.044	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 05	2018-06-07	605954.096	6393341.044	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 05	2018-06-07	605954.096	6393341.044	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 05	2018-06-07	605954.096	6393341.044	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 05	2018-06-07	605954.096	6393341.044	<i>Loxia curvirostra</i>	Red crossbill	11
BBS 05	2018-06-07	605954.096	6393341.044	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 05	2018-06-07	605954.096	6393341.044	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 05	2018-06-23	605950.816	6393340.958	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 05	2018-06-23	605950.816	6393340.958	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 05	2018-06-23	605950.816	6393340.958	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 05	2018-06-23	605950.816	6393340.958	<i>Dumetella carolinensis</i>	Gray catbird	1
BBS 05	2018-06-23	605950.816	6393340.958	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 05	2018-06-23	605950.816	6393340.958	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 05	2018-06-23	605950.816	6393340.958	<i>Spinus pinus</i>	Pine siskin	1
BBS 06	2018-06-06	605602.151	6393590.351	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 06	2018-06-06	605602.151	6393590.351	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 06	2018-06-06	605602.151	6393590.351	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 06	2018-06-06	605602.151	6393590.351	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 06	2018-06-06	605602.151	6393590.351	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 06	2018-06-23	605605.691	6393594.23	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 06	2018-06-23	605605.691	6393594.23	<i>Junco hyemalis</i>	Dark-eyed junco	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 06	2018-06-23	605605.691	6393594.23	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 06	2018-06-23	605605.691	6393594.23	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 06	2018-06-23	605605.691	6393594.23	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 07	2018-06-06	606079.722	6393793.76	<i>Turdus migratorius</i>	American robin	1
BBS 07	2018-06-06	606079.722	6393793.76	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 07	2018-06-06	606079.722	6393793.76	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 07	2018-06-06	606079.722	6393793.76	<i>Corvus corax</i>	Northern raven	1
BBS 07	2018-06-06	606079.722	6393793.76	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 07	2018-06-06	606079.722	6393793.76	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 07	2018-06-06	606079.722	6393793.76	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 07	2018-06-23	606062.819	6393803.452	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 07	2018-06-23	606062.819	6393803.452	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 07	2018-06-23	606062.819	6393803.452	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 07	2018-06-23	606062.819	6393803.452	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 07	2018-06-23	606062.819	6393803.452	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 07	2018-06-23	606062.819	6393803.452	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 08	2018-06-06	605291.813	6393339.002	<i>Turdus migratorius</i>	American robin	1
BBS 08	2018-06-06	605291.813	6393339.002	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 08	2018-06-06	605291.813	6393339.002	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 08	2018-06-06	605291.813	6393339.002	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 08	2018-06-06	605291.813	6393339.002	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 08	2018-06-06	605291.813	6393339.002	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 08	2018-06-06	605291.813	6393339.002	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 08	2018-06-23	605288.16	6393334.897	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 08	2018-06-23	605288.16	6393334.897	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 08	2018-06-23	605288.16	6393334.897	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 08	2018-06-23	605288.16	6393334.897	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 08	2018-06-23	605288.16	6393334.897	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 09	2018-06-07	605587.997	6393101.689	<i>Turdus migratorius</i>	American robin	1
BBS 09	2018-06-07	605587.997	6393101.689	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 09	2018-06-07	605587.997	6393101.689	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 09	2018-06-07	605587.997	6393101.689	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 09	2018-06-07	605587.997	6393101.689	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 09	2018-06-07	605587.997	6393101.689	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 09	2018-06-23	605582.236	6393105.214	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Gavia immer</i>	Common loon	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 09	2018-06-23	605582.236	6393105.214	<i>Loxia leucoptera</i>	Two-barred crossbill	2
BBS 10	2018-06-07	605915.194	6392855.296	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 10	2018-06-07	605915.194	6392855.296	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 10	2018-06-07	605915.194	6392855.296	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 10	2018-06-07	605915.194	6392855.296	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 10	2018-06-07	605915.194	6392855.296	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 10	2018-06-07	605915.194	6392855.296	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 10	2018-06-07	605915.194	6392855.296	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 10	2018-06-07	605915.194	6392855.296	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 10	2018-06-22	605908.299	6392854.224	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 10	2018-06-22	605908.299	6392854.224	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 10	2018-06-22	605908.299	6392854.224	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 10	2018-06-22	605908.299	6392854.224	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 10	2018-06-22	605908.299	6392854.224	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 10	2018-06-22	605908.299	6392854.224	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 10	2018-06-22	605908.299	6392854.224	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 11	2018-06-06	606336.022	6394338.243	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 11	2018-06-06	606336.022	6394338.243	<i>Aythya affinis</i>	Lesser scaup	1
BBS 11	2018-06-06	606336.022	6394338.243	<i>Corvus corax</i>	Northern raven	1
BBS 11	2018-06-06	606336.022	6394338.243	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 11	2018-06-06	606336.022	6394338.243	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 11	2018-06-06	606336.022	6394338.243	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 11	2018-06-22	606326.814	6394341.231	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Gavia immer</i>	Common loon	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 11	2018-06-22	606326.814	6394341.231	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Haliaeetus leucocephalus</i>	Bald eagle	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Spizella pallida</i>	Clay-colored sparrow	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Gavia immer</i>	Common loon	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Melospiza melodia</i>	Song sparrow	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Melospiza melodia</i>	Song sparrow	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 12	2018-06-10	607446.486	6394107.086	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Corvus brachyrhynchos</i>	American crow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Turdus migratorius</i>	American robin	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Turdus migratorius</i>	American robin	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 12	2018-06-22	607443.607	6394109.906	<i>Turdus migratorius</i>	American robin	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Haliaeetus leucocephalus</i>	Bald eagle	2
BBS 12	2018-06-22	607443.607	6394109.906	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Spizella passerina</i>	Chipping sparrow	2
BBS 12	2018-06-22	607443.607	6394109.906	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Spizella pallida</i>	Clay-colored sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Gavia immer</i>	Common loon	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Melospiza melodia</i>	Song sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Melospiza melodia</i>	Song sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Melospiza melodia</i>	Song sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Actitis macularius</i>	Spotted sandpiper	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 12	2018-06-22	607443.607	6394109.906	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Corvus brachyrhynchos</i>	American crow	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Turdus migratorius</i>	American robin	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Turdus migratorius</i>	American robin	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Gavia immer</i>	Common loon	1
BBS 13	2018-06-10	608290.669	6395164.366	<i>Tringa solitaria</i>	Solitary sandpiper	2
BBS 13	2018-06-10	608290.669	6395164.366	<i>Melospiza melodia</i>	Song sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Turdus migratorius</i>	American robin	2
BBS 13	2018-06-22	608285.966	6395159.562	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Branta canadensis</i>	Canada goose	55
BBS 13	2018-06-22	608285.966	6395159.562	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Spizella passerina</i>	Chipping sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 13	2018-06-22	608285.966	6395159.562	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Melospiza melodia</i>	Song sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Melospiza melodia</i>	Song sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Melospiza melodia</i>	Song sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 13	2018-06-22	608285.966	6395159.562	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 14	2018-06-11	603318.572	6390131.649	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Parkesia noveboracensis</i>	Northern waterthrush	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Tachycineta bicolor</i>	Tree swallow	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Zonotrichia albicollis</i>	White-throated sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 14	2018-06-22	603326.576	6390133.969	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 14	2018-06-22	603326.576	6390133.969	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Branta canadensis</i>	Canada goose	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Picoides villosus</i>	Hairy woodpecker	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Anas acuta</i>	Northern pintail	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Contopus sordidulus</i>	Western wood pewee	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 15	2018-06-08	610535.291	6396687.644	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 15	2018-06-08	610535.291	6396687.644	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 15	2018-06-24	610536.373	6396687.339	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 15	2018-06-24	610536.373	6396687.339	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 15	2018-06-24	610536.373	6396687.339	<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak	1
BBS 15	2018-06-24	610536.373	6396687.339	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 15	2018-06-24	610536.373	6396687.339	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 15	2018-06-24	610536.373	6396687.339	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Plectrophenax nivalis</i>	Snow bunting	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 16	2018-06-06	603653.6	6387609.824	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Larus californicus</i>	California gull	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Catharus ustulatus</i>	Swainson's thrush	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 16	2018-06-25	603652.088	6387612.904	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Loxia leucoptera</i>	Two-barred crossbill	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 16	2018-06-25	603652.088	6387612.904	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 17	2018-06-08	604609.284	6388003.163	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Regulus satrapa</i>	Golden-crowned kinglet	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Larus</i>	-	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 17	2018-06-08	604609.284	6388003.163	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 17	2018-06-25	604614.608	6388002.966	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Gavia immer</i>	Common loon	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Zenaida macroura</i>	Mourning dove	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Catharus ustulatus</i>	Swainson's thrush	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 17	2018-06-25	604614.608	6388002.966	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 17	2018-06-25	604614.608	6388002.966	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Branta canadensis</i>	Canada goose	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Gavia immer</i>	Common loon	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Gavia immer</i>	Common loon	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Corvus corax</i>	Northern raven	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Corvus corax</i>	Northern raven	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Vireo philadelphicus</i>	Philadelphia vireo	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 18	2018-06-08	605320.952	6388687.874	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Turdus migratorius</i>	American robin	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Turdus migratorius</i>	American robin	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Grus canadensis</i>	Sandhill crane	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Melospiza melodia</i>	Song sparrow	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Falciptennis canadensis</i>	Spruce grouse	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 18	2018-06-25	605328.376	6388689.627	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 19	2018-06-08	609013.26	6396900.453	<i>Spizella passerina</i>	Chipping sparrow	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 19	2018-06-08	609013.26	6396900.453	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 19	2018-06-08	609013.26	6396900.453	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 19	2018-06-08	609013.26	6396900.453	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 19	2018-06-24	609013.031	6396900.113	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 19	2018-06-24	609013.031	6396900.113	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 19	2018-06-24	609013.031	6396900.113	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 19	2018-06-24	609013.031	6396900.113	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 19	2018-06-24	609013.031	6396900.113	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 19	2018-06-24	609013.031	6396900.113	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 19	2018-06-24	609013.031	6396900.113	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Hirundo rustica</i>	Barn swallow	4
BBS 20	2018-06-08	608209.868	6397026.652	<i>Mniotilta varia</i>	Black-and-white warbler	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Picoides arcticus</i>	Black-backed woodpecker	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Melospiza melodia</i>	Song sparrow	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 20	2018-06-08	608209.868	6397026.652	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Turdus migratorius</i>	American robin	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Anas americana</i>	American wigeon	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Hirundo rustica</i>	Barn swallow	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Megaceryle alcyon</i>	Belted kingfisher	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Larus californicus</i>	California gull	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Gavia immer</i>	Common loon	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Cistothorus palustris</i>	Marsh wren	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Melospiza melodia</i>	Song sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 20	2018-06-24	608223.457	6397015.766	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 20	2018-06-24	608223.457	6397015.766	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Branta canadensis</i>	Canada goose	150
BBS 21	2018-06-08	607663.391	6397222.782	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Gavia immer</i>	Common loon	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 21	2018-06-08	607663.391	6397222.782	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 21	2018-06-24	607661.603	6397222.734	<i>Turdus migratorius</i>	American robin	1
BBS 21	2018-06-24	607661.603	6397222.734	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 21	2018-06-24	607661.603	6397222.734	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Turdus migratorius</i>	American robin	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Picoides arcticus</i>	Black-backed woodpecker	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Picoides arcticus</i>	Black-backed woodpecker	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Branta canadensis</i>	Canada goose	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 22	2018-06-08	606927.437	6397103.539	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Turdus migratorius</i>	American robin	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Picoides villosus</i>	Hairy woodpecker	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Corvus corax</i>	Northern raven	1
BBS 22	2018-06-24	606934.574	6397099.718	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 23	2018-06-08	606099.835	6396805.928	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 23	2018-06-08	606099.835	6396805.928	<i>Gavia immer</i>	Common loon	1
BBS 23	2018-06-08	606099.835	6396805.928	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 23	2018-06-08	606099.835	6396805.928	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 23	2018-06-08	606099.835	6396805.928	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 23	2018-06-24	606129.184	6396821.401	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 23	2018-06-24	606129.184	6396821.401	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 23	2018-06-24	606129.184	6396821.401	<i>Corvus corax</i>	Northern raven	1
BBS 23	2018-06-24	606129.184	6396821.401	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 23	2018-06-24	606129.184	6396821.401	<i>Laridae</i>	-	6
BBS 23	2018-06-24	606129.184	6396821.401	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 23	2018-06-24	606129.184	6396821.401	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 24	2018-06-08	605304.056	6396921.095	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 24	2018-06-08	605304.056	6396921.095	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 24	2018-06-08	605304.056	6396921.095	<i>Gavia immer</i>	Common loon	1
BBS 24	2018-06-08	605304.056	6396921.095	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 24	2018-06-08	605304.056	6396921.095	<i>Podiceps grisegena</i>	Red-necked grebe	2
BBS 24	2018-06-08	605304.056	6396921.095	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Turdus migratorius</i>	American robin	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Larus californicus</i>	California gull	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 24	2018-06-24	605303.989	6396919.088	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Gavia immer</i>	Common loon	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Corvus corax</i>	Northern raven	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Podiceps grisegena</i>	Red-necked grebe	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Larus delawarensis</i>	Ring-billed gull	2
BBS 25	2018-06-08	604450.209	6396895.133	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 25	2018-06-08	604450.209	6396895.133	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 25	2018-06-24	604449.141	6396899.561	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 25	2018-06-24	604449.141	6396899.561	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 25	2018-06-24	604449.141	6396899.561	<i>Catharus guttatus</i>	Hermit thrush	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 25	2018-06-24	604449.141	6396899.561	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 25	2018-06-24	604449.141	6396899.561	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 25	2018-06-24	604449.141	6396899.561	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 25	2018-06-24	604449.141	6396899.561	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 26	2018-06-08	603715.15	6396664.456	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 26	2018-06-08	603715.15	6396664.456	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 26	2018-06-08	603715.15	6396664.456	<i>Falcipectus canadensis</i>	Spruce grouse	1
BBS 26	2018-06-08	603715.15	6396664.456	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 26	2018-06-24	603724.118	6396658.894	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 26	2018-06-24	603724.118	6396658.894	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 26	2018-06-24	603724.118	6396658.894	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 27	2018-06-08	602869.029	6396490.338	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 27	2018-06-08	602869.029	6396490.338	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 27	2018-06-08	602869.029	6396490.338	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 27	2018-06-08	602869.029	6396490.338	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 27	2018-06-08	602869.029	6396490.338	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 27	2018-06-08	602869.029	6396490.338	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 27	2018-06-24	602911.102	6396498.427	<i>Picoides arcticus</i>	Black-backed woodpecker	1
BBS 27	2018-06-24	602911.102	6396498.427	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 27	2018-06-24	602911.102	6396498.427	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 27	2018-06-24	602911.102	6396498.427	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 27	2018-06-24	602911.102	6396498.427	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 28	2018-06-08	602159.434	6396237.321	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 28	2018-06-08	602159.434	6396237.321	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 28	2018-06-08	602159.434	6396237.321	<i>Perisoreus canadensis</i>	Gray jay	4
BBS 28	2018-06-08	602159.434	6396237.321	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 28	2018-06-08	602159.434	6396237.321	<i>Loxia curvirostra</i>	Red crossbill	1
BBS 28	2018-06-08	602159.434	6396237.321	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 28	2018-06-24	602171.25	6396232.273	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 28	2018-06-24	602171.25	6396232.273	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 28	2018-06-24	602171.25	6396232.273	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 28	2018-06-24	602171.25	6396232.273	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 28	2018-06-24	602171.25	6396232.273	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 29	2018-06-05	603900.818	6389071.197	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 29	2018-06-05	603900.818	6389071.197	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 29	2018-06-05	603900.818	6389071.197	<i>Vireo philadelphicus</i>	Philadelphia vireo	1
BBS 29	2018-06-05	603900.818	6389071.197	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 29	2018-06-05	603900.818	6389071.197	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 29	2018-06-05	603900.818	6389071.197	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 29	2018-06-05	603900.818	6389071.197	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 29	2018-06-24	603871.251	6389047.718	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Spizella pallida</i>	Clay-colored sparrow	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Empidonax minimus</i>	Least flycatcher	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 30	2018-06-05	603395.684	6388470.529	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 30	2018-06-24	603387.264	6388467.975	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 31	2018-06-09	603595.618	6392075.372	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 31	2018-06-09	603595.618	6392075.372	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 31	2018-06-09	603595.618	6392075.372	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 31	2018-06-09	603595.618	6392075.372	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 31	2018-06-09	603595.618	6392075.372	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 31	2018-06-09	603595.618	6392075.372	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 31	2018-06-09	603595.618	6392075.372	<i>Falcipectus canadensis</i>	Spruce grouse	1
BBS 31	2018-06-09	603595.618	6392075.372	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 31	2018-06-09	603595.618	6392075.372	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Turdus migratorius</i>	American robin	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Mergus merganser</i>	Common merganser	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 31	2018-06-24	603594.351	6392075.896	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 31	2018-06-24	603594.351	6392075.896	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Branta canadensis</i>	Canada goose	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Empidonax minimus</i>	Least flycatcher	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 32	2018-06-05	602780.118	6388111.041	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Branta canadensis</i>	Canada goose	3
BBS 32	2018-06-24	602745.534	6388110.497	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Junco hyemalis</i>	Dark-eyed junco	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 32	2018-06-24	602745.534	6388110.497	<i>Gavia immer</i>	Common loon	2
BBS 32	2018-06-24	602745.534	6388110.497	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Zonotrichia albicollis</i>	White-throated sparrow	4
BBS 32	2018-06-24	602745.534	6388110.497	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 32	2018-06-24	602745.534	6388110.497	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Laridae</i>	-	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 33	2018-06-10	599857.607	6390816.724	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Larus californicus</i>	California gull	2
BBS 33	2018-06-22	599860.4	6390809.999	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 33	2018-06-22	599860.4	6390809.999	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 34	2018-06-10	601176.735	6390348.411	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 34	2018-06-10	601176.735	6390348.411	<i>Spizella pallida</i>	Clay-colored sparrow	1
BBS 34	2018-06-10	601176.735	6390348.411	<i>Larus argentatus</i>	Herring gull	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 34	2018-06-10	601176.735	6390348.411	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 34	2018-06-10	601176.735	6390348.411	<i>Catharus ustulatus</i>	Swainson's thrush	2
BBS 34	2018-06-10	601176.735	6390348.411	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 34	2018-06-27	601174.151	6390341.887	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Empidonax alnorum</i>	Alder flycatcher	2
BBS 35	2018-06-07	602607.221	6387361.771	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Branta canadensis</i>	Canada goose	11
BBS 35	2018-06-07	602607.221	6387361.771	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Parkesia noveboracensis</i>	Northern waterthrush	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Melospiza melodia</i>	Song sparrow	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 35	2018-06-07	602607.221	6387361.771	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 35	2018-06-07	602607.221	6387361.771	<i>Cardellina pusilla</i>	Wilson's warbler	2
BBS 35	2018-06-07	602607.221	6387361.771	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Spizella passerina</i>	Chipping sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 35	2018-06-25	602615.474	6387361.535	<i>Spizella pallida</i>	Clay-colored sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Gavia immer</i>	Common loon	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Oreothlypis ruficapilla</i>	Nashville warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 35	2018-06-25	602615.474	6387361.535	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 36	2018-06-07	601970.544	6388175.782	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Setophaga palmarum</i>	Palm warbler	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 36	2018-06-24	601964.338	6388177.853	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 36	2018-06-24	601964.338	6388177.853	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 36	2018-06-24	601964.338	6388177.853	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Branta canadensis</i>	Canada goose	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Mergus merganser</i>	Common merganser	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 37	2018-06-07	600990.557	6388098.215	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 37	2018-06-24	600992.674	6388094.815	<i>Spizella passerina</i>	Chipping sparrow	2
BBS 37	2018-06-24	600992.674	6388094.815	<i>Spinus pinus</i>	Pine siskin	1
BBS 37	2018-06-24	600992.674	6388094.815	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 37	2018-06-24	600992.674	6388094.815	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 37	2018-06-24	600992.674	6388094.815	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 37	2018-06-24	600992.674	6388094.815	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 37	2018-06-24	600992.674	6388094.815	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Larus argentatus</i>	Herring gull	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Gavia immer</i>	Common loon	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Zonotrichia albicollis</i>	White-throated sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 38	2018-06-07	600137.971	6387519.064	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 38	2018-06-07	600137.971	6387519.064	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 38	2018-06-24	600114.609	6387497.102	<i>Poecile atricapillus</i>	Black-capped chickadee	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Spizella passerina</i>	Chipping sparrow	2
BBS 38	2018-06-24	600114.609	6387497.102	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 38	2018-06-24	600114.609	6387497.102	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 38	2018-06-24	600114.609	6387497.102	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 39	2018-06-08	598106.26	6395998.182	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 39	2018-06-08	598106.26	6395998.182	<i>Gavia immer</i>	Common loon	1
BBS 39	2018-06-08	598106.26	6395998.182	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 39	2018-06-08	598106.26	6395998.182	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 39	2018-06-08	598106.26	6395998.182	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 39	2018-06-24	598101.09	6395992.488	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 39	2018-06-24	598101.09	6395992.488	<i>Colaptes auratus</i>	Northern flicker	1
BBS 39	2018-06-24	598101.09	6395992.488	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 39	2018-06-24	598101.09	6395992.488	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 40	2018-06-08	598933.106	6395929.806	<i>Gavia immer</i>	Common loon	1
BBS 40	2018-06-08	598933.106	6395929.806	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 40	2018-06-08	598933.106	6395929.806	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 40	2018-06-08	598933.106	6395929.806	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Perisoreus canadensis</i>	Gray jay	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 40	2018-06-24	598935.57	6395921.736	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 40	2018-06-24	598935.57	6395921.736	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 41	2018-06-08	599859.595	6395861.052	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 41	2018-06-08	599859.595	6395861.052	<i>Seiurus aurocapilla</i>	Ovenbird	1
BBS 41	2018-06-08	599859.595	6395861.052	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 41	2018-06-08	599859.595	6395861.052	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 41	2018-06-08	599859.595	6395861.052	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 41	2018-06-24	599867.377	6395864.697	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 41	2018-06-24	599867.377	6395864.697	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 41	2018-06-24	599867.377	6395864.697	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 41	2018-06-24	599867.377	6395864.697	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 42	2018-06-08	600664.811	6395809.422	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 42	2018-06-08	600664.811	6395809.422	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 42	2018-06-08	600664.811	6395809.422	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 42	2018-06-08	600664.811	6395809.422	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 42	2018-06-08	600664.811	6395809.422	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 42	2018-06-24	600663.851	6395807.282	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 42	2018-06-24	600663.851	6395807.282	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 42	2018-06-24	600663.851	6395807.282	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 43	2018-06-10	599842.287	6391778.622	<i>Setophaga striata</i>	Blackpoll warbler	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Branta canadensis</i>	Canada goose	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Gavia immer</i>	Common loon	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Geothlypis philadelphia</i>	Mourning warbler	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Melospiza melodia</i>	Song sparrow	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Melospiza melodia</i>	Song sparrow	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 43	2018-06-10	599842.287	6391778.622	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 43	2018-06-10	599842.287	6391778.622	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Larus californicus</i>	California gull	3
BBS 43	2018-06-22	599836.716	6391774.586	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Melospiza melodia</i>	Song sparrow	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Melospiza melodia</i>	Song sparrow	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 43	2018-06-22	599836.716	6391774.586	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 44	2018-06-10	598711	6393678.96	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 44	2018-06-10	598711	6393678.96	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 44	2018-06-10	598711	6393678.96	<i>Larus delawarensis</i>	Ring-billed gull	6
BBS 44	2018-06-10	598711	6393678.96	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 44	2018-06-10	598711	6393678.96	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 44	2018-06-10	598711	6393678.96	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 44	2018-06-10	598711	6393678.96	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 44	2018-06-10	598711	6393678.96	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 44	2018-06-10	598711	6393678.96	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 44	2018-06-10	598711	6393678.96	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Empidonax minimus</i>	Least flycatcher	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 44	2018-06-22	598700.599	6393682.159	<i>Empidonax minimus</i>	Least flycatcher	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 44	2018-06-22	598700.599	6393682.159	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Mergus merganser</i>	Common merganser	20
BBS 45	2018-06-10	600925.047	6391680.526	<i>Gavia immer</i>	Common loon	3
BBS 45	2018-06-10	600925.047	6391680.526	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Pandion haliaetus</i>	Western osprey	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 45	2018-06-10	600925.047	6391680.526	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Mergus merganser</i>	Common merganser	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Zonotrichia albicollis</i>	White-throated sparrow	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 45	2018-06-22	600923.773	6391683.724	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 45	2018-06-22	600923.773	6391683.724	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 46	2018-06-08	601307.131	6395914.246	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 46	2018-06-08	601307.131	6395914.246	<i>Spinus pinus</i>	Pine siskin	6
BBS 46	2018-06-08	601307.131	6395914.246	<i>Catharus ustulatus</i>	Swainson's thrush	2
BBS 46	2018-06-08	601307.131	6395914.246	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 46	2018-06-08	601307.131	6395914.246	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 46	2018-06-24	601306.943	6395914.575	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 46	2018-06-24	601306.943	6395914.575	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
BBS 46	2018-06-24	601306.943	6395914.575	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 46	2018-06-24	601306.943	6395914.575	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Turdus migratorius</i>	American robin	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Regulus satrapa</i>	Golden-crowned kinglet	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 47	2018-06-05	605259.98	6390887.482	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 47	2018-06-05	605259.98	6390887.482	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Turdus migratorius</i>	American robin	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Turdus migratorius</i>	American robin	2
BBS 47	2018-06-24	605253.476	6390857.463	<i>Turdus migratorius</i>	American robin	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Gavia immer</i>	Common loon	2
BBS 47	2018-06-24	605253.476	6390857.463	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Melospiza melodia</i>	Song sparrow	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 47	2018-06-24	605253.476	6390857.463	<i>Actitis macularius</i>	Spotted sandpiper	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Loxia leucoptera</i>	Two-barred crossbill	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 47	2018-06-24	605253.476	6390857.463	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 48	2018-06-05	604253.585	6389419.634	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 48	2018-06-05	604253.585	6389419.634	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 48	2018-06-05	604253.585	6389419.634	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 48	2018-06-05	604253.585	6389419.634	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 48	2018-06-05	604253.585	6389419.634	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 48	2018-06-05	604253.585	6389419.634	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 48	2018-06-24	604237.904	6389411.545	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Loxia curvirostra</i>	Red crossbill	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Loxia leucoptera</i>	Two-barred crossbill	13
BBS 48	2018-06-24	604237.904	6389411.545	<i>Loxia leucoptera</i>	Two-barred crossbill	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 48	2018-06-24	604237.904	6389411.545	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Megaceryle alcyon</i>	Belted kingfisher	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Junco hyemalis</i>	Dark-eyed junco	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 49	2018-06-05	604872.173	6389516.248	<i>Gavia immer</i>	Common loon	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 49	2018-06-05	604872.173	6389516.248	<i>Agelaius phoeniceus</i>	Red-winged blackbird	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 49	2018-06-05	604872.173	6389516.248	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 49	2018-06-24	604874.319	6389516.415	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 50	2018-06-10	604582.12	6389943.011	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 50	2018-06-10	604582.12	6389943.011	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 50	2018-06-10	604582.12	6389943.011	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 50	2018-06-10	604582.12	6389943.011	<i>Loxia curvirostra</i>	Red crossbill	8
BBS 50	2018-06-10	604582.12	6389943.011	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 50	2018-06-10	604582.12	6389943.011	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 50	2018-06-10	604582.12	6389943.011	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Vireo olivaceus</i>	Red-eyed vireo	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 50	2018-06-24	604577.846	6389939.671	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 50	2018-06-24	604577.846	6389939.671	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 51	2018-06-05	604895.913	6390310.551	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 51	2018-06-05	604895.913	6390310.551	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
BBS 51	2018-06-05	604895.913	6390310.551	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 51	2018-06-05	604895.913	6390310.551	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 51	2018-06-05	604895.913	6390310.551	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 51	2018-06-05	604895.913	6390310.551	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 51	2018-06-05	604895.913	6390310.551	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Loxia leucoptera</i>	Two-barred crossbill	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Loxia leucoptera</i>	Two-barred crossbill	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 51	2018-06-24	604874.703	6390292.403	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 52	2018-06-09	603981.461	6393233.141	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 52	2018-06-09	603981.461	6393233.141	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 52	2018-06-09	603981.461	6393233.141	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 52	2018-06-09	603981.461	6393233.141	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 52	2018-06-09	603981.461	6393233.141	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 52	2018-06-24	603983.136	6393237.639	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 52	2018-06-24	603983.136	6393237.639	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 52	2018-06-24	603983.136	6393237.639	<i>Passerella iliaca</i>	Red fox sparrow	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 52	2018-06-24	603983.136	6393237.639	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 52	2018-06-24	603983.136	6393237.639	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 52	2018-06-24	603983.136	6393237.639	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 52	2018-06-24	603983.136	6393237.639	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Geothlypis philadelphia</i>	Mourning warbler	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Parkesia noveboracensis</i>	Northern waterthrush	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Pandion haliaetus</i>	Western osprey	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 53	2018-06-06	605387.473	6394012.338	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Loxia leucoptera</i>	Two-barred crossbill	5
BBS 53	2018-06-23	605389.292	6393999.799	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 53	2018-06-23	605389.292	6393999.799	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 54	2018-06-09	605800.559	6394158.79	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Haliaeetus leucocephalus</i>	Bald eagle	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Spizella passerina</i>	Chipping sparrow	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 54	2018-06-23	605799.93	6394157.772	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 54	2018-06-23	605799.93	6394157.772	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Gavia immer</i>	Common loon	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 54	2018-06-23	605799.93	6394157.772	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Turdus migratorius</i>	American robin	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Gavia immer</i>	Common loon	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Corvus corax</i>	Northern raven	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 55	2018-06-07	606910.421	6392101.813	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Melospiza melodia</i>	Song sparrow	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 55	2018-06-07	606910.421	6392101.813	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Corvus brachyrhynchos</i>	American crow	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Turdus migratorius</i>	American robin	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Turdus migratorius</i>	American robin	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 55	2018-06-23	606906.145	6392105.487	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 55	2018-06-23	606906.145	6392105.487	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Tringa semipalmata</i>	Willet	1
BBS 55	2018-06-23	606906.145	6392105.487	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Melospiza melodia</i>	Song sparrow	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Melospiza melodia</i>	Song sparrow	2
BBS 56	2018-06-10	603794.803	6394433.797	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 56	2018-06-10	603794.803	6394433.797	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 56	2018-06-22	603798.824	6394428.22	<i>Larus delawarensis</i>	Ring-billed gull	6
BBS 56	2018-06-22	603798.824	6394428.22	<i>Melospiza melodia</i>	Song sparrow	1
BBS 56	2018-06-22	603798.824	6394428.22	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 56	2018-06-22	603798.824	6394428.22	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 57	2018-06-09	604351.109	6393647.639	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 57	2018-06-09	604351.109	6393647.639	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 57	2018-06-09	604351.109	6393647.639	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 57	2018-06-09	604351.109	6393647.639	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 57	2018-06-23	604335.304	6393651.909	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 57	2018-06-23	604335.304	6393651.909	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 57	2018-06-23	604335.304	6393651.909	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 57	2018-06-23	604335.304	6393651.909	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 57	2018-06-23	604335.304	6393651.909	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 57	2018-06-23	604335.304	6393651.909	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 58	2018-06-12	605215.872	6389767.75	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 58	2018-06-12	605215.872	6389767.75	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	5
BBS 58	2018-06-12	605215.872	6389767.75	<i>Junco hyemalis</i>	Dark-eyed junco	2

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 58	2018-06-12	605215.872	6389767.75	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 58	2018-06-12	605215.872	6389767.75	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 58	2018-06-12	605215.872	6389767.75	<i>Melospiza melodia</i>	Song sparrow	1
BBS 58	2018-06-12	605215.872	6389767.75	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Melospiza melodia</i>	Song sparrow	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 58	2018-06-24	605213.627	6389771.367	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 59	2018-06-06	604673.195	6392415.643	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 59	2018-06-06	604673.195	6392415.643	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 59	2018-06-06	604673.195	6392415.643	<i>Setophaga palmarum</i>	Palm warbler	3
BBS 59	2018-06-06	604673.195	6392415.643	<i>Setophaga palmarum</i>	Palm warbler	3
BBS 59	2018-06-06	604673.195	6392415.643	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 59	2018-06-06	604673.195	6392415.643	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 59	2018-06-23	597121.683	6382421.587	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 59	2018-06-23	597121.683	6382421.587	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 59	2018-06-23	597121.683	6382421.587	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 59	2018-06-23	597121.683	6382421.587	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 59	2018-06-23	597121.683	6382421.587	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 59	2018-06-23	597121.683	6382421.587	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 59	2018-06-23	597121.683	6382421.587	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 59	2018-06-23	597121.683	6382421.587	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 59	2018-06-23	597121.683	6382421.587	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 60	2018-06-06	605020.018	6392275.273	<i>Empidonax minimus</i>	Least flycatcher	1
BBS 60	2018-06-06	605020.018	6392275.273	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 60	2018-06-06	605020.018	6392275.273	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 60	2018-06-06	605020.018	6392275.273	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 60	2018-06-06	605020.018	6392275.273	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 60	2018-06-06	605020.018	6392275.273	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 60	2018-06-23	605023.073	6392279.474	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 60	2018-06-23	605023.073	6392279.474	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Picoides arcticus</i>	Black-backed woodpecker	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Setophaga striata</i>	Blackpoll warbler	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Empidonax traillii</i>	Willow flycatcher	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 61	2018-06-07	607276.899	6392411.022	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Turdus migratorius</i>	American robin	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Turdus migratorius</i>	American robin	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Melospiza lincolnii</i>	Lincoln's sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Loxia curvirostra</i>	Red crossbill	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Buteo jamaicensis</i>	Red-tailed hawk	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Contopus sordidulus</i>	Western wood pewee	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 61	2018-06-23	607272.329	6392410.009	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 61	2018-06-23	607272.329	6392410.009	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 62	2018-06-07	606967.367	6392619.015	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 62	2018-06-07	606967.367	6392619.015	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 62	2018-06-07	606967.367	6392619.015	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 62	2018-06-07	606967.367	6392619.015	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 62	2018-06-07	606967.367	6392619.015	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 62	2018-06-07	606967.367	6392619.015	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 62	2018-06-07	606967.367	6392619.015	<i>Grus canadensis</i>	Sandhill crane	2
BBS 62	2018-06-23	606959.987	6392615.924	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Turdus migratorius</i>	American robin	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Turdus migratorius</i>	American robin	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Setophaga palmarum</i>	Palm warbler	3
BBS 62	2018-06-23	606959.987	6392615.924	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 62	2018-06-23	606959.987	6392615.924	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Branta canadensis</i>	Canada goose	23
BBS 63	2018-06-07	606585.101	6392881.585	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Gavia immer</i>	Common loon	2
BBS 63	2018-06-07	606585.101	6392881.585	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Corvus corax</i>	Northern raven	2
BBS 63	2018-06-07	606585.101	6392881.585	<i>Setophaga palmarum</i>	Palm warbler	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 63	2018-06-07	606585.101	6392881.585	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Pinicola enucleator</i>	Pine grosbeak	6
BBS 63	2018-06-07	606585.101	6392881.585	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 63	2018-06-07	606585.101	6392881.585	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Turdus migratorius</i>	American robin	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 63	2018-06-23	606587.057	6392873.06	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 64	2018-06-06	604959.919	6393029.091	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 64	2018-06-06	604959.919	6393029.091	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 64	2018-06-06	604959.919	6393029.091	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 64	2018-06-06	604959.919	6393029.091	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 64	2018-06-06	604959.919	6393029.091	<i>Catharus guttatus</i>	Hermit thrush	2
BBS 64	2018-06-06	604959.919	6393029.091	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 64	2018-06-06	604959.919	6393029.091	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 64	2018-06-23	604958.979	6393028.509	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 64	2018-06-23	604958.979	6393028.509	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 64	2018-06-23	604958.979	6393028.509	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Turdus migratorius</i>	American robin	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Turdus migratorius</i>	American robin	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Catharus guttatus</i>	Hermit thrush	2

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 65	2018-06-06	604164.381	6392081.402	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 65	2018-06-06	604164.381	6392081.402	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Passerella iliaca</i>	Red fox sparrow	2
BBS 65	2018-06-23	604165.31	6392082.428	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 65	2018-06-23	604165.31	6392082.428	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Haliaeetus leucocephalus</i>	Bald eagle	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Hirundo rustica</i>	Barn swallow	6
BBS 66	2018-06-08	603336.084	6391419.734	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Corvus corax</i>	Northern raven	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Larus delawarensis</i>	Ring-billed gull	3
BBS 66	2018-06-08	603336.084	6391419.734	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Pandion haliaetus</i>	Western osprey	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Cardellina pusilla</i>	Wilson's warbler	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Troglodytes hiemalis</i>	Winter wren	1
BBS 66	2018-06-08	603336.084	6391419.734	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 66	2018-06-08	603336.084	6391419.734	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Turdus migratorius</i>	American robin	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Hirundo rustica</i>	Barn swallow	4
BBS 66	2018-06-23	603331.413	6391420.283	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Petrochelidon pyrrhonota</i>	Cliff swallow	2
BBS 66	2018-06-23	603331.413	6391420.283	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Oreothlypis ruficapilla</i>	Nashville warbler	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Melospiza melodia</i>	Song sparrow	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Loxia leucoptera</i>	Two-barred crossbill	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Pandion haliaetus</i>	Western osprey	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 66	2018-06-23	603331.413	6391420.283	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Larus delawarensis</i>	Ring-billed gull	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
BBS 67	2018-06-05	604548.893	6390482.452	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Junco hyemalis</i>	Dark-eyed junco	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 67	2018-06-24	604550.578	6390484.277	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Gavia immer</i>	Common loon	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Parkesia noveboracensis</i>	Northern waterthrush	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 67	2018-06-24	604550.578	6390484.277	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 68	2018-06-06	602327.799	6391845.518	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 68	2018-06-06	602327.799	6391845.518	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 68	2018-06-06	602327.799	6391845.518	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 68	2018-06-06	602327.799	6391845.518	<i>Loxia curvirostra</i>	Red crossbill	2
BBS 68	2018-06-06	602327.799	6391845.518	<i>Loxia curvirostra</i>	Red crossbill	4
BBS 68	2018-06-06	602327.799	6391845.518	<i>Loxia curvirostra</i>	Red crossbill	2
BBS 68	2018-06-06	602327.799	6391845.518	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 68	2018-06-06	602327.799	6391845.518	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 68	2018-06-06	602327.799	6391845.518	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 68	2018-06-06	602327.799	6391845.518	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 68	2018-06-24	602324.622	6391841.317	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 68	2018-06-24	602324.622	6391841.317	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 68	2018-06-24	602324.622	6391841.317	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 68	2018-06-24	602324.622	6391841.317	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 68	2018-06-24	602324.622	6391841.317	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 68	2018-06-24	602324.622	6391841.317	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 68	2018-06-24	602324.622	6391841.317	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 69	2018-06-06	601837.631	6391472.178	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 69	2018-06-06	601837.631	6391472.178	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 69	2018-06-06	601837.631	6391472.178	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 69	2018-06-06	601837.631	6391472.178	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 69	2018-06-06	601837.631	6391472.178	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 69	2018-06-06	601837.631	6391472.178	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 69	2018-06-06	601837.631	6391472.178	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 69	2018-06-24	601837.715	6391468.839	<i>Spizella passerina</i>	Chipping sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 69	2018-06-24	601837.715	6391468.839	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 69	2018-06-24	601837.715	6391468.839	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 69	2018-06-24	601837.715	6391468.839	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 69	2018-06-24	601837.715	6391468.839	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 69	2018-06-24	601837.715	6391468.839	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 69	2018-06-24	601837.715	6391468.839	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 70	2018-06-06	602727.054	6392060.126	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Gavia immer</i>	Common loon	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 70	2018-06-24	602722.948	6392052.559	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 70	2018-06-24	602722.948	6392052.559	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Turdus migratorius</i>	American robin	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Regulus satrapa</i>	Golden-crowned kinglet	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Gavia immer</i>	Common loon	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Vireo olivaceus</i>	Red-eyed vireo	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 71	2018-06-06	604508.143	6394101.222	<i>Setophaga petechia</i>	Yellow warbler	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 71	2018-06-06	604508.143	6394101.222	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Turdus migratorius</i>	American robin	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Hirundo rustica</i>	Barn swallow	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Mergus merganser</i>	Common merganser	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Junco hyemalis</i>	Dark-eyed junco	3
BBS 71	2018-06-22	604505.22	6394105.825	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 71	2018-06-22	604505.22	6394105.825	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
BBS 71	2018-06-22	604505.22	6394105.825	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 72	2018-06-06	604503.244	6393217.3	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 72	2018-06-06	604503.244	6393217.3	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 72	2018-06-06	604503.244	6393217.3	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 72	2018-06-06	604503.244	6393217.3	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 72	2018-06-06	604503.244	6393217.3	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 72	2018-06-06	604503.244	6393217.3	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Turdus migratorius</i>	American robin	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Hirundo rustica</i>	Barn swallow	2
BBS 72	2018-06-23	604497.084	6393215.47	<i>Spizella passerina</i>	Chipping sparrow	2
BBS 72	2018-06-23	604497.084	6393215.47	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Chordeiles minor</i>	Common nighthawk	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Tringa flavipes</i>	Lesser yellowlegs	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 72	2018-06-23	604497.084	6393215.47	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Hirundo rustica</i>	Barn swallow	2
BBS 73	2018-06-06	604005.316	6393609.658	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Seiurus aurocapilla</i>	Ovenbird	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 73	2018-06-06	604005.316	6393609.658	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 73	2018-06-06	604005.316	6393609.658	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 73	2018-06-24	603983.136	6393237.639	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Gavia immer</i>	Common loon	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Vireo solitarius</i>	Solitary vireo	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 74	2018-06-06	603372.837	6393606.691	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 74	2018-06-24	603387.229	6393613.296	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Pelecanus erythrorhynchos</i>	American white pelican	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Spizella pallida</i>	Clay-colored sparrow	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Oreothlypis ruficapilla</i>	Nashville warbler	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Spinus pinus</i>	Pine siskin	7
BBS 74	2018-06-24	603387.229	6393613.296	<i>Passerella iliaca</i>	Red fox sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 74	2018-06-24	603387.229	6393613.296	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 74	2018-06-24	603387.229	6393613.296	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 75	2018-06-06	603195.317	6392942.129	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 75	2018-06-24	603190.98	6392946.028	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 75	2018-06-24	603190.98	6392946.028	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 75	2018-06-24	603190.98	6392946.028	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 75	2018-06-24	603190.98	6392946.028	<i>Passerella iliaca</i>	Red fox sparrow	2
BBS 75	2018-06-24	603190.98	6392946.028	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 75	2018-06-24	603190.98	6392946.028	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 75	2018-06-24	603190.98	6392946.028	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 76	2018-06-07	604849.342	6393603.726	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Larus argentatus</i>	Herring gull	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Gavia immer</i>	Common loon	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 76	2018-06-07	604849.342	6393603.726	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 76	2018-06-07	604849.342	6393603.726	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 76	2018-06-23	604851.956	6393608.806	<i>Turdus migratorius</i>	American robin	1
BBS 76	2018-06-23	604851.956	6393608.806	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 76	2018-06-23	604851.956	6393608.806	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 76	2018-06-23	604851.956	6393608.806	<i>Setophaga magnolia</i>	Magnolia warbler	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 76	2018-06-23	604851.956	6393608.806	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 76	2018-06-23	604851.956	6393608.806	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 76	2018-06-23	604851.956	6393608.806	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 77	2018-06-06	604178.402	6392670.4	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 77	2018-06-06	604178.402	6392670.4	<i>Junco hyemalis</i>	Dark-eyed junco	3
BBS 77	2018-06-06	604178.402	6392670.4	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 77	2018-06-06	604178.402	6392670.4	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 77	2018-06-06	604178.402	6392670.4	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 77	2018-06-06	604178.402	6392670.4	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 77	2018-06-06	604178.402	6392670.4	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 77	2018-06-23	604179.108	6392673.091	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	8
BBS 77	2018-06-23	604179.108	6392673.091	<i>Larus californicus</i>	California gull	3
BBS 77	2018-06-23	604179.108	6392673.091	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 77	2018-06-23	604179.108	6392673.091	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 77	2018-06-23	604179.108	6392673.091	<i>Setophaga palmarum</i>	Palm warbler	3
BBS 77	2018-06-23	604179.108	6392673.091	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 77	2018-06-23	604179.108	6392673.091	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 78	2018-06-06	603573.717	6392769.7	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Corvus corax</i>	Northern raven	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 78	2018-06-06	603573.717	6392769.7	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 78	2018-06-06	603573.717	6392769.7	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Setophaga palmarum</i>	Palm warbler	2

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 78	2018-06-24	603568.522	6392769.79	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 78	2018-06-24	603568.522	6392769.79	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 79	2018-06-06	603022.965	6392320.59	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 79	2018-06-24	603022.709	6392318.913	<i>Turdus migratorius</i>	American robin	1
BBS 79	2018-06-24	603022.709	6392318.913	<i>Branta canadensis</i>	Canada goose	7
BBS 79	2018-06-24	603022.709	6392318.913	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 79	2018-06-24	603022.709	6392318.913	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 79	2018-06-24	603022.709	6392318.913	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 79	2018-06-24	603022.709	6392318.913	<i>Passerella iliaca</i>	Red fox sparrow	2
BBS 79	2018-06-24	603022.709	6392318.913	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 79	2018-06-24	603022.709	6392318.913	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Empidonax alnorum</i>	Alder flycatcher	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Hirundo rustica</i>	Barn swallow	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Hirundo rustica</i>	Barn swallow	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 80	2018-06-06	603110.314	6391329.104	<i>Regulus calendula</i>	Ruby-crowned kinglet	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 80	2018-06-06	603110.314	6391329.104	<i>Melospiza georgiana</i>	Swamp sparrow	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Turdus migratorius</i>	American robin	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Turdus migratorius</i>	American robin	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Petrochelidon pyrrhonota</i>	Cliff swallow	4
BBS 80	2018-06-23	603115.576	6391324.115	<i>Junco hyemalis</i>	Dark-eyed junco	2
BBS 80	2018-06-23	603115.576	6391324.115	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 80	2018-06-23	603115.576	6391324.115	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 81	2018-06-06	602674.821	6390817.835	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 81	2018-06-06	602674.821	6390817.835	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 81	2018-06-06	602674.821	6390817.835	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 81	2018-06-06	602674.821	6390817.835	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 81	2018-06-06	602674.821	6390817.835	<i>Setophaga petechia</i>	Yellow warbler	1
BBS 81	2018-06-06	602674.821	6390817.835	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Turdus migratorius</i>	American robin	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Larus californicus</i>	California gull	8
BBS 81	2018-06-22	602683.013	6390812.697	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Gavia immer</i>	Common loon	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Melospiza melodia</i>	Song sparrow	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Tachycineta bicolor</i>	Tree swallow	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Pandion haliaetus</i>	Western osprey	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Troglodytes hiemalis</i>	Winter wren	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 81	2018-06-22	602683.013	6390812.697	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 81	2018-06-22	602683.013	6390812.697	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 82	2018-06-06	602197.606	6391055.573	<i>Poecile hudsonicus</i>	Boreal chickadee	1
BBS 82	2018-06-06	602197.606	6391055.573	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 82	2018-06-06	602197.606	6391055.573	<i>Passerella iliaca</i>	Red fox sparrow	1
BBS 82	2018-06-06	602197.606	6391055.573	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 82	2018-06-06	602197.606	6391055.573	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 82	2018-06-24	602193.235	6391051.342	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 82	2018-06-24	602193.235	6391051.342	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 82	2018-06-24	602193.235	6391051.342	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 82	2018-06-24	602193.235	6391051.342	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 82	2018-06-24	602193.235	6391051.342	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 82	2018-06-24	602193.235	6391051.342	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 83	2018-06-05	604431	6391458.985	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 83	2018-06-05	604431	6391458.985	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 83	2018-06-05	604431	6391458.985	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 83	2018-06-05	604431	6391458.985	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 83	2018-06-05	604431	6391458.985	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 83	2018-06-05	604431	6391458.985	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 83	2018-06-24	604452.898	6391459.55	<i>Turdus migratorius</i>	American robin	1
BBS 83	2018-06-24	604452.898	6391459.55	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 83	2018-06-24	604452.898	6391459.55	<i>Oreothlypis celata</i>	Orange-crowned warbler	2
BBS 83	2018-06-24	604452.898	6391459.55	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 83	2018-06-24	604452.898	6391459.55	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
BBS 84	2018-06-05	605198.904	6391291.204	<i>Turdus migratorius</i>	American robin	1
BBS 84	2018-06-05	605198.904	6391291.204	<i>Mniotilta varia</i>	Black-and-white warbler	1
BBS 84	2018-06-05	605198.904	6391291.204	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 84	2018-06-05	605198.904	6391291.204	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 84	2018-06-05	605198.904	6391291.204	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 84	2018-06-05	605198.904	6391291.204	<i>Setophaga palmarum</i>	Palm warbler	2
BBS 84	2018-06-05	605198.904	6391291.204	<i>Gallinago delicata</i>	Wilson's snipe	1
BBS 84	2018-06-05	605198.904	6391291.204	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Turdus migratorius</i>	American robin	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
BBS 84	2018-06-24	605195.153	6391286.206	<i>Turdus migratorius</i>	American robin	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Turdus migratorius</i>	American robin	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 84	2018-06-24	605195.153	6391286.206	<i>Larus delawarensis</i>	Ring-billed gull	2
BBS 84	2018-06-24	605195.153	6391286.206	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Spizella passerina</i>	Chipping sparrow	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Catharus guttatus</i>	Hermit thrush	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Vireo philadelphicus</i>	Philadelphia vireo	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 85	2018-06-05	603594.097	6391570.567	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Junco hyemalis</i>	Dark-eyed junco	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Perisoreus canadensis</i>	Gray jay	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Setophaga magnolia</i>	Magnolia warbler	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Setophaga palmarum</i>	Palm warbler	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Catharus ustulatus</i>	Swainson's thrush	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
BBS 85	2018-06-23	603594.643	6391570.247	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Turdus migratorius</i>	American robin	2
ARU 01	2018-05-31	601312.893	6398647.581	<i>Spizella passerina</i>	Chipping sparrow	2

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 01	2018-05-31	601312.893	6398647.581	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Junco hyemalis</i>	Dark-eyed junco	3
ARU 01	2018-05-31	601312.893	6398647.581	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Loxia curvirostra</i>	Red crossbill	3
ARU 01	2018-05-31	601312.893	6398647.581	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Tringa solitaria</i>	Solitary sandpiper	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Gallinago delicata</i>	Wilson's snipe	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Piciformes</i>	Woodpeckers	1
ARU 01	2018-05-31	601312.893	6398647.581	<i>Piciformes</i>	Woodpeckers	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Turdus migratorius</i>	American robin	2
ARU 01	2018-06-17	601312.893	6398647.581	<i>Branta canadensis</i>	Canada goose	2
ARU 01	2018-06-17	601312.893	6398647.581	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Junco hyemalis</i>	Dark-eyed junco	4
ARU 01	2018-06-17	601312.893	6398647.581	<i>Gavia immer</i>	Common loon	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Loxia curvirostra</i>	Red crossbill	3
ARU 01	2018-06-17	601312.893	6398647.581	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 01	2018-06-17	601312.893	6398647.581	<i>Loxia leucoptera</i>	Two-barred crossbill	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Turdus migratorius</i>	American robin	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Turdus migratorius</i>	American robin	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 01	2018-07-07	601312.893	6398647.581	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 01	2018-07-07	601312.893	6398647.581	<i>Tachycineta bicolor</i>	Tree swallow	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 01	2018-07-07	601312.893	6398647.581	<i>Loxia leucoptera</i>	Two-barred crossbill	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Turdus migratorius</i>	American robin	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Branta canadensis</i>	Canada goose	3
ARU 02	2018-05-31	605791.912	6398598.442	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 02	2018-05-31	605791.912	6398598.442	<i>Gavia immer</i>	Common loon	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Loxia curvirostra</i>	Red crossbill	2
ARU 02	2018-05-31	605791.912	6398598.442	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Piciformes</i>	Woodpeckers	1
ARU 02	2018-05-31	605791.912	6398598.442	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 02	2018-06-18	605791.912	6398598.442	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 02	2018-06-18	605791.912	6398598.442	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 02	2018-06-18	605791.912	6398598.442	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 02	2018-06-18	605791.912	6398598.442	<i>Perisoreus canadensis</i>	Gray jay	2
ARU 02	2018-06-18	605791.912	6398598.442	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 02	2018-06-18	605791.912	6398598.442	<i>Setophaga palmarum</i>	Palm warbler	2
ARU 02	2018-06-18	605791.912	6398598.442	<i>Passerella iliaca</i>	Red fox sparrow	2
ARU 02	2018-06-18	605791.912	6398598.442	<i>Euphagus carolinus</i>	Rusty blackbird	1
ARU 02	2018-06-18	605791.912	6398598.442	<i>Setophaga coronata</i>	Yellow-rumped warbler	3
ARU 02	2018-07-06	605791.912	6398598.442	<i>Picoides dorsalis</i>	American three-toed woodpecker	1
ARU 02	2018-07-06	605791.912	6398598.442	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 02	2018-07-06	605791.912	6398598.442	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 02	2018-07-06	605791.912	6398598.442	<i>Gavia immer</i>	Common loon	1
ARU 02	2018-07-06	605791.912	6398598.442	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 02	2018-07-06	605791.912	6398598.442	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 02	2018-07-06	605791.912	6398598.442	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 02	2018-07-06	605791.912	6398598.442	<i>Setophaga palmarum</i>	Palm warbler	3
ARU 02	2018-07-06	605791.912	6398598.442	<i>Passerella iliaca</i>	Red fox sparrow	1

Appendix B, Table 5

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 02	2018-07-06	605791.912	6398598.442	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 02	2018-07-06	605791.912	6398598.442	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 03	2018-05-31	609905.884	6395870.496	<i>Turdus migratorius</i>	American robin	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Turdus migratorius</i>	American robin	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Branta canadensis</i>	Canada goose	2
ARU 03	2018-05-31	609905.884	6395870.496	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 03	2018-05-31	609905.884	6395870.496	<i>Chordeiles minor</i>	Common nighthawk	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Junco hyemalis</i>	Dark-eyed junco	3
ARU 03	2018-05-31	609905.884	6395870.496	<i>Gavia immer</i>	Common loon	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Contopus cooperi</i>	Olive-sided flycatcher	2
ARU 03	2018-05-31	609905.884	6395870.496	<i>Setophaga palmarum</i>	Palm warbler	2
ARU 03	2018-05-31	609905.884	6395870.496	<i>Grus canadensis</i>	Sandhill crane	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Loxia leucoptera</i>	Two-barred crossbill	2
ARU 03	2018-05-31	609905.884	6395870.496	<i>Zonotrichia albicollis</i>	White-throated sparrow	3
ARU 03	2018-05-31	609905.884	6395870.496	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Piciformes</i>	Woodpeckers	1
ARU 03	2018-05-31	609905.884	6395870.496	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 03	2018-06-19	609905.884	6395870.496	<i>Corvus brachyrhynchos</i>	American crow	2
ARU 03	2018-06-19	609905.884	6395870.496	<i>Turdus migratorius</i>	American robin	2
ARU 03	2018-06-19	609905.884	6395870.496	<i>Setophaga castanea</i>	Bay-breasted warbler	3
ARU 03	2018-06-19	609905.884	6395870.496	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 03	2018-06-19	609905.884	6395870.496	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 03	2018-06-19	609905.884	6395870.496	<i>Gavia immer</i>	Common loon	2
ARU 03	2018-06-19	609905.884	6395870.496	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
ARU 03	2018-06-19	609905.884	6395870.496	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 03	2018-06-19	609905.884	6395870.496	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 03	2018-06-19	609905.884	6395870.496	<i>Melospiza melodia</i>	Song sparrow	1
ARU 03	2018-06-19	609905.884	6395870.496	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 03	2018-06-19	609905.884	6395870.496	<i>Tachycineta bicolor</i>	Tree swallow	1
ARU 03	2018-06-19	609905.884	6395870.496	<i>Loxia leucoptera</i>	Two-barred crossbill	3
ARU 03	2018-06-19	609905.884	6395870.496	<i>Zonotrichia albicollis</i>	White-throated sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 03	2018-06-19	609905.884	6395870.496	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Turdus migratorius</i>	American robin	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Junco hyemalis</i>	Dark-eyed junco	4
ARU 03	2018-07-09	609905.884	6395870.496	<i>Gavia immer</i>	Common loon	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Gavia immer</i>	Common loon	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Melospiza melodia</i>	Song sparrow	1
ARU 03	2018-07-09	609905.884	6395870.496	<i>Zonotrichia albicollis</i>	White-throated sparrow	3
ARU 03	2018-07-09	609905.884	6395870.496	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Turdus migratorius</i>	American robin	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Hirundo rustica</i>	Barn swallow	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Picoides arcticus</i>	Black-backed woodpecker	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Branta canadensis</i>	Canada goose	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 04	2018-06-10	608183.077	6396958.324	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 04	2018-06-10	608183.077	6396958.324	<i>Strix nebulosa</i>	Great gray owl	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 04	2018-06-10	608183.077	6396958.324	<i>Melospiza lincolnii</i>	Lincoln's sparrow	2
ARU 04	2018-06-10	608183.077	6396958.324	<i>Colaptes auratus</i>	Northern flicker	2
ARU 04	2018-06-10	608183.077	6396958.324	<i>Corvus corax</i>	Northern raven	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Loxia curvirostra</i>	Red crossbill	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Melospiza melodia</i>	Song sparrow	3
ARU 04	2018-06-10	608183.077	6396958.324	<i>Bartramia longicauda</i>	Upland sandpiper	1
ARU 04	2018-06-10	608183.077	6396958.324	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 04	2018-06-10	608183.077	6396958.324	<i>Piciformes</i>	Woodpeckers	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Turdus migratorius</i>	American robin	3
ARU 04	2018-06-22	608183.077	6396958.324	<i>Hirundo rustica</i>	Barn swallow	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 04	2018-06-22	608183.077	6396958.324	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 04	2018-06-22	608183.077	6396958.324	<i>Mergus merganser</i>	Common merganser	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 04	2018-06-22	608183.077	6396958.324	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Charadrius vociferus</i>	Killdeer	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Tringa flavipes</i>	Lesser yellowlegs	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Melospiza lincolnii</i>	Lincoln's sparrow	2
ARU 04	2018-06-22	608183.077	6396958.324	<i>Colaptes auratus</i>	Northern flicker	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Corvus corax</i>	Northern raven	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Loxia curvirostra</i>	Red crossbill	2
ARU 04	2018-06-22	608183.077	6396958.324	<i>Grus canadensis</i>	Sandhill crane	2
ARU 04	2018-06-22	608183.077	6396958.324	<i>Melospiza melodia</i>	Song sparrow	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Actitis macularius</i>	Spotted sandpiper	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	2
ARU 04	2018-06-22	608183.077	6396958.324	<i>Zonotrichia albicollis</i>	White-throated sparrow	3
ARU 04	2018-06-22	608183.077	6396958.324	<i>Gallinago delicata</i>	Wilson's snipe	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Piciformes</i>	Woodpeckers	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Piciformes</i>	Woodpeckers	1
ARU 04	2018-06-22	608183.077	6396958.324	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 04	2018-07-08	608183.077	6396958.324	<i>Branta canadensis</i>	Canada goose	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 04	2018-07-08	608183.077	6396958.324	<i>Mergus merganser</i>	Common merganser	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 04	2018-07-08	608183.077	6396958.324	<i>Gavia immer</i>	Common loon	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Melospiza lincolnii</i>	Lincoln's sparrow	3
ARU 04	2018-07-08	608183.077	6396958.324	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Melospiza melodia</i>	Song sparrow	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Melospiza melodia</i>	Song sparrow	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
ARU 04	2018-07-08	608183.077	6396958.324	<i>Zonotrichia albicollis</i>	White-throated sparrow	5

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 05	2018-06-01	603793.641	6394437.22	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Mergus merganser</i>	Common merganser	3
ARU 05	2018-06-01	603793.641	6394437.22	<i>Chordeiles minor</i>	Common nighthawk	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Gavia immer</i>	Common loon	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Tringa flavipes</i>	Lesser yellowlegs	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Melospiza lincolni</i>	Lincoln's sparrow	2
ARU 05	2018-06-01	603793.641	6394437.22	<i>Aythya americana</i>	Redhead	4
ARU 05	2018-06-01	603793.641	6394437.22	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Melospiza melodia</i>	Song sparrow	2
ARU 05	2018-06-01	603793.641	6394437.22	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 05	2018-06-01	603793.641	6394437.22	<i>Zonotrichia albicollis</i>	White-throated sparrow	3
ARU 05	2018-06-01	603793.641	6394437.22	<i>Piciformes</i>	Woodpeckers	1
ARU 05	2018-06-15	603793.641	6394437.22	<i>Larus californicus</i>	California gull	1
ARU 05	2018-06-15	603793.641	6394437.22	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 05	2018-06-15	603793.641	6394437.22	<i>Gavia immer</i>	Common loon	1
ARU 05	2018-06-15	603793.641	6394437.22	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 05	2018-06-15	603793.641	6394437.22	<i>Melospiza melodia</i>	Song sparrow	2
ARU 05	2018-06-15	603793.641	6394437.22	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 05	2018-06-15	603793.641	6394437.22	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 05	2018-06-15	603793.641	6394437.22	<i>Setophaga coronata</i>	Yellow-rumped warbler	3
ARU 05	2018-07-12	603793.641	6394437.22	<i>Turdus migratorius</i>	American robin	1
ARU 05	2018-07-12	603793.641	6394437.22	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 05	2018-07-12	603793.641	6394437.22	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 05	2018-07-12	603793.641	6394437.22	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 05	2018-07-12	603793.641	6394437.22	<i>Ammodramus leconteii</i>	LeConte's sparrow	1
ARU 05	2018-07-12	603793.641	6394437.22	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
ARU 05	2018-07-12	603793.641	6394437.22	<i>Melospiza melodia</i>	Song sparrow	4
ARU 05	2018-07-12	603793.641	6394437.22	<i>Actitis macularius</i>	Spotted sandpiper	1
ARU 05	2018-07-12	603793.641	6394437.22	<i>Zonotrichia albicollis</i>	White-throated sparrow	2

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 05	2018-07-12	603793.641	6394437.22	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Turdus migratorius</i>	American robin	2
ARU 06	2018-05-30	599234.54	6391404.598	<i>Picoides arcticus</i>	Black-backed woodpecker	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 06	2018-05-30	599234.54	6391404.598	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 06	2018-05-30	599234.54	6391404.598	<i>Gavia immer</i>	Common loon	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Loxia curvirostra</i>	Red crossbill	3
ARU 06	2018-05-30	599234.54	6391404.598	<i>Larus delawarensis</i>	Ring-billed gull	2
ARU 06	2018-05-30	599234.54	6391404.598	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Grus canadensis</i>	Sandhill crane	2
ARU 06	2018-05-30	599234.54	6391404.598	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Cardellina pusilla</i>	Wilson's warbler	1
ARU 06	2018-05-30	599234.54	6391404.598	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 06	2018-06-13	599234.54	6391404.598	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 06	2018-06-13	599234.54	6391404.598	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 06	2018-06-13	599234.54	6391404.598	<i>Melospiza melodia</i>	Song sparrow	1
ARU 06	2018-06-13	599234.54	6391404.598	<i>Melospiza melodia</i>	Song sparrow	1
ARU 06	2018-06-13	599234.54	6391404.598	<i>Catharus ustulatus</i>	Swainson's thrush	2
ARU 06	2018-06-13	599234.54	6391404.598	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 06	2018-06-13	599234.54	6391404.598	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 06	2018-07-07	599234.54	6391404.598	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 06	2018-07-07	599234.54	6391404.598	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 06	2018-07-07	599234.54	6391404.598	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 06	2018-07-07	599234.54	6391404.598	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 06	2018-07-07	599234.54	6391404.598	<i>Ammodramus leconteii</i>	LeConte's sparrow	1
ARU 06	2018-07-07	599234.54	6391404.598	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 06	2018-07-07	599234.54	6391404.598	<i>Loxia curvirostra</i>	Red crossbill	2
ARU 06	2018-07-07	599234.54	6391404.598	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 06	2018-07-07	599234.54	6391404.598	<i>Melospiza georgiana</i>	Swamp sparrow	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 07	2018-06-09	606540.753	6385406.776	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Turdus migratorius</i>	American robin	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Megasceryle alcyon</i>	Belted kingfisher	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Picoides arcticus</i>	Black-backed woodpecker	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 07	2018-06-09	606540.753	6385406.776	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 07	2018-06-09	606540.753	6385406.776	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Larus delawarensis</i>	Ring-billed gull	2
ARU 07	2018-06-09	606540.753	6385406.776	<i>Larus delawarensis</i>	Ring-billed gull	2
ARU 07	2018-06-09	606540.753	6385406.776	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Vireo solitarius</i>	Solitary vireo	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Gallinago delicata</i>	Wilson's snipe	1
ARU 07	2018-06-09	606540.753	6385406.776	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 07	2018-06-19	606540.753	6385406.776	<i>Turdus migratorius</i>	American robin	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Turdus migratorius</i>	American robin	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Picoides arcticus</i>	Black-backed woodpecker	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Branta canadensis</i>	Canada goose	3
ARU 07	2018-06-19	606540.753	6385406.776	<i>Branta canadensis</i>	Canada goose	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Bombycilla cedrorum</i>	Cedar waxwing	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Spizella passerina</i>	Chipping sparrow	4
ARU 07	2018-06-19	606540.753	6385406.776	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Larus delawarensis</i>	Ring-billed gull	3
ARU 07	2018-06-19	606540.753	6385406.776	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Catharus ustulatus</i>	Swainson's thrush	2
ARU 07	2018-06-19	606540.753	6385406.776	<i>Loxia leucoptera</i>	Two-barred crossbill	2
ARU 07	2018-06-19	606540.753	6385406.776	<i>Bartramia longicauda</i>	Upland sandpiper	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Zonotrichia albicollis</i>	White-throated sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 07	2018-06-19	606540.753	6385406.776	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 07	2018-06-19	606540.753	6385406.776	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 07	2018-06-19	606540.753	6385406.776	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 07	2018-07-01	606540.753	6385406.776	<i>Turdus migratorius</i>	American robin	1
ARU 07	2018-07-01	606540.753	6385406.776	<i>Turdus migratorius</i>	American robin	1
ARU 07	2018-07-01	606540.753	6385406.776	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 07	2018-07-01	606540.753	6385406.776	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 07	2018-07-01	606540.753	6385406.776	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 08	2018-06-10	603388.452	6391741.952	<i>Bombycilla cedrorum</i>	Cedar waxwing	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 08	2018-06-10	603388.452	6391741.952	<i>Gavia immer</i>	Common loon	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Loxia curvirostra</i>	Red crossbill	2
ARU 08	2018-06-10	603388.452	6391741.952	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Vireo solitarius</i>	Solitary vireo	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Catharus ustulatus</i>	Swainson's thrush	3
ARU 08	2018-06-10	603388.452	6391741.952	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 08	2018-06-10	603388.452	6391741.952	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 08	2018-06-10	603388.452	6391741.952	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Turdus migratorius</i>	American robin	2
ARU 08	2018-06-20	603388.452	6391741.952	<i>Megaceryle alcyon</i>	Belted kingfisher	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 08	2018-06-20	603388.452	6391741.952	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 08	2018-06-20	603388.452	6391741.952	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Passerella iliaca</i>	Red fox sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 08	2018-06-20	603388.452	6391741.952	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 08	2018-06-20	603388.452	6391741.952	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 08	2018-07-09	603388.452	6391741.952	<i>Turdus migratorius</i>	American robin	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Megaceryle alcyon</i>	Belted kingfisher	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 08	2018-07-09	603388.452	6391741.952	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Geothlypis philadelphia</i>	Mourning warbler	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Oreothlypis celata</i>	Orange-crowned warbler	2
ARU 08	2018-07-09	603388.452	6391741.952	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 08	2018-07-09	603388.452	6391741.952	<i>Zonotrichia albicollis</i>	White-throated sparrow	3
ARU 09	2018-06-08	605602.388	6393302.55	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Branta canadensis</i>	Canada goose	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Branta canadensis</i>	Canada goose	7
ARU 09	2018-06-08	605602.388	6393302.55	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Gavia immer</i>	Common loon	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Gavia immer</i>	Common loon	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 09	2018-06-08	605602.388	6393302.55	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 09	2018-06-08	605602.388	6393302.55	<i>Loxia curvirostra</i>	Red crossbill	2
ARU 09	2018-06-08	605602.388	6393302.55	<i>Setophaga coronata</i>	Yellow-rumped warbler	3
ARU 09	2018-06-08	605602.388	6393302.55	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 09	2018-06-16	605602.388	6393302.55	<i>Turdus migratorius</i>	American robin	2
ARU 09	2018-06-16	605602.388	6393302.55	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 09	2018-06-16	605602.388	6393302.55	<i>Spizella passerina</i>	Chipping sparrow	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 09	2018-06-16	605602.388	6393302.55	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 09	2018-06-16	605602.388	6393302.55	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 09	2018-06-16	605602.388	6393302.55	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 09	2018-06-16	605602.388	6393302.55	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 09	2018-06-16	605602.388	6393302.55	<i>Loxia curvirostra</i>	Red crossbill	2
ARU 09	2018-06-16	605602.388	6393302.55	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 09	2018-07-04	605602.388	6393302.55	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 09	2018-07-04	605602.388	6393302.55	<i>Chordeiles minor</i>	Common nighthawk	4
ARU 09	2018-07-04	605602.388	6393302.55	<i>Junco hyemalis</i>	Dark-eyed junco	3
ARU 09	2018-07-04	605602.388	6393302.55	<i>Perisoreus canadensis</i>	Gray jay	2
ARU 09	2018-07-04	605602.388	6393302.55	<i>Catharus guttatus</i>	Hermit thrush	3
ARU 09	2018-07-04	605602.388	6393302.55	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 09	2018-07-04	605602.388	6393302.55	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 09	2018-07-04	605602.388	6393302.55	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Turdus migratorius</i>	American robin	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Spizella pallida</i>	Clay-colored sparrow	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Junco hyemalis</i>	Dark-eyed junco	4
ARU 10	2018-06-03	607388.365	6394102.646	<i>Setophaga magnolia</i>	Magnolia warbler	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Euphagus carolinus</i>	Rusty blackbird	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Melospiza melodia</i>	Song sparrow	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Melospiza melodia</i>	Song sparrow	2
ARU 10	2018-06-03	607388.365	6394102.646	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 10	2018-06-03	607388.365	6394102.646	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 10	2018-06-03	607388.365	6394102.646	<i>Piciformes</i>	Woodpeckers	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Turdus migratorius</i>	American robin	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 10	2018-06-13	607388.365	6394102.646	<i>Turdus migratorius</i>	American robin	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Setophaga magnolia</i>	Magnolia warbler	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Parkesia noveboracensis</i>	Northern waterthrush	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Vireo olivaceus</i>	Red-eyed vireo	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Euphagus carolinus</i>	Rusty blackbird	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Melospiza melodia</i>	Song sparrow	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Melospiza melodia</i>	Song sparrow	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Actitis macularius</i>	Spotted sandpiper	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Tachycineta bicolor</i>	Tree swallow	3
ARU 10	2018-06-13	607388.365	6394102.646	<i>Zonotrichia albicollis</i>	White-throated sparrow	3
ARU 10	2018-06-13	607388.365	6394102.646	<i>Gallinago delicata</i>	Wilson's snipe	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Cardellina pusilla</i>	Wilson's warbler	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Setophaga petechia</i>	Yellow warbler	2
ARU 10	2018-06-13	607388.365	6394102.646	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 10	2018-06-13	607388.365	6394102.646	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Turdus migratorius</i>	American robin	2
ARU 10	2018-06-27	607388.365	6394102.646	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Spizella pallida</i>	Clay-colored sparrow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Melospiza lincolni</i>	Lincoln's sparrow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Setophaga magnolia</i>	Magnolia warbler	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 10	2018-06-27	607388.365	6394102.646	<i>Colaptes auratus</i>	Northern flicker	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Melospiza melodia</i>	Song sparrow	2
ARU 10	2018-06-27	607388.365	6394102.646	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Bartramia longicauda</i>	Upland sandpiper	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	2
ARU 10	2018-06-27	607388.365	6394102.646	<i>Zonotrichia albicollis</i>	White-throated sparrow	4
ARU 10	2018-06-27	607388.365	6394102.646	<i>Cardellina pusilla</i>	Wilson's warbler	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Cardellina pusilla</i>	Wilson's warbler	1
ARU 10	2018-06-27	607388.365	6394102.646	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Turdus migratorius</i>	American robin	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Hirundo rustica</i>	Barn swallow	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Mergus merganser</i>	Common merganser	2
ARU 11	2018-06-06	605112.635	6390534.366	<i>Tringa melanoleuca</i>	Greater yellowlegs	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Perisoreus canadensis</i>	Gray jay	2
ARU 11	2018-06-06	605112.635	6390534.366	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 11	2018-06-06	605112.635	6390534.366	<i>Gallinago delicata</i>	Wilson's snipe	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Cardellina pusilla</i>	Wilson's warbler	1
ARU 11	2018-06-06	605112.635	6390534.366	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Turdus migratorius</i>	American robin	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Haliaeetus leucocephalus</i>	Bald eagle	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Hirundo rustica</i>	Barn swallow	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 11	2018-06-15	605112.635	6390534.366	<i>Gavia immer</i>	Common loon	2
ARU 11	2018-06-15	605112.635	6390534.366	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Melospiza lincolni</i>	Lincoln's sparrow	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 11	2018-06-15	605112.635	6390534.366	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Loxia curvirostra</i>	Red crossbill	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Vireo solitarius</i>	Solitary vireo	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Melospiza melodia</i>	Song sparrow	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Actitis macularius</i>	Spotted sandpiper	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 11	2018-06-15	605112.635	6390534.366	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Turdus migratorius</i>	American robin	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Hirundo rustica</i>	Barn swallow	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	2
ARU 11	2018-06-30	605112.635	6390534.366	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 11	2018-06-30	605112.635	6390534.366	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Colaptes auratus</i>	Northern flicker	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Catharus ustulatus</i>	Swainson's thrush	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
ARU 11	2018-06-30	605112.635	6390534.366	<i>Loxia leucoptera</i>	Two-barred crossbill	2
ARU 11	2018-06-30	605112.635	6390534.366	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 11	2018-06-30	605112.635	6390534.366	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 12	2018-06-10	602685.101	6387382.79	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Turdus migratorius</i>	American robin	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Larus californicus</i>	California gull	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Spizella pallida</i>	Clay-colored sparrow	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Tringa flavipes</i>	Lesser yellowlegs	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Setophaga magnolia</i>	Magnolia warbler	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Setophaga palmarum</i>	Palm warbler	1

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 12	2018-06-10	602685.101	6387382.79	<i>Catharus ustulatus</i>	Swainson's thrush	2
ARU 12	2018-06-10	602685.101	6387382.79	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Oreothlypis peregrina</i>	Tennessee warbler	2
ARU 12	2018-06-10	602685.101	6387382.79	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Loxia leucoptera</i>	Two-barred crossbill	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Cardellina pusilla</i>	Wilson's warbler	2
ARU 12	2018-06-10	602685.101	6387382.79	<i>Piciformes</i>	Woodpeckers	1
ARU 12	2018-06-10	602685.101	6387382.79	<i>Setophaga petechia</i>	Yellow warbler	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Empidonax alnorum</i>	Alder flycatcher	2
ARU 12	2018-06-17	602685.101	6387382.79	<i>Mniotilta varia</i>	Black-and-white warbler	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 12	2018-06-17	602685.101	6387382.79	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Setophaga magnolia</i>	Magnolia warbler	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Catharus ustulatus</i>	Swainson's thrush	3
ARU 12	2018-06-17	602685.101	6387382.79	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 12	2018-06-17	602685.101	6387382.79	<i>Oreothlypis peregrina</i>	Tennessee warbler	3
ARU 12	2018-06-17	602685.101	6387382.79	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 12	2018-06-17	602685.101	6387382.79	<i>Cardellina pusilla</i>	Wilson's warbler	2
ARU 12	2018-06-17	602685.101	6387382.79	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Turdus migratorius</i>	American robin	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Spizella pallida</i>	Clay-colored sparrow	2
ARU 12	2018-06-25	602685.101	6387382.79	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Oreothlypis celata</i>	Orange-crowned warbler	2
ARU 12	2018-06-25	602685.101	6387382.79	<i>Spinus pinus</i>	Pine siskin	3

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 12	2018-06-25	602685.101	6387382.79	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Melospiza melodia</i>	Song sparrow	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Catharus ustulatus</i>	Swainson's thrush	2
ARU 12	2018-06-25	602685.101	6387382.79	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Melospiza georgiana</i>	Swamp sparrow	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Loxia leucoptera</i>	Two-barred crossbill	3
ARU 12	2018-06-25	602685.101	6387382.79	<i>Zonotrichia albicollis</i>	White-throated sparrow	4
ARU 12	2018-06-25	602685.101	6387382.79	<i>Empidonax flaviventris</i>	Yellow-bellied flycatcher	1
ARU 12	2018-06-25	602685.101	6387382.79	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Turdus migratorius</i>	American robin	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 13	2018-06-03	606592.508	6388820.829	<i>Mergus merganser</i>	Common merganser	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Tringa flavipes</i>	Lesser yellowlegs	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Vireo olivaceus</i>	Red-eyed vireo	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Melospiza melodia</i>	Song sparrow	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Falcapennis canadensis</i>	Spruce grouse	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Catharus ustulatus</i>	Swainson's thrush	2
ARU 13	2018-06-03	606592.508	6388820.829	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 13	2018-06-03	606592.508	6388820.829	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 13	2018-06-15	606592.508	6388820.829	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Turdus migratorius</i>	American robin	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Euphagus carolinus</i>	Rusty blackbird	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Melospiza melodia</i>	Song sparrow	2
ARU 13	2018-06-15	606592.508	6388820.829	<i>Loxia leucoptera</i>	Two-barred crossbill	2
ARU 13	2018-06-15	606592.508	6388820.829	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 13	2018-06-15	606592.508	6388820.829	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 13	2018-07-12	606592.508	6388820.829	<i>Turdus migratorius</i>	American robin	1
ARU 13	2018-07-12	606592.508	6388820.829	<i>Mergus merganser</i>	Common merganser	2

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 13	2018-07-12	606592.508	6388820.829	<i>Contopus cooperi</i>	Olive-sided flycatcher	1
ARU 13	2018-07-12	606592.508	6388820.829	<i>Loxia curvirostra</i>	Red crossbill	5
ARU 13	2018-07-12	606592.508	6388820.829	<i>Melospiza melodia</i>	Song sparrow	1
ARU 13	2018-07-12	606592.508	6388820.829	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 13	2018-07-12	606592.508	6388820.829	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 14	2018-06-06	608124.41	6390784.457	<i>Euphagus</i>	American blackbirds	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Turdus migratorius</i>	American robin	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Turdus migratorius</i>	American robin	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Picoides arcticus</i>	Black-backed woodpecker	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 14	2018-06-06	608124.41	6390784.457	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Gavia immer</i>	Common loon	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 14	2018-06-06	608124.41	6390784.457	<i>Corvus corax</i>	Northern raven	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Vireo philadelphicus</i>	Philadelphia vireo	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Loxia curvirostra</i>	Red crossbill	5
ARU 14	2018-06-06	608124.41	6390784.457	<i>Vireo olivaceus</i>	Red-eyed vireo	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Regulus calendula</i>	Ruby-crowned kinglet	2
ARU 14	2018-06-06	608124.41	6390784.457	<i>Melospiza melodia</i>	Song sparrow	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Melospiza melodia</i>	Song sparrow	2
ARU 14	2018-06-06	608124.41	6390784.457	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 14	2018-06-06	608124.41	6390784.457	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 14	2018-06-06	608124.41	6390784.457	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Corvus brachyrhynchos</i>	American crow	2
ARU 14	2018-06-25	608124.41	6390784.457	<i>Turdus migratorius</i>	American robin	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Turdus migratorius</i>	American robin	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Chroicocephalus philadelphia</i>	Bonaparte's gull	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 14	2018-06-25	608124.41	6390784.457	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 14	2018-06-25	608124.41	6390784.457	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Gavia immer</i>	Common loon	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Corvus corax</i>	Northern raven	3

**Appendix B, Table 5**

Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 14	2018-06-25	608124.41	6390784.457	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Melospiza melodia</i>	Song sparrow	2
ARU 14	2018-06-25	608124.41	6390784.457	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Zonotrichia albicollis</i>	White-throated sparrow	2
ARU 14	2018-06-25	608124.41	6390784.457	<i>Piciformes</i>	Woodpeckers	1
ARU 14	2018-06-25	608124.41	6390784.457	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 14	2018-07-08	608124.41	6390784.457	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Corvus brachyrhynchos</i>	American crow	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Turdus migratorius</i>	American robin	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Picoides arcticus</i>	Black-backed woodpecker	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Spizella passerina</i>	Chipping sparrow	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 14	2018-07-08	608124.41	6390784.457	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Gavia immer</i>	Common loon	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Sitta canadensis</i>	Red-breasted nuthatch	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Melospiza melodia</i>	Song sparrow	3
ARU 14	2018-07-08	608124.41	6390784.457	<i>Zonotrichia leucophrys</i>	White-crowned sparrow	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 14	2018-07-08	608124.41	6390784.457	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 15	2018-06-08	601850.206	6391261.993	<i>Empidonax alnorum</i>	Alder flycatcher	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Spizella passerina</i>	Chipping sparrow	3
ARU 15	2018-06-08	601850.206	6391261.993	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Junco hyemalis</i>	Dark-eyed junco	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Catharus guttatus</i>	Hermit thrush	2
ARU 15	2018-06-08	601850.206	6391261.993	<i>Passerella iliaca</i>	Red fox sparrow	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Larus delawarensis</i>	Ring-billed gull	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 15	2018-06-08	601850.206	6391261.993	<i>Setophaga coronata</i>	Yellow-rumped warbler	2
ARU 15	2018-07-07	601850.206	6391261.993	<i>Spizella passerina</i>	Chipping sparrow	1

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Detailed Breeding Bird Results, 2018

Site ID	Date	UTM Coordinates <sup>1</sup>		Scientific Name	Common Name	Abundance
		Easting	Northing			
ARU 15	2018-07-07	601850.206	6391261.993	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 15	2018-07-07	601850.206	6391261.993	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Oreothlypis celata</i>	Orange-crowned warbler	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 15	2018-07-07	601850.206	6391261.993	<i>Setophaga coronata</i>	Yellow-rumped warbler	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Bombycilla cedrorum</i>	Cedar waxwing	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Spizella passerina</i>	Chipping sparrow	2
ARU 15	2018-07-23	601850.206	6391261.993	<i>Junco hyemalis</i>	Dark-eyed junco	2
ARU 15	2018-07-23	601850.206	6391261.993	<i>Perisoreus canadensis</i>	Gray jay	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Catharus guttatus</i>	Hermit thrush	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Setophaga magnolia</i>	Magnolia warbler	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Oreothlypis celata</i>	Orange-crowned warbler	2
ARU 15	2018-07-23	601850.206	6391261.993	<i>Setophaga palmarum</i>	Palm warbler	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Regulus calendula</i>	Ruby-crowned kinglet	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Oreothlypis peregrina</i>	Tennessee warbler	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Zonotrichia albicollis</i>	White-throated sparrow	1
ARU 15	2018-07-23	601850.206	6391261.993	<i>Setophaga coronata</i>	Yellow-rumped warbler	1

a) UTM = NAD83 Zone 13V.

**Appendix B, Table 6**

Total Bat Detections, May to October 2018

Detected ID	Number of Nights in Operation	Recorded Bat Passes			Total Recorded Bat Passes	Total Bat Passes Per Detector Night
		High Frequency <sup>a</sup>	<i>Myotis</i> spp. <sup>b</sup>	Low Frequency <sup>c</sup>		
BAT 01	130	377	272	11	660	5.08
BAT 02	130	1166	1138	11	2315	17.81
BAT 03	130	320	195	67	582	4.48
BAT 04	43 <sup>d</sup>	300	128	3	431	10.02
BAT 05	130	132	178	14	324	2.49
<b>COMBINED</b>	<b>563</b>	<b>2295</b>	<b>1911</b>	<b>106</b>	<b>4312</b>	<b>7.66</b>

a) Including *Myotis lucifugus*, *Myotis septentrionalis*, and *Lasirurus borealis*.

b) Including *Myotis lucifugus*, and *Myotis septentrionalis*.

c) Including *Eptesicus fuscus*, *Lasionycteris noctivagans*, and *Lasirurus cinereus*.

d) Detector Malfunction on 4 July 2018.