# Mount Nansen Site
# Baseline Bird Assessment 2011

***Prepared for:***

Yukon
Energy Mines and Resources
Assessment and Abandoned Mines

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***EDI Project No:***

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2012 ENVIRONMENTAL EMPLOYER OF THE YEAR

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# EXECUTIVE SUMMARY

The Yukon Government, Assessment and Abandoned Mines (AAM) retained EDI Environmental Dynamics to conduct baseline bird surveys at the Mount Nansen site during the 2011 bird breeding season. AAM is in the process of gathering baseline data for environmental and socio-economic assessment and to inform site remediation. The objectives of the study were to determine species presence/absence, identify key habitat features and to associate bird species with their respective habitat types.

Bird and habitat surveys were completed over a four-day period from June 27 to June 30, 2011. Standardized point counts were conducted in a variety of habitats that were representative of the study area. Survey conditions were less than ideal due to extended periods of precipitation and likely resulted in lower species and individual counts. The survey resulted in 421 individual bird observations of 23 bird species. A total of 37 point count surveys were conducted in forest, shrubland, wetland and disturbed habitat types. Of the 13 species of conservation concern (COSEWIC and CESCC) that may occur in the project area, one species (Olive-sided Flycatcher) was observed in 2011.

# AUTHORSHIP

This report was prepared by EDI Environmental Dynamics Inc. EDI staff who contributed to this project included:

S. Atherton, B.Sc. ..... Field Ornithologist / Biologist

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# 1 INTRODUCTION

The Mount Nansen site is located approximately 45 km west of the townsite of Carmacks and lies within the traditional territory of the Little Salmon Carmacks First Nation (LSCFN). This site has had an extensive history of mining activity dating back to the late 1800s. The Mount Nansen site operated as a gold and silver mine until it went into voluntary receivership in 1999 and was formally declared abandoned. Through the DTA (devolution transfer agreement) and discussions between the two parties, the Yukon Government and the Government of Canada have agreed that both governments should work together to manage and administer the mine remediation. Today, the Yukon Government, Assessment and Abandoned Mines (AAM) is in the process of collecting baseline data to inform the remediation of the site.

Located within the Yukon Plateau-Central Ecoregion, the area is broadly distinguished by rolling hills, grasslands, wetlands and expansive valleys (Smith et al. 2004). The area commonly experiences precipitation events during the summer months (June to August), whereas January through to April are typically the driest months (EDI 2010). Typical vegetation for this Ecoregion consists of lodgepole pine, white spruce, black spruce, aspen, Labrador tea, grasses, moss and lichen (Smith et al. 2004).

Prior to this report, a comprehensive inventory of bird species presence / absence had not been completed for the project area. Bird information was limited to incidental and casual observations that were documented in the Birds of the Yukon Database (CWS 1998). North of the Mount Nansen site, Frisch (1983) completed an inventory of breeding birds in the alpine areas of Klaza Mountain.

The area supports habitat for a variety of year-round resident and migrant bird species. Species assemblages are characteristic of those of boreal sub-alpine and alpine habitats. Background research into the potential breeding bird species that may occur in the study area indicates the likelihood of 87 species with possible or probable breeding statuses (see Appendix A for a list of species and category descriptions). A number of these species have been evaluated as a conservation concern by the Committee of the Status of Endangered Wildlife in Canada (COSEWIC) and the Canadian Endangered Species Conservation Council (CESCC). These assessment bodies include separate working groups comprised of experts from all provinces/territories which utilize all available information to designate species into a standardized set of status categories (Table 1).

Species[1] that have been assessed by COSEWIC as 'Threatened' included the Common Nighthawk, Olive-sided Flycatcher and Barn Swallow (COSEWIC 2011). The Rusty Blackbird and Short-eared Owl are species likely to occur within the area and are listed as species of 'Special Concern' (COSEWIC 2011). Within the Yukon, the CESCC has assessed the Common Nighthawk and Olive-sided Flycatcher as an 'At Risk' species and the American Kestrel as 'May be at Risk' (CESCC 2010). Additionally, the CESCC (2010) has listed a number of species that are likely to occur in the study area as 'Sensitive' (see Appendix A for a list of sensitive species).

[1] Scientific nomenclature of bird species are provided in Appendix A.

**Table 1. Description of COSEWIC and CESCC status categories.**

| Listing Authority | Status | Description |
|---|---|---|
| COSEWIC Committee on the Status of Endangered Wildlife in Canada | Extinct | A species that no longer exists. |
| | Extirpated | A species that no longer exists in the wild in Canada, but exists elsewhere. |
| | Endangered | A species facing imminent extinction or extirpation. |
| | Threatened | A species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction. |
| | Special Concern | A species that may become threatened or endangered because of a combination of biological characteristics and identified threats. |
| CESCC Canadian Endangered Species Conservation Council (Yukon General Status) | Extinct | Species that are extirpated worldwide. |
| | Extirpated | Species that are no long present in a given geographical area, but occur in other areas. |
| | At Risk | Species for which a COSEWIC or provincial/ territorial equivalent have found the species to be at risk of extirpation or extinction. |
| | May Be At Risk | Species that may be at risk of extirpation or extinction and are candidates for assessment by COSEWIC. |
| | Sensitive | Species not believed to be at risk of immediate extirpation or extinction but may require additional or protection to prevent becoming at risk. |
| | Secure | Species not believed to be Sensitive, May Be At Risk, At Risk, Extirpated or Extinct. |

## 1.1 STUDY OBJECTIVES

EDI Environmental Dynamics Inc. was retained by AAM to conduct baseline bird surveys and habitat assessments during the breeding season (early June to early July). This report is intended to provide baseline data for birds that were observed at the Mount Nansen site, and adjacent habitats, in late June 2011. The study objectives were to:

- Collect a baseline inventory of species presence/absence;
- Identify key habitat features; and
- Associate bird species with habitat types.

# 2 METHODS

Breeding bird and habitat surveys at the site were conducted by two experienced ornithologists (S. Atherton, June 27 to 29; and J. Jantunen, June 30) and a biologist (L. Grieve) over four days from June 27 to 30, 2011 (Photo 1). All field data were entered into a database for analysis and reviewed for quality assurance by a biologist that was familiar with the point count survey data and the regional bird populations. The following sections outline the methods that were used to complete the bird and habitat surveys.

**Photo 1.** **Ornithologist Jukka Jantunen records bird species that were observed during a point count survey at site 232 on June 30, 2011.**

## 2.1 SITE SELECTION

Prior to beginning field work, standardized point count stations and study areas were identified using GIS (ArcMap 10.0), available orthophoto imagery and EDI's local knowledge of the Mount Nansen site. Exploratory surveys were designed to sample a variety of habits representative of the site. Currently disturbed areas (e.g., tailings pond) were not specifically sampled because they are not representative of the habitat potential of the site. All point counts were also placed in areas that were accessible by foot and/or vehicle.

## 2.2 POINT COUNTS

A total of 37 bird point counts were each surveyed once over a four day period and in a variety of habitats ranging from forested to alpine areas (Figure 1). Point count surveys were conducted during daylight hours, from official sunrise until approximately 9:00 am. Point count stations were spaced at least 300 m apart and consisted of a circular plot with a fixed radius of 100 m centered on the primary observer. Point counts were conducted over a ten minute interval, during which all visual and auditory observations were recorded and distance from the observer to the first observation of individual birds was recorded. Observations were noted by time from start, behaviour, sex and species. In addition to the data collected during point count surveys, incidental bird observations were recorded during travel between station sites as well as any observations during the point count sites that were beyond the 100 m plots or outside of the 10 minute time interval. The field crew also recorded signs of other wildlife that included approximate site locations, and photos of notble observations.

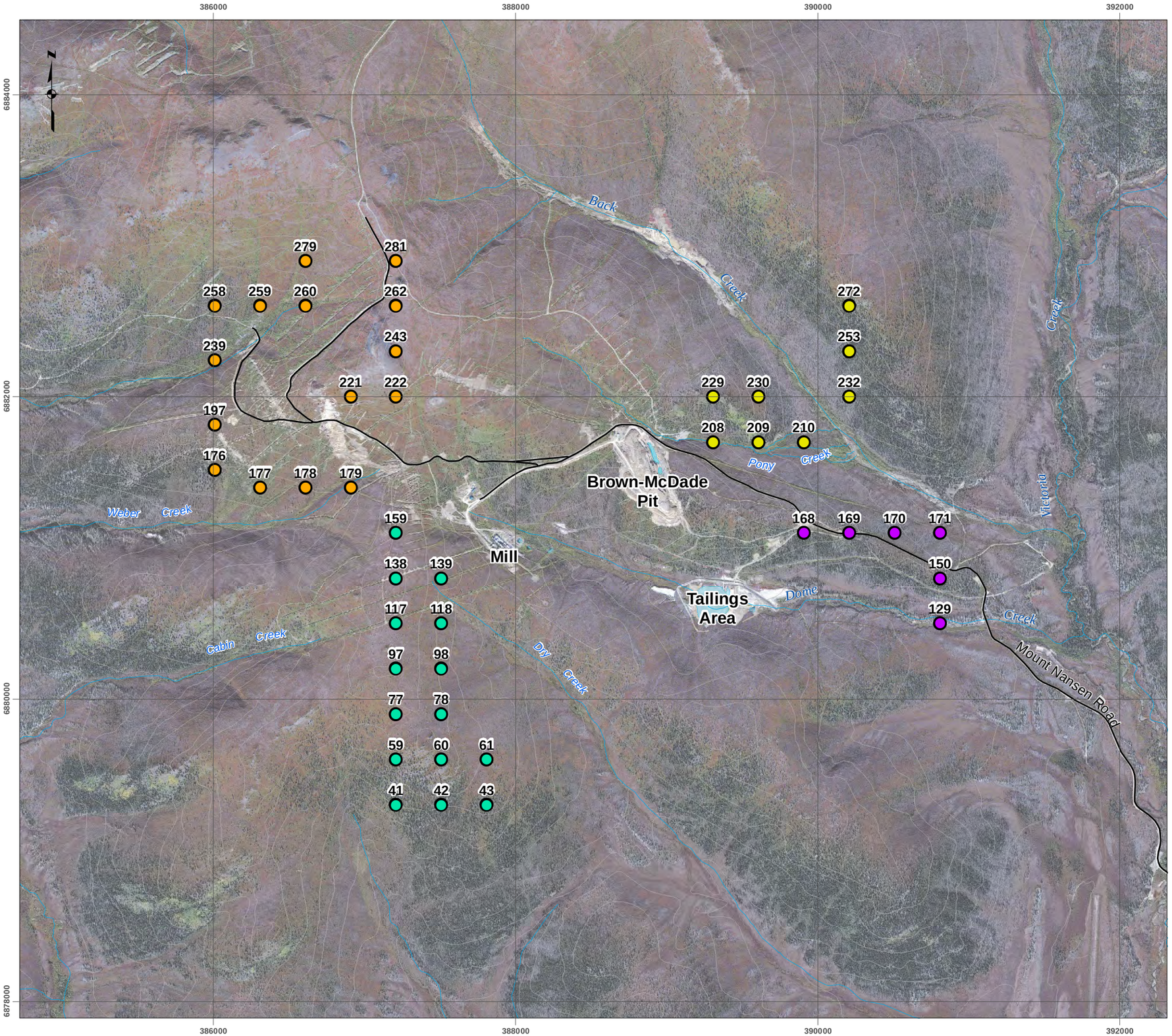
At each station, general habitat characteristics and site information was collected including: weather conditions, habitat type, forest characteristics, and vegetation species.

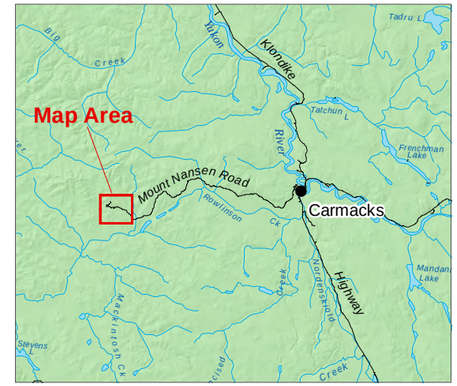
*Weather* — recorded at each point count location for precipitation, wind and cloud cover. Precipitation was recorded as none, fog, drizzle, light rain, snow or hail. Wind was estimated along a six-point scale starting with level 0 (calm <2 km/h) to a level 5 (fresh: 30–39 km/h). Bird surveys were not conducted when winds were > 39 km/h or when observations were otherwise compromised by adverse weather conditions.

*Habitat type* — recorded at each site to classify the area by forest, wetland, shrubland, rangeland, alpine or developed. Wetlands were further classified into lakes, marshes, bogs, swamps, fens and floods.

*Vegetation* — forest class was recorded as regenerating, young, mature, old, logged or burned and the forest type was classified into deciduous, coniferous or mixed wood. The percent composition for tree species (with >5% presence) at each site was recorded, along with the average canopy cover type (open, sparse, closed or dense). Shrub layer species and average shrub heights (low, medium or high) were recorded. Herb layer vegetation was noted along with the percent ground cover.

*Photo documentation* — site photos were taken in each of the four cardinal directions (north, east, south and west) and at ground view.




**Project Specific Features**

**Bird and Habitat Survey Plots (2011)**

- Area A
- Area B
- Area C
- Area D

**Topographic Features**

- Access Road
- Contours
- Watercourse
- Waterbody (pit pond and tailings)

0 200 400 600 800 1,000

metres

Map scale 1:26,000 (when printed on 11x17)

# Figure 1: Bird Point Count and Habitat Plots at the Mount Nansen Site (2011)

| | |
|---|---|
| Drawn By: | L. Grieve |
| Checked By: | M. Power |
| Date: | 16 January 2012 |
| Map Projection: | NAD 1983 UTM Zone 08 |
| EDI Project #: | 11-Y-0261 |



Bird Plot data derived by EDI (2011).



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EDI Environmental Dynamics Inc.

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# 3 RESULTS AND DISCUSSION

The four day survey in late June 2011 resulted in 421 individual bird observations (319 point count and 102 incidentals) and 23 recorded bird species (Table 1). The following sections (3.1 to 3.2) present the results of the bird surveys including confirmed breeding observations in the area, species of conservation concern, and the observed bird-habitat associations.

**Table 2. A list of recorded bird species and bird species codes from point count and incidental observations at Mount Nansen from June 27 to 30, 2011.**

| Species | Bird Species Code |
|---|---|
| Golden Eagle | GOEA |
| Rock Ptarmigan | ROPT |
| Olive-sided Flycatcher | OSFL |
| Western Wood-Pewee | WEWP |
| Gray Jay | GRJA |
| Horned Lark | HOLA |
| Boreal Chickadee | BOCH |
| Ruby-crowned Kinglet | RCKI |
| Townsend's Solitaire | TOSO |
| Swainson's Thrush | SWTH |
| American Robin | AMRO |
| Orange-crowned Warbler | OCWA |
| Yellow-rumped Warbler | YRWA |
| Wilson's Warbler | WIWA |
| American Tree Sparrow | ATSP |
| Savannah Sparrow | SASP |
| Lincoln Sparrow | LISP |
| White-crowned Sparrow | WCSP |
| Dark-eyed (Slate-coloured) Junco | SCJU |
| White-winged Crossbill | WWCR |
| Common Redpoll | CORE |
| Common Redpoll / Pine Siskin[2] | CORE / PISI |

[2] Species could not be differentiated during observations.

## 3.1 POINT COUNT BIRD OBSERVATIONS

A total of 37 point count stations were surveyed. The ten most commonly observed species during the point counts surveys, in order of abundance, were White-crowned Sparrow, Dark-eyed (Slate-coloured) Junco, Common Redpoll / Pine Siskin, Wilson's Warbler, American Tree Sparrow, Orange Crowned Warbler, Yellow-rumped Warbler, Gray Jay, and Boreal Chickadee (Figure 2).

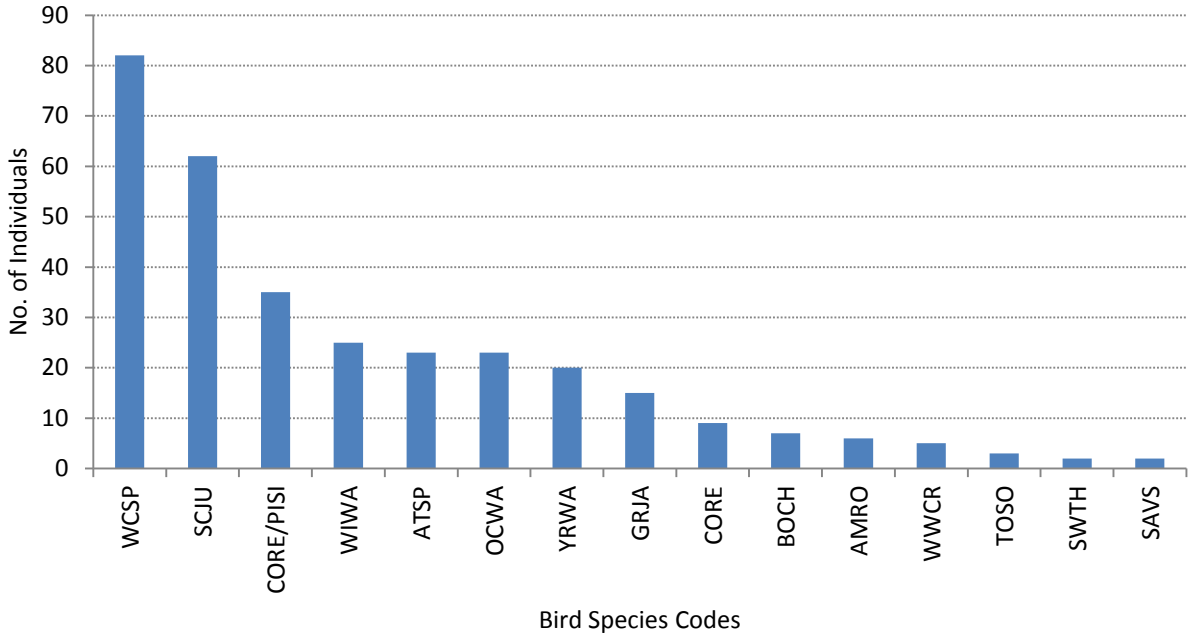


**Figure 2.** **Recorded species abundance during point counts for observed birds at the Mount Nansen site from June 27 to 30, 2011.**

Habitat assessments were conducted at 44 sites in Areas A, B, C, and D. Surveyed habitats included alpine, subalpine, forest, shrubland, wetland and disturbed areas (Figure 3). Point count stations were located in three general zones of vegetation, in forested (<1,200 m above sea level [ASL]), sub-alpine (between 1,200 m and 1,370 m ASL) and alpine (>1,370 m ASL) zones (Smith et al. 2004). Waterbodies at the Mount Nansen site are not extensive and therefore, the likelihood of encountering nesting ducks and waterbirds was low. Wetlands and "riparian" habitats, generally considered important bird habitats in many other areas of the Yukon, are not present in sufficient area to provide representative bird surveys at the site. Those habitats were therefore not considered as a specific habitat type for surveys.

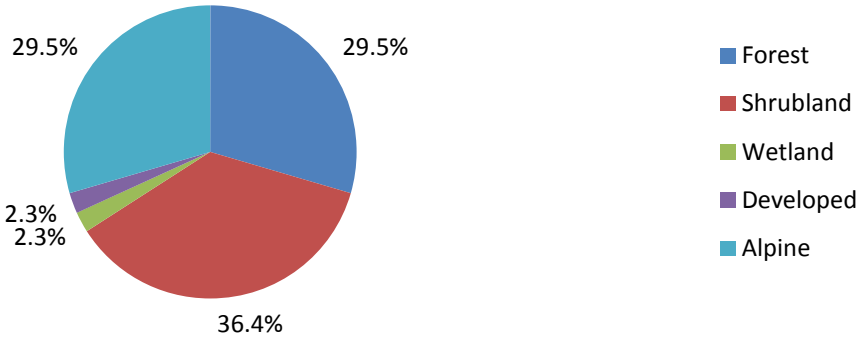


**Figure 3.** **Percent of habitat types recorded for 44 site assessments at the Mount Nansen site from June 27 to 30, 2011. These allocations are not an accurate reflection of the distribution of habitats within the study area.**

Common tree species observed were white spruce, black spruce and aspen (Table 3). Canopy cover was predominantly open at 75% of the sites and sparse at 25% of sites. Shrub cover was observed at 58.7% of sites and herb cover was observed at 23.1% of sites.

**Table 3.** **The tree species, number of sites observed and site average composition percent during a total of 44 habitat surveys at the Mount Nansen site from June 27 to 30, 2011.**

| Tree species | No. of sites observed | % of sites observed |
|---|---|---|
| White spruce | 35 | 79.5 |
| Black spruce | 27 | 61.4 |
| Aspen | 1 | 2.3 |

The following sections provide general habitat and weather descriptions and bird species that were encountered in each of the four general areas (refer to Figure 1).

### 3.1.1 Area A

Area A was located in the uplands of the north-west area of the Mount Nansen site. There were a total of ten plots surveyed in Area A on June 27, 2011. Early in the morning, precipitation fell in the form of drizzle at two plots. Throughout the day, winds were calm to gentle (0–19 km/h) and cloud cover ranged from 10% to 90%.

This area encompassed a variety of habitat types including forest habitat, sparsely wooded sub-alpine habitat, riparian habitat and alpine habitat (Photos 2–5). Shrub heights were low to medium with an average

shrub cover of 63% and an average herb cover of 28%. Predominant tree species included black spruce and white spruce. Slopes ranged from approximately 10% to 40% and elevations from 1,211 m to 1,488m ASL.

**Photo 2. Site 178, typical vegetation assemblages for Area A include sparse conifer forests and willow shrub cover. Site surveyed on June 27, 2011.**

**Photo 3. Located in a riparian area, site 239 was surveyed on June 27, 2011.**

**Photo 4. Located in alpine habitat, site 281 was surveyed on June 27, 2011. A road provides access to exploration and mining properties beyond the Mount Nansen site.**

**Photo 5. Located in forested habitat, site 176 was surveyed on June 27, 2011.**

#### 3.1.1.1 Bird Observations in Area A

A total of 91 individuals and thirteen bird species were observed in this area during ten point count surveys conducted on June 27, 2011 (Figure 4). White-crowned Sparrow was the most frequently observed species at all sites.

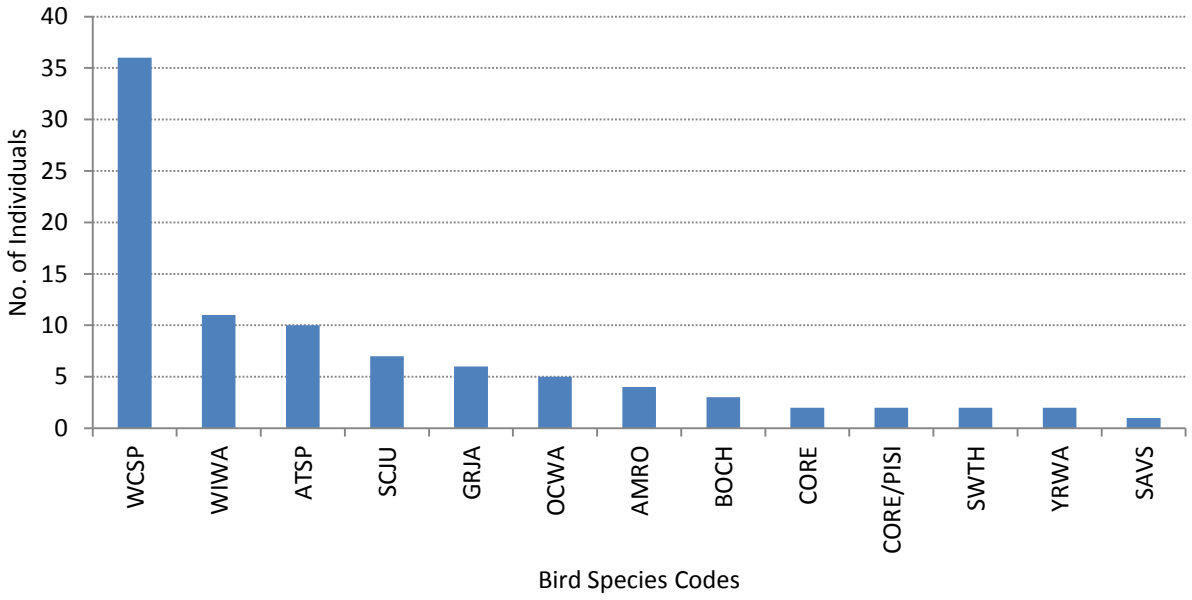


**Figure 4. Recorded species abundance during point counts surveys in Area A on June 27, 2011, Mount Nansen.**

### 3.1.2 Area B

Thirteen plots were surveyed in Area B on June 28, 2011 (Photos 6–9). Precipitation fell at three of the sites (sites 60, 98, and 118) in the form of drizzle and Site 139 was the only site that light rain was experienced. Winds were light air to gentle (2–19 km/h) and cloud cover ranged from 35% to 100%.

Area B was generally located to the west and south-west of the site. This area featured a variety of habitats including disturbed areas (e.g. access roads), shrubland habitat and forest habitat. Slopes in this area ranged from 5% to 20% and elevations were 1,198 m to 1,337 m ASL. Tree species in the area were white and black spruce. Shrub heights were low to high with an average shrub cover of 57% and an average herb cover of 11%.

**Photo 6. Open shrubland habitat at Site 159. This site was located at an access road. Photo taken at the Mount Nansen Site.**

**Photo 7. Typical spruce forest with low to medium height shrubs. Photo taken at Site 42 at the Mount Nansen Site.**

**Photo 8. Sparsely spaced spruce and low shrubs cover this hillside to the west of the site. The Mount Nansen site can be seen in the background. Site 78, surveyed on June 28, 2011.**

**Photo 9. Site 77 surveyed on June 28, 2011. An Olive-sided Flycatcher was observed near this site.**

#### 3.1.2.1 Bird Observations in Area B

A total of thirteen bird species were observed in this area during the thirteen point count surveys conducted on June 28, 2011 (Figure 5). White-crowned Sparrow, the most frequently observed species, occurred at 77% of the sites. Other commonly observed species included the Common Redpoll / Pine Siskin and Dark-eyed (Slate-coloured) Junco. There were two incidental Olive-sided Flycatcher observations[3] near sites 77 and 41.

[3] Due to the close proximity of sites 77 and 41, observations may be from the same individual.

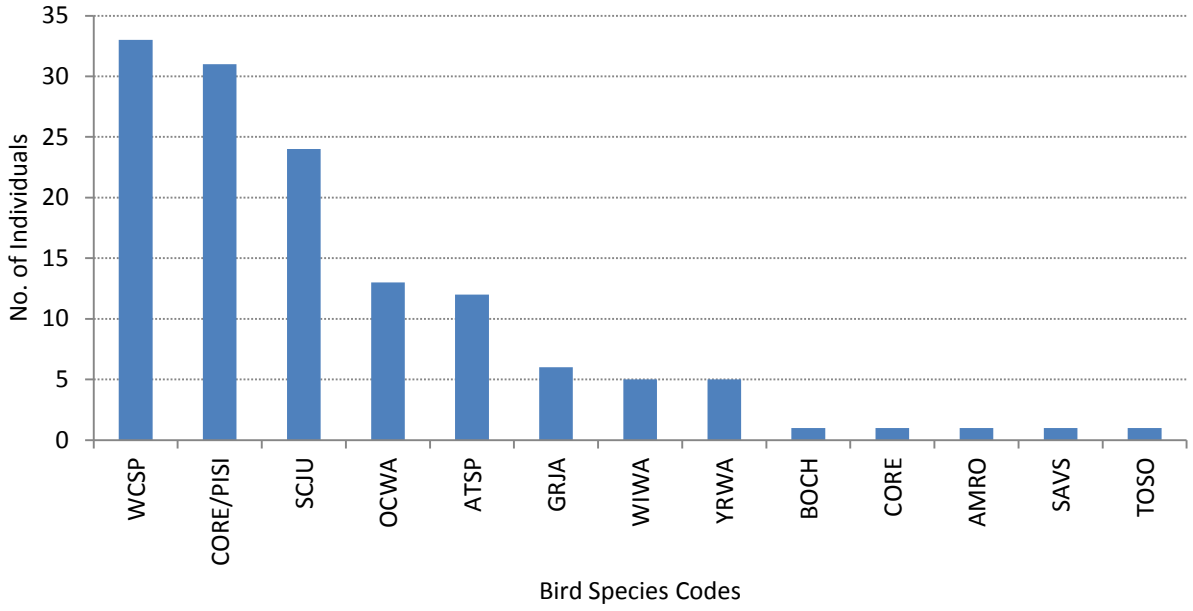


**Figure 5.** **Recorded species abundance during 13 point counts surveys in Area B on June 28, 2011 at the Mount Nansen Site.**

### 3.1.3 Area C

Eight plots were surveyed in Area C on June 30, 2011 (Photos 10–13). Area C was generally located within the Back Creek drainage area, north-east of the Mount Nansen site. At the time of the observations, winds were light to gentle (2–19 km/h), cloud cover ranged from 90% to 98% and there were no precipitation events. Elevations were between 1,105 m and 1,242 m ASL with slopes of up to 40%.

Forest was the predominant habitat type in Area C and one site of shrubland habitat was surveyed. Forest habitat included mostly conifer trees however, one mixedwood spruce and aspen stand was surveyed. Shrub cover was on average 65.6% and herb cover was 27.5%. Typical herb cover for this area included crowberry (*Empetrum nigrum*), Labrador tea (*Ledum groenlandicum*), reindeer lichen (*Cladonia rangiferina*), cinquefoil (*Potentilla fruticosa*), and lingonberry (*Vaccinium vitis-idaea*).

Photo 10. Shrubland habitat at site 208, surveyed on June 30, 2011.

Photo 11. Site 210 with black spruce cover surveyed on June 30, 2011.

Photo 12. Forest habitat at Site 232 looking across the valley at the Mount Nansen Road along the far hillside. Site was surveyed on June 30, 2011.

Photo 13. Vegetation at Site 272. Site surveyed on June 30, 2011.

#### 3.1.3.1 Bird Observations in Area C

A total of ten bird species were observed in this area during the eight point count surveys, conducted on June 30, 2011 (Figure 6). Dark-eyed (Slate-coloured) Junco was the species with the highest number of observed individuals (n=15) and this species occurred at five sites. Other commonly observed species included the Yellow-rumped Warbler, Wilson's Warbler, Common Redpoll and White-winged Crossbill.

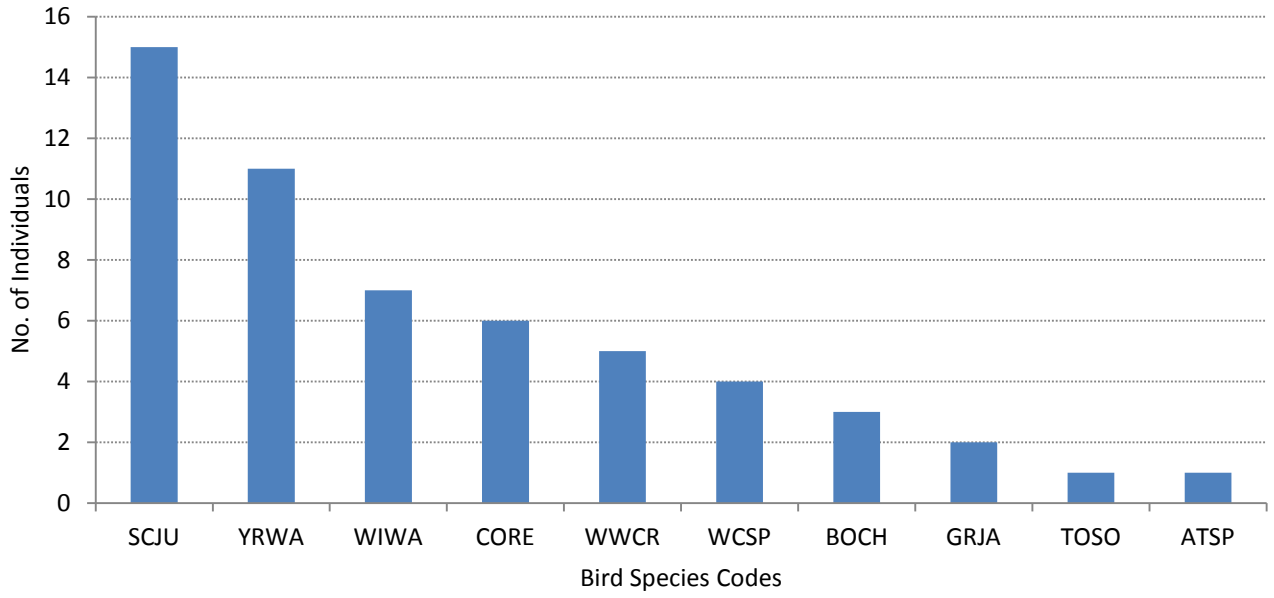


**Figure 6.** **Recorded species abundance during point counts surveys in Area C on June 30, 2011 at the Mount Nansen Site.**

### 3.1.4 Area D

Area D was located in the south-east corner of the project area and includes a portion of Back Creek. There were a total of six plots that were surveyed in Area D on June 29, 2011. On this day precipitation fell in the form of drizzle and light rain throughout the duration of the bird point counts.

This area encompassed a variety of habitat types including shrubland, wetland and developed areas (Photos 14–17). On average, shrub heights were low to medium with an average shrub cover of 46% and an average herb cover of 34%. Predominant tree species were black spruce and white spruce. Slopes ranged from approximately 5% to 30% and elevations from 1,051 m to 1,131 m ASL.

Photo 14. Site 170, surveyed on June 29, 2011.

Photo 15. Tree species at Site 171 consisted of sparsely spaced black and white spruce. Willow was the dominant shrub species. Site surveyed on June 29, 2011.

Photo 16. Site 129 is located on a north facing slope near Dome Creek. The site was surveyed on June 29, 2011.

Photo 17. Site 150 was surveyed on June 29, 2011.

#### 3.1.4.1 Bird Observations in Area D

A total of nine bird species were observed in this area during the six point count surveys conducted on June 29, 2011 (Figure 7). Dark-eyed (Slate-coloured) Junco was the species with the highest number of observed individuals (n=16). Other commonly observed species include the White-crowned Sparrow and Orange-crowned Warbler.

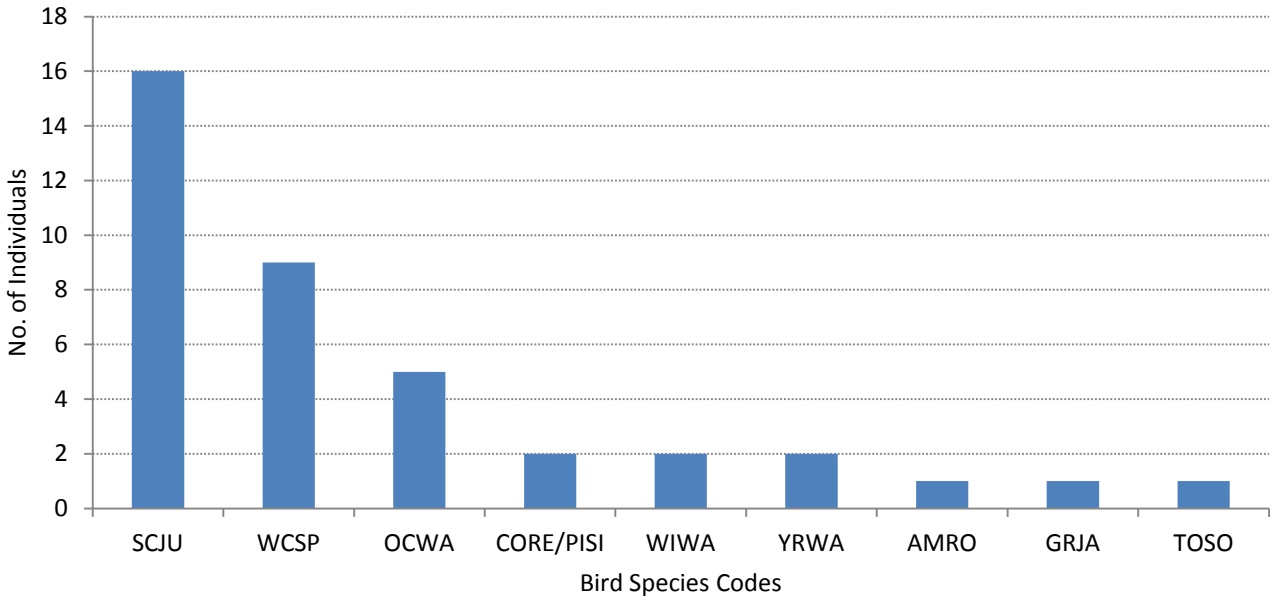


**Figure 7.** **Recorded species abundance during point counts surveys in Area D on June 29, 2011 at the Mount Nansen Site.**

## 3.2 INCIDENTAL OBSERVATIONS

### 3.2.1 Birds

The field crew recorded incidental observations of birds that were encountered during travel to, and from, the point station locations. A total of 102 individuals of 21 species were recorded during the incidental observations including six species that were not observed during the point counts (Figure 8).

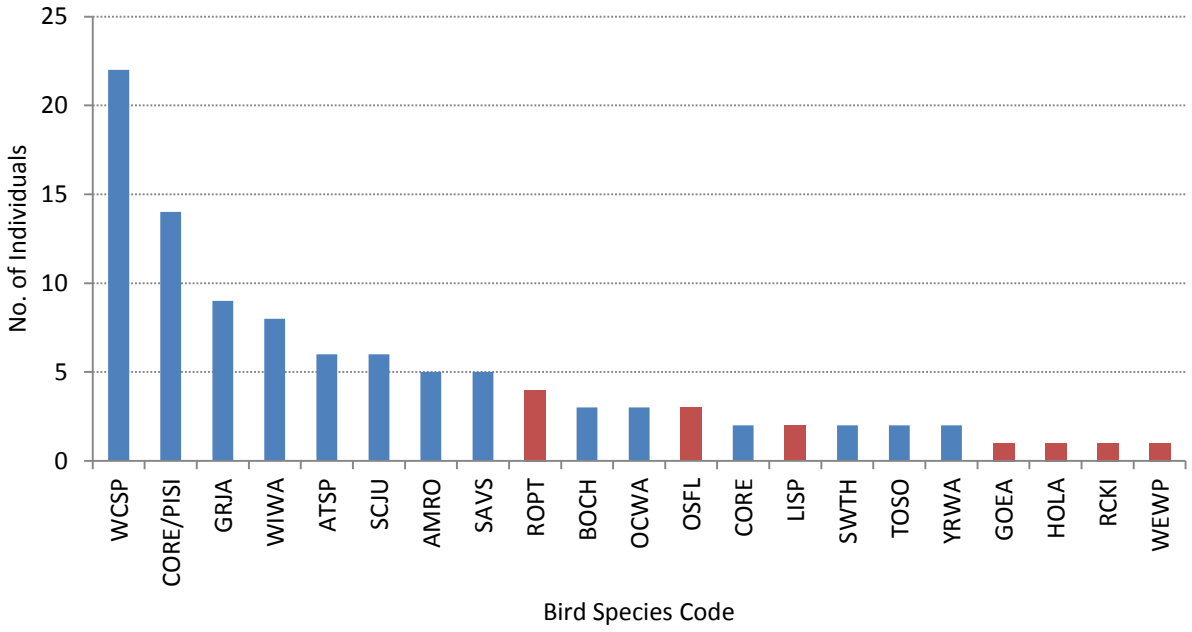


**Figure 8.** **Recorded species abundance for incidental observations of birds at the Mount Nansen Site from June 27 to 30, 2011. Species that were incidental observations that were not observed during the point counts are indicated in red, species observed in both point counts and incidentals are indicated in blue.**

### 3.2.2 Other Wildlife Observations

Incidental observations of wildlife were recorded by the field crew at the bird point count sites and while in transit. Observations of scat and tracks were common throughout the study areas for moose, caribou, porcupine and bear (Table 4). The field crew documented frequent observations (sight and scat) of grouse and ptarmigan during the four day survey. Observations that indicated the presence of caribou included scat, an antler and trails (Photo 18). A single porcupine was observed in a tree near an access road in Area B (Photo 19). Other wildlife observations include rodent dens, old moose kill sites, rubbed trees and temporary wildlife shelters.

**Table 4.** **A list of common wildlife observations in order of abundance at the Mount Nansen site from June 27 to 30, 2011.**

| Species | Type of observation | Areas |
|---|---|---|
| Moose | Scat, tracks and browse | A, C, D |
| Caribou | Antler, scat, trails | A, B, D |
| Porcupine | Sight observation and quills | A, B |
| Bear | Scat | A, D |
| Wolf | Scat | B |

Photo 18. Caribou antler, observed on June 28, in the hills to the south-west of the Mount Nansen Site.

Photo 19. A single porcupine was observed on June 28, 2011 west of the Mount Nansen Site.

## 3.3 CONFIRMED BREEDING

Breeding was confirmed within the study site through observations of active nests and juveniles. Only one species, Rock Ptarmigan, was confirmed breeding in the study area. Rock Ptarmigan chicks were spotted in Area B and a deceased chick was observed nearby; the cause of death is unknown.

In addition, breeding was determined to be 'probable' for an additional 41 species (Appendix A). This designation was given to species which fit the following criteria;

- Numerous males observed in the study area proclaiming their territorial song; and/or
- Widespread breeding in the central Yukon in the types of habitat present in the study area.

## 3.4 SPECIES OF CONSERVATION CONCERN

The Olive-sided Flycatcher, a species of conservation concern(COSEWIC – threatened, CESCC – At Risk), was observed during the 2011 field surveys at the Mount Nansen site. Additional species of conservation concern that were not observed during the field surveys but are considered either probable[4] or possible[5] inhabitants of the study area are described below (adapted from Sinclair et al. 2003). Refer to Appendix A for a complete list of species that may occur in the study area.

*American Kestrel* — often observed in open or semi-open habitats (e.g. meadows, wetlands, burned forests, alpine near the treeline, and open spruce or mixed spruce/aspen forests) where foraging habitat and nesting sites are available (Sinclair et al. 2003). This species may be observed in alpine and sub-alpine areas (e.g. Area A), in open habitats (e.g. areas B and C) or aspen stands within the project area (e.g. Site 209 in Area C). This species is listed as a probable breeder in the study area.

*Barn Swallow* — habitat during the breeding season is limited to areas with potential nesting structures, typically buildings or other man-made structures. Mine infrastructure including the mill, pumphouse, bunkhouse and kitchen are potential areas for breeding habitat at Mount Nansen, and the species is considered a possible breeder in the study area. Outside of the breeding season, this species may be found in open habitats (e.g. wetlands, grasslands and urban areas; Sinclair et al. 2003). Similar open habitats in the study area can be found in Area B and Area C.

*Common Nighthawk* — this species is may occur in open and semi-open habitats including open lodgepole pine or mixed forests, burned areas, and wetlands. Foraging for flying insects may occur over waterbodies and rivers (Sinclair et al. 2003). This species may occur in habitats throughout the study area; however, its abundance is likely to be very low.

*Olive-sided Flycatcher* — was observed on three occasions during the 2011 bird surveys. This species was recorded in open habitat near Area B and in the Dome Creek valley near Area D (on June 28, 2011, an individual was heard in the stream valley near Dome Creek (latitude 62.03262378, longitude -137.10439933); on June 29, 2011, two individuals[6] were heard; one approximately 125 m from Site 77 and another was heard 125 m from Site 41). This species is typically associated with spruce, pine and mixed forests, often along forest edges or the edge of wetlands, usually featuring standing dead trees (Sinclair et al. 2003). This species is expected to occur throughout much of the study area, with the exception of areas above treeline.

*Rusty Blackbird* — habitat is limited to wetland areas, often along lake or pond edges, and usually with standing dead trees (Sinclair et al. 2003). This species is considered a possible breeder in the project area. There are few areas where this species may occur within the project area; however, habitat may include wetland areas along Dome and Victoria creeks.

[4] Based on widespread breeding combined with suitable habitat
[5] Lower likelihood of breeding in the study area due to low numbers observed, limited breeding in the Mount Nansen region and/or limited suitable habitat located in the study area
[6] Due to the close proximity of sites 77 and 41, observations may be from the same individual.

*Sharp-tailed Grouse* — this species prefers open "parkland" habitats such as meadows, subalpine areas and open bog habitats where it resides year-round (Sinclair et al. 2003). Potential habitat in the project area includes open subalpine areas (e.g. areas B and C) and the valley bottom habitats to the southeast of Area D. This species is a probable breeder in the area.

*Short-eared Owl* — a possible breeder in the project area. This species is typically observed in open areas including alpine, wetland and meadow habitats (Sinclair et al. 2003). Within the project area, this species may occur in the alpine habitat to the north of the Mount Nansen Site (e.g. Area A) and may also use shrubland habitats (Area B) for foraging.

# 4 CONCLUSION

Assessment and Abandoned Mines (AAM) is in the process of preparing for assessment of the Mount Nansen remediation project. The objectives of this study were to collect a baseline inventory of bird species in the area and to obtain information about their respective habitats. This is the first known breeding bird survey at the site.

Standardized point counts were conducted over a four day period from June 27 to 30, 2011. Survey conditions were less than ideal due to extended periods of precipitation and likely resulted in lower species and individual counts. Background research into the breeding status of bird species in the study area indicates the likelihood of 87 possible or probable species (Appendix A). A total of 421 individuals and 23 species were observed in habitats that are representative of the area. Out of the 13 possible species of conservation concern (e.g. Short-eared Owl, Rusty Black Bird) that may occur in the area, only the Olive-sided Flycatcher was observed in the 2011 point count surveys. The breeding bird assemblage observed at Mount Nansen was typical of the Plateau-Central Ecoregion.

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# APPENDIX A DETAILED LIST OF LIKELY AND RECORDED BIRD SPECIES FOR THE MOUNT NANSEN SITE INCLUDING BREEDING STATUS, RESIDENCY AND CONSERVATION STATUS

**Table A1.** Species list of breeding birds at the Mount Nansen site; includes species observed during the 2011 study and additional species likely to occur based on bird distribution in the area.

| Common Name | Latin Name | Species Code | Residency | Recorded in 2011 Study | Breeding Status in Study Area | COSEWIC Status | CESCC Status |
|---|---|---|---|---|---|---|---|
| Bald Eagle | *Haliaeetus leucocephalus* | BAEA | migrant | | possible | | Secure |
| Northern Harrier | *Circus cyaneus* | NOHA | migrant | | possible | | Secure |
| Sharp-shinned Hawk | *Accipiter striatus* | SSHA | migrant | | possible | | Secure |
| Northern Goshawk | *Accipiter gentilis* | NOGO | year round | | possible | | Secure |
| Red-tailed Hawk | *Buteo jamaicensis* | RTHA | migrant | | possible | | Secure |
| Golden Eagle | *Aquila chrysaetos* | GOEA | migrant | Y | possible | | Sensitive |
| American Kestrel | *Falco sparverius* | AMKE | migrant | | probable | | May Be At Risk |
| Merlin | *Falco columbarius* | MERL | migrant | | possible | | Secure |
| Gyrfalcon | *Falco rusticolus* | GYRF | year round | | possible | | Secure |
| Ruffed Grouse | *Bonasa umbellus* | RUGR | year round | | probable | | Secure |
| Spruce Grouse | *Falcipennis canadensis* | SPGR | year round | | probable | | Secure |
| Willow Ptarmigan | *Lagopus lagopus* | WIPT | year round | | possible | | Secure |
| Rock Ptarmigan | *Lagopus mutus* | ROPT | year round | Y | confirmed | | Secure |
| White-tailed Ptarmigan | *Lagopus leucurus* | WTPT | year round | | possible | | Secure |
| Dusky Grouse | *Dendragapus obscurus* | DUGR | year round | | possible | | Secure |
| Sharp-tailed Grouse | *Tympanchus phasianellus* | STGR | year round | | probable | | Sensitive |
| American Golden-Plover | *Pluvialis dominca* | AGPL | migrant | | possible | | Sensitive |
| Semipalmated Plover | *Charadrius semipalmatus* | SEPL | migrant | | possible | | Secure |
| Killdeer | *Charadrius vociferus* | KILL | migrant | | possible | | Secure |
| Lesser Yellowlegs | *Tringa flavipes* | LEYE | migrant | | possible | | Sensitive |
| Solitary Sandpiper | *Trinag solitaria* | SOSA | migrant | | possible | | Secure |
| Wandering Tattler | *Heteroscelus incanus* | WATA | migrant | | possible | | Sensitive |
| Spotted Sandpiper | *Actitis macularia* | SPSA | migrant | | probable | | Secure |
| Upland Sandpiper | *Bartramia longicauda* | UPSA | migrant | | possible | | Secure |
| Whimbrel | *Numenius phaeopus* | WHIM | migrant | | possible | | Sensitive |

| Common Name | Latin Name | Species Code | Residency | Recorded in 2011 Study | Breeding Status in Study Area | COSEWIC Status | CESCC Status |
|---|---|---|---|---|---|---|---|
| Least Sandpiper | *Calidris minutilla* | LESA | migrant | | possible | | Secure |
| Mew Gull | *Larus canus* | MEGU | migrant | | possible | | Secure |
| Great Horned Owl | *Bubo virginianus* | GHOW | year round | | probable | | Secure |
| Northern Hawk Owl | *Surnia ulula* | NHOW | year round | | possible | | Secure |
| Great Gray Owl | *Strix nebulosa* | GGOW | year round | | possible | | Secure |
| Short-eared Owl | *Asio flammeus* | SEOW | migrant | | possible | Special Concern | Sensitive |
| Boreal Owl | *Aegolius funerus* | BOOW | year round | | probable | | Secure |
| Common Nighthawk | *Chordeiles minor* | CONI | migrant | | possible | Threatened | At Risk |
| Belted Kingfisher | *Ceryle alcyon* | BEKI | migrant | | possible | | Secure |
| Hairy Woodpecker | *Picoides villosus* | HAWO | year round | | probable | | Secure |
| American Three-toed Woodpecker | *Picoides dorsalis* | ATTW | year round | | probable | | Secure |
| Black-backed Woodpecker | *Picoides arcticus* | BBWO | year round | | possible | | Secure |
| Northern Flicker | *Colaptes auratus* | NOFL | migrant | | probable | | Secure |
| Olive-sided Flycatcher | *Contopus cooperi* | OSFL | migrant | Y | probable | Threatened | At Risk |
| Western Wood-Pewee | *Contopus sordidulus* | WEWP | migrant | Y | possible | | Secure |
| Yellow-bellied Flycatcher | *Empidonax flaviventris* | YBFL | migrant | | possible | | Sensitive |
| Alder Flycatcher | *Empidonax alnorum* | ALFL | migrant | | probable | | Secure |
| Hammond`s Flycatcher | *Empidonax hammondii* | HAFL | migrant | | possible | | Secure |
| Say`s Phoebe | *Sayornis saya* | SAPH | migrant | | probable | | Secure |
| Gray Jay | *Perisoreus canadensis* | GRAJ | year round | Y | probable | | Secure |
| Black-billed Magpie | *Pica hudsonia* | BBMA | year round | | possible | | Secure |
| Common Raven | *Corvus corax* | CORA | year round | | probable | | Secure |
| Horned Lark | *Eremophila alpestris* | HOLA | migrant | Y | possible | | Secure |
| Tree Swallow | *Tachycineta bicolor* | TRES | migrant | | probable | | Secure |
| Violet-green Swallow | *Tachycineta thalassina* | VGSW | migrant | | probable | | Secure |
| Bank Swallow | *Riparia riparia* | BANS | migrant | | possible | | Secure |

| Common Name | Latin Name | Species Code | Residency | Recorded in 2011 Study | Breeding Status in Study Area | COSEWIC Status | CESCC Status |
|---|---|---|---|---|---|---|---|
| Cliff Swallow | *Petrochelidon pyrrhonota* | CLSW | migrant | | possible | | Secure |
| Barn Swallow | *Hirundo rustica* | BARS | migrant | | possible | Threatened | Sensitive |
| Black-capped Chickadee | *Poecile atricapilla* | BCCH | year round | | possible | | Secure |
| Boreal Chickadee | *Poecile hudsonica* | BOCH | year round | Y | probable | | Secure |
| Ruby-crowned Kinglet | *Regulus calendula* | RCKI | migrant | Y | probable | | Secure |
| Townsend`s Solitaire | *Myadestes townsedni* | TOSO | migrant | Y | probable | | Secure |
| Gray-cheeked Thrush | *Catharus minimus* | GCTH | migrant | | possible | | Secure |
| Swainson`s Thrush | *Catharus ustulatus* | SWTH | migrant | Y | probable | | Secure |
| Hermit Thrush | *Catharus guttatus* | HETH | migrant | | possible | | Secure |
| American Robin | *Turdus migratorius* | AMRO | migrant | Y | probable | | Secure |
| Varied Thrush | *Ixoreus naevius* | VATH | migrant | | probable | | Secure |
| American Pipit | *Anthus rubescens* | AMPI | migrant | | possible | | Secure |
| Bohemian Waxwing | *Bombycilla garrulus* | BOWA | year round | | probable | | Secure |
| Northern Waterthrush | *Parkesia noveboracensis* | NOWA | migrant | | probable | | Secure |
| Tennessee Warbler | *Oreothlypis peregrina* | TEWA | migrant | | possible | | Secure |
| Orange-crowned Warbler | *Oreothlypis celata* | OCWA | migrant | Y | probable | | Secure |
| Common Yellowthroat | *Geothlypis trichas* | COYE | migrant | | possible | | Secure |
| Yellow Warbler | *Setophaga petechia* | YWAR | migrant | | probable | | Secure |
| Blackpoll Warbler | *Setophaga striata* | BLPW | migrant | | probable | | Secure |
| Yellow-rumped "Myrtle" Warbler | *Setophaga coronata* | MYWA | migrant | Y | probable | | Secure |
| Townsend`s Warbler | *Setophaga townsendi* | TOWA | migrant | | possible | | Sensitive |
| Wilson`s Warbler | *Cardellina pusilla* | WIWA | migrant | Y | probable | | Secure |
| American Tree Sparrow | *Spizella arborea* | ATSP | migrant | Y | probable | | Secure |
| Chipping Sparrow | *Spizella passerina* | CHSP | migrant | | probable | | Secure |
| Savannah Sparrow | *Passerculus sandwichensis* | SAVS | migrant | Y | probable | | Secure |
| Fox Sparrow | *Passerella iliaca* | FOSP | migrant | | probable | | Secure |

| Common Name | Latin Name | Species Code | Residency | Recorded in 2011 Study | Breeding Status in Study Area | COSEWIC Status | CESCC Status |
|---|---|---|---|---|---|---|---|
| Lincoln's Sparrow | *Melospiza lincolnii* | LISP | migrant | Y | probable | | Secure |
| White-crowned Sparrow | *Zonotrichia leucophyrs* | WCSP | migrant | Y | probable | | Secure |
| Golden-crowned Sparrow | *Zonotrichia atricpailla* | GCSP | migrant | | possible | | Secure |
| Dark-eyed "Slate-coloured" Junco | *Junco hyemalis* | SCJU | migrant | Y | probable | | Secure |
| Rusty Blackbird | *Euphagus carolinus* | RUBL | migrant | | possible | Special Concern | Sensitive |
| Gray-crowned Rosy Finch | *Leucosticte tephrocotis* | GCRF | migrant | | possible | | Secure |
| Pine Grosbeak | *Pincola enucleator* | PIGR | year round | | probable | | Secure |
| White-winged Crossbill | *Loxia leucoptera* | WWCR | year round | | probable | | Secure |
| Common Redpoll | *Acanthis flammea* | CORE | year round | Y | probable | | Secure |
| Pine Siskin | *Spinus pinus* | PISI | migrant | Y | probable | | Secure |

[1] Breeding Status; confirmed – presence of active nest with eggs/chicks or recently fledged young; probable – numerous singing males observed in the study area or widespread breeding in the Faro region combined with suitable habitat in the study area; possible – lower likelihood of breeding in the study area due to low numbers observed, limited breeding in the Faro region and/or limited suitable habitat located in the study area.

[2] COSEWIC status codes; Extinct - a species that no longer exists, Extirpated - a species that no longer exists in the wild in Canada, but exists elsewhere, Endangered – a species facing imminent extinction or extirpation, Threatened – a species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction, Special Concern – a species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

[3] CESCC status codes; Extinct - species that are extirpated worldwide, Extirpated - species that are no long present in a given geographical area, but occur in other areas, At Risk - species for which a COSEWIC or provincial/ territorial equivalent have found the species to be at risk of extirpation or extinction, May Be At Risk - species that may be at risk of extirpation or extinction and are candidates for assessment by COSEWIC or a provincial/territorial equivalent, Sensitive - species not believed to be at risk of immediate extirpation or extinction but may require additional or protection to prevent becoming at risk, Secure - species not believed to be Sensitive, May Be At Risk, At Risk, Extirpated or Extinct.