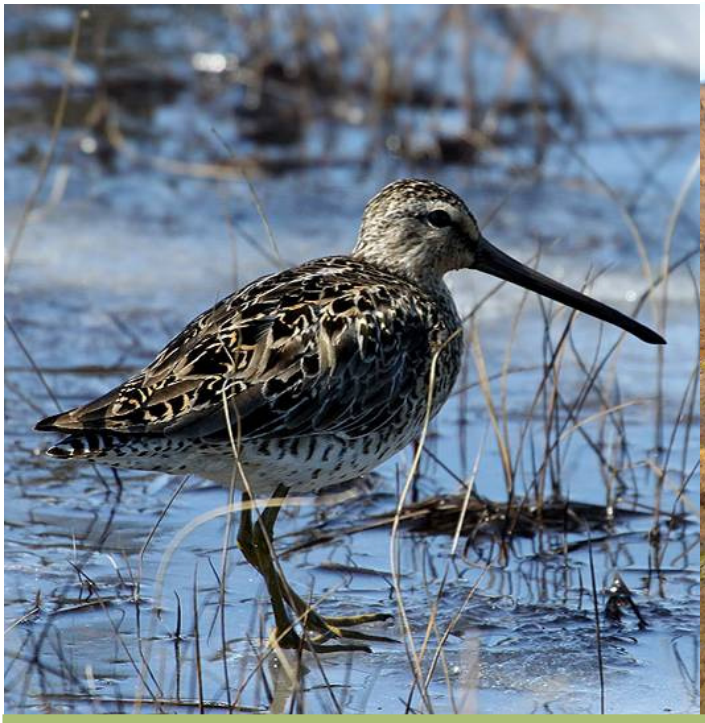
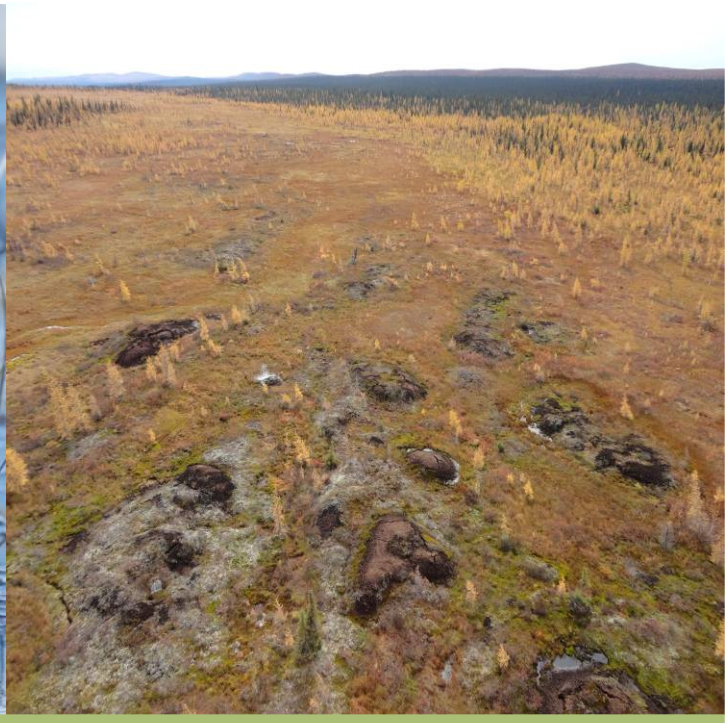
GroupeHemispheres





Migrating Birds Surveys at the KéMag Project Mine Site, Spring and Fall 2011

NEW MILLENNIUM IRON

TATA

Technical Report

Our file: PR85-34-11

Your order: NML-00-2064

August 31, 2012

info@hemis.ca

QUÉBEC : 57, chemin du Domaine, Beaumont (Qc) G0R 1C0 418 649-3641

MONTRÉAL : 1453, rue Beaubien Est, suite 301, Montréal (Qc) H2G 3C6 514 509-6572

www.hemis.ca

PROJECT TEAM

GROUPE HÉMISPHÈRES

Myrtille Husson	Project Manager, BAA, Management and Review
Daniel Néron	Wildlife Technician, M.Sc. Geogr., Fieldwork, Analysis and Report Drafting
Samuel Denault	Biologist, M.Sc., Fieldwork, Analysis and Report Drafting
Marie-Ève Dion	Biologist, M.Sc. Env., Fieldwork and Review
Joel Poirier	Wildlife Technician, Fieldwork
Joel Coutu	Bird Specialist, Fieldwork
Daniel Daigneault	Bird Specialist, Fieldwork
Louis Beaucage	Geographer, DESS in Geomatics, Mapping

Collaborators

Paul F. Wilkinson	Senior Vice-President, Environmental and Social Affairs, NML
Donna O'Quinn	Security and Logistics, NML
Peshue Gauthier	Field Assistant for Spring Migratory Birds Survey
Joseph Peastitute	Field Assistant for Fall Migratory Birds Survey
Corey Einish	Field Assistant for Fall Migratory Birds Survey

Subcontractor

Sikumiut Environmental Management Ltd	Juliana Coffey, Biologist, Fieldwork in spring
	Leroy Metcalfe, Senior Biologist, Advisor
Héli-Nation	Helicopter

(Refer also to the list of personal communications in the References section)

Recyclable and made of 100% recycled paper.
Paper made with wind energy and contributing to the responsible use of forest resources

This report has been formatted for double-sided printing.

REVISION AND PUBLICATION		
Number	**Date**	**Modification or Publication Data**
00	2012-05-31	Preliminary Technical Report
01	2012-08-31	Final technical Report

V:\Contrat en cours\PR85-34-11_Bird Survey_LabMag-KeMag\Rapport\Rapport KeMag Migrateur\Hemis_PR85-34-11_Migrating Birds Survey-KéMag_120831_VF.doc

Report prepared by:

<Original signed by>

Samuel Denault
Biologist, M.Sc.

<Original signed by>

Daniel Néron
Wildlife technician and Geogr., M.Sc.

Report revised by:

<Original signed by>

Marie-Ève Dion
Biologist, M.Sc. Env.

This document should be cited as:

Groupe Hémisphères (August 2012) *Migrating Birds Surveys at the KéMag Project Mine Site, Spring and Fall 2011.* Technical Report submitted to New Millennium Iron Corp., 25 pp. and 6 appendices

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ABBREVIATIONS AND SYMBOLS

^{0}C	Degrees Celsius
AOU	American Ornithologists' Union
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
CWS	Canadian Wildlife Service
DSO	Direct Shipping Ore
GHI	Groupe Hémisphères
GIS	Geographic Information System
GPS	Global Positioning System
hr	Hour
km	Kilometer
km/hr	Kilometer per hour
m	Meter
min	Minute
MRNF	Ministère des Ressources naturelles et de la Faune
NML	New Millennium Iron Corp.

1 INTRODUCTION

Groupe Hémisphères (GHI) was mandated by New Millennium Iron Corp (NML) to conduct environmental studies on a future taconite mine, called the KéMag Project, located in Quebec. This report describes the bird communities that were encountered in the study area during the spring and fall migrations of 2011.

1.1 Birds Potentially Found in the Study Area

To prepare appropriate inventories, bird species that potentially occupy the study area must be identified. Birds are typically classified in three categories: terrestrial birds, aquatic birds and birds of prey. A brief description of these classes, including their presence in Quebec, is presented below. The study area is described in Section 2.3.

1.1.1 Terrestrial Birds

Terrestrial birds include songbirds and woodpeckers, as well as cuckoos, hummingbirds, Galliformes (partridges, grouse and ptarmigan), pigeons, doves, nighthawks, kingfishers and swifts. There is a total of 152 species of terrestrial birds in Quebec (Gauthier and Aubry, 1995).

1.1.2 Aquatic Birds

This group comprises the Anatidae family, including ducks, swans and geese, as well as other taxonomic groups considered aquatic birds, namely loons, grebes, cormorants, herons, cranes, rails, shorebirds, gulls and terns. Gauthier and Aubry (1995) list 87 species of birds in this category for Quebec North, but 26 of them are exclusively found in marine habitats or close to the coast, and are therefore unlikely to be found in the study area.

1.1.3 Birds of Prey

This group comprises many taxonomic groups. Durnal birds of prey (Falconidae) include 15 species that breed in Quebec. Nocturnal birds of prey (Strigidae) include 10 species of owls that are found regularly in the province. The Turkey Vulture is considered as part of the Cathartidae family. Although it is genetically closer to storks and marabouts, it behaves ecologically as a bird of prey (SCF, 2005).

1.2 Species with Status

There are six species with status potentially found in the study area (Table 1) (MNRF, 2011). Some biotopes in the study area may be suitable for migrating stopovers. The survey techniques used are also designed to detect species of concern potentially found in the study area during their migrations. Eagles no longer have status under Federal legislation but they still do under Quebec legislation.

Table 1. Species with Status Potentially Found in the Study Area

COMMON NAME	SCIENTIFIC NAME	STATUS	
		Québec	Canada
Golden Eagle	*Aquila chrysaetos*	Vulnerable	_
Harlequin Duck	*Histrionicus histrionicus*	Vulnerable	Vulnerable
Peregrine Falcon	*Falcon peregrinus*	Vulnerable	Vulnerable
Short-eared Owl	*Asio flammeus*	ESDMV	Vulnerable
Bald Eagle	*Haliaeetus leucocephalus*	Vulnerable	_
Rusty Blackbird	*Euphagus carolinus*	_	Vulnerable

1.3 Documents Consulted

The survey was designed in accordance with the current Canadian guidelines and with knowledge of the site from previous studies. The level of effort is considered sufficient to comply with survey requirements (Hanson *et al.*, 2009).

The following sources were consulted:

- Lists of bird species with status potentially found in the study area:
  - The federal species at risk list (COSEWIC, 2011);
  - the list of species protected under « Liste des espèces de la faune désignées menacées vulnérables au Québec » (MRNF, Ministère des Ressources naturelles et de la faune, 2011)
- Previous bird studies conducted in the vicinity of the study area:
  - *Breeding Bird Data Collection in the Howells River Basin of Labrador* (Golder Associates Ltd. and Global Environment, 2005);
  - *LabMag Iron Ore Project Waterfowl Breeding Pair Surveys* (Minaskuat Limited Partnership, 2008);
  - *Inventaire 2008 et 2009 des oiseaux nicheurs du futur site DSO* (Groupe Hémisphères, 2009);
- Previous bird studies in the region:
  - The Waterfowl Component Study Trans Labrador Highway (Happy Valley-Goose Bay to Cartwright Junction) report by Jacques Whitford (January 2003);
  - The Timing of Waterfowl Arrival and Dispersion during Spring Migration in Labrador, a scientific article by Chaulk and Turner (2007).

These sources gave information on:

- Species with status that may use the study area during their migrations;
- Species that can be found regionally;
- Potential dates of migration for aquatic birds.

The survey methodology took into account the information found in these sources.

2 METHODOLOGY

2.1 Validation Method

The proposed survey methodology was submitted to the Quebec Department of Natural Resources and to the Canadian Wildlife Service (CWS) division of Environment Canada.

2.2 Classification

The English, French and Latin names of birds are based on the 7th edition and 52nd supplement to the list of birds of North America (AOU, 2011).

2.3 Study Area

The NML KeMag claims area plus a buffer 3 km wide around its perimeter constitutes the study area.

2.4 Spring and Fall Migrations: Detailed Survey Techniques

Three types of surveys were performed: overland flights, short transects and adapted visits. The last two types were carried out on foot as ground surveys. The overland flight paths and the locations of the ground surveys can be found respectively in Figures 1 and 2. Because the fall migration lasts much longer than the spring migration (Bauchinger and Klaassen, 2005), two visits were made in fall. The first visit, in August, targeted passerines and shorebirds, while the second, in late September, targeted geese and ducks. Under these conditions, the term fall migration is used as a common expression describing the return migration of birds.

A sighting refers to a bird that was heard or seen. For some groups, such as birds of prey, the number of sightings could potentially overestimate the number of individuals present in the study area, because the same bird may be observed repeatedly throughout the survey period. An effort was made not to count an individual more than once on the same day.

2.4.1 Overland Flights

In the spring, waterfowl were surveyed by helicopter in a two-phase survey: one on May 22 and another on May 28, for a total of 9 hr 11 min of flight. During the fall season, waterfowl surveying by helicopter took place over three consecutive days, from September 27 to 29, for a total flight time of 6 hr 27 min. The overland flights targeted waterfowl, but all birds that could be identified were noted, including birds of prey, other aquatic birds (gulls, shorebirds, loons) and terrestrial birds.

The crew was composed of four members:

- The pilot;
- An observer-navigator, seated next to the pilot, who was responsible for maintaining the flight path. The observer-navigator recorded the GPS coordinates and entered all of the relevant bird sightings on a data observation sheet;
- An observer-identifier, seated behind the pilot, who was responsible for making bird sightings and providing information to the observer/navigator on the species, number, sex and maturity, when possible, of all birds observed on that side of the aircraft;
- A fourth observer-identifier, seated behind the observer-navigator, who was in charge of finding birds and providing information to the observer-navigator on the species, number, sex and maturity, when possible, of all birds observed on that side of the aircraft.

On completion of the survey, the GPS coordinates unique numbers were loaded into a GIS program and merged with the observation data spreadsheets to produce a single spreadsheet combining all of the

location and sighting data. When different species were observed at the same GPS unique number, a decimal number was added to the unique number for each species seen.

Overland flights also included the following:

- All open waterbodies and wetlands were overflown to locate waterfowl and other birds near the shorelines;
- Airspeed varied between 70 and 150 km/hr and flight altitude above ground level was between 20 and 50 m (Bordage *et al.,* 1992; Guérette *et al*., 2009);
- The number of individuals, species, sex (if possible) and age (if possible) were recorded;
- The habitats of species with status were given special attention. These include rapids for Harlequin Ducks, cliffs for Golden Eagles and Peregrine Falcons and large open boggy habitats for Short-eared Owls;
- Date and time, weather and biotope were also noted.

2.4.2 Short Transects

Short transects are used to survey terrestrial birds, mostly songbirds and woodpeckers. They are conducted as follows:

- The survey is done in the morning, in the first five hours of light, if minimum weather requirements are met;
- The survey starts at least 5 min after the helicopter has shut down its engine;
- Two observers, spaced at least 150 m apart, walk and watch for birds 500 m in opposite directions;
- Distance categories from the transect centre line (0 to 50 m, 50 to 100 m, more than 100 m) are recorded;
- The survey lasts about 30 min;
- The following data are recorded: number of bird observations, species and distance from the transect (category);
- Other recorded data are: date and time, weather, biotope, human or natural disturbances.

Transect locations were determined in a manner ensuring that each biotope surveyed (i.e., coniferous forest, shrubland and tundra) would be represented proportionately to its occurrence in the study area. During the spring survey, the songbird surveys were conducted between the two phases of the helicopter survey, namely on May 25 and 27. Nine short transects were each surveyed twice, and two other short transects were visited only once. These surveys took 10 hours and 41 minutes of effort. During the fall survey, short transects were carried out only once, from August 23 to 26, and took 4 hours and 42 minutes of effort.

Short Transects, Adapted Visits and Overland Flights
Spring

Virées courtes, visites adaptées et survols
Printemps

New Millennium Iron Corp.

LEGEND/LÉGENDE

Methodology/méthodologie

- Adapted visit/visite adaptée
- Short transect/virée courte
- Study area/aire d'étude
- Base camp/camp de base
- Airborne route/trajet aéroporté

Infrastructure and mining components
infrastructures et composantes minières

- Kemag claim/ titres miniers Kemag

Map base/fond de carte

- Road/route
- Border/frontière
- Watercourse/cours d'eau
- Contour interval/courbe de niveau
- Waterbody/plan d'eau

*Hydronyms are oriented along the direction of water flow
*Les hydronymes sont orientés selon le sens d'écoulement de l'eau

0 1 2 3
Kilometers/Kilomètres

SCALE/ÉCHELLE: 1:70 000

UTM 19N NAD 83

FILE, VERSION, DATE, AUTHOR/
FICHIER, VERSION, DATE, AUTEUR:
GH-0271-a-01, 2012-05-31, P.L, L.B et E.D.

SOURCES:
Government of Canada, BNDT, 1:250,000, 1979
Government of Canada, CanVec, 1:50,000, 2002
Government of NL and government of Quebec,
Boundary used for claims
New Millennium Capital Corp., Mining sites and roads

Gouvernement du Canada, BNDT, 1/250 000, 1979
Gouvernement du Canada, CanVecT, 1/50 000, 2002
Gouvernement de T-N-L et gouvernement du Québec,
frontière utilisée pour les titres miniers
New Millennium Capital Corp., gisements et routes

GroupeHemispheres

Figure 1

Short Transects, Adapted Visits and Overland Flights
Fall

Virées courtes, visites adaptées et survols
Automne

New Millennium Iron Corp.

LEGEND/LÉGENDE

Methodology/méthodologie

- Adapted visit/visite adaptée
- Short transect/virée courte
- Study area/aire d'étude
- Base camp/camp de base
- Airborne route/trajet aéroporté

Infrastructure and mining components
infrastructures et composantes minières

- Kemag claim/ titres miniers Kemag

Map base/fond de carte

- Road/route
- Border/frontière
- Watercourse/cours d'eau
- Contour interval/courbe de niveau
- Waterbody/plan d'eau

*Hydronyms are oriented along the direction of water flow
*Les hydronymes sont orientés selon le sens d'écoulement de l'eau

0 1 2 3
Kilometers/Kilomètres

SCALE/ÉCHELLE: 1:70 000

UTM 19N NAD 83

FILE, VERSION, DATE, AUTHOR/
FICHIER, VERSION, DATE, AUTEUR:
GH-0271-a-01, 2012-05-31, P.L, L.B et E.D.

SOURCES:
Government of Canada, BNDT, 1:250,000, 1979
Government of Canada, CanVec, 1:50,000, 2002
Government of NL and government of Quebec,
Boundary used for claims
New Millennium Capital Corp., Mining sites and roads

Gouvernement du Canada, BNDT, 1/250 000, 1979
Gouvernement du Canada, CanVecT, 1/50 000, 2002
Gouvernement de T-N-L et gouvernement du Québec,
frontière utilisée pour les titres miniers
New Millennium Capital Corp., gisements et routes

GroupeHemispheres

Figure 2

2.4.3 Adapted Visits

Migratory staging areas, such as shallow ponds, lakeshores and herb fens, were identified during overland flights and were then revisited to survey for shorebirds using the adapted visits protocol. This protocol is similar to that of the short transects. It was developed to survey shorebirds that cannot be identified and counted from the air and is conducted as follows:

- The survey can be done at any time when there is sufficient daylight. The shorebirds are identified by sight and they might rest all day at the same place, so this survey is not restricted to the morning hours;
- The helicopter lands at a minimum distance of 100 m from the selected habitat;
- The survey starts at least 5 min after the helicopter has shut down its engine;
- Distance categories of sightings from the transect centre line (0 to 50 m, 50 to 100 m, more than 100 m) are recorded;
- The survey lasts between 20 and 40 min, depending on the size of the wetland;
- The following data are recorded: number of individuals, species and distance from the transect (category);
- Other recorded data are: date and time, weather, biotope, human or natural disturbances.

Five adapted visits in wetlands were carried out on foot; each wetland was visited twice in spring, from May 25 to 27. In the fall, the same five stations were carried out only once, on August 24 and August 25. The total effort for these visits was 3 hours and 24 minutes in May, and 1 hour and 38 minutes in August. Total helicopter travelling time during the short transects and adapted visits was 6 hours and 20 minutes in the spring, and 6 hours and 27 minutes in the fall.

3 RESULTS AND DISCUSSION

In spring 2011, 49 species of birds were recorded, while 43 species were recorded in fall. Both counts included species spotted in transit to and from the survey areas (Appendix I). For both seasons combined, 65 bird species were recorded. Four different biotopes were surveyed for migrating birds: coniferous forest, shrubland, tundra and wetland (Appendix II). The wetlands demonstrated the greatest diversity of birds. A complete list of the bird species observed, both seasons combined, showing the survey code and the English, French and Latin names can found in Appendix III. Some pictures of birds taken during the surveys can be seen in Appendix IV.

3.1 Survey Conditions

Observation conditions varied from average to excellent, but the majority of the surveys were carried out in good or excellent conditions. May 24 was the only field day cancelled due to bad weather (rain and snow). Cloud cover was variable during the rest of the survey period, but no fog was encountered. The temperature varied between -5°C and 13°C during the survey period. Environment Canada's daily meteorological data for the survey months are available in Appendix V.

3.2 Effort

Tables 2 and 3 show the effort for the short transects and the adapted visits.

Table 2. Survey Effort in Short Transects and Adapted Visits, Spring 2011

BIOTOPE	CONIFEROUS FOREST	SHRUBLAND	TUNDRA	WETLAND (ADAPTED VISITS)
Transects per Biotope	3	6	2	4
Amount of Time per Biotope	2 h 57	5 h 21	1 h 48	3 h 24
Transect Code	KVC4, KVC5, KVC6	KVC1, KVC2, KVC3, KVC7, KVC9, KVC10	KVC8 et KVC11	KVA2, KVA3, KVA4, KVA5

Table 3. Survey Effort in Short Transects and Adapted Visits, Fall 2011

BIOTOPE	CONIFEROUS FOREST	SHRUBLAND	TUNDRA	WETLAND (ADAPTED VISITS)
Transects per Biotope	9	8	3	5
Amount of Time per Biotope	4 h 01	2 h 32	1 h 09	1 h 38
Transect Code	KVC4, KVC5, KVC6, KVC12, KVC14, KVC17, KVC18, KVC19, KVC20	KVC1, KVC2, KVC7, KVC9, KVC10, KVC13, KVC16	KVC8, KVC11, KVC15	KVA1, KVA2, KVA3, KVA4, KVA5

3.3 Overland Flights

The complete list of birds seen during the spring and the fall overland flights is available in Appendix I. A detailed list of the birds seen during the spring and the fall overland flights, including GPS coordinates, species name, number of sightings and sex (if noted), is available in Appendix VI.

3.3.1 Spring

Figure 3 shows the sightings of waterfowl in spring. The most abundant species were the Wilson's Snipe *(Gallinago delicata*) (34 sightings) Canada Goose (*Branta canadensis*) (27 sightings), Surf Scoter (*Melanitta perspicillata*) (26 sightings) and Green-winged Teal (*Anas crecca*) (24 sightings). Despite the high number of sightings of Canada Geese, Abraham Chemaganish, a Naskapi from Kawawachikamach, reported that local hunters had found it hard to find Canada Geese in the Schefferville and Kawawachikamach vicinity. They had had to drive as far as Menihek Dam to find them.

Common Goldeneye (*Bucephala clangula*) (17 sightings), Short-billed Dowitchers (*Limnodromus griseus*) (16 sightings), American Black Duck (*Anas rubripes*) and Northern Pintail (*Anas acuta*) (9 sightings) were also encountered numerous times during the overland flights.

The birds of prey that were recorded included two sightings of Ospreys (*Pandion haliaetus*), one of Bald Eagle (*Haliaeetus leucocephalus*), and three Short-eared Owl (*Asio flammeus*) sightings, probably representing two individuals.

3.3.2 Fall

Figure 4 shows the sightings of waterfowl in fall. The most common species was Common Merganser (*Mergus merganser*) (64 sightings), which was more common than all the other species of ducks put together. Unrecorded in spring, Lesser Scaup (*Aythya affinis*) was the second most common species during the fall surveys (14 sightings). More Lesser Scaup may have been present, because the species is difficult to determine with certainty and eight sightings were classified as either Greater or Lesser Scaup. Eight Hooded Mergansers (*Lophodytes cucullatus*) were observed. These sightings were north of the current known distribution of that species. Other species observed included Herring Gull (*Larus argentatus*) (7 sightings), Red-breasted Merganser (*Mergus serrator*) (3 sightings), Surf Scoter (2 sightings), Common Loon (*Gavia immer*) (2 sightings) and Common Goldeneye (1 sighting)

Birds of prey were well represented, with six sightings of Bald Eagles, four of Rough-legged Hawks (*Buteo lagopus*) and one of Northern Goshawk (*Accipiter gentilis*).

3.4 Short Transects

Three different biotopes were surveyed during the short transects. In spring, 245 sightings belonging to 23 species were found. A similar abundance and diversity were found in fall, with 222 sightings belonging to 29 species. The bird list per biotope is presented in Appendix II. The abundance of terrestrial birds was similar in both migration seasons.

3.4.1 Coniferous Forest

In spring, 40 sightings belonging to 14 species were made during the 3 short transects carried out in the coniferous forest. In descending order of importance, the most common species were White-crowned Sparrow (*Zonotrichia leucophrys*) (9 sightings), Dark-eyed Junco (*Junco hyemalis*) (7 sightings), Ruby-crowned Kinglet (*Regulus calendula*) (4 sightings) and Bohemian Waxwing (*Bombycilla garrulus*) (4 sightings).

In fall (late August), 95 sightings belonging to 25 species were made during the 9 short transects carried out in the coniferous forest. In descending order of importance, the most common species were the White-crowned Sparrow (26 sightings), Blackpoll Warbler (6 sightings) Common Redpoll (6 sightings), Boreal Chickadee (*Poecile hudsonicus*) (5 sightings) and Yellow-rumped Warbler (*Setophaga coronata*) (4 sightings). Northern Waterthrush (*Parkesia noveboracensis*) and White-winged Crossbill (*Loxia leucoptera*) were found exclusively in fall.

The coniferous forest biotope is the most extensive habitat in the study area. As a result, much more effort was spent there than in any other biotope.

3.4.2 Shrubland

In spring, 135 sightings belonging to 17 species were made during the 6 short transects carried out in the shrubland biotope. In descending order of importance, the most common species were the Common Redpoll (52 sightings), American Robin (*Turdus migratorius*) (19 sightings), White-crowned Sparrow (19 sightings), American Tree Sparrow (*Spizella arborea*) (9 sightings) and Dark-eyed Junco (8 sightings). Noteworthy was a singing Brown Creeper in KVC10 far north of its previously known distribution in Quebec (Hejl *et al.*, 2002).

In fall, 72 sightings belonging to 10 species were made during the 7 short transects. In descending order of importance, the most common species were the Common Redpoll (29 sightings), White-Crowned Sparrow (22 sightings), American Tree Sparrow (6 sightings) and Blackpoll Warbler (4 sightings). Other species found were American Robin (4 sightings), Gray Jay (*Perisoreus canadensis*) (3 sightings), Yellow-rumped Warbler (1 sighting), Northern Shrike (*Lanius excubitor*) (1 sighting), Herring Gull (1 sighting), and Rusty Blackbird (1 sighting).

3.4.3 Tundra

In spring, 70 sightings belonging to 8 species were made during the 2 short transects carried out in the tundra biotope. In descending order of importance, the most common species were the Horned Lark (*Eremophila alpestris*) (37 sightings), American Robin (12 sightings), Common Redpoll (7 sightings) and Willow Ptarmigan (*Lagopus lagopus*) (7 sightings). Most of the birds that were observed were still in migration and had not settled down for the breeding season. However, Willow Ptarmigans were already defending their breeding territory and were ready to mate.

In fall, 70 sightings belonging to 14 species were made during the 3 short transects carried out in the tundra biotope. In descending order of importance, the most common species were the White-crowned Sparrow (31 sightings), American Pipit (*Anthus rubescens*) (9 sightings), Yellow-rumped Warbler (8 sightings), Gray Jay (7 sightings) and American Tree Sparrow (5 sightings). Wilson's Warbler (*Wilsonia pusilla*), a species unrecorded during spring surveys, was also found in this habitat (2 sightings).

Overland Flight Results
Spring

Observations du survol
Printemps

New Millennium Iron Corp.

LEGEND/LÉGENDE

Observations

- Other species/autres espèces

Waterfowl/Sauvagine

- Anatidae/anatidé
- Wader/limicole

Specie with status /Espèce à statut précaire

- Bald Eagle/pygargue à tête blanche
- Golden Eagle/aigle royal
- Rusty Blackbird/quiscale rouilleux
- Short-eared Owl/hibou des marais
- Harlequin Duck/arlequin plongeur
- Multiple observations - single point/ observations multiples - point unique
- Study area/aire d'étude
- Base camp/camp de base
- 91.2: GPS unique number/ no. unique du GPS

Infrastructure and mining components
infrastructures et composantes minières

- Kemag claim/ titres miniers Kemag

Map base/fond de carte

- Road/route
- Border/frontière
- Watercourse/cours d'eau
- Contour interval/ courbe de niveau
- Waterbody/ plan d'eau
- Wetland/milieu humide

*Hydronyms are oriented along the direction of water flow
*Les hydronymes sont orientés selon le sens d'écoulement de l'eau

0 1 2 3
Kilometers/Kilomètres

SCALE/ÉCHELLE: 1:70 000 UTM 19N NAD 83

FILE, VERSION, DATE, AUTHOR/
FICHIER, VERSION, DATE, AUTEUR:
GH-0322-01, 2012-05-31, P.L, L.B et E.D.

SOURCES:
Government of Canada, BNDT, 1:250,000, 1979
Government of Canada, CanVec, 1:50,000, 2002
Government of NL and government of Quebec,
Boundary used for claims
New Millennium Capital Corp., Mining sites and roads

Gouvernement du Canada, BNDT, 1/250 000, 1979
Gouvernement du Canada, CanVecT, 1/50 000, 2002
Gouvernement de T-N-L et gouvernement du Québec,
frontière utilisée pour les titres miniers
New Millennium Capital Corp., gisements et routes

GroupeHemispheres

Figure 3

Overland Flight Results
Fall

Observations du survol
Automne

New Millennium Iron Corp.

595000 6120000 600000 605000 6115000 610000
67°30'W 67°25'W 67°20'W 55°10'N 67°15'W
590000 6120000 67°35'W 67°15'W 6110000 6110000 6105000
6115000 55°10'N 585000 67°40'W 67°20'W 6100000 6105000
585000 6110000 67°40'W 67°35'W 67°30'W 67°25'W
6105000 590000 595000 6100000 600000

Control area/zone témoin

64 67 65 66 113 114 47 46 45 112 042 109 110 41 44 111 43 40 36 33 104 103 108 107 106 37 027 94 95 96 26 26.1 25 93 24 23 22 115

A
100 32 35 105 34 102 101 38 28.2 28.1 97 30 98 31 039 99

LEGEND/LÉGENDE

Observations

- Other species/autres espèces

Waterfowl/Sauvagine

- Anatidae/anatidé

Species of status/Espèce à statut

- Bald eagle/pygargue à tête blanche
- Base camp/camp de base
- Study area/aire d'étude
- Control area/zone témoin

12.2: GPS unique number/ no. unique du GPS

Infrastructure and mining components
infrastructures et composantes minières

- Kemag claim/ titres miniers Kemag

Map base/Fond de carte

- Road/route
- Border/frontière
- Watercourse/cours d'eau
- Contour interval/ courbe de niveau
- Waterbody/ plan d'eau
- Wetland/milieu humide

*Hydronyms are oriented along the direction of water flow
*Les hydronymes sont orientés selon le sens d'écoulement de l'eau

0 1 2 3
Kilometers/Kilomètres

SCALE/ÉCHELLE: 1:70 000 UTM 19N NAD 83

FILE, VERSION, DATE, AUTHOR/
FICHIER, VERSION, DATE, AUTEUR:
GH-0272-b-01, 2012-05-31, P.L, L.B et E.D.

SOURCES:
Government of Canada, BNDT, 1:250,000, 1979
Government of Canada, CanVec, 1:50,000, 2002
Government of NL and government of Quebec, Boundary used for claims
New Millennium Capital Corp., Mining sites and roads

Gouvernement du Canada, BNDT, 1/250 000, 1979
Gouvernement du Canada, CanVecT, 1/50 000, 2002
Gouvernement de T-N-L et gouvernement du Québec, frontière utilisée pour les titres miniers
New Millennium Capital Corp., gisements et routes

GroupeHemispheres

Figure 4

3.5 Adapted Visits

3.5.1 Spring

In spring, the wetland was the richest biotope for bird diversity, with 29 species and 305 sightings (Appendix II), confirming its importance as a migration stopover. Bird diversity and abundance in this biotope was probably enhanced by the fact that, at this time of the year, there is less snow cover in wetlands than in any other biotope.

American Robin (81 sightings) and Rusty Blackbird (63 sightings) were the most abundant species. The Rusty Blackbird is a species with status and is described more fully presented in section 3.6.5.

For shorebirds, the Short-billed Dowitcher (29 sightings) was the most common species, followed by the Wilson's Snipe (23 sightings), Least Sandpiper (*Calidris minutilla*) (5 sightings), Greater Yellowlegs (*Tringa melanoleuca*) (3 sightings), Solitary sandpiper (*Tringa solitaria*) (3 sightings) and Semipalmated Plover (*Calidris pusilla*) (3 sightings).

The abundance of Short-billed Dowitchers in the study area is particularly interesting considering that some of them appeared to already be on breeding grounds, which are poorly known in Québec and Labrador. The origin of the eastern population of Short-billed Dowitchers remained unclear for a long period. It was not until the late 1950s that recently fledged young were located in Central Québec (Todd, 1963), and only in 1989 that the first nest with eggs was discovered, in the Schefferville area (Harris, 1989).

The eastern Short-billed Dowitcher population is believed to be declining, but further research is required to confirm this. For much of the 19th century, the Short-billed Dowitcher was an extremely common and sought-after game bird (Jehl *et al.*, 2001). The Shorebird Survey, 1974–91 (Morrison *et al*., 1994), indicates both a significant decline, with the rate varying with the type of analysis. Trends based on the maximum size of migrating flocks, mainly on the Atlantic coast, also indicate a decline (Jehl *et al.*, 2001). No special status has been granted to the Short-billed Dowitcher either in Canada or in Québec.

3.5.2 Fall

In the fall, the wetlands were not as rich as in the spring. Only 31 sightings from 14 species were made. Semipalmated Sandpiper (2 sightings) (not recorded in spring), Solitary Sandpiper (1 sighting), Greater Yellowlegs (1 sighting) and Wilson's Snipe (1 sighting) were the shorebird species encountered. A single Short-eared Owl was observed, suggesting that this endangered species may have spent the summer in marshy habitats around Harris Lake.

3.6 Species with Status

3.6.1 Harlequin Duck

A pair of Harlequin Ducks (*Histrionicus histrionicus*) was found north of Harris Lake on May 28 (Figure 3). Eastern North American populations are listed as vulnerable in Canada (COSEWIC, 2011) and in Quebec (MRNF, 2011). Considering that individuals, pairs or small groups tend to head directly from wintering grounds to breeding grounds (Kuchel, 1977), it appears likely that these birds were breeding in the study area. Smith (1998) observed that males were not found near by starting 4–10 days after females began incubating. Considering that eggs hatch in the last 10 days of July in northern Labrador (Rodway, 1998), it appears that the beginning of August would be the best time to confirm breeding for this species by attempting to spot the females with ducklings. Harlequin Ducks may prefer swift-moving sections of river early in the breeding season, and slower-moving stretches during brood-rearing (Kuchel, 1977).

3.6.2 Bald Eagle

Two immature adult Bald Eagles were seen in flight over Harris Lake from station KVA3 on May 22 (Figure 3). There were six sightings during overland flights in late September (Figure 4). Bald Eagles typically breed in forested areas adjacent to large bodies of water (less than 2 km from a suitable foraging waterbody) (Buehler, 2000). It takes up to five and a half years for Bald Eagles to acquire their definitive basic plumage (McCollough, 1989) Immature birds engage in a prolonged period of exploration that can last for four years until their definitive plumage is attained (Buehler, 2000). Considering that the two Bald Eagles observed were younger than three years, it appears that they were only passing through and were unlikely to have been breeding in the study area. Three more Bald Eagles were observed outside the breeding season during aerial surveys in late September.

3.6.3 Golden Eagle

An adult Golden Eagle was observed in flight on May 22 during waterfowl aerial survey (see Figure 3). In eastern North America, Golden Eagle occurs typically in areas with high topographic relief dominated by low-arctic tundra plant species (Poole and Bromley, 1988) and in areas with cuesta relief (asymmetric hills or ridges with gentle slopes and steep escarpments) and rugged topography in eastern Hudson Bay region (Morneau *et al.* 1994). They nest near burns, open marshes, meadows, bogs, lakes and forages in open and semi-open mountainous or hilly terrain (Brodeur *et al.*,, 1996). Nevertheless, Golden Eagle is known to be breeding mainly on cliffs (Morneau *et al.,* 1994) and no large cliff was observed in the study area making it unlikely that it would be breeding nearby. It appears that the Golden Eagle observed during this survey was either a late migrant or an unpaired wandering subadult.

3.6.4 Short-eared Owl

The Short-eared Owl was observed four times during the spring surveys. These four records imply at least two different individuals (see Figure 3). The Short-eared Owl inhabits a wide variety of open habitats: dunes, bogs, marsh, wet meadows, pastures and arctic tundra (Holt and Leasure, 1993). Even though the habitat where the species was found around Harris Lake would be appropriate for breeding, further research would be needed later in the season to confirm that these birds were not merely migrants. Breeding for the Short-eared Owl begins only in June in the High Arctic (Wiggins *et al*., 2006). Considering the important amount of snow on the ground during survey, it appears that these birds were using the herbaceous fen around Harris Lake as a migratory stopover. However, a single sighting of a Short-eared Owl in August suggests that at least one individual may have spent the summer in the vicinity of Harris Lake. The absence of other individuals may suggest a failed breeding attempt or simply a lone unpaired bird.

3.6.5 Rusty Blackbird

There were 73 sightings of the Rusty Blackbird (*Euphagus carolinus*) during the spring survey. Most of them (64) were seen during adapted visits in the wetland biotope (KVA2, KVA3, KVA4 and KVA5). Five were reported during short transects (KVC3, KVC5, KVC8 and KVC11) (Figure 1). Four sightings were noted in overland flights (Figure 3). Some of the Rusty Blackbirds observed were still in flocks, which suggests that they were still in migration, and their breeding density in the study area is not expected to be very high. However, it is expected to find a Rusty Blackbird breeding site during June or July in the study zone. In fall, only four individuals were seen respectively in KVC6, KVC11, KVC16, and KVA5.

NML developed a mitigation plan to protect the riparian habitat used by the Rusty Blackbird for breeding (Groupe Hémisphères, 2011). It is based on protecting all plant strata (herbaceous species, shrubs and trees) adjacent to a watercourse, lake or wetland (Gagnon and Gangbazo, 2007).

3.7 Species of Interest

Some unexpected species of birds were encountered in the study area: in some cases the literature suggests that they are rare in the study area, while in other cases they have not previously been recorded so far north.

3.7.1 Hooded Merganser

There were 8 sightings of Hooded Mergansers in fall, but none in spring. The northern breeding limit of Hooded Merganser in Canada is poorly defined (Godfrey, 1986 cited in Dugger *et al.*, 2009). Most recent distribution maps of the Hooded Merganser do not include the Schefferville area as part of the breeding range, but it appears that this species is probably more common in the north than was originally thought. Recent studies have shown that this species breeds at low densities (2.3 pairs per 100 km²) in Quebec between the 51st and 58th parallels (Guérette Montminy *et al.*, 2009). Considering that the sightings of Hooded Mergansers in the study area were made in fall, it is possible that they migrate north to moult after the breeding season.

3.7.2 Northern Hawk-Owl

There was one sighting of the Northern Hawk-Owl in fall in the study area. Ranked as of "Medium" concern (85th of 297 birds considered) among the Canadian birds evaluated for setting conservation, research, and monitoring priorities (Dunn 1997), the species is considered as a low-density breeding bird, with 0–6 pairs/100 km² in the Yukon (Rohner *et al.,* 1995). It is considered as a rare bird and one of the least studied birds in North America (Duncan *et al.*, 1998).

3.7.3 Short-billed Dowitcher

There were 45 sightings of the Short-billed Dowitcher in spring during the overland flights, but none in fall. The Short-billed Dowitcher is a distinct subspecies (*Limnodromus griseus griseus*) that nests in north-central Quebec and western Labrador, from approximately the 52nd parallel north to Ungava Bay and from James Bay and south-eastern Hudson Bay east to central Labrador (Godfrey 1986; Cotter, 1995). As previously noted, the few known confirmations are recent and are in the vicinity of the study area, but David (1996) considers this species a rare migrant in Quebec.

3.7.4 Brown Creeper

There was one sighting of a Brown Creeper in spring, a singing male in mature coniferous forest biotope. The northernmost confirmed breeding records for this species in Quebec/Labrador come from Lac Mistassini (Harrap and Quinn, 1995) and Harrington Harbour (Shaffer and Alvo, 1996). There are no previous sightings of this species in Labrador (Tyler, 1948). This sighting, north of the 55th parallel, was potentially the northernmost ever recorded in eastern Canada.

4 CONCLUSION

GHI was mandated by NML to conduct bird surveys at the KeMag mine site during the 2011 spring and fall migrations. Three techniques were used in order to properly evaluate each group of birds: overland flights were used to count waterfowl; short transects were used for terrestrial birds in forest, shrubland and tundra biotopes; and adapted visits were done in wetlands to identify shorebirds.

The study area was used by more species in spring (49 species) than in fall (43 species). Sixty-five (65) species were recorded in spring and fall combined. The overland flights showed the greatest difference of use between seasons; with a similar effort, 227 bird sightings were made in the spring compared to 129 sightings in the fall.

The wetland biotope was the richest habitat for bird diversity. An abundance and a good diversity of shorebirds was found in wetlands in spring (144 sightings), but very few in fall (12 sightings). Shorebird species in descending order of abundance all methods combined were Wilson's Snipe, Short-billed Dowitcher, Semipalmated Plover, Least Sandpiper, Greater Yellowlegs, Solitary Sandpiper and Semipalmated Sandpiper.

The Rusty Blackbird, a species with status, uses the wetland habitat for foraging during its spring migration (63 sightings), but it was also found in the coniferous forest and shrubland habitats during the short transects. A total of 73 sightings of the Rusty blackbird was recorded in spring, but only 4 in fall.

A pair of Harlequin Ducks (also a species with status) was also found during an overland flight in an apparent breeding habitat north of Lake Gillespie.

The Bald Eagle (considered as vulnerable in Quebec) were observed both in spring (2 sightings) and fall (11 sightings).

The survey recorded the presence of four species of interest. These are rare species, such as Short-billed Dowitcher and Northern Hawk-Owl, or species north of their known distribution, such as Hooded Merganser and Brown Creeper.

In general, spring was the season when the study area was most critical as a staging area. In general fewer birds were found in fall. Despite the fact that the scientific community agrees that the migration routes of birds are poorly known in Canada, we can still say that, in a regional context, the study area is located within a valley that seems to act as an important corridor for the spring migration. Essentially, it is the combination of large water bodies and large wetlands at the bottom of a sheltered valley that attract an abundance of migrating birds.

5 REFERENCES

Personal communication

Abraham Chemaganish	Kawawachikamach resident
Liette Gauthier	Wildlife Technician, MRNF
Daniel Bergeron	Scientific Advisor, Strategy and Program Integration, CWS, Quebec Region

Database Consulted

AVIBASE (2011) Bird Checklists of the World, Newfoundland and Labrador. This list is managed by Denis Lepage and hosted by Bird Studies Canada, the Canadian copartner of Birdlife International.http://avibase.bsc-eoc.org/checklist.jsp?region=canl&list=howardmoore

COSEWIC [Comittee on the Status of Endangered Wildlife in Canada] (2011) Government of Canada. Internet Site: http://www.cosepac.gc.ca/eng/sct5/index_e.cfm

Bibliography

AOU [American Ornithologists' Union] (2011) *Check-list of North American Birds, 7th edition, 52nd supplement*. North American Classification Committee, American Ornithologists' Union. Internet Site: http://www.aou.org/checklist/north/

Bauchinger, U. and M. Klaassen (2005) *Longer days in spring than in autumn accelerate migration speed of passerine birds*. Journal of Avian Biology 36:3-5

Bordage, D., N. Plante et M. Grenier (1992) *Milieux propices à la reproduction de la Bernache du Canada, de la Macreuse à bec jaune et de la Macreuse à front blanc. Projet pilote-Complexe Grande-Baleine*. Rapport présenté à la vice-présidence Environnement d'Hydro-Québec, Service canadien de la faune, région du Québec, 78 p.

Brodeur, S., R. Décarie, D. M. Bird and M. Fuller (1996) *Complete migration cycle of Golden Eagles breeding in northern Quebec.* Condor 98:293-299.

Buehler, D.A. (2000) *Bald Eagle (*Haliaeetus leucocephalus*), The Birds of North America Online (A. Poole, Ed.*). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/506doi:10.2173/bna.506

Chaulk, K.G. and B. Turner (2007) *The Timing of Waterfowl Arrival and Dispersion during Spring Migration in Labrador*. Northeastern Naturalist 14(3):375-386

Cotter, R.C. (1995) *Bécasseau roux*, pp. 488-491 in Gauthier, J. et Y. Aubry (sous la direction de). *Les oiseaux nicheurs du Québec : Atlas des oiseaux nicheurs du* Québec *méridional*. Association québécoise des groupes d'ornithologues, Société québécoise de protection des oiseaux, Service canadien de la faune, Environnement Canada, région du Québec, Montréal.

David, N. (1996) *Liste commentée des oiseaux du Québec.* Association québécoise des groupes d'ornithologues, 89 p. et 5 annexes

Dugger, B. D., K. M. Dugger and L. H. Fredrickson (2009) *Hooded Merganser (Lophodytes cucullatus)*, The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/098doi:10.2173/bna.98

Duncan, James R. and Patricia A. Duncan (1998) *Northern Hawk Owl (Surnia ulula)*, The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/356doi:10.2173/bna.356

Dunn, E. H. (1997) *Setting priorities for conservation, research and monitoring of Canada's landbirds*. Tech. Rep. Ser. No. 293. Can. Wildl. Serv., Ottawa, ON.

Gagnon, É. et G. Gangbazo (2007) *Efficacité des bandes riveraines: analyse de la documentation scientifique et perspectives.* Québec, Ministère du Développement durable, de l'Environnement et des Parcs, Direction des politiques de l'eau, ISBN: 978-2-550-49213-9, 17 p.

Gauthier, J. et Y. Aubry (1995) *Les Oiseaux nicheurs du Québec: Atlas des oiseaux nicheurs du Québec méridional*. Gauthier, J. et Y. Aubry (sous la direction de). Association québecoise des groupes d'ornithologues, Société Québecoise pour la Protection des Oiseaux, Service canadien de la faune, Environnement Canada, région du Québec, Montréal, Québec, xviii + 1295 p.

Guérette-Montminy A., M.A., E. Berthiaume, M. Darveau, S. Cumming, D. Bordage, S. Lapointe et L.V. Lemelin (2009) *Répartition de la sauvagine en période de nidification entre les 51º et 58º de latitude nord dans la province de Québec*. Rapport technique n° Q14, Canards Illimités Canada – Québec, 43 p.

Godfrey, W.E. (1986) *Les oiseaux du Canada.* Édition revisée, Éditions Broquet, Musée national des sciences naturelles, 650 p.

Golder Associates Ltd. and Global Environment (2005) *Breeding Bird Data Collection in the Howells River Basin of Labrador*. Submitted to LabMag GP Inc.

Groupe Hémisphères (2009) *Inventaire 2008 et 2009 des oiseaux nicheurs du futur site DSO*. Rapport technique réalisé pour New Millennium Capital Corp., 22 p et 4 annexes

Groupe Hémisphères (2011) *Plan de mitigation pour la protection du Quiscale rouilleux, Projet DSO*. Rapport réalisé pour New Millennium Capital Corp., 13 p.

Hanson, A., I Goudie, A. Lang, C. Gjerdrum, R. Cotter and G. Donaldson (2009) *A Framework for the Scientific Assessment of Potential Project Impacts on Birds*. Wildlife Canadian Service, Technical report n° 508, Atlantic Region, 73 p.

Harrap, S. and D. Quinn (1995) *Chickadees, tits, nuthatches and treecreepers*. Princeton Univ. Press, Princeton, NJ

Harris, R. E. (1989) *Breeding biology of the Short-billed Dowitcher in the Schefferville area, Quebec-Labrador*. Master's Thesis, Univ. of Ottawa, Ottawa, Ontario

Hejl, S. J., K. R. Newlon, M. E. Mcfadzen, J. S. Young and C. K. Ghalambor (2002) *Brown Creeper (Certhia americana), The Birds of North America Online (A. Poole, Ed.)*. Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/669doi:10.2173/bna.669

Holt, D. W. and S. M. Leasure (1993) *Short-eared Owl (Asio flammeus).* In the Birds of North America, No. 62 (A. Poole et F. Gill, ed.). The Birds of North America inc., Philadelphia

Jehl, Jr., J. R., Joanna J. K. and R. E. Harris (2001) *Short-billed Dowitcher (Limnodromus griseus), The Birds of North America Online (A. Poole, Ed.).* Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/564doi:10.2173/bna.564

Kuchel, C. R. (1977) *Some aspects of the behavior and ecology of Harlequin Ducks breeding in Glacier National Park, Montana.* Master's Thesis, Univ. of Montana, Missoula

McCollough, M. A. (1989) *Molting sequence and aging of Bald Eagles*. Wilson Bull 101:1-10

Minaskuat Limited Partnership (2008) *LabMag Iron Ore Project Waterfowl Breeding Pair Surveys*. Technical Report presented to LabMag GP Inc.

Morrison, R. I. G., C. Downes, and B. Collins (1994) *Population trends of shorebirds on fall migration in eastern Canada 1974-1991*. Wilson Bull 106:431-447

Morneau, F., S. Brodeur, R. Décarie, S. Carrière, and D. M. Bird. 1994. *Abundance and distribution of nesting Golden Eagles in Hudson Bay, Quebec*. J. Raptor Res. 28:220-225

MRNF [ministère des Ressources naturelles et de la Faune] (2011) *Liste des espèces de la faune désignées menacées ou vulnérables.* http://www3.mrnf.gouv.qc.ca/faune/especes /menacees/liste.asp, avril 2011

Poole, K. G. and R. G. Bromley (1988) *Interrelationships within a raptor guild in the central Canadian arctic*. Can. J. Zool. 66:2275-2282

Rodway, M. S. (1998) *Habitat use by Harlequin Ducks breeding in Hebron Fiord, Labrador*. Can. J. Zool. 76:897-901

Rohner, C., J.N.M. Smith, J. Stroman, and M. Joyce (1995) *Northern Hawk-owls in the Nearctic boreal forest: Prey selection and population consequences of multiple prey cycles*. Condor 97:208-220

SCF [Service canadien de la faune] (2005) *Les éoliennes et les oiseaux. Revue de littérature pour les évaluations environnementales.* Version provisoire du 12 mai 2005, Service canadien de la faune, Environnement Canada, 63 p.

Shaffer, F. and R. Alvo (1996) *Brown Creeper*. Pp 748-751 in The breeding birds of Quebec: atlas of the breeding birds of southern Quebec. (Gauthier, J. and Y. Aubry, Eds.) Assoc. québecoise des groupes d'ornithologues, Prov. of Quebec Soc. for the protection of birds, Can. Wildl. Serv., Environ. Canada, Québec Region, Montréal

Smith, C. M. (1998) *Banff National Park Harlequin Duck research project: 1997 progress report*. Unpubl. Tech. Report. Heritage Resour. Conserv., Parks Canada, Banff, AB

Todd, W. E. C. (1963) *Birds of the Labrador Peninsula and adjacent areas*. Univ. of Toronto Press, Toronto

Tyler, W. M. (1948) *Brown Creeper*. Pp 56-79 in Life histories of North American nuthatches, wrens, thrashers and their allies. (Bent, A. C., Ed.) U.S. Natl. Mus. Bull. no. 195

Whitford, J. (January 2003) *Waterfowl Component Study Trans Labrador Highway (Happy Valley-Goose Bay to Cartwright Junction).* Project No. Nfs08243 presented to Department of Works, Services and Transportation, NFL, 53 p. and 3 appendices

Wiggins, D. A., D. W. Holt and S. M. Leasure. (2006) *Short-eared Owl (Asio flammeus), The Birds of North America Online (A. Poole, Ed.).* Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/062doi:10.2173/bna.62

APPENDICES

Appendix I

Bird Species Observed in Migration, by Season

Bird Species Observed during the Migration Season - Spring

*** indicates the species is listed as federally or provincially at risk

Site / Survey	Group	Code & Name	Number of observations: overland flight	short transect	long transect*	adapted visit	travel	TOTAL
TACONITE - KEMAG PROJECT			**227**	**245**		**305**		**777**
MIGPRKM11			**227**	**245**		**305**		**777**
	BIRD OF PREY		**6**	**1**		**3**		**10**
		BAPE Osprey	2	1				3
		*** PYTB Bald Eagle				2		2
		*** AIRO Golden Eagle	1					1
		*** HIMA Short-eared Owl	3			1		4
	AQUATIC BIRDS		**217**	**2**		**76**		**295**
		PLHU Common Loon		1				1
		BECA Canada Goose	27			2		29
		SAHI Green-winged Teal	24			2		26
		CANO American Black Duck	9					9
		CAPI Northern Pintail	9			4		13
		SPFU *Aythya* sp.	5					5
		*** ARPL Harlequin Duck	2					2
		MAFB Surf Scoter	26					26
		GAOO Common Goldeneye	17					17
		GRHA Common Merganser	7			2		9
		HAHU Red-breasted Merganser	6					6
		SPOR Shorebird	17					17
		PLSE Semipalmated Plover				3		3
		SPCH Plover	2					2
		GRCH Greater Yellowlegs	3			3		6
		CHSO Solitary Sandpiper	6			3		9
		BEMI Least Sandpiper				5		5
		BERO Short-billed Dowitcher	16			29		45
		BEWI Wilson's Snipe	34			23		57
		GOAR Herring Gull	7	1				8
	LANDBIRDS		**4**	**242**		**226**		**472**
		TECA Spruce Grouse		1				1
		LASA Willow Ptarmigan		7				7
		SPPI Woodpecker		2				2
		PIDN Black-backed Woodpecker		1				1
		ALHC Horned Lark		37				37
		HIBI Tree Swallow				1		1
		MECA Gray Jay		4		2		6
		GRCO Common Raven		2				2
		METB Boreal Chickadee		2				2
		GRBR Brown Creeper		1				1
		ROCR Ruby-crowned Kinglet		10		3		13
		MEAM American Robin		33		81		114
		PIAM American Pipit				7		7
		JABO Bohemian Waxwing		7		5		12

Bird Species Observed during the Migration Season - Spring

*** indicates the species is listed as federally or provincially at risk

Site / Survey	Group	Code & Name	Number of observations: overland flight	short transect	long transect*	adapted visit	travel	TOTAL
	PACJ	Yellow-rumped Warbler		1		1		2
	SPBR	Sparrow		2				2
	BRHU	American Tree Sparrow		11		19		30
	BRPR	Savannah Sparrow				1		1
	BRFV	Fox Sparrow		7		2		9
	BRCB	White-crowned Sparrow		30		10		40
	JUAR	Dark-eyed Junco		15		5		20
	BRLA	Lapland Longspur				10		10
	BRNE	Snow Bunting				1		1
	*** QURO	Rusty Blackbird	4	6		63		73
	DUSA	Pine Grosbeak		1		3		4
	SIFL	Common Redpoll		62		12		74

* method not use in this project

Bird Species Observed during the Migration Season - Fall

*** indicates the species is listed as federally or provincially at risk

Site / Survey	Group	Code & Name	Number of observations: overland flight	short transect	long transect*	adapted visit	travel	TOTAL
TACONITE - KEMAG PROJECT			**129**	**222**		**46**	**25**	**422**
FALL MIGRATION			**129**	**222**		**46**	**25**	**422**
	BIRD OF PREY		**11**	**2**		**1**		**14**
	***	PYTB Bald Eagle	6	2				8
		AUPA Northern Goshawk	1					1
		BUPA Rough-legged Hawk	4					4
	***	HIMA Short-eared Owl				1		1
	AQUATIC BIRDS		**110**	**18**		**10**	**19**	**157**
		PLHU Common Loon	2	3		2	1	8
		BECA Canada Goose					17	17
		FUMI Greater Scaup	1					1
		PEFU Lesser Scaup	14	5				19
		SPFF Lesser or Greater Scaup	8					8
		MAFB Surf Scoter	2					2
		GAOO Common Goldeneye	1					1
		HACO Hooded Merganser	8					8
		GRHA Common Merganser	64					64
		HAHU Red-breasted Merganser	3					3
		SPOR Shorebird				2		2
		PLSE Semipalmated Plover		4				4
		GRCH Greater Yellowlegs				1		1
		CHSO Solitary Sandpiper				1		1
		BESE Semipalmated Sandpiper				2		2
		BEWI Wilson's Snipe		1		1		2
		GOAR Herring Gull	7	5		1	1	14
	LANDBIRDS		**3**	**202**		**35**	**6**	**246**
		TECA Spruce Grouse		2			1	3
		LASA Willow Ptarmigan		1			4	5
		ALHC Horned Lark				2		2
		MECA Gray Jay	2	13		5		20
		GRCO Common Raven	1	2				3
		METB Boreal Chickadee		5				5
		ROCR Ruby-crowned Kinglet		4			1	5
		MEAM American Robin		7				7
		PIAM American Pipit		2		10		12
		JABO Bohemian Waxwing		2				2
		PGGR Northern Shrike		2				2
		PACJ Yellow-rumped Warbler		13				13
		PARA Blackpoll Warbler		11				11
		PARU Northern Waterthrush		1				1
		PACN Wilson's Warbler		2				2
		SPBR Sparrow		1				1
		BRHU American Tree Sparrow		13		6		19

Project : Taconite Project (NML & TSMC)
Query : 10-05-2012

Bird Species Observed during the Migration Season - Fall

*** indicates the species is listed as federally or provincially at risk

Site / Survey	Group	Code & Name	Number of observations: overland flight	short transect	long transect*	adapted visit	travel	TOTAL
	BRFV	Fox Sparrow		2				2
	BRLI	Lincoln's Sparrow				1		1
	BRGB	White-throated Sparrow		1				1
	BRCB	White-crowned Sparrow		75		3		78
	*** QURO	Rusty Blackbird		3		1		4
	DUSA	Pine Grosbeak		1				1
	BCBI	White-winged Crossbill		3				3
	SIFL	Common Redpoll		36		7		43
BIRDS			**3**					**3**
	SPNI	Bird nest	2					2
	SPNP	Bird nest of raptor	1					1
MAMMALS			**2**					**2**
	RENRO	Red fox	1					1
	CASTH	North American Beaver lodge	1					1

* method not use in this project

Appendix II

Bird Species by Biotope vs Ground Survey

Bird Species Observed during the Migration Season - Biotope vs Ground Survey

Site / Survey	Habitat	Code & Name		Number of observations
TACONITE - KEMAG PROJECT				**550**
	SPRING BIRD MIGRATION KÉMAG PROJECT - MINE SITE			550
	SHRUBLAND			135
		PLHU	Common Loon	1
		BAPE	Osprey	1
		GOAR	Herring Gull	1
		SPPI	Woodpecker	1
		MECA	Gray Jay	3
		GRCO	Common Raven	1
		METB	Boreal Chickadee	1
		GRBR	Brown Creeper	1
		ROCR	Ruby-crowned Kinglet	6
		MEAM	American Robin	19
		JABO	Bohemian Waxwing	3
		SPBR	Sparrow	2
		BRHU	American Tree Sparrow	9
		BRFV	Fox Sparrow	5
		BRCB	White-crowned Sparrow	19
		JUAR	Dark-eyed Junco	8
		QURO	Rusty Blackbird	1
		DUSA	Pine Grosbeak	1
		SIFL	Common Redpoll	52
	CONIFEROUS FOREST			40
		TECA	Spruce Grouse	1
		SPPI	Woodpecker	1
		PIDN	Black-backed Woodpecker	1
		MECA	Gray Jay	1
		METB	Boreal Chickadee	1
		ROCR	Ruby-crowned Kinglet	4
		MEAM	American Robin	2
		JABO	Bohemian Waxwing	4
		PACJ	Yellow-rumped Warbler	1
		BRHU	American Tree Sparrow	2
		BRFV	Fox Sparrow	1
		BRCB	White-crowned Sparrow	9
		JUAR	Dark-eyed Junco	7
		QURO	Rusty Blackbird	2
		SIFL	Common Redpoll	3
	WETLAND			305
		BECA	Canada Goose	2

Bird Species Observed during the Migration Season - Biotope vs Ground Survey

Site / Survey	Habitat	Code & Name		Number of observations
		SAHI	Green-winged Teal	2
		CAPI	Northern Pintail	4
		GRHA	Common Merganser	2
		PYTB	Bald Eagle	2
		PLSE	Semipalmated Plover	3
		GRCH	Greater Yellowlegs	3
		CHSO	Solitary Sandpiper	3
		BEMI	Least Sandpiper	5
		BERO	Short-billed Dowitcher	29
		BEWI	Wilson's Snipe	23
		HIMA	Short-eared Owl	1
		HIBI	Tree Swallow	1
		MECA	Gray Jay	2
		ROCR	Ruby-crowned Kinglet	3
		MEAM	American Robin	81
		PIAM	American Pipit	7
		JABO	Bohemian Waxwing	5
		PACJ	Yellow-rumped Warbler	1
		BRHU	American Tree Sparrow	19
		BRPR	Savannah Sparrow	1
		BRFV	Fox Sparrow	2
		BRCB	White-crowned Sparrow	10
		JUAR	Dark-eyed Junco	5
		BRLA	Lapland Longspur	10
		BRNE	Snow Bunting	1
		QURO	Rusty Blackbird	63
		DUSA	Pine Grosbeak	3
		SIFL	Common Redpoll	12
	TUNDRA			70
		LASA	Willow Ptarmigan	7
		ALHC	Horned Lark	37
		GRCO	Common Raven	1
		MEAM	American Robin	12
		BRFV	Fox Sparrow	1
		BRCB	White-crowned Sparrow	2
		QURO	Rusty Blackbird	3
		SIFL	Common Redpoll	7

Bird Species Observed during the Migration Season - Biotope vs Ground Survey

Site / Survey	Habitat	Code & Name		Number of observations
TACONITE - KEMAG PROJECT				**268**
FALL BIRD MIGRATION KÉMAG PROJECT - MINE SITE				268
	SHRUBLAND			72
		GOAR	Herring Gull	1
		MECA	Gray Jay	3
		MEAM	American Robin	4
		PGGR	Northern Shrike	1
		PACJ	Yellow-rumped Warbler	1
		PARA	Blackpoll Warbler	4
		BRHU	American Tree Sparrow	6
		BRCB	White-crowned Sparrow	22
		QURO	Rusty Blackbird	1
		SIFL	Common Redpoll	29
	CONIFEROUS FOREST			95
		PLHU	Common Loon	3
		PEFU	Lesser Scaup	5
		PYTB	Bald Eagle	2
		TECA	Spruce Grouse	2
		PLSE	Semipalmated Plover	4
		BEWI	Wilson's Snipe	1
		GOAR	Herring Gull	4
		MECA	Gray Jay	4
		GRCO	Common Raven	1
		METB	Boreal Chickadee	5
		ROCR	Ruby-crowned Kinglet	2
		MEAM	American Robin	3
		PIAM	American Pipit	2
		JABO	Bohemian Waxwing	2
		PGGR	Northern Shrike	1
		PACJ	Yellow-rumped Warbler	4
		PARA	Blackpoll Warbler	6
		PARU	Northern Waterthrush	1
		SPBR	Sparrow	1
		BRHU	American Tree Sparrow	3
		BRFV	Fox Sparrow	2
		BRCB	White-crowned Sparrow	26
		QURO	Rusty Blackbird	1
		DUSA	Pine Grosbeak	1
		BCBI	White-winged Crossbill	3
		SIFL	Common Redpoll	6

Bird Species Observed during the Migration Season - Biotope vs Ground Survey

Site / Survey	Habitat	Code & Name		Number of observations
	WETLAND			31
		PLHU	Common Loon	2
		SPOR	Shorebird	2
		GRCH	Greater Yellowlegs	1
		CHSO	Solitary Sandpiper	1
		BESE	Semipalmated Sandpiper	2
		BEWI	Wilson's Snipe	1
		GOAR	Herring Gull	1
		HIMA	Short-eared Owl	1
		ALHC	Horned Lark	1
		MECA	Gray Jay	4
		PIAM	American Pipit	1
		BRHU	American Tree Sparrow	5
		BRLI	Lincoln's Sparrow	1
		QURO	Rusty Blackbird	1
		SIFL	Common Redpoll	7
	TUNDRA			70
		LASA	Willow Ptarmigan	1
		ALHC	Horned Lark	1
		MECA	Gray Jay	7
		GRCO	Common Raven	1
		ROCR	Ruby-crowned Kinglet	2
		PIAM	American Pipit	9
		PACJ	Yellow-rumped Warbler	8
		PARA	Blackpoll Warbler	1
		PACN	Wilson's Warbler	2
		BRHU	American Tree Sparrow	5
		BRGB	White-throated Sparrow	1
		BRCB	White-crowned Sparrow	30
		QURO	Rusty Blackbird	1
		SIFL	Common Redpoll	1

Appendix III

Complete List of Bird Species

Bird Survey - Migration - Taconite - KeMag Project

Code		English Name	French Name	Latin Name
PLHU		Common Loon	Plongeon huard	*Gavia immer*
BECA		Canada Goose	Bernache du Canada	*Branta canadensis*
SAHI		Green-winged Teal	Sarcelle d'hiver	*Anas crecca*
CANO		American Black Duck	Canard noir	*Anas rubripes*
CAPI		Northern Pintail	Canard pilet	*Anas acuta*
SPFU		*Aythya* sp.	Fuligule sp.	*Aythya* sp.
FUMI		Greater Scaup	Fuligule milouinan	*Aythya marila*
PEFU		Lesser Scaup	Petit Fuligule	*Aythya affinis*
SPFF		Lesser or Greater Scaup	Fuligule milouinan ou petit	*Aythya affinis ou marila*
ARPL	***	Harlequin Duck	Arlequin plongeur	*Histrionicus histrionicus*
MANO		Black Scoter	Macreuse à bec jaune	*Melanitta americana*
MAFB		Surf Scoter	Macreuse à front blanc	*Melanitta perspicillata*
GAOO		Common Goldeneye	Garrot à oeil d'or	*Bucephala clangula*
HACO		Hooded Merganser	Harle couronné	*Lophodytes cucullatus*
GRHA		Common Merganser	Grand Harle	*Mergus merganser*
HAHU		Red-breasted Merganser	Harle huppé	*Mergus serrator*
BAPE		Osprey	Balbuzard pêcheur	*Pandion haliaetus*
PYTB	***	Bald Eagle	Pygargue à tête blanche	*Haliaeetus leucocephalus*
AUPA		Northern Goshawk	Autour des palombes	*Accipiter gentilis*
BUQR		Red-tailed Hawk	Buse à queue rousse	*Buteo jamaicensis*
BUPA		Rough-legged Hawk	Buse pattue	*Buteo lagopus*
AIRO	***	Golden Eagle	Aigle royal	*Aquila chrysaetos*
TECA		Spruce Grouse	Tétras du Canada	*Falcipennis canadensis*
LASA		Willow Ptarmigan	Lagopède des saules	*Lagopus lagopus*
SPOR		Shorebird	Oiseau de rivage sp.	-
PLSE		Semipalmated Plover	Pluvier semipalmé	*Charadrius semipalmatus*
SPCH		Plover	Chevalier sp.	-
GRCH		Greater Yellowlegs	Grand Chevalier	*Tringa melanoleuca*
CHSO		Solitary Sandpiper	Chevalier solitaire	*Tringa solitaria*
BESE		Semipalmated Sandpiper	Bécasseau semipalmé	*Calidris pusilla*
BEMI		Least Sandpiper	Bécasseau minuscule	*Calidris minutilla*
BERO		Short-billed Dowitcher	Bécassin roux	*Limnodromus griseus*
BEWI		Wilson's Snipe	Bécassine de Wilson	*Gallinago delicata*
GOAR		Herring Gull	Goéland argenté	*Larus argentatus*
STAR		Arctic Tern	Sterne arctique	*Sterna paradisaea*
CHEP		Northern Hawk Owl	Chouette épervière	*Surnia ulula*
HIMA	***	Short-eared Owl	Hibou des marais	*Asio flammeus*
SPPI		Woodpecker	Picidé sp. (pic)	-
PIDN		Black-backed Woodpecker	Pic à dos noir	*Picoides arcticus*
ALHC		Horned Lark	Alouette hausse-col	*Eremophila alpestris*
HIBI		Tree Swallow	Hirondelle bicolore	*Tachycineta bicolor*
MECA		Gray Jay	Mésangeai du Canada	*Perisoreus canadensis*
GRCO		Common Raven	Grand Corbeau	*Corvus corax*

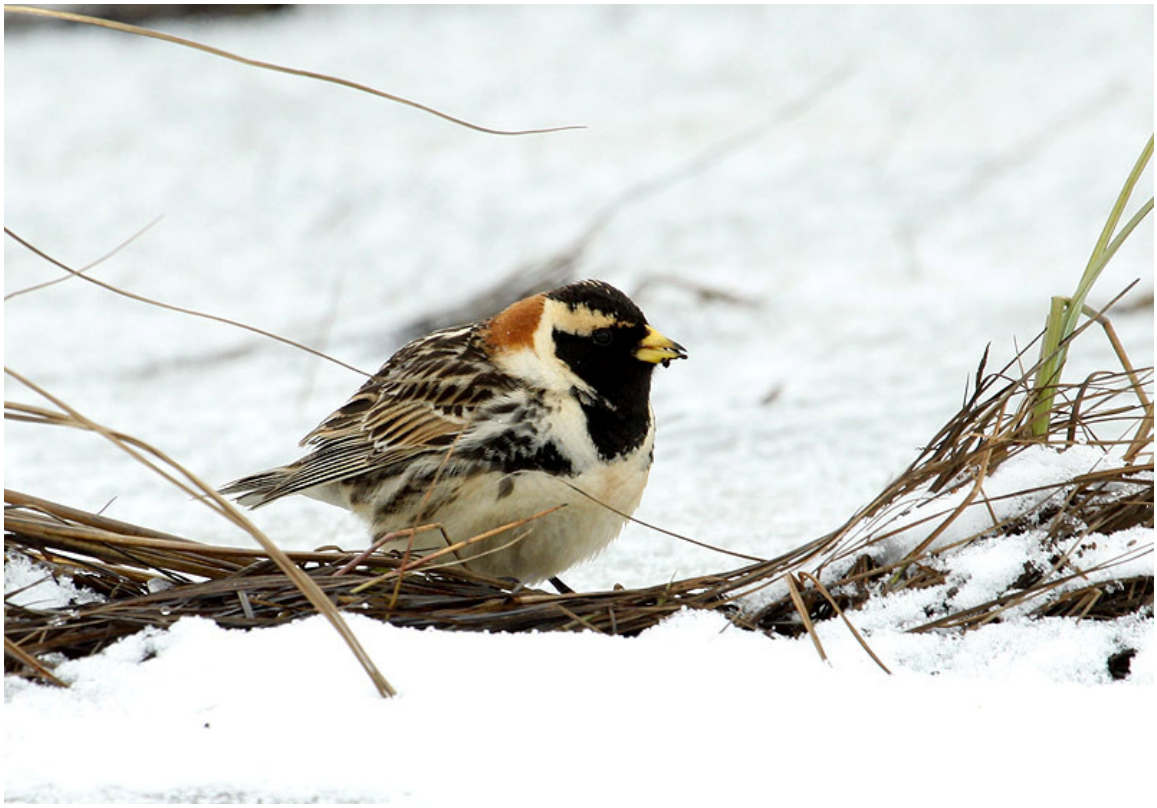
Bird Survey - Migration - Taconite - KeMag Project

Code	English Name	French Name	Latin Name
METB	Boreal Chickadee	Mésange à tête brune	*Poecile hudsonicus*
GRBR	Brown Creeper	Grimpereau brun	*Certhia americana*
ROCR	Ruby-crowned Kinglet	Roitelet à couronne rubis	*Regulus calendula*
GRJG	Gray-cheeked Thrush	Grive à joues grises	*Catharus minimus*
MEAM	American Robin	Merle d'Amérique	*Turdus migratorius*
PIAM	American Pipit	Pipit d'Amérique	*Anthus rubescens*
JABO	Bohemian Waxwing	Jaseur boréal	*Bombycilla garrulus*
PGGR	Northern Shrike	Pie-grièche grise	*Lanius excubitor*
PAOB	Tennessee Warbler	Paruline obscure	*Oreothlypis peregrina*
PACJ	Yellow-rumped Warbler	Paruline à croupion jaune	*Setophaga coronata*
PACR	Palm Warbler	Paruline à couronne rousse	*Setophaga palmarum*
PARA	Blackpoll Warbler	Paruline rayée	*Setophaga striata*
PARU	Northern Waterthrush	Paruline des ruisseaux	*Parkesia noveboracensis*
PACN	Wilson's Warbler	Paruline à calotte noire	*Cardellina pusilla*
SPBR	Sparrow	Bruant sp.	-
BRHU	American Tree Sparrow	Bruant hudsonien	*Spizella arborea*
BRPR	Savannah Sparrow	Bruant des prés	*Passerculus sandwichensis*
BRFV	Fox Sparrow	Bruant fauve	*Passerella iliaca*
BRLI	Lincoln's Sparrow	Bruant de Lincoln	*Melospiza lincolnii*
BRGB	White-throated Sparrow	Bruant à gorge blanche	*Zonotrichia albicollis*
BRCB	White-crowned Sparrow	Bruant à couronne blanche	*Zonotrichia leucophrys*
JUAR	Dark-eyed Junco	Junco ardoisé	*Junco hyemalis*
BRLA	Lapland Longspur	Plectrophane lapon	*Calcarius lapponicus*
BRNE	Snow Bunting	Plectrophane des neiges	*Plectrophenax nivalis*
QURO ***	Rusty Blackbird	Quiscale rouilleux	*Euphagus carolinus*
DUSA	Pine Grosbeak	Durbec des sapins	*Pinicola enucleator*
BCBI	White-winged Crossbill	Bec-croisé bifascié	*Loxia leucoptera*
SIFL	Common Redpoll	Sizerin flammé	*Acanthis flammea*
SPNI	Bird nest	Nid d'oiseau	
SPNP	Bird nest of raptor	Nid d'oiseau de proie	
RENR	Red fox	Renard roux	*Vulpes vulpes*
CASTH	North American Beaver lodge	Hutte de castor du Canada	*Castor canadensis*

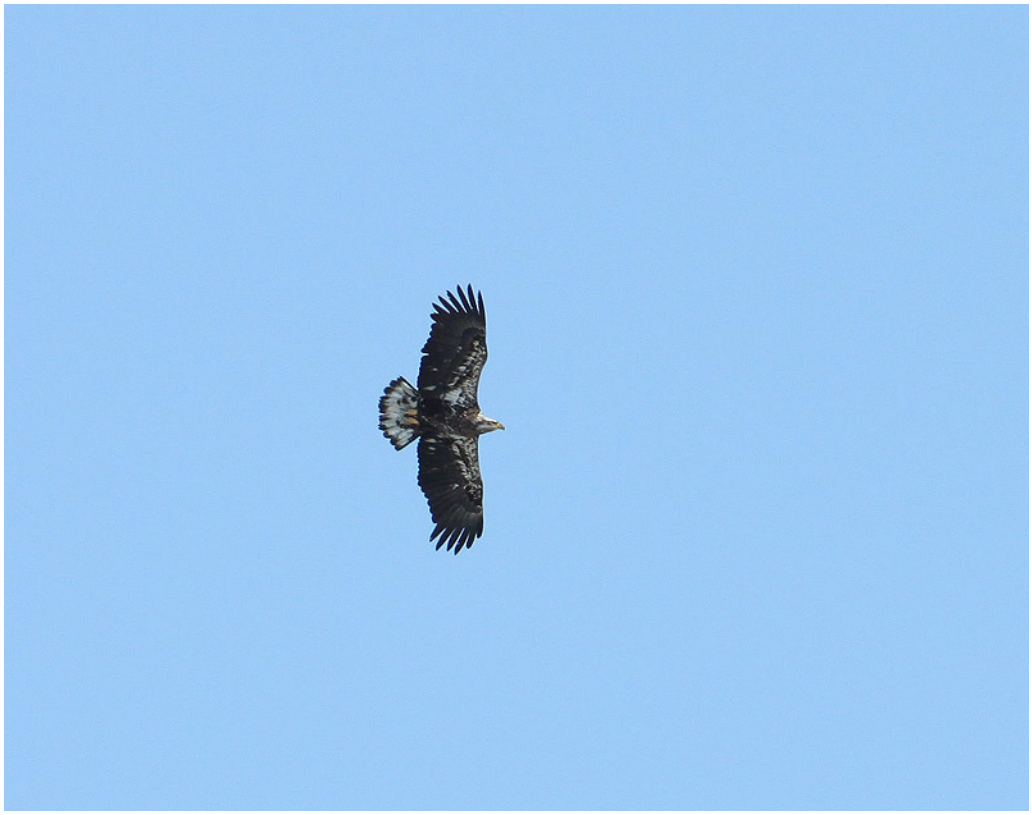
*** indicates the species is listed as federally or provincialy threatened

Appendix IV

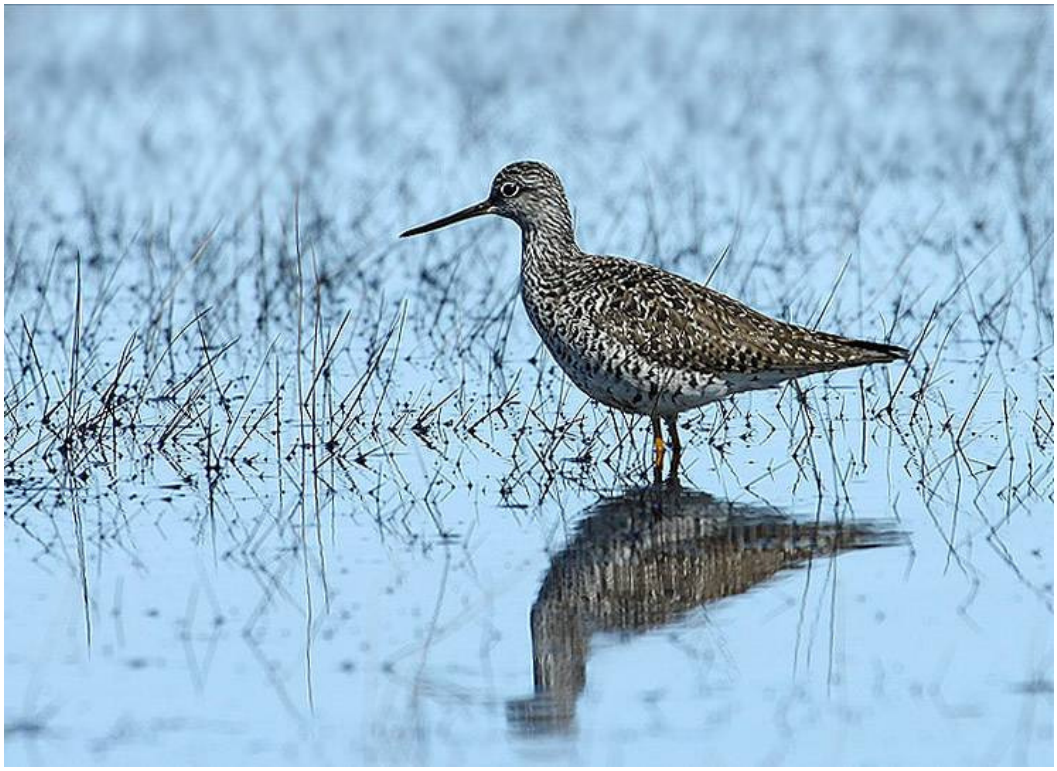
Pictures of Birds Taken at KéMag Mine Site during Surveys



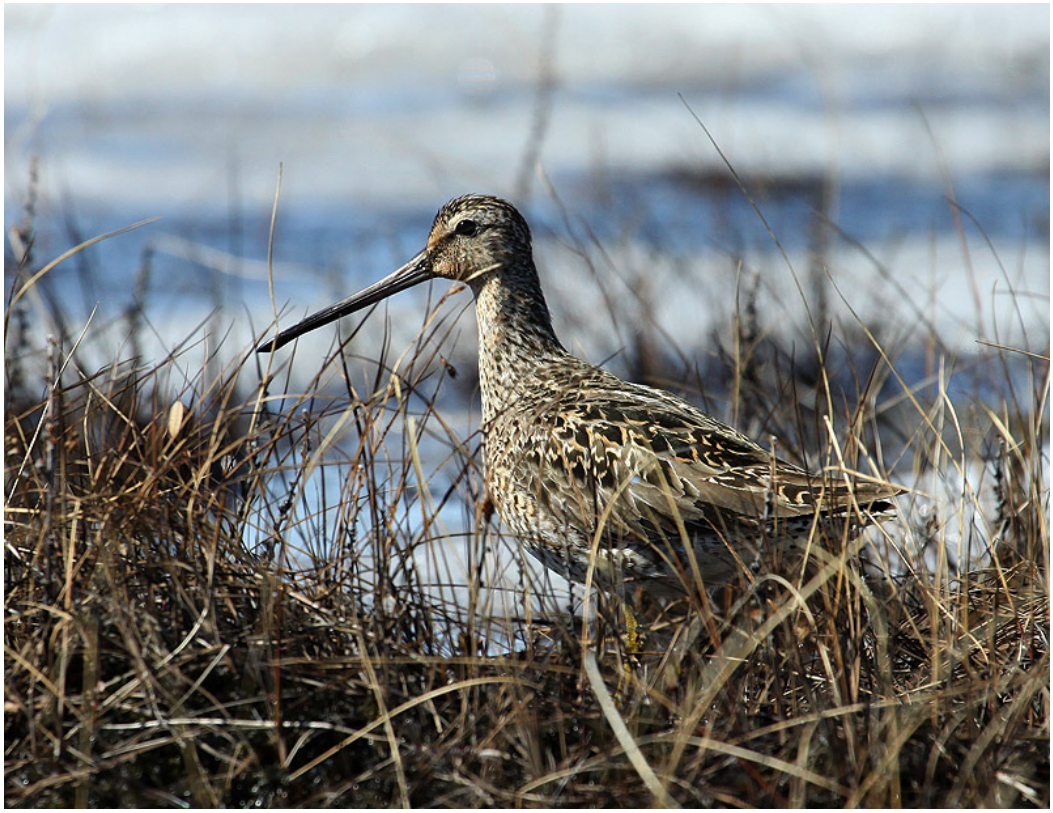
Lapland Longspur, in frozen wetland, KéMag, May 2011



Bald Eagle, subadult III, KéMag, May 2011



Greater Yellowlegs, wetland, KéMag, May 2011



Short-billed Dowitcher, wetland, KéMag, May 2011

Appendix V

Daily Meteorological Data Report for May, August and September 2011 from Environment Canada

Environment Canada Environnement Canada

Canada

Daily Data Report for May 2011

SCHEFFERVILLE A
QUEBEC

Latitude: 54°48'00.000" N Longitude: 66°48'00.000" W Elevation: 521.00 m

Climate ID: 7117827 WMO ID: 71828 TC ID: YKL

Daily Data Report for May 2011

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days °C	Cool Deg Days °C	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's deg	Spd of Max Gust km/h
01†	11.6	0.3	6.0	12.0	0.0	M	M	0.0		26	33
02†	9.7	0.5	5.1	12.9	0.0	M	M	3.0		21	59
03†	1.6	-7.9	-3.2	21.2	0.0	M	M	4.5		33	35
04†	3.8	-9.6	-2.9	20.9	0.0	M	M	0.0			<31
05†	2.7	-8.8	-3.1	21.1	0.0	M	M	0.0			<31
06†	2.5	-5.9	-1.7	19.7	0.0	M	M	2.0		12	46
07†	5.8	-1.2	2.3	15.7	0.0	M	M	1.0			<31
08†	2.3	-5.4	-1.6	19.6	0.0	M	M	0.0		35	37
09†	0.1	-10.0	-5.0	23.0	0.0	M	M	0.0		34	33
10†	5.2	-12.1	-3.5	21.5	0.0	M	M	0.0			<31
11†	9.4	-4.3	2.6	15.4	0.0	M	M	0.0			<31
12†	5.4	-5.2	0.1	17.9	0.0	M	M	0.0			<31
13†	3.7	-6.8	-1.6	19.6	0.0	M	M	0.0			<31
14†	5.3	-4.7	0.3	17.7	0.0	M	M	0.0		33	39
15†	0.5	-5.4	-2.5	20.5	0.0	M	M	0.5		35	48
16†	4.1	-4.0	0.1	17.9	0.0	M	M	0.0		2	44
17†	11.8	1.0	6.4	11.6	0.0	M	M	0.5		25	54
18†	15.1	0.2	7.7	10.3	0.0	M	M	0.0		26	48
19†	6.6	-4.8	0.9	17.1	0.0	M	M	0.0		7	35
20†	7.6	-4.9	1.4	16.6	0.0	M	M	0.0			<31
21†	6.9	-7.1	-0.1	18.1	0.0	M	M	0.0			<31
22†	13.3	-3.8	4.8	13.2	0.0	M	M	0.0		22	37
23†	6.3	-0.6	2.9	15.1	0.0	M	M	5.5			<31
24†	2.5	-3.4	-0.5	18.5	0.0	M	M	18.0		36	48
25†	1.7	-4.1	-1.2	19.2	0.0	M	M	1.5		33	32
26†	6.3	-6.1	0.1	17.9	0.0	M	M	0.5		25	37
27†	6.5	-4.5	1.0	17.0	0.0	M	M	0.0			<31
28†	14.9	-5.2	4.9	13.1	0.0	M	M	0.5			<31
29†	12.1	3.0	7.6	10.4	0.0	M	M	7.0		24	41
30†	8.0	-0.2	3.9	14.1	0.0	M	M	1.0		35	41
31†	8.4	-1.2	3.6	14.4	0.0	M	M	0.5			<31
Sum				**523.2**	**0.0**	**0.0***	**0.0***	**46.0**			
Avg	**6.5**	**-4.3**	**1.1**								
Xtrm	**15.1**	**-12.1**								**21**	**59**

Legend
[empty] = No data available

Environment Canada Environnement Canada

Canada

Daily Data Report for August 2011

SCHEFFERVILLE A
QUEBEC

Latitude: 54°48'00.000" N Longitude: 66°48'00.000" W Elevation: 521.00 m

Climate ID: 7117827 WMO ID: 71828 TC ID: GKL

Daily Data Report for August 2011

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days	Cool Deg Days	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's deg	Spd of Max Gust km/h
01†	20.9	10.8	15.9	2.1	0.0	M	M	0.0		14	37
02†	22.9	11.5	17.2	0.8	0.0	M	M	0.0		17	33
03†	22.9	12.0	17.5	0.5	0.0	M	M	0.0		19	33
04†	23.7	14.4	19.1	0.0	1.1	M	M	2.5			<31
05†	24.3	13.8	19.1	0.0	1.1	M	M	1.5		22	48
06†	22.7	12.8	17.8	0.2	0.0	M	M	1.0		24	32
07†	17.8	10.6	14.2	3.8	0.0	M	M	1.0		29	32
08†	18.4	7.9	13.2	4.8	0.0	M	M	4.0			<31
09†	19.5	5.9	12.7	5.3	0.0	M	M	0.0			<31
10†	21.6	10.2	15.9	2.1	0.0	M	M	0.5		17	44
11†	14.6	11.7	13.2	4.8	0.0	M	M	0.0		17	35
12†	18.6	11.5	15.1	2.9	0.0	M	M	8.0			<31
13†	20.3	11.1	15.7	2.3	0.0	M	M	1.0		30	37
14†	16.1	6.6	11.4	6.6	0.0	M	M	0.0		30	35
15†	17.0	9.0	13.0	5.0	0.0	M	M	6.5		21	39
16†	15.1	7.1	11.1	6.9	0.0	M	M	1.0		32	35
17†	13.0	7.3	10.2	7.8	0.0	M	M	0.0		30	33
18†	17.3	5.7	11.5	6.5	0.0	M	M	0.0			<31
19†	17.6	10.0	13.8	4.2	0.0	M	M	3.0			<31
20†	22.3	13.2	17.8	0.2	0.0	M	M	3.5			<31
21†	20.5	9.5	15.0	3.0	0.0	M	M	3.0			<31
22†	16.6	8.5	12.6	5.4	0.0	M	M	27.5		14	56
23†	14.5	8.5	11.5	6.5	0.0	M	M	2.0		30	46
24†	16.9	7.5	12.2	5.8	0.0	M	M	3.5		18	52
25†	16.9	8.8	12.9	5.1	0.0	M	M	14.0		33	44
26†	17.3	7.7	12.5	5.5	0.0	M	M	0.5		33	41
27†	16.7	8.3	12.5	5.5	0.0	M	M	2.5		20	50
28†	12.6	7.1	9.9	8.1	0.0	M	M	0.0		29	35
29†	11.8	6.5	9.2	8.8	0.0	M	M	4.0		6	33
30†	15.2	7.1	11.2	6.8	0.0	M	M	2.5			<31
31†	15.4	6.4	10.9	7.1	0.0	M	M	2.5		33	35
Sum				**134.4**	**2.2**	**0.0***	**0.0***	**95.5**			
Avg	**18.1**	**9.3**	**13.7**								
Xtrm	**24.3**	**5.7**								**14**	**56**

Summary, average and extreme values are based on the data above.

Environment Canada Environnement Canada

Canada

Daily Data Report for September 2011

SCHEFFERVILLE A
QUEBEC

Latitude: 54°48'00.000" N Longitude: 66°48'00.000" W Elevation: 521.00 m

Climate ID: 7117827 WMO ID: 71828 TC ID: GKL

Daily Data Report for September 2011

Day	Max Temp °C	Min Temp °C	Mean Temp °C	Heat Deg Days	Cool Deg Days	Total Rain mm	Total Snow cm	Total Precip mm	Snow on Grnd cm	Dir of Max Gust 10's deg	Spd of Max Gust km/h
01†	18.4	7.4	12.9	5.1	0.0	M	M	0.0		27	37
02†	22.6	11.9	17.3	0.7	0.0	M	M	4.0		3	74
03†	15.0	3.5	9.3	8.7	0.0	M	M	1.0		27	80
04†	9.2	2.3	5.8	12.2	0.0	M	M	0.0		31	35
05†	10.7	-0.7	5.0	13.0	0.0	M	M	0.0			<31
06†	15.0	-1.7	6.7	11.3	0.0	M	M	0.0			<31
07†	17.8	6.6	12.2	5.8	0.0	M	M	0.5		25	56
08†	9.8	2.8	6.3	11.7	0.0	M	M	7.5		24	56
09†	8.3	2.4	5.4	12.6	0.0	M	M	6.0		2	35
10†	7.3	2.0	4.7	13.3	0.0	M	M	0.5		33	37
11†	13.8	3.4	8.6	9.4	0.0	M	M	6.0		25	56
12†	8.2	1.4	4.8	13.2	0.0	M	M	1.0		31	50
13†	9.4	0.3	4.9	13.1	0.0	M	M	9.0		16	50
14†	7.6	-2.8	2.4	15.6	0.0	M	M	0.0		30	56
15†	7.2	-3.1	2.1	15.9	0.0	M	M	1.5			<31
16†	3.9	0.1	2.0	16.0	0.0	M	M	12.0		33	61
17†	9.3	0.5	4.9	13.1	0.0	M	M	4.0		32	50
18†	15.0	7.0	11.0	7.0	0.0	M	M	0.0		26	44
19†	17.3	6.4	11.9	6.1	0.0	M	M	0.0		25	46
20†	11.6	4.5	8.1	9.9	0.0	M	M	0.0		20	37
21†	10.7	2.6	6.7	11.3	0.0	M	M	0.5		28	41
22†	6.2	1.6	3.9	14.1	0.0	M	M	0.0			<31
23†	12.8	2.4	7.6	10.4	0.0	M	M	0.5			<31
24†	12.8	9.0	10.9	7.1	0.0	M	M	0.5		3	67
25†	12.8	4.3	8.6	9.4	0.0	M	M	0.0		29	61
26†	6.6	1.2	3.9	14.1	0.0	M	M	0.0		32	46
27†	9.0	0.4	4.7	13.3	0.0	M	M	0.0		35	32
28†	17.2	5.8	11.5	6.5	0.0	M	M	0.0		24	46
29†	17.7	4.7	11.2	6.8	0.0	M	M	9.0			<31
30†	4.7	-1.0	1.9	16.1	0.0	M	M	27.5		35	46
Sum				**322.8**	**0.0**	**0.0***	**0.0***	**91.0**			
Avg	**11.6**	**2.8**	**7.2**								
Xtrm	**22.6**	**-3.1**								**27**	**80**

Summary, average and extreme values are based on the data above.

Legend

[empty] = No data available
M = Missing
E = Estimated
A = Accumulated
C = Precipitation occurred, amount uncertain
L = Precipitation may or may not have occurred
F = Accumulated and estimated
N = Temperature missing but known to be > 0
Y = Temperature missing but known to be < 0
S = More than one occurrence
T = Trace
* = The value displayed is based on incomplete data
† = Data for this day has undergone only preliminary quality checking

---

We'd like to hear from you! Please click "Contact Us" to share your comments and suggestions.

Date Modified: 2012-01-11

Appendix VI

Birds Observed during Overland Flights

Birds Observed during Overland Flights

*** indicates the species is listed as federally or provincially at risk

Site/Survey GPS	Date	Code & Name		Number of observations Undifferentiated	Male	Female
TACONITE - PROJET KEMAG						
SPRING BIRD MIGRATION KÉMAG PROJECT - MINE SITE						
169	28-05-2011	BEWI	Wilson's Snipe	2		
170	28-05-2011	BERO	Short-billed Dowitcher	4		
171	28-05-2011	BEWI	Wilson's Snipe	2		
172	28-05-2011	SPOR	Shorebird	3		
172	28-05-2011	BEWI	Wilson's Snipe	2		
173	28-05-2011	BEWI	Wilson's Snipe	2		
174	28-05-2011	BEWI	Wilson's Snipe	4		
175	28-05-2011	SPOR	Shorebird	2		
176	28-05-2011	CHSO	Solitary Sandpiper	2		
176	28-05-2011	BERO	Short-billed Dowitcher	3		
176	28-05-2011	BEWI	Wilson's Snipe	1		
177	28-05-2011	BEWI	Wilson's Snipe	1		
179	28-05-2011	HAHU	Red-breasted Merganser	1	1	1
180	28-05-2011	GAOO	Common Goldeneye	2	1	1
182	28-05-2011	HAHU	Red-breasted Merganser	4	2	2
183	28-05-2011	CANO	American Black Duck	8		
183	28-05-2011	CAPI	Northern Pintail	1	1	1
183	28-05-2011	MAFB	Surf Scoter	10	5	5
184	28-05-2011	SPOR	Shorebird	1		
185	28-05-2011	GOAR	Herring Gull	1		
186	28-05-2011	SPFU	*Aythya* sp.	3		
186	28-05-2011	MAFB	Surf Scoter	14		
186	28-05-2011	GAOO	Common Goldeneye	1		
186	28-05-2011	HAHU	Red-breasted Merganser	1	1	1
187	28-05-2011	SPOR	Shorebird	1		
188	28-05-2011	GOAR	Herring Gull	2		
189	28-05-2011	GAOO	Common Goldeneye	2	1	1
190	28-05-2011	GAOO	Common Goldeneye	1	1	1
191	28-05-2011	BEWI	Wilson's Snipe	1		
192	28-05-2011	SPFU	*Aythya* sp.	2	1	1
193	28-05-2011	BERO	Short-billed Dowitcher	2		
194	28-05-2011	BEWI	Wilson's Snipe	1		
195	28-05-2011	CAPI	Northern Pintail	1	1	1
196	28-05-2011	BEWI	Wilson's Snipe	1		
197	28-05-2011	BERO	Short-billed Dowitcher	2		
198	28-05-2011	SPOR	Shorebird	2		
198	28-05-2011	BEWI	Wilson's Snipe	1		
199	28-05-2011	BECA	Canada Goose	3		
200	28-05-2011	GOAR	Herring Gull	1		
201	28-05-2011	CHSO	Solitary Sandpiper	1		
202	28-05-2011	HIMA	Short-eared Owl	1		
203	28-05-2011	CHSO	Solitary Sandpiper	1		
204	28-05-2011	ARPL	Harlequin Duck	2	1	1

Birds Observed during Overland Flights

*** indicates the species is listed as federally or provincially at risk

Site/Survey					Number of observations		
	GPS	Date	Code & Name		Undifferentiated	Male	Female
	206	28-05-2011	SAHI	Green-winged Teal	2		
	207	28-05-2011	GAOO	Common Goldeneye	1	1	1
	208	28-05-2011	BERO	Short-billed Dowitcher	3		
	209	28-05-2011	SPOR	Shorebird	2		
	211	28-05-2011	HIMA	Short-eared Owl	1		
	212	28-05-2011	BEWI	Wilson's Snipe	1		
	213	28-05-2011	BEWI	Wilson's Snipe	1		
	214	28-05-2011	BEWI	Wilson's Snipe	2		
	215	28-05-2011	CAPI	Northern Pintail	2	1	1
	216	28-05-2011	CANO	American Black Duck	1		
	217	28-05-2011	GRCH	Greater Yellowlegs	1		
	217	28-05-2011	BERO	Short-billed Dowitcher	2		
	217	28-05-2011	BEWI	Wilson's Snipe	1		
	218	28-05-2011	SPOR	Shorebird	1		
	219	28-05-2011	BEWI	Wilson's Snipe	1		
	220	28-05-2011	BEWI	Wilson's Snipe	3		
	221	28-05-2011	GRHA	Common Merganser	2	1	1
	222	28-05-2011	SAHI	Green-winged Teal	2	1	1
	223	28-05-2011	SPOR	Shorebird	3		
	223	28-05-2011	GRCH	Greater Yellowlegs	2		
	224	28-05-2011	BEWI	Wilson's Snipe	1		
	225	28-05-2011	BEWI	Wilson's Snipe	1		
	226	28-05-2011	SPCH	Plover	2		
	227	28-05-2011	BEWI	Wilson's Snipe	1		
	228	28-05-2011	BEWI	Wilson's Snipe	1		
	229	28-05-2011	BAPE	Osprey	0		
	230	28-05-2011	BECA	Canada Goose	2	1	1
	231	28-05-2011	SPOR	Shorebird	1		
	232	28-05-2011	BECA	Canada Goose	1		
	233	28-05-2011	SPOR	Shorebird	1		
	234	28-05-2011	BECA	Canada Goose	2		
	234	28-05-2011	GAOO	Common Goldeneye	2	1	1
	235	28-05-2011	GAOO	Common Goldeneye	1	1	1
	236	28-05-2011	GRHA	Common Merganser	3	3	3
	53	22-05-2011	GAOO	Common Goldeneye	2	1	1
	54	22-05-2011	SAHI	Green-winged Teal	2	1	1
	55	22-05-2011	QURO	Rusty Blackbird	4		
	56	22-05-2011	SAHI	Green-winged Teal	2	1	1
	57	22-05-2011	BECA	Canada Goose	1		
	58	22-05-2011	BECA	Canada Goose	4		
	58	22-05-2011	GAOO	Common Goldeneye	1	1	1
	59	22-05-2011	GAOO	Common Goldeneye	2	1	1
	60	22-05-2011	BAPE	Osprey	2		
	61	22-05-2011	CAPI	Northern Pintail	3		
	61	22-05-2011	BEWI	Wilson's Snipe	1		
	62	22-05-2011	BECA	Canada Goose	6		

Birds Observed during Overland Flights

*** indicates the species is listed as federally or provincially at risk

Site/Survey GPS	Date	Code & Name		Number of observations Undifferentiated	Male	Female
62	22-05-2011	SAHI	Green-winged Teal	14		
62	22-05-2011	CAPI	Northern Pintail	2		
63	22-05-2011	GRHA	Common Merganser	2	2	2
64	22-05-2011	BECA	Canada Goose	2		
65	22-05-2011	MAFB	Surf Scoter	2	1	1
65	22-05-2011	GOAR	Herring Gull	2		
66	22-05-2011	GAOO	Common Goldeneye	2	1	1
67	22-05-2011	AIRO	Golden Eagle	1		
69	22-05-2011	BECA	Canada Goose	2		
70	22-05-2011	CHSO	Solitary Sandpiper	1		
71	22-05-2011	GOAR	Herring Gull	1		
73	22-05-2011	BECA	Canada Goose	2		
74	22-05-2011	HIMA	Short-eared Owl	1		
76	22-05-2011	BECA	Canada Goose	2		
77	22-05-2011	SAHI	Green-winged Teal	2	1	1
78	22-05-2011	BEWI	Wilson's Snipe	1		
79	22-05-2011	BEWI	Wilson's Snipe	1		
81	22-05-2011	CHSO	Solitary Sandpiper	1		
AUTUMN BIRD MIGRATION KÉMAG PROJECT - MINING SITE						
024	27-09-2011	HACO	Hooded Merganser	1		
025	27-09-2011	GRHA	Common Merganser	9		
026	27-09-2011	AUPA	Northern Goshawk	1		
026	27-09-2011	GRHA	Common Merganser	1		
027	27-09-2011	PYTB	Bald Eagle	1		
028	27-09-2011	MAFB	Surf Scoter	1	1	1
028	27-09-2011	GRHA	Common Merganser	5		
030	27-09-2011	RENR	Red fox	1		
031	27-09-2011	PLHU	Common Loon	1		
032	27-09-2011	PYTB	Bald Eagle	1		
033	27-09-2011	GRHA	Common Merganser	1	1	1
034	27-09-2011	GOAR	Herring Gull	2		
035	27-09-2011	GRHA	Common Merganser	2	2	2
036	27-09-2011	GRHA	Common Merganser	4		
037	27-09-2011	FUMI	Greater Scaup	1	1	1
037	27-09-2011	GRHA	Common Merganser	2		
038	27-09-2011	GRHA	Common Merganser	1	1	1
039	27-09-2011	MECA	Gray Jay	2		
040	27-09-2011	SPNI	Bird nest	1		
041	27-09-2011	PYTB	Bald Eagle	1		
042	27-09-2011	GRHA	Common Merganser	17		
043	27-09-2011	GOAR	Herring Gull	1		
044	27-09-2011	SPFF	Lesser or Greater Scaup	7		
045	27-09-2011	GRHA	Common Merganser	1	1	1
046	27-09-2011	GRHA	Common Merganser	7	7	7
047	27-09-2011	GRHA	Common Merganser	9		

Birds Observed during Overland Flights

*** indicates the species is listed as federally or provincially at risk

Site/Survey					Number of observations		
	GPS	Date	Code & Name		Undifferentiated	Male	Female
	064	28-09-2011	BUPA	Rough-legged Hawk	1		
	065	28-09-2011	PEFU	Lesser Scaup	10		
	066	28-09-2011	GAOO	Common Goldeneye	1	1	1
	067	28-09-2011	BUPA	Rough-legged Hawk	2		
	093	29-09-2011	HACO	Hooded Merganser	3	3	3
	094	29-09-2011	HACO	Hooded Merganser	3	3	3
	095	29-09-2011	SPNP	Bird nest of raptor	1		
	096	29-09-2011	GOAR	Herring Gull	1		
	097	29-09-2011	HAHU	Red-breasted Merganser	3		
	098	29-09-2011	MAFB	Surf Scoter	1		
	099	29-09-2011	PLHU	Common Loon	1		
	100	29-09-2011	PYTB	Bald Eagle	1		
	101	29-09-2011	GOAR	Herring Gull	1		
	102	29-09-2011	GOAR	Herring Gull	1		
	103	29-09-2011	PEFU	Lesser Scaup	1	1	1
	104	29-09-2011	PYTB	Bald Eagle	1		
	105	29-09-2011	PYTB	Bald Eagle	1		
	106	29-09-2011	GRCO	Common Raven	1		
	107	29-09-2011	GOAR	Herring Gull	1		
	108	29-09-2011	BUPA	Rough-legged Hawk	1		
	109	29-09-2011	PEFU	Lesser Scaup	3		
	110	29-09-2011	HACO	Hooded Merganser	1	1	1
	111	29-09-2011	SPNI	Bird nest	1		
	112	29-09-2011	GRHA	Common Merganser	4	4	4
	113	29-09-2011	CAST	North American Beaver lodge	1		
	114	29-09-2011	GRHA	Common Merganser	1		
	115	29-09-2011	SPFF	Lesser or Greater Scaup	1	1	1