Native Plants

Learn to identify native plants to be able to notice when non-native plants are introduced

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Native Plant Guides (Examples)

PhytoKeys 141: 1–330 (2020)
doi: 10.3897/phytokeys.141.48810
http://phytokeys.pensoft.net

MONOGRAPH

PhytoKeys

Vascular plants of Victoria Island (Northwest Territories and Nunavut, Canada): a specimen-based study of an Arctic flora

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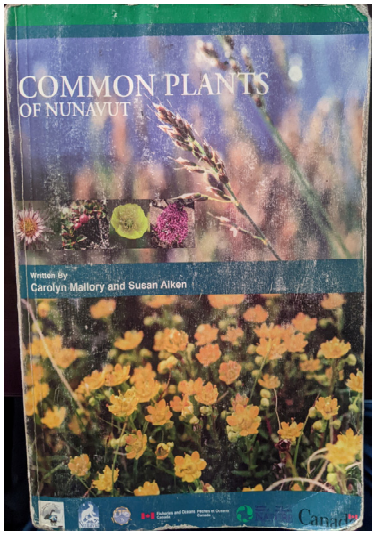
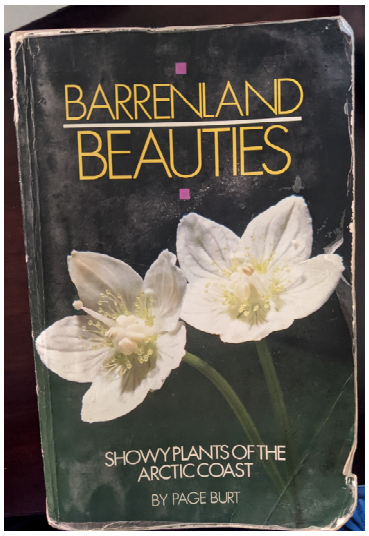
Abstract

Victoria Island in Canada's western Arctic is the eighth largest island in the world and the second largest in Canada. Here, we report the results of a floristic study of vascular plant diversity of Victoria Island. The study is based on a specimen-based dataset comprising 7031 unique collections from the island, including some 2870 new collections gathered between 2008 and 2019 by the authors and nearly 1000 specimens variously gathered by N. Polunin (in 1947), M. Oldenburg (1940s–1950s) and S. Edlund (1980s) that, until recently, were part of the unprocessed backlog of the National Herbarium of Canada and unavailable to researchers. Results are presented in an annotated checklist, including keys and distribution maps for all taxa, citation of specimens, comments on taxonomy, distribution and the history of documentation of taxa across the island, and photographs for a subset of taxa. The vascular plant flora of Victoria Island comprises 38 families, 106 genera, 272 species, and 17 additional taxa. Of the 289 taxa known on the island, 237 are recorded from the Northwest Territories portion of the island and 277 from the Nunavut part. Thirty-nine taxa are known on the island from a single collection, seven from two collections and three from three collections. Twenty-one taxa in eight families are newly recorded for the flora of Victoria Island: *Arnemia elatoi*, *Senecio lugens*, *Taraxacum scopulorum* (Asteraceae); *Crucihimalaya huntsfilda*, *Draba fladnizensis*, *D. juvenilis*, *D. pilosa*, *D. simmonsii* (Brassicaceae); *Carex higelowii* subsp. *higelowii*, *Eriophorum russeolum* subsp. *albidum* (Cyperaceae); *Anthoxanthum monticola* subsp. *monticola*, *Bromus pumpellianus*, *Deschampsia cespitosa* subsp. *cespitosa*, *D. sukatschewii*, *Festuca rubra* subsp. *rubra*, *Lolium perenne*, *Poa pratensis* subsp. *pratensis* (Poaceae); *Stuckenia filiformis* (Potamogetonaceae); *Potentilla x-prorsata* (Rosaceae); *Galium aparine* (Rubiaceae); and *Salix ovalifolia* var. *ovalifolia* (Salicaceae). Eight of these are new to the flora of the Canadian Arctic Archipelago: *Senecio lugens*, *Draba juvenilis*, *D. pilosa*,





Plant ID Key for region near Hope Bay: Vascular plants of Victoria Island (Northwest Territories and Nunavut, Canada): a specimen-based study of an Arctic flora (pensoft.net)

APPENDIX Z CARIBOU HEIGHT OF LAND MONITORING SOP

Hope Bay

Caribou Height of Land Monitoring

STANDARD OPERATING PROCEDURE

February 2023 Version 1.0

Scope of Work:	This SOP provides guidance for triggering and carrying out caribou height of land surveys	
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	Hannah Visty ERM Wildlife Biologist	Hannah.visty@erm.com 236-260-1880

1. INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Eagle) has committed to monitoring caribou near the Hope Bay mine site during times of increased caribou activity, such as migration periods. Monitoring will be undertaken as Height of Land (HOL) surveys to identify when and where caribou may be interacting with site activities and ensure mitigation measures are enacted.

Height of Land surveys are based on a traditional Inuit method of scanning the landscape from high points such as hills and bluffs. The monitoring locations and survey methods have been developed in consultation with the Hope Bay Inuit Environmental Advisory Committee (IEAC) and will be carried out by an Inuit representative from a local community (e.g., Cambridge Bay) and/or on-site technicians.

Hope Bay and the IEAC discussed HOL monitoring in December 2018 and identified a draft set of methods. Detailed methods were developed and discussed with the IEAC in December 2019, with a plan to conduct a site visit and test the methods in spring 2020. The Covid-19 pandemic prevented site visits during 2020 and 2021, holding up the program. During 2021, ERM biologists identified locations for hilltop monitoring which were presented to and discussed with the IEAC in December 2021.

During summer 2022, ERM biologists worked with Inuit technicians from Hope Bay to refine the list of potential HOL survey locations. In August 2022, the IEAC visited site and conducted a site tour. This tour included visiting the proposed sites and discussing methods for HOL surveys.

This SOP is the result of the consultation and feedback from the IEAC.

1.1 Objectives

The objectives of the HOL monitoring program at Hope Bay are to:

- Conduct caribou monitoring during periods of elevated caribou presence near Hope Bay, and
- Provide data on the presence and abundance of caribou near Hope Bay mine site, to guide mitigation.

1.2 Responsible Parties

The Hope Bay Environment team will be overall responsible for triggering and conducting the HOL surveys. The Environment team will work together with the Cambridge Bay Hunters and Trappers

Organization (HTO) to trigger and enact caribou HOL monitoring. The responsibilities of each party are described in Table 1.2-1.

Table 1.2-1. Responsible Parties for Caribou Height of Land Monitoring

Party	Responsibility
All on site personnel	Report caribou sightings to Environment Department.
On site Environmental Manager	Trigger caribou HOL monitoring by contacting the Cambridge Bay HTO.
Cambridge Bay HTO	Select a local Inuit representative for caribou HOL monitoring on site.
Inuit Monitor	Carry out HOL monitoring on site, record and provide data to Hope Bay Environment Department.
Hope Bay Environment Department / ERM	Conduct HOL monitoring with Inuit monitor, or in place of Inuit monitor if no one is available. Report caribou monitoring activities in the annual WMMP Report.
Inuit Environmental Advisory Committee (IEAC)	Provide feedback on the caribou HOL monitoring program for continuous improvement.

2. TRIGGERS FOR MONITORING

2.1 Monitoring Initiation

Caribou HOL monitoring will be triggered based on reported caribou sightings.

- All site personnel are provided training and guidance for reporting sightings of caribou and other wildlife as part of the Wildlife Incidental Sightings program, described in the Wildlife Mitigation and Monitoring Plan (WMMP).
- Reports of caribou on site, near work areas, or along Project roads are called in to the Environment Department on radio Channel 7. Sightings of caribou from further afield are either called in by radio or reported via paper slips available near the camp kitchen.

The onsite Environmental Manager will contact the Cambridge Bay HTO if 25 or more individual caribou are reported within 5 km of project activities (including all site facilities and Project roads) in a 24 hour period. Multiple reports of the same individual will be counted as one reported caribou.

Additionally, information provided by the HTO regarding caribou activity near Hope Bay may trigger monitoring (e.g., through local reports or caribou collar data available to the HTO).

- The Cambridge Bay HTO will identify an available local Inuit monitor to travel to Hope Bay site as soon as possible.
  - If an Inuit monitor cannot be resourced within one week of the monitoring trigger day, Hope Bay environment personnel will initiate monitoring for up to one additional week. If an Inuit monitor is still not available after two weeks, monitoring will be concluded if criteria for caribou abundance are met, described in Section 2.2.
- Note: additional site mitigations are triggered if 50+ female and calves are reported during calving season (June 5 to June 20), see WMMP for more details.

2.2 Monitoring Period and Discontinuation

Monitoring activities will be carried out for a minimum of six days (based on flight access to site occurring one day per week), with termination of monitoring based on reported caribou abundance. Monitoring will be continued for subsequent 6 day periods if:

- data from the Inuit monitor and/or incidental sightings total more than 25 individual caribou over a 24 hour period for at least 2 of 6 monitoring days, or
- data from the Inuit monitor and/or incidental sightings indicate a single group of more than 100 caribou are within five kilometres of site on any monitoring day, or
- input from the HTO indicates that monitoring should continue.

Continuation of the monitoring period will be carried out in 6 days blocks; for example if monitoring indicates caribou abundance remains high during the initial 6 day monitoring period, monitoring will continue for another 6 days, after which caribou abundance will be reassessed, and so forth.

3. HEIGHT OF LAND MONITORING PROTOCOL

3.1 Overview

Height of Land monitoring will be carried out by an Inuit monitor and a Hope Bay Environment team member at least twice per day during the monitoring period.

- Additional monitoring should be conducted if groups of caribou (e.g., > 10 individuals) are reported near site activities or roads.
- Daily surveys should be spaced out across a shift as much as possible (e.g., beginning and end of shift),
  - These surveys are separate from those conducted prior to blasting or other site activities which may cause disturbance for caribou. See the Quarry Management Plan for pre-blasting survey protocol.

3.2 Survey Locations

Three survey locations have been identified by an Inuit Hope Bay Environment team member, wildlife biologists and IEAC members as optimal HOL survey locations (Figure 3.2-1).

- Sites were chosen for good visibility across the broadest possible area, with consideration of site access; all sites are within 30 m of a road pullout.
- If any sites are inaccessible (e.g., due to snow conditions), surveys should be conducted from the road, in the location with the best visibility close to the site. The change in survey location should be noted in the data sheet comments (see Section 3.3 below).
- **HOL-1**: The pull out is at km 1 on Windy Road. The monitoring location is just east of the road at the small rocky peak (~30 m)
- **HOL-2**: The monitoring location is to the west of the road, on the cliffs above Windy Lake (~20 m)
- **HOL-3**: The monitoring location is at the top of the Madrid waste rock stockpile. Surveyors may need to communicate with work crews if trucks are actively working at the stockpile. Visibility is excellent in all directions if surveyors walk or drive around the perimeter at the top of the stockpile.

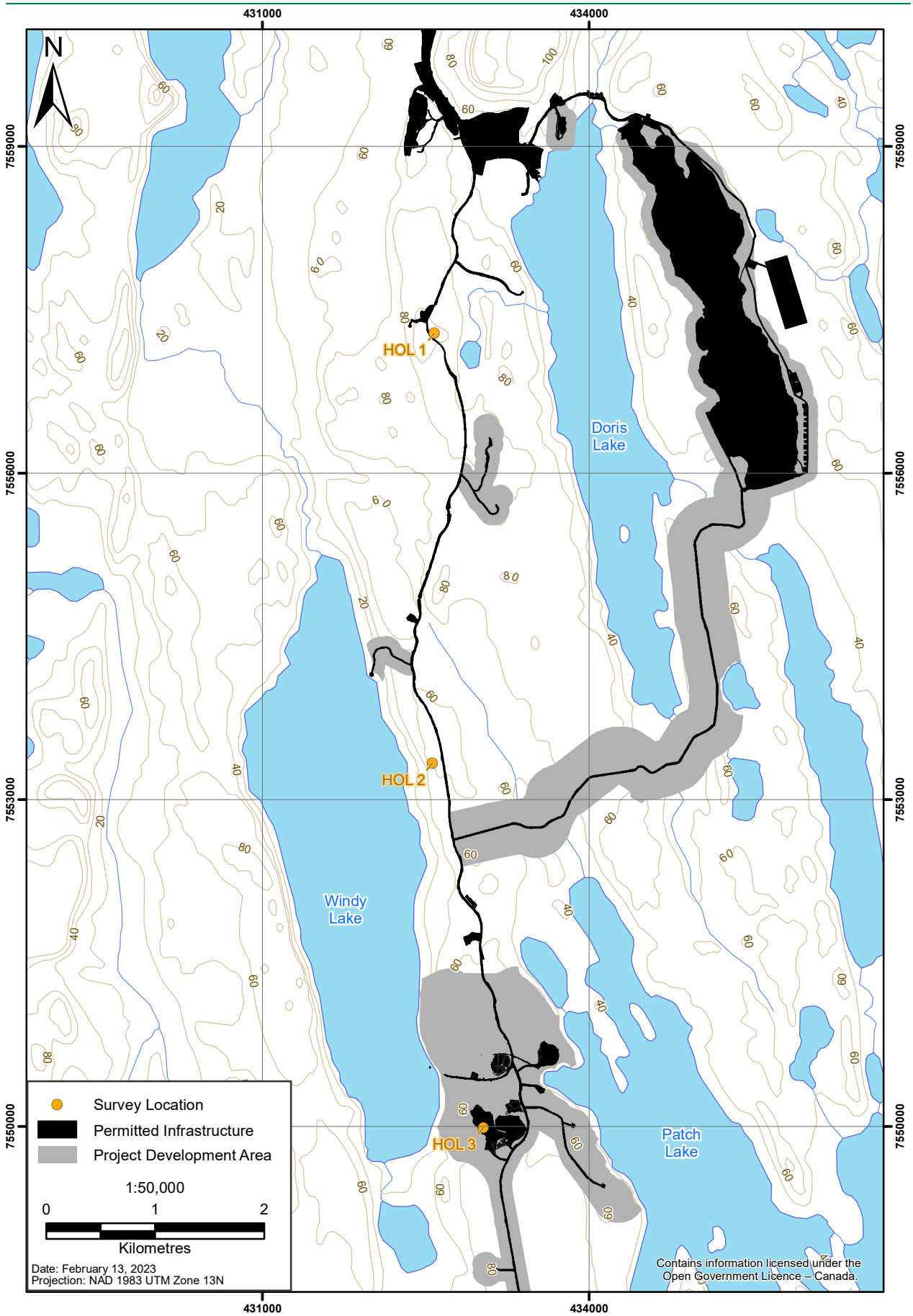


Figure 3.2-1: Height of Land Survey Locations

1.1 Equipment List

- A GPS unit with waypoints of survey locations
- Field data sheets (Attachment A), clipboard, pencils, or tablet with data form
- A watch or timer (e.g., smartphone timer)
- Binoculars and/or spotting scope
- Compass (or use compass function on GPS unit)
- Portable weather station (temperature and wind speed)
- Camera
- Rangefinder (optional but recommended)

3.3 Survey Methods

Each survey location should be visited for 10 minutes, with both observers scanning the landscape for caribou.

- Binoculars and a spotting scope (if possible) should be used to help monitors identify caribou from greater distances.
- Surveys should be carried out at each HOL site location, and at any additional non-standard locations if groups of caribou are reported in other locations (e.g., at Roberts Bay, near the TIA).

Data for each survey will be recorded onto field data sheets supplied in Attachment A. All locations surveyed at a given time will be included on one datasheet, with additional sheets as necessary to record all observations.

3.3.1 General Survey Data

Information about each survey period is recorded at the top of the data sheet (Appendix A), at the beginning and end of each survey:

- Survey date
- Field personnel (full names)
- Weather, recorded at the beginning of the first site surveyed and end of the last site surveyed:
  - Temperature, wind speed, rain/snow, and general weather conditions
- Site locations, start and end times
  - If site is *not* a standard HOL monitoring location: enter GPS coordinates, waypoint number, and site description (e.g., road name and distance marker)
- Photographs or video:
  - For any photographs taken, record the picture IDs in the "Photo Numbers and Site Notes" section
  - Write descriptions of any photos or video taken for specific reasons
- General notes about the survey or changes from the survey methods

Note: When in doubt, take pictures and make field notes explaining the situation. It is better to have more data/notes than not enough.

3.3.2 Caribou Observation Data

Each group of caribou will be counted together recorded as one line in the datasheet; individual caribou should be recorded as their own observation.

- **Site**: The site location where caribou were seen
- **Time**: Time of observation
- **Number Male:** Number of adult male caribou
- **Number Female**: Number of adult female caribou
- **Number Unknown:** Number of caribou of unknown sex
- **Number Young:** Number of young (calf or yearling) caribou
- **Direction:** Cardinal direction from the monitoring location to the caribou (e.g., N for north, or SE for south-east). Use a compass, or compass on a GPS.
- **Distance:** Estimated number of meters from caribou to the monitoring location; a *range finder* is helpful for determining estimates
- **Behaviour: G**eneral behaviour (resting, standing, feeding, alert, walking, trotting)
  - Additional behaviour notes such as males sparring, females nursing young, or insect response behaviour (twitching, stamping, head tossing) should be noted in the comments
  - For groups of caribou, select the behaviour which most of the group is exhibiting, or select multiple behaviours
- **Observation Notes:** Any additional comments about the observation or group

4. DATA PROCESSING AND REPORTING

Data will be checked for Quality Assurance/ Quality Control (QA/QC) after each survey period. All data will be compiled and stored long-term in a digital database.

Results and outcomes of surveys will be reported in the annual Wildlife Mitigation and Monitoring Plan (WMMP) Report. This includes:

- A summary of when and why caribou HOL monitoring was triggered, based on the triggers in this SOP;
- A summary of when and why caribou HOL monitoring was discontinued, based on the conditions listed in this SOP;
- Any management or mitigation actions undertaken, including outcomes and communications with stakeholders;
- Data summaries for general survey data (time and weather parameters) and caribou observations; and
- Full data provided in appendices.

Hope Bay – Caribou Height of Land Survey

Date _____ **Personnel** _____

Weather	Temp (°C)	Wind (km/hr)	Rain/Snow	General Weather (clouds, recent storms)
Start				
End				

General: _____

Sites Visited	Start Time	End Time	Photo Numbers and Site Notes (include coordinates and WPT number if non-standard site)
HOL-1			
HOL-2			
HOL-3			

Site ID (HOL-)	Time (HH:MM)	# Male	# Female	# Unkn	# Young	Direction (N/E/S/W)	Distance (m)	Behaviour*	Observation Notes

***Behaviour can include**: resting, standing, feeding, alert, walking, running/trotting, insect response (twitching, stamping, head tossing)

Hope Bay – Caribou Height of Land Survey

Example Data Entry

Date August 1 1990 **Personnel** H Visty, G Dumont Vandewinkel

Weather	Temp (°C)	Wind (km/hr)	Rain/Snow	General Weather (clouds, recent storms)
Start	21 C	10 km	None	partly cloudy
End	25 C	15 km	Light rain	storm incoming

General: warm day, few caribou reported near road looking to escape bugs.

Additional stop at TIA after one caribou reported nearby.

Sites Visited	Start Time	End Time	Photo Numbers and Site Notes (include coordinates and WPT number if non-standard site)
HOL-1	07:03	07:13	
HOL-2	07:21	07:31	
HOL-3	07:40	07:55	stayed longer to watch caribou
TIA	08:15	08:25	13W 0434173 E, 7559478 N. Waypoint TIA-HOL

Site ID (HOL-)	Time (HH:MM)	# Male	# Female	# Unkn	# Young	Direction (N/E/S/W)	Distance (m)	Behaviour*	Observation Notes
HOL-1	07:10	1	0	0	0	E	100m	twitching, walking	male standing near road, occasional twitching, walked away
HOL-2	07:31	0	0	0	0	-	-	-	No caribou seen
HOL-3	07:50	3	3	0	0	SW	500m	walking, feeding	small group headed roughly N but not travelling fast
TIA	08:15	1	0	0	0	S	250m	walking	
TIA	8:20	-	1	0	0	S	300m	feeding	female nearby male, both feeding/walking slowly away from TIA

***Behaviour can include**: resting, standing, feeding, alert, walking, running/trotting, insect response (twitching, stamping, head tossing)

APPENDIX AA CARIBOU IDENTIFICATION PRESENTATION 2023

Hope Bay Project

Caribou ID Guide

The business of sustainability

ERM

1

Caribou of Hope Bay

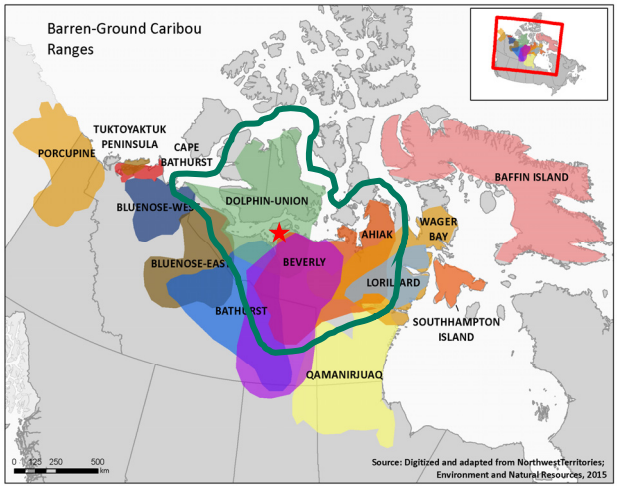
Dolphin-Union (Island caribou)

- SARA Status: Special Concern
- COSEWIC Status: Endangered
- Occur in the Hope Bay area during winter, and during spring and fall migration

Beverly and Ahiak (Mainland caribou)

- SARA Status: Not on Schedule 1
- COSEWIC Status: Threatened
- Occur in the Hope Bay area during summer, fall, and winter

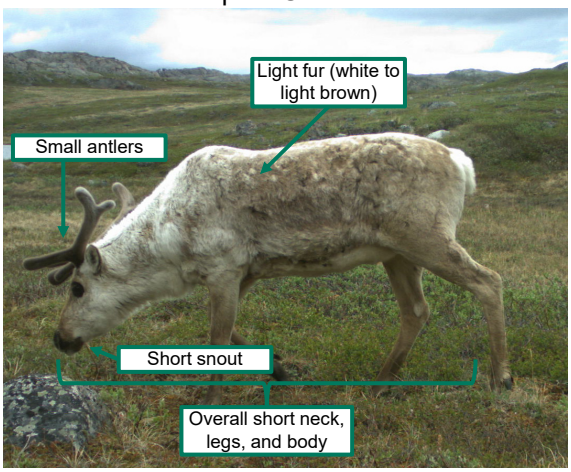
The Project area does not overlap any caribou calving or post-calving grounds, or any key migratory areas, summer, rutting, or winter areas.



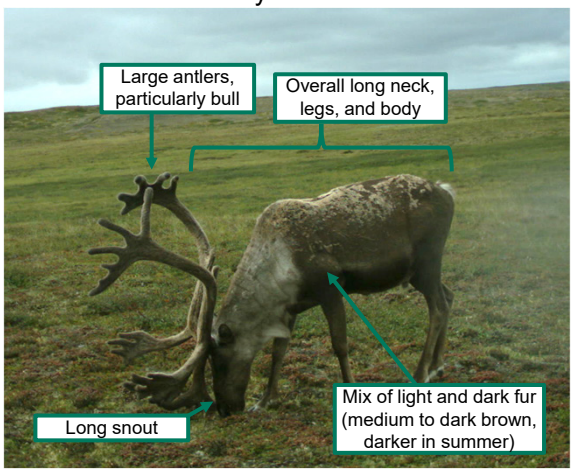
2

Dolphin-Union vs Beverly/Ahiak Characteristics

Dolphin-Union



Beverly and Ahiak



3

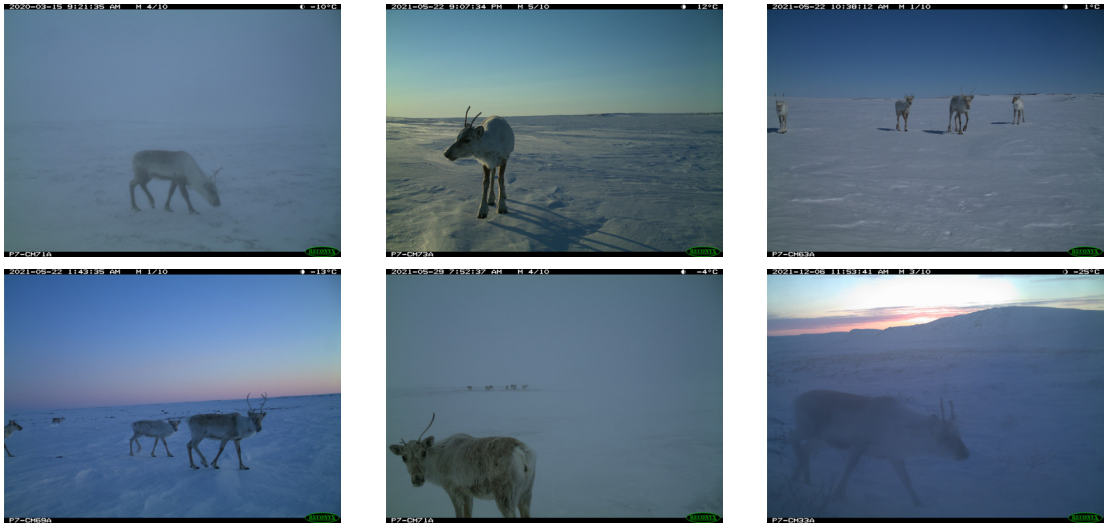
Examples of Dolphin-Union Caribou

Overall body and colour

4

Examples of Dolphin-Union Caribou

Overall body and colour



5

Examples of Dolphin-Union Caribou

Face structure

Narrower, more petite face and short snout

6

Examples of Mainland Caribou

Overall body and colour

7

Examples of Mainland Caribou

Face structure

Broader, longer, and wider face and snout

8

Unidentifiable Individuals

- Certain individuals may illustrate mixed characteristics (left photos)
- If the face shape and snout length cannot be seen, and the body is not fully visible, the individual cannot be easily identified (right photo)
- In cases where ID is uncertain, photos will be sent to the IEAC for identification assistance

APPENDIX AB MARINE MAMMAL MONITORING SOP

Hope Bay

Marine Mammal Monitoring

STANDARD OPERATING PROCEDURE

May 2023 Version A.1

Scope of Work:	This SOP provides guidance for triggering and carrying out marine mammal surveys within Roberts Bay	
Contacts:	Hannah Visty ERM Wildlife Biologist	Hannah.visty@erm.com 778-985-6200

1. INTRODUCTION AND OBJECTIVES

A Marine Mammal Monitoring Standard Operating Procedure (SOP) has been developed to guide monitoring for marine mammals in Roberts Bay. This SOP addresses Condition 33 of the Hope Bay Mine NIRB Project Certificate No. 009. The purpose of this SOP is to outline the monitoring procedures for Agnico Eagle to minimize potential effects to marine mammals during shipping activities.

Agnico Eagle Environment staff will conduct visual presence/absence surveys for marine mammals in Roberts Bay during the shipping season to monitor potential disturbance to marine mammals due to vessel noise. The findings of these surveys may be used to inform adaptive management measures to mitigate the impacts of project related noise, if required. The Hope Bay Environment team will be responsible for completing the marine mammal surveys.

2. MARINE MAMMAL MONITORING

The following protocol will be implemented by Environment staff assigned duties of a Marine Mammal Observer (MMO). Surveys for marine mammals in Roberts Bay will be completed by trained Environment staff during the shipping season. Training required, equipment, survey frequency, and methods are described in the following sections.

2.1 Training

Training for the assigned MMOs will include:

- Review the Marine Mammal Monitoring SOP (this document);
- Review the *Marine Mammal Sightings Form* (Attachment A) and be familiar with how to fill it out;
- Review marine mammal identification, including common species (primarily pinnipeds; see Attachments B and C); and
- Know how to estimate distances from shore to animals observed.

2.2 Equipment

Agnico Eagle Environment staff participating in wildlife monitoring will require the following to conduct surveys:

- A GPS unit
- Field data sheets, clipboard, pencils, or tablet with data form

- A watch or timer (e.g., smartphone timer)
- Binoculars
- Compass
- Portable weather station (temperature and wind speed)
- This SOP

2.3 Monitoring Periods and Frequency

Presence/absence of marine wildlife (primarily seals) with and without the presence of ships will be recorded in Roberts Bay using a Before-During-After study design, as described below.

2.3.1 Pre-Vessel Surveys (Before)

Marine mammal surveys will be conducted prior to a vessel arriving in Roberts Bay. In the four days immediately prior to the vessel's arrival in Roberts Bay, Environment staff will conduct one survey daily. Pre-vessel surveys will follow the same methods as anchored and post- vessel surveys in the Bay (Section 2.4).

2.3.2 Anchored Vessel Surveys (During)

Barges transport goods from the anchored vessel in Roberts Bay to the Hope Bay mine site over a period of one week or more. During this period when the vessel is anchored, Environment staff will be deployed for a minimum of one 30-minute surveys daily, following the same methods as pre- and post-vessel surveys (Section 2.4).

2.3.3 Post-Vessel Surveys (After)

Following the departure of a vessel from Roberts Bay Environment staff will conduct four days of surveys with one 30-minute survey daily. Post-vessel surveys will follow the same methods as pre- and anchored vessel surveys in the Bay.

2.4 Marine Mammal Monitoring Methods

Marine mammal shore-based surveys will be completed from the shore of Roberts Bay, in locations with the best visibility (Figure 1).

- There are two preferred locations for surveying: the jetty and the 730 building (Figure 1).
- Surveys will be conducted from an approved observation location with a minimum of one observer actively surveying for 30 minutes per survey (Figure 1).
- One survey per day will be conducted before, during, and after vessels are in the Bay, as described in Section 2.3.

General environmental and marine mammal sightings information will be collected and recorded by filling out the form in Attachment A. Data for each survey will be recorded on its own datasheet with all general survey information (including the date, time, observer, and weather) filled out regardless of whether marine mammals were detected or not.

Figure 1: Marine Mammal Observation Locations 2023

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2.4.1 Scanning Routine

The following outlines the proper scan routine for marine mammal surveys.

- Scan the water from the observation location outwards to the horizon with the naked eye and use binoculars to confirm possible sightings.
- Scans should occur across the visible area of Roberts Bay between shore and the horizon in a uniform fashion.
- Perform S and U scans of the Bay about every 20 seconds looking for signs of marine mammals (Figure 2).
- If a marine mammal is observed, record the sighting on the data sheet (Section 2.4.2).

- If a vessel is observed during the survey, this should be recorded in the data sheet by indicating the location, and if it is moving (including direction of travel) or anchored. Also record if the vessel leaves Roberts Bay or docks at the container yard during the scan.

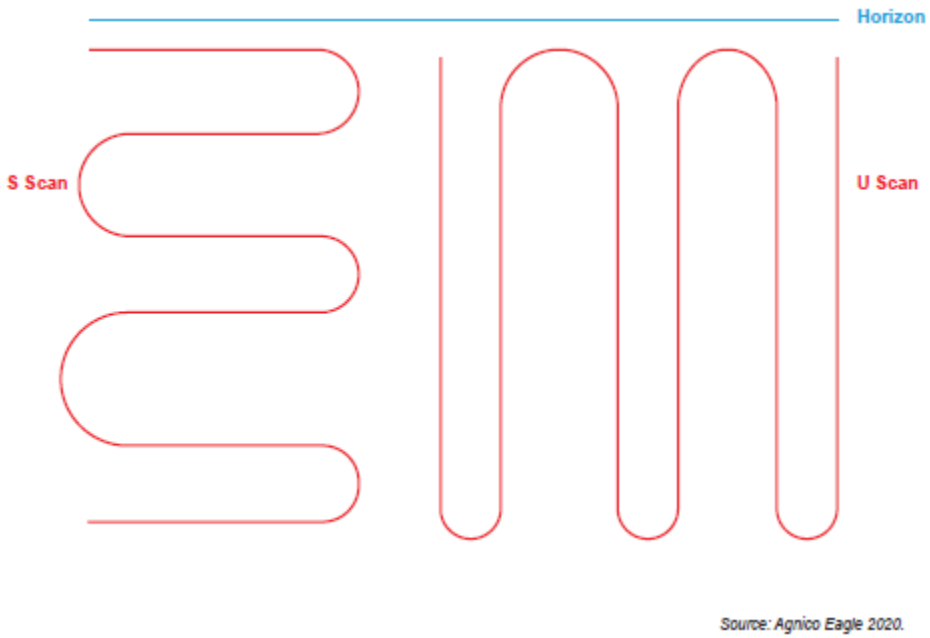


Figure 2: Illustration Showing S & U Scanning Techniques

2.4.2 Recording Observation Data

- If a marine mammal is observed during the survey, they will be recorded on the data sheet including:
  - Distance to animal from observation location and angle of sighting relative to observation location;
  - Species of marine mammal observed;
  - Number of marine mammal individuals;
  - Unknown species – if a species is unknown or if a blow is the only detection of the animal observed, then mark the sighting as unknown or record the general species group (e.g., whale, seal, walrus), and provide a description of what was seen (e.g., colour of animal, how many were observed, behaviour, dorsal fin present or absent, etc.); and
  - Behavior (e.g., travelling, feeding, other).
- Marine mammals in large groups that are close together should be marked as a single sighting.
- Sightings of pinnipeds (seals, walrus) hauled-out on land will be recorded with a description in the “Notes” section indicating the animal(s) were observed on land.
- If a marine mammal is counted twice or more in the sightings record, then a note of a re-sighting should be marked.

- When possible, photographs of marine mammal sightings will be taken and the photo name/number recorded alongside the sightings record(s). These photos must be stored along with the entered data, managed by Environment staff.
- Even if no marine mammals are observed during a survey period, the rest of the survey data sheet must be filled out with an indication that no animals were observed.
- The entire data sheet must be filled in (no blank cells).

2.4.3 Recording General Survey Data

Information about each survey period is recorded at the top of the data sheet (Attachment A), at the beginning and end of each survey:

- Survey date and location.
- Eye height of observer at observation point.
- Field personnel.
- General notes about the survey or changes from the survey methods.
- Weather, recorded at the beginning of each survey:
  - Cloud cover/precipitation, wind force and direction, visibility, sea state, wave height, and glare conditions.
- Start and end times.
- Number of vessels, vessel names and locations, and vessel activity in Roberts Bay.

Note: When in doubt make field notes explaining the situation. It is better to have more data/notes than not enough.

3. REPORTING

Information from marine mammal surveys will be included in the annual WMMP reports for Hope Bay. This information may also be used to inform mitigations and adaptive management within Roberts Bay.

ATTACHMENT A. ROBERTS BAY MARINE MAMMAL SURVEY DATA SHEET

Roberts Bay Marine Mammal Survey Data Sheet

General Information					
Date		Survey Location		Height of Eye (m)	
Observer Name(s)		Survey Comments			

Environmental Information					
Weather	Clear Partly Cloudy 100% Cloud Fog Rain Snow			Sea State (0-9)	
Beaufort Wind Force	0 1 2 3 4 5			Wave Height (m)	
Wind Direction (N/E/S/W)		Glare Conditions	None Slight Grey Bright	Visibility (km)	

Survey Information			
Time Start		Time End	

Vessel Information Summary					
Anchored Vessel Name				Anchored Vessel Location	
Moving Vessels Observed?	Yes / No	Number of Moving Vessels		Moving Vessel Location	

Time of Sighting	Species	Count	Distance to Sighting (m)	Angle of Sighting (deg.)	Age (Adult/ Young)	Sex (M/F/ UNK)	Re-sighting (Y/N)	Behaviour (Travel, Feeding, Other)	Behaviour changes in Response to Vessel? (Y/N)	Photo #s	Comments/ Notes (Description if Behaviour Change)

Roberts Bay Marine Mammal Survey Data Sheet

MARINE MAMMAL OBSERVATION DATA KEY

Height of Eye	Estimated height of observation platform + eye height of observer
Beaufort Wind Force	Beaufort scale *0 = sea smooth and mirror-like* *1 = scale-like ripple w/o foam crests* *2 = large wavelets (4-6 kts wind)* *3 = large wavelets, some crests starting to break (7-10 kts wind)* *4 = small waves, fairly frequent white foam crests (11-16 kts wind)* *5 = moderate waves, many whitecaps (17-21 kts wind)*
Visibility	Estimated distance able to see towards the horizon. Clear days are approx. 8 to 12 miles depending on height of eye
Group Size	Enter either exact number of animals or a range (Min & Max) and include your best estimate in comments
Angle of Sighting	Location of the animal estimated in degrees relative to the observer`s heading (Straight Ahead = 0, Right = 90, Left = -90)
Wind Direction	Location the wind is coming from estimated in degrees relative to the observer`s heading (Straight Ahead = 0, Right = 90, Left = -90)
Distance	Distance to the animal in meters
Comments	Include any other details of the observation that may be relevant (description of animal, behaviour, calves or pups, etc.). If more space is required, make notes on a separate comment sheet and correspond the two sheets using the Sighting Number. Include Photo # if photo taken.

COMMON WHALE ID GUIDE

Narwhal

Size: 4 - 5 m

Body: Small head, stocky body, short/round flippers, tusk

Dorsal Fin: No

Colour: Mottled black and white, grey or brownish

Beluga

Size: 4 - 5 m

Body: Stout body, small head, short, broad paddle-shaped flippers

Dorsal Fin: No

Colour: Adults white, calves brown/grey

Bowhead Whale

Size: up to 19 m

Body: Large and rotund

Dorsal Fin: No

Colour: Black/brown, white lower jaw

Blow: Bushy V-shaped

Fluke: Shows fluke when diving

Fin Whale

Size: up to 23m

Body: Streamlined and long

Dorsal Fin: hooked

Colour: Grey body, white lower jaw right-side only

Blow: Tall and straight

Fluke: Rarely shows fluke

Orca/ Killer Whale

Size: 7-9 m

Body: Long rounded body

Dorsal Fin: Tall dorsal fin

Colour: Black-and-white, saddle patch (grey area) behind dorsal fin, white underside

COMMON PINNIPED ID GUIDE

Walrus

Size: 2.5 - 3m

Body: large, blubbery, long tusks

Head: Large thick neck, dark mouth with whiskers

Colour: Dark brown

Harbour Seal

Size: 2m

Body: Medium size, spindle shaped body

Head: like dog, heart-shaped snout

Colour: Blue-grey with dark spots/speckles

Hooded Seal

Size: 2.5 m

Body: Large, robust

Head: Broad head short narrow snout, males of “hood” they inflate

Colour: Black head, silver/grey fur, dark patches

Harp Seal

Size: 1.5 - 2 m

Body: Medium size, robust

Head: Small head, pointy snout

Colour: Light grey, harp-shaped black patch on back, black face

Bearded Seal

Size: 2 - 2.5 m

Body: Large, robust

Head: Small head, short snout, long whiskers

Colour: Dark brown/grey with dark rings/spots

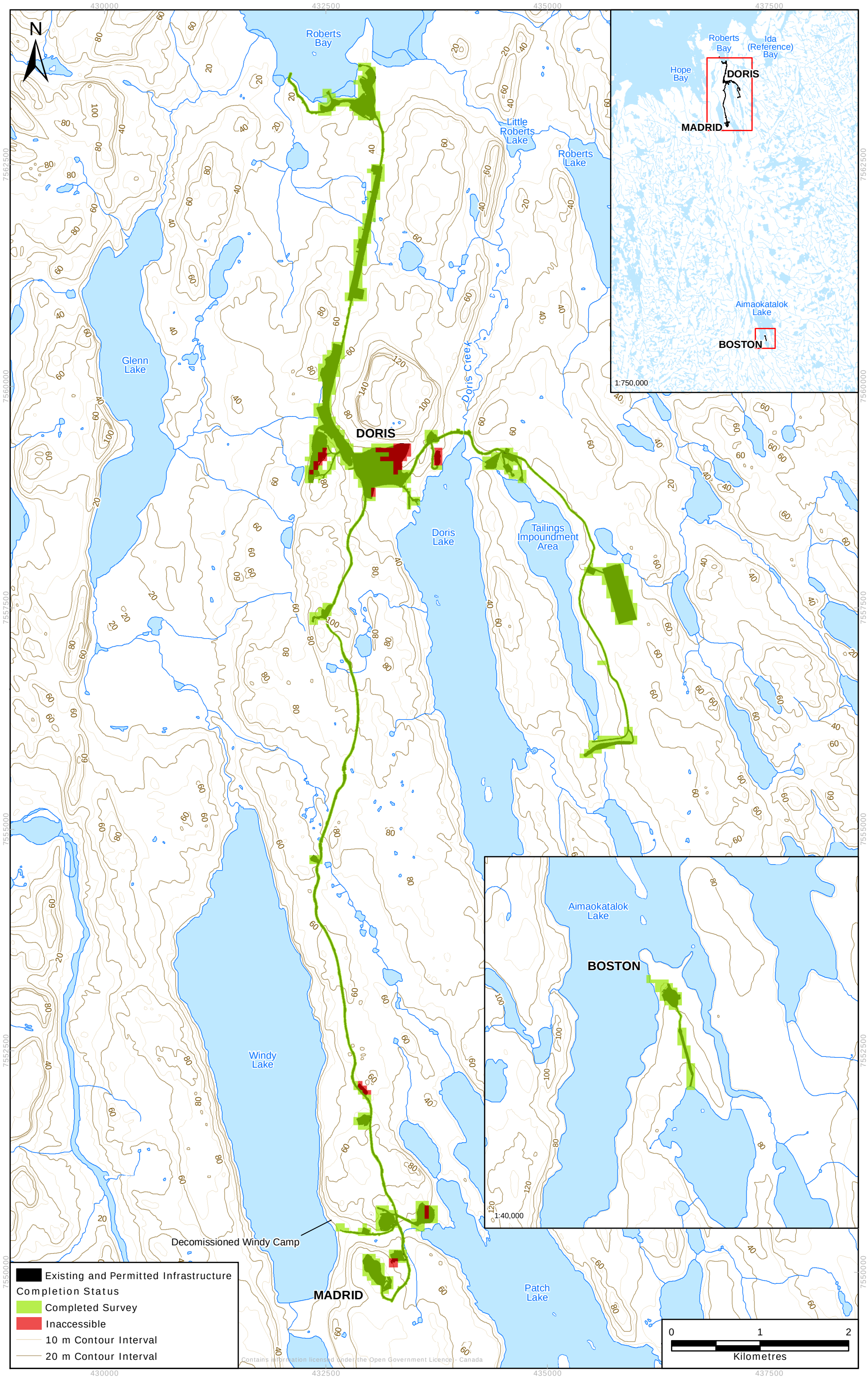
APPENDIX AC SUMMARY OF THE AT SEA VESSEL WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2023

APPENDIX AC: SUMMARY OF THE AT SEA VESSEL WILDLIFE SIGHTINGS LOG AND INCIDENTAL SIGHTINGS, 2023

Date	Time	Zone	Easting	Northing	Species	No. Individuals	Age	Sex	Behaviour	Mitigation Action	Comments
8/29/2023	12:21	15N	494947	8241920	Harbour Seal	1	Not recorded	UNK	Travel	N	
8/29/2023	12:32	15N	491870	8241900	Bearded Seal	2	Not recorded	UNK	Travel	N	
8/29/2023	12:36	15N	487885	8241829	Northern Fulmar	1	Not recorded	UNK	Flying	N	
8/29/2023	No observations										
8/29/2023	12:45	15N	484307	8238386	Northern Fulmar	2	Not recorded	UNK	Flying		
8/29/2023	12:45	15N	484307	8238386	Pomarine Jaeger	1	Not recorded	UNK	Flying		
8/29/2023	20:00	17N	542585	8210952	Northern Fulmar	2	Adult	UNK	Flying		
8/30/2023	8:25	16N	413189	8253439	Northern Fulmar	1	Not recorded	UNK	Flying	N	
8/30/2023	9:00	15N	577179	8254703	Black Guillemot	3	Not recorded	UNK	Rafting		
8/30/2023	9:00	15N	577179	8254703	Northern Fulmar	1	Adult	UNK	Flying		
8/30/2023	9:30	No Observations									
8/30/2023	17:00	15N	408344	8175418	Herring Gull	4	Not recorded	UNK	Flying		
8/30/2023	20:00	No Observations									
8/30/2023	20:30	No Observations									
8/30/2023	22:30	14N	599697	8043696	Northern Fulmar	5	Not recorded	Not recorded	Resting on ocean surface	N	
8/31/2023	20:00	14N	386350	7621643	Common Loon	15	Adult	UNK	Flying		
8/31/2023	20:00	14N	386350	7621643	Long Tail Duck	1	Adult	UNK	Rafting		
8/31/2023	21:05	13N	525580	7624760	Hooded Seal	1	Adult	UNK	travel		
8/31/2023	21:20	13N	512015	7630232	Hooded Seal	1	Adult	UNK	Travel		
8/31/2023	No observations										
8/31/2023	No observations										
8/31/2023	No observations										
8/31/2023	No observations										
9/2/2023	No observations										
9/2/2023	No observations										
9/3/2023	No observations										
9/3/2023	No observations										
9/4/2023	16:00	13N	381779	7489853	Duck (Common Loon)	Not recorded	Not recorded	UNK	Flying	N	
9/5/2023	No observations										
9/6/2023	no observations										
9/7/2023	No observations										
9/8/2023	13:10	13N	432281	7566060	Pomarine Jaeger	1	Not recorded	UNK	Flying		
9/9/2023	No observations										
9/10/2023	No Observations										
9/11/2023	No Observations										
9/12/2023	12:00	14N	398006	7656482	Canadian Geese	10	Not recorded	UNK	Flying		V-Formation
9/13/2023	18:00	15N	464583	8236650	Whale	1	Not recorded	UNK	Diving		Diving without tail outside the water, only back out of the water

APPENDIX AD INVASIVE PLANT SPECIES SURVEY GRID AND SURVEY LOCATIONS JULY 26 TO AUGUST 1,2023

APPENDIX AD INVASIVE PLANT SPECIES SURVEY GRID AND SURVEY LOCATIONS JULY 26 TO AUGUST 1, 2023



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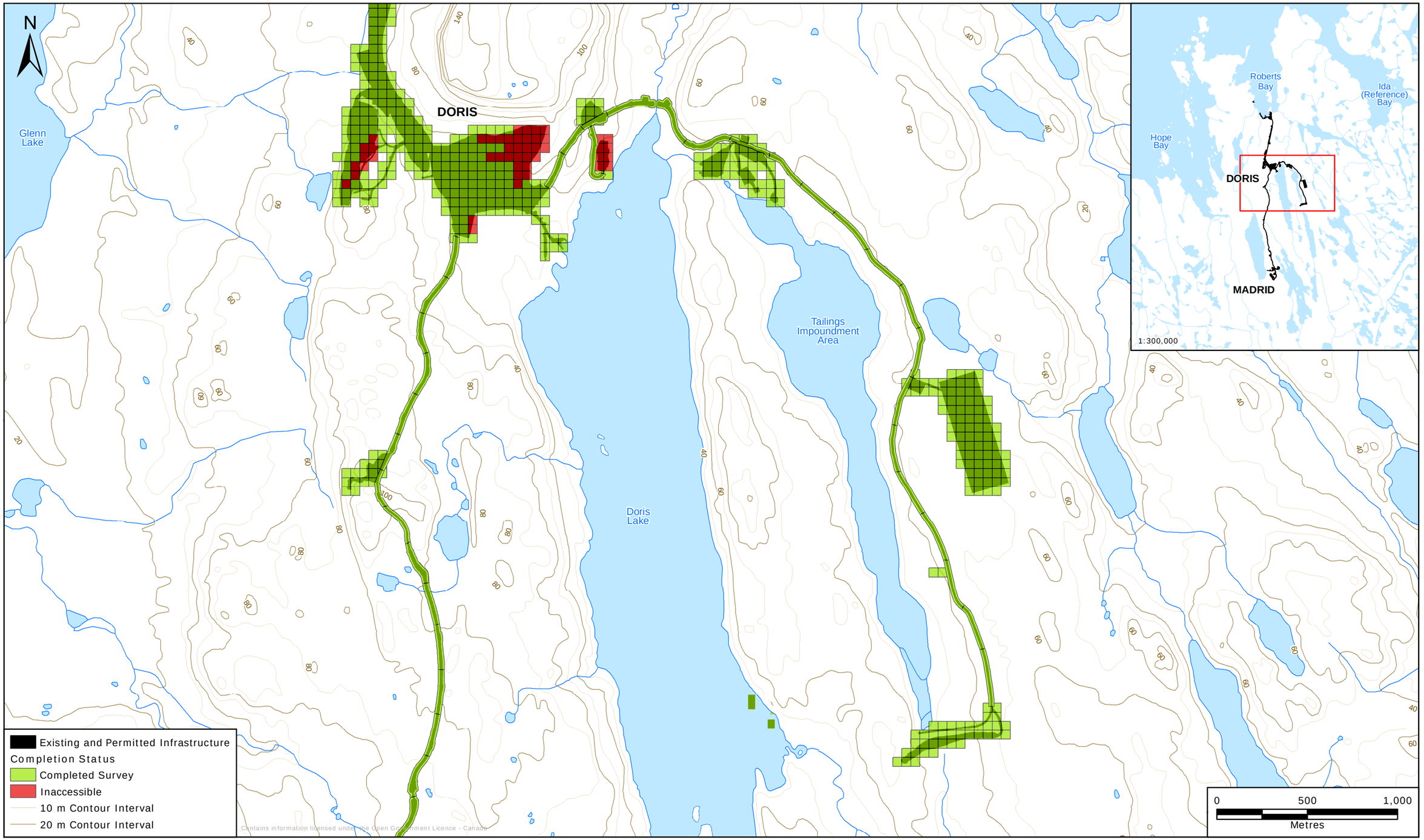

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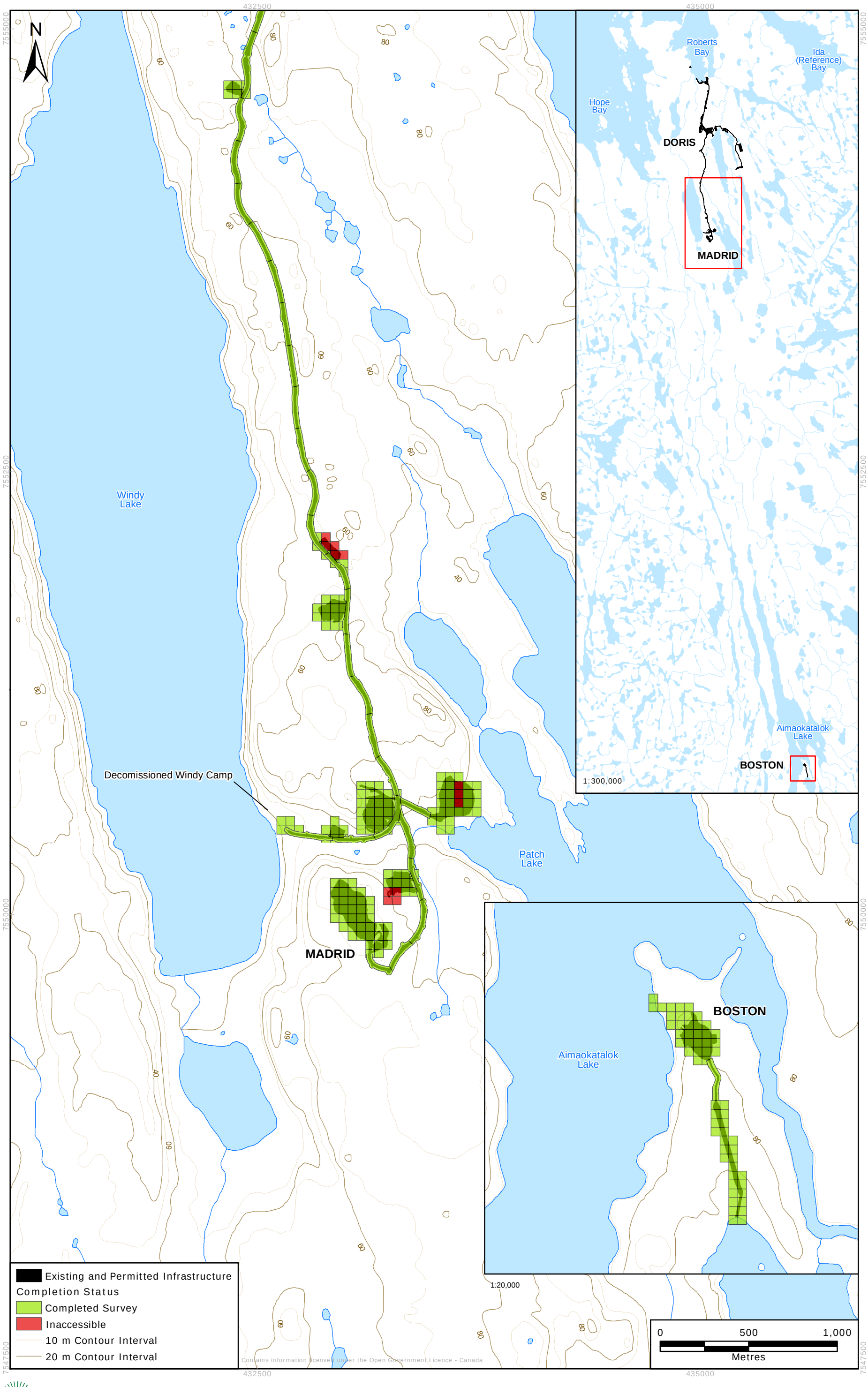

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