Progress Report on the Conservation and Recovery of Hairy Braya (*Braya pilosa*)

in the Northwest Territories (2017-2021)

SPECIES AT RISK (NWT) ACT

Progress Report and Review Series November 2021

For copies of the progress report, recovery strategy, or for additional information on Northwest Territories (NWT) species at risk, please visit the NWT Species at Risk website: www.nwtspeciesatrisk.ca.

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Cover illustration: Jim G. Harris.

What is the *Species at Risk (NWT) Act*?
The *Species at Risk (NWT) Act* (the Act) provides a process to identify, protect, and recover species at risk in the NWT. The Act applies to any wild animal, plant, or other species for which the Government of the Northwest Territories has management authority. It applies everywhere in the NWT, on both public and private lands, including private lands owned under a land claims agreement.

What is the Conference of Management Authorities?
The Conference of Management Authorities (CMA) was established under the Act and is made up of the wildlife co-management boards and governments in the NWT that share responsibility for the conservation and recovery of species at risk in the NWT (referred to as 'Management Authorities'). The purpose of the CMA is to build consensus among Management Authorities on the conservation of species at risk and to provide direction, coordination, and leadership with respect to the assessment, listing, conservation and recovery of species at risk while respecting the roles and responsibilities of Management Authorities under land claim and self-government agreements. The CMA develops consensus agreements on listing species at risk, conservation measures, management strategies and recovery plans. Only Management Authorities that have jurisdiction for a species are involved in making decisions.

What is a Threatened species?
Under the Act, a Threatened species is a species that is likely to become Endangered in the NWT if nothing is done to reverse the factors leading to its extirpation or extinction.

What is a recovery strategy?
Under the Act, a recovery strategy is a document that recommends objectives for the conservation and recovery of a Threatened species. It also recommends approaches to achieve those objectives. It includes a description of threats and positive influences to the species and its habitat. Under the Act, a recovery strategy must be completed for Threatened species within two years of the species being added to the NWT List of Species at Risk.

What is a progress report?
Under the Act, a progress report is required every five years, or sooner, to report on the actions undertaken to implement a management plan or recovery strategy and, on the progress made towards meeting its objectives.

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PROGRESS REPORT

1. INTRODUCTION

This document is a report on progress towards the conservation and recovery of Hairy Braya (*Braya pilosa*) in the Northwest Territories (NWT) from 2017 to 2021. This report meets the legislative requirement for a progress report under the *Species at Risk (NWT) Act*.

In 2012, the NWT Species at Risk Committee (SARC) completed a report on the status of Hairy Braya in the NWT and assessed the species as Threatened in the NWT (SARC 2012). In 2014, Hairy Braya was listed as Threatened in the NWT. The Recovery Strategy for Hairy Braya (*Braya pilosa*) in the Northwest Territories was completed by the Conference of Management Authorities (CMA) in February 2016 (CMA 2015).

The purpose of a recovery strategy is to provide an action-oriented planning tool that identifies how the conservation and recovery of Hairy Braya can be accomplished. It is a tool to assist the Management Authorities in deciding what actions to take, how to prioritize work, and how to allocate resources.

This progress report highlights the actions taken to implement the recovery strategy and progress made towards meeting objectives.

The CMA finalized an agreement to implement the recovery strategy for Hairy Braya on November 25, 2016. The implementation agreement outlines the actions management authorities intend to take to implement the recovery strategy.

Under subsection 73(1) of the *Species at Risk (NWT) Act*, the CMA must submit a progress report every five years, or sooner if so required by a management plan or recovery strategy, on the actions undertaken to implement a management plan or recovery strategy and on the progress made towards meeting objectives.

Section 74 of the *Species at Risk (NWT) Act* also states that the CMA shall review a management plan or recovery strategy every five years. A review of the recovery strategy for Hairy Braya took place on March 11, 2021, and the findings are summarized in this document. The purpose of this review, as determined by the Conference of Management Authorities, is to identify whether the recovery strategy continues to meet the needs of Management Authorities to achieve the conservation and recovery goal for the species.

In 2013, the Committee on the Status of Endangered Wildlife in Canada (COSEWIC) completed a report on the status of Hairy Braya in Canada and assessed the species as Endangered in Canada (COSEWIC 2013). The Hairy Braya was listed as Endangered under the federal *Species at Risk Act* (SARA) in 2018. A proposed federal recovery strategy was developed and posted on the SARA registry for public comment in 2021 (ECCC 2021). The proposed strategy consists of an adoption of the NWT recovery strategy plus a federal addition to complete the SARA requirements.

2. MANAGEMENT AUTHORITIES FOR HAIRY BRAYA

Success in the conservation and recovery of this species depends on the commitment and cooperation of many different groups involved in implementing the directions set out in the recovery strategy. The Management Authorities that share responsibility for the conservation and recovery of Hairy Braya in the NWT are:

- Wildlife Management Advisory Council (NWT)
- Government of the Northwest Territories

The Inuvialuit Regional Corporation (IRC) is a partner in management since it owns the land where Hairy Braya is found.

Environment and Climate Change Canada (ECCC) is responsible for implementing the provisions of the federal *Species at Risk Act*. For Hairy Braya, listed in 2018 as an Endangered species, this includes the identification and protection of critical habitat. Management of Hairy Braya remains a territorial lead, but ECCC cooperates in implementation as outlined in the *Accord for the Protection of Species at Risk*.

Further information on these Management Authorities can be found in Appendix A: Planning Partners.

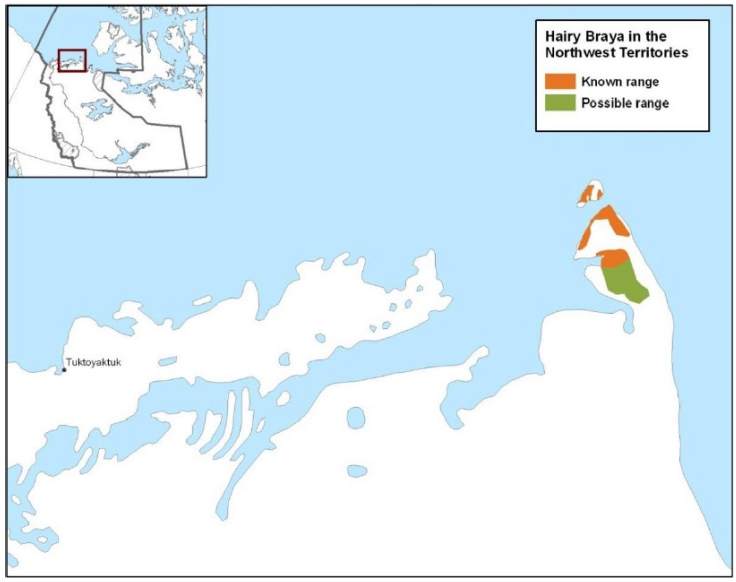
3. SPECIES INFORMATION

Common name in English: Hairy Braya
Name(s) in other languages: Braya poilu (French)
Scientific name: *Braya pilosa*

Hairy Braya is a perennial plant belonging to the mustard family (Brassicaceae). It is typically 4.5 - 12.0 cm tall.

Hairy Braya stems grow from a tuft of leaves at the base of the plant and have white flowers arranged in dense clusters. It can be distinguished from other *Braya* species by its large flowers and the shape of its fruits (almost round with very long "styles" [elongated reproductive structures]).

This plant is endemic to the NWT. It is located on the northwestern part of Cape Bathurst peninsula and on the nearby Baillie Islands (Harris 2004).



4. HOW THE SPECIES IS DOING

It is estimated there are about 15,000 to 20,000 Hairy Braya plants in the Northwest Territories, the only place in the world where the species occurs. Along the coast, Hairy Braya numbers are declining because of rapid coastal erosion and salt spray. However, most Hairy Braya plants are found in more stable habitats inland or along protected inlets.

The population survey conducted in 2011 (Harris 2011), reflected in the SARC status report and the recovery strategy, is still the most recent survey of the Hairy Braya population. The recovery strategy recommends surveying the distribution and abundance of Hairy Braya every 10 years, or more frequently if possible. A population survey was planned for the summer of 2020. However, due to travel restrictions associated with the COVID-19 pandemic, this fieldwork has been postponed.

One Hairy Braya subpopulation on the northwest coast of Cape Bathurst was re-visited in 2015 as part of a biodiversity inventory. The coast had eroded about 100 m inland, and the number of Hairy Braya plants at the site was much less than in 2011.

While human-caused habitat disturbance is currently not considered to be a major threat to Hairy Braya, existing community conservation priorities are reflected in the Hairy Braya recovery strategy. The Tuktoyaktuk Community Conservation Plan (TCCP 2016) recommends the Cape Bathurst peninsula "be managed so as to eliminate, to the greatest extent possible, potential damage and disruption." Although this designation is intended to protect the Cape Bathurst barren-ground caribou herd, it protects all the Hairy Braya's mainland habitat as well.

5. CONSERVATION AND RECOVERY

Conservation and Recovery Goal

The conservation and recovery goal in the recovery strategy is to **ensure survival of Hairy Braya (*Braya pilosa*) in the wild for at least the next 100 years**.

Since Hairy Braya habitat is changing rapidly (through erosion of the Cape Bathurst peninsula and Baillie Islands), it may not be feasible to maintain Hairy Braya throughout its entire historic range forever. The continued existence of some Hairy Braya plants in the wild over at least the next 100 years is believed to be an achievable target.

5.1. Conservation and Recovery Objectives

The recovery strategy recommended the following objectives to meet the conservation and recovery goal for the Hairy Braya:

1. **Secure** future existence of Hairy Braya seeds/plants.
2. **Monitor** Hairy Braya population, range and habitat.
3. **Obtain information** to inform sound management decisions.
4. **Minimize detrimental effects** of human activities on Hairy Braya and its habitat.
5. **Adaptively co-manage** Hairy Braya in accordance with the best available information.

5.2. Approaches to Achieve Objectives

Thirteen approaches are recommended in the recovery strategy to achieve these five objectives (Table 1). Each is assigned a relative priority (critical, necessary or beneficial) and relative timeframe (short-term, long-term or ongoing).

> **Relative priority** can be *critical*, *necessary* or *beneficial*. Critical approaches are the highest priority for the conservation of Hairy Braya and should be implemented sooner rather than later. Necessary approaches are important to implement for the conservation of Hairy Braya but with less urgency than critical. Beneficial approaches help to achieve management goals but are less important to the conservation of the species compared to critical or necessary.
>
> **Relative timeframe** can be *short-term*, *long-term* or *ongoing*. Short-term approaches should be completed within five years and long-term approaches require more than five years to complete. Ongoing approaches are actions carried out repeatedly on a systematic basis.

6. PROGRESS TOWARDS CONSERVATION AND RECOVERY 2017-2021

6.1. Highlights

Progress has been made towards implementing all objectives identified for action in 2017-2021, including:

- Completion of genome sequencing and submission of genetic information to the Canadian Museum of Nature and the Inuvialuit Regional Corporation archive
- Ongoing monitoring of shoreline erosion through analysis of Landsat imagery
- The Tuktoyaktuk Community Conservation Plan specifies a high level of conservation priority for the Cape Bathurst peninsula because of its importance to barren-ground caribou
- Development of a fact sheet on Hairy Braya highlighting the importance of biodiversity conservation
- Annual review of progress on recovery actions, as well as current information on population and habitat

How will we know if the recovery strategy is working?

- **Status of Hairy Braya has not become further at risk when reassessed by the NWT Species at Risk Committee (SARC).**
- **Rate of habitat loss has not significantly increased.**
- **Population trends are stable or increasing.**

6.2.Progress overview

Table 1. Progress on recommended approaches for conservation and recovery of Hairy Braya in the NWT

Done	In progress	Not started

Goal: Ensure survival of Hairy Braya in the wild for at least the next 100 years				
Objective	**Management approaches** (Lead agency)	**Relative Priority/ Time frame**	**Performance measure**	**Progress**
Objective #1: Secure future existence of Hairy Braya seeds/ plants.	**1.1:** Deposit a portion of the existing seed collection for storage and propagation in a seed bank. (GNWT)	Critical/ Short-term	Seeds are collected and deposited in a secure seed bank.	• Seeds germinated by Dr. Jim Harris. Germination rates were low, likely because many of the seeds were immature when collected. • Seeds that did germinate grew into healthy plants but failed to flower or set seed. Future attempts should use a more controlled environment to mimic natural growth conditions. • Next survey will be planned for late summer to collect mature seeds.
	1.2: Gather samples from throughout the Hairy Braya's distribution for seed bank, to cover the range of genetic diversity. (Not identified)	Necessary/ Long-term	Seeds are collected and deposited in a secure seed bank.	• Not identified for implementation in 2017-2021 • Seed samples to be collected from various locations throughout the Hairy Braya's distribution as part of the next survey.
	1.3: Conduct genome sequencing for Hairy Braya and submit to gene bank to conserve genetic information. (GNWT)	Beneficial/ Short-term	Genome is sequenced and submitted to gene bank.	• Genome sequencing completed and genetic information submitted to the Canadian Museum of Nature for storage. A copy was also sent to the Inuvialuit Regional Corporation Records Management for its archive. • Canadian Museum of Nature to upload the information to GenBank, a database of publicly available DNA sequences.
Objective #2: Monitor Hairy Braya population, range, and habitat.	**2.1:** Survey the distribution and abundance of Hairy Braya every 10 years and investigate possible range further south on the Cape Bathurst peninsula to determine if Hairy Braya is found there. (GNWT)	Necessary/ Ongoing	Survey occurs every 10 years. Possible range is investigated.	• Population survey scheduled for August 2020 was postponed due to the COVID-19 pandemic. Survey has been tentatively rescheduled for August 2022. • As a result of the delay to the survey, the SARC re-assessment of Hairy Braya was postponed to 2024 and the NWT listing was extended to 2026. • In 2015, Bruce Bennett visited some sites on the northeastern side of Cape Bathurst Peninsula as part of a biodiversity inventory and did not find any Hairy Braya there. This information can be used to refine the range map.

Goal: Ensure survival of Hairy Braya in the wild for at least the next 100 years				
Objective	**Management approaches** (Lead agency)	**Relative Priority/ Time frame**	**Performance measure**	**Progress**
	2.2: Monitor shoreline erosion in Hairy Braya range using satellite imagery. (GNWT)	Necessary/ Ongoing	Shoreline erosion rates are monitored.	• GNWT Geomatics analyzed Landsat imagery at 5-year intervals up to 2015 to re-estimate coastal erosion rates. Interpretation of results is underway. • Additional related research: o The **CanCoast project** (Manson *et al.* 2019) mapped coastal sensitivity to change, showing that the coast of the Beaufort Sea is highly sensitive to climate change and sea-level rise impacts such as erosion and flooding. o **Canada's Changing Climate Report** (Chapter 7, Greenan *et al.* 2018) contains information on changes to the Beaufort Sea due to climate change such as sea level rise, wave action and storm surges, as well as coastline subsidence due to glacial isostatic adjustment.
	2.3: Monitor storm surges in Hairy Braya range. (Not identified)	Necessary/ Ongoing	Occurrence of storm surges is monitored.	• Not identified for implementation in 2017-2021
Objective #3: Obtain information to inform sound management decisions.	**3.1:** Investigate the reported possible existence of Hairy Braya in Russia. (Not identified)	Beneficial/ Short-term	Research reports, maps and other information products are produced and shared with decision-makers and communities.	• Not identified for implementation in 2017-2021 • Photos of the plants were obtained from a Russian herbarium and studied by Dr. Jim Harris. Some were clearly not Hairy Braya, but for others it was not possible to confirm the species from the images. Bruce Bennett is continuing correspondence with botanists in Russia with the objective of sharing genetic material or a specimen to compare the Russian plants with Hairy Braya.
	3.2: Study the relationship between Hairy Braya and other related species (smooth braya and Greenland braya) to better understand whether hybridization is a threat. (Not identified)	Beneficial/ Long-term	Research reports, maps and other information products are produced and shared with decision-makers and communities.	• Not identified for implementation in 2017-2021

Goal: Ensure survival of Hairy Braya in the wild for at least the next 100 years				
Objective	**Management approaches** (Lead agency)	**Relative Priority/ Time frame**	**Performance measure**	**Progress**
	3.3: Analyze the frequency of storm surges in Hairy Braya range. (Not identified)	Necessary/ Long-term	Research reports, maps and other information products are produced and shared with decision-makers and communities.	• Not identified for implementation in 2017-2021 • Vermaire *et al.* (2013) analyzed storm surges in the Mackenzie Delta.
Objective #4: Minimize detrimental effects of human activities on Hairy Braya and its habitat.	**4.1:** Work with the Inuvialuit Land Administration to ensure that human impacts remain minimal, i.e. avoid any increase in human-caused habitat disturbance. (GNWT)	Critical/ Short-term and Ongoing	Agreement with the Inuvialuit Land Administration on habitat management.	• Conservation priorities for Cape Bathurst peninsula are formalized in the Tuktoyaktuk Community Conservation Plan (2016). Because the peninsula is a core calving and post-calving ground for the Cape Bathurst barren-ground caribou herd, the plan states that it is an area "where cultural or renewable resources are of particular significance and sensitivity throughout the year", and recommends that "this area shall be managed so as to eliminate, to the greatest extent possible, potential damage and disruption." • Development activities in Hairy Braya range are screened by the Environmental Impact Screening Committee which seeks input from local Hunters and Trappers Committees before issuing decisions. Any development activities would also require a permit from the Inuvialuit Land Administration. • In Spring 2020, the GNWT delivered an update on Hairy Braya research and monitoring to the Inuvialuit Regional Corporation. • The Government of Canada included identification of Critical Habitat under the federal *Species at Risk Act* as part of its proposed federal recovery strategy for Hairy Braya.
	4.2: Work with local Hunters and Trappers Committees and Inuvialuit Game Council to educate about Hairy Braya and the importance of minimizing human impacts. (Not identified)	Necessary/ Ongoing	There is an increase in awareness of Hairy Braya and the importance of minimizing human impacts.	• Not identified for implementation in 2017-2021 • Fact sheet on Hairy Braya developed to highlight the importance of biodiversity conservation: Why we should care about Hairy Braya (SARS 2019) • Conservation scientists are considering nominating the Hairy Braya range on Cape Bathurst as a Key Biodiversity Area (site contributes significantly to the global persistence of biodiversity, based on IUCN criteria) (KBA Canada 2021).

Goal: Ensure survival of Hairy Braya in the wild for at least the next 100 years				
Objective	**Management approaches** (Lead agency)	**Relative Priority/ Time frame**	**Performance measure**	**Progress**
Objective #5: Adaptively co-manage Hairy Braya in accordance with the best available information.	**5.1:** WMAC (NWT) and GNWT to annually review progress on recovery actions, as well as current information on population and habitat. (GNWT, WMAC (NWT))	Critical/ Ongoing	Co-management bodies annually review information and progress on Hairy Braya recovery.	• WMAC (NWT) and GNWT reviewed progress on recovery actions and current information on population and habitat annually (February) at CMA meetings.
	5.2: If necessary, consider more aggressive recovery actions such as transplantation or habitat modification. (Not identified)	Critical/Long-term	Co-management bodies make management recommendations in response to changes in Hairy Braya numbers or range.	• Not identified for implementation in 2017-2021

7. RECOVERY STRATEGY REVIEW

The CMA is required under the *Species at Risk (NWT) Act* to review a management plan or recovery strategy every five years. The first review of the recovery strategy for Hairy Braya took place on March 11, 2021.

The review determined that the *Recovery Strategy for the Hairy Braya (*Braya Pilosa*) in the Northwest Territories* continues to meet the needs of Management Authorities to achieve the conservation and recovery goal for the species. As there is no indication that the threats facing Hairy Braya have been reduced, there is a continued need for the recovery strategy to provide guidance for management.

The review looked at the goal and objectives of the recovery strategy and determined they are still appropriate for the conservation and recovery of Hairy Braya in the NWT. Management Authorities also discussed approaches that could be revised if or when the recovery strategy is amended. Ideas for additional potential conservation actions that were noted during the review include:

- Monitor changes to the abundance and composition of tundra vegetation over the long term to determine impacts from shrubification.
- Gather information on the ecological needs of Hairy Braya including soil conditions and relationship to caribou.
- Engage with land users and visitors of Baillie Island and Cape Bathurst to record observations of Hairy Braya and to contribute to data monitoring and collection through citizen science (e.g. iNaturalist or by reporting sightings to WildlifeObs@gov.nt.ca).
- Provide communities with a mounted framed specimen or high-resolution image to help identify Hairy Braya.

8. NEXT STEPS

Progress has been made towards securing the future existence of Hairy Braya, monitoring range and habitat, and minimizing detrimental effects of human activities on Hairy Braya and its habitat. However, more work is required to survey the distribution and abundance of Hairy Braya and to fill information gaps so that Hairy Braya management can be based on the best possible information. Additionally, more work needs to be done to ensure some Hairy Braya seeds and/or plants are secured in a safe location for the future.

It is expected that some of these activities, including fieldwork to conduct surveys and gather seed samples for storage, may be delayed by travel restrictions and other measures to reduce the spread of COVID-19.

The recovery strategy for Hairy Braya will continue to guide conservation and recovery of the species and will be updated as needed. The next progress report on its implementation is due in 2026.

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APPENDIX A – PLANNING PARTNERS

This section describes the groups and organizations that were involved in the development of the Hairy Braya recovery strategy.

Wildlife Management Advisory Council (NWT)

The Wildlife Management Advisory Council (NWT) advises governments on wildlife policy, management, regulation, and administration of wildlife, habitat, and harvesting in the NWT portion of the Inuvialuit Settlement Region (*Inuvialuit Final Agreement*, section 14). The Wildlife Management Advisory Council (NWT) works collaboratively with the Inuvialuit Game Council, hunters and trappers committees, and government in research, monitoring, and management of wildlife and habitat. The Wildlife Management Advisory Council (NWT) consults regularly with the Inuvialuit Game Council and hunters and trappers committees, and these groups assist the Council in carrying out its functions, upon request.

Government of the Northwest Territories

The Government of the Northwest Territories (GNWT), represented by the Minister of Environment and Natural Resources (ENR), has ultimate responsibility for the conservation and management of wildlife, wildlife habitat, and forest resources in the NWT, subject to land claims and self-government agreements. It is the Minister of ENR's ultimate responsibility to prepare and complete management plans and recovery strategies under the *Species at Risk (NWT) Act*. Other GNWT departments also have responsibilities, including for land management, resources, communities, public infrastructure, and economic development. ENR engages with other GNWT departments on species at risk issues through the Inter-departmental Species at Risk Committee, inter-departmental committees of Directors and Deputy Ministers, and Executive Council.

Government of Canada

The Government of Canada has ultimate responsibility for the management of migratory birds (as described in the *Migratory Birds Convention Act*, 1994), fish, marine mammals, and other aquatic species (as described in the *Fisheries Act*). It also has responsibilities for the implementation of the federal *Species at Risk Act*, including enforcement of the general prohibitions and critical habitat prohibitions where listed species occur on federal lands that belong to her Majesty, in Right of Canada, or under the direct authority of the Minister of the Environment (national wildlife areas and migratory bird sanctuaries) and the Minister responsible for the Parks Canada Agency (national parks, national park reserves, and national historic sites).