Progress Report on the Management of Amphibians

in the Northwest Territories (2017-2021)

SPECIES AT RISK (NWT) ACT

Progress Report and Review Series 2022

For copies of the progress report, management plan, 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 (left to right):
Northern leopard frog, credit: Leslie Bol
Wood frog, credit: Danna Schock
Western toad, credit: Floyd Bertrand
Canadian toad, credit: Danna Schock
Boreal chorus frog, credit: Danna Schock
Long-toed salamander, credit: Mark Thompson

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 plans and recovery strategies. The Conference also reviews management plans and recovery strategies every five years and reports on progress toward meeting objectives. 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. Northern leopard frog and western toad are listed as Threatened species on the NWT List of Species at Risk. Under the Act, a recovery strategy must be completed for a Threatened species within two years of the species being added to the NWT List of Species at Risk.

What is a management plan?

A management plan is a document that recommends objectives for the management of a species (or in this case, a class of species). It also recommends approaches to achieve those objectives. It includes a description of threats and positive influences to the species and its habitat.

The *Management Plan for Amphibians in the Northwest Territories* includes, but is not limited to, species at risk. It was developed in part to fulfill the requirement for northern leopard frog and western toad recovery strategies under the Act. Other NWT amphibian species do not have this requirement; however, they share several threats in common and there is considerable overlap in their management needs. This management plan addresses the needs of all NWT amphibians and fulfills the requirements for a recovery strategy under the Act for northern leopard frog and western toad.

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.

ACKNOWLEDGMENTS

This progress report was developed collaboratively by the partners involved in the management of amphibians in the NWT: Wildlife Management Advisory Council (NWT), Gwich'in Renewable Resources Board, Sahtú Renewable Resources Board, Wek'èezhìı Renewable Resources Board, Tłı̨chǫ Government and Government of the Northwest Territories.

We would also like to thank participants in the Conference of Management Authorities, and the North Slave Métis Alliance in particular, for reporting the actions they have taken towards meeting the objectives of the *Management Plan for Amphibians in the Northwest Territories*. Further information on the governments and organizations that contributed to the development of this report is provided in Appendix A.

Preparation of this progress report was funded by Environment and Natural Resources (ENR). We would like to thank the Species at Risk Secretariat for addressing the requirements of a progress report under the *Species at Risk (NWT) Act*. The principal preparers of this progress report were Mélanie Routh and Joslyn Oosenbrug (Species at Risk Implementation Specialists) and Michele Grabke (Species at Risk Implementation Supervisor).

Background information in this document is summarized from the Conference of Management Authorities' *Management Plan for Amphibians in the Northwest Territories*.

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PROGRESS REPORT

1. INTRODUCTION

This document is a report on progress toward the management and conservation of amphibians 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*.

Under subsection 73(1) of the *Species at Risk (NWT) Act*, the Conference of Management Authorities (CMA) must publish a progress report every five years, or sooner, on the actions undertaken to implement a management plan or recovery strategy and on the progress made toward meeting its objectives.

Northern Leopard Frog

	NWT	Canada
Status	Threatened	Special Concern
Listed	2015	2005
Management plan	2017	2013

Western Toad

	NWT	Canada
Status	Threatened	Special Concern
Listed	2016	2005
Management plan	2017	2020

While only two species of amphibians (northern leopard frog and western toad) are currently listed on the NWT List of Species at Risk, they share several threats in common with other NWT amphibians and there is considerable overlap in their management needs. As a result, the multi-species *Management Plan for Amphibians in the Northwest Territories* was completed by the CMA in February 2017 to address the needs of all NWT amphibians. This action-oriented planning tool provides guidance and direction to partners in amphibian management. It helps them decide what actions to take, how to prioritize work, and how to allocate resources.

An agreement to implement the management plan for amphibians was finalized on November 24, 2017. This agreement outlines the actions Management Authorities intend to take to implement the management plan.

This progress report highlights the actions taken to implement the management plan for amphibians from 2017 to 2021 and progress made towards meeting its 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 management plan for amphibians took place on March 30, 2022, and the findings are summarized in this document.

2. MANAGEMENT AUTHORITIES FOR AMPHIBIANS

Success in the management of amphibians depends on the commitment and cooperation of many different groups involved in implementing the directions set out in the management plan. This includes renewable resources boards and governments with formal responsibility for wildlife management, as well as many other partners that work together to care for the land, water and wildlife of the NWT.

The Management Authorities that share responsibility for the management of amphibians in the Northwest Territories are:

- Wildlife Management Advisory Council (NWT)
- Gwich'in Renewable Resources Board
- Sahtú Renewable Resources Board
- Wek'èezhìı Renewable Resources Board
- Tłı̨chǫ Government
- Government of the Northwest Territories

Further information on these Management Authorities is provided in Appendix A.

Participants in the CMA were also invited to contribute to this progress report. This includes the Acho Dene Koe First Nation, Akaitcho Territory Government, Beverly and Qamanirjuaq Caribou Management Board, Dehcho First Nations, Kátł'odeeche First Nation, North Slave Métis Alliance, Northwest Territory Métis Nation and Salt River First Nation.

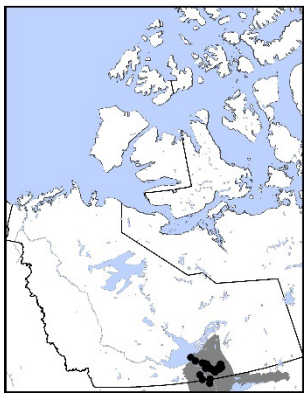
3. SPECIES INFORMATION

Common Name (English)	**Common Name (French)**	**Scientific Name**
Northern leopard frog	Grenouille léopard	*Lithobates pipiens*
Wood frog	Grenouille des bois	*Lithobates sylvaticus*
Western toad	Crapaud de l'Ouest	*Anaxyrus boreas*
Canadian toad	Crapaud du Canada	*Anaxyrus hemiophrys*
Boreal chorus frog	Rainette faux-grillon boréale	*Pseudacris maculata*
Long-toed salamander	Salamandre à longs doigts	*Ambystoma macrodactylum*

Amphibians play an essential role in wetland ecosystems and are often used as indicators of ecosystem health due to their sensitivity to changes in their environment. There are five known species of amphibians in the NWT: northern leopard frog, wood frog, western toad, Canadian toad and boreal chorus frog. The long-toed salamander is suspected to occur in the NWT, but there are no confirmed records of this species as of 2022. Amphibians require three types of habitats: 1) aquatic habitat for breeding, egg laying

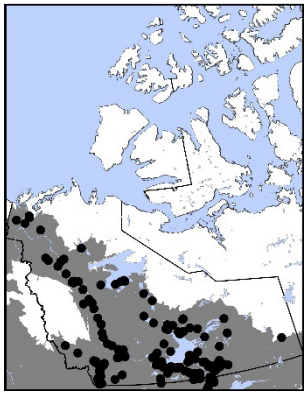
and tadpole development, 2) foraging habitat, and 3) overwintering habitat. Specific requirements for these habitats vary among species; however, these habitats must be connected by travel corridors that are suitable for migration and dispersal. Overwintering habitat is one of the most important factors limiting amphibians' distribution in the NWT, as some species are not adapted to tolerate freezing at sub-zero temperatures.

Northern leopard frog (*Lithobates pipiens*)



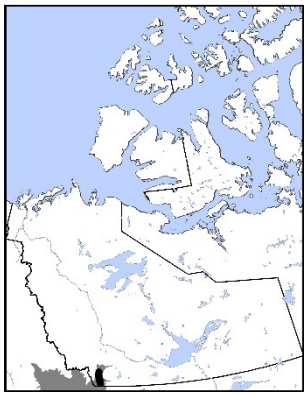
The northern leopard frog is a large green, or sometimes brownish, frog with dark spots with distinct light borders and an unmarked milky-white underside. They grow to a maximum length of 11 cm. Their call consists of a long, drawn-out rattling snore, ending with several rapid short grunts. This species is found throughout most of central and northeastern North America. In the NWT, the northern leopard frog only occurs in the South Slave Region of the NWT near the Slave, Taltson and Tethul rivers.

Wood frog (*Lithobates sylvaticus*)



Wood frogs are small to medium-size frogs (3-6 cm) with highly variable colour patterns ranging from brown, tan or grey to pinkish. They have a dark brown or black mask that runs from the snout, through the eye to the top of the front leg. Their call consists of a low, often rapid, "*quack*" that is easily mistaken for a duck. This species is found across most of Alaska and Canada below the treeline, as well as northeastern United States. In the NWT, the wood frog is widespread throughout forested regions from the Alberta border to the Mackenzie Delta.

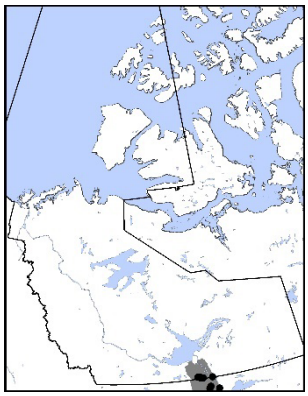
Western toad (*Anaxyrus boreas*)



The western toad is an olive green to reddish brown or black toad with a light stripe down the middle of the back and small round or oval wart-like bumps on the back, sides and upper limbs. They grow to a maximum length of 9 cm in the north. It is suspected that western toads in the NWT do not make true mating calls, but they can make a weak bird-like chirp. This species is found in western North America from California to Alaska. In the NWT, it is only known to occur in the Liard River basin.

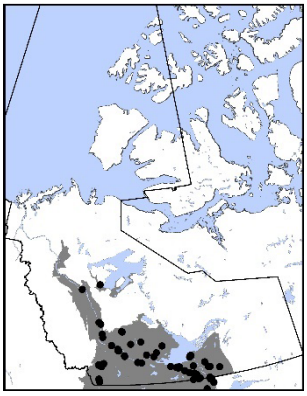
MAPS: Distribution of known and suspected amphibians in the NWT. Maps created by Suzanne Carrière, GNWT, based on data from the NWT Wildlife Management Information System.

Canadian toad (*Anaxyrus hemiophrys*)



The Canadian toad is a small grey-green or brown toad (4-8 cm) with two bony crests on top of the skull to form a bump between its eyes. They are covered in wart-like bumps with prominent oval or kidney-shaped glands over the shoulders. Their call is a short soft trill that repeats about every 30 seconds. This species is found in Alberta, Saskatchewan and Manitoba, as well as north-central United States, yet only occurs in the Fort Smith area near the NWT/Alberta border.

Boreal chorus frog (*Pseudacris maculata*)



Boreal chorus frogs are small (2-4 cm), slender frogs ranging in colour from grey to brown to green. Their skin texture is somewhat rough and granular. They usually have a dark stripe extending from the snout through the eye to the groin, as well as irregular dark stripes on their back. Their call consists of a drawn-out rising "*kreeeeeeep,*" similar to the sound of a thumbnail moving slowly over a stiff pocket comb. This species is found throughout North America east of the continental divide; it is widely distributed in the NWT, but it is uncertain how far north its range extends along the Mackenzie River valley.

Long-toed salamander (*Ambystoma macrodactylum*)

The long-toed salamander is a slender brown to black salamander with a vivid yellow stripe down its back and white flecks on its sides and feet. They can reach a length of up to 14 cm. This species is found in southeastern Alaska, British Columbia and eastward to the foothills of Alberta, as well as in the northwestern United States. There have been no confirmed records (photographs, captures or specimens) of long-toed salamanders in the NWT, but there have been reports from Fort Liard that suggest the species may be present along the shores of rivers in the southern Liard River valley.

4. HOW ARE AMPHIBIANS DOING IN THE NWT?

Amphibian research and monitoring in the NWT is typically short-term and relatively few sites have been revisited to determine population persistence, population estimate or trends. Many amphibian records are collected opportunistically and the ability to distinguish between species is often limited by the experience of the observer. Also, there is a great deal of Indigenous and community knowledge on amphibians in the NWT, but relatively little of that information has been collected and documented.

For the most part, the information presented in the *Management Plan for Amphibians in the Northwest Territories* (CMA 2017) remains the best available information on abundance and population trends for the five known species of amphibians occurring in the NWT (as of 2022, the long-toed salamander was not confirmed in the NWT). However, recent research has improved our understanding of species distributions and threats.

Acoustic monitoring for amphibians is providing new information on the distribution of species in the NWT, including indications that boreal chorus frog has a larger range than previously thought (ENR unpubl. data 2018). Research on amphibians in the South Slave region from 2012-2017 provided data on Canadian toad, boreal chorus frog and wood frog locations, including some breeding sites (Bienentreu *et al*. 2022). These researchers also reported Indigenous knowledge from local Elders who noticed a steady decline in amphibian calling activities in the region over the past 20-30 years (ENR 2022a).

Previously, a gravel pit at the Muskeg River was the only known breeding site for western toad in the NWT. The breeding site was documented in 2007 and 2008 but found to be dry and unsuitable habitat when visited in 2018 and 2019 (Schock 2009; Dulisse 2019; ENR unpubl. data 2018). However, Dulisse (2019) found three other significant western toad breeding sites in the surrounding Muskeg River area; this survey reinforced the idea that there are likely more breeding sites in the region and suggested that western toads may be more common in the Liard River valley than previously thought. However, this should be interpreted with caution as breeding sites can change over time (Dulisse 2019).

In 2018, roadkill mortality of western toads was documented on the Liard Highway near the Muskeg River bridge. Traffic warning signs were installed and GNWT departments of ENR and Infrastructure launched a public awareness campaign to encourage people to slow down and watch for toads.

Recent research on amphibian diseases supports the conclusion that ranavirus is a widespread and persistent pathogen in the NWT, as it is elsewhere in Canada (ENR 2022a). Ranavirus is known to affect wood frogs, boreal chorus frogs, and Canadian toads in the Dehcho and South Slave regions (Schock 2009; Bienentreu *et al*. 2022) Amphibian mortalities due to ranavirus were observed in the Fort Smith area in 2015-2017 (Bienentreu *et al*. 2022; ENR 2022a) and in the Dehcho region in 2019 (Dulisse 2019). Wood frogs and boreal chorus frogs exhibit higher infection rates than Canadian toads. Tadpoles are more heavily impacted by ranavirus than terrestrial individuals, but terrestrial individuals may act as carriers or reservoirs for the virus (Bienentreu *et al*. 2022). Genetic analyses of ranavirus in the South Slave region found at least two distinct virus variants (Grant *et al*. 2019; Vilaça *et al*. 2019).

Chytrid fungus (Batrachochytrium dendrobatidis; Bd) is also present in the NWT as well as other parts of Canada (ENR 2022a). Bd infections have been found in both the Dehcho and South Slave regions in wood frogs, boreal chorus frogs and western toads (Schock *et al*. 2010; ENR 2022a), but as of 2008, Bd infections have not been found in the Sahtú region (Schock 2009). No mortalities attributed to Bd have been documented in the NWT, but sublethal infections can have negative effects on overall fitness and therefore Bd is still considered an ongoing threat to amphibians in the NWT (Gahl *et al*. 2011; Campbell *et al*. 2019).

5. MANAGEMENT

5.1. Management Goal and Objectives

Management Goal

The management goal outlined in the management plan is to **maintain a healthy and viable population for each amphibian species across its NWT range**.

The management plan recommends the following objectives to meet the management goal for amphibians:

1. Fill knowledge gaps and enhance understanding of NWT amphibians, including traditional, community and scientific knowledge, to inform sound management decisions.
2. Identify and maintain key amphibian habitats.
3. Mitigate, monitor and manage the effects of disease and other important threats to amphibians.
4. Increase public awareness and stewardship of amphibians and their habitats.
5. Manage amphibians using an adaptive and collaborative approach, and the best available information.

5.2. Approaches to Achieve Objectives

Seventeen approaches are recommended in the management plan 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 amphibians and should be implemented sooner rather than later. Necessary approaches are important to implement for the conservation of amphibians 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. MANAGEMENT PROGRESS FROM 2017 TO 2021

6.1. Highlights

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

- Completing an amphibian survey in the Muskeg River area (near Fort Liard) where three new significant western toad breeding sites were documented
- Deploying acoustic recording units in various locations in the NWT
- Using eDNA sampling to detect the presence of chytrid fungus and to explore the distribution of species at risk in water bodies in the North and South Slave regions
- Tracking amphibian observations/records in the NWT Wildlife Management Information System (WMIS)
- Conducting research on amphibian diseases (e.g. ranavirus and chytridiomycosis) in the Fort Smith area
- Launching a public awareness campaign for western toad, which included "toad crossing" signs on the Liard Highway
- Raising awareness of NWT amphibians and the threats they face through social media, website updates, radio advertising, etc.
- Developing and implementing *Western Toad Best Management Practices* for work on roadways in the Liard River valley
- Publishing a *Field Guide to Amphibians and Reptiles of the Northwest Territories*

How will we know if the management plan is working?

- Population trends are stable or increasing.
- Species continues to be found in its historical range.
- Northern leopard frog and western toad have not become further at risk when re-assessed by the NWT Species at Risk Committee (SARC).
- Canadian toad, boreal chorus frog, wood frog and long-toed salamander are not at risk if assessed by SARC.

6.2. Progress Overview

Table 1. Progress on approaches for management of amphibians in the NWT, 2017-2021.

Completed	In progress	Not started	Not pursuing[1]

Goal: Maintain a healthy and viable population for each amphibian species across its NWT range.				
Objective	**Management Approaches**	**Relative Priority/ Time Frame**	**Performance Measure**	**Progress (2017-2021)**
Objective #1: Fill knowledge gaps and enhance understanding of NWT amphibians, including traditional, community and scientific knowledge, to inform sound management decisions.	**1.1:** Identify knowledge gaps and encourage research and monitoring focused on amphibian health/disease, biology, population, distribution, habitat, threats, climate change, and cumulative effects.	Necessary/ Ongoing	Research and monitoring are conducted and results are shared. Learn new knowledge on amphibians in the NWT.	• **2018-2021** – North Slave Métis Alliance developed an eDNA sampling program to monitor for species at risk in water bodies in the North Slave and South Slave regions. • **2019** – ENR[2] worked with a contractor to conduct an amphibian survey in the Liard Valley (Muskeg River area) in July 2019. Three new significant western toad breeding sites were documented (Dulisse 2019). • **2019** – ENR worked with researchers to develop a genetic primer for detection of western toad eDNA in the NWT (Helbing Laboratory 2019). • **2021** – Researchers from Orchis Environmental, Palustris Environmental and the University of Calgary worked with ENR to prepare an overview of aquatic diseases and pathogens for the NWT State of the Environment Report (Indicator 15.6 - Status of Wildlife Health in Aquatic Ecosystems) (ENR 2022a). • **2020-2021** – ENR and the Government of Canada worked with many partners including Indigenous governments and Indigenous organizations and researchers to deploy acoustic recording units at Norman Wells, Fort Good Hope, Ts'udé Niljné Tuyeta Protected Area,

[1] **Not pursuing**: Some implementation actions in the management plan are more appropriately led by other partners, and some actions are not currently a high priority for Management Authorities to implement given other higher priorities and resource constraints.

[2] **ENR/GNWT**: Where an action is solely undertaken by the Department of Environment and Natural Resources (ENR), the action is attributed to ENR. Actions or publications involving multiple departments are attributed to the Government of the Northwest Territories (GNWT).

				Dınàgà Wek'èhodì Candidate Protected Area, and Thaidene Nëné Protected Area. • **2021** – A researcher analyzed a small sample of recordings of wood frogs in the Sahtú and provided a report with recommendations on schedules for future amphibian acoustic monitoring in the NWT (Schock 2021).
	1.2: Periodically survey known breeding sites, especially for at risk amphibian species.	Critical/Ongoing	Known breeding sites for northern leopard frog and western toad are periodically surveyed.	• **2018-2019** – One known western toad breeding site was documented in 2007/2008 at the Muskeg River gravel pit. When the site was revisited in 2018 and 2019, there was no standing water, and the area was unsuitable for amphibian breeding. However, three other significant breeding sites for western toad have since been found in the surrounding area (Dulisse 2019).
	1.3: Encourage people to report observations of amphibians to WILDLIFEOBS@gov.nt.ca, and periodically compile all records.	Beneficial/Ongoing	Number of reported observations has increased and records are maintained in a database.	• **2021** – WRRB provided information about reporting NWT amphibians observations in Wek'èezhìı through WRRB's website and social media. • **Ongoing** – ENR tracks reports of amphibian observations/records in the NWT Wildlife Management Information System (WMIS) database.
	1.4: Encourage the collection and recording of traditional and community knowledge about amphibians.	Necessary/ Ongoing	Information is collected/documented and results are shared.	• **2019** – Local knowledge was key in documenting traffic-related mortality and identifying new western toad breeding sites during the 2019 amphibian survey (Dulisse 2019). • **2020** – ENR collected community-based observations in the Sahtú during the months of May and June 2020 to determine the presence of chorus frogs (ENR unpubl. data 2022b). • **2021** – ENR shared amphibian occurrence data with researchers from Trent University to investigate whether citizen science monitoring data may be used to effectively monitor trends in Canada's amphibian population.
	1.5: Explore sources and background reports from land use planning and other regulatory processes for relevant traditional knowledge on amphibians.	Beneficial/Short-term	Sources/reports are reviewed and relevant information is compiled.	• Implementation action is not being pursued.

Objective #2: Identify and maintain key amphibian habitats.	**2.1:** Identify and map key amphibian habitats using information from 1.1 to 1.5.	Critical/Ongoing	Number of known key sites has increased.	• **2021** – ENR published the *Field Guide to Amphibians and Reptiles of the Northwest Territories* (ENR 2021), which includes updated amphibian range maps. • **2021** – ENR launched the NWT Species and Habitat Viewer. Users can generate reports showing which species at risk ranges (e.g. western toad and northern leopard frog) overlap with their area of interest, as well as which amphibian species are found in their area of interest.
	2.2: At key sites where amphibians are concentrated, promote measures that aim to prevent mass mortality from motorized vehicles.	Necessary/Short-term	Measures are in place at sites where vehicle traffic is identified as a concern.	• **2018** – GNWT produced best management practices related to western toad for Department of Infrastructure staff and contractors working in the Liard River valley (*Western Toad Best Management Practices*). • **2018-2019** – GNWT placed western toad crossing signs on the Liard Highway near the Muskeg River gravel pit to reduce vehicle mortality. • **2019** – GNWT launched a public education campaign in Spring 2019 to encourage people to slow down and watch out for western toads in the Muskeg River area, including radio ads in English and South Slavey, posts on ENR's Facebook page and website, as well as a CBC radio interview. • **2021** – The *Field Guide to Amphibians and Reptiles of the Northwest Territories* (2021) includes information on common roadkill areas and where drivers should watch out for amphibians and snakes.
	2.3: Identify and avoid or mitigate human impacts on key amphibian habitats through the regulatory process (permitting, screening and environmental assessment), legislation, land use planning, conservation areas, stewardship or other effective mechanisms.	Critical/Ongoing	Key sites are recognized and considered in decision-making. Key sites persist and are not destroyed.	• **2019** – ENR provided advice about western toad for development proposals related to possible new quarry sites along the Liard Highway. The 2019 amphibian survey (Dulisse 2019) was partly in response to these proposals and survey results have been shared. • **2018-2021** – GNWT implemented its *Western Toad Best Management Practices* for Department of Infrastructure staff and contractors working in the Liard River valley. • **Ongoing** – ENR participates in the regulatory process on an ongoing basis and provides advice regarding amphibian habitat as appropriate.
	2.4: Develop standard advice for industry and government to mitigate the impacts of development projects, timber harvesting and roads on amphibians.	Beneficial/Short-term	Standard advice is in place and is being used in the regulatory process.	• **2019** – ENR developed a draft guidance document for developers to avoid and reduce negative impacts on western toad and their habitats.

				• **Ongoing** – GRRB provides standard advice to individuals conducting water sampling to minimize the spread of disease and encourage equipment sanitization.
Objective #3: Mitigate, monitor and manage the effects of disease and other important threats to amphibians.	**3.1:** Monitor amphibian diseases (chytridiomycosis and ranavirus) and their impacts in the NWT.	Necessary/Ongoing	Disease monitoring is taking place.	• **2017** – Researchers doing fieldwork in the summers of 2015-2017 in the Fort Smith area encountered ranavirus-related die-offs at a few wetlands and detected ranavirus at numerous sites (Bienentreu *et al.* 2022; ENR 2022a). • **2018-2019** – ENR collected water samples from the Dehcho region (August 2018), Fort Smith area (July 2018), and Liard River Valley (July 2019) to be tested for chytrid fungus using eDNA. One site at Grosbeak Lake (Wood Buffalo National Park) tested positive for chytrid fungus (Bd). • **2019** – ENR collected two tadpoles in the Liard Valley during the 2019 amphibian survey; they were tested and found to have died from systemic ranavirus infection (Dulisse 2019). The presence of ranavirus in this region was documented in 2007/2008 (Schock 2009), but these were the first confirmed ranavirus mortalities in the area. • **2021** – Researchers from Orchis Environmental, Palustris Environmental and the University of Calgary worked with ENR to prepare an overview of aquatic diseases and pathogens for the NWT State of the Environment Report (Indicator 15.6 - Status of Wildlife Health in Aquatic Ecosystems) (ENR 2022a).
	3.2: Develop and/or adopt best practices to prevent the spread of disease in wetlands and ponds.	Critical/Short-term	Compliance with best practices.	• National protocols for decontamination already exist (CHHWG 2017). ENR requires following decontamination protocols as a condition of research permits for amphibian research/monitoring. • **Ongoing** – GRRB provides standard advice to individuals conducting water sampling to minimize the spread of disease and encourage equipment sanitization.
	3.3: Ensure that any introductions of live fish follow the National Code on Introductions and Transfer of Aquatic Organisms; and consider potential impacts on amphibians.	Beneficial/Long-term	Any introductions are compliant with the National Code.	• Implementation action is not being pursued.

Objective #4: Increase public awareness and stewardship of amphibians and their habitats.	**4.1:** Raise awareness of NWT amphibians and the threats they face through various means (e.g. posters, brochures, web, social media, interpretive signs, presentations, school programs).	Necessary/ Ongoing	Communication is taking place and knowledge/interest among the public has increased.	• **2019** – GNWT launched a public education campaign in Spring 2019 to encourage people to slow down and watch out for western toads in the Muskeg River area, as well as to increase awareness and appreciation for western toad. • **2020** – Ecology North developed and shared a teacher's guide and classroom learning materials about the western toad, northern leopard frog and amphibians in general. This project was supported by the NWT Species Conservation and Recovery Fund (SCARF). • **2020-2021** – ENR published the *NWT Species at Risk Booklet* (GNWT 2020) in collaboration with partners and a *Field Guide to Amphibians and Reptiles of the Northwest Territories* (ENR 2021). • **2021** – WRRB provided information about NWT amphibians and their threats through WRRB's website and Facebook page. • **2021** – ENR shared a series of posts with information about NWT amphibians on the ENR Facebook page. • **2021** – ENR hosted a booth and activity for school students focused on northern leopard frog at Rivers to Oceans Day in Yellowknife in June 2021.
	4.2: Encourage and support stewardship projects that benefit amphibians and their habitat.	Necessary/ Ongoing	Number of stewardship projects has increased throughout the range.	• **Ongoing** – NWT Species Conservation and Recovery Fund (SCARF) is a source of funding for projects that help with conservation of northern leopard frog and western toad. Funding of up to $60,000 is available per year.
Objective #5: Manage amphibians using an adaptive and collaborative approach, and the best available information.	**5.1:** NWT co-management partners collaborate with each other and with other jurisdictions and research institutions on management and monitoring of NWT amphibians.	Necessary/ Ongoing	Collaborative research/monitoring projects and management initiatives are taking place.	• **Ongoing** – Projects noted above have involved collaboration with Indigenous governments and Indigenous organizations, academic researchers, independent contractors, and provincial/territorial/ federal governments.
	5.2: Encourage flow of information among researchers, co-management partners, regulatory boards and the public.	Necessary/ Ongoing	Information is being shared.	• **Ongoing** – Information-sharing is ongoing via websites for NWT Species at Risk and management authorities, publications, Facebook posts, and through sharing reports with partners.
	5.3: Conduct periodic co-management reviews of new information, management actions and progress made toward meeting management objectives.	Critical/Ongoing	Periodic co-management reviews are taking place.	• **Ongoing** – Review occurs every year at the February CMA meeting.

7. MANAGEMENT PLAN 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 management plan for amphibians took place on March 30, 2022.

The review determined that the *Management Plan for Amphibians in the Northwest Territories* continues to meet the needs of Management Authorities to achieve the management goal for these species. As there is no indication the threats facing amphibians have been reduced, there is a continued need for the management plan to provide guidance for management.

The review looked at the goal, objectives and approaches of the management plan and determined they are still appropriate for the management of amphibians in the NWT. There are no changes to the management plan recommended by Management Authorities at this time. Species information should be updated *if* or *when* the management plan is amended.

8. NEXT STEPS

Progress has been made towards maintaining healthy and viable populations of amphibian species across their NWT ranges.

Research and community knowledge have improved our understanding of species habitat, distributions and threats. Work is underway to minimize detrimental effects of human activities on amphibians and their habitat, and information-sharing on amphibians is ongoing with annual reviews of new information and progress among co-management partners.

Management Authorities have identified opportunities for future work, including the development of acoustic monitoring programs around communities. However, there remain gaps in knowledge for amphibians in the NWT. More work is required to determine population estimates, long-term population persistence and trends. There is also a need to collect and analyze Indigenous and community knowledge on amphibians in the NWT to ensure amphibian management is based on the best possible information.

The management plan for amphibians will continue to guide management of these species. The management plan will be reviewed again in five years and progress on its implementation (2022-2026) will be reported in 2027.

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APPENDIX A – PROGRESS REPORT PARTNERS

The following governments and organizations contributed to the development of this progress report on amphibians:

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.

Gwich'in Renewable Resources Board

The Gwich'in Renewable Resources Board is the main instrument of wildlife management in the Gwich'in Settlement Area. Its powers include approving plans for the management and protection of particular wildlife populations (including endangered species), particular wildlife habitats, and forests (*Gwich'in Comprehensive Land Claim Agreement*, sections 12 and 13). The Gwich'in Renewable Resources Board works collaboratively with renewable resources councils and government in research, monitoring, and management of wildlife and habitat. The Gwich'in Renewable Resources Board consults regularly with the renewable resources councils, and its management authority may be delegated to renewable resources councils.

Sahtú Renewable Resources Board

The Sahtú Renewable Resources Board is the main instrument of wildlife management in the Sahtú Settlement Area. Its powers include approving plans for the management and protection of particular wildlife populations (including endangered species), particular wildlife habitats, and forests (*Sahtu Dene and Metis Comprehensive Land Claim Agreement*, sections 13 and 14). The Sahtú Renewable Resources Board works collaboratively with renewable resources councils and government in research, monitoring, and management of wildlife and habitat. The Sahtú Renewable Resources Board consults regularly with the renewable resources councils, and management authority may be delegated to renewable resources councils.

Wek'èezhìı Renewable Resources Board

The Wek'èezhìı Renewable Resources Board is the wildlife co-management authority responsible for managing wildlife, wildlife habitat, forests, plants, and protected areas in Wek'èezhìı as set out in the *Tłı̨chǫ Agreement* (*Tłı̨chǫ Agreement*, sections 12-14 & 16). Responsibilities include making determinations or recommendations on management proposals for activities that may affect wildlife and wildlife habitat. The Wek'èezhìı Renewable Resources Board works collaboratively with the Tłı̨chǫ communities and

Tłı̨chǫ, territorial, and federal governments in research, monitoring, and management of wildlife and habitat.

Tłı̨chǫ Government

The Tłı̨chǫ Government has powers to enact laws in relation to the use, management, administration, and protection of lands and renewable resources on Tłı̨chǫ lands. This includes laws relating to the management and exercise of harvesting rights for wildlife, plants, and trees (*Tłı̨chǫ Agreement*, section 7). The Tłı̨chǫ Government has prepared the *Tłı̨chǫ Land Use Plan* to assist in managing approximately 39,000 km^2 of Tłı̨chǫ lands. The Plan provides a guide for future development by outlining how Tłı̨chǫ land will be protected and how activities and development on Tłı̨chǫ lands should occur.

Government of the Northwest Territories (GNWT)

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.

North Slave Métis Alliance

The North Slave Métis Alliance (NSMA) is a non-profit society that represents the Aboriginal rights-bearing Métis people of the Northwest Territories, who primarily exercise their Aboriginal rights north and east of Great Slave Lake. The NSMA environment department partners with other Indigenous governments, municipal, territorial and the federal government to manage and monitor the traditional lands and waters of the NSMA.