Long Point Walsingham Forest: Integrated Conservation Action Plan (2018-2023)

Update: June 2020

Cover Photo: Big Creek Marsh, © Jason Read, 2018

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Ontario Soil and Crop Improvement Association
Pterophylla Farm
St. Williams Conservation Reserve
Tallgrass Ontario

Contact:
Britney Macleod
Environment and Climate Change Canada: Canadian Wildlife Service – Ontario
4905 Dufferin Street, Toronto, ON M3H 5T4
Britney.macleod@ec.gc.ca

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1. INTRODUCTION

The Long Point Walsingham Forest (LPWF) Integrated Conservation Action Plan (ICAP) was developed using the science-based adaptive management framework Open Standards for the Practice of Conservation Version 4.0 (Conservation Standards) (Figure 1). The ICAP identifies the highest priority strategies and actions for improving ecosystem health and conserving species at risk (SAR) in LPWF. The ICAP is an iterative or evergreen document, developed and refined based on input from over 23 local and Ontario based organizations. The Situation Analysis document provides the context for the ICAP and should be read first. The Situation Analysis contains detailed information on methods, Conservation Targets, Viability Assessment and Threats.

The strategies in the ICAP are currently focused on the following direct threats:
1. Invasive Species
2. Fire Suppression inTallgrass Communities;
3. Roads;
4. Agricultural Runoff

Identified as a main threat to the Forests and Treed Swamps Conservation Target, the following has been added as an additional direct threat. Addressing this threat will assist in improving management of Forests and Treed Swamps, while increasing habitat size, quality and connectivity:
5. Logging and Wood Harvesting

FIGURE 1. CONSERVATION STANDARDS ADAPTIVE MANAGEMENT CYCLE.

1.1 Version 2.0

The first version of the LPWF ICAP was completed and shared in May 2019. Version 2.0 incorporates comments received as part of the 2019 review period. Changes to the Situation Analysis and the ICAP include:

- Clearer linkages between conservation targets, threats, viability assessment, strategies, and objectives.
- An updated vision.
- A more refined/concise ICAP. This includes removing redundancies and merging strategies. Goals and objectives were updated to be more clear and concise.
- Addition of a strategy for the Forests and Treed Swamp Conservation Target, focused on the threat of Logging and Wood Harvesting to address Goal 2.
- Adjustment to terminology based on Open Standards for the Practice of Conservation 4.0 (released February 2020).

2. SCOPE: LONG POINT WALSINGHAM FOREST

2.1 Overview

The ICAP focuses strategies and actions that benefit six Conservation Targets (Figure 2).
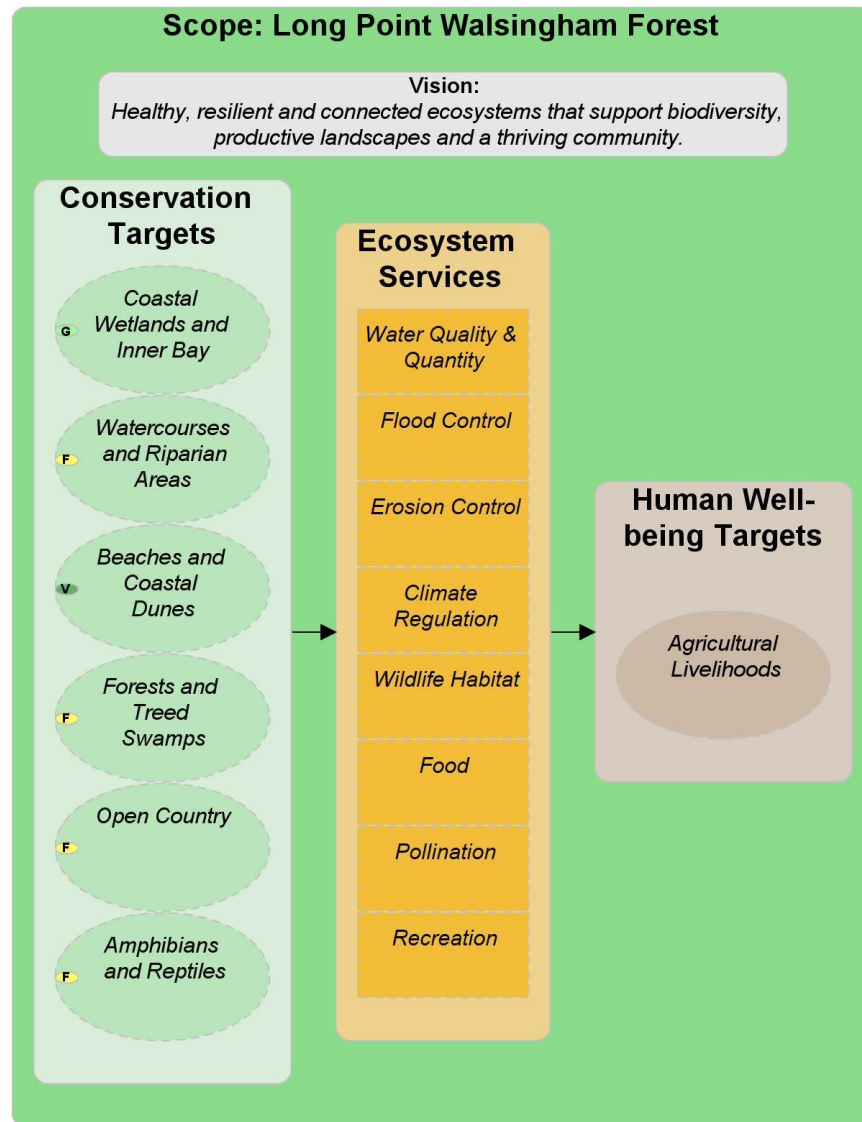
FIGURE 2. SITUATION MODEL SHOWING SCOPE, VISION AND TARGETS.

2.2 Map
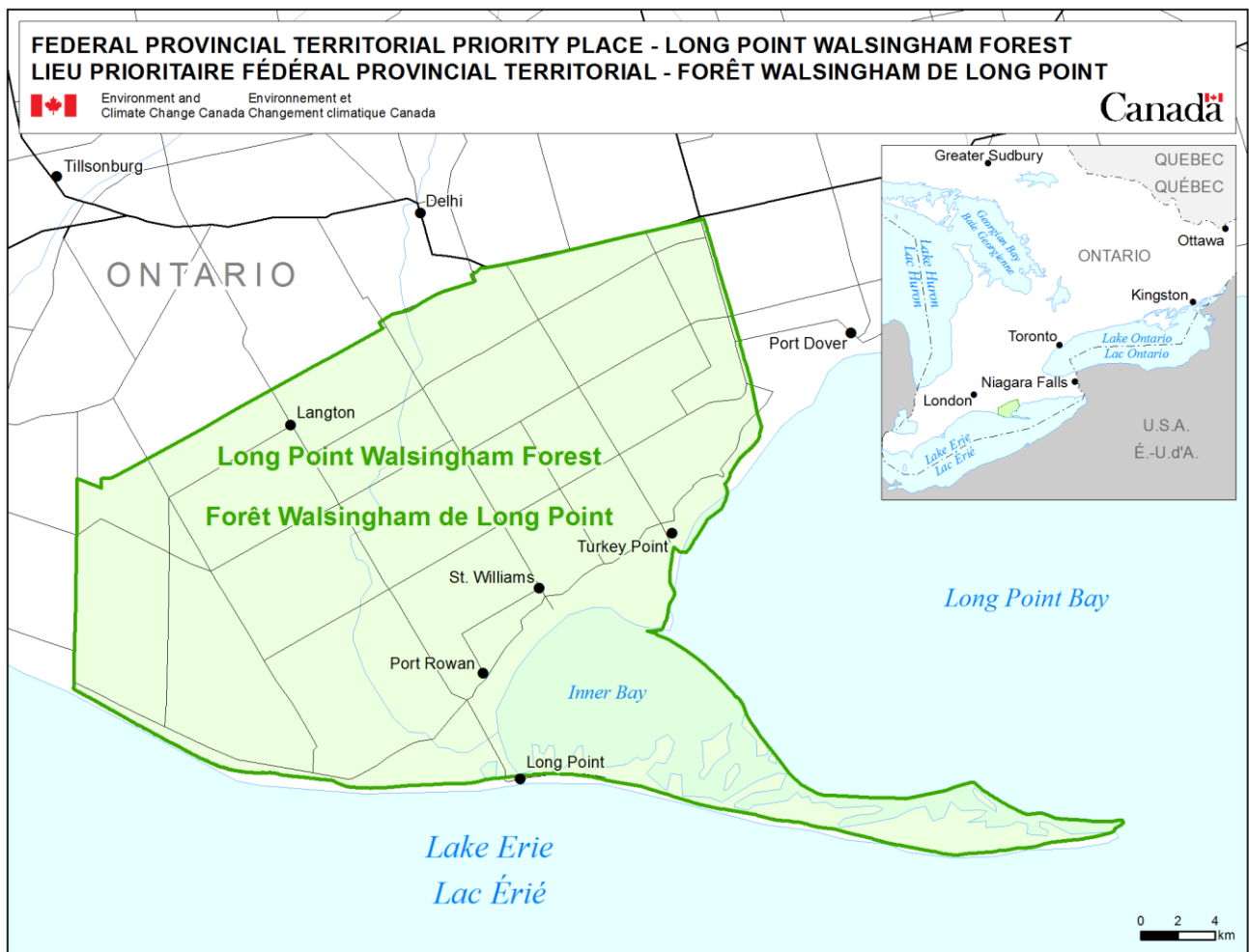
FIGURE 3. LONG POINT WALSINGHAM FOREST PRIORITY PLACE MAP

2.3 Vision

Healthy, resilient and connected ecosystems that support biodiversity, productive landscapes and a thriving community.

2.4 Conservation Targets

The ICAP focuses strategies and actions that benefit six main Conservation Targets. A Conservation Target is an element of biodiversity (species, habitat, or ecological system) at a project site on which a project has chosen to focus. All targets should collectively represent the biodiversity of concern at the site.

The six main Conservation Targets for Long Point Walsingham Forest are:
- Forests and Treed Swamps
- Open Country
- Coastal Wetlands and Inner Bay
- Watercourses and Riparian Areas

- Beaches and Coastal Dunes
- Amphibians and Reptiles

2.4.1 Viability Assessment

Viability Assessment is a method identified by the *Conservation Standards* for assessing the health of a Conservation Target. This Viability Assessment was completed using the best available information given the time and resources available. Table 1 summarizes the overall results of the Viability Assessment and the detailed assessment can be found in the Situation Analysis.

TABLE 1. VIABILITY ASSESSMENT SUMMARY

Conservation Target	Overall Status	Key Ecological Attribute		Indicator	Status
Forest and Treed Swamps	Fair	Size	Interior forest habitat	Number of large forest patches	Good
		Size	Ecosystem extent	Percent forest cover	Poor
		Condition	Presence/abundance of forest interior bird communities	Number of individuals of Acadian Flycatchers and Cerulean Warblers	Fair
		Landscape Context	Connectivity of forest patches	Amount of resistance to movement	Good
Coastal Wetlands and Inner Bay	Good	Size	Ecosystem extent	Percent coastal wetland cover	Good
		Condition	Native species composition	Obligate marsh-nesting bird species richness	Good
		Condition	Plant community integrity	Percent *Phragmites australis* cover	Good
		Landscape Context	Sediment stability and movement	Percent shoreline hardening	Very Good
		Landscape Context	Adjacent natural systems	Percent non-impervious cover within 120 m	Very Good
Beaches and Coastal Dunes	Very Good	Size	Adjacent vegetation	Percent non-impervious surface within 1 km of beach	Good
		Condition	Presence and status of rare plant communities	EO ranks of rare vegetation communities	Very Good
		Landscape Context	Sediment stability and movement	Percent shoreline hardening	Very Good
Watercourses and Riparian Areas	Fair	Size	Habitat integrity	Percent of 30 m buffer (adjacent to watercourses) naturally vegetated	Fair
		Size	Habitat integrity	Percent of 5 m buffer (adjacent to drains) naturally vegetated	Poor
		Condition	Surface water quality	Total phosphorus (mg/L)	Fair
		Landscape Context	Hydrologic regime	Natural flow regime	Fair
Amphibians and Reptiles	Fair	Size	Habitat availability	Extent of habitat identified as having potential to contain biophysical attributes required by nested targets to support one or more life stages (measures as the percent of LPWF)	Good
		Condition	Presence and persistence	Proportion of species assessed by COSEWIC as endangered	Poor
		Landscape Context	Ability to move across the landscape	Road mortality risk - Percent of total suitable habitat intersecting high risk roads	Poor
Open Country	Fair	Size	Ecosystem extent	Number of ha of Open Country communities	Poor
		Condition	Species composition	Open country bird species richness	Good
		Landscape Context	Disturbance regime	Percentage of Open Country habitats managed to maintain early successional stages	UNKNOWN
		Landscape Context	Habitat connectivity	Distance between habitat patches	Fair
		Size	Habitat patch size	Number of patches >5 ha	Poor

2.4.2 Direct Threats

Threat Rating and/or Assessment is a method which aims to explicitly and objectively identify and assess the threats impacting a Conservation Target. The direct threats to the Conservation Targets in LPWF were identified and assessed based on scope, severity and irreversibility in the Miradi software (Table 2). The Threat Assessment was completed at the February 2018 ICAP workshop and was subsequently expanded on by CWS and other local experts further engaged outside the workshop forum.

For consistency and comparison among conservation projects, the International Union for Conservation of Nature (IUCN) direct threat categories were used to the extent possible. Some threat names have been adjusted to make them more applicable to the threats in the LPWF Priority Place. Refer to the Situation Analysis for additional information.

TABLE 2. DIRECT THREAT RATING SUMMARY

Direct Threats / Conservation Targets	Forests and Treed Swamps	Coastal Wetlands and Inner Bay	Watercourses and Riparian Areas	Beaches and Coastal Dunes	Open Country	Amphibians and Reptiles	Artificial Habitat Structures	Summary Threat Rating
Housing & Urban Areas	Medium	Low	Not Specified	Medium		Medium		Medium
Commercial & Industrial Areas	Low					Medium		Low
Tourism & Recreation Areas	Not Specified	Low		Low		Low		Low
Annual & Perennial Non-timber Crops			Not Specified			Low		Low
Livestock Farming & Ranching						Not Specified		Not Specified
Roads	Low	Low	Low	Low	Low	High		Medium
Utility & Service Lines								Low
Hunting & Collecting Terrestrial Animals						Medium		Low
Gathering Terrestrial Plants					Low			Low
Logging & Wood Harvesting	Medium		Low			Not Specified		Low
Fishing & Harvesting Aquatic Resources			Low			Not Specified		Low
Recreational Activities	Medium	Low	Low	Medium	Low	Not Specified		Low
Fire Suppression	Low				Very High	Not Specified		High
Dams & Water Management/Use	Low	Medium	Medium	Not Specified		Not Specified		Medium
Shoreline Hardening & Beach Modifications		Low	Not Specified	Medium		Not Specified		Low
Invasive Species	Medium	Very High	Medium	High	Medium	Medium		High
Problematic Native Plants & Animals	Low	Medium	Not Specified	Not Specified	Low	Low		Medium
Pathogens & Microbes	Not Specified					Low		Low
Household Sewage & Urban Waste Water			Low	Low		Not Specified		Low
Agricultural Runoff (point & non-point source)	Medium	Medium	Medium	Not Specified		Not Specified		Medium
Garbage & Solid Waste	Low	Low	Low	Low		Low		Low
Air-borne Pollutants	Low							Low
Light & Noise Pollution	Low					Not Specified		Low
Climate Change	Low		Low	Low		Not Specified		Low
Threat summary for each conservation target	Medium	High	Medium	Medium	High	Medium		High

2.4.3 Goals

A goal is a formal statement detailing a desired impact of a project, such as the desired future status of a target. Whereas an objective details the desired outcome of a project. The following goals were developed for each Conservation Target using key ecological attributes from the Viability Assessment (see Situation Analysis). Each goal was developed to meet the criteria of being specific, measurable, achievable, results-oriented, and time-limited (SMART).

TABLE 3. CONSERVATION TARGET GOALS.

	Goals	Conservation Targets
1.	By 2025, 90% of the vegetation in the Coastal Wetlands and Beaches and Coastal Dunes ecosystems is native.	Coastal Wetlands and Inner Bay Beaches and Coastal Dunes
2.	Maintain existing 2018 Forests and Treed Swamps cover and where possible increase/improve interior forest habitat and connectivity through additional forested acreage and forested corridors by 2050.	Forests and Treed Swamps
3.	Maintain and improve the riparian zone so that 75% is vegetated with native plants.	Watercourses and Riparian Areas
4.	By 2025, at least 50% of surface water samples meet the provincial water quality objective for phosphorus (0.03 mg/L for streams and rivers).	Watercourses and Riparian Areas
5.	Reduce wildlife road mortality by enhancing road infrastructure to facilitate safe movement of wildlife across the landscape.	Amphibians and Reptiles
6.	Maintain existing Open Country habitat and restore additional areas, prioritizing sites where: existing habitat patches can be increased in size, habitat patches >=5 ha can be created, patch connectivity is best achieved and/or there are opportunities for long-term management.	Open Country

2.4.4 Ecosystem Services and Human Well-being Targets

In order to understand the important connections between the Conservation Targets and human-wellbeing in LPWF, ecosystem services and Human Well-being Targets were identified. Ecosystem services provided by the Conservation Targets include; wildlife habitat, water quality and quantity, climate regulation, flood control, recreation, erosion control and food. Currently only one human well-being target has been identified - agricultural livelihoods.

3. SITUATION MODEL

Scope: Long Point Walsingham Forest

Vision:
Healthy, resilient and connected ecosystems that support biodiversity, productive landscapes and a thriving community.
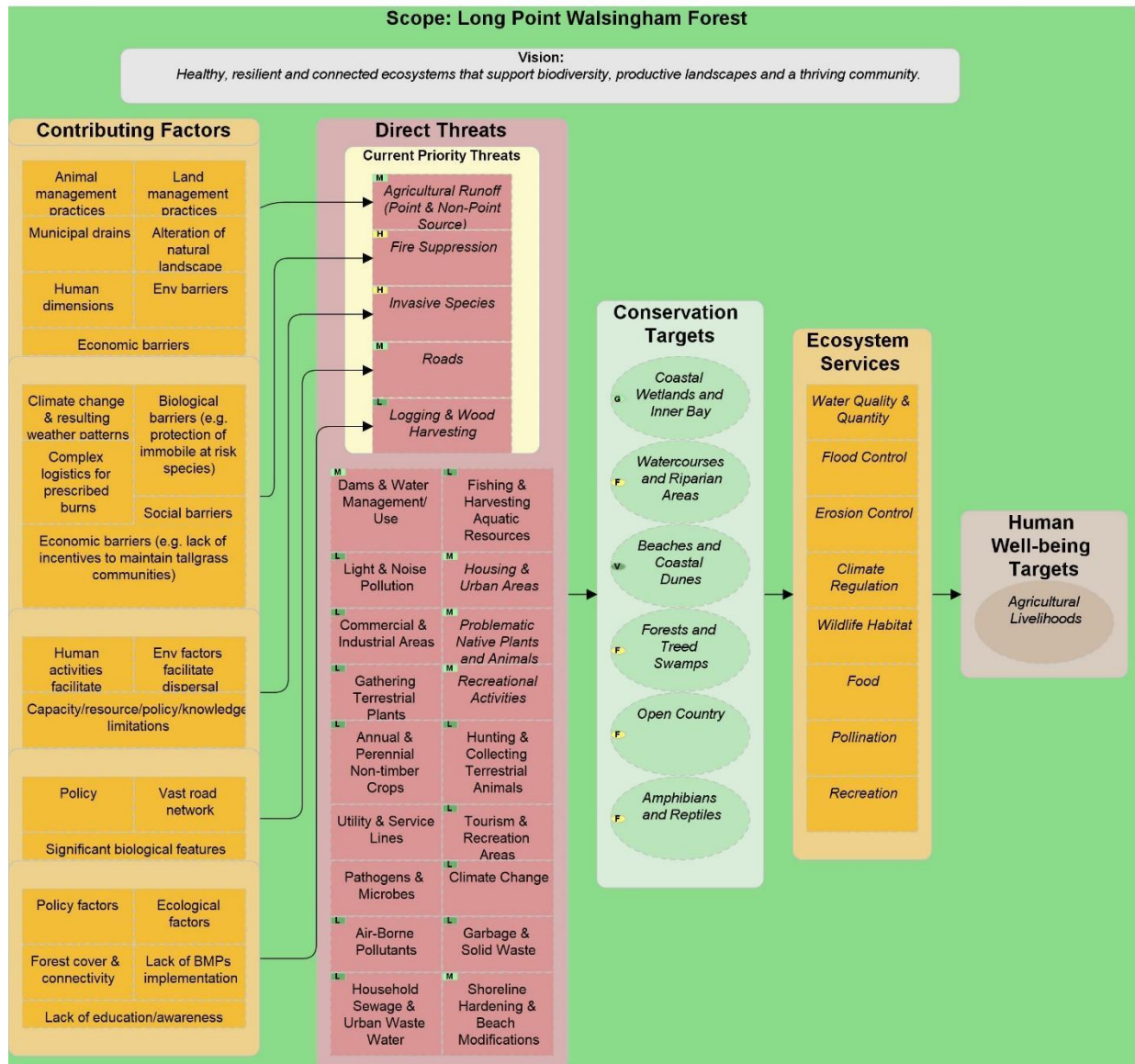
FIGURE 4. SITUATION MODEL FOR LONG POINT WALSINGHAM FOREST

4. ACTION PLAN

In order to achieve the Conservation Target goals identified in Section 5, the following strategies and actions should be implemented. The short term objectives are identified in order to measure progress towards achieving the longer term goals.

Measuring the effectiveness of conservation action is central to good adaptive management. The ICAP will apply two types of monitoring: 1) status monitoring of Conservation Targets (status of habitats and species assessed using key ecological attributes, indicators and data sources identified in the Viability

Assessment), and 2) effectiveness monitoring (whether actions are having their intended impacts). This section focuses on the second type of monitoring, effectiveness monitoring.

Conservation projects commonly track the immediate outputs of the project as it can be difficult to measure the longer term results for species and habitats. This is due to the complexity of ecological systems and the ability to attribute change in a species population or habitat to any one particular action. Results Chains are a systematic method that can be used for measuring effectiveness of conservation action. Results Chains link conservation actions to the intended results through a theory of change. Draft Results Chains were completed for each strategy identified in the ICAP (see section 7). Results chains involve completing the following steps:
- Identifying a conservation action
- Describing the theory of change for how the action will lead to the desired result
- Identifying objectives and indicators associated with key intermediate results, and;
- Collecting, analyzing and assessing whether actions are achieving desired results (are objectives being achieved?)

STRATEGY 1: Plan and conduct site specific control of *Phragmites australis* at Long Point and Big Creek.

Conservation Target(s): Coastal Wetlands and Inner Bay, Beaches and Coastal Dunes
Direct Threat: Invasive Species
Actions:
- Utilize an integrated pest management approach using a combination of control methods.
- Collaborate with regulatory agencies.
- Document re-establishment in treated areas to assess efficacy and inform follow-up treatment.
- Obtain necessary authorizations from regulatory agencies.
- Coordinate mapping to track and monitor efficacy.
- Conduct ecological monitoring.
- Prioritize areas for management.
- Explore best practices for alternative control methods and new/emerging techniques.
- Conduct outreach to key stakeholders to identify new partners and maintain existing support.
- Conduct First Nations engagement sessions to share information and knowledge.
- Support training of licensed contractors and local individuals.
- Create opportunities for volunteers to pull small patches found in Beaches and Coastal Dunes.
- Apply for all required federal permits (SARA, CWA, DFO).
- Obtain contractors for implementation and monitoring.

Measures of Effectiveness:

Objectives	Indicators
1.0: Maintain *Phragmites australis* cover in the Long Point Coastal Wetland Complex to <10%.	# ha habitat improved % change in Phragmites cover based on vegetation plots
1.1: A funded and coordinated Phragmites control program is implemented on the Long	# ha habitat improved

Point and Big Creek National Wildlife Areas annually from 2019-2025.	% change in Phragmites cover based on vegetation plots
1.2: Evaluate native vegetation recovery capacity.	% native cover Species richness, abundance, and community composition of vegetation present in seedbank samples
1.3: Evaluate effects of treatment on wetland biota habitat use.	Relative abundance of turtles, marsh birds and amphibians in treated areas vs. control

Theory of Change:

The following results chains (e.g. Figure 4 and onwards) throughout this document outline the assumptions for how each strategy will contribute to reducing the threats to the Conservation Targets identified. Reducing the threats to these targets will in the long term contribute towards the achievement of the ICAP goals. The theory of change outlines a series of causal statements that link intermediate results (assumptions) in an "IF…THEN" fashion. The measures of effectiveness as well as actions have also been identified at key steps in the chains where they apply.

The following results chain (Figure 4) demonstrates how Strategy 1 will contribute to reducing the threat of *Phragmites australis* to the Coastal Wetlands and Inner Bay and Beaches and Coastal Dunes Conservation Targets. Reducing the threat of *Phragmites australis* to these targets will in the long term contribute towards the achievement of Goal 1. A theory of change and associated results chain is provided for each strategy in the ICAP below.
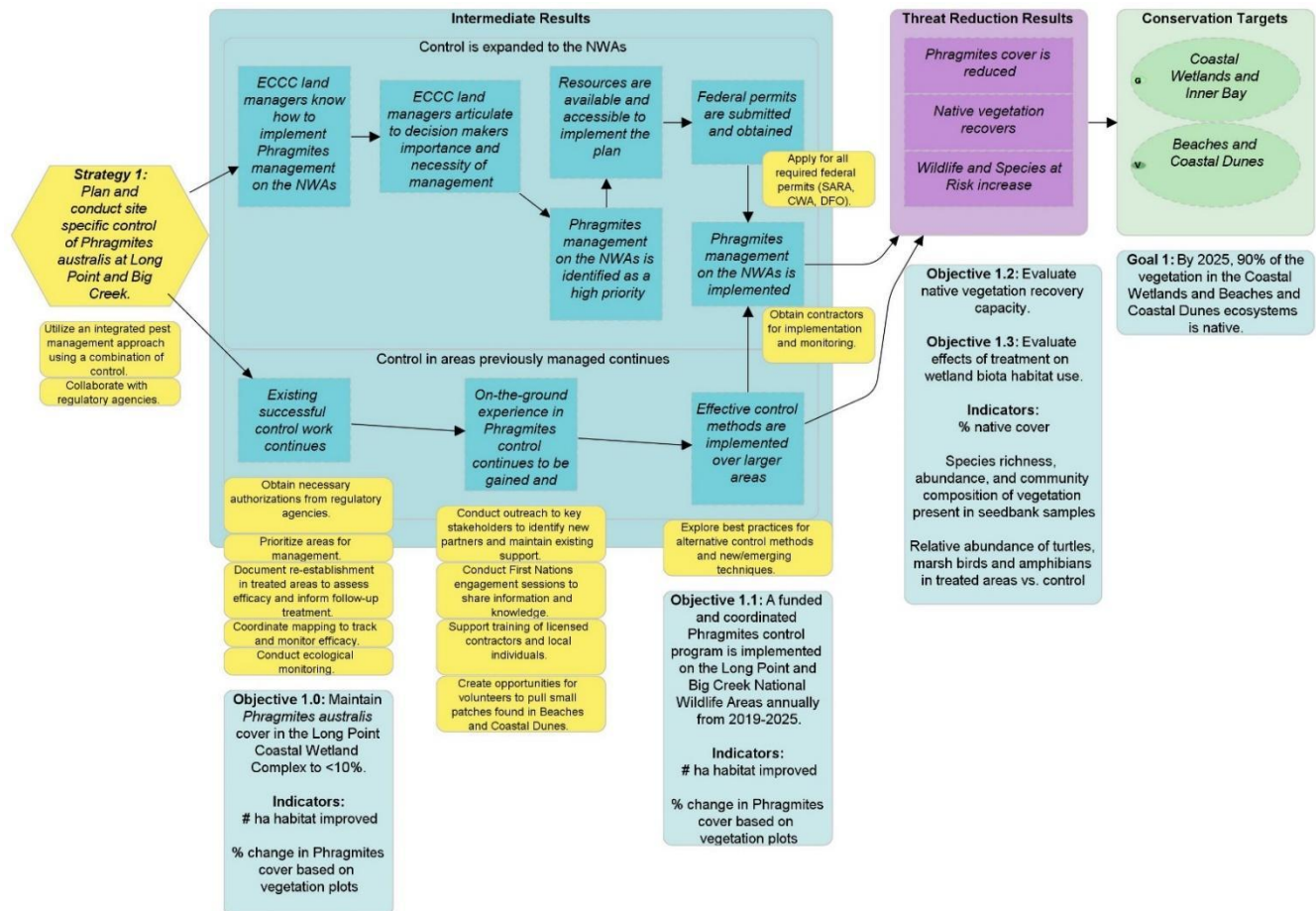
FIGURE 4. STRATEGY 1 - THEORY OF CHANGE.

STRATEGY 2: Plan and conduct *Phragmites australis* control within the upper watershed to reduce spread into Big Creek and Long Point.

Conservation Target(s): Coastal Wetlands and Inner Bay, Beaches and Coastal Dunes, Watercourses and Riparian Areas, Forests & Treed Swamps
Direct Threat: Invasive Species
Actions:
- Develop a watershed engagement plan for managing Phragmites.
- Mobilize landowners and the general public to monitor and manage Phragmites.
- Prioritize areas in the upper watershed to treat.
- Provide training materials to heavy machinery operators and construction companies on clean equipment protocols.
- Work with Norfolk County to control Phragmites on roadside and drainage ditches.

Measures of Effectiveness:

Objectives	Indicators
2.0: By 2024, key *Phragmites australis* propagule sources in the upper watershed are controlled.	# ha and/or km improved # landowners participating in control # individuals trained to control Phragmites

Theory of Change:
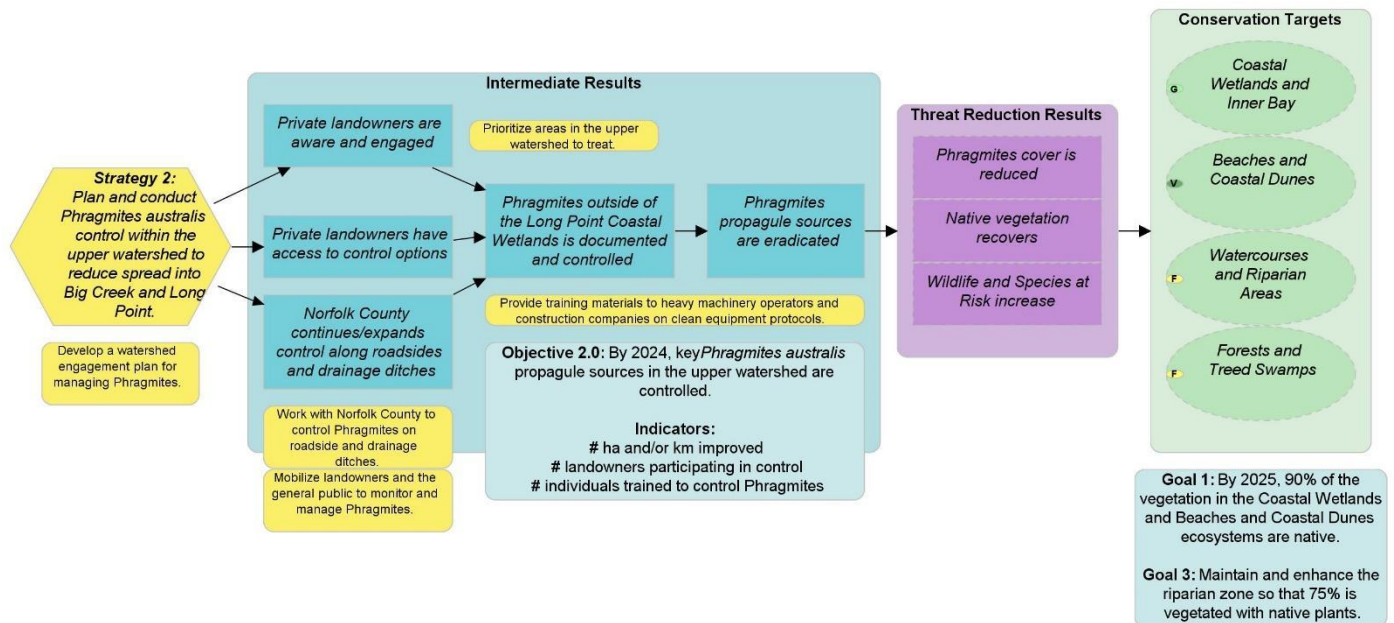
FIGURE 5. STRATEGY 2 - THEORY OF CHANGE.

STRATEGY 3: Develop legislative and/or policy guidance that supports ecosystem recovery for Species at Risk.

Conservation Target(s): Coastal Wetlands and Inner Bay, Beaches and Coastal Dunes
Direct Threat: Invasive Species
Actions:
- Ensure project applications are reviewed within the spirit of associated SAR legislation and with recognition of the urgent need and benefits to SAR.
- Provide the flexibility to undertake urgent restoration activities which benefit SARA listed SAR species and their habitat, irrespective of historic occurrences or current Critical Habitat designations.
- Identify process required to develop necessary legislative and/or policy guidance that supports prioritized ecosystem recovery for the benefit of SARA and non-SARA listed species.

- Provide necessary delegated authority for resource managers to make practical decisions around urgent stewardship actions which halt the degradation of Critical Habitat quality and the wildlife it supports.
- Support restoration work in suitable habitat for SAR.

Measures of Effectiveness:

Objectives	Indicators
3.0: *Phragmites australis* is effectively controlled in SAR critical habitat at Long Point and Big Creek by 2022.	# ha of SAR critical habitat improved
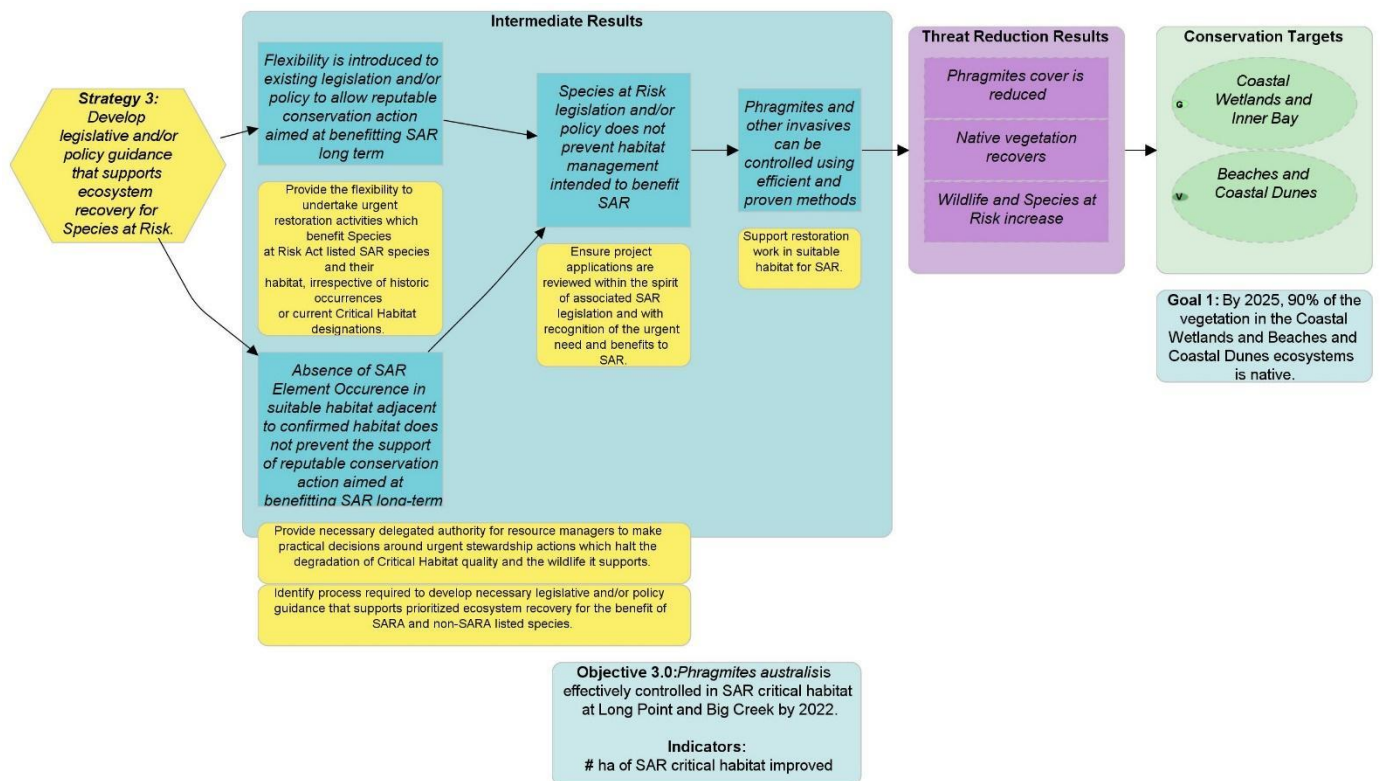
Theory of Change:

STRATEGY 4: Increase awareness on the threat of roads to wildlife and engage the local community in stewardship efforts.

Conservation Target(s): Amphibians and Reptiles
Direct Threat: Roads
Actions:
- Conduct local community stewardship events and workshops.

- Inform motorists when and how to modify behaviour.
- Install MTO wildlife mortality awareness signs at priority hotspots.
- Initiate a citizen science data collection program at potential future mitigation sites.

Measures of Effectiveness:

Objectives	Indicators
4.0: By 2020, citizen scientists are submitting road mortality observations in Norfolk County to the iNaturalist 'Citizen Science Data Collection in Norfolk County' project or the 'Wildlife on Roads in Ontario' project and observations/people contributing increases each year.	# people (citizen scientists) conducting road mortality surveys on Norfolk County roads # road mortality observations submitted to the iNaturalist 'Citizen Science Data Collection in Norfolk County' project or the 'Wildlife on Roads in Ontario' project (in Norfolk County) to inform future management
4.1: By 2023, 5 public engagement events on road ecology have occurred.	# public engagement events # attendees at each event
4.2: By 2023, at least 75% of Norfolk County residents have been made aware of the threats of roads to reptiles and amphibians and the solutions to mitigate road mortality.	# households and/or residents reached

Theory of Change:
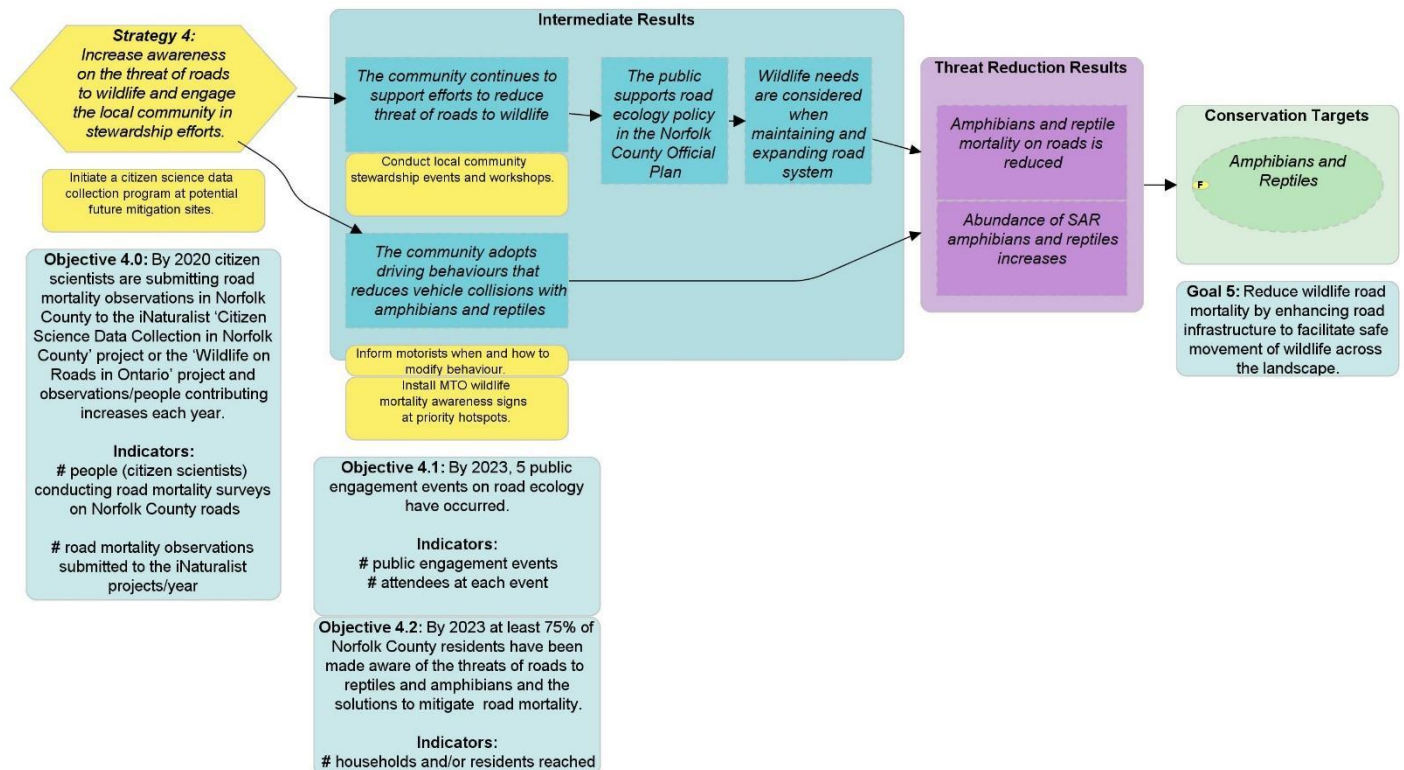
FIGURE 6. STRATEGY 4 - THEORY OF CHANGE.

STRATEGY 5: Incorporate road ecology mitigation policy and guidelines in the Norfolk County Official Plan and Road Asset Management Plan.

Conservation Target(s): Amphibians and Reptiles
Direct Threat: Roads
Actions:

- Norfolk County staff present a road ecology mitigation policy and guidelines report to council.
- Lunch and learn workshops are delivered to Norfolk County Council to provide support and education on wildlife/road mitigation.
- Norfolk County staff develop amendments to the Official Plan that integrate and support implementation of road ecology mitigation measures.
- Provide Norfolk County staff with the information and resources required to mitigate the threat of roads to wildlife.
- Identify and contact key Norfolk County staff to establish a partnership
- Develop and distribute an electronic road ecology resource folder for Norfolk County Staff which includes a road mortality hot spot map.
- Host a planning/road management/road ecology workshop for Norfolk County Staff

Measures of Effectiveness:

Objectives	Indicators
5.0: By 2025, Norfolk County council has reviewed at least 1 municipal staff recommended report about the threat of roads to SAR herpetofauna and road ecology mitigation principles and practices.	# reports reviewed
5.1: At the next Official Plan review, road ecology mitigation policy amendments are consolidated into the Official Plan.	An updated Norfolk County Official Plan which includes road ecology mitigation policy amendments.

Theory of Change:
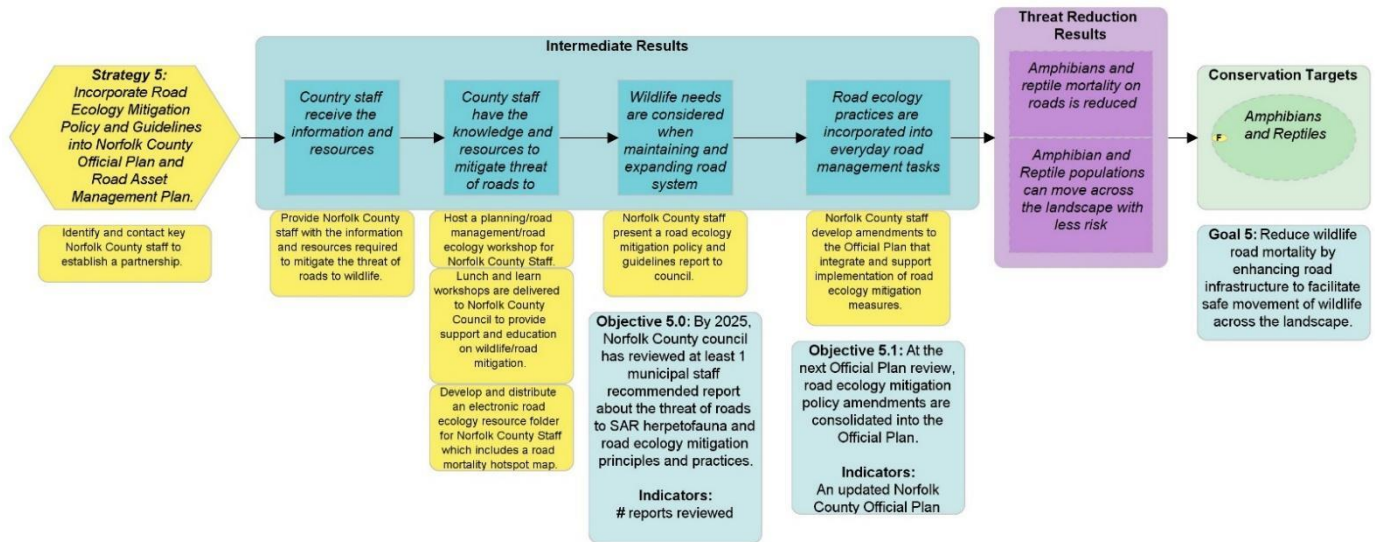
FIGURE 7. STRATEGY 5 - THEORY OF CHANGE.

STRATEGY 6: Install and maintain dedicated road mitigation infrastructure for Species at Risk amphibians and reptiles.

Conservation Target(s): Amphibians and Reptiles
Direct Threat: Roads
Actions:
- Identify road projects scheduled to take place in SAR herpetofauna hotspots in Norfolk County
- Consolidate all relative information (Natural Heritage System maps/land use schedules from the Official Plan, SAR herpetofauna hotspots, wildlife corridors, and scheduled road projects)
- For every current, planned and future road project, follow an assessment process to determine if the site is a wildlife corridor/crossing hotspot, and integrate standard and widely accepted mitigation measures efficiently and cost effectively as required
- Plan and design roads to avoid and minimize threats to SAR and the surrounding environment through any required process(es)
- Install/implement temporary mitigation strategies at sites where permanent mitigation infrastructure is scheduled to be built
- Augment mitigation with accessory conservation initiatives (e.g.,. habitat creation, and public awareness campaigns)
- Monitor effectiveness of mitigation infrastructure

Measures of Effectiveness:

Objectives	Indicators
6.0: By 2021, Norfolk County road managers consider SAR herpetofauna habitat for all road projects that are scheduled.	% road project proposals that include an assessment of the potential for herpetofauna road mortality

	% projects include considerations (an analysis or mitigation plan if appropriate) for SAR herpetofauna
6.1: By 2025, a report with proposed road ecology amendments to the Norfolk County Official Plan is presented to council.	Road ecology amendments to the Norfolk County Official Plan are completed # presentations to Council on road ecology amendments
6.2: By 2026, Norfolk County plans, installs, monitors and maintains dedicated wildlife/road mitigation infrastructure at priority hotspots.	# wildlife road mitigation infrastructure projects being maintained and/or implemented at priority SAR herpetofauna hotspots # projects that are inspected/ repaired per year # projects for which surveys are conducted to measure effectiveness in reducing road mortality

Theory of Change:
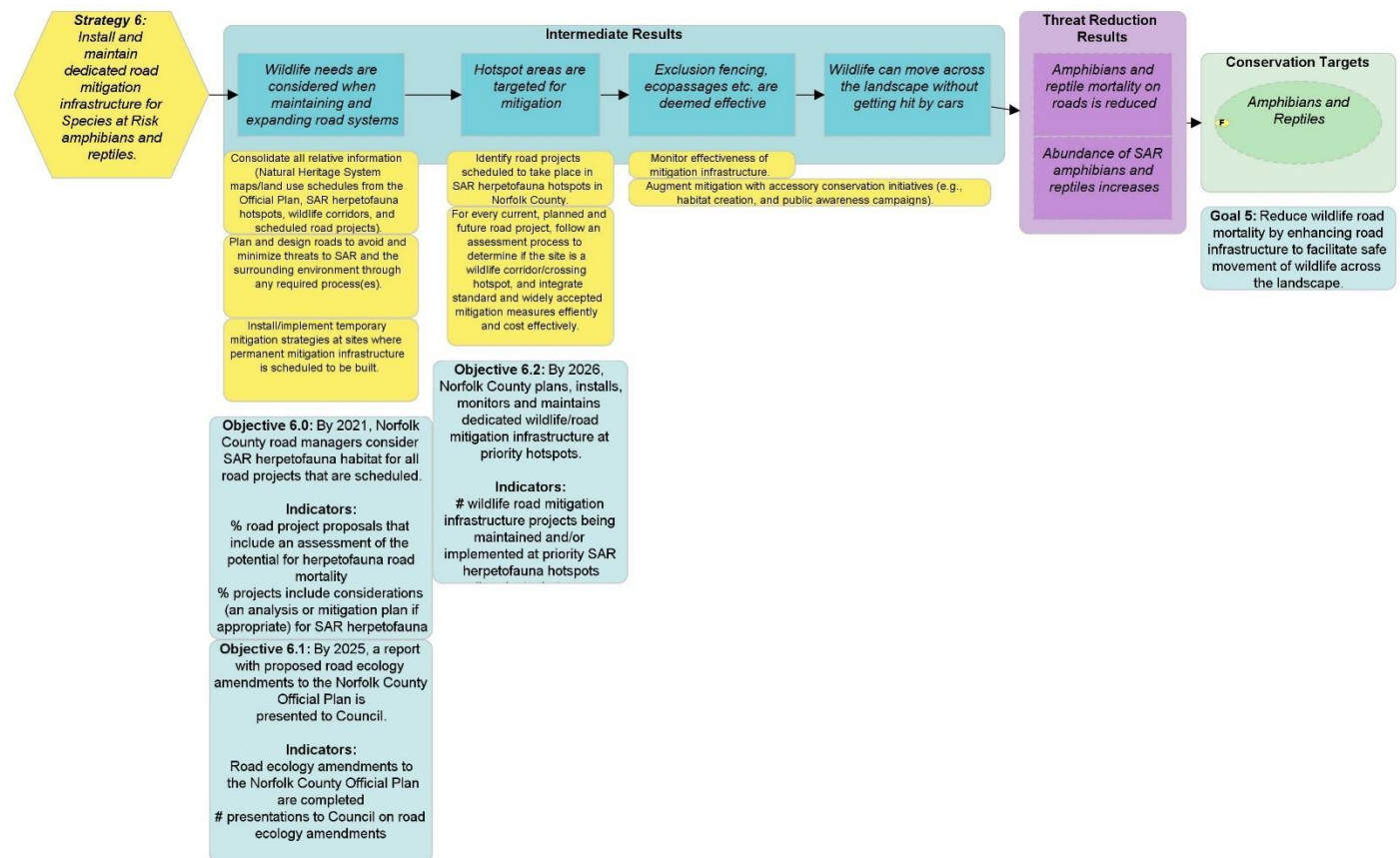
FIGURE 8. STRATEGY 6 - THEORY OF CHANGE.

STRATEGY 7: Maintain a geospatial database for tallgrass habitat with information on management and monitoring activities.

Conservation Target(s): Open Country

Direct Threat: Fire Suppression in Tallgrass Communities

Actions:
- Compile all existing databases and mapping of Open Country habitats, including Ecological Land Classification (ELC) Community Class mapping and historical data into a shareable database
- Identify priority areas for ground-truthing and those that have adequate data
- Compile and track timeline of management activities associated with each site
- Complete field work to apply ELC to Open Country habitats, complete botanical inventories, complete bird surveys, and document candidate areas for prescribed fire
- Identify areas with fire-responsive invasive species and other invasive species pressures
- Identify sites with sensitive non-mobile species
- Prepare list of tallgrass indicator species by ELC polygon
- Prepare list of rare or sensitive species (to fire or other management) by ELC polygon
- Identify high-risk, no burn areas (e.g. buildings, fuel-loaded areas, etc.)

Measures of Effectiveness:

Objectives	Indicators
7.0: Develop a shareable database linked to the LPWF Shared Geospatial Conservation Database to track monitoring results with a focus on problematic invasive species, key tallgrass habitat indicator species, overall biodiversity, and management activities.	An updated geospatial database for tallgrass habitat is created Results included in the LPWF Shared Geospatial Conservation Database
7.1: By 2021, map (and ground-truth where necessary) tallgrass habitat.	Tallgrass habitat is mapped in a geospatial database

Theory of Change:
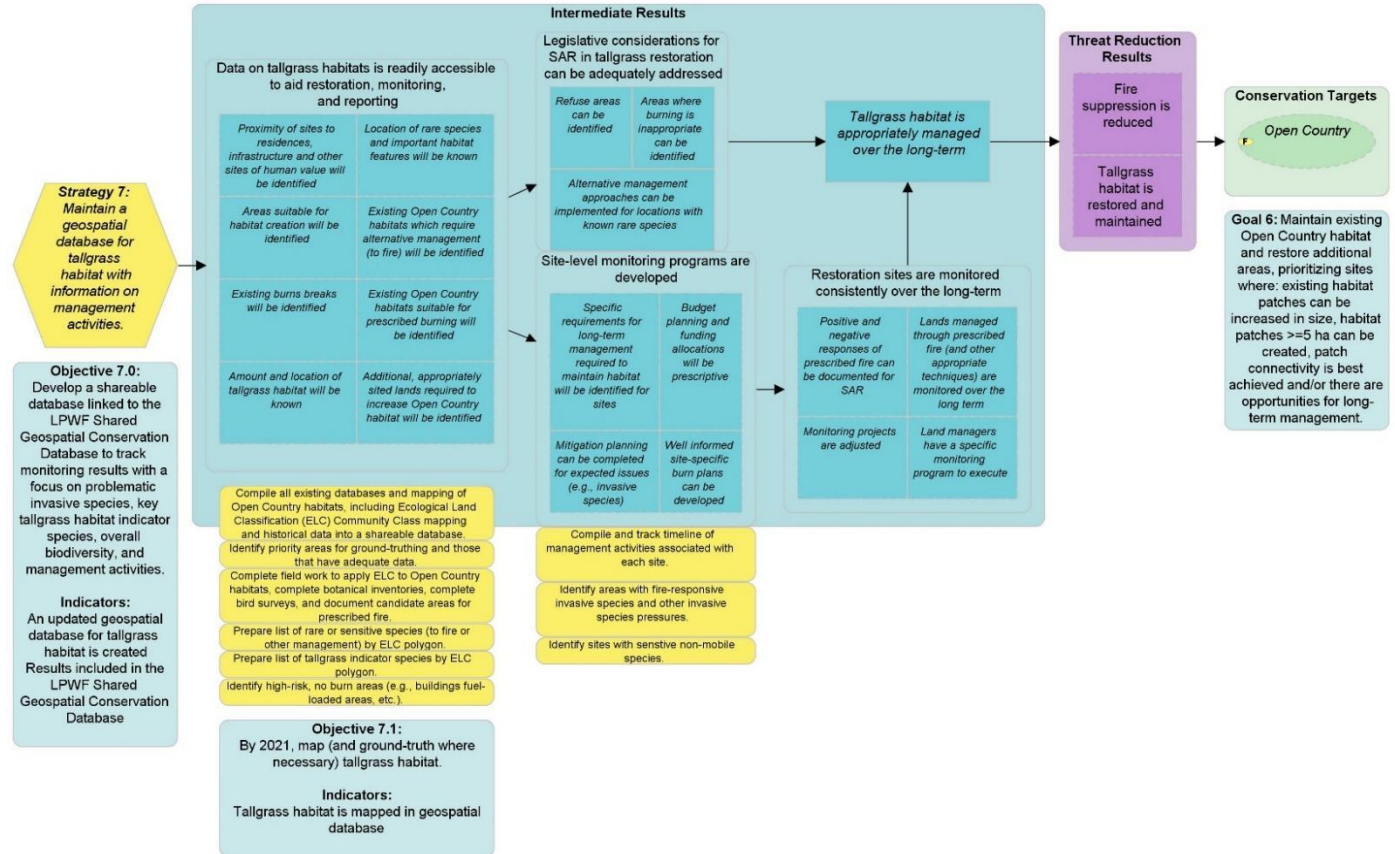
FIGURE 9. STRATEGY 7 - THEORY OF CHANGE.

STRATEGY 8: Implement a landscape-level Open Country habitat management plan to restore and maintain Open Country habitat on private and public lands.

Conservation Target(s): Open Country

Direct Threat: Fire Suppression in Tallgrass Communities

Actions:
- Identify key stakeholders (land managers, land owners, conservation organizations etc.) to form an implementation team.
- Identify a lead for the working group to organize communication among stakeholders, compile input/resources and coordinate the formulation and implementation of a management plan.
- Identify habitat creation targets for different Open Country community types.
- Develop a landscape-level Open Country habitat management plan which includes:
  - Description and mapping of existing Open Country communities, landscape-level habitat connectivity, and sites suitable for habitat restoration and improvement
  - Recommendations for the proportion of different successional stages within the landscape (e.g., X number of ha should be maintained as tallgrass prairie, X number of ha should be maintained as savanna, etc.)

- o Identification of high-priority management needs (e.g., sites where canopy closure threatens Open Country communities, invasive species are prevalent, etc.)
- o Identification of site-specific habitat management objectives, prescriptions and cycles (e.g., Property A should be maintained as oak savanna through prescribed fire every 10-15 years).
- o Identification of existing natural and required fire breaks
- o Identification of existing and desired habitat linkages
- o Specific areas where Open Country habitat patches can be increased in overall size identified
- o Recommendations for short and long-term monitoring
- o Recommendations for seed collection and assisted dispersal
- ● Conduct prescribed burns and/or use other management techniques (e.g. mowing) at existing, improved and restored sites
- ● Create/take advantage of natural fire breaks (e.g., vegetation gaps, removal of fuel, rivers etc.) when conducting prescribed burns
- ● Update tracking databases (e.g., the LPWF Shared Geospatial Conservation Database) as required
- ● Implement monitoring activities at restored and existing sites

Measures of Effectiveness:

Objectives	Indicators
8.0: By 2023, a landscape level Open Country habitat management plan is being implemented.	Open country habitat restoration and management is implemented in a coordinated and strategic manner by the working group
8.1: Improve and restore 250 ha of Open Country habitat on private and public lands by 2023 in a manner that focuses on creating new habitat patches >5 ha where possible.	# projects funded # ha habitat restored # ha habitat improved # new Open Country habitat patches created >5 ha # ha of tallgrass habitat improved using prescribed burn or other methods for reducing woody encroachment and invasive species
8.2: Implement monitoring plans to assess the success of restoration efforts focused on Open Country habitat indicator species, SAR, and overall biodiversity.	# sites with pre and post restoration data is collected # sites where a systematic monitoring program has been implemented

Theory of Change:
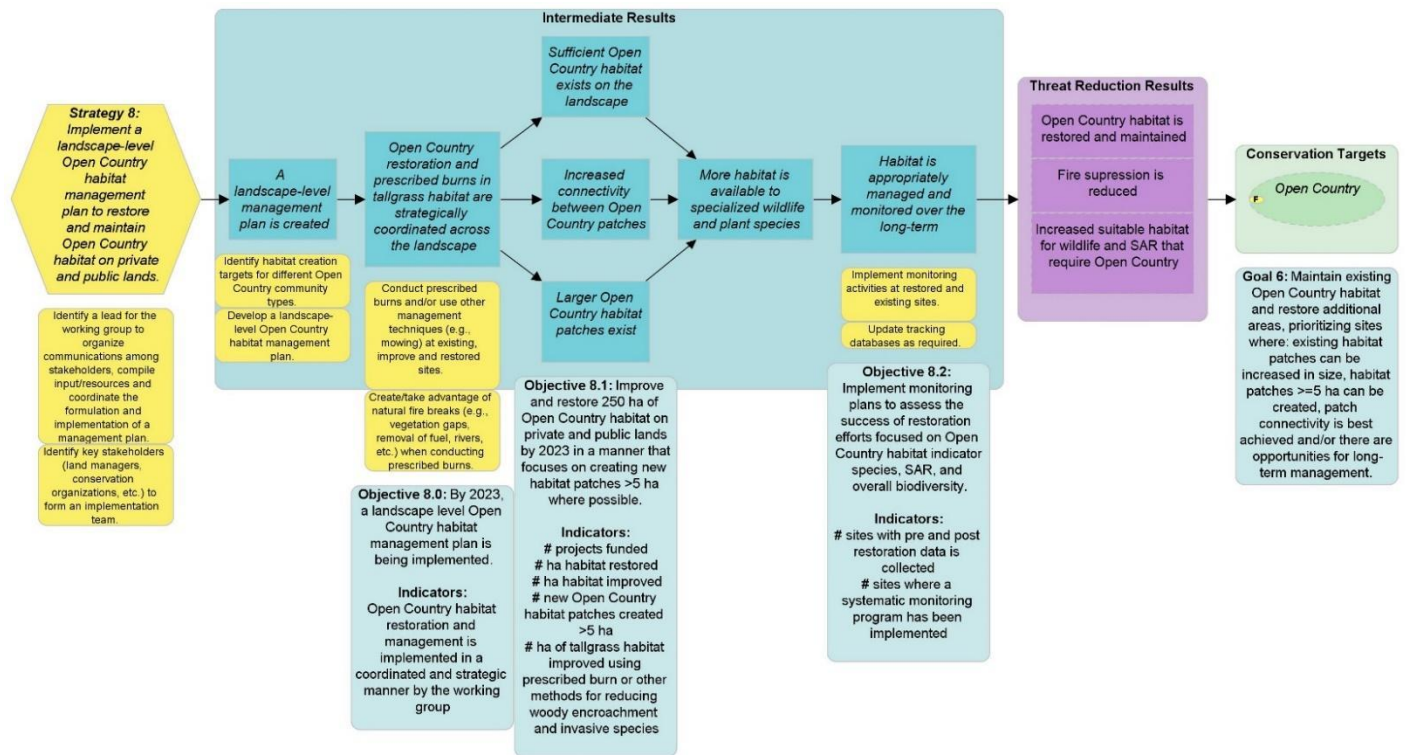
FIGURE 10. STRATEGY 8 - THEORY OF CHANGE.

STRATEGY 9: Increase public awareness about the importance of Open Country communities and the use of fire as a management tool in maintaining tallgrass habitat.

Conservation Target(s): Open Country

Direct Threat: Fire Suppression in Tallgrass Communities

Actions:
- Prepare and deliver public outreach materials (presentations, factsheets etc.) on the ecological importance of Open Country habitat
- Circulate written materials and offer fact-filled presentations at local agricultural or other community events, St. Williams Conservation Reserve, Turkey Point Provincial Park, and local schools
- Establish regular communication amongst landowners managing Open Country habitat to better facilitate sharing of resources and knowledge, volunteer engagement, and updating of the tallgrass database
- Prepare mail out packages for residents in close proximity to sites where prescribed burns are planned or anticipated
- Prepare a prescribed burn notice template that can be shared with partners organizing prescribed burns
- Engage members of the public as volunteers in the creation and maintenance of Open Country habitat

- Provide incentives to allow members of the public to become RX100 certified and create a volunteer program to increase public involvement in prescribed burns
- Engage knowledge resources such as burn bosses and the local fire departments to participate in public education and outreach
- Offer tours to members of the public to visit Open Country habitats across the LPWF Priority Place

Measures of Effectiveness:

Objectives	Indicators
9.0: By 2023, a public awareness campaign on the importance of Open Country communities, with an emphasis on fire as a management tool for tallgrass habitat is developed and executed with at least 2 public outreach events and 3 presentations given.	# public outreach events # presentations # attendees at events or presentations # private landowners with Open Country communities engaged in outreach

Theory of Change:
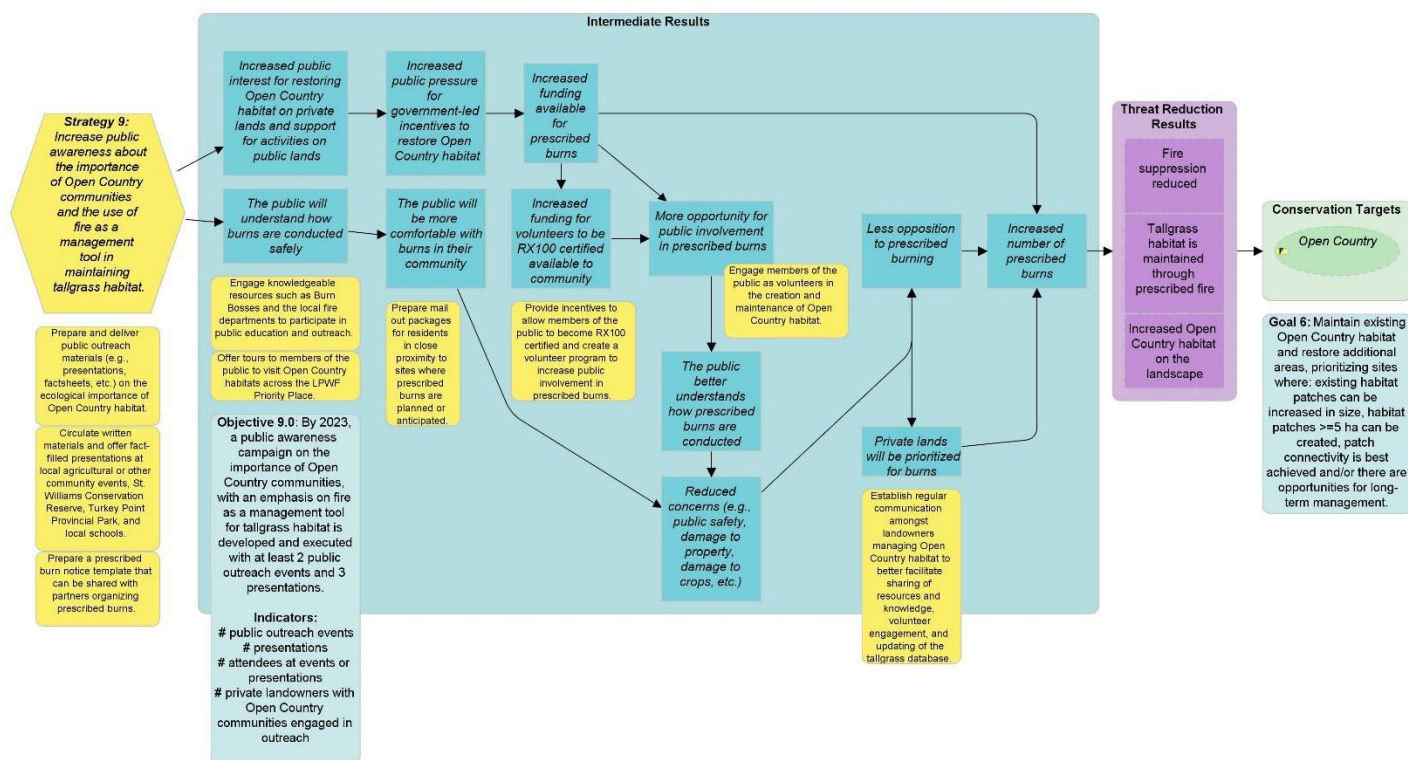
FIGURE 11. STRATEGY 9 - THEORY OF CHANGE.

STRATEGY 10: Provide support and opportunities for landowners to manage, restore and maintain Open Country habitat on private lands.

Conservation Target(s): Open Country

Direct Threat: Fire Suppression in Tallgrass Communities

Actions:
- Identify opportunities to restore and maintain Open Country habitat on private lands
- Develop site-specific management plans tailored to individual landowners managing Open Country communities
- Present incentive opportunities to landowners which aim to restore and maintain Open Country habitat on private lands (government led incentive programs, seed give-a-ways, education on habitat creation and maintenance, etc.)
- Develop landowner materials to identify funding opportunities and ecological benefits of habitat restoration
- Connect landowners to organizations such as Tallgrass Ontario, Nature Conservancy of Canada, Long Point Basin land Trust, ALUS Norfolk, and Pollinator Partnership

Measures of Effectiveness:

Objectives	Indicators
10.0: By 2023, at least 60 ha (of the 250 ha Open Country restoration objective) is restored on private lands.	# ha of habitat restored on private lands
10.1: By 2023, at least 5 prescribed burns have occurred on private lands to maintain/improve tallgrass habitat.	# prescribed burns conducted on private lands # ha of habitat improved through prescribed burns

Theory of Change:
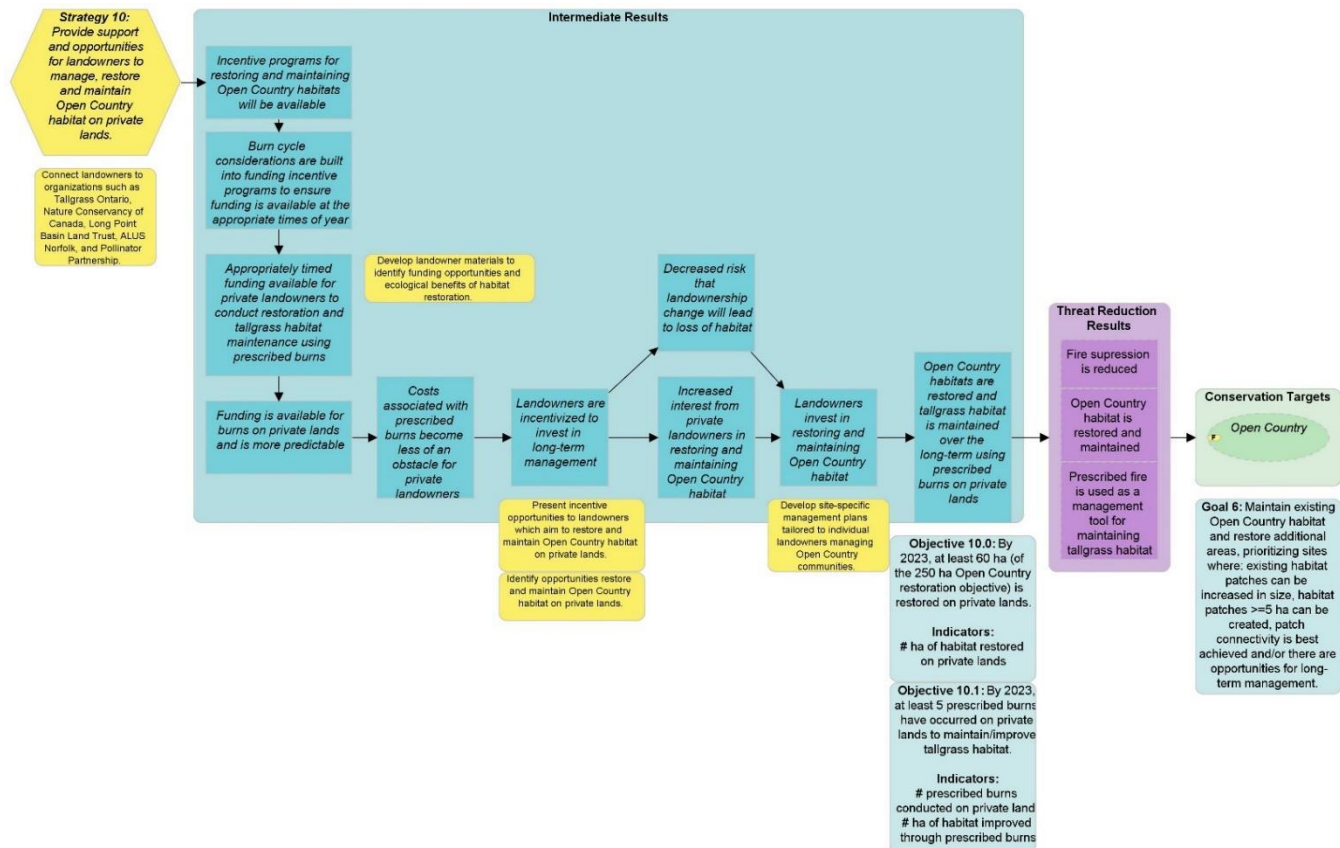
FIGURE 12. STRATEGY 10 - THEORY OF CHANGE.

STRATEGY 11: Restore, improve, and maintain natural features on agricultural lands.

Conservation Target(s): Watercourses and Riparian Areas, Coastal Wetlands and Inner Bay, Open Country, Forests & Treed Swamps, Beaches and Coastal Dunes

Direct Threat: Agricultural Runoff

Actions:
- Provide environmental financing to agricultural landowners for restoration, maintenance and improvement of natural features
- Focus restoration and maintenance efforts on riparian buffers, grassland, hedgerows and wetlands

Measures of Effectiveness:

Objectives	Indicators
11.0: Restore 200 ha of natural features on marginal agricultural land by 2023.	# ha natural features restored # restoration projects funded
11.1: Maintain and/or enhance existing restored natural features on marginal agricultural land.	# ha natural features maintained and/or improved

11.2: Maintain and diversify the plant species composition of existing hedgerows and plant additional hectares to link woodlands by 2023.	# ha hedgerows maintained # ha hedgerows planted
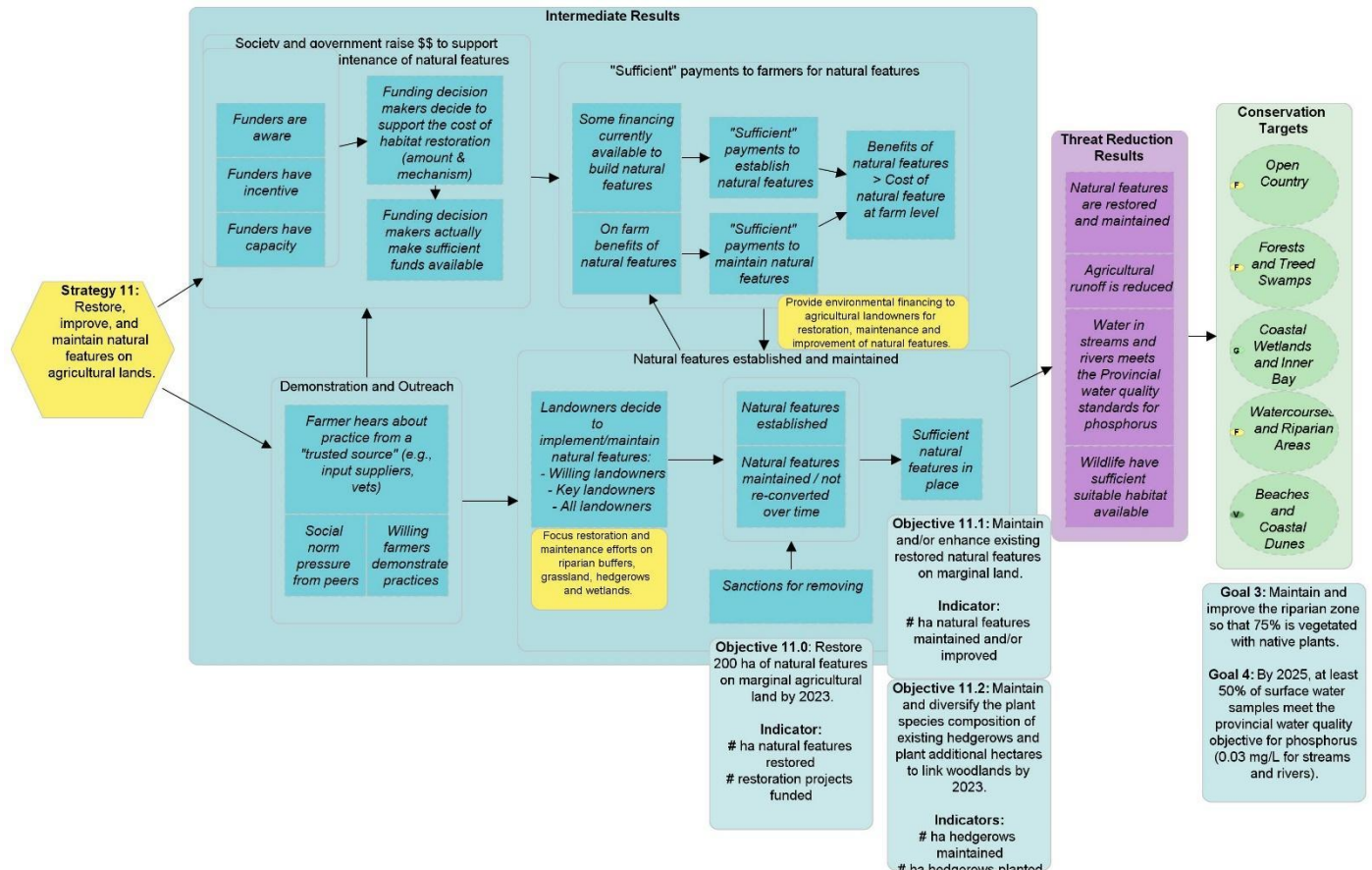
Theory of Change:

STRATEGY 12: Promote the adoption of agricultural BMPs through existing incentive programs.

Conservation Target(s): Watercourses and Riparian Areas, Coastal Wetlands and Inner Bay, Open Country, Forests & Treed Swamps, Beaches and Coastal Dunes

Direct Threat: Agricultural Runoff/Agriculture Sector

Actions:
- Deliver programs with extension personnel who can provide technical support on the ground and assist with funding securement for individual landowners
- Work with landowners to determine what BMPs they are interested in and what may work well for them
- Provide public tours of demonstration sites

- Conduct targeted, door-to-door campaign
- Promote Farmland Health Check-Up and LEADS/CAP program for funding
- Coordinate with commodity groups
- Support and enhance existing Agricultural BMP programs
- Conduct outreach to certified crop advisors
- Work with crop input providers to promote the use of cover crops
- Target farmer associations for outreach
- Provide economic incentives for planting cover crops
- Provide a tax break for implementing cover crop BMPs

Measures of Effectiveness:

Objectives	Indicators
12.0: Conduct at least 2 public tours of agricultural demonstration sites annually.	# of tours/year # of farmers attending tours/year # of farmers that indicate they will implement one or more BMPs in the following growing season
12.1: By 2023, financial incentives are sufficient to meet the demand.	% of qualifying funding applications that are funded
12.2: By 2023, a public awareness and engagement campaign is created and implemented to notify landowners of available funding programs and BMPs.	# of individuals reached
12.3: By 2023, 50% of farms in Norfolk County maintain winter cover crops during the non-growing season.	% farms in Norfolk County maintaining at least a single field of winter cover crops # of hectares with winter cover crops

Theory of Change:
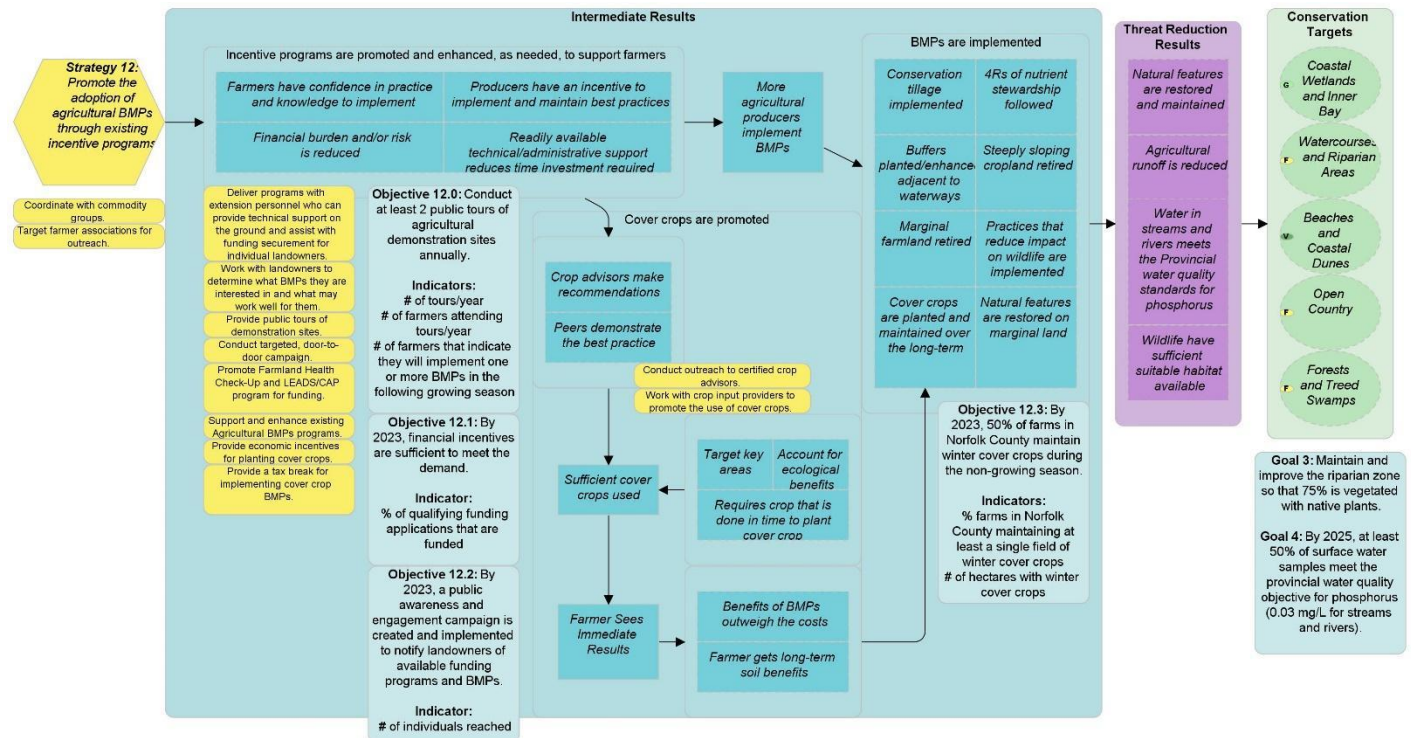
FIGURE **14. S**TRATEGY **12 - T**HEORY OF **C**HANGE**.**

STRATEGY 13: Implement a management plan for forest connectivity and diversity in Forests and Treed Swamps.

Conservation Target(s): Forests and Treed Swamps

Direct Threat: Logging & wood harvesting

Actions:
- Develop a model to identify areas of low forest connectivity to focus outreach and management activities
- Create a LPWF Forests and Treed Swamp Management Plan to improve forest condition, size and connectivity
- Develop user-friendly BMPs guideline information packets for SAR and the forest floor.
- Develop a project to monitor water levels within treed swamps
- Give expert advice at Norfolk County Council meetings
- Develop a marketing campaign to target cat owners
- Engage landowners and land managers through workshops and presentations on the importance of forest structure and diversity, species at risk, and invasive species management
- Engage landowners and land managers to follow BMPs where applicable
- Distribute and develop, as needed educational materials for invasive species and tree diseases

- Promote and develop, as needed, incentive programs aiming to improve forest condition, size and connectivity (e.g. tree planting)
- Install devices to monitor water levels within treed swamps
- Monitor sites where BMPs are being implemented to determine their effectiveness
- Monitor select sites to determine if roadside dumping has been reduced

Measures of Effectiveness:

Objectives	Indicators
13.0: By 2022, a model is created to identify areas with low forest connectivity.	# ha identified as area with low forest connectivity
13.1: By 2023, landowners and land managers are engaged in forest management outreach regarding BMPs and incentive programs.	# landowners implementing BMPs # land managers implementing BMPs # landowners and land managers engaged through incentive programs
13.2: By 2023, a Management Plan for Forests and Treed Swamps is implemented.	# ha of habitat improved # properties with Management Plan actions implemented # trees planted to increase forest cover over time # treed swamps with water levels monitored and maintained at optimal levels

Theory of Change:

Intermediate Results

Active involvement at Norfolk County council meetings

Norfolk County council meetings are attended

Give expert advice at council meeting(s)

Current tree-cutting by-law for Norfolk County is retained and/or strengthened

Awareness campaign for the general public

Public awareness of outdoor and feral cats is increased

Develop a marketing campaign to target cat owners.

Overall public perception of outdoor and feral cats shifts towards keeping cats as indoor pets

Strategy 13: Implement a management plan for forest connectivity and diversity in Forests and Treed Swamps.

Areas with low forest connectivity can be identified and assessed for potential

Areas of high resistance for wildlife are identified

Develop a model to identify areas of low forest connectivity to focus outreach and management activities.

Objective 13.0: By 2022, a model is created to identify areas with low forest connectivity.

Indicators:
ha identified as area with low forest connectivity

A Forests and Treed Swamps Management Plan is created to increase forests and treed swamps size, quality, and connectivity

Create a LPWF Forests and Treed Swamps Management Plan to improve forest condition, size and connectivity.

Develop user-friendly BMPs guideline information packets for SAR and the forest floor.

Develop a project to monitor water levels within treed swamps.

Outreach to landowners and managers is conducted to promote and encourage management plan actions

Landowners and managers have an increased awareness about maintaining and enhancing forest structure and diversity on their property or within their woodlot

Native planting in gardens and woodlots is encouraged

Landowners and managers with treed swamps have been engaged to monitor water levels

Engage landowners and managers through workshops and presentations on the importance of forest structure and diversity, species at risk, and invasive species management.

Engage landowners and land managers to follow BMPs where applicable. Distribute and develop, as needed, educational materials for invasive species and tree diseases.

Promote and develop, as needed, incentive programs aiming to improve forest and treed swamp condition, size and connectivity (e.g., tree planting).

Install devices to monitor water levels within treeds swamps.

Landowners and managers are actively implementing management plan actions

Landowners and managers agree to plant trees and areas to plant are identified

Invasive species are actively removed from high priority sites

Landowners and managers reduce the distance firewood and lumber that have succumbed to invasive species are transported

Landowners are increasingly selecting native plants for their gardens

Forest floor and SAR BMPs are implemented

Landowners and managers monitor their woodlots for potential invasive species and tree diseases

Roadside dumping of yard waste and garbage is reduced

Water measuring devices are placed in treed swamps

Increased number of land managers are regularly washing their harvesting equipment

Objective 13.1: By 2023, landowners and land managers are engaged in forest management outreach regarding BMPs and incentive programs.

Indicators:
landowners implementing BMPs
land managers implementing BMPs
landowners and land managers engaged through incentive programs

Objective 13.2: By 2023, a Management Plan for Forests and Treed Swamps is implemented.

Indicators:
ha of habitat improved
properties with Management Plan actions implemented
trees planted to increase forest cover over time
treed swamps with water levels monitored and maintained at optimal levels

Landowner and manager actions maintain or improve forest habitat and connectivity

Trees are planted in high priority areas

Native vegetation is re-established taking the place of invasive species and ornamental plants

Chance of potential invasive species colonizing forests is decreased

BMPs compliance has increased

Monitor sites where BMPs are being implemented to determine their effectiveness.

Monitor select sites to determine if roadside dumping has been reduced.

Threat Reduction Results

Forest connectivity, cover, diversity, structure, and sustainability as well as SAR habitat are maintained or increased

Conservation Targets

Forests and Treed Swamps

Goal 2: Maintain existing 2018 forest and treed swamp cover and where possible increase/improve interior forest habitat and connectivity through additional forested acreage and forested corridors by 2050.
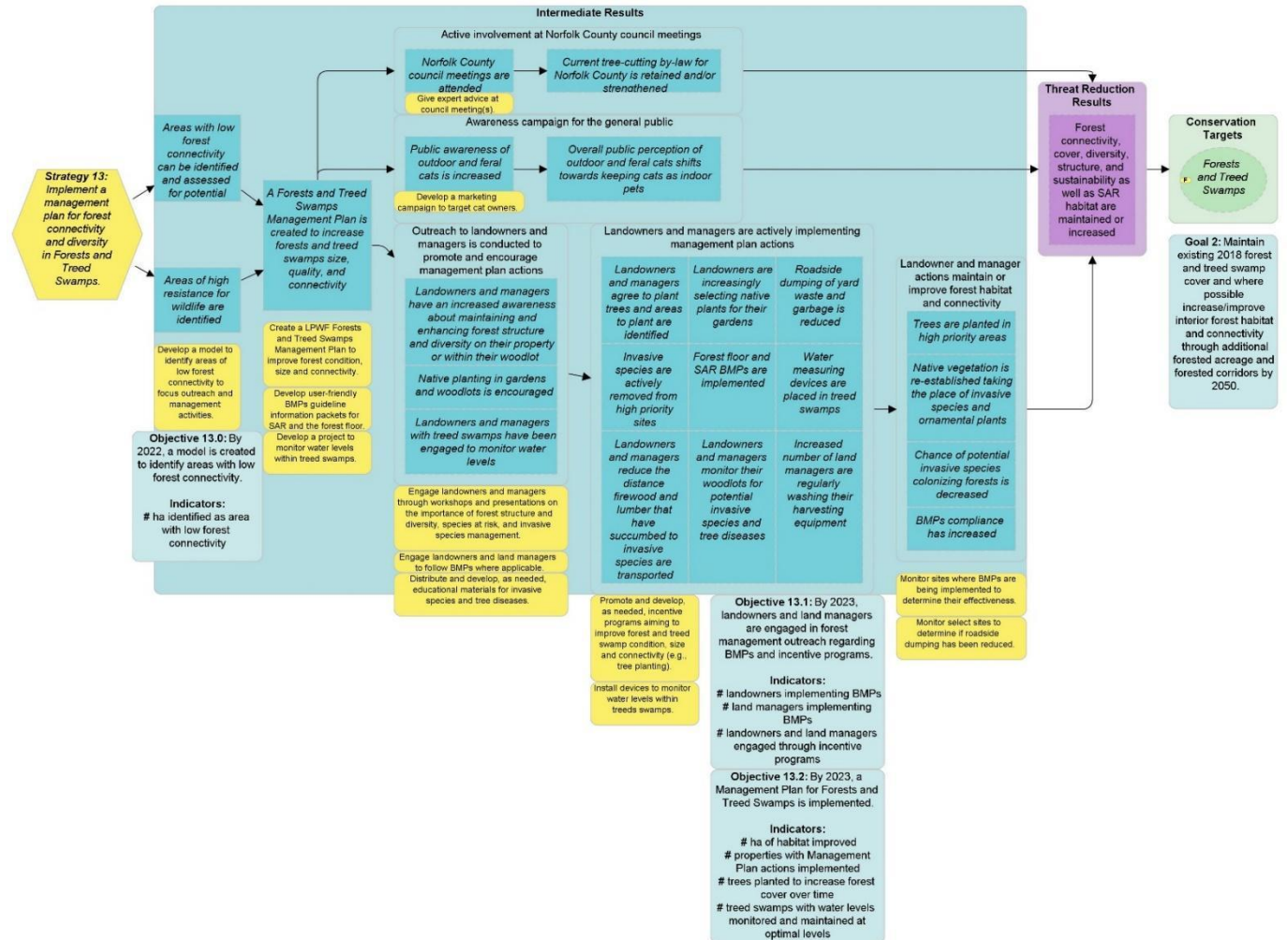
FIGURE 15. STRATEGY 13 - THEORY OF CHANGE.

Appendix A.

TABLE A. IMPLEMENTATION SUMMARY OF THE CONSERVATION TARGET GOALS FOR LONG POINT WALSINGHAM FOREST

Goals	Direct Threats	Conservation Targets	Strategies	Objectives	Benefitting SAR
1. By 2025, 90% of the vegetation in the Coastal Wetlands and Beaches and Coastal Dunes ecosystems is native.	Invasive Species	Coastal Wetlands and Inner Bay Beaches and Coastal Dunes Watercourses and Riparian Areas Forests and Treed Swamps	**STRATEGY 1:** Plan and conduct site specific control of *Phragmites australis* at Long Point and Big Creek. **STRATEGY 2:** Plan and conduct *Phragmites australis* control within the upper watershed to reduce spread into Big Creek and Long Point. **STRATEGY 3:** Develop legislative and/or policy guidance that supports ecosystem recovery for Species at Risk.	**1.0:** Maintain *Phragmites australis* cover in the Long Point Coastal Wetland Complex to <10%. **1.1:** A funded and coordinated Phragmites control program is implemented on the Long Point and Big Creek National Wildlife Areas annually from 2019-2025. **1.2:** Evaluate native vegetation recovery capacity. **1.3:** Evaluate effects of treatment on wetland biota habitat use. **2.0:** By 2024, key *Phragmites australis* propagule sources in the upper watershed are controlled. **3.0:** *Phragmites australis* is effectively controlled in SAR critical habitat at Long Point and Big Creek by 2022.	Acadian Flycatcher American Chestnut American Ginseng American Water-willow Bald Eagle Bank Swallow Barn Owl (Eastern population) Barn Swallow Bent Spike-rush (Great Lakes Plains population) Bird's-foot Violet Black Ash Black Tern Blanding's Turtle (Great Lakes/St. Lawrence population) Broad Beech Fern Butternut Canada Warbler Cerulean Warbler Chimney Swift Common Hoptree Common Nighthawk Crooked-stem Aster Cucumber Tree Downy Yellow False Foxglove Eastern Flowering Dogwood Eastern Foxsnake (Carolinian population) Eastern Hog-nosed Snake Eastern Milksnake

					Eastern Musk Turtle
					Eastern Ribbonsnake (Great Lakes population)
					Eastern Whip-poor-will
					Eastern Wood-pewee
					False-foxglove Sun Moth
					Fern-leaved Yellow False Foxglove
					Fowler's Toad
					Golden-winged Warbler
					Gray Ratsnake (Carolinian population)
					Grey Fox
					Gypsy Cuckoo Bumble Bee
					Harris's Sparrow
					Horsetail Spike-rush
					Jefferson Salamander
					King Rail
					Large Whorled Pogonia
					Laura's Clubtail
					Least Bittern
					Little Brown Myotis
					Louisiana Waterthrush
					Least Bittern
					Little Brown Myotis
					Midland Painted Turtle
					Nine-spotted Lady Beetle
					Northern Map Turtle
					Northern Myotis
					Olive-sided Flycatcher
					Piping Plover *circumcinctus* subspecies
					Prothonotary Warbler
					Queensnake
					Red-headed Woodpecker
					Riverine Clubtail (Great Lakes Plains population)

						Round-leaved Greenbrier (Great Lakes population) Rusty Blackbird Smooth Yellow False Foxglove Snapping Turtle Spiny Softshell Spotted Turtle Spotted Wintergreen Swamp Rose-mallow Transverse Lady Beetle Tri-colored Bat Unisexual Ambystoma Jefferson Salamander Wood Thrush Woodland Vole Yellow-banded Bumble Bee Yellow-breasted Chat *virens* subspecies
2.	Maintain existing 2018 forest cover and increase/improve interior forest habitat and connectivity through additional forested acreage and forested corridors by 2050.	Logging & Wood Harvesting	Forests and Treed Swamps	**STRATEGY 13:** Implement a management plan for forest connectivity and diversity Forests and Treed swamps.	**13.0:** By 2022, a model is created to identify areas with low forest connectivity. **13.1:** By 2023, landowners and land managers are engaged in forest management outreach regarding BMPs and incentive programs. **13.2:** By 2023, a Management Plan for Forests and Treed Swamps is implemented.	Acadian Flycatcher American Chestnut American Ginseng Bird's-foot Violet Black Ash Broad Beech Fern Butternut Canada Warbler Cerulean Warbler Chimney Swift Common Nighthawk Crooked-stem Aster Cucumber Tree Downy Yellow False Foxglove Eastern Flowering Dogwood Eastern Foxsnake (Carolinian population) Eastern Hog-nosed Snake Eastern Milksnake

					Eastern Ribbonsnake (Great Lakes population)
					Eastern Whip-poor-will
					Eastern Wood-pewee
					False-foxglove Sun Moth
					Fern-leaved Yellow False Foxglove
					Golden-winged Warbler
					Gray Ratsnake (Carolinian population)
					Grey Fox
					Gypsy Cuckoo Bumble Bee
					Harris's Sparrow
					Jefferson Salamander
					Large Whorled Pogonia
					Little Brown Myotis
					Louisiana Waterthrush
					Nine-spotted Lady Beetle
					Northern Myotis
					Olive-sided Flycatcher
					Prothonotary Warbler
					Red-headed Woodpecker
					Round-leaved Greenbrier (Great Lakes population)
					Rusty Blackbird
					Smooth Yellow False Foxglove
					Spotted Turtle
					Spotted Wintergreen
					Transverse Lady Beetle
					Tri-colored Bat
					Unisexual Ambystoma Jefferson Salamander
					Wood Thrush
					Woodland Vole
					Yellow-banded Bumble Bee

| 3. | Maintain and improve the riparian zone so that 75% is vegetated with native plants. | Agricultural Runoff | Coastal Wetlands and Inner Bay Beaches and Coastal Dunes Watercourses and Riparian Areas Forests and Treed Swamps Open Country | **STRATEGY 2:** Plan and conduct *Phragmites australis* control within the upper watershed to reduce spread into Big Creek and Long Point.
 STRATEGY 11: Restore, improve, and maintain natural features on agricultural lands.
 STRATEGY 12: Promote the adoption of agricultural BMPs through existing incentive programs. | **2.0:** By 2024, key *Phragmites australis* propagule sources in the upper watershed are controlled.
 11.0: Restore 200 ha of natural features on marginal agricultural land by 2023.
 11.1: Maintain and/or enhance existing restored natural features on marginal agricultural land.
 11.2: Maintain and diversify the plant species composition of existing hedgerows and plant additional hectares to link woodlands by 2023.
 12.0: Conduct at least 2 public tours of agricultural demonstration sites annually.
 12.1: By 2023, financial incentives are sufficient to meet the demand.
 12.2: By 2023, a public awareness and engagement campaign is created and implemented to notify landowners of available funding programs and BMPs.
 12.3: By 2023, 50% of farms in Norfolk County maintain winter cover crops during the non-growing season. | Acadian Flycatcher
 American Chestnut
 American Ginseng
 American Water-willow
 Bald Eagle
 Bank Swallow
 Barn Owl (Eastern population)
 Barn Swallow
 Bent Spike-rush (Great Lakes Plains population)
 Bird's-foot Violet
 Black Ash
 Black Tern
 Blanding's Turtle (Great Lakes/St. Lawrence population)
 Broad Beech Fern
 Butternut
 Canada Warbler
 Cerulean Warbler
 Chimney Swift
 Common Hoptree
 Common Nighthawk
 Crooked-stem Aster
 Cucumber Tree
 Downy Yellow False Foxglove
 Eastern Flowering Dogwood
 Eastern Foxsnake (Carolinian population)
 Eastern Hog-nosed Snake
 Eastern Milksnake
 Eastern Musk Turtle
 Eastern Ribbonsnake (Great Lakes population)
 Eastern Whip-poor-will
 Eastern Wood-pewee
 False-foxglove Sun Moth |

						Fern-leaved Yellow False Foxglove
						Fowler's Toad
						Golden-winged Warbler
						Gray Ratsnake (Carolinian population)
						Grey Fox
						Gypsy Cuckoo Bumble Bee
						Harris's Sparrow
						Horsetail Spike-rush
						Jefferson Salamander
						King Rail
						Large Whorled Pogonia
						Laura's Clubtail
						Least Bittern
						Little Brown Myotis
						Louisiana Waterthrush
						Least Bittern
						Little Brown Myotis
						Midland Painted Turtle
						Nine-spotted Lady Beetle
						Northern Map Turtle
						Northern Myotis
						Olive-sided Flycatcher
						Piping Plover *circumcinctus* subspecies
						Prothonotary Warbler
						Queensnake
						Red-headed Woodpecker
						Riverine Clubtail (Great Lakes Plains population)
						Round-leaved Greenbrier (Great Lakes population)
						Rusty Blackbird
						Smooth Yellow False Foxglove
						Snapping Turtle
						Spiny Softshell
						Spotted Turtle

					Spotted Wintergreen Swamp Rose-mallow Transverse Lady Beetle Tri-colored Bat Unisexual Ambystoma Jefferson Salamander Wood Thrush Woodland Vole Yellow-banded Bumble Bee Yellow-breasted Chat *virens* subspecies
4.	By 2025, at least 50% of surface water samples meet the provincial water quality objective for phosphorus (0.03 mg/L for streams and rivers).	Agricultural Runoff	Watercourses and Riparian Areas Coastal Wetlands and Inner Bay	**STRATEGY 11:** Restore, improve, and maintain natural features on agricultural lands. **STRATEGY 12:** Promote the adoption of agricultural BMPs through existing incentive programs.	**11.0:** Restore 200 ha of natural features on marginal agricultural land by 2023. **11.1:** Maintain and/or enhance existing restored natural features on marginal agricultural land. **11.2:** Maintain and diversify the plant species composition of existing hedgerows and plant additional hectares to link woodlands by 2023. **12.0:** Conduct at least 2 public tours of agricultural demonstration sites annually. **12.1:** By 2023, financial incentives are sufficient to meet the demand. **12.2:** By 2023, a public awareness and engagement campaign is created and implemented to notify landowners of available funding programs and BMPs. **12.3:** By 2023, 50% of farms in Norfolk County maintain winter	American Water-willow Bald Eagle Bank Swallow Barn Owl (Eastern population) Barn Swallow Bent Spike-rush (Great Lakes Plains population) Black Tern Blanding's Turtle (Great Lakes/St. Lawrence population) Chimney Swift Common Nighthawk Eastern Foxsnake (Carolinian population) Eastern Musk Turtle Eastern Ribbonsnake (Great Lakes population) Fowler's Toad Horsetail Spike-rush King Rail Least Bittern Louisiana Waterthrush Midland Painted Turtle Northern Map Turtle Prothonotary Warbler Queensnake

					cover crops during the non-growing season.	Snapping Turtle Spiny Softshell Spotted Turtle Swamp Rose-mallow Acadian Flycatcher American Water-willow Bald Eagle Bank Swallow Barn Swallow Blanding's Turtle (Great Lakes/St. Lawrence population) Broad Beech Fern Butternut Canada Warbler Chimney Swift Crooked-stem Aster Eastern Foxsnake (Carolinian population) Eastern Milksnake Eastern Musk Turtle Eastern Ribbonsnake (Great Lakes population) Gray Ratsnake (Carolinian population) Grey Fox Harris's Sparrow King Rail Laura's Clubtail Least Bittern Little Brown Myotis Louisiana Waterthrush Midland Painted Turtle Nine-spotted Lady Beetle Northern Map Turtle Northern Myotis Olive-sided Flycatcher Prothonotary Warbler

					Queensnake
					Riverine Clubtail (Great Lakes Plains population)
					Snapping Turtle
					Spiny Softshell
					Spotted Turtle
					Transverse Lady Beetle
					Tri-colored Bat
					Yellow-breasted Chat *virens* subspecies
5.	Reduce wildlife road mortality by enhancing road permeability to facilitate safe movement of wildlife across the landscape.	Roads	Amphibians and Reptiles	**STRATEGY 4:** Increase awareness on the threat of roads to wildlife and engage the local community in stewardship efforts. **STRATEGY 5:** Incorporate road ecology mitigation policy and guidelines in the Norfolk County Official Plan and Road Asset Management Plan. **STRATEGY 6:** Install and maintain dedicated road mitigation infrastructure for Species at Risk amphibians and reptiles.	**4.0:** By 2020, citizen scientists are submitting road mortality observations in Norfolk County to the iNaturalist 'Citizen Science Data Collection in Norfolk County' project or the 'Wildlife on Roads in Ontario' project and observations/people contributing increases each year. **4.1:** By 2023, 5 public engagement events on road ecology have occurred. **4.2:** By 2023, at least 75% of Norfolk County residents have been made aware of the threats of roads to reptiles and amphibians and the solutions to mitigate road mortality. **5.0:** By 2025, Norfolk County council has reviewed at least 1 municipal staff recommended report about the threat of roads to SAR herpetofauna and road ecology mitigation principles and practices. **5.1:** At the next Official Plan review, road ecology mitigation policy amendments are	Blanding's Turtle (Great Lakes/St. Lawrence population) Eastern Foxsnake (Carolinian population) Eastern Hog-nosed Snake Eastern Milksnake Eastern Musk Turtle Eastern Ribbonsnake (Great Lakes population) Fowler's Toad Gray Ratsnake (Carolinian population) Jefferson Salamander Midland Painted Turtle Northern Map Turtle Queensnake Snapping Turtle Spiny Softshell Spotted Turtle Unisexual Ambystoma Jefferson Salamander

				consolidated into the Official Plan. **6.0:** By 2021, Norfolk County road managers consider SAR herpetofauna habitat for all road projects that are scheduled. **6.1:** By 2025, a report with proposed road ecology amendments to the Norfolk County Official Plan is presented to council. **6.2:** By 2026, Norfolk County plans, installs, monitors and maintains dedicated wildlife/road mitigation infrastructure at priority hotspots.	
6.	Maintain existing Open Country habitat and restore additional areas, prioritizing sites where: existing habitat patches can be increased in size, habitat patches >=5 ha can be created, patch connectivity is best achieved and/or there are opportunities for long-term management.	Fire Suppression in Tallgrass Communities	Open Country	**STRATEGY 7:** Maintain a geospatial database for tallgrass habitat with information on management and monitoring activities. **STRATEGY 8:** Implement a landscape-level Open Country habitat management plan to restore and maintain Open Country habitat on private and public lands. **STRATEGY 9:** Increase public awareness about the importance of Open Country communities and the use of fire as a management tool in maintaining tallgrass habitat.	**7.0:** Develop a shareable database linked to the LPWF Shared Geospatial Conservation Database to track monitoring results with a focus on problematic invasive species, key tallgrass habitat indicator species, overall biodiversity, and management activities. **7.1:** By 2021, map (and ground-truth where necessary) tallgrass habitat. **8.0:** By 2023, a landscape level Open Country habitat management plan is being implemented. **8.1:** Improve and restore 250 ha of Open Country habitat on private and public lands by 2023 in a manner that focuses on	American Badger *jacksoni* subspecies American Bumble Bee Bank Swallow Barn Owl (Eastern population) Barn Swallow Bird's-foot Violet Bobolink Chimney Swift Colicroot Common Hoptree Common Nighthawk Downy Yellow False Foxglove Eastern Foxsnake (Carolinian population) Eastern Hog-nosed Snake Eastern Meadowlark Eastern Milksnake Eastern persius Duskywing Eastern Whip-poor-will False-foxglove Sun Moth

| | | | | STRATEGY 10: Provide support and opportunities for landowners to manage, restore and maintain Open Country habitat on private lands. | creating new habitat patches >5 ha where possible.
8.2: Implement monitoring plans to assess the success of restoration efforts focused on Open Country habitat indicator species, SAR, and overall biodiversity.
9.0: By 2023, a public awareness campaign on the importance of Open Country communities, with an emphasis on fire as a management tool for tallgrass habitat is developed and executed with at least 2 public outreach events and 3 presentations given.
10.0: By 2023, at least 60 ha (of the 250 ha Open Country restoration objective) is restored on private lands.
10.1: By 2023, at least 5 prescribed burns have occurred on private lands to maintain/improve tallgrass habitat. | Fern-leaved Yellow False Foxglove
Frosted Elfin
Golden-winged Warbler
Grasshopper Sparrow *pratensis* subspecies
Gray Ratsnake (Carolinian population)
Gypsy Cuckoo Bumble Bee
Henslow's Sparrow
Karner Blue
Monarch
Mottled Duskywing (Great Lakes Plains population)
Nine-spotted Lady Beetle
Red-Headed Woodpecker
Rusty-patched Bumble Bee
Short-eared Owl
Small White Lady's slipper
Smooth Yellow False Foxglove
Transverse Lady Beetle
Virginia Goat's-rue
Yellow-banded Bumble Bee
Yellow-breasted Chat *virens* subspecies |