



ECS Lunch and Learn

Supporting internal knowledge transfer within TRCA

January 24, 2023

Identifying areas meeting criteria for Significant Wildlife Habitat in TRCA's jurisdiction (draft)

Presented by: Lyndsay Cartwright, Ecosystem and Climate Science

Ecosystem and Climate Science Lunch and Learn
January 24, 2023

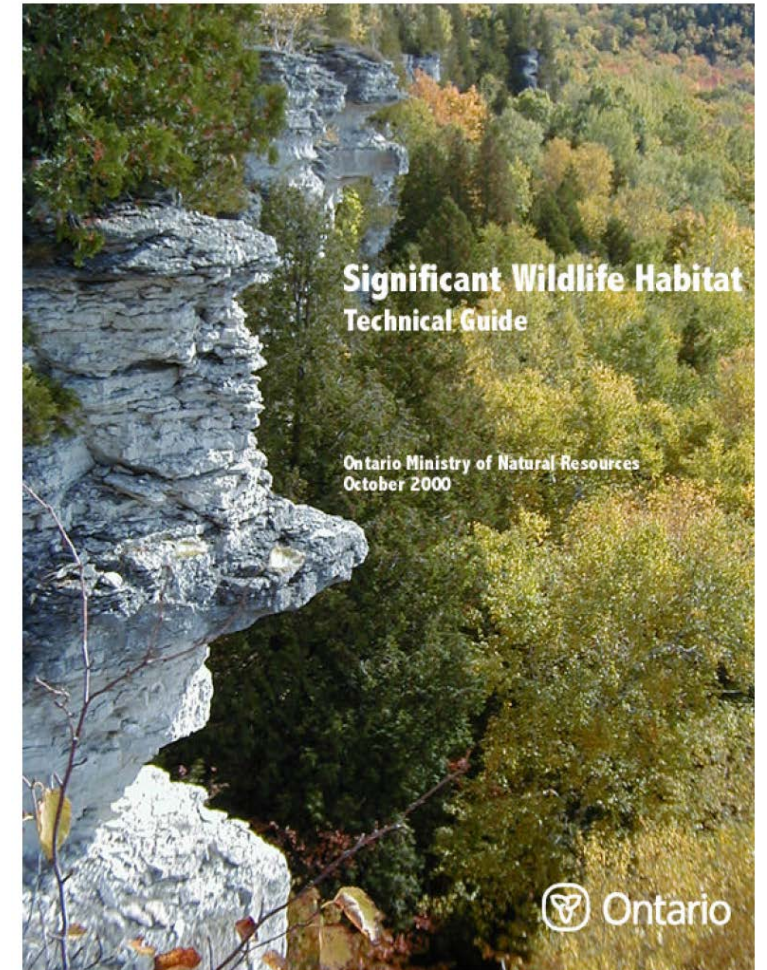


Acknowledgements

- Steven Ling
- *Laura Timms/CVC* (metadata files), Leilani Lee-Yates
- Namrata Shrestha, Noah Gaetz, Jonathan Ruppert, *Sue Hayes*, Laura Del Giudice, Brad Stephens, *Shauna Fernandes Chagani*, Mary-Ann Burns, Karen McDonald, Steve Heuchert, Beth Williston, Adam Miller
- Kate Goodale, Dave Lawrie, Marc Dupuis-Desormeaux, Juliana Skuza, Gavin Miller

What is Significant Wildlife Habitat?

- One of seven key natural heritage features identified in the PPS
- Defined as: “ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system”.
- Provincial criteria schedules for 6E & 7E, but municipal approaches that meet or exceed are acceptable

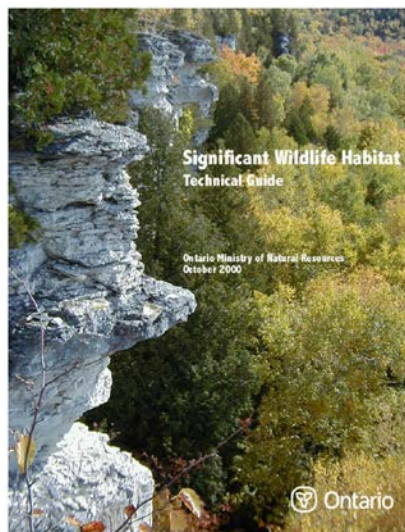


SWH categories and examples

- Seasonal concentration areas of animals (e.g. landbird migratory stopover areas)
- Rare vegetation communities (e.g. old growth forest) or specialized habitat for wildlife (e.g. seeps and springs)
- Habitat for species of conservation concern (e.g. special concern and rare wildlife species)
- Animal movement corridors (e.g. amphibian movement corridors)



Background



Significant Wildlife Habitat Criteria Schedules For Ecoregion 6E January, 2015

Ontario Ministry of Natural Resources and Forestry
Regional Operations Division:
Southern Region Resources Section:
300 Water Street, 4th Floor South
Peterborough, Ontario, Canada, K9J 8M5



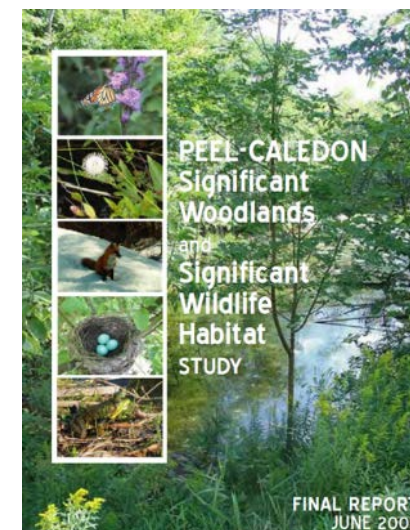
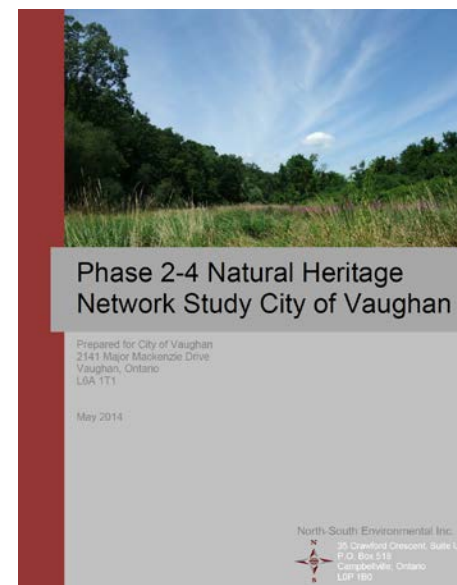
Significant Wildlife Habitat Criteria Schedules For Ecoregion 7E January, 2015

Ontario Ministry of Natural Resources and Forestry
Regional Operations Division:
Southern Region Resources Section:
300 Water Street, 4th Floor South
Peterborough, Ontario, Canada, K9J 8M5



Natural Heritage System for the Lake Simcoe Watershed

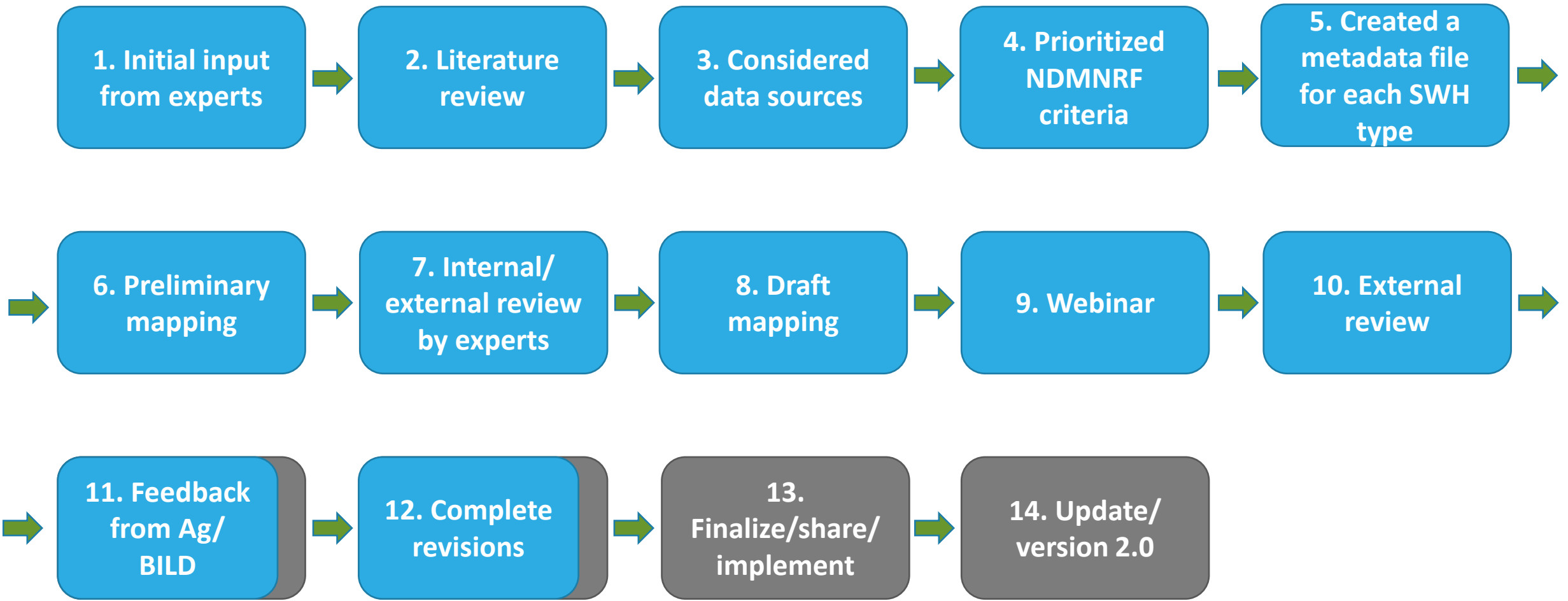
Phase 1: Components and Policy Templates



Objective

- To map areas that meet criteria for SWH across TRCA's jurisdiction.
-
- * We did not map areas that do not meet criteria for SWH
 - Areas outside of those meeting criteria for SWH imply either an absence of SWH OR a lack of data; however, we could not confirm one or the other.
 - * Final mapping products of this project
 - Will be available for use as a screening tool by municipal partners
 - Does not negate the need for site-level SWH identification
 - Not intended to replace any existing SWH studies

Methodology



Draft mapping – Criteria categories

MNRF Criteria Schedules – Confirmed (14)	Peel-Caledon Study Criteria (3)	Regionally Unique Criteria (5)
MNRF Criteria Schedules – Candidate (1)	A combination of MNRF Schedules and Peel-Caledon Study Criteria (3)	No mapping – Grid-based screening only (1)

- 26 SWH types
- Criteria used depended on data availability
- Users are recommended to review metadata files for each SWH type

Unmapped SWH types

- We did not map areas meeting criteria for SWH for 14 SWH types
 - Lack of data
 - Representation in other SWH types
 - Inherent challenges associated with mapping
 - Not applicable to the Region

- Shorebird Migratory Stopover Areas
- Migratory Butterfly Stopover Areas
- Bat Hibernacula
- Alvar
- Woodland Raptor Nesting Habitat
- Waterfowl Stopover and Staging Areas (Terrestrial)
- Raptor Wintering Area
- Waterfowl Nesting Area
- Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat
- Deer Yarding Areas (6E only)
*different from Deer Winter Congregation Areas
- Mast Producing Areas (6E-14)
- Lek (6E-17)
- Bat Migratory Stopover Area (7E-2)
- Deer Movement Corridors (6E only)

MNRF Criteria Schedules

January 2015

Eco-Region 6E

1.3 Habitat for Species of Conservation Concern (Not including Endangered or Threatened Species)

Habitats of Species of Conservation Concern include wildlife species that are listed as Special Concern or rare, that are declining, or are featured species. Habitats of Species of Conservation Concern do not include habitats of Endangered or Threatened species as identified by the Endangered Species Act 2007. Table 1.3 assists with the identification of SWH for Species of Conservation Concern.

Table 1.3. Habitats of Species of Conservation Concern considered SWH.

Wildlife	Species	CANDIDATE SWH		CONFIRMED SWH
		ELC Ecosite	Habitat Criteria and Information Sources	Defining Criteria
Marsh Breeding Bird Habitat Rationale: Wetlands for these bird species are typically productive and fairly rare in Southern Ontario landscapes.	American Bittern Virginia Rail Sora Common Moorhen American Coot Pied-billed Grebe Marsh Wren Sedge Wren Common Loon Sandhill Crane Green Heron Trumpeter Swan	MAM1 MAM2 MAM3 MAM4 MAM5 MAM6 SAS1 SAM1 SAF1 FEO1 BOO1 For Green Heron: All SW, MA and CUM1 sites.	<ul style="list-style-type: none"> Nesting occurs in wetlands. All wetland habitat is to be considered as long as there is shallow water with emergent aquatic vegetation present ^{cxxiv}. For Green Heron, habitat is at the edge of water such as sluggish streams, ponds and marshes sheltered by shrubs and trees. Less frequently, it may be found in upland shrubs or forest a considerable distance from water. <u>Information Sources</u> <ul style="list-style-type: none"> OMNRF District and wetland evaluations. Field Naturalist clubs Natural Heritage Information Center (NHIC) Records. Reports and other information available from Conservation Authorities. Ontario Breeding Bird Atlas 	Studies confirm: <ul style="list-style-type: none"> Presence of 5 or more nesting pairs of Sedge Wren or Marsh Wren or or 1 pair of Sandhill Cranes; or breeding by any combination of 5 or more of the listed species [®]. Note: any wetland with breeding of 1 or more Black Terns, Trumpeter Swan, Green Heron or Yellow Rail is SWH [®]. Area of the ELC ecosite is the SWH. Breeding surveys should be done in May/June when these species are actively nesting in wetland habitats. Evaluation methods to follow "Bird and Bird Habitats: Guidelines for Wind Power Projects" ^{ccxi} SWHMiST ^{cxlix} Index #35 provides development effects and mitigation measures
	Special Concern: Black Tern Yellow Rail			

MNRF Criteria Schedules - Confirmed

Eco-Region 6F

January 2015			
Wildlife Habitat	Wildlife Species	CANDIDATE SWH	
		ELC Ecosite Codes	Habitat Criteria and Information Sources
			CONFIRMED SWH Defining Criteria

- Amphibian Breeding Habitat (Wetlands)
- Amphibian Breeding Habitat (Woodland)
- Cliff and Talus Slopes
- Colonially Nesting Bird Breeding Habitat (Ground)
- Colonially Nesting Bird Breeding Habitat (Tree/Shrubs)
- Marsh Bird Breeding Habitat
- Old Growth Forest
- Reptile Hibernaculum
- Sand Barren
- Savannah
- Tallgrass Prairie
- Terrestrial Crayfish Habitat
- Turtle Nesting Areas
- Turtle Wintering Areas

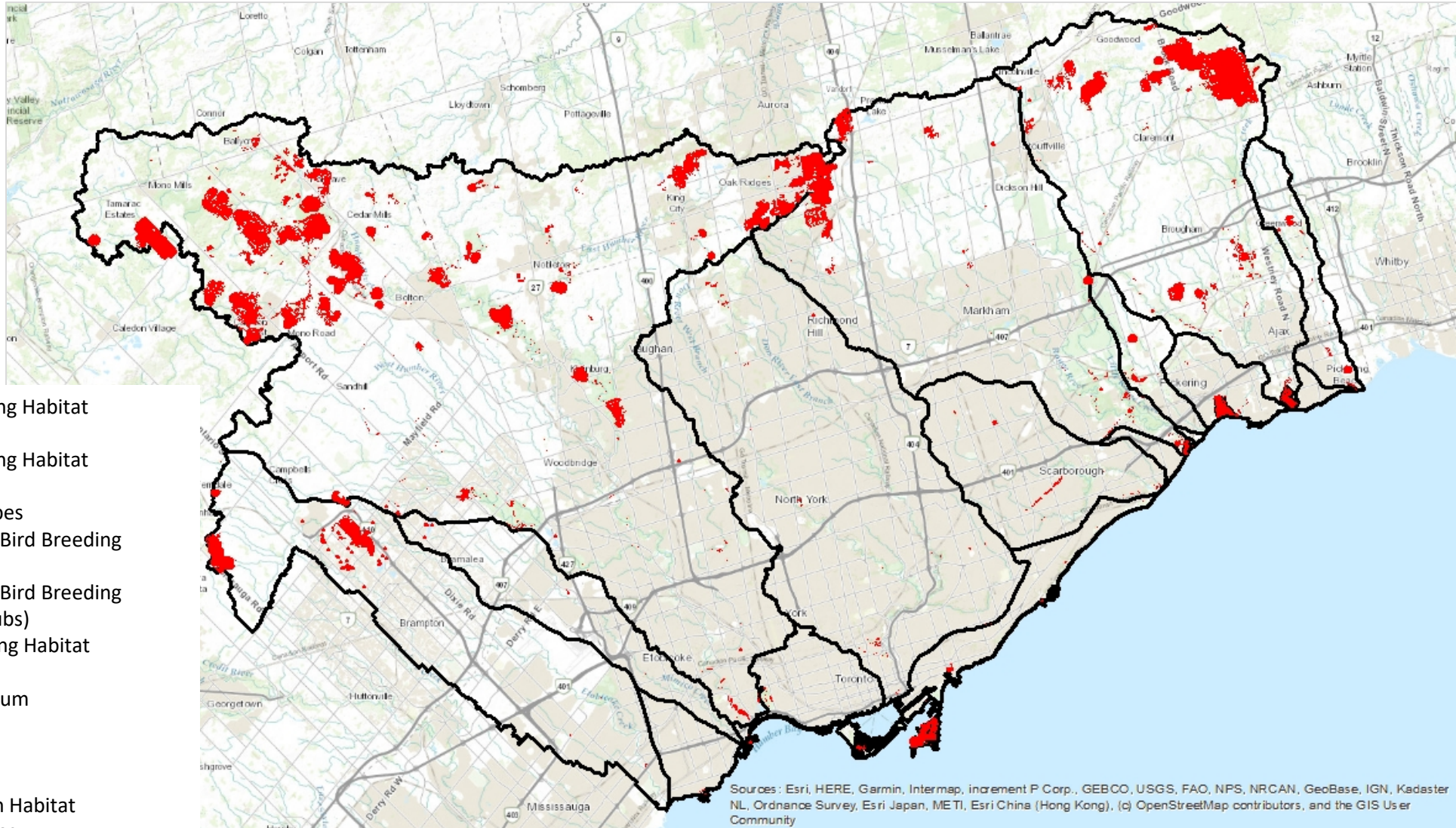


Midland Painted Turtle

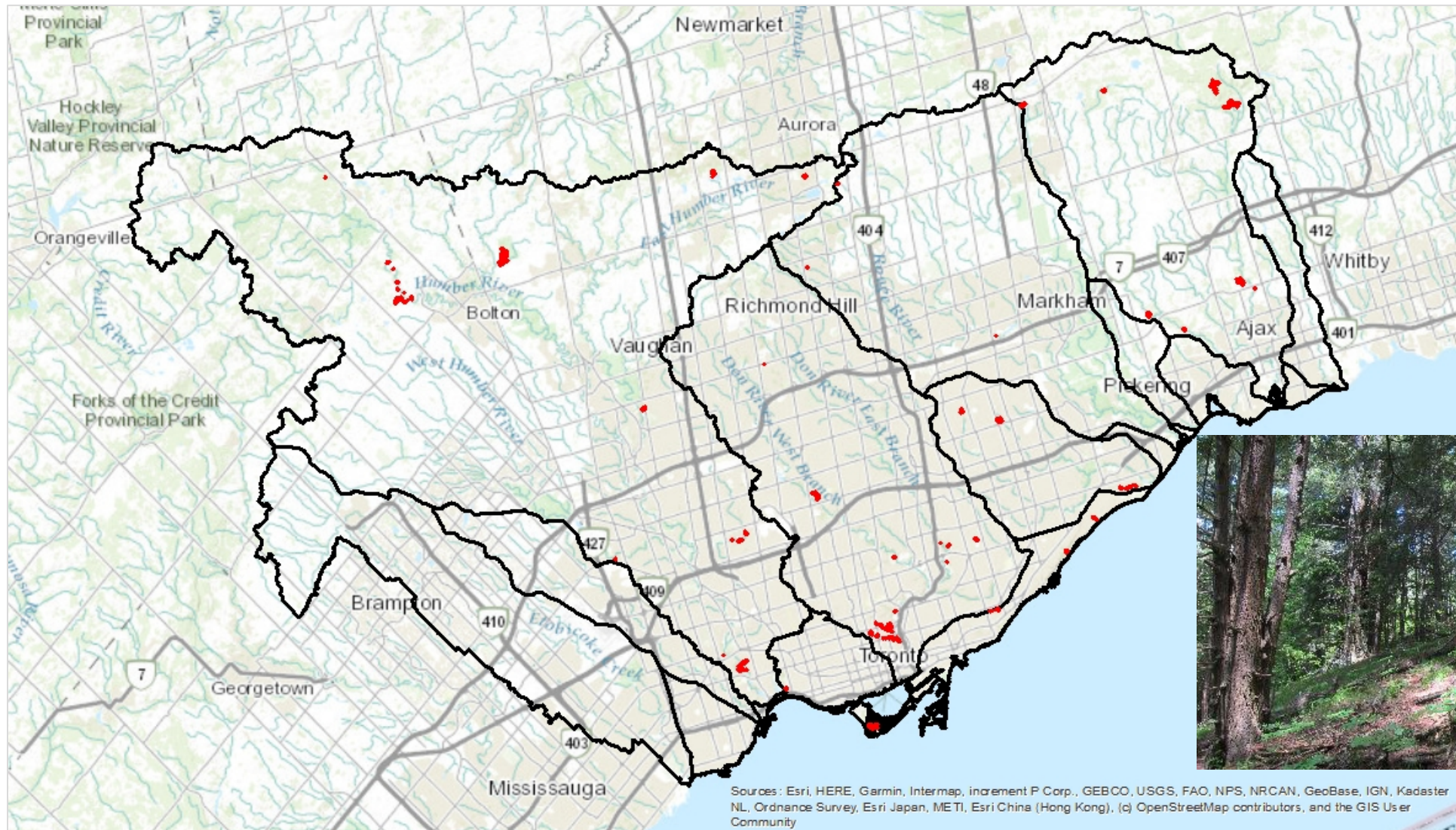


Eastern Newt

MNRF Criteria Schedules - Confirmed



Example – Old Growth Forest



Old Growth Forest

Example – Old Growth Forest

METADATA FOR SIGNIFICANT WILDLIFE HABITAT MAPPING	Old Growth Forest
Peel criterion	
MNRF criterion (MiST)	Rare vegetation communities #23 (RVC23)
MNRF criterion (6E & 7E schedules)	Old Growth Forest
Layer names	OldGrowthForest_SWH (in SWH geodatabase)
Metadata prepared	March 2021
Update interval	Every 5 years
Source	TRCA Business Intelligence and Data Analytics
Source data and year	<ul style="list-style-type: none"> TRCA ELC inventory up to and including 2020
Production details	<ul style="list-style-type: none"> Old growth forest habitats were derived from TRCA's ELC inventory data layer. Old growth forest ELC community types and <u>complexes</u> included <ul style="list-style-type: none"> FOD, FOC, FOM, SWD, SWC, SWM If the AGECLASS field in TRCA's ELC inventory data indicated Old-Growth or >100, the ELC polygon was considered confirmed SWH. The LOG_CUT field in TRCA's ELC inventory data should be empty. Since inclusions do not have an AGECLASS, they were not considered. QC was done on all retained communities to ensure they still exist and have not been removed by development or other land use changes. <p>If sections of the polygons had been developed (e.g. building or road), the urban features were removed from the polygon.</p>
Notes	<ul style="list-style-type: none"> Based on schedules 6E & 7E, dominant tree species must be >140 years old with no evidence of forestry activities. TRCA inventory protocols use the following to map old growth forests: Stands containing very old climax tree species with obvious wind-throw gaps, snags, logs, moss diversity, pit and mound micro-topography, etc. may be <i>old growth</i>. Old growth forests are rare in the TRCA jurisdiction. <i>Old growth</i> implies a stable presence of the community since before European settlement. (Different from CVC/Peel-Caledon but uses criteria similar to schedules for ecoregion 6E & 7E (i.e. >140 years old represents pre-settlement conditions which is a consideration in TRCA's field methods)). The Peel-Caledon study did not map old growth SWH and assumed that all old growth and mature forests will be captured by the significant woodlands criteria for old growth and size.
Criteria & thresholds	<ul style="list-style-type: none"> Meets criteria for significance in the 2015 MNRF SWH Criteria Schedules for Ecoregions 6E & 7E.
Version	<ul style="list-style-type: none"> 2021

MNRF Criteria Schedules - Candidate

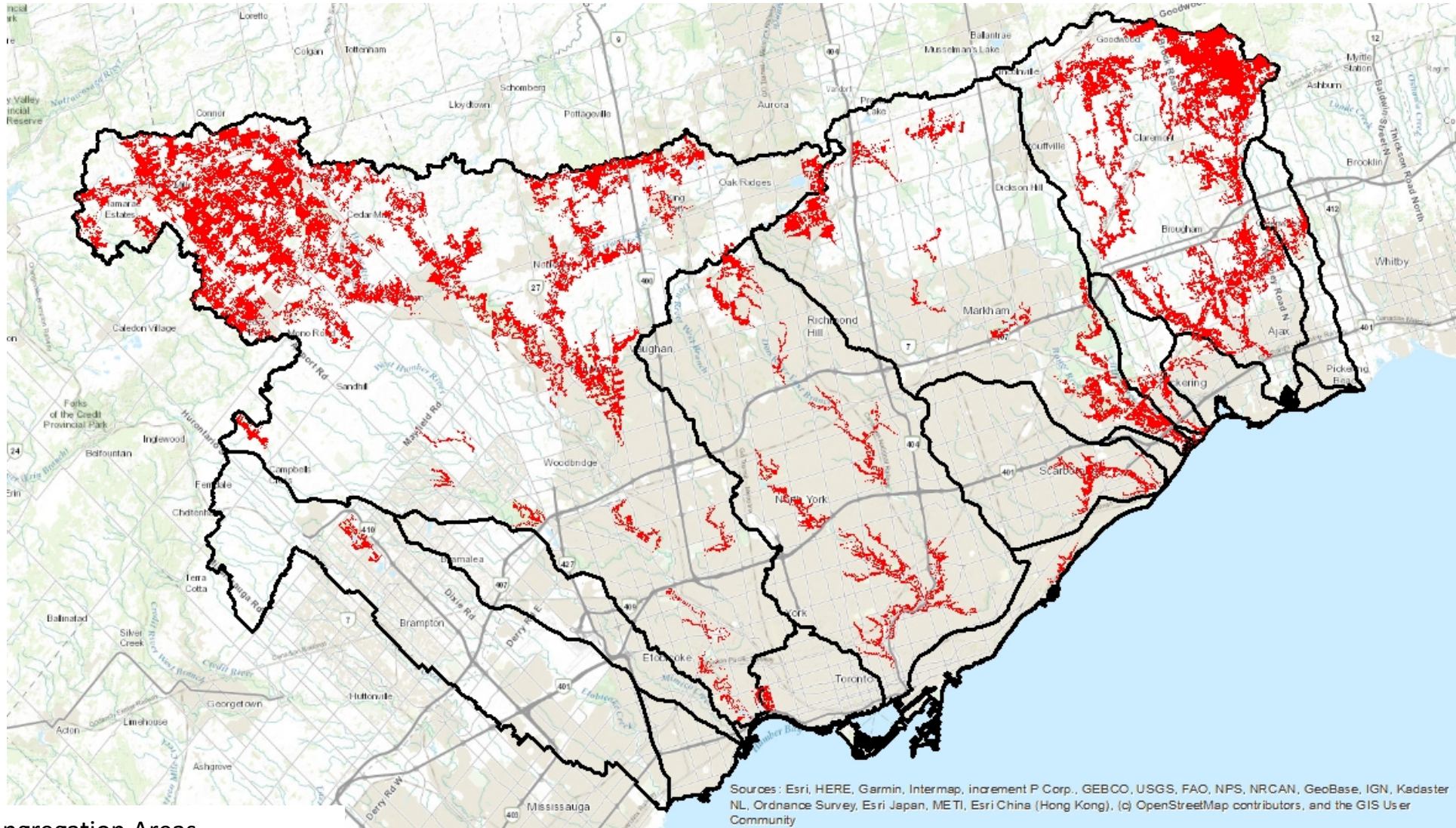
January 2015				Eco-Region 6E
Wildlife Habitat	Wildlife Species	CANDIDATE SWH		CONFIRMED SWH
		ELC Ecosite Codes	Habitat Criteria and Information Sources	Defining Criteria

- Deer Winter Congregation Areas



White-tailed Deer

MNRF Criteria Schedules - Candidate



- Deer Winter Congregation Areas

Peel-Caledon Study Criteria

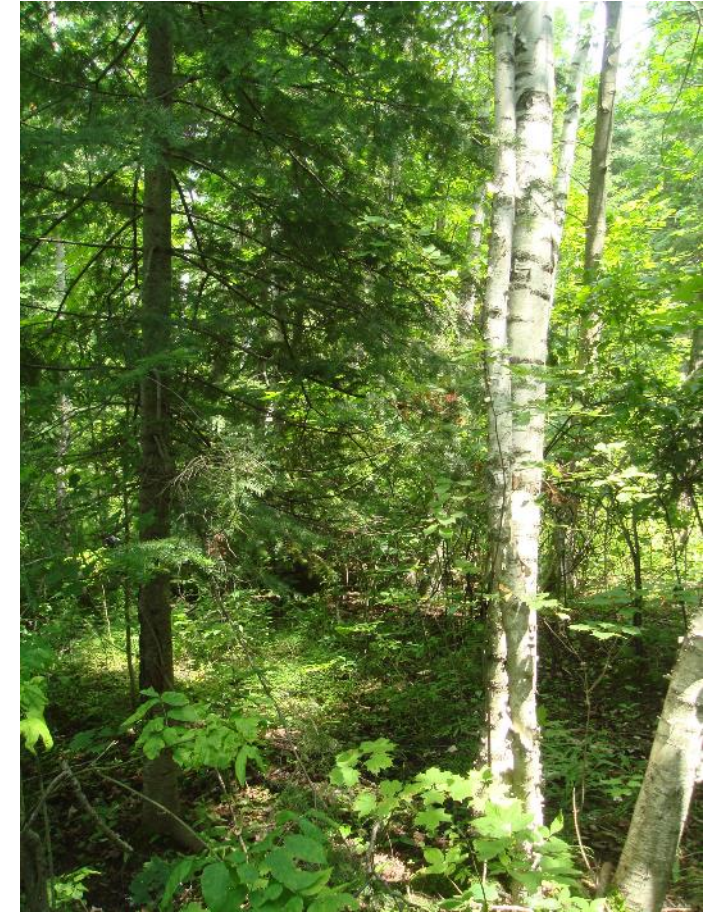
- Bog and Fen
- Landbird Migratory Stopover Areas
- Woodland Area-Sensitive Bird Breeding Habitat



Treed Fen

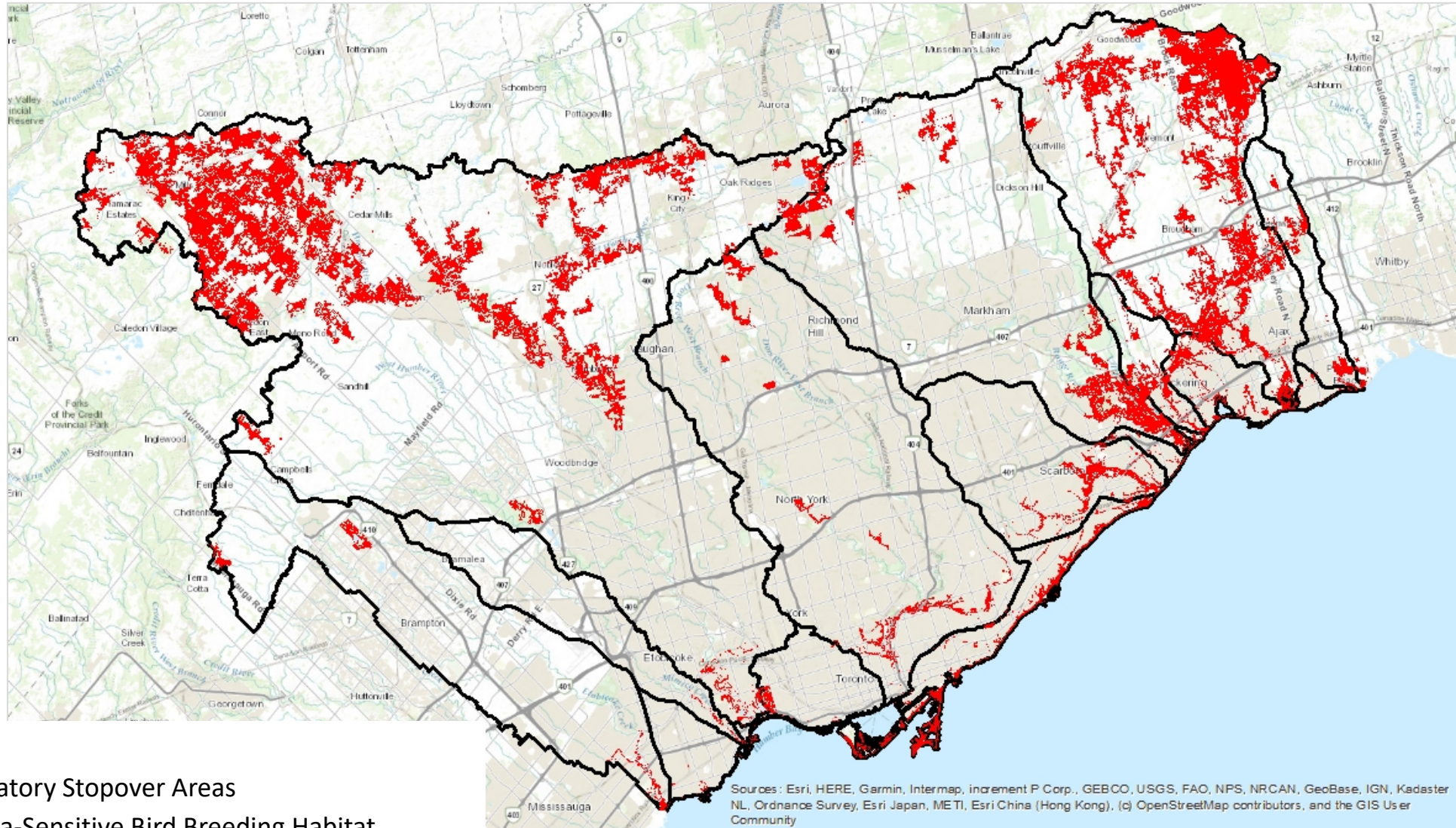


round-leaved sundew



Mixed Forest

Peel-Caledon Study Criteria



MNRF Criteria Schedules and Peel-Caledon Study Criteria

- Open Country Bird Breeding Habitat
- Shrub/Early Successional Bird Breeding Habitat
- Waterfowl Stopover and Staging Areas (Aquatic)



Meadow

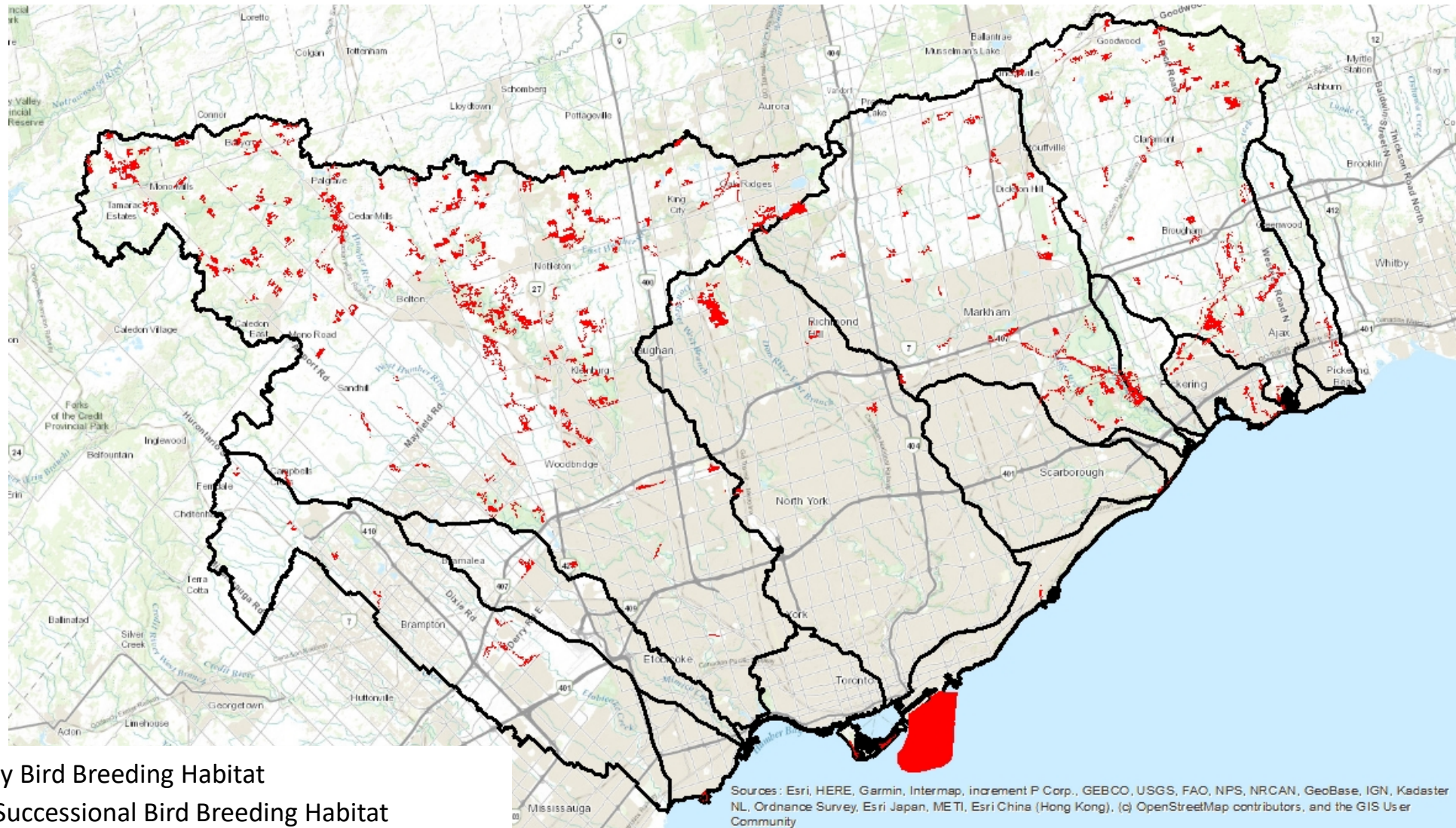


Early Successional



Stopover and Staging

MNRF Criteria Schedules and Peel-Caledon Study Criteria



- Open Country Bird Breeding Habitat
- Shrub/Early Successional Bird Breeding Habitat
- Waterfowl Stopover and Staging Areas (Aquatic)

Regionally Unique Criteria

- Bat Maternity Colonies
- Colonially Nesting Bird Breeding Habitat (Bank/Cliff)
- Other Rare Vegetation Communities
- Amphibian Movement Corridors (modelled)
- Seeps and Springs (modelled)



Infrared imagery of bat emerging from building

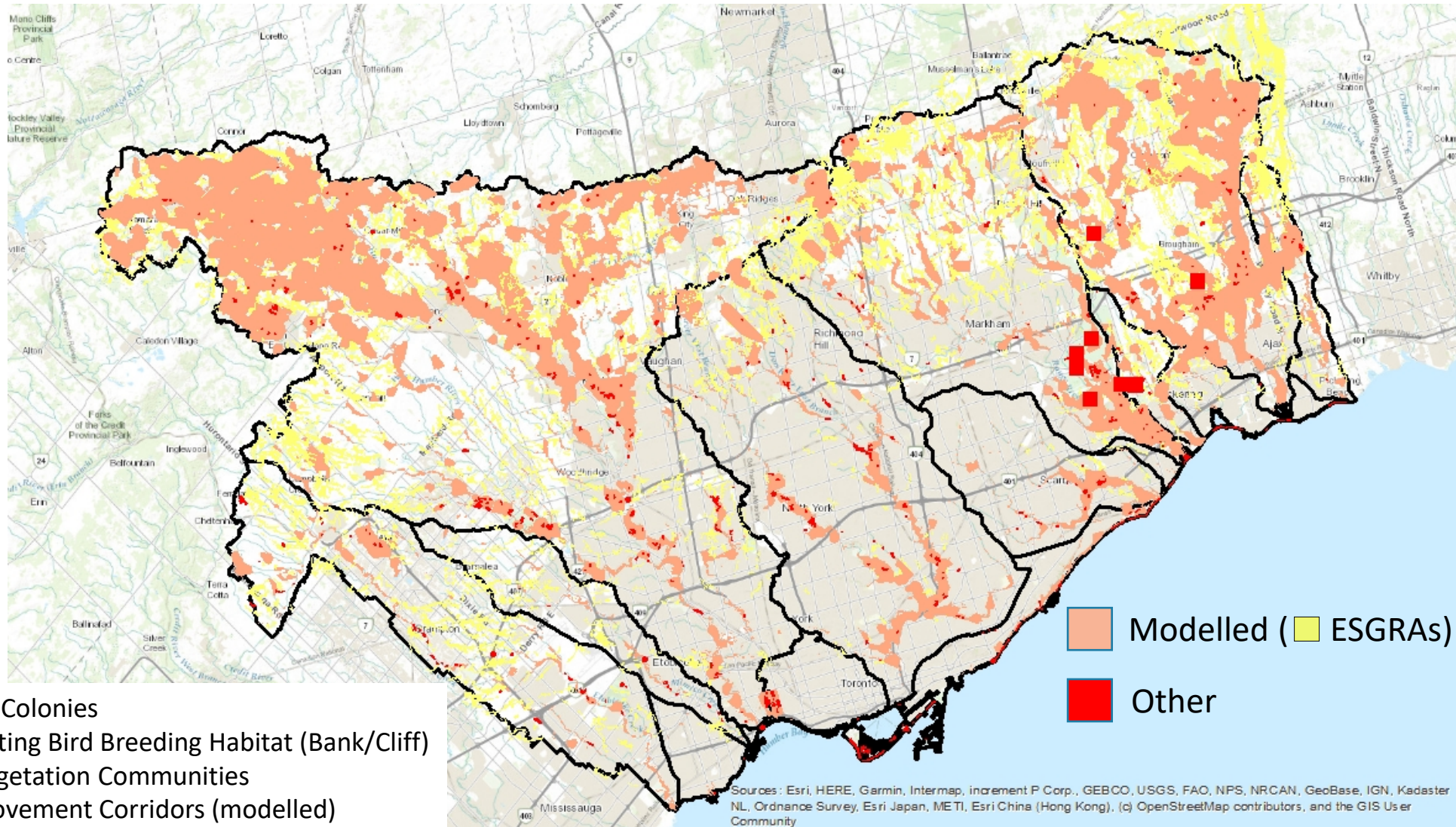


Spotted Salamander



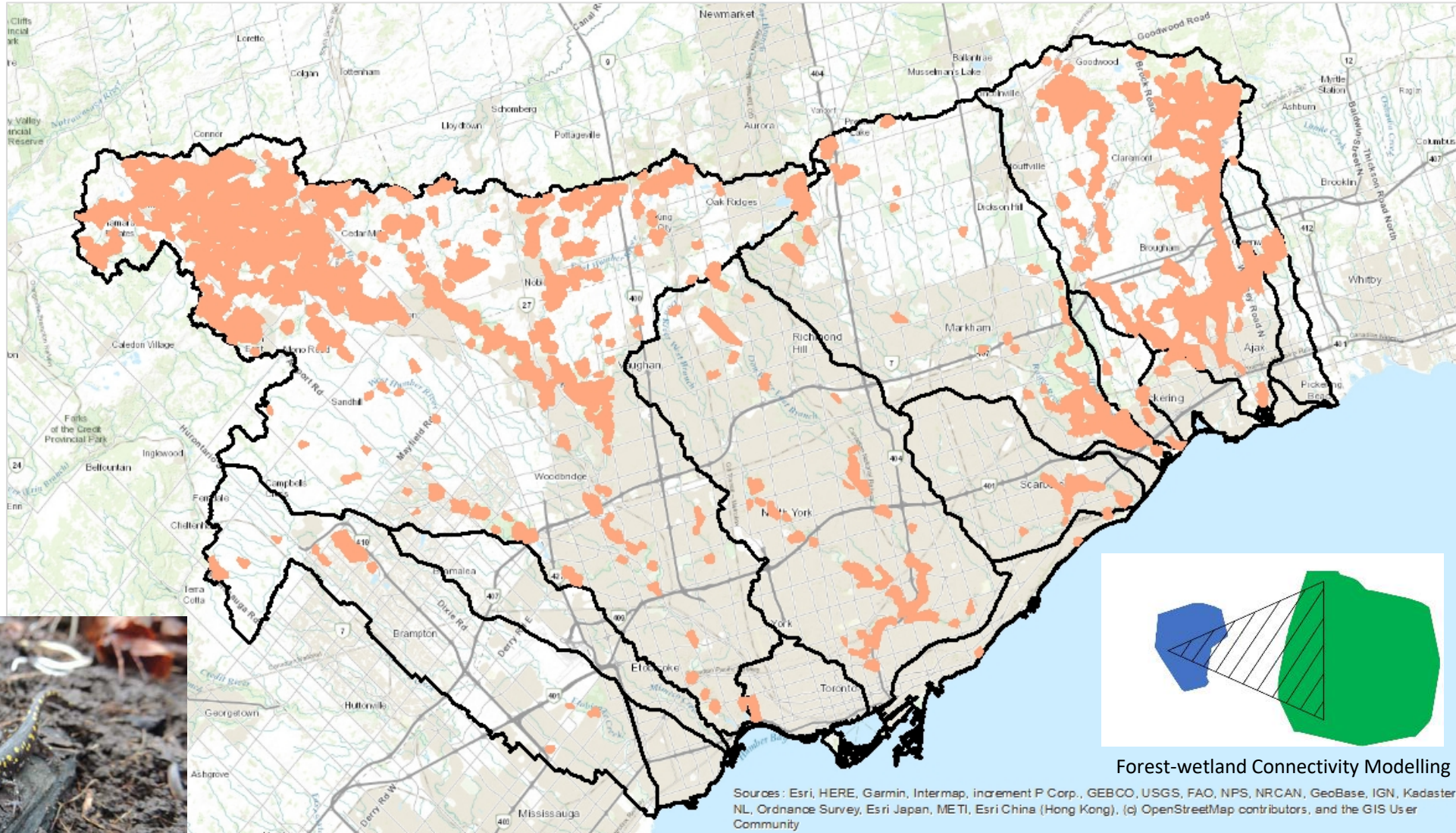
Seepage areas

Regionally Unique Criteria



- Bat Maternity Colonies
- Colonially Nesting Bird Breeding Habitat (Bank/Cliff)
- Other Rare Vegetation Communities
- Amphibian Movement Corridors (modelled)
- Seeps and Springs (modelled)

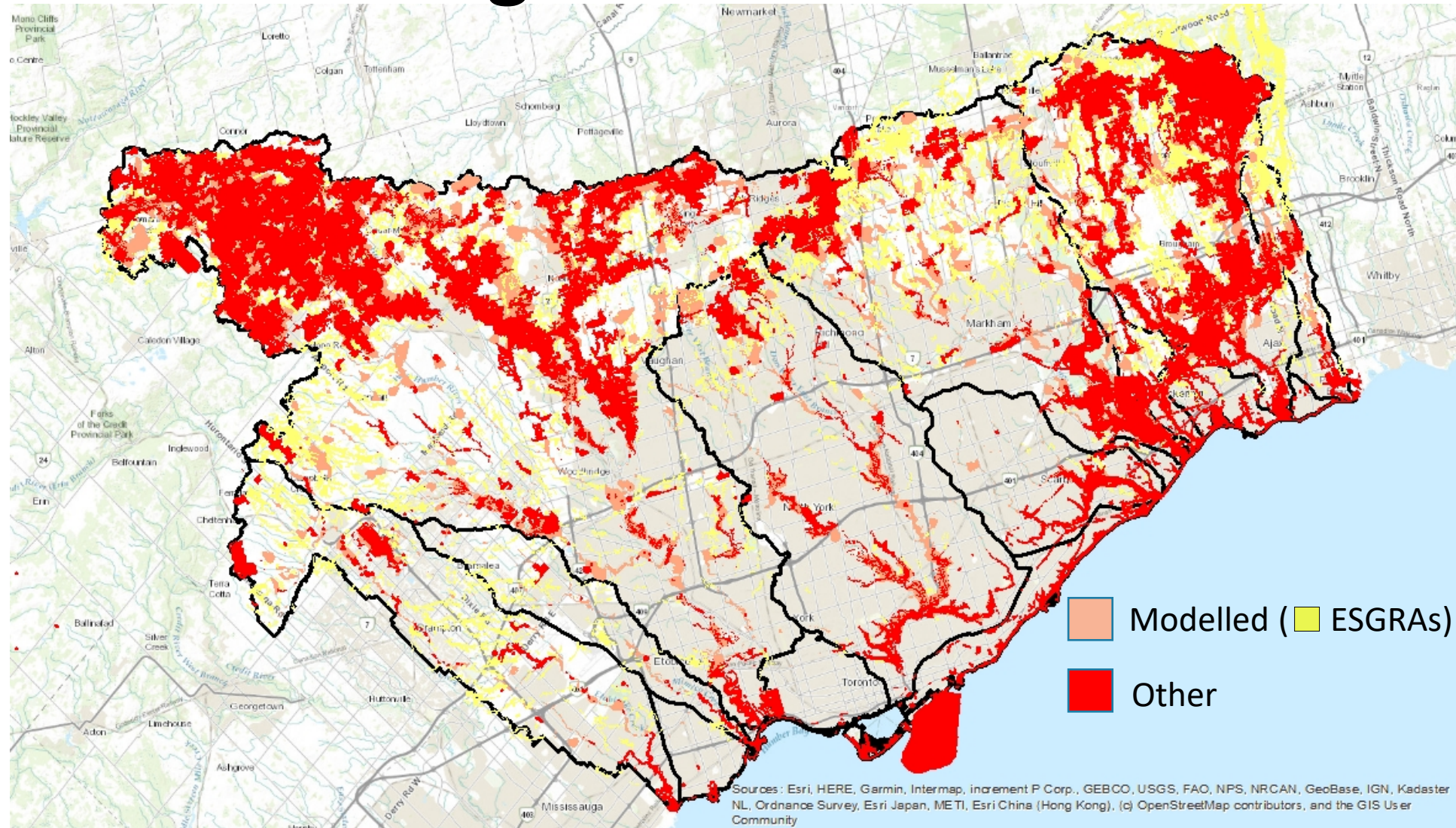
Example – Amphibian Movement Corridors



Example – Amphibian Movement Corridors

METADATA FOR SIGNIFICANT WILDLIFE HABITAT MAPPING SWH type	Amphibian Movement Corridors
Peel criterion	
MNRF criterion (MiST)	Amphibian Movement Corridor (#40)
MNRF criterion (6E & 7E schedules)	Amphibian Movement Corridors
Layer names	AmphibianMovementCorridor_SWH (in SWH geodatabase)
Metadata prepared	March 2021
Update interval	Every 5 years
Source	TRCA Business Intelligence and Data Analytics
Source data and year	<ul style="list-style-type: none"> Local connectivity modelling (Forest-Wetland) (S:\DataGDB\StreamCrossing\Criteria.gdb\TRCA_FWCH_303_2017_2020)
Production details	<ul style="list-style-type: none"> We mapped connectivity between forest and wetland patches to represent important areas for facilitating daily and seasonal movements of amphibians. Identified connectivity areas based on modelling. We mapped local connectivity using the concept of “habitat networks” which reflects the areas where potential wildlife movements within their general daily and seasonal movement capacity are more likely (D’Eon et al. 2002, Van der Grift and Pouwels 2006). We focused on species that move between wetlands and forests (includes most amphibians). We identified the resulting habitat network layers as priority areas for local connectivity. For further details on connectivity analyses refer to TRCA’s Crossing Guidelines for Valley and Stream Corridors (TRCA 2015a).
Notes	<ul style="list-style-type: none"> This layer was based on modelling.
Criteria & thresholds	<ul style="list-style-type: none"> New criteria based on modelling.
Version	<ul style="list-style-type: none"> 2021

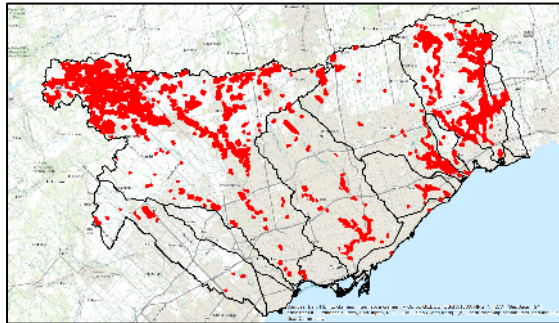
All areas meeting criteria for SWH



~17% of TRCA jurisdiction, 93% included within TRCA's regional target NHS

Products (Draft)

26 shapefiles



+

26 metadata files

METADATA FOR SIGNIFICANT WILDLIFE HABITAT MAPPING SWH type	Amphibian Movement Corridors
Peel criterion	
MNR criterion (MIST)	Amphibian Movement Corridor (#40)
MNR criterion (6E & 7E schedules)	Amphibian Movement Corridors
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Notes	<ul style="list-style-type: none"> This layer was based on modelling.
Criteria & thresholds	<ul style="list-style-type: none"> New TRCA criteria based on modelling.
Version	<ul style="list-style-type: none"> 2021

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Technical report



- Digital copies of shapefiles are available for use by municipal partners upon request and via a data sharing agreement.

Potential applications

- *Inform planning and planning ecology teams commenting on development applications and infrastructure planning*
- Assist municipalities with SWH identification (if needed)
 - NHS planning, restoration planning, provincial policy conformity, infrastructure planning, land use planning/design, OP review
- Inform TRCA initiatives
 - Restoration projects, NHS development, watershed planning
- Inform work of other CAs (if helpful)
 - Feedback from NDMNRF, metadata

Feedback

- Remove/include areas, mapping candidate SWH, restoration work
- Bat maternity colonies, bridges, deer winter congregation areas

Thank you!

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www.trca.ca

Upcoming ECS Lunch and Learns!

Wednesday, February 8
11:00am-12:00pm

**Ecosystem Service
Valuation of Toronto's
Parks and Green Spaces**

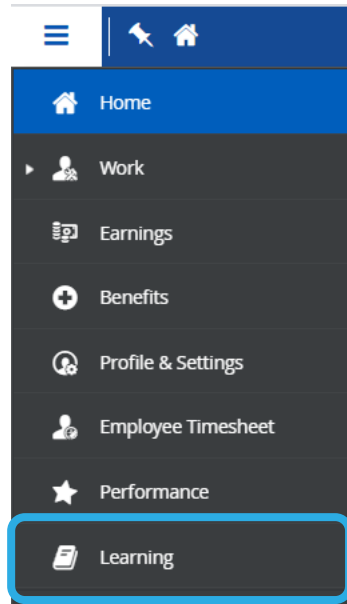
By Aidin Akbari


Tuesday, March 7
11:00am-12:00pm

**Ontario's Excess Soil
Regulation**

By Don Ford

Learning Management System



 Course Catalog

CATEGORIES


FILTERS

Lunch and Learn

X

Q

4 items




New

Lunch and Learn: Teams, OneDrive and SharePoint

EN

Webinar




New

Lunch and Learn: Hobbies for Mental and Physical Health (Please read...

EN

ILT (Instructor-Led Training)




New

Lunch and Learn: Thermal Imaging for Restoration and Conservation

ENROLLED

EN

Webinar



New

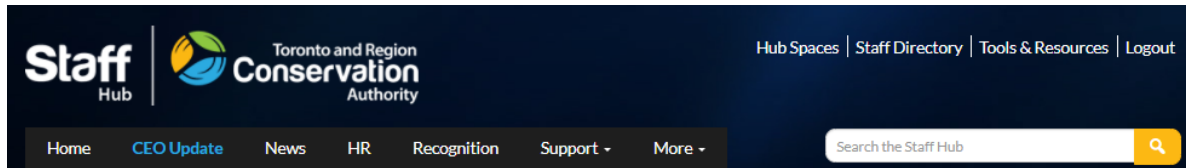
Lunch and Learn: Natural Heritage System Update

ENROLLED

EN

Webinar

Scientific Knowledge Sharing Hub



[Home](#) > [Scientific Knowledge Sharing](#)

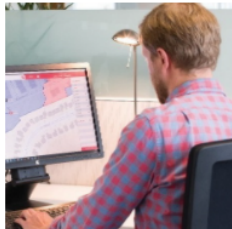
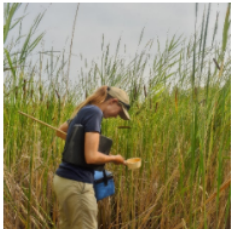
Scientific Knowledge Sharing

Evidence-based decision making is at the core of what TRCA does. Several of our Business Units engage in generating new scientific knowledge to support watershed management actions and decisions.

It is critical that the knowledge generated is effectively shared.

The Scientific Knowledge Sharing platform is dedicated to sharing the latest scientific knowledge generated by TRCA and our partners. It is a place where staff can learn about and engage in the scientific work TRCA is undertaking.

PLEASE NOTE: There are several TRCA teams engaged in generating new scientific knowledge. Currently the content on the platform is specific to the Watershed Planning and Ecosystem Science business unit. Additional content from other TRCA teams will be added as the platform develops.



Knowledge Sharing: Learn More

- [Watershed and Ecosystems Reporting Hub](#)
- [Environmental Monitoring](#)
- [Research and Science Working Group](#)
- [TRCA Research Agenda](#)
- [Development and Engineering Services Hub Space](#)

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Knowledge Sharing: Latest Updates

[Knowledge Sharing - Climate Change Analysis at the Local Scale](#)

April 19, 2021 by Hub Admin [Featured](#)

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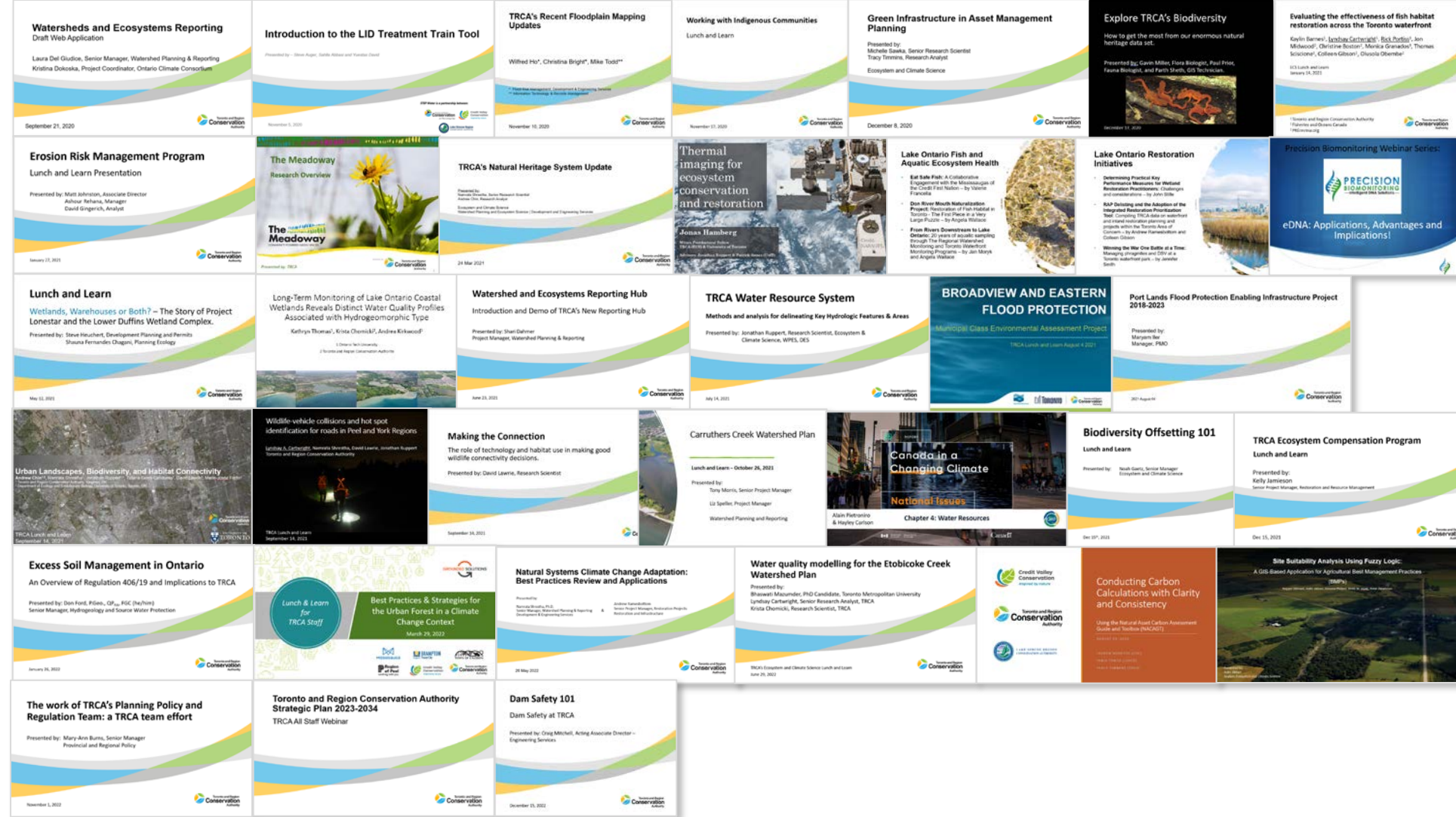
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[Technical Protocols & Best Practices](#) +

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[Webinars and Lunch & Learns](#) +

Past Recordings



Thank you

For questions about the ECS Lunch and Learn Series, please contact:

Sharon Lam
sharon.lam@trca.ca