eFRI to EWC Crosswalk and Associated Products

eFRI = Enhanced Forest Resource Inventory
EWC = Enhanced Wetland Classification

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Ducks Unlimited Canada

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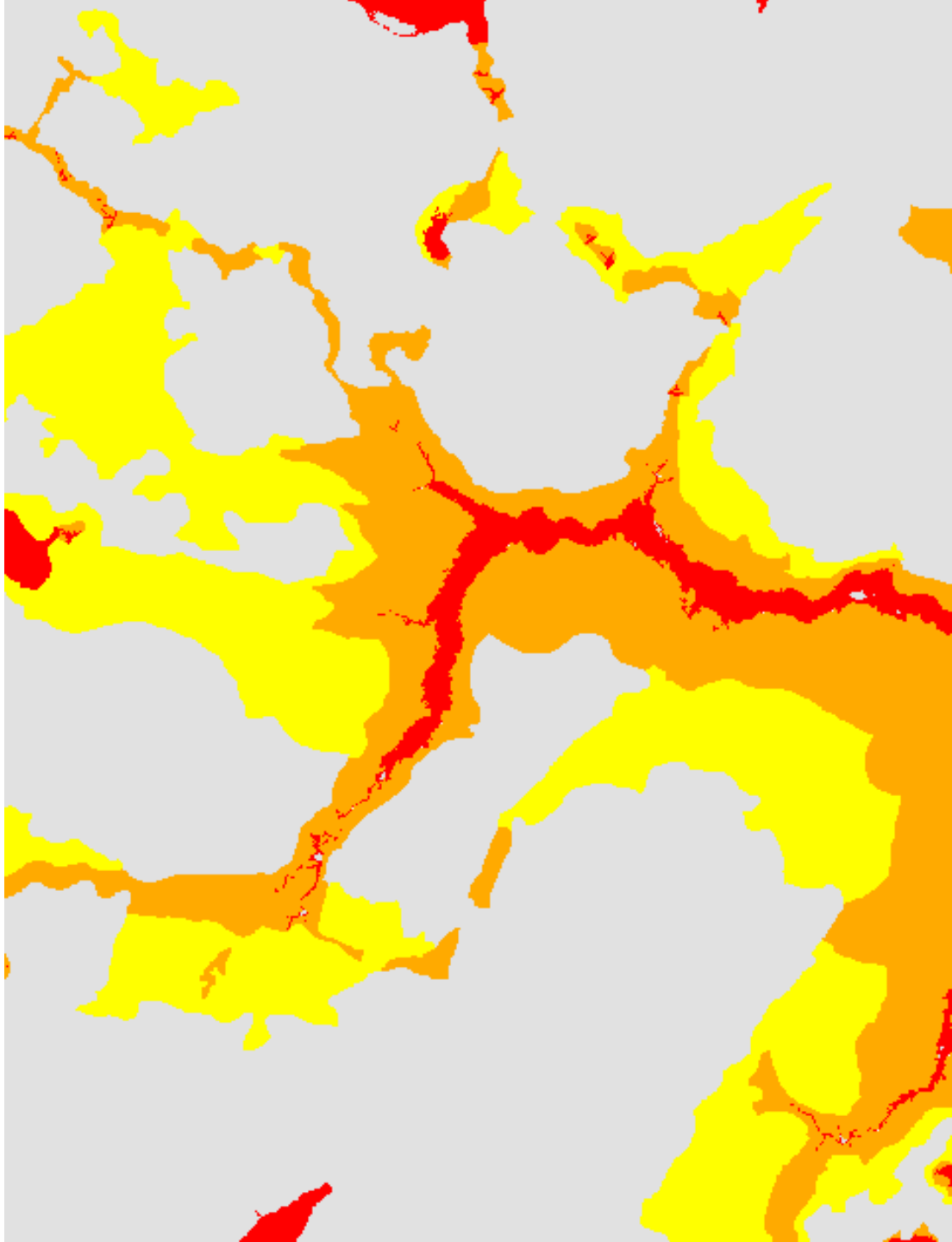
Ducks Unlimited Canada

FORESTRY FUTURES TRUST ONTARIO



Land Acknowledgement

Presentation Outline

Part 1	I	Ducks Unlimited Canada
Part 2	I	Project overview
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Part 4	I	Associated spatial products
Part 5	I	Resources

Ducks Unlimited Canada

National Boreal Program

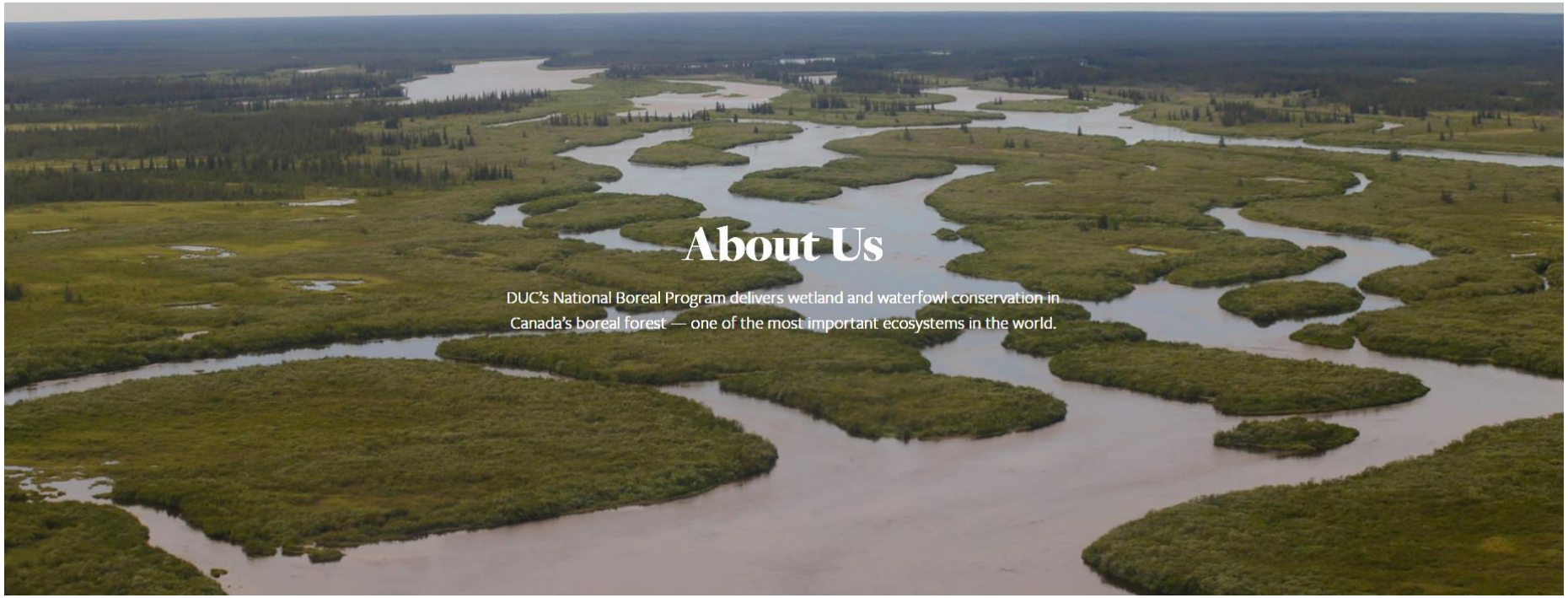
- Delivery of science-based solutions for wetland & waterfowl conservation.
- Over 20 years of experience.
- Work with governments, Indigenous peoples, and industry.

Services

- Wetland mapping.
- Best management practices.
- Wetlands training.
- Land use planning.
- Consultation services.
- Scientific research.

National Boreal Program

Read more here: https://boreal.ducks.ca/



Ducks Unlimited Canada

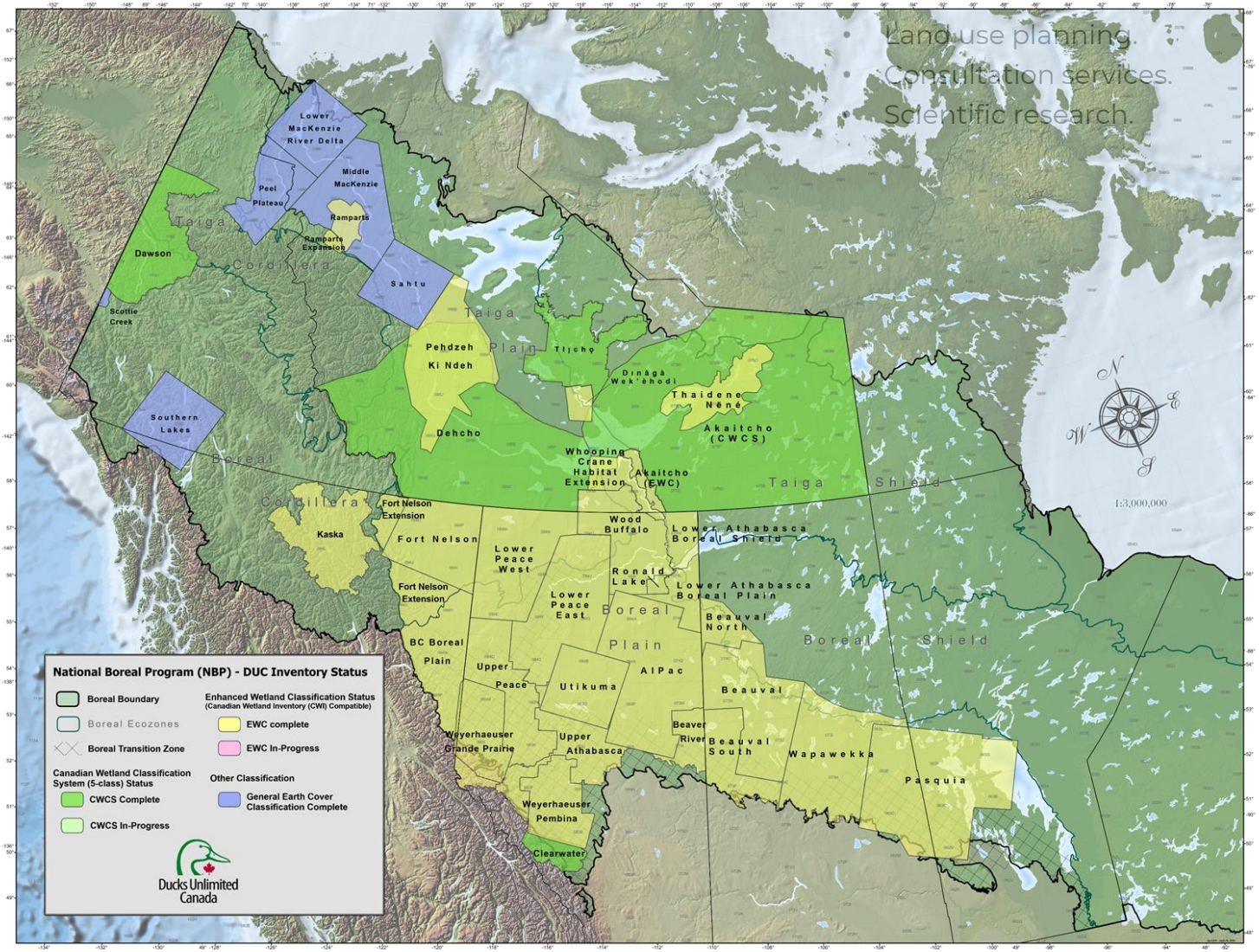
Why do we need detailed and accurate wetland inventories?

If we know where wetlands are, we can protect them

Species monitoring, carbon storage, wetland policy, land use planning, IPCA

Ts'udé Niljné Tueyata, Edéhzhíe, Thaidene Nëné, Salve Taltson, Dene k'éh kusān

- Land use planning.
- Consultation services.
- Scientific research.



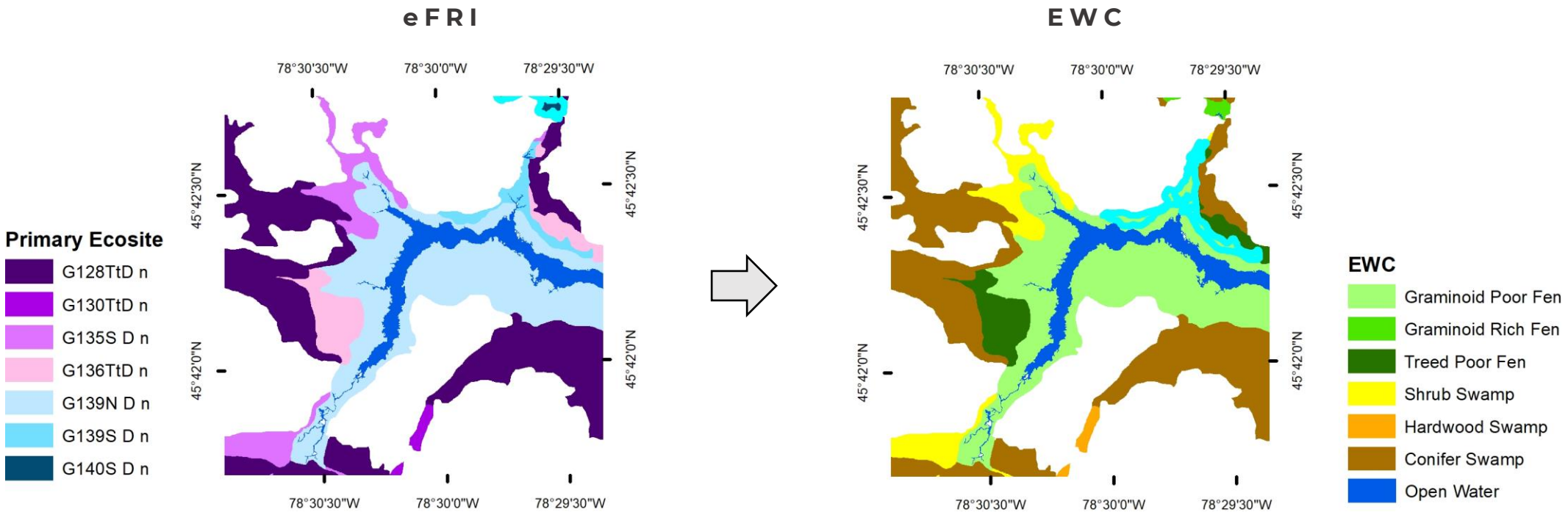
Project Overview

Objective

- To develop enhanced and user-friendly wetland data and associated products for the province of Ontario.
- Specific project phases:

  (1) Phase 1: Taking the Ontario eFRI and crosswalking (i.e., translation) to the Enhanced Wetland Classification (EWC), and

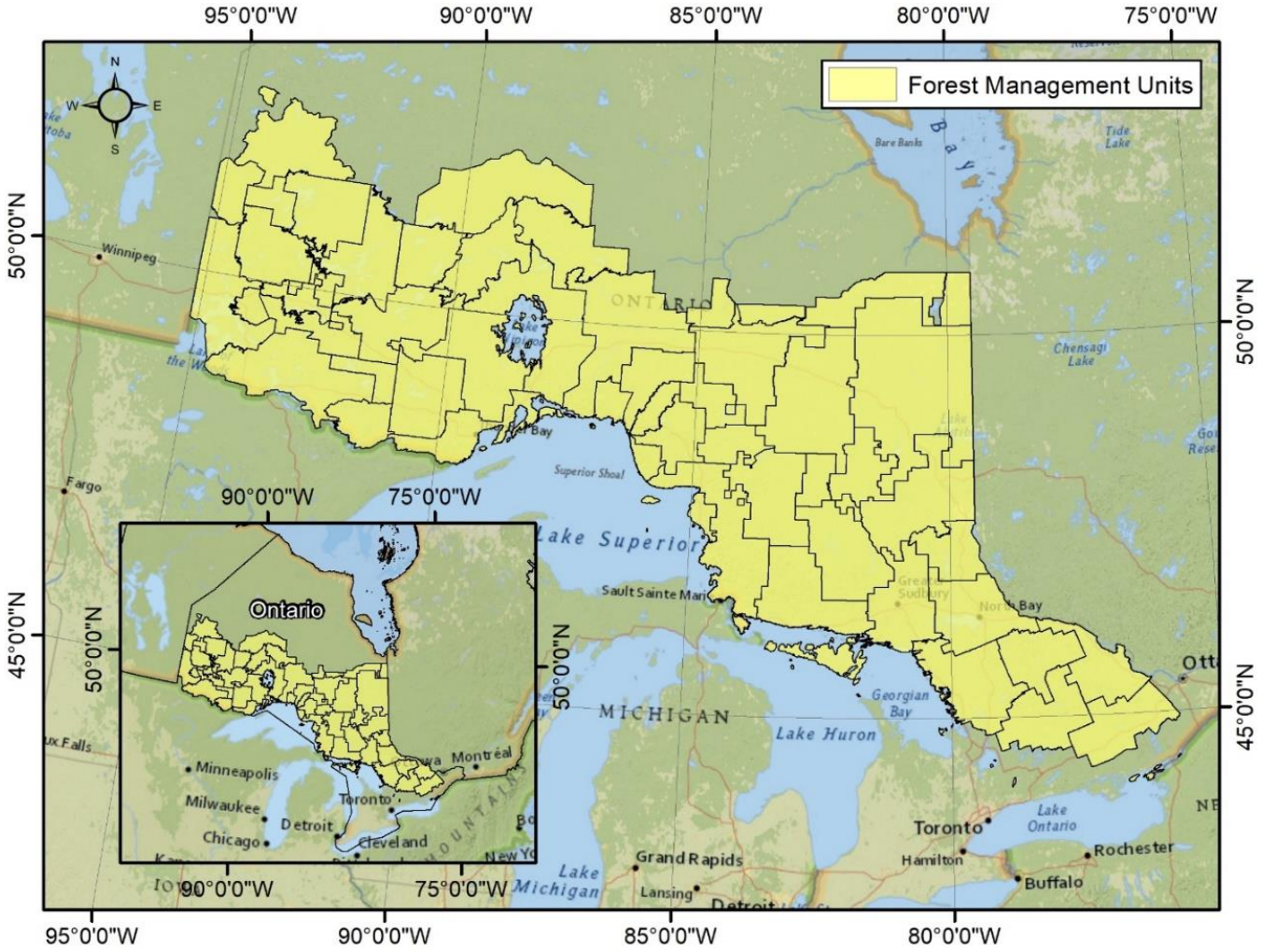
  (2) Phase 2: Applied water flow and risk crossing spatial products resulting from Phase 1.



Project Overview

Project Area

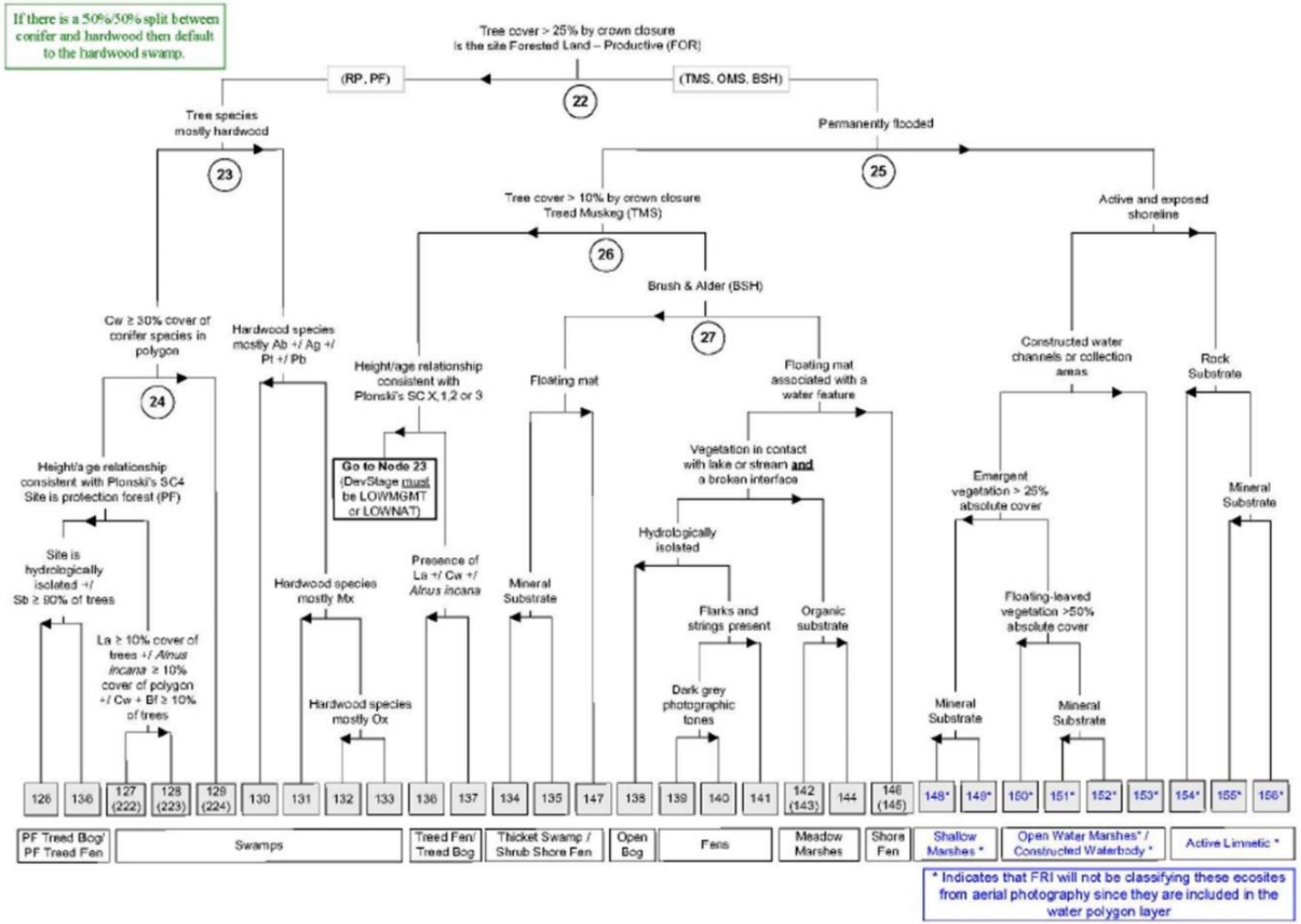
- All FMUs in Canada that have available eFRI spatial data.
- 43 FMUs.



Crosswalk Exercise

eFRI to EWC

- The Ontario's eFRI includes 33 permanently flooded/hydric ecosite codes.
- The ecosite codes follow the Canadian Wetland Classification System (CWCS) wetland definition.



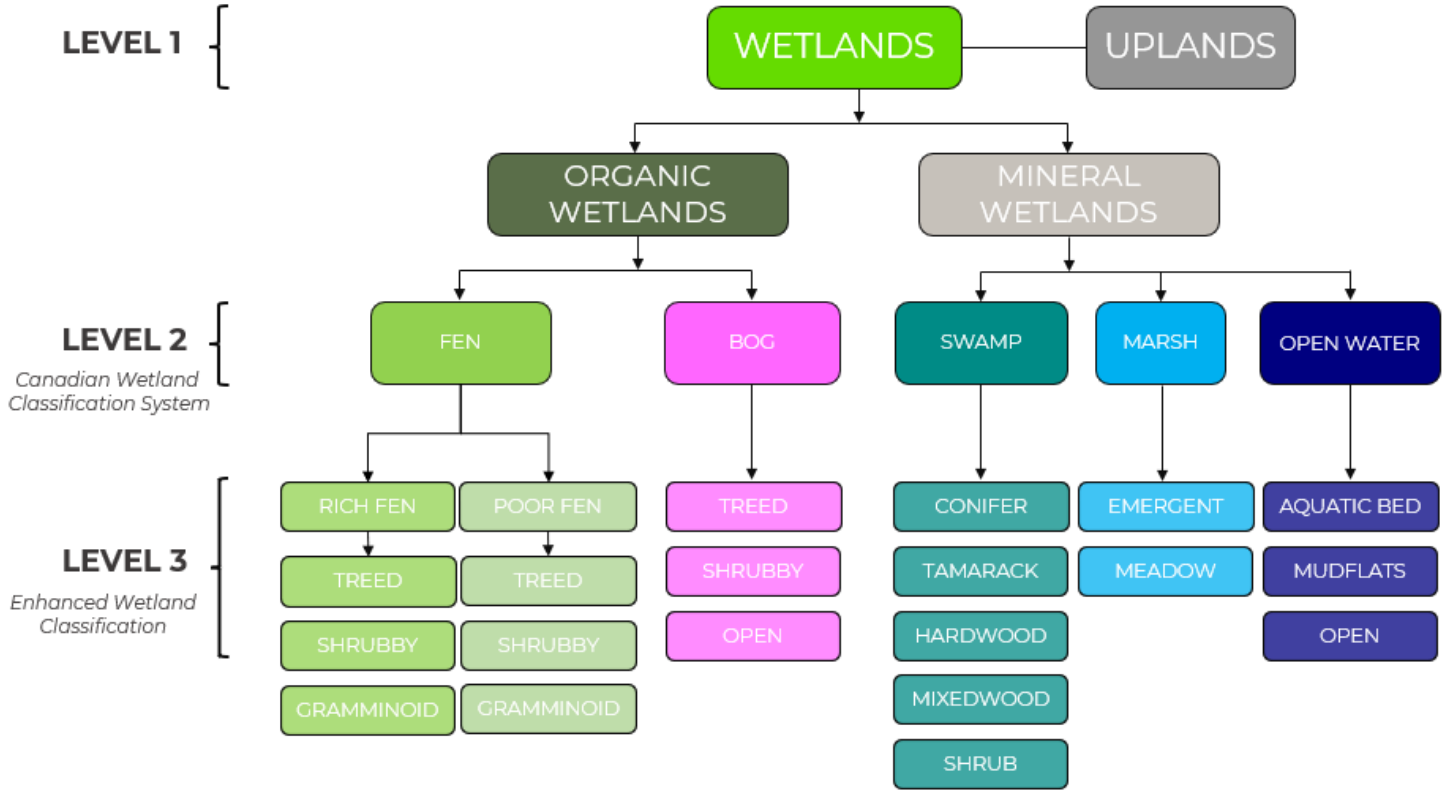
Citation:

Ontario Ministry of Natural Resources. (2010). Photo Interpretation Manual for Ecosites in Ontario. Northwest Science and Information Ontario Ministry of Natural Resources. Thunder Bay.

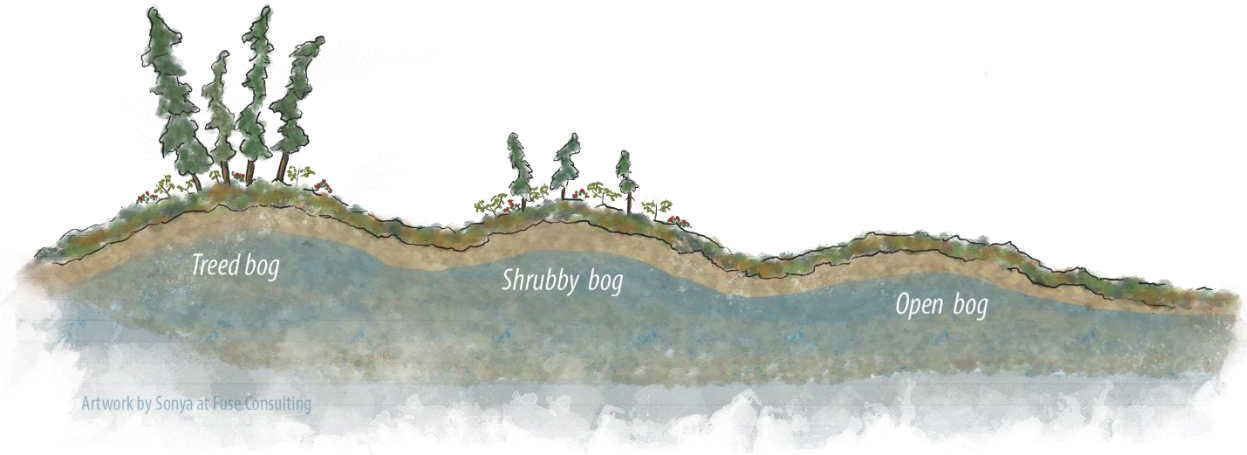
Crosswalk Exercise

eFRI to EWC

- To facilitate the development of more concise and user-friendly information for practitioners and forest managers, a crosswalk from OMNR's eFRI permanently flooded/Hydric ecosites to DUC's EWC boreal wetland classes was completed.
- DUC's EWC identifies 19 different wetland classes.

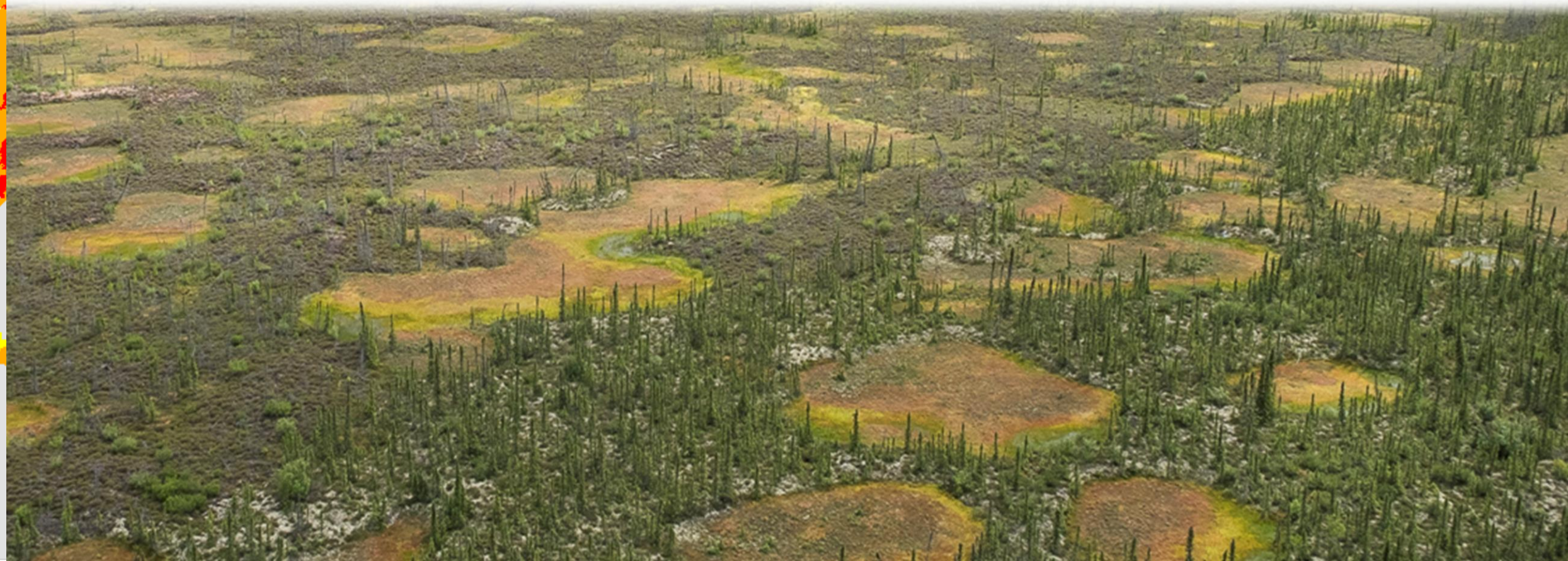


Read more here: https://www.ducks.ca/resources/industry/boreal-plains-field-guide/



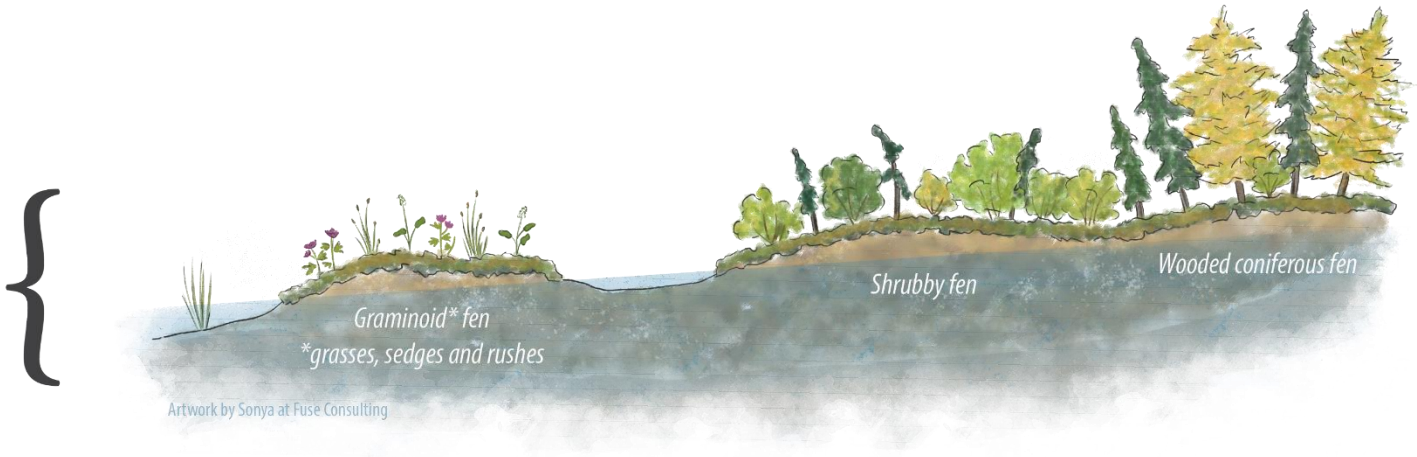
Bog

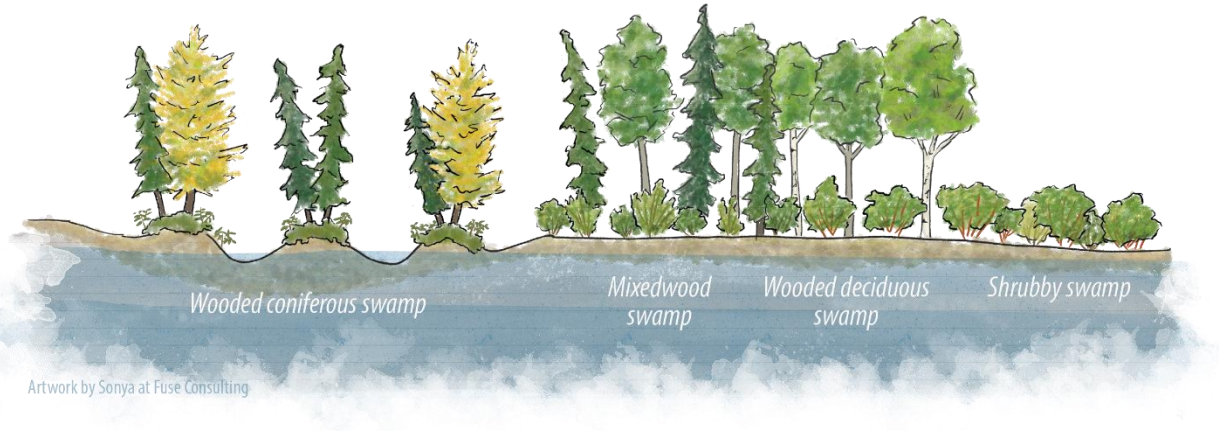
- Water is typically below the ground surface
- The top layer of moss often feels wet and spongy
- Trees are stunted black spruce



Fen

- Sometimes you can see the water at the surface, and sometimes it is below-ground
- Water is slow-moving compared to rivers and streams
- Trees are black spruce and tamarack, and the ground cover species are diverse, ranging from willows to mosses



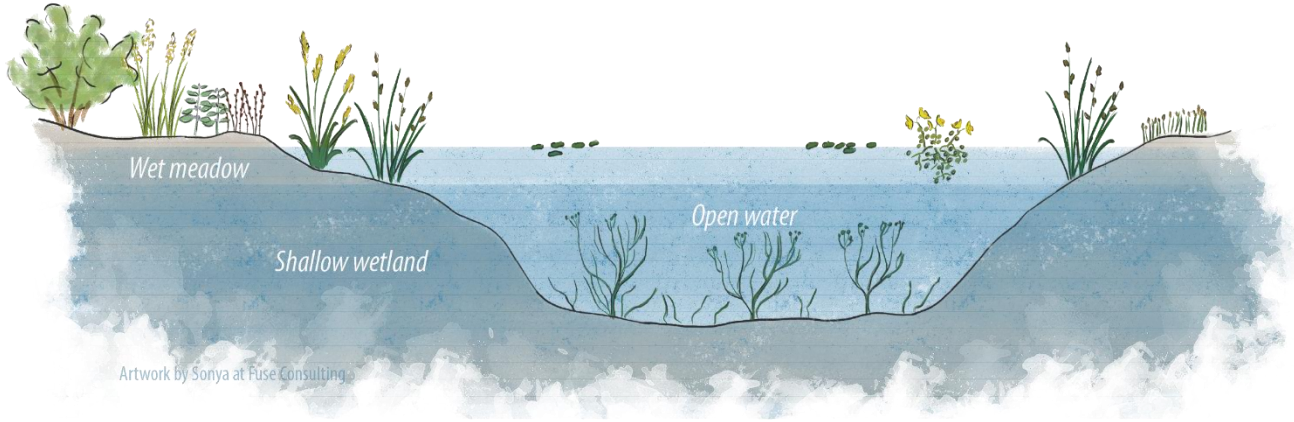


Swamp

- Fluctuating water levels cause temporary to seasonal flooding, leading to the formation of hummocks and hollows and water-adapted trees and shrubs
- Typically, more than 25% tree/shrub cover

Marsh

- Water levels fluctuate during the year and may dry up temporarily
- Vegetation may change from wet years to dry years
- Dominated by graminoid (grass-like) plants including cattails and bulrushes



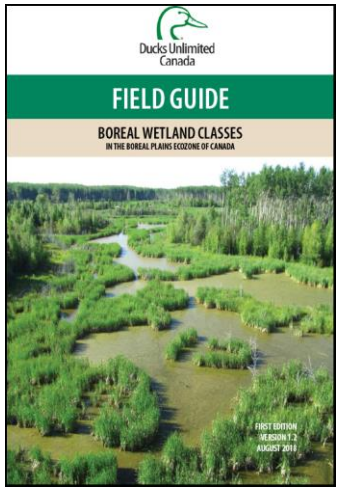
Shallow open water

- Standing water up to 2 m deep in most years
- Water may be brackish to saline (salty)
- Submersed and/or floating vegetation in the open water

eFRI Code	eFRI Ecosite Name	CWCS Major Class	EWC Minor Class
B126	Treed Bog	Bog	Treed Bog
B137	Sparse Treed Bog	Bog	Shrubby Bog
B138	Open Bog	Bog	Open Bog
B139	Poor Fen	Fen	Graminoid Poor Fen
B136	Sparse Treed Fen	Fen	Treed Poor Fen
B140	Open Moderately Rich Fen	Fen	Graminoid Rich Fen
B141	Open Extremely Rich Fen	Fen	Graminoid Rich Fen
B146	Open Shore Fen	Fen	Graminoid Rich Fen
B147	Shrub Shore Fen	Fen	Shrubby Rich Fen
B130	Intolerant Hardwood Swamp	Swamp	Hardwood Swamp
B131	Maple Hardwood Swamp	Swamp	Hardwood Swamp
B132	Oak Hardwood Swamp	Swamp	Hardwood Swamp
B133	Hardwood Swamp	Swamp	Hardwood Swamp
B134	Mineral Thicket Swamp	Swamp	Shrub Swamp
B135	Organic Thicket Swamp	Swamp	Shrub Swamp
B127	Poor Conifer Swamp	Swamp	Conifer Swamp
B128	Intermediate Conifer Swamp	Swamp	Conifer Swamp
B129	Rich Conifer Swamp	Swamp	Conifer Swamp
B222	Mineral Poor Conifer Swamp	Swamp	Conifer Swamp
B223	Mineral Intermediate Conifer Swamp	Swamp	Conifer Swamp
B224	Mineral Rich Conifer Swamp	Swamp	Conifer Swamp
B142	Mineral Meadow Marsh	Marsh	Meadow Marsh
B143	Rock Meadow Marsh	Marsh	Meadow Marsh
B144	Organic Meadow Marsh	Marsh	Meadow Marsh
B145	Floating Marsh	Marsh	Emergent Marsh
B148	Mineral Shallow Marsh	Marsh	Emergent Marsh
B149	Organic Shallow Marsh	Marsh	Emergent Marsh
B150	Open Water Marsh: Floating-Leaved	Shallow Open Water	Aquatic Bed
B151	Open Water Marsh: Mineral	Shallow Open Water	Aquatic Bed
B152	Open Water Marsh: Organic	Shallow Open Water	Aquatic Bed
B154	Active Limnetic Rock	Shallow Open Water	Open Water
B155	Active Limnetic Mineral	Shallow Open Water	Open Water
B156	Active Limnetic Organic	Shallow Open Water	Open Water

Crosswalk Exercise

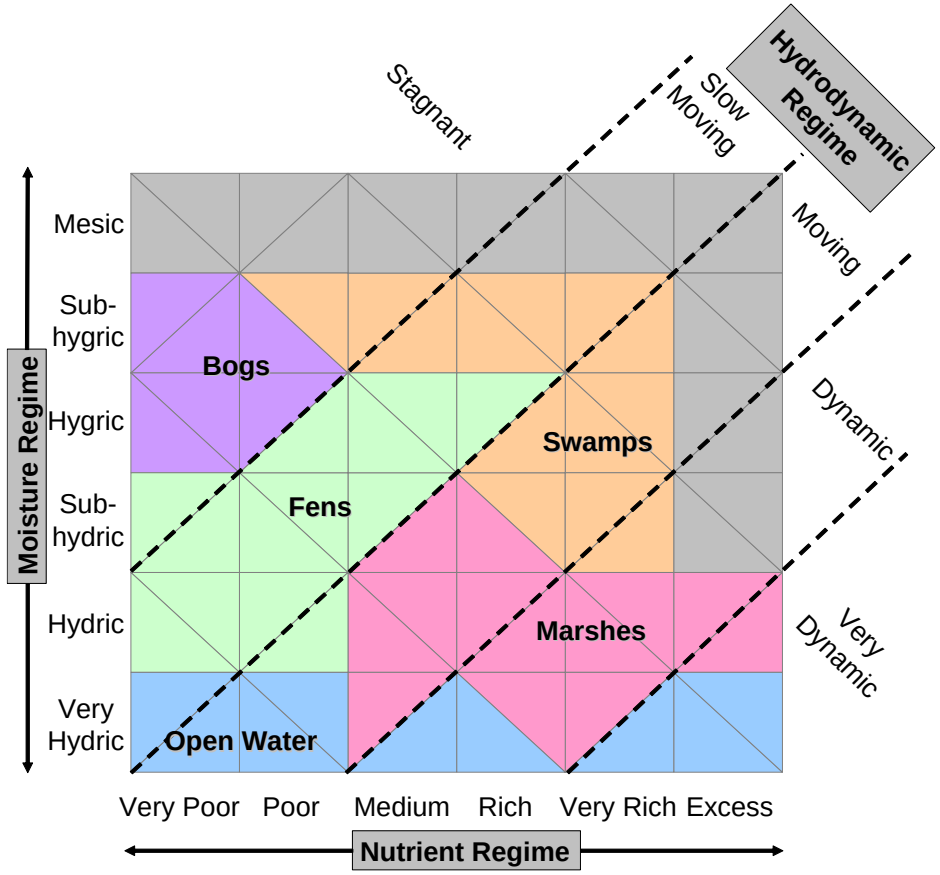
- The translation of classes from one classification system to another was completed by analyzing the species composition (i.e., presence), heights, and coverage for each code/class as described in their classification system documentation.
- 14 EWC classes were identified from the crosswalk exercise.



Results: Associated Products

Inferred Information:

- After cross-walking the eFRI ecosites, inferred water flow characteristics and relative risk ratings were then assigned to each wetland polygon within the Ontario FMUs.
- This was done using DUC's edatopic grid as a guiding principle.



Edatopic Grid:

Distribution of major wetland classes in relation to their hydrodynamic regimes and other regimes.

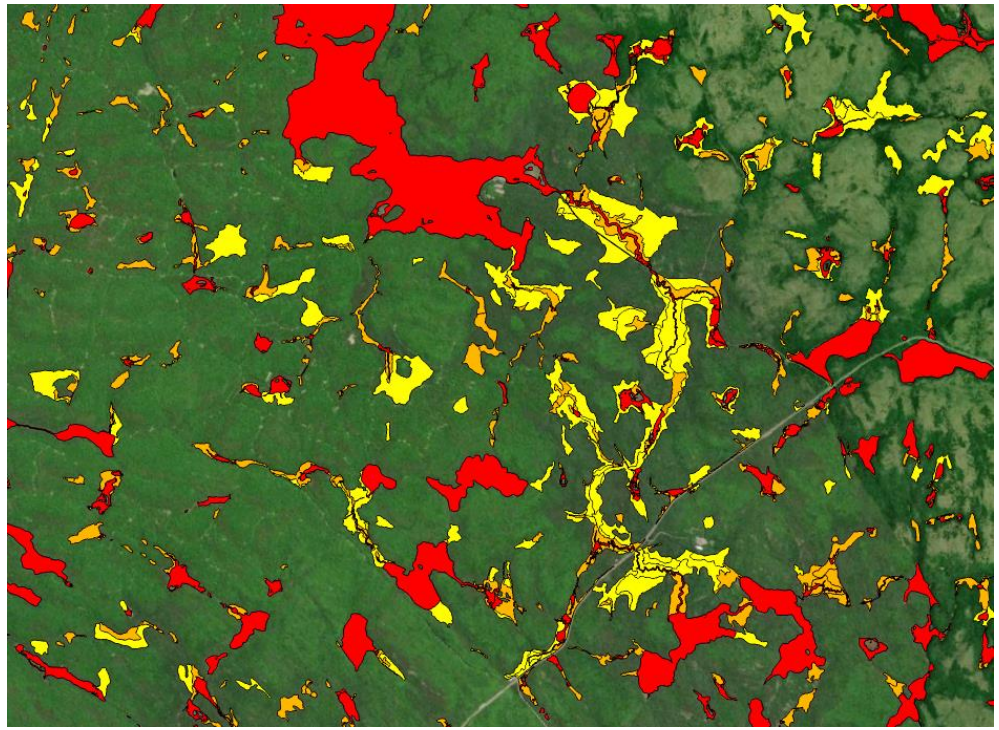
Read more here: https://boreal.ducks.ca/publications/enhanced-wetland-classification-inferred-products-user-guide/

Results: Associated Products

Inferred Information:

- Wetland flow type helpful for working in and around wetlands.
- Wetland flow used to provide a risk assessment in terms of potential impacts on hydrology and associated consequences on wetland function.
- Risk ratings can be applied to road planning, design, and construction.

EWC Class	Crossing Risk
Open Water	High
Aquatic Bed	High
Emergent Marsh	High
Meadow Marsh	High
Graminoid Poor Fen	Medium
Graminoid Rich Fen	Medium
Shrubby Rich Fen	Medium
Treed Poor Fen	Low
Open Bog	Low
Shrubby Bog	Low
Treed Bog	Low
Shrub Swamp	Medium
Hardwood Swamp	Medium
Conifer Swamp	Low

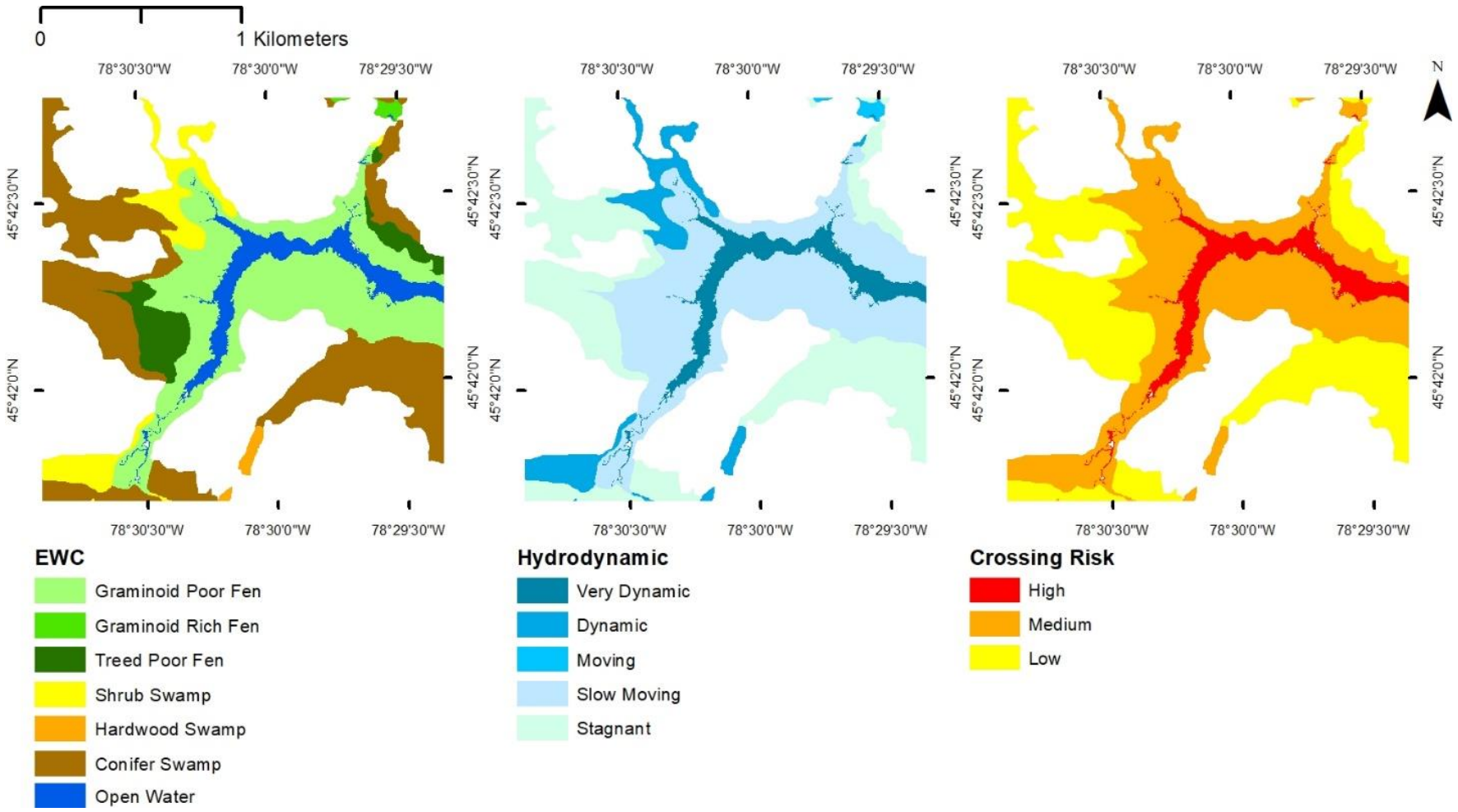


Read more here: https://boreal.ducks.ca/publications/operational-guide-for-forest-road-wetland-crossings/

Results: Associated Products

Inferred Information:

- Hydrodynamics: Indicates the movement of water through wetlands.
- Crossing risk: Indicates level of potential risk for operating within that wetland.



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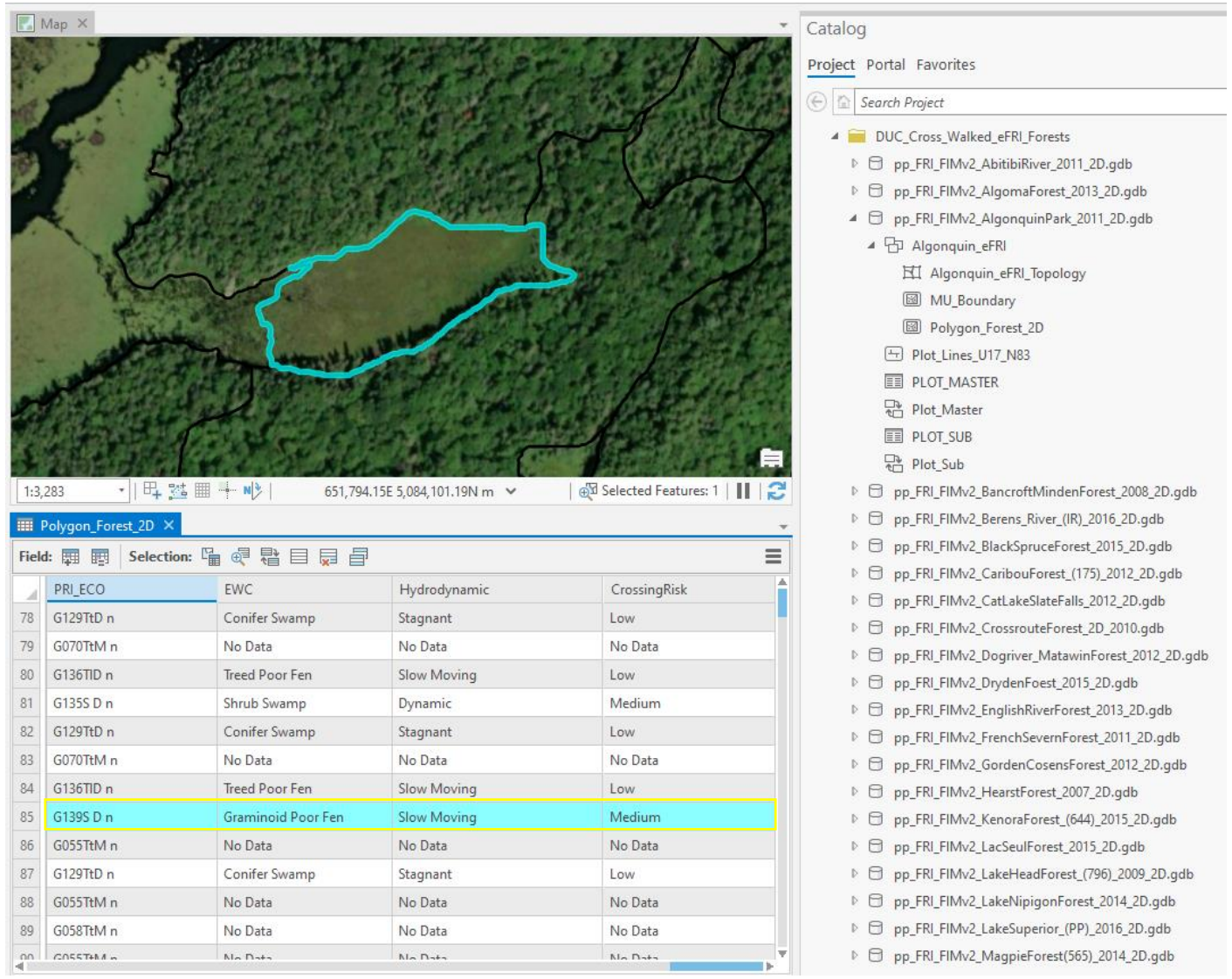
Results: Crosswalk Data



	PRI_ECO	EWC	Hydrodynamic	CrossingRisk
78	G129TtD n	Conifer Swamp	Stagnant	Low
79	G070TtM n	No Data	No Data	No Data
80	G136TlD n	Treed Poor Fen	Slow Moving	Low
81	G135S D n	Shrub Swamp	Dynamic	Medium
82	G129TtD n	Conifer Swamp	Stagnant	Low
83	G070TtM n	No Data	No Data	No Data
84	G136TlD n	Treed Poor Fen	Slow Moving	Low
85	G139S D n	Graminoid Poor Fen	Slow Moving	Medium
86	G055TtM n	No Data	No Data	No Data
87	G129TtD n	Conifer Swamp	Stagnant	Low
88	G055TtM n	No Data	No Data	No Data
89	G058TtM n	No Data	No Data	No Data

Inferred Information:

- 43 forests across Ontario were cross-walked to DUC's EWC system.
- Each forest is contained within a unique geodatabase.
- Each forest contains a new attribute field for 'EWC class', 'hydrodynamic regime', and 'crossing risk'.
- All forest geodatabases have been delivered to Forestry Futures Trust Ontario and are available for operational use.

Resources

eFRI to EWC Crosswalk and Associated Products: Final Report

Report detailing all project outcomes.

Citation:

Ducks Unlimited Canada (2022). *eFRI to EWC Crosswalk and Associated Products: Final Report*. National Boreal Program, Ducks Unlimited Canada, Edmonton, Alberta, Canada.

Ducks Unlimited Canada: National Boreal Program

Updates on what DUC is doing in the boreal, wetland guides, BMP guides.

Link:

boreal.ducks.ca

DUC Enhanced Wetland Classification (EWC) Field Guide

A guide describing the EWC wetland classes.

Link:

https://boreal.ducks.ca/publications/a-field-guide-to-the-wetlands-of-the-boreal-plains-ecozone-of-canada/

Wetland BMPs for Forest Management Planning and Operations Guide

User friendly guide of Best Management Practices that can be applied to forestry operations.

Link:

https://boreal.ducks.ca/publications/wetland-best-management-practices-for-forest-management-planning-and-operations-practitioner-guide/

Forest Road Wetland Crossings Operational Guide

User friendly guide on planning, constructing, monitoring, and decommissioning wetland crossings.

Link:

https://boreal.ducks.ca/wp-content/uploads/2017/12/280_Operational-Guide-for-Forest-Road-Wetland-Crossings.pdf

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