A Freshwater Blueprint for Maritime Canada

Union of Nova Scotia Municipalities (UNSM)

November 8th, 2017

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NATURE CONSERVANCY CANADA

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- Value and Utility for Municipalities

Cains Mountain, Victoria County

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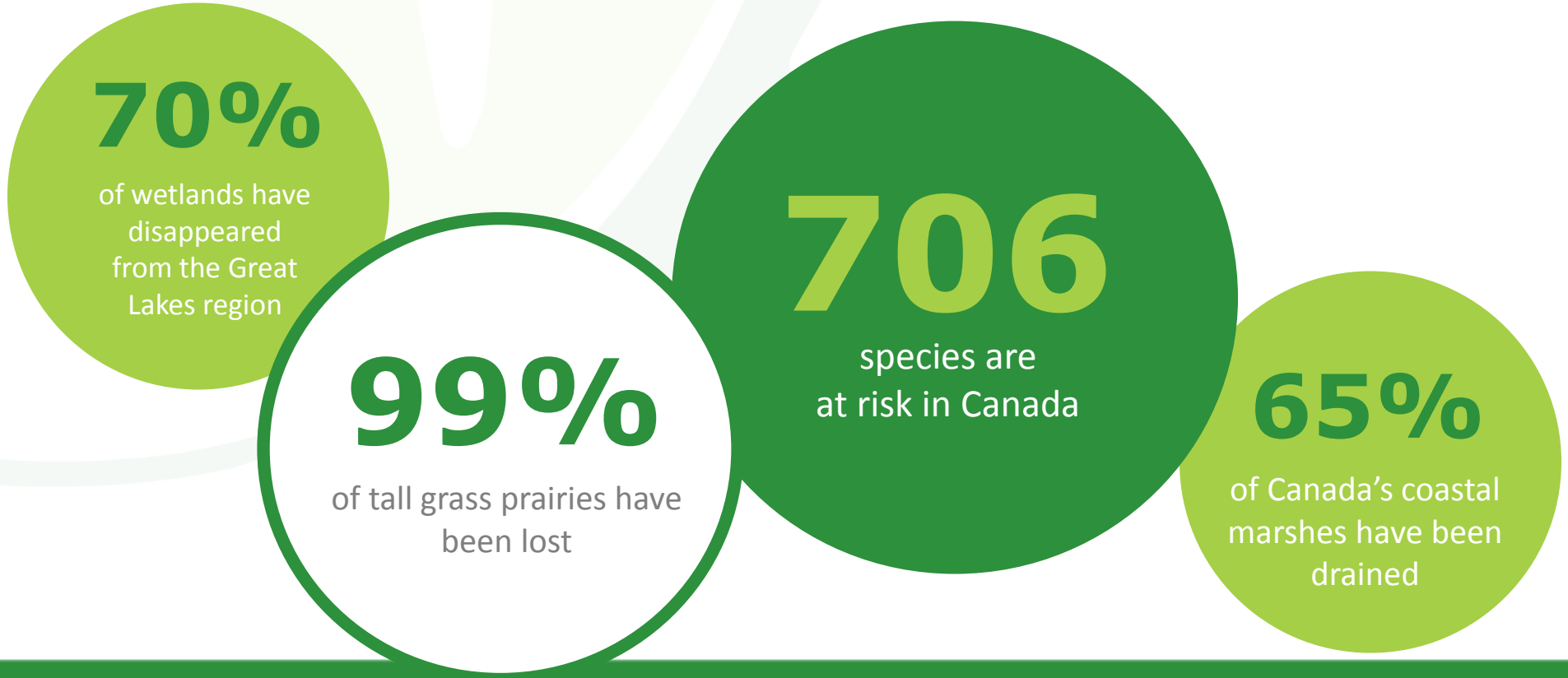
The Canadian lands we love are changing forever

The Earth's biological diversity is being lost at a rate that **impoverishes our quality of life** and **threatens our future**.



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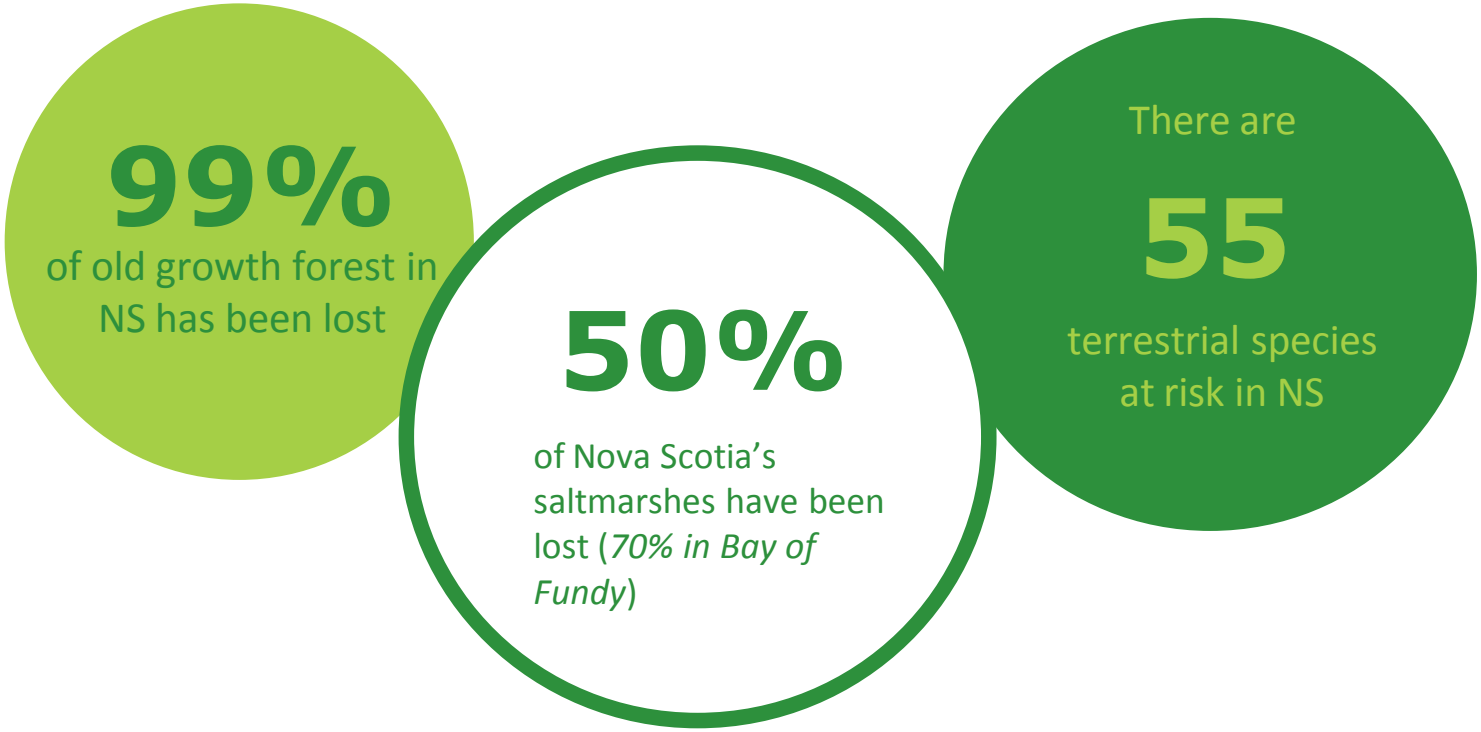
Nova Scotia lands we love are changing forever



NATURE CONSERVANCY CANADA

Our vision for a healthier future

Mission: We will **lead, innovate,** and **use creativity** in conserving Canada's natural heritage.

Vision: We **protect** areas of natural diversity for their intrinsic value and **for the benefit of our children and those after them.**

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Our Advantage

Canada's top-ranked environmental charity *by Financial Post*

Canada's **leading** land conservation organization

Consistent mission for over 50 years

Collaborative, non-confrontational

Tangible results

Local presence, national scope, **global impact**

"**A**" RATING
"One of the most **efficient** and **responsible** charities in Canada."

– MoneySense Magazine

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Focused and effective for over 50 years

Our core activities:

Science

Securement

Stewardship

Engagement

80%

Funds raised & directed towards land conservation work

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A Vector for Partnerships

Results You Can Walk On

Since 1962, NCC has helped protect

2.8 M acres

across Canada

73,441 acres

in Atlantic Canada.

35,000 acres

in Nova Scotia

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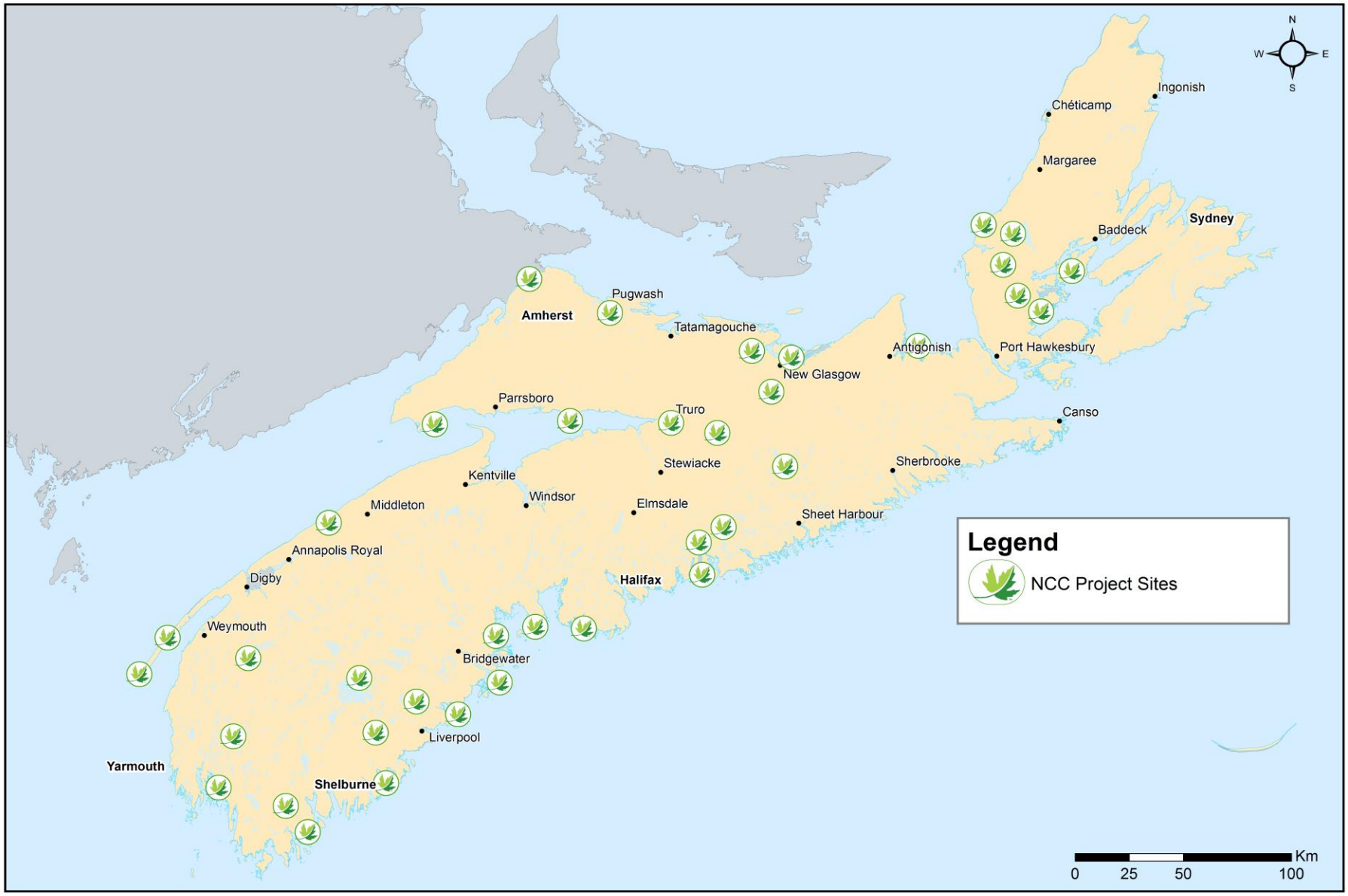
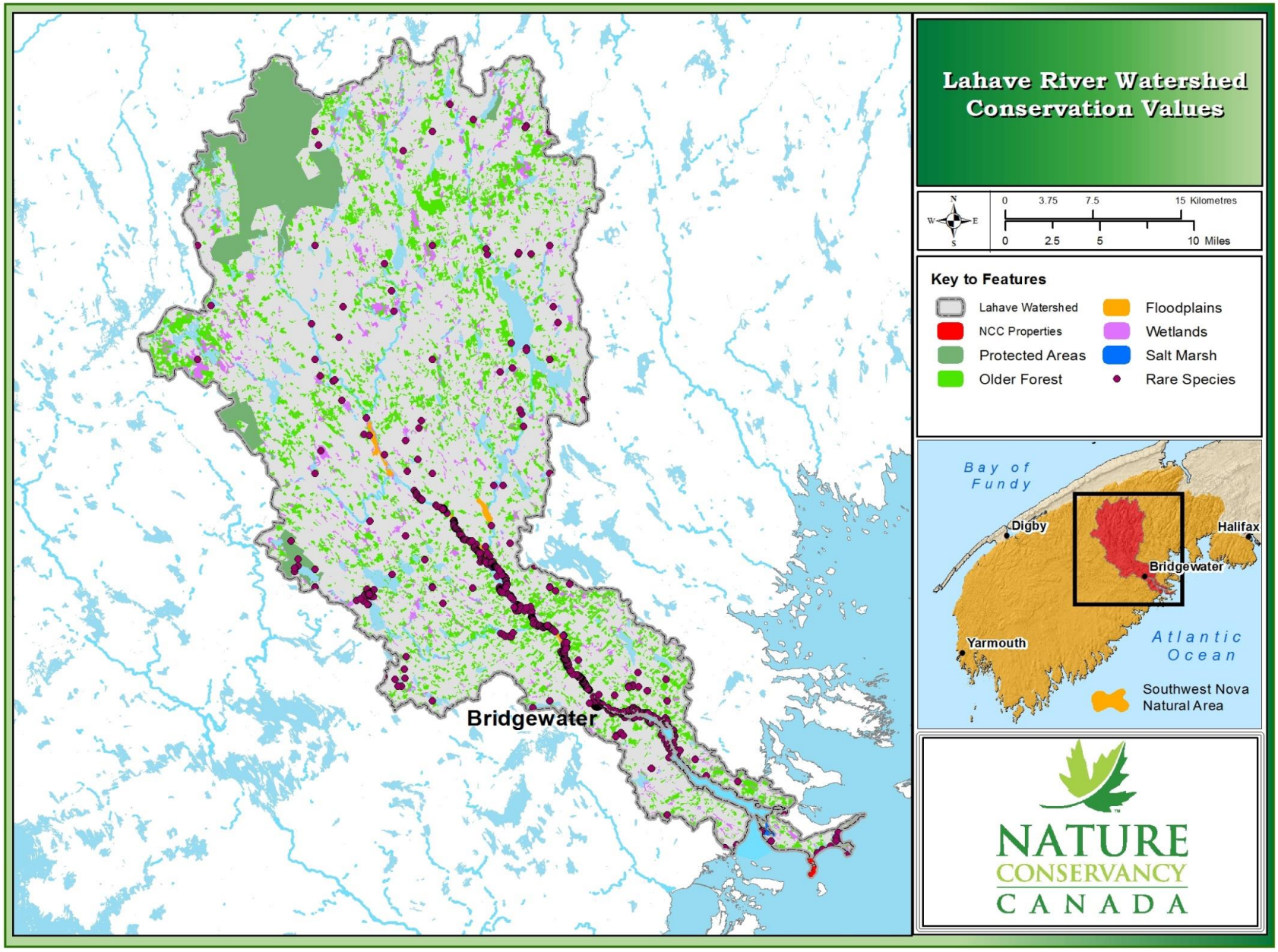
Nature Conservancy of Canada
Nova Scotia Conservation Projects





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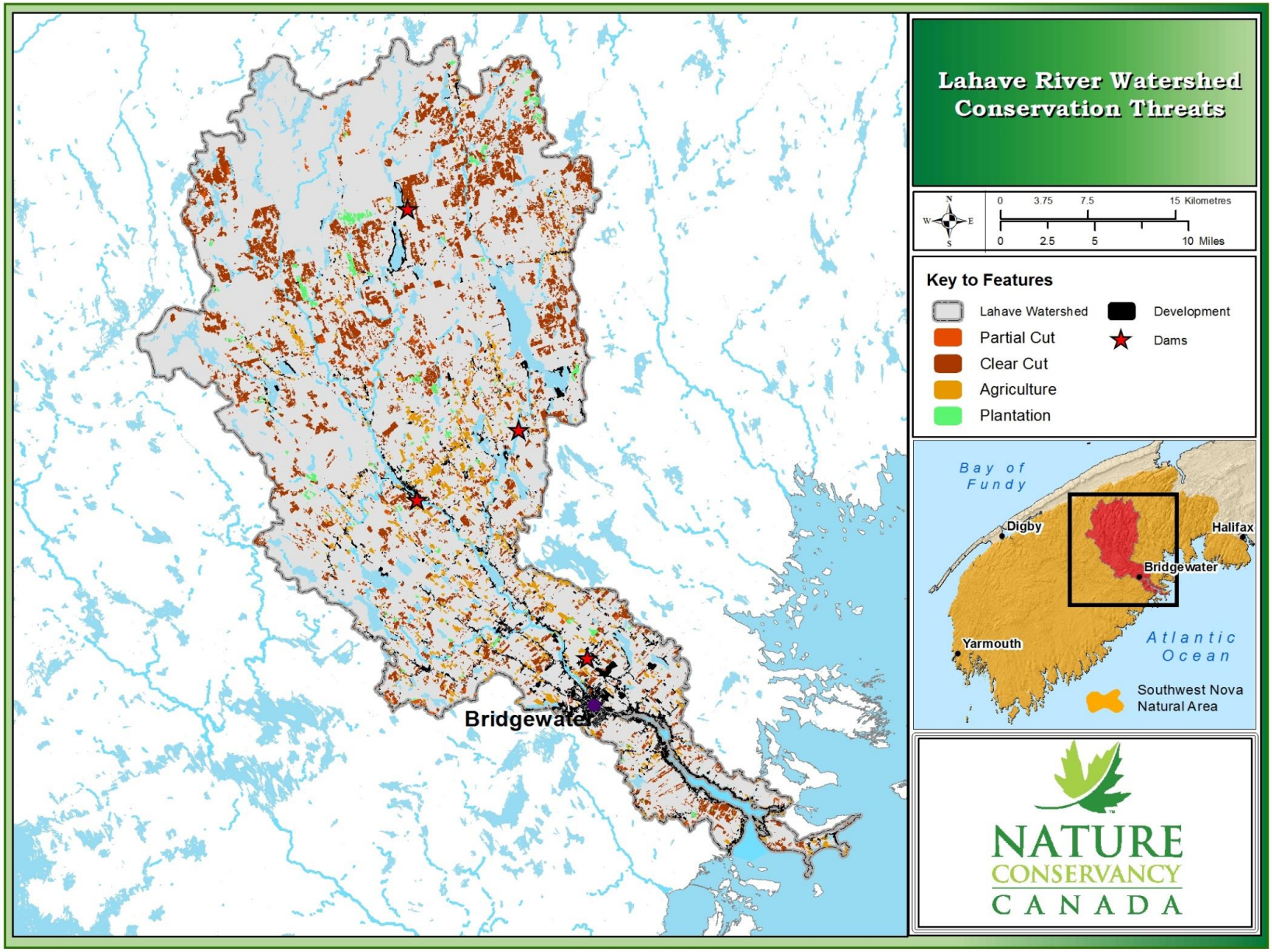
Lahave River Watershed
Conservation Threats
N
W
E
S
0 3.75 7.5 15 Kilometres
0 2.5 5 10 Miles
Key to Features
Lahave Watershed
Partial Cut
Clear Cut
Agriculture
Plantation
Development
Dams
Bay of Fundy
Digby
Halifax
Bridgewater
Yarmouth
Atlantic Ocean
Southwest Nova Natural Area
Bridgewater
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Urban Wilderness Park:
A PARTNERSHIP FOR THE FUTURE OF HALIFAX

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HALIFAX

THE SHAW GROUP

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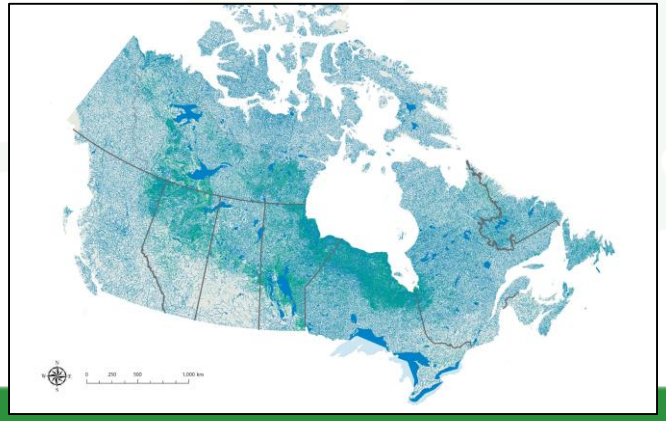
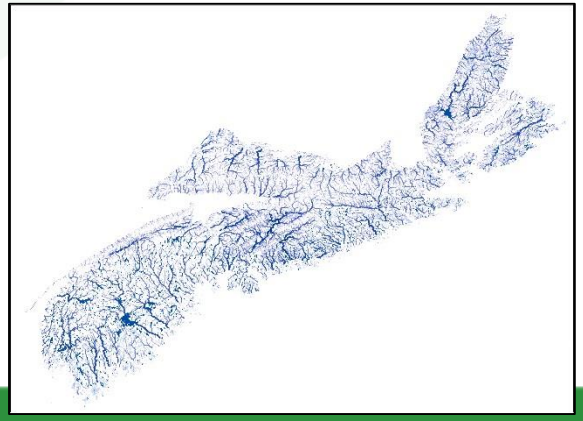
Water, Water Everywhere

- 25% of the worlds wetlands are in Canada.
- Canada has more lakes than the rest of the world combined.
- 10% of Nova Scotia is covered by water and wetlands
- Nova Scotia has 50,000 km of rivers and streams





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Ecosystem Services performed by *intact* Aquatic Systems

Benefits supplied to humans by ecosystems

Provisioning	Regulatory	Cultural
Water for consumptive and use (drinking, industry, ag)	Maintenance of air water quality (filtration and treatment)	Recreation
Water for non-consumptive use (power generation, transport)	Flood and erosion control	Tourism
Aquatic organisms for food, medicine	*Carbon storage*	
	Maintenance of air quality	
	Temperature regulation	

Climate Change Impacts

- More frequent and intense storms (i.e. precipitation)
- Rising sea levels
- Storm surges
- Warmer waters (sea-surface and freshwater)

Green Infrastructure

Intact ecosystems can help mitigate impacts of climate change

- Wetlands and riparian forests absorb and store water, preventing downstream erosion and reducing flood severity
- Saltmarshes absorb storm surges
- Riparian forests regulate water temperature

Example

- Riparian forest along the Nashwaak River in Fredericton, NB.
- Focus on valuing 4 ecosystem services of riparian forests
  - Air Quality
  - Carbon Sequestration
  - Temperature Regulation
  - Flood Control

What's it Worth? (Natural Capital)

Benefit Description	$ CAD / acre / year
Air Quality Improvements	$319.61
Carbon Sequestration	$242.14
Temperature Regulation	$2,482.36
Flood Damage Prevention	$11,853.63

Total = $14,898 acre / year

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What's it Worth? (Natural Capital)

In Nova Scotia protected areas (approximately 12% land area).....

- Wetlands are worth an estimated $466 to $519 million (~$16,000 per acre) per year.

- Lakes and rivers provide services worth $115 to $358 million (~$10,000 per acre) per year

Source: Lee et al. 2013

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Black River Bog, Inverness County

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The Freshwater Blueprint

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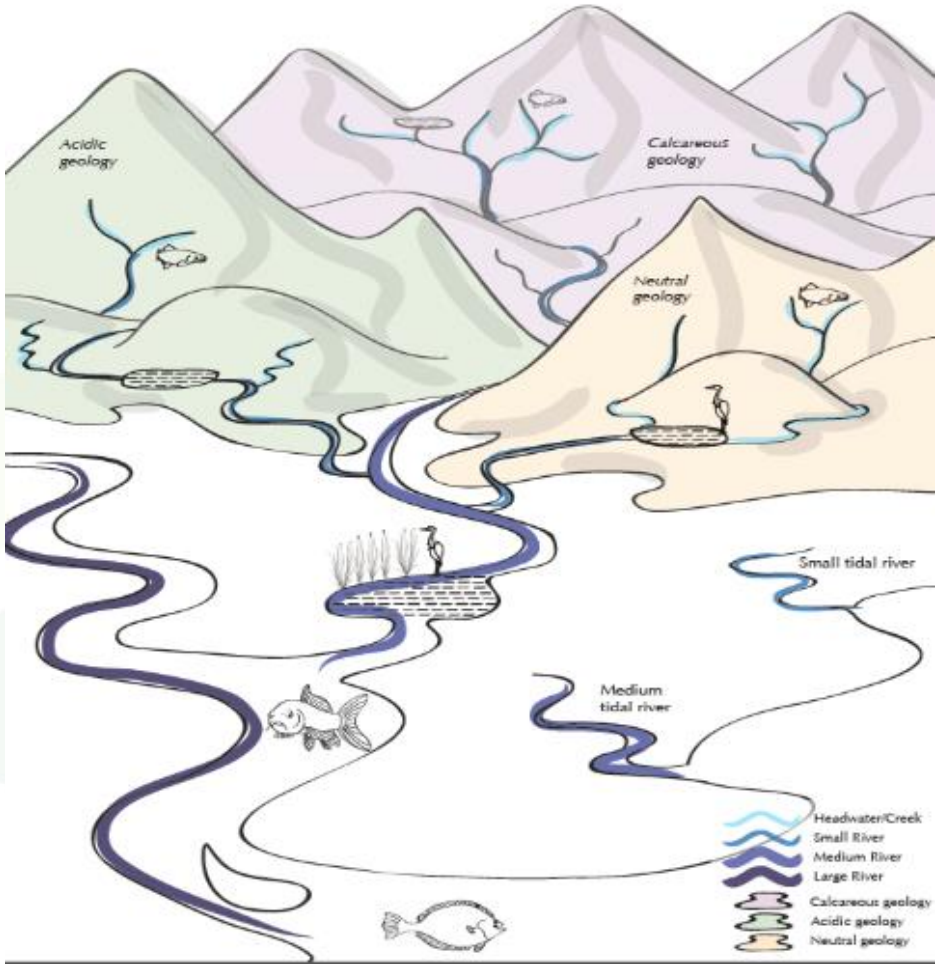
Step 1: Freshwater Classification

- Size
- Gradient
- Geology
- Temperature
- Tidal Influence



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Headwaters (Cold and Fast)	Small River (Cool and Rapid)	Large Tidal River (Warm and Slow)
		
		

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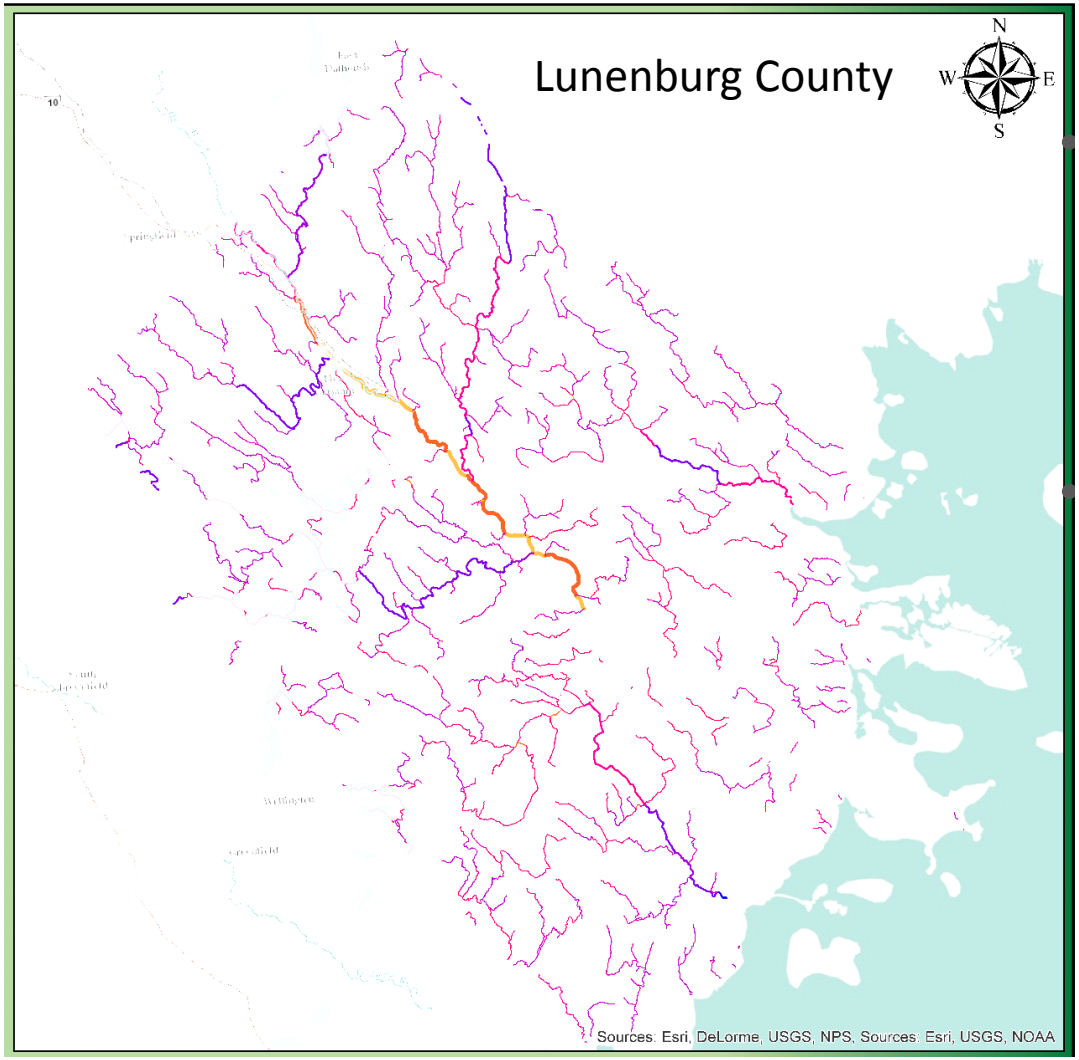
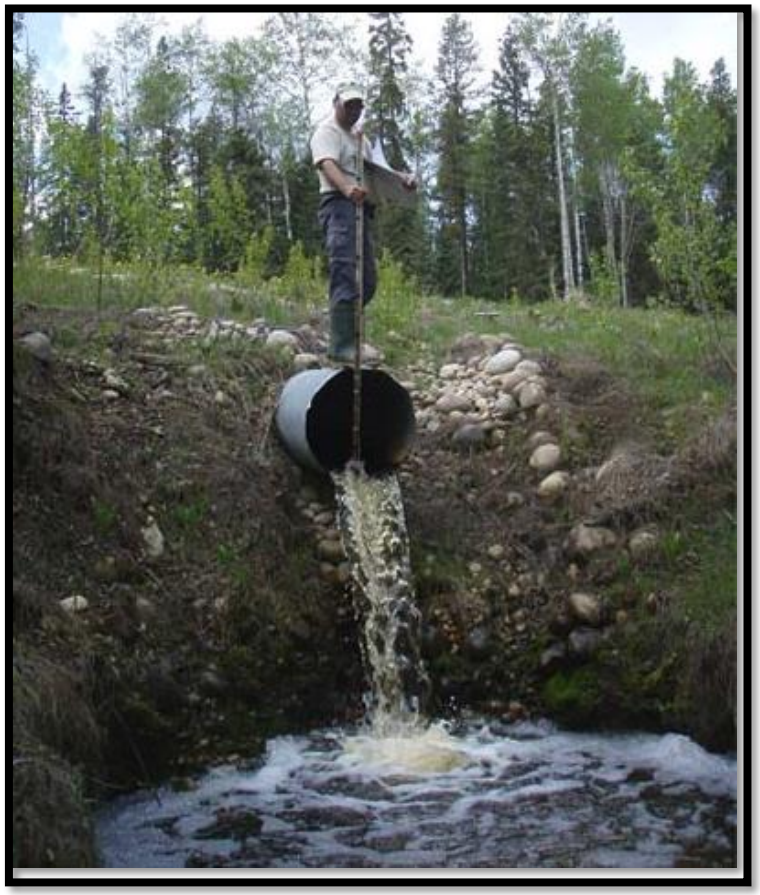
Importance

- What's rare?
- What's common?
- Common language
- Basis for many other planning tools



Step 2: Stream Connectivity



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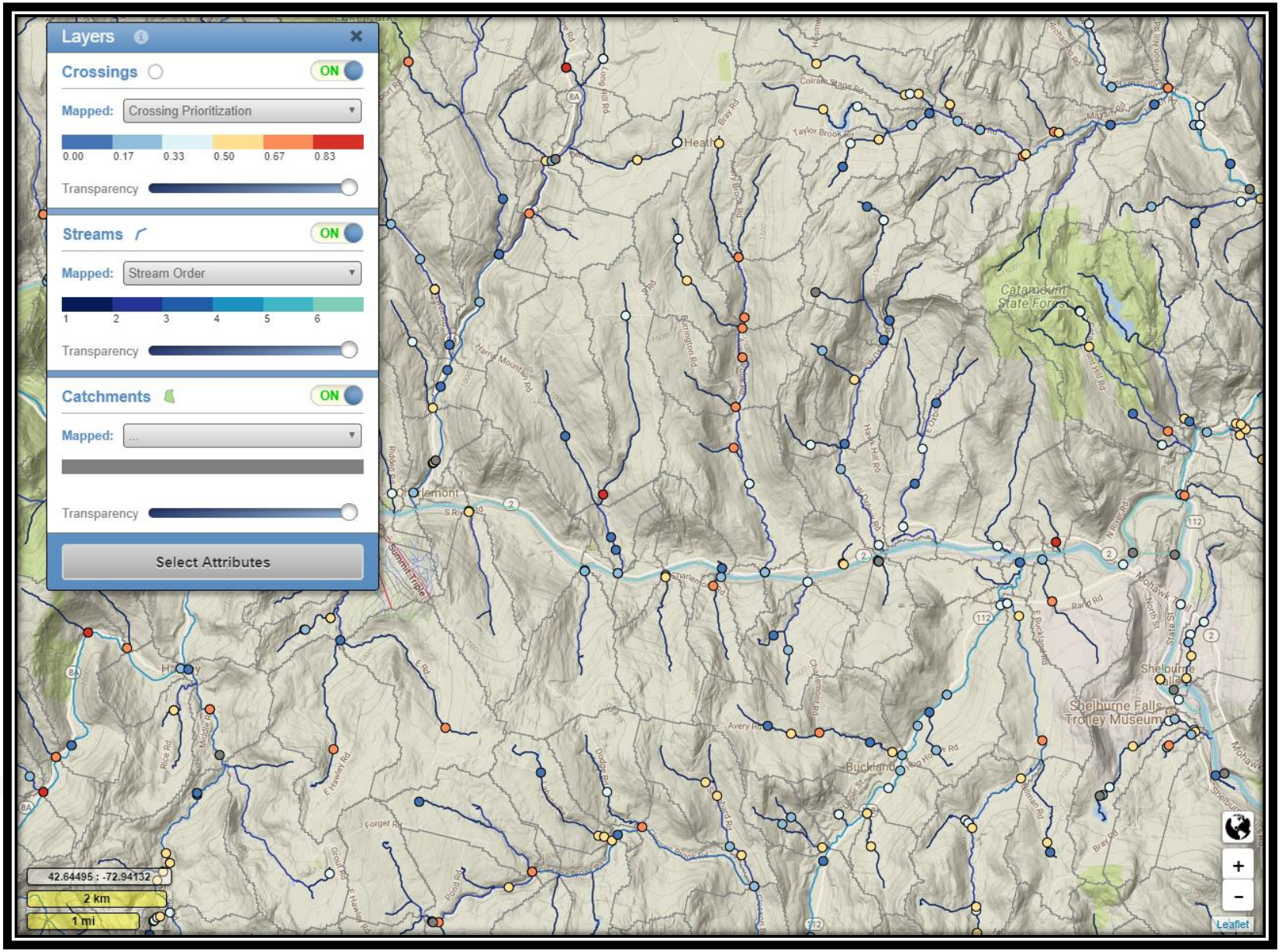
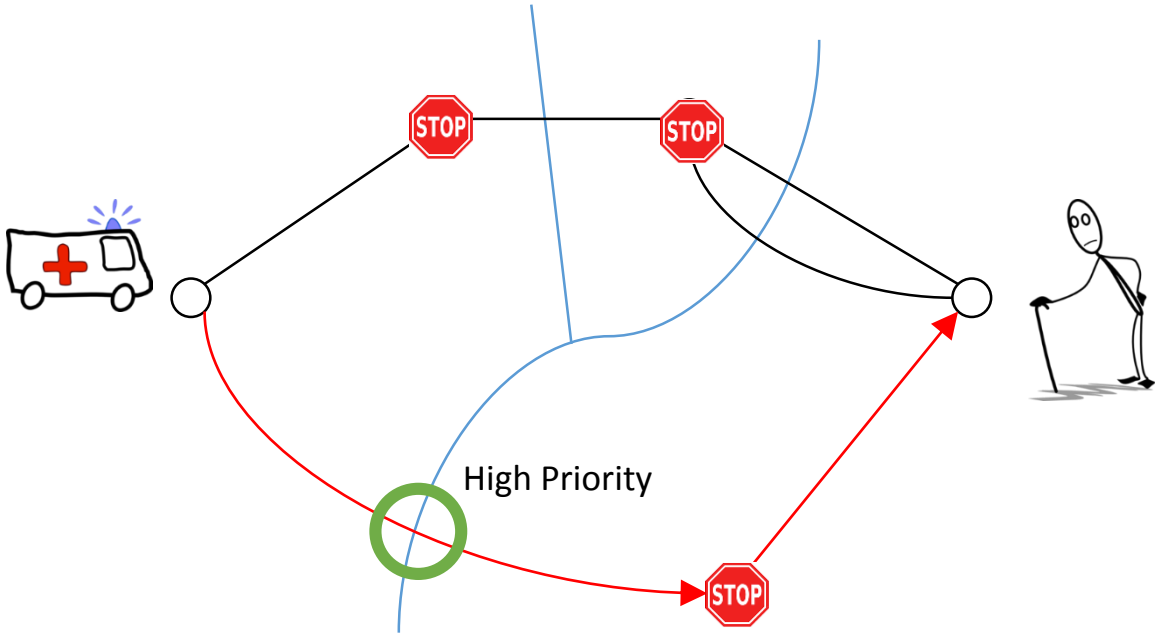

Layers
Crossings
ON
Mapped:
Crossing Prioritization
0.00
0.17
0.33
0.50
0.67
0.83
Transparency
Streams
ON
Mapped:
Stream Order
1
2
3
4
5
6
Transparency
Catchments
ON
Mapped:
...
Transparency
Select Attributes
42.64495 : -72.94132
2 km
1 mi
Leaflet

Importance

- Emergency Services Planning
- Climate-change Adaptation
- Flood Mitigation
- Cost Savings!



Step 3: Watershed "Stress"

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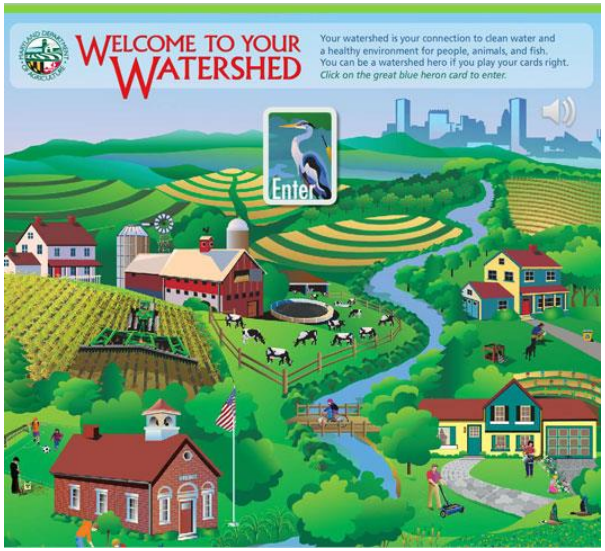
Step 3: Watershed "Stress"

- What are common watershed stressors?

- How do different watershed stressors impact different watersheds?



- What is the **Condition** of these unique freshwater ecosystems ?

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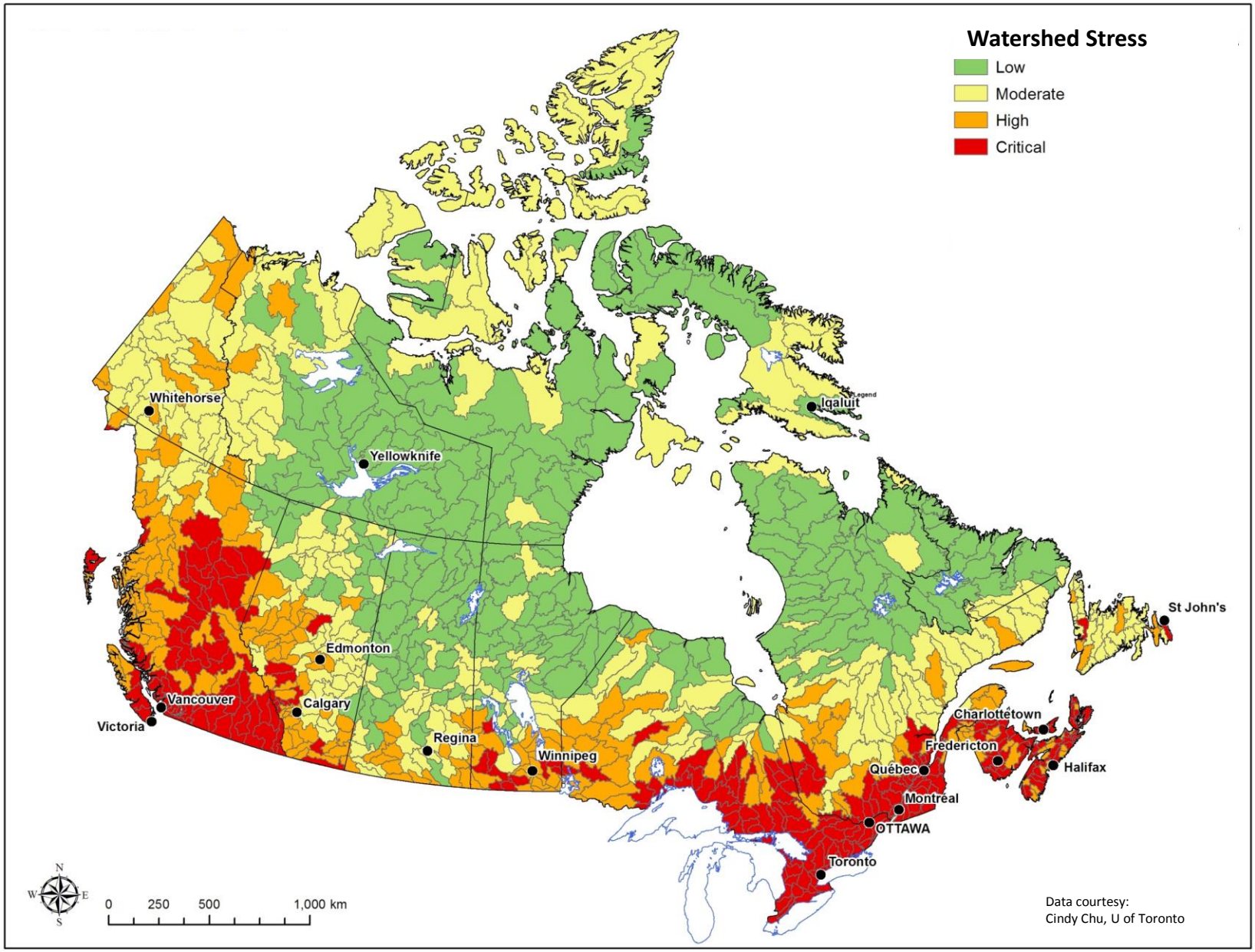

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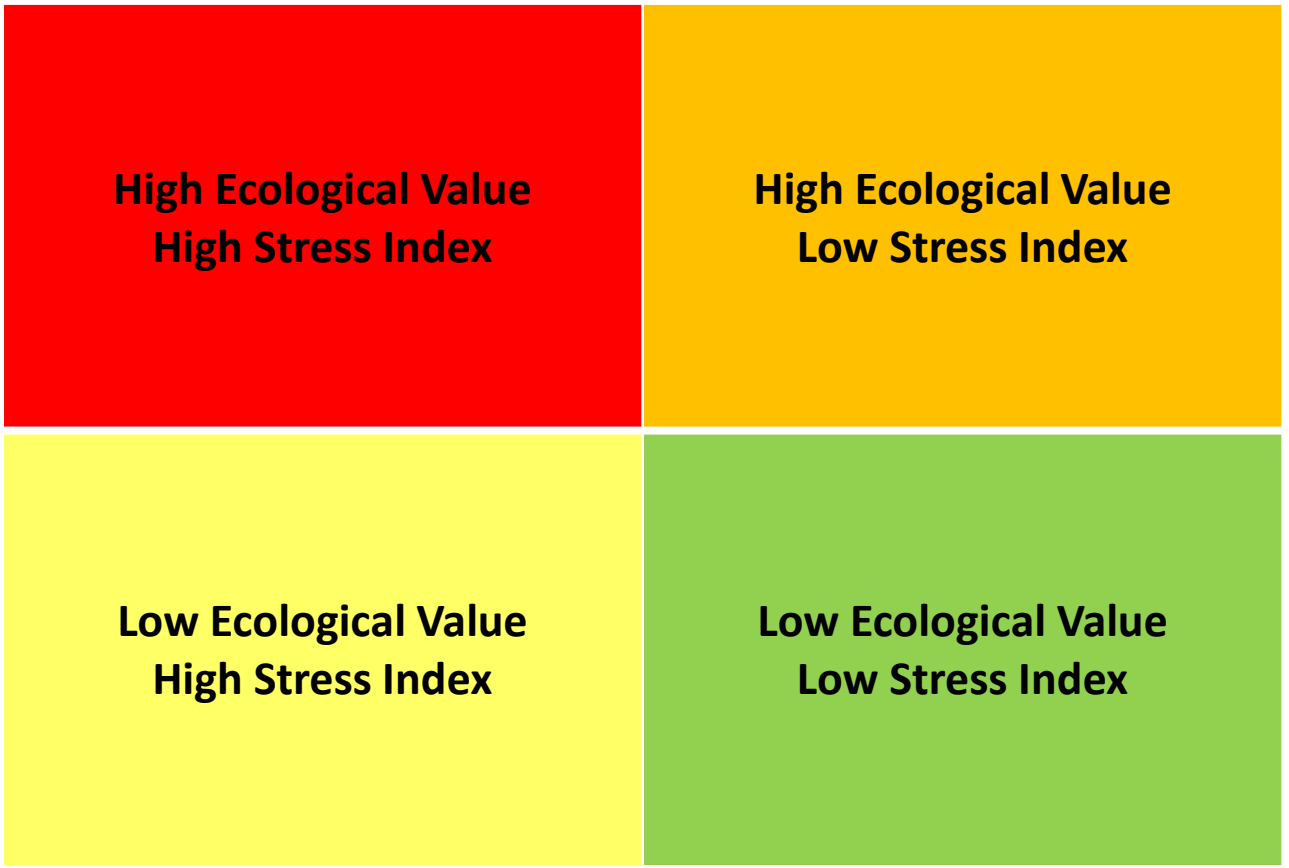
Step 4: Watershed Prioritization



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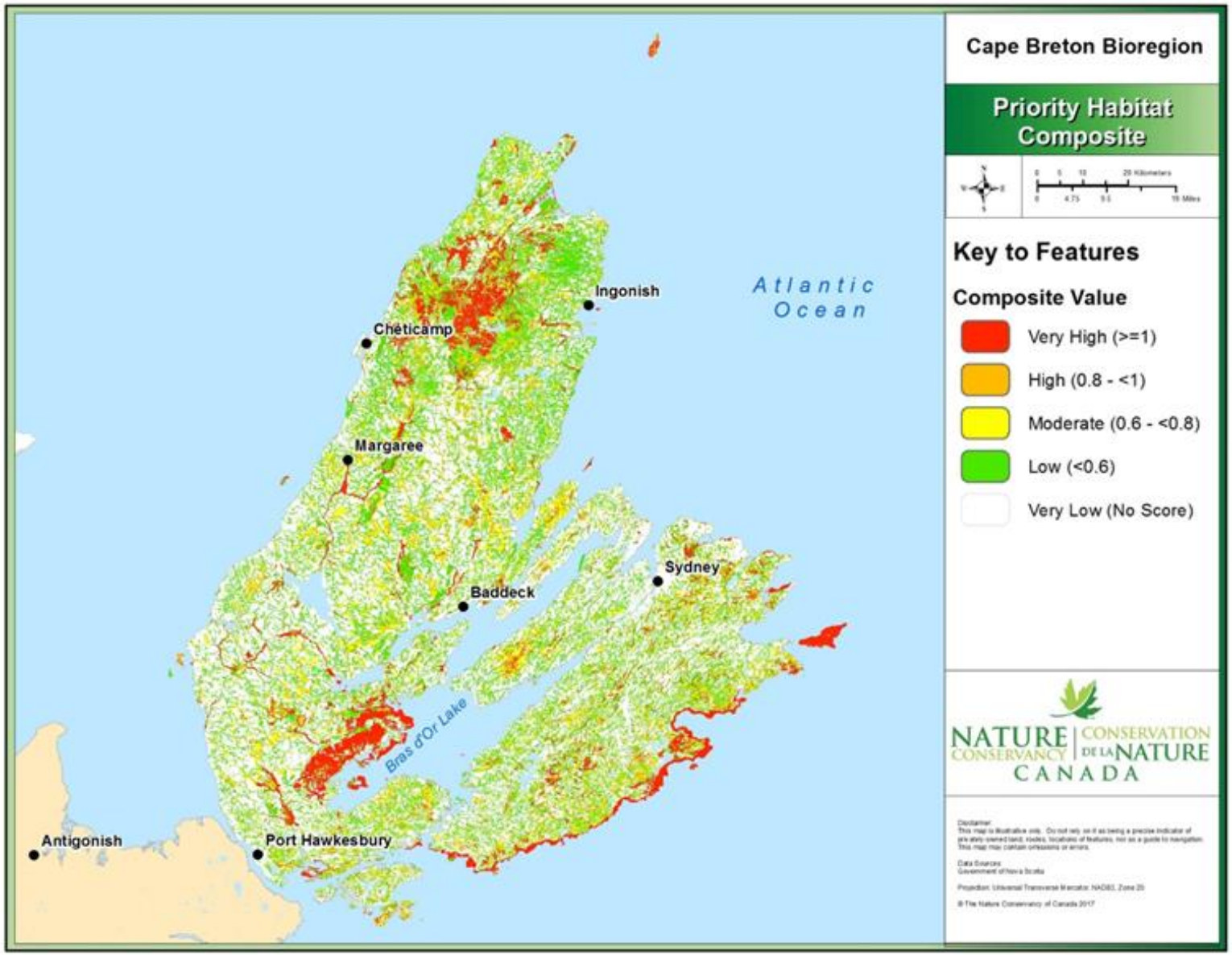
Cape Breton Bioregion
Priority Habitat Composite
Key to Features
Composite Value
Very High (>=1)
High (0.8 - <1)
Moderate (0.6 - <0.8)
Low (<0.6)
Very Low (No Score)
Atlantic Ocean
Ingonish
Cheticamp
Margaree
Baddeck
Sydney
Bras d'Or Lake
Antigonish
Port Hawkesbury
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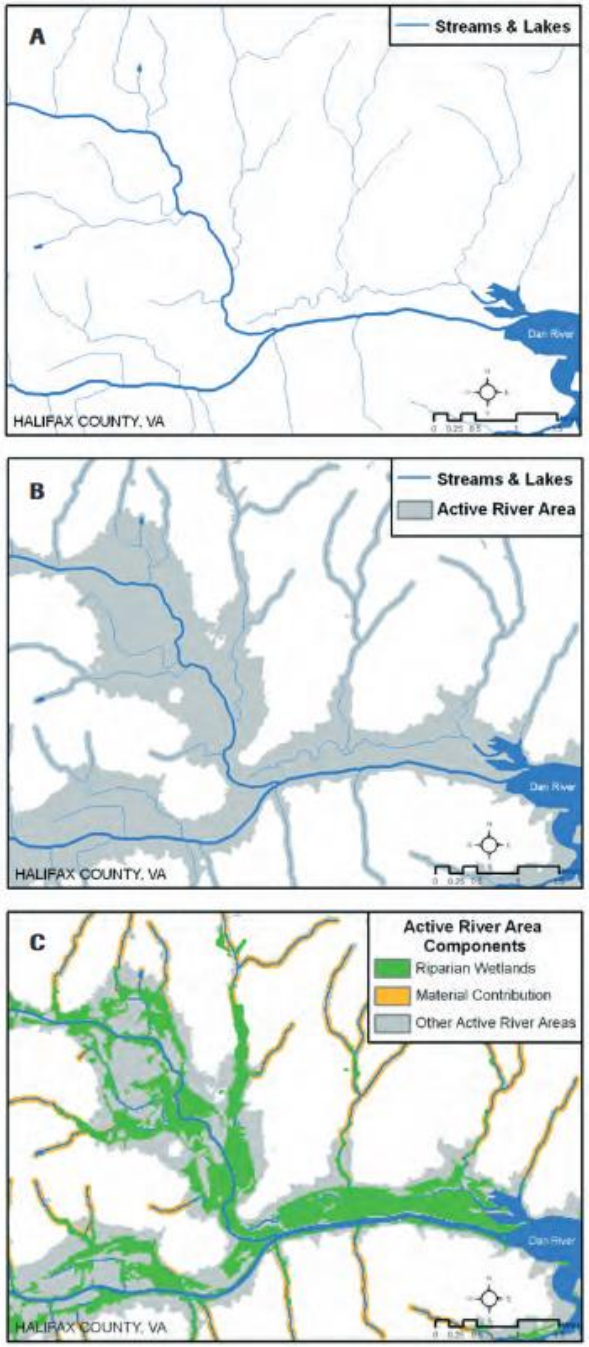
Importance

- Prioritize Limited Resources
- Maintain services to communities
- Conserve and Restore habitat for species at risk
- Land-use planning support

Step 5: Active River Area

The Land that Influences our Water

- Material Contribution
- Meander zones
- Riparian Wetlands
- Floodplains
- Terraces



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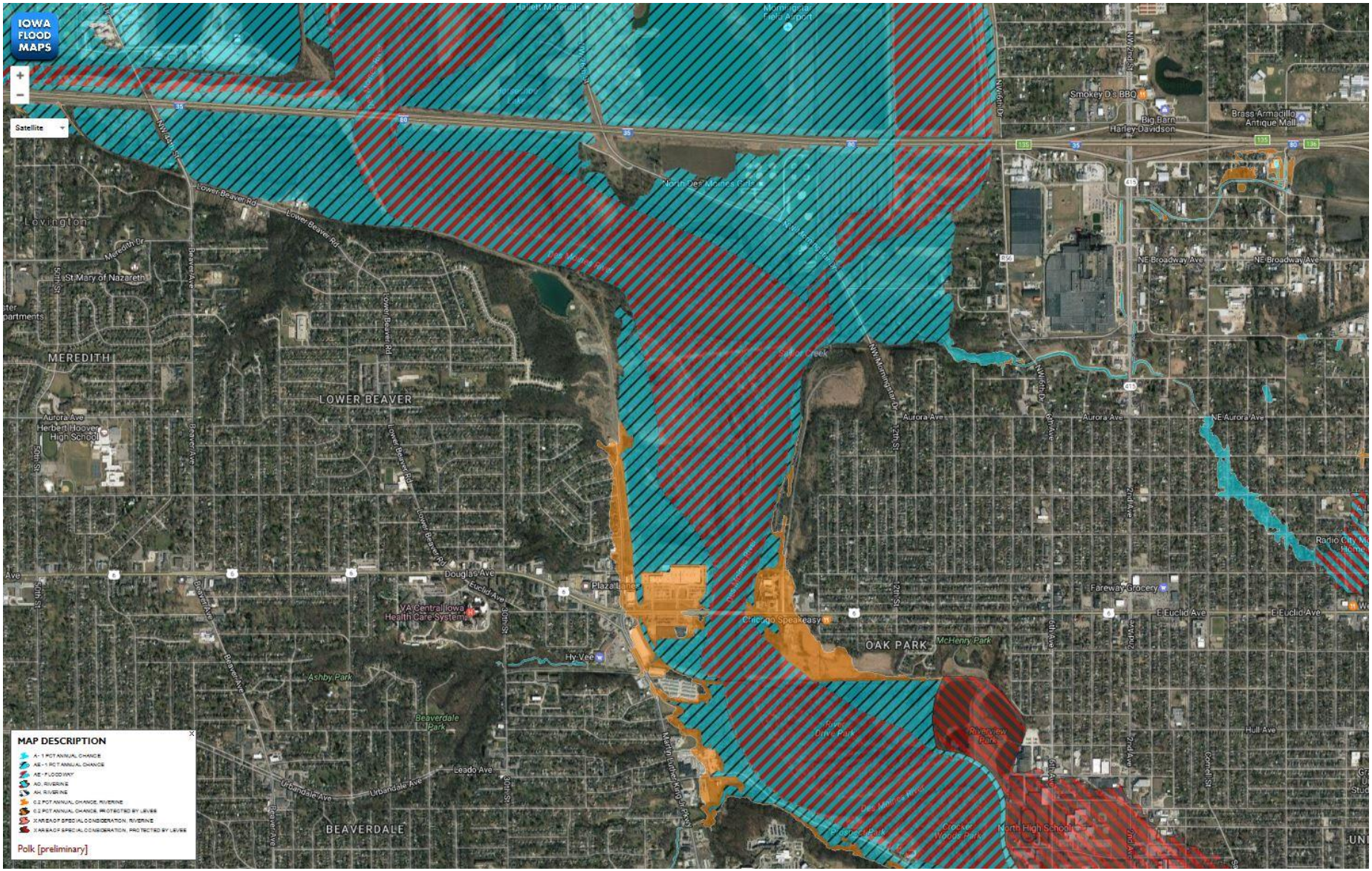

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Summary of Utility and Value

- Water Quality/Quantity Protection
  - How stressed is my municipal water supply?
- Climate-change Mitigation
  - What is the risk of flooding to our Emergency Services?
- Land-use Planning for Sustainable Development
  - Where are inappropriate areas for development?
- Cost Savings
  - Protection of Infrastructure
  - Avoided Infrastructure Development
  - Operational Efficiencies

Project Deliverables

- Freshwater Conservation Blueprint - Spring 2019
- Active River Area – Spring 2020

Products to expect

- Final Report for both projects (digital and hard copy)
- Mapping tools
- Map data available for download

Contact : William.Millar@natureconservancy.ca

North Atlantic LCC
North Atlantic Landscape Conservation Cooperative

eco canada

Foundation familiale Trottier Family Foundation

Thank You

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This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :

Environment and Climate Change Canada
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www.salamanderfoundation.org

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Questions?

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Thank You for Your Time

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