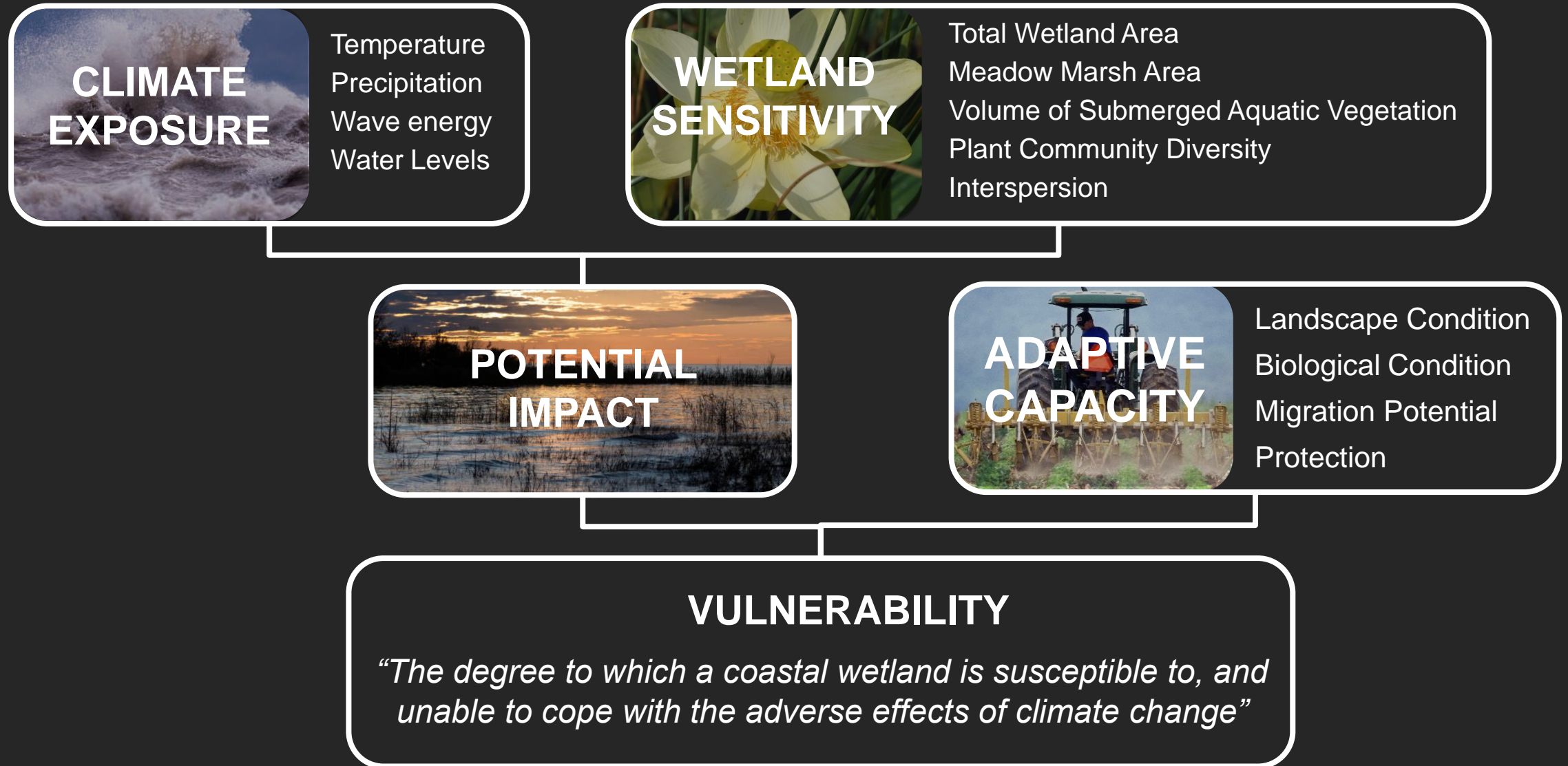
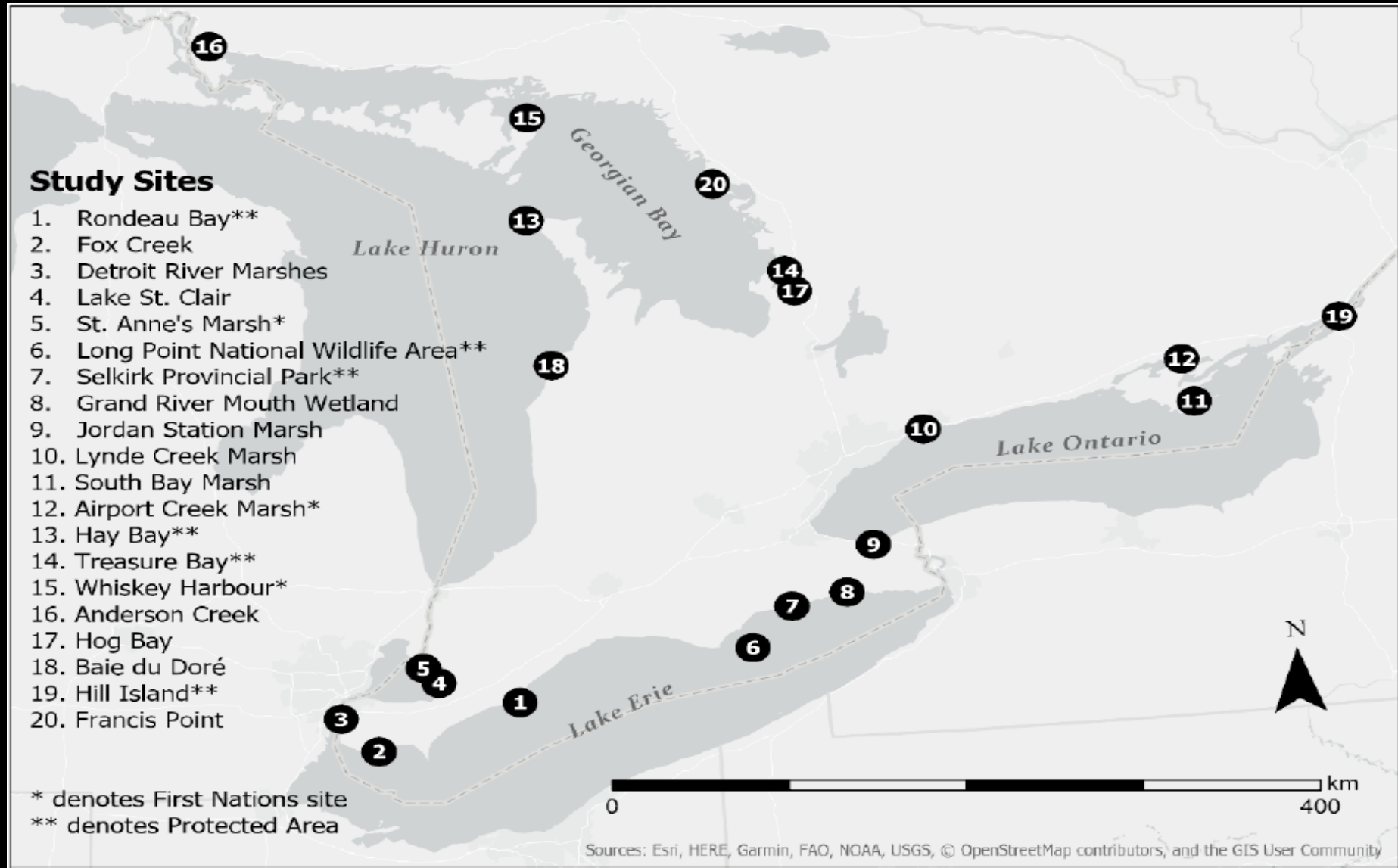


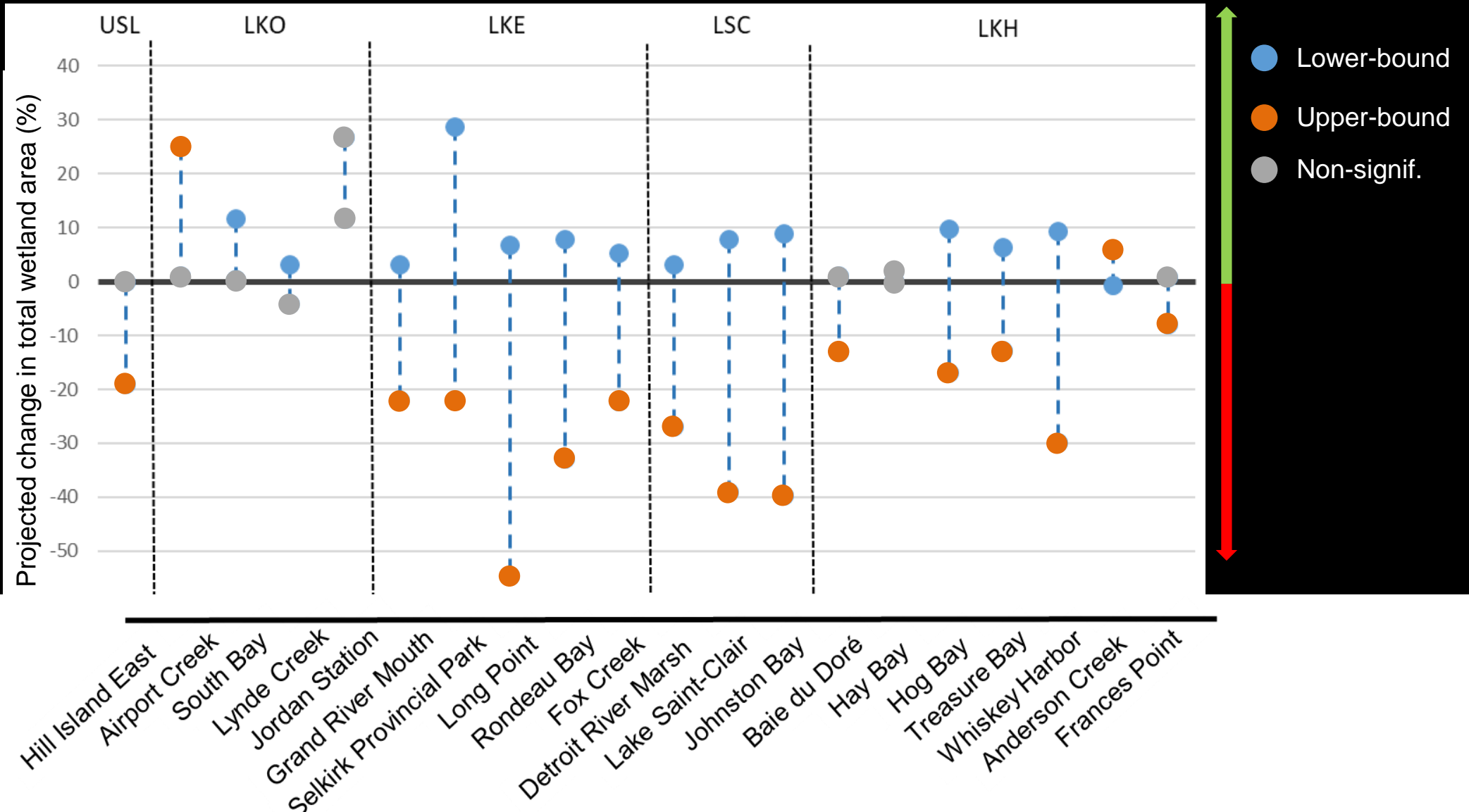
VULNERABILITY ASSESSMENT FRAMEWORK



COASTAL WETLAND STUDY SITES



TOTAL WETLAND AREA GENERALLY **INCREASES** UNDER THE LOWER-BOUND SCENARIO **DECREASES** UNDER THE UPPER-BOUND SCENARIO



VULNERABILITY: POTENTIAL IMPACT + ADAPTIVE CAPACITY

Lake St. Clair Marshes

VULNERABILITY: Moderate – Very High

POTENTIAL IMPACT: Moderate – High

Wetland Area Low – High

**Plant Community
Diversity:** Low – High

Interspersion: Low – Moderate

Meadow Marsh Area: Low – High

**Volume of
Submerged Aquatic
Vegetation:** Low – High

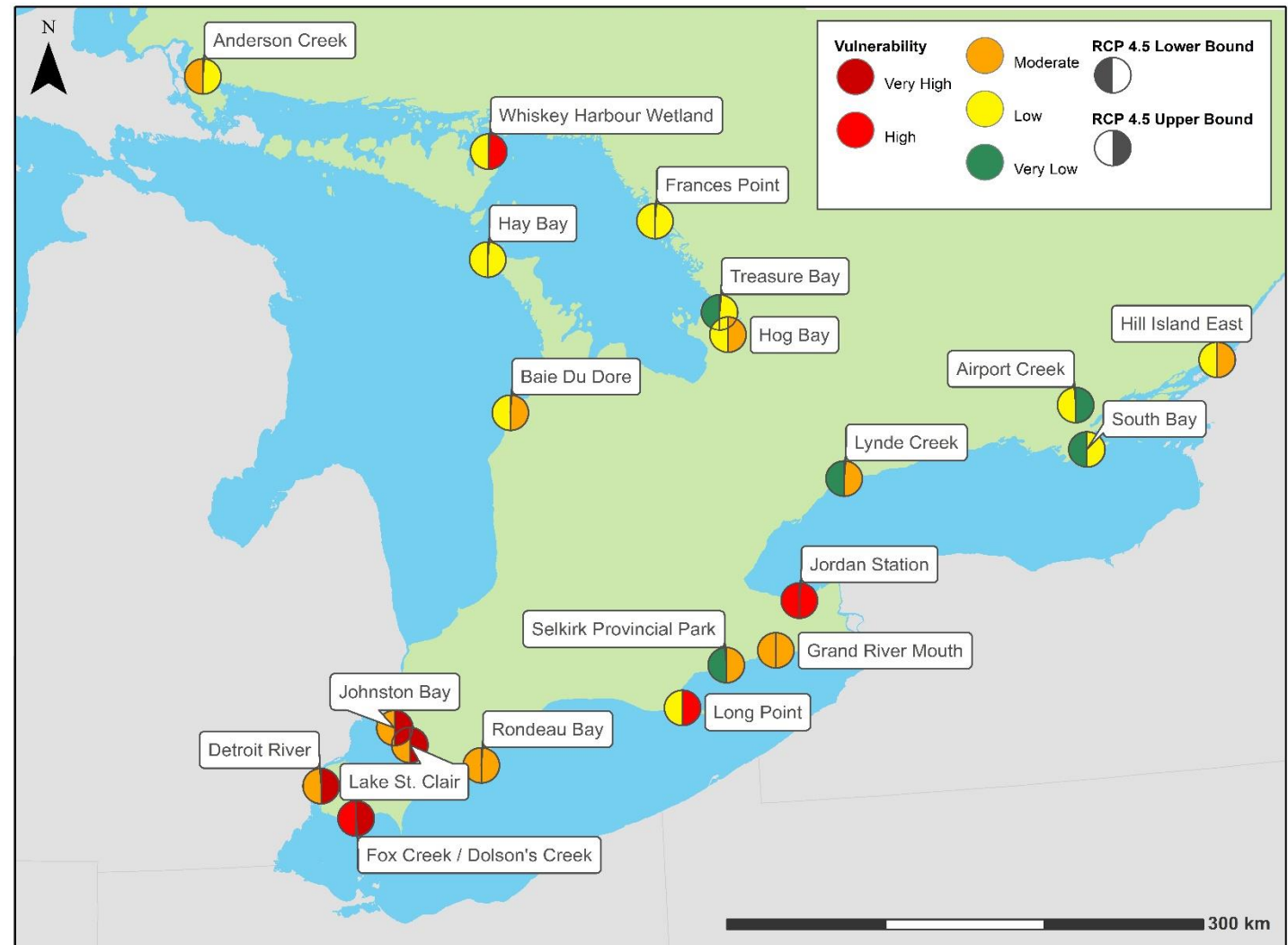
ADAPTIVE CAPACITY: Low

**Landscape
Condition:** Low

Biological Condition: Low

Migration Potential: High

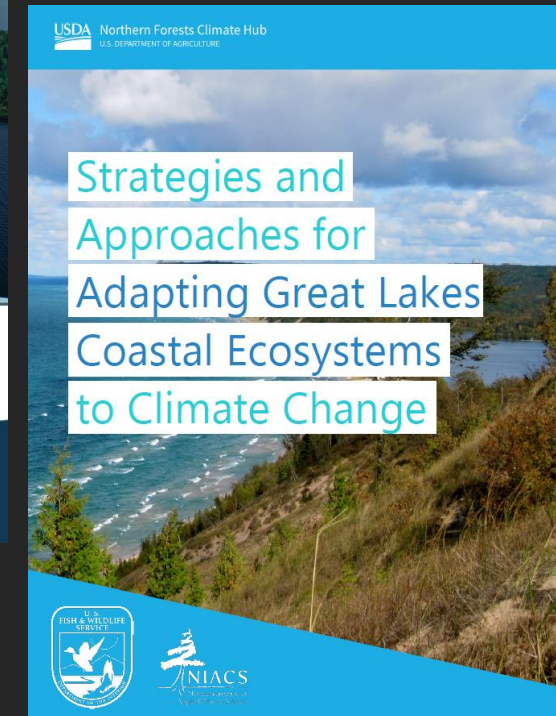
Protection: High



“WITHOUT ADAPTATION ACTION, COASTAL WETLANDS WILL LIKELY BE SEVERELY IMPACTED OR LOST”

Six priority strategies, 17 associated adaptive measures, and many examples/options:

- Strategy 1. Reduce non-climatic stressors and enhance adaptive capacity
- Strategy 2. Protect littoral cell geodiversity and restore barrier features that protect wetlands
- Strategy 3. Maintain and restore biodiversity and functional redundancy
- Strategy 4. Enhance wetland capacity to cope with altered hydrology
- Strategy 5. Identify, manage, and protect climate change refugia
- Strategy 6. Improve Great Lakes coastal wetland conservation and protection



See:

- <https://www.canada.ca/en/environment-climate-change/services/great-lakes-protection/taking-action-protect/coastal-wetlands/assessment-coastal-wetlands.html>
- <https://www.climatehubs.usda.gov/hubs/northern-forests/topic/strategies-adapting-great-lakes-coastal-ecosystems-climate-change>



Essex Region Conservation
the place for life

Restoring and Enhancing the Resilience of Hillman Marsh



Hillman Marsh Conservation Area

- > Located in Leamington, Ontario, and covers 980 acres
- > Extensive, shallow marsh previously separated from Lake Erie by a 1.5 km long barrier beach
- > Part of the Carolinian Canada region and preserves hundreds of rare and endangered species



Hillman Marsh in a Changing Climate

- > Hillman Beach has had restricted sediment supply for over a century
- > Wheatley Harbour and attached jetty, offshore breakwaters, waterfront home development, and shoreline armouring all disrupt coastal processes
- > These structures are responsible for trapping or removing sediment and starving the downdrift shoreline



Hillman Marsh in a Changing Climate

- > Rising water levels initiated the rapid expansion of the breach in 2016
- > Breach expanded from 15 m to almost 400 m in only 4 years
- > 2019/2020 experienced record high water levels and near record low ice cover



Hillman Marsh in a Changing Climate

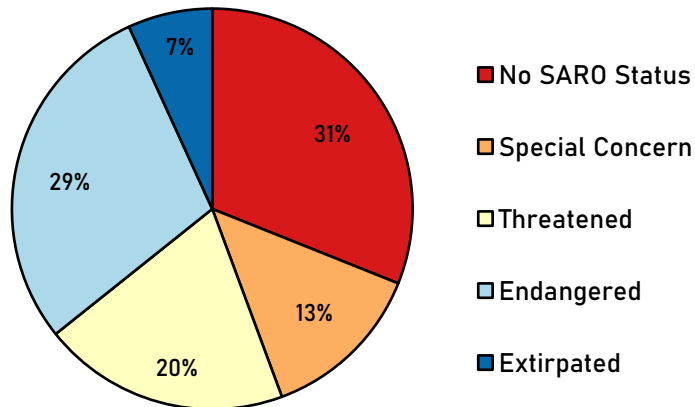
- > Essex County has only 7.5% of its natural cover remaining
- > Loss of barrier has resulted in loss of vegetation
- > Breach events impact the composition of marsh habitat, and these new conditions may favour certain species



Dislodged vegetation floating in the middle of the breach, where barrier used to be.

What's at stake?

- > Spawning, nesting, and feeding habitat for a diverse number of species, including many species at risk
- > Land of Caldwell First Nation, a location of traditional use and knowledge
- > Opportunities for environmental education and scientific research



Hillman Marsh Restoration Plan

- > **Goal:** To restore and enhance the resilience of the Hillman Marsh barrier beach, and the wetland plant community it protects.





Saving Hillman Marsh





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