

## Climate Change What it means to YOUR Environment

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**GEORGIAN BAY  
FOREVER**



## MISSION

"To protect, enhance and restore the natural ecosystem and aquatic environment of the Georgian Bay area through funding and conducting accredited research into water levels, water quality and aquatic ecosystems to add to the public knowledge and to educate the public on issues of environmental protection, conservation, safety and preservation of the water and natural features in the Georgian Bay area of Ontario to increase public appreciation for these systems and their environment."

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## WATER Rights

"Water is a common heritage and a fundamental human right essential to life. It is a shared inherited resource to be preserved, protected and made accessible to all, today and in the future."

Georgian Bay Forever – Mission, Vision, Values and Guiding Principles

The UN declares that access to clean water and sanitation is a fundamental human right – July 28, 2010.

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## Late Breaking News

Wednesday July 28, 2010

"Phytoplankton is declining an average of 1% each year, and the northern hemisphere has lost roughly 40 per cent since 1950."

- Daniel Boyce, Dalhousie University, Nature.
- affects the entire food chain
- linked to rising surface temperatures in the ocean

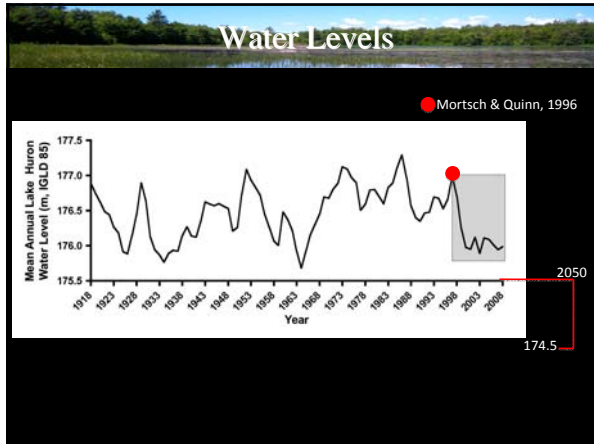
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**WATER LEVELS**   **WATER QUALITY**   **WETLANDS PROTECTION**   **INVASIVE SPECIES**

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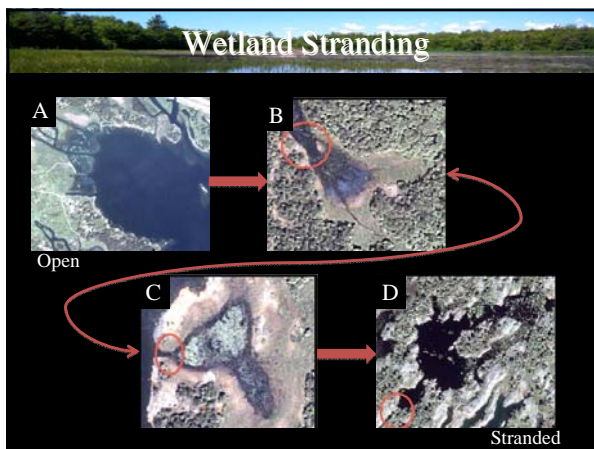
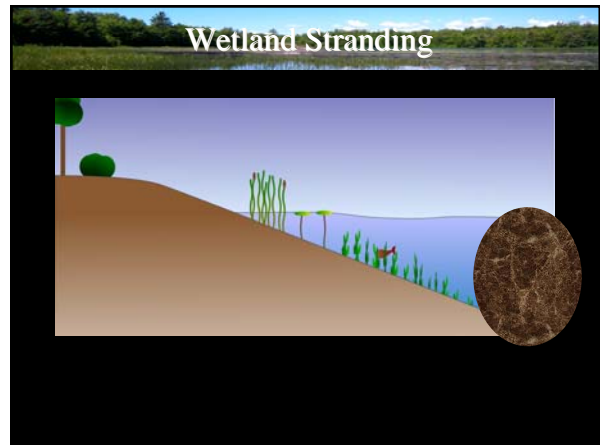
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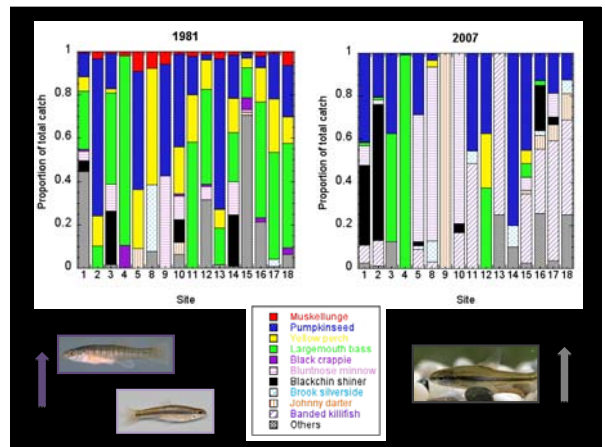
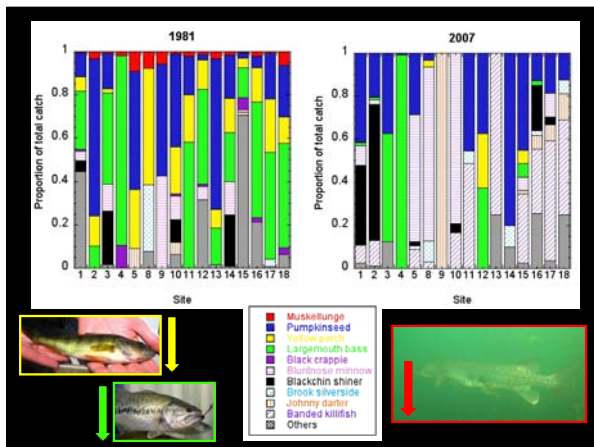
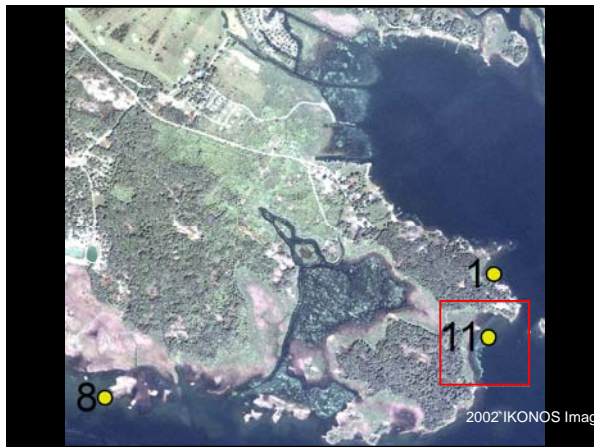
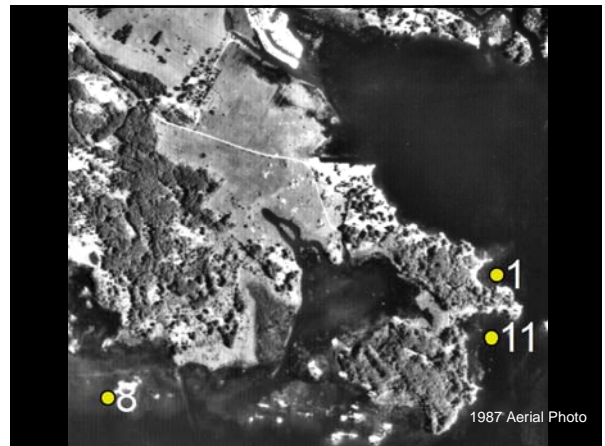
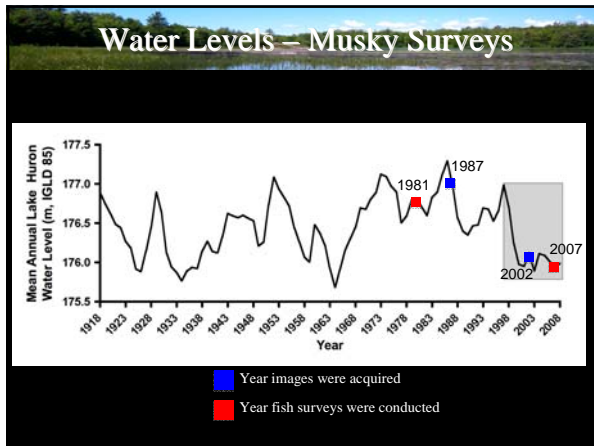


- ### Threat – Water Level
- Low water levels and lack of water level variation may negatively impact wetlands by:
    - Removing the connection of coastal wetlands to Georgian Bay (stranding)
    - Altering vegetation structure or composition in wetlands (fish habitat loss)

- ### Goals
- Determine the number of wetlands that may become stranded
  - Assess changes in aquatic vegetation coverage and fish community composition in response to low water levels
  - Discover inter-wetland distance suitable for fish movement among wetlands

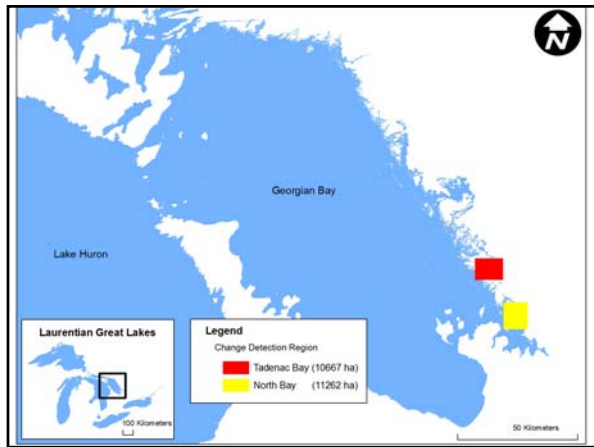
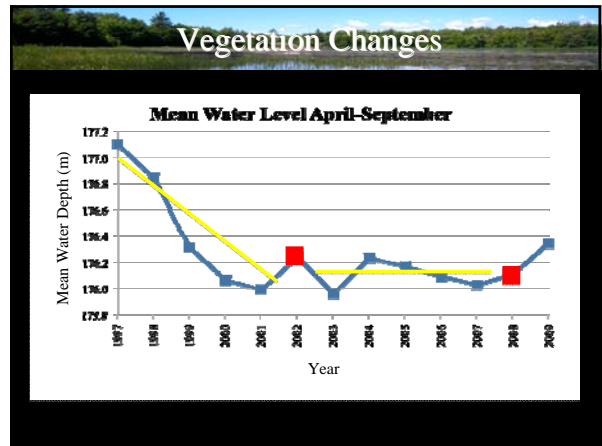


- ### Wetland Stranding
- Preliminary Results
    - Since 2002
      - ~10% are stranded
      - ~15% have been significantly altered
    - Will predict number of wetlands stranded under future water level scenarios
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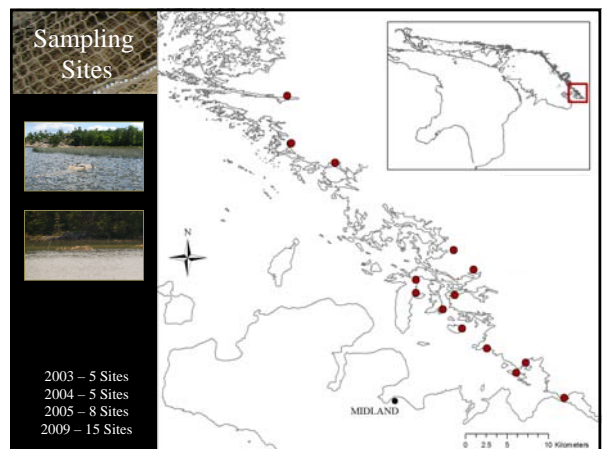
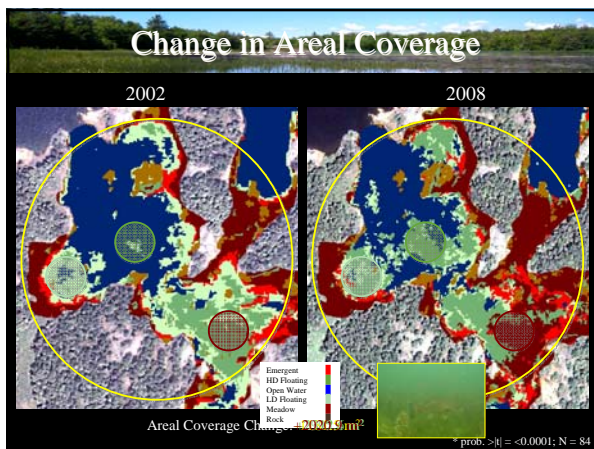
## Summary

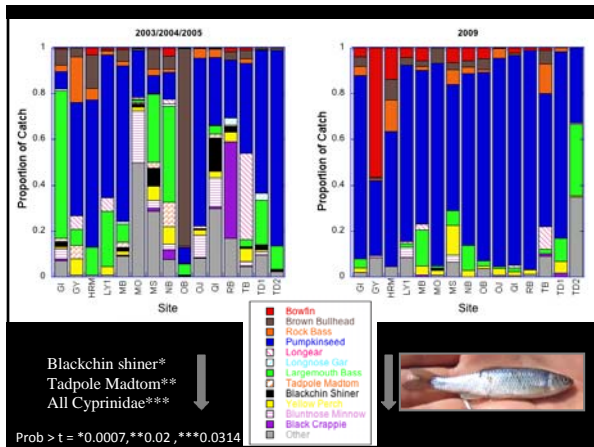
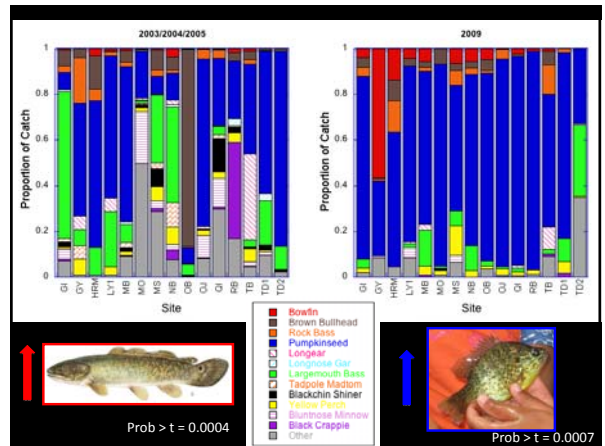
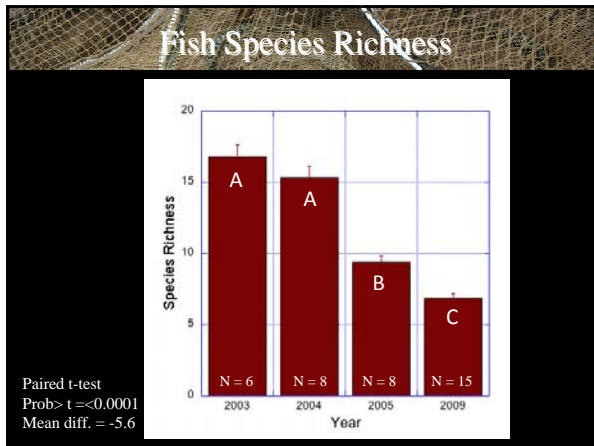
- From 1987 to 2007 low water levels significantly altered availability of habitat and consequently the composition of the fish community



## Vegetation Classes for Mapping

- Meadow
- Emergent
- High-density floating
- Low-density floating
- Water
- Rock

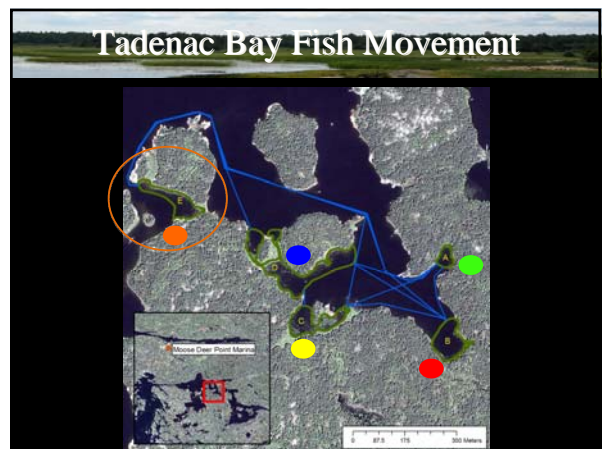
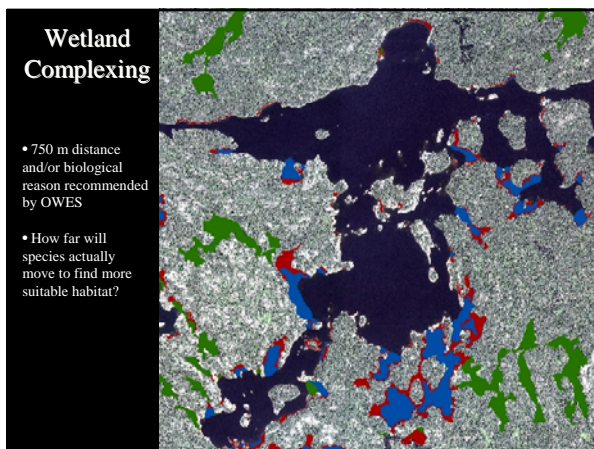




### Summary

- Decreased habitat availability and less complex habitat has resulted in a loss of species, wetland communities are increasingly homogeneous

Where have the other species gone?



## Tadenac Bay Fish Movement

Pumpkinseed 2789 (52)

Bluntnose 234 (4)

Largemouth Bass 154 (3)

Pike 11 (0)

## Tadenac Bay Fish Movement

## Conclusions

- **Climate-change driven low water levels;**
  - Strand coastal wetlands
  - Alter aquatic habitat
  - Change the composition of coastal fish communities

## Acknowledgements

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# Questions?

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