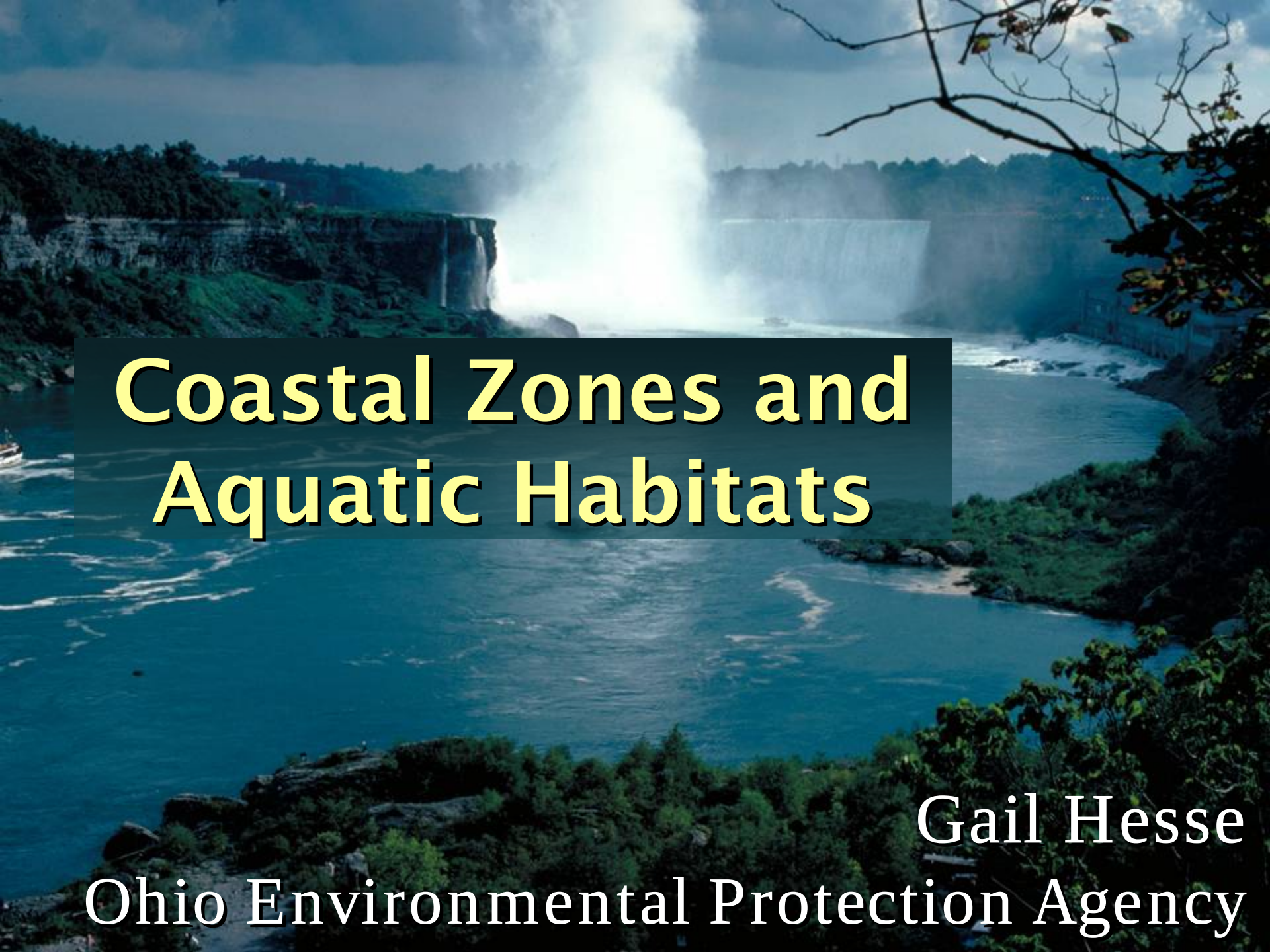
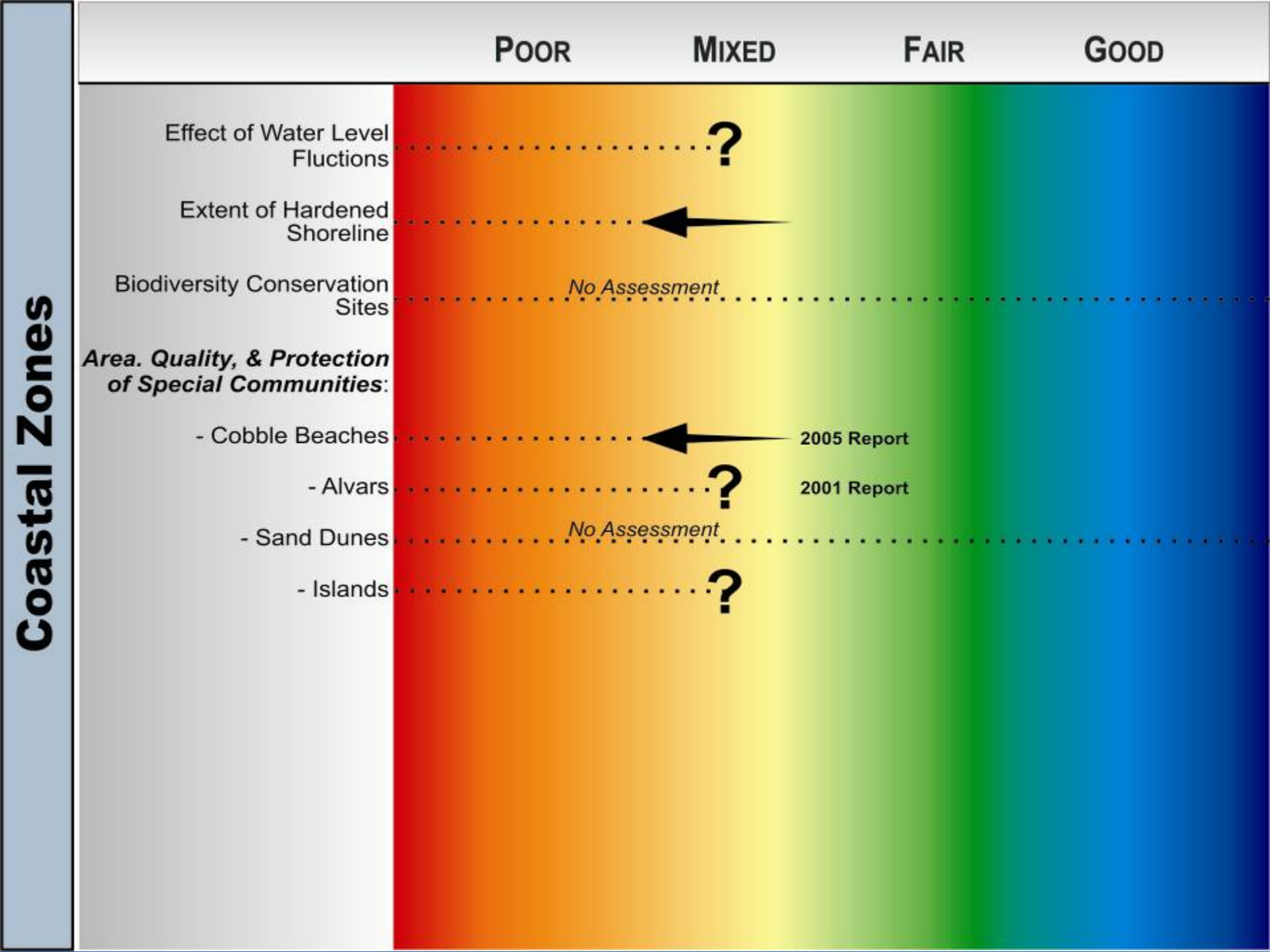
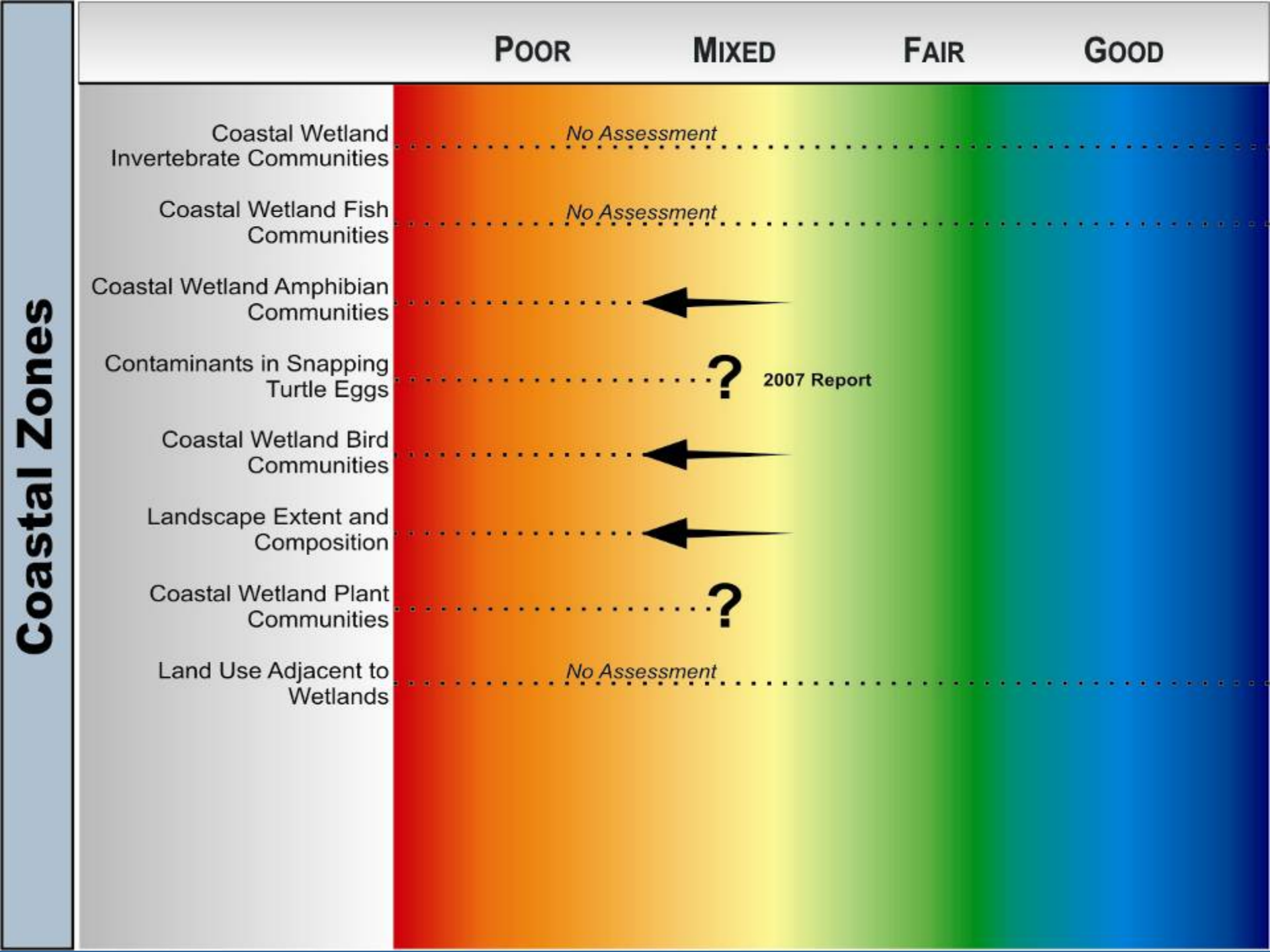


Coastal Zones and Aquatic Habitats

Gail Hesse
Ohio Environmental Protection Agency

Coastal Zones


Coastal Zones
POOR
MIXED
FAIR
GOOD
Effect of Water Level Fluctions
?
Extent of Hardened Shoreline
Biodiversity Conservation Sites
No Assessment
Area. Quality, & Protection of Special Communities:
- Cobble Beaches
2005 Report
- Alvars
?
2001 Report
- Sand Dunes
No Assessment
- Islands
?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No Assessment
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Contaminants in Snapping Turtle Eggs
?
2007 Report
Coastal Wetland Bird Communities
Landscape Extent and Composition
Coastal Wetland Plant Communities
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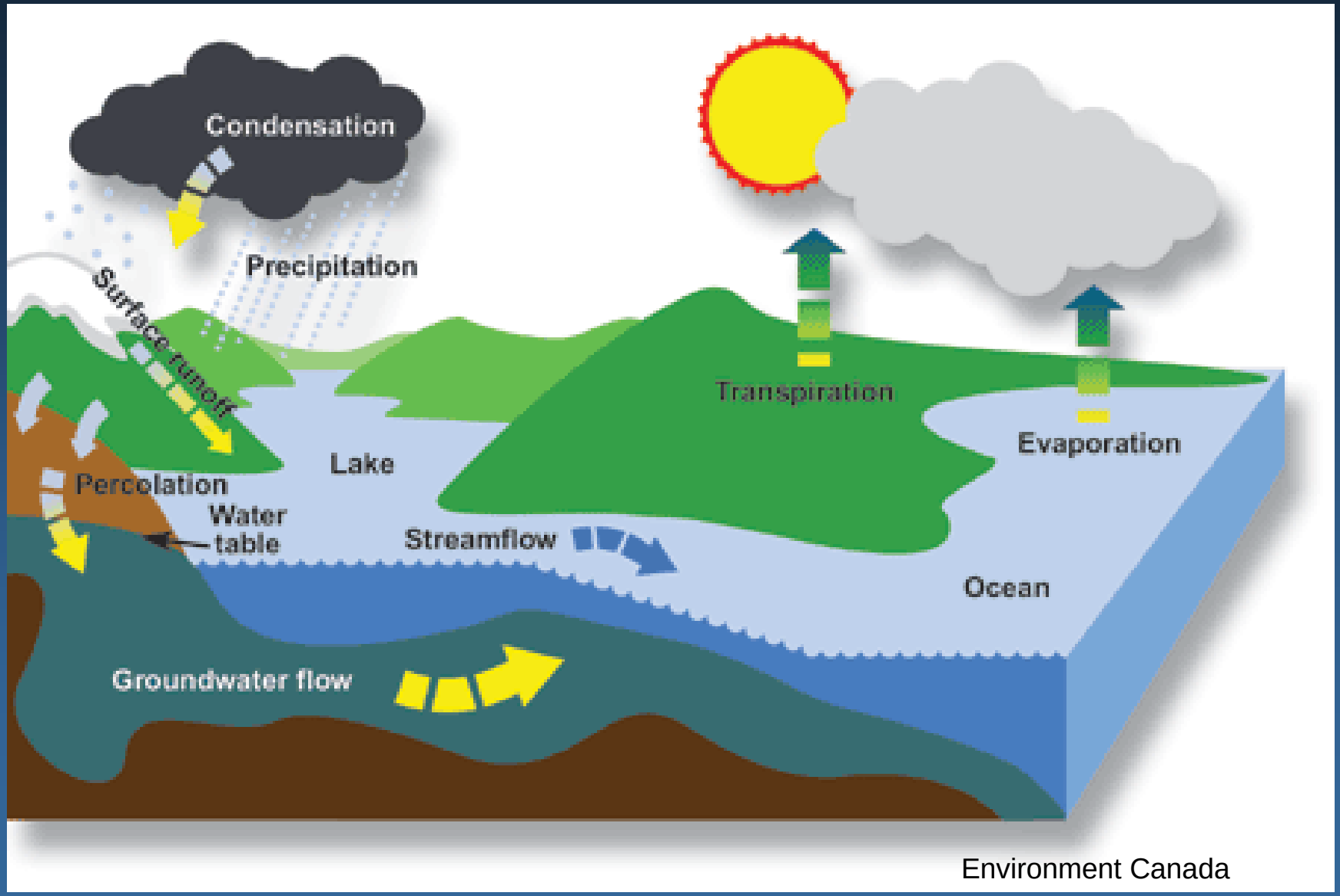
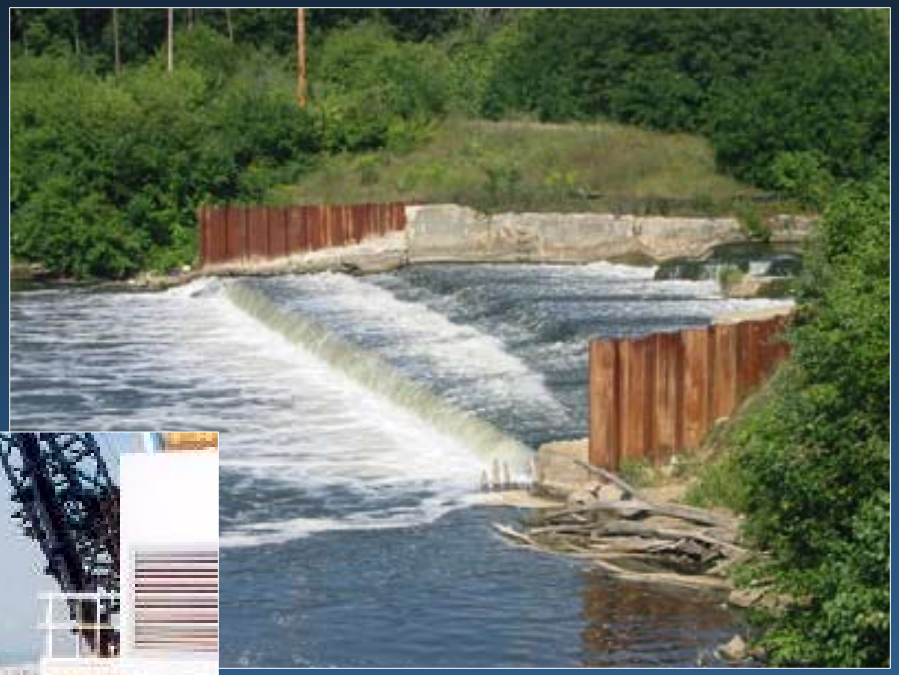
Land Use Adjacent to Wetlands
No Assessment

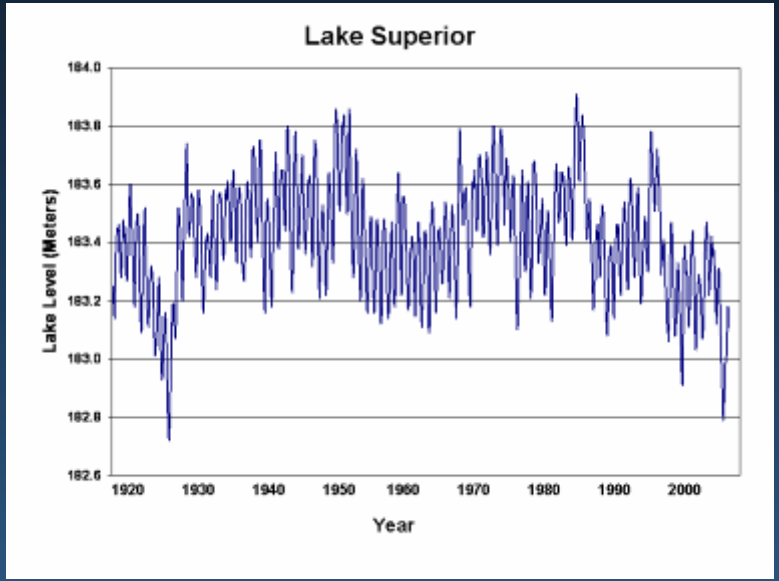
Water Level Fluctuations
Natural Factors

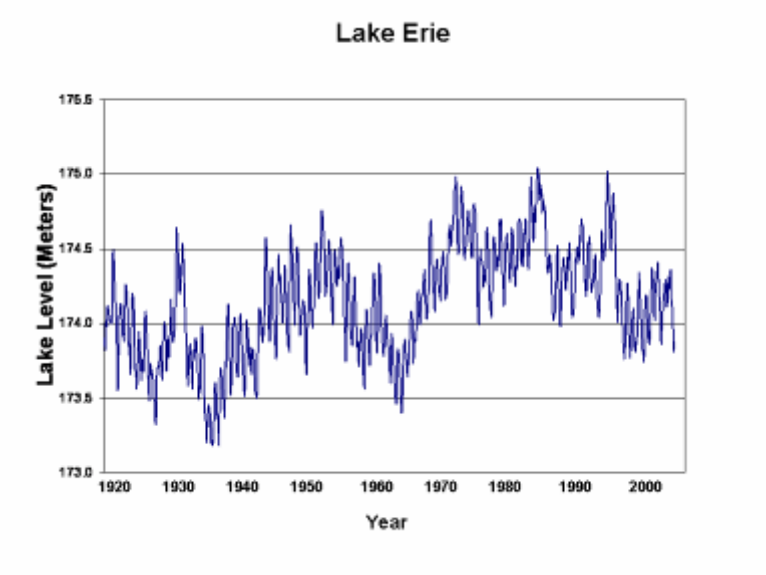


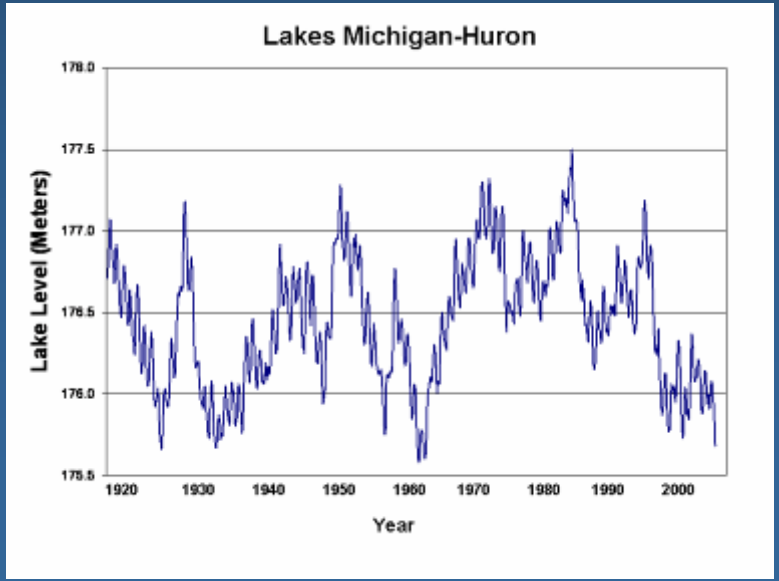
Water Level Fluctuations
Anthropogenic Factors

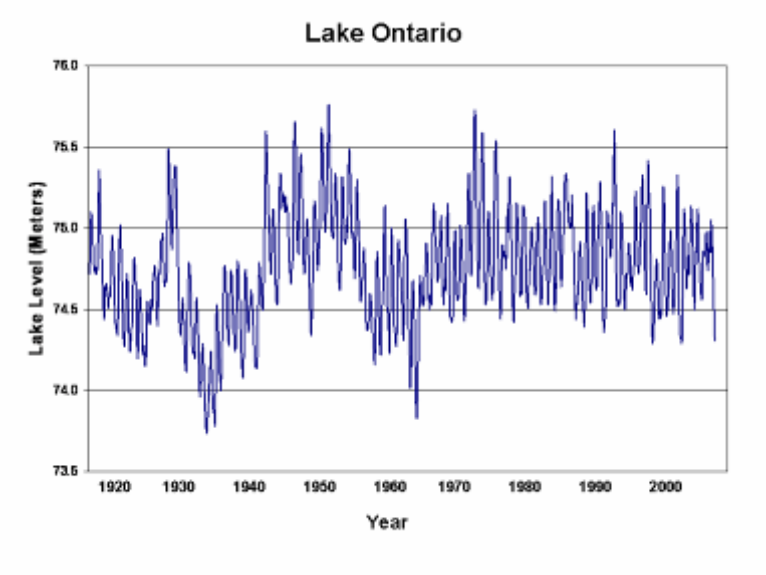


Water Level Fluctuations

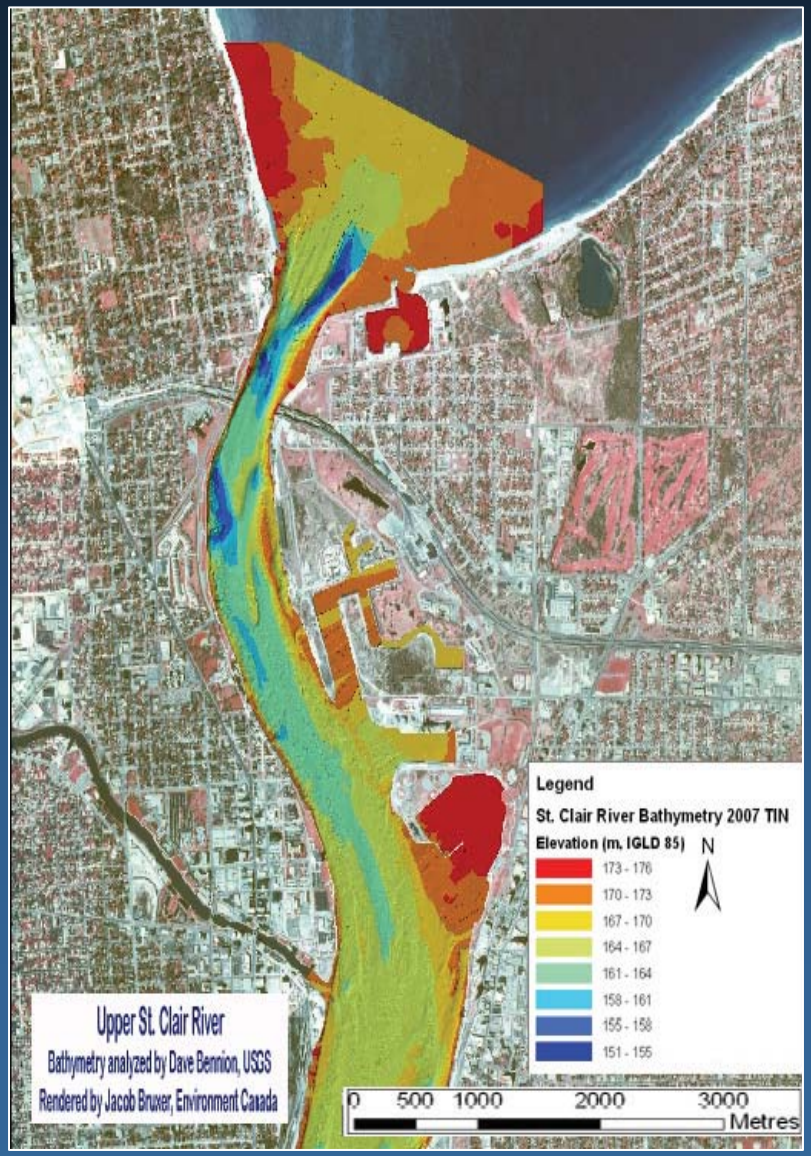








International Upper Great Lakes Study



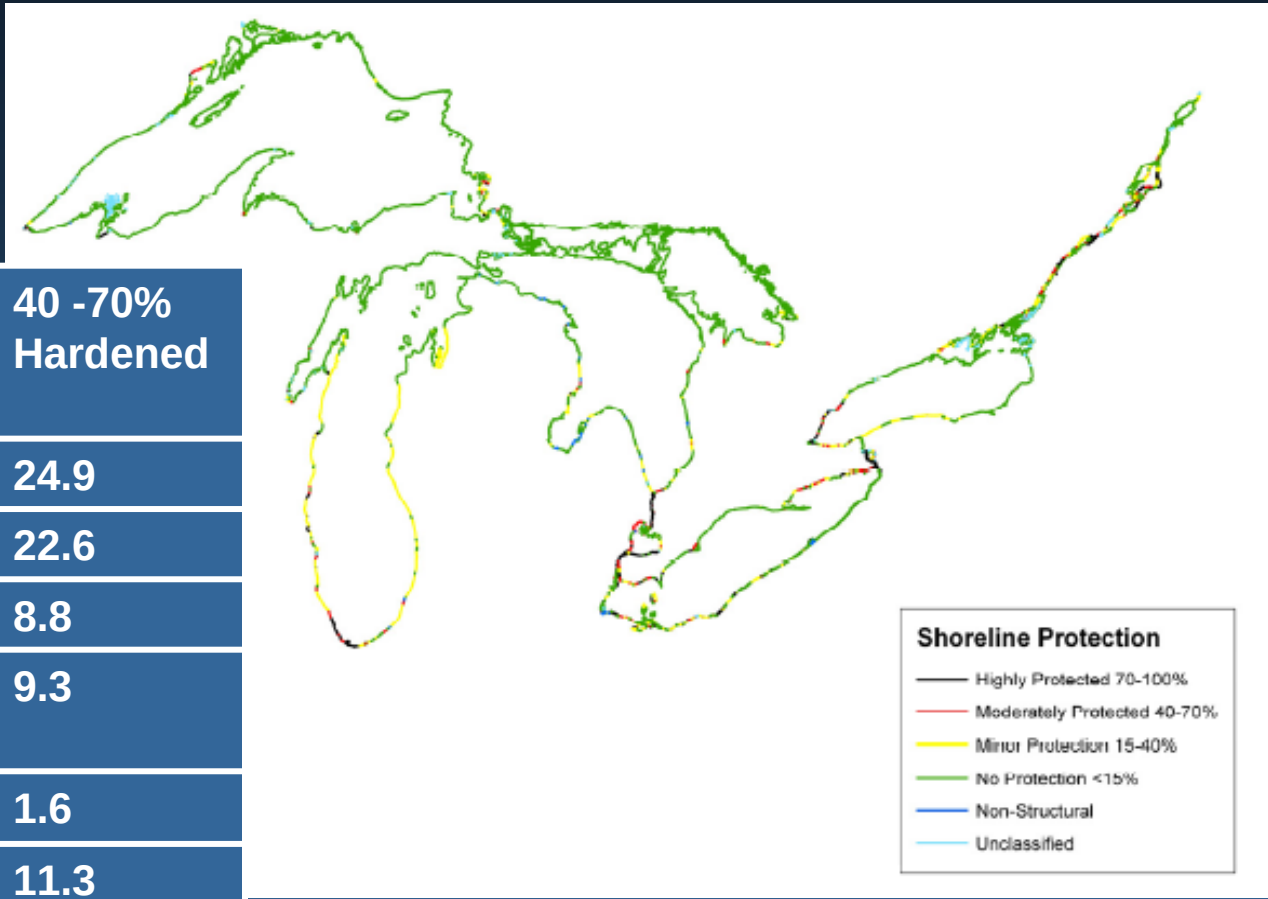
- What is causing the declining head difference between Lakes Michigan/Huron-Erie?
- Has the St. Clair River flow regime changed with time and if so, why?
- Have the velocity patterns in the St. Clair River been modified and if so, what are the implications?
- Is the St. Clair River bed stable or eroding?
- If the bed of the St. Clair is eroding, what initiated it and when?
- Has the sediment budget for the St. Clair River changed and if so, what are the implications?

Order and Plan 2007

Review of the
LAKE ONTARIO -
ST. LAWRENCE RIVER
ORDER OF APPROVAL

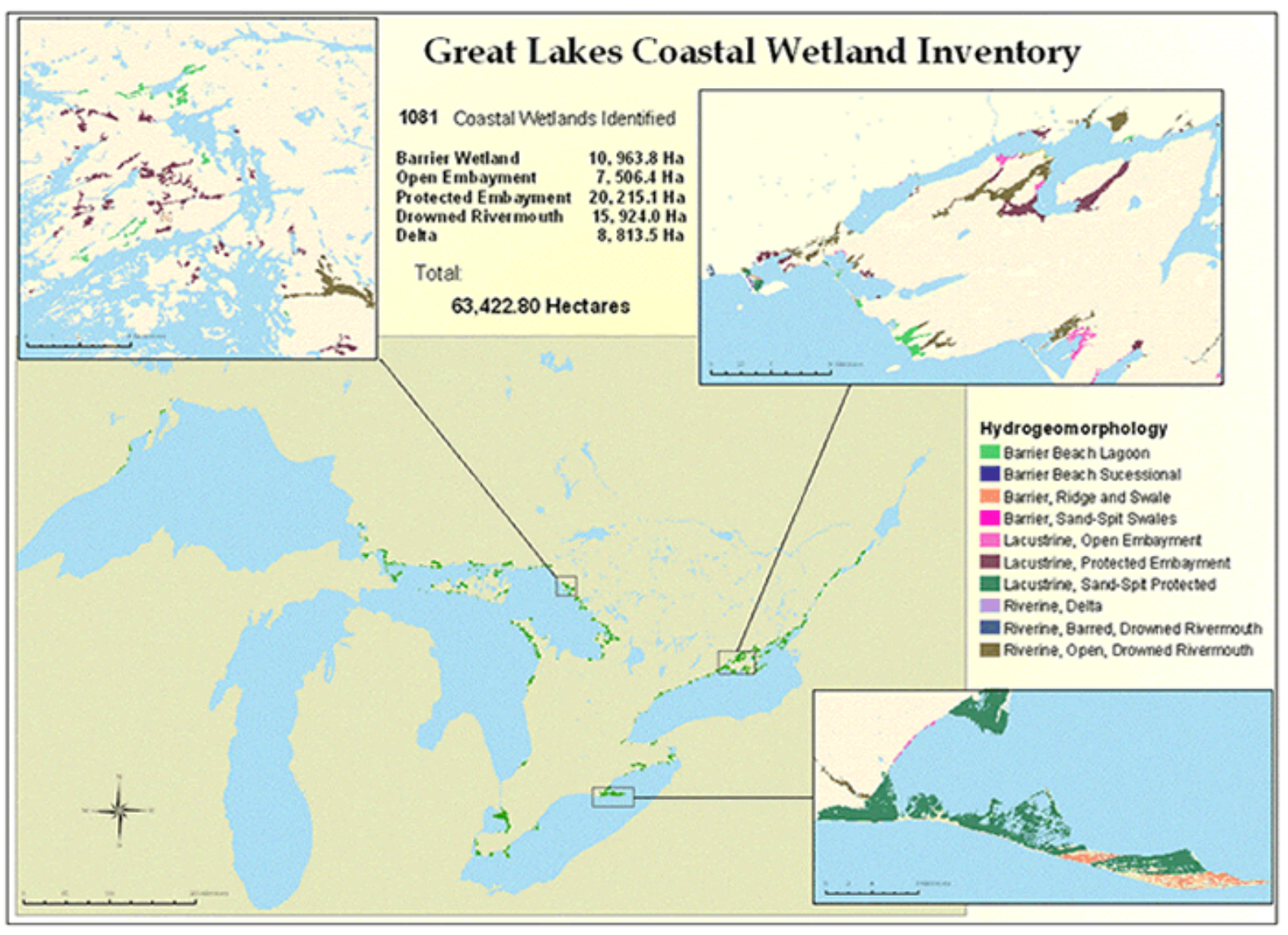
IJC has proposed a one-year process to resolve outstanding issues and obtain concurrence of the two Federal governments

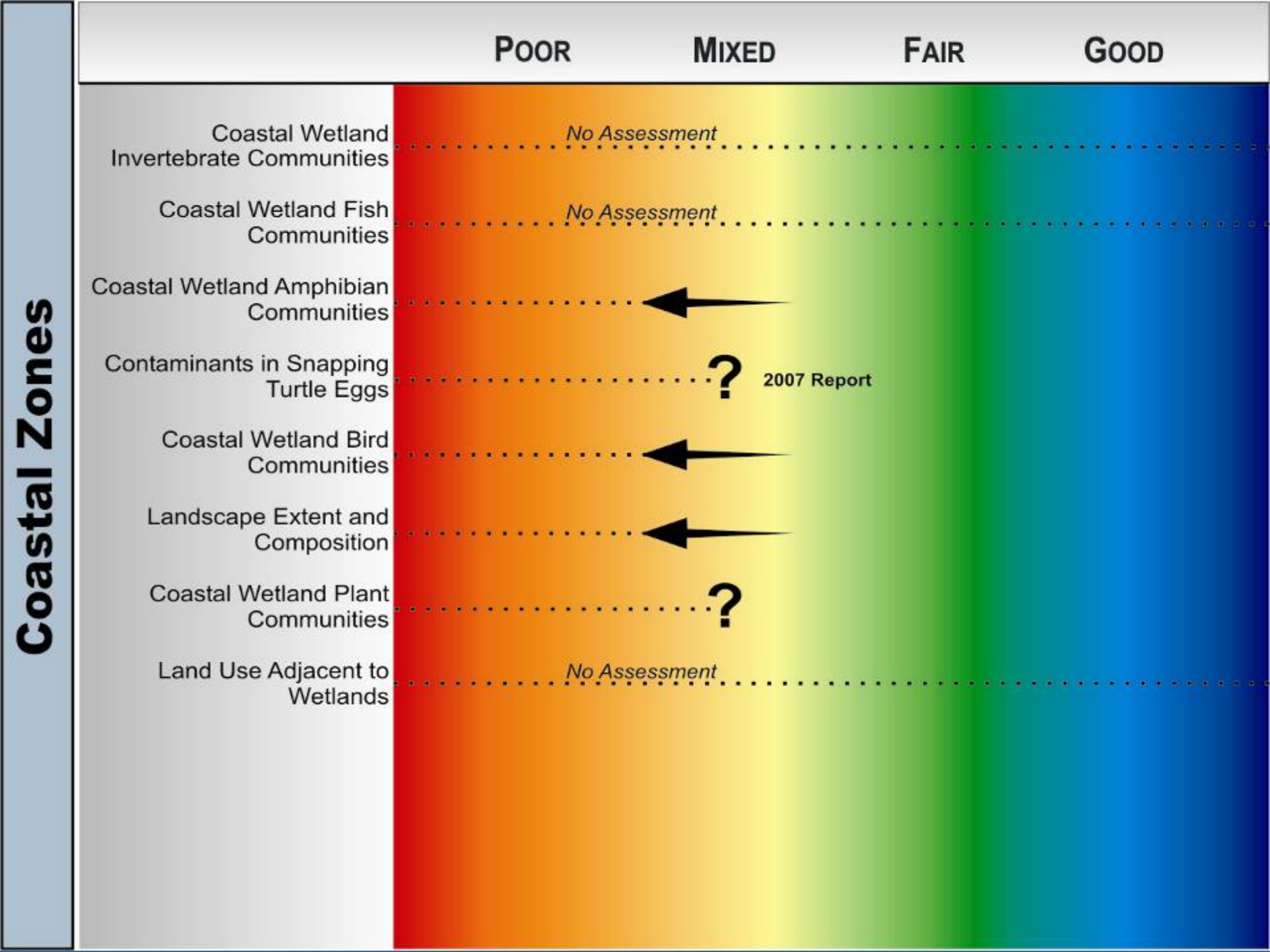
Hardened Shoreline



Lake/ Connecting Channel	70 -100% Hardened	40 -70% Hardened
St. Clair River	69.3	24.9
Detroit River	47.2	22.6
Niagara River	44.3	8.8
St. Lawrence Seaway	12.6	9.3
St. Marys River	2.9	1.6
Lake Erie	20.4	11.3
Lake St. Clair	11.3	25.8
Lake Ontario	10.2	6.3
Lake Michigan	8.6	2.9
Lake Superior	3.1	1.1
Lake Huron	1.5	1.0

217,000 Hectares of Great Lakes Coastal Wetlands

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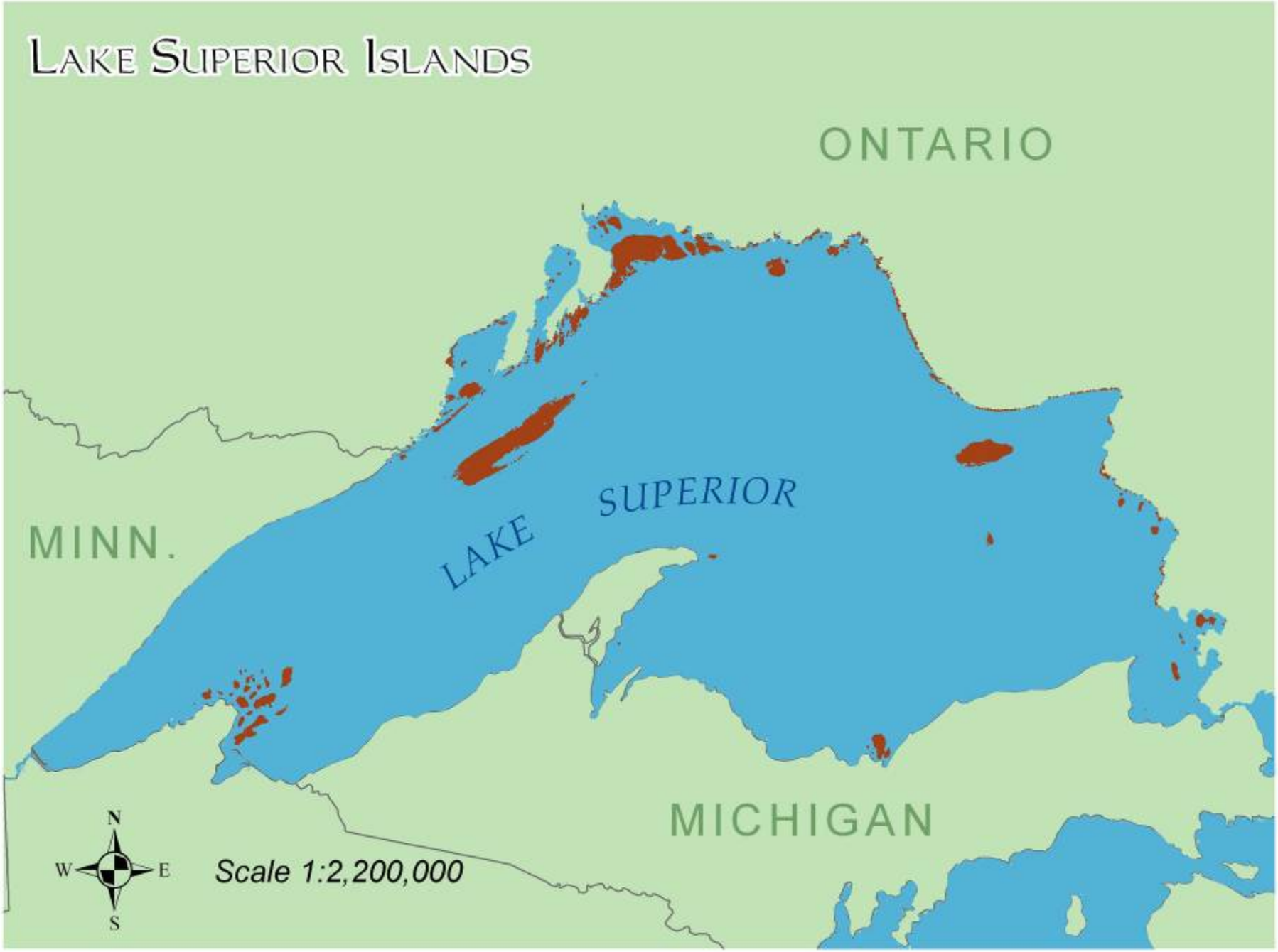
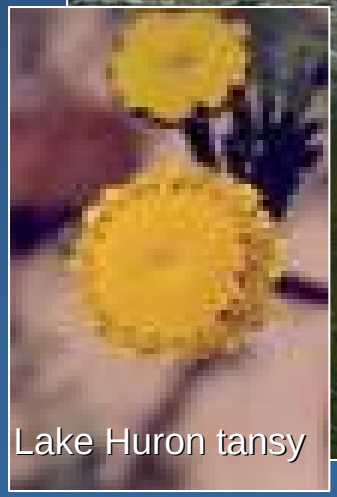
Georgian Bay Islands, Lake Huron


Lake Superior Islands
ONTARIO
MINN.
LAKE SUPERIOR
MICHIGAN
N
W
E
S
Scale 1:2,200,000

Alvars

Cobble Beaches



Lake Huron tansy

Houghton's goldenrod

Sand Dunes

Piping plover

Pitcher's thistle

Aquatic Habitats

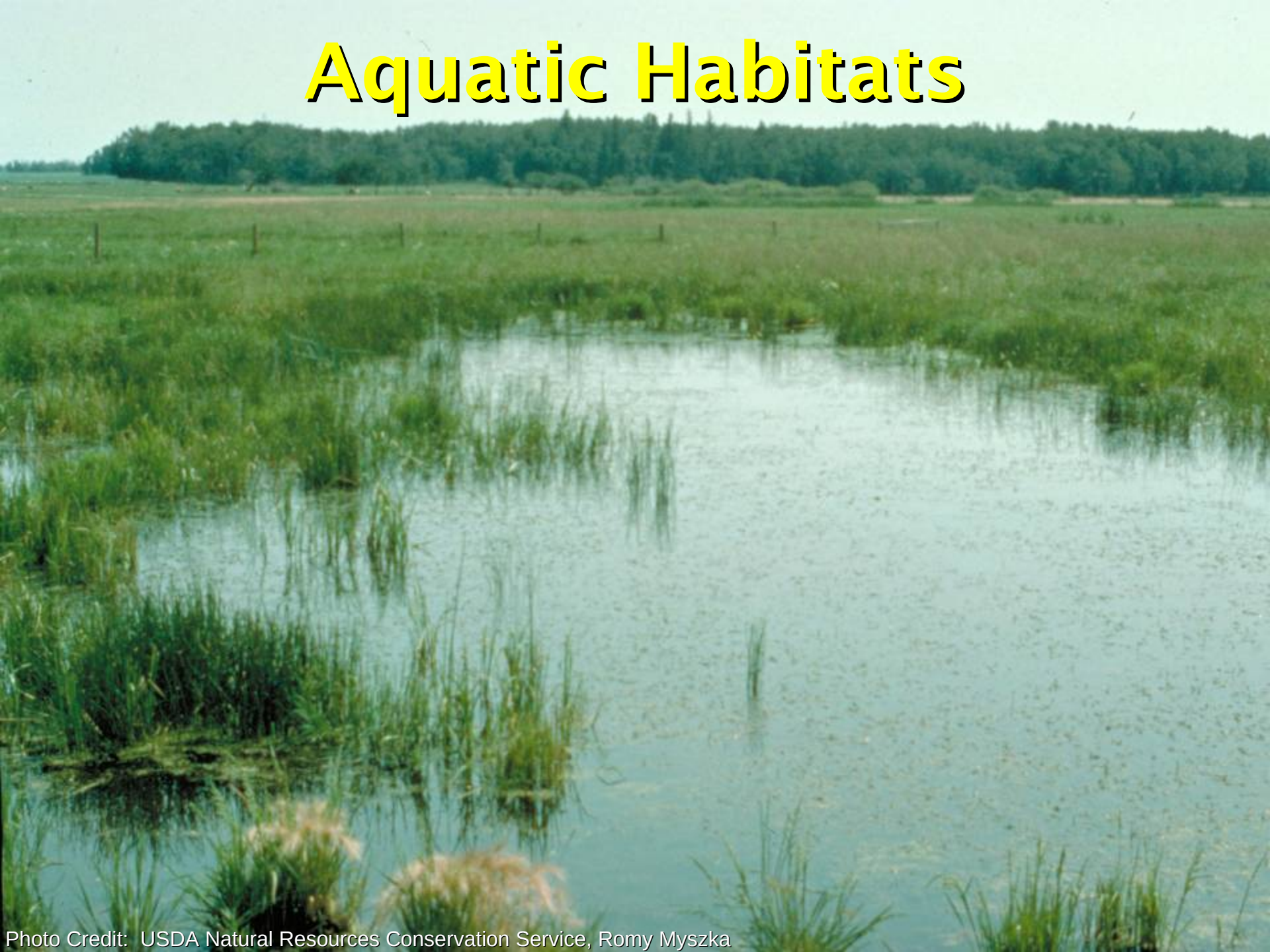
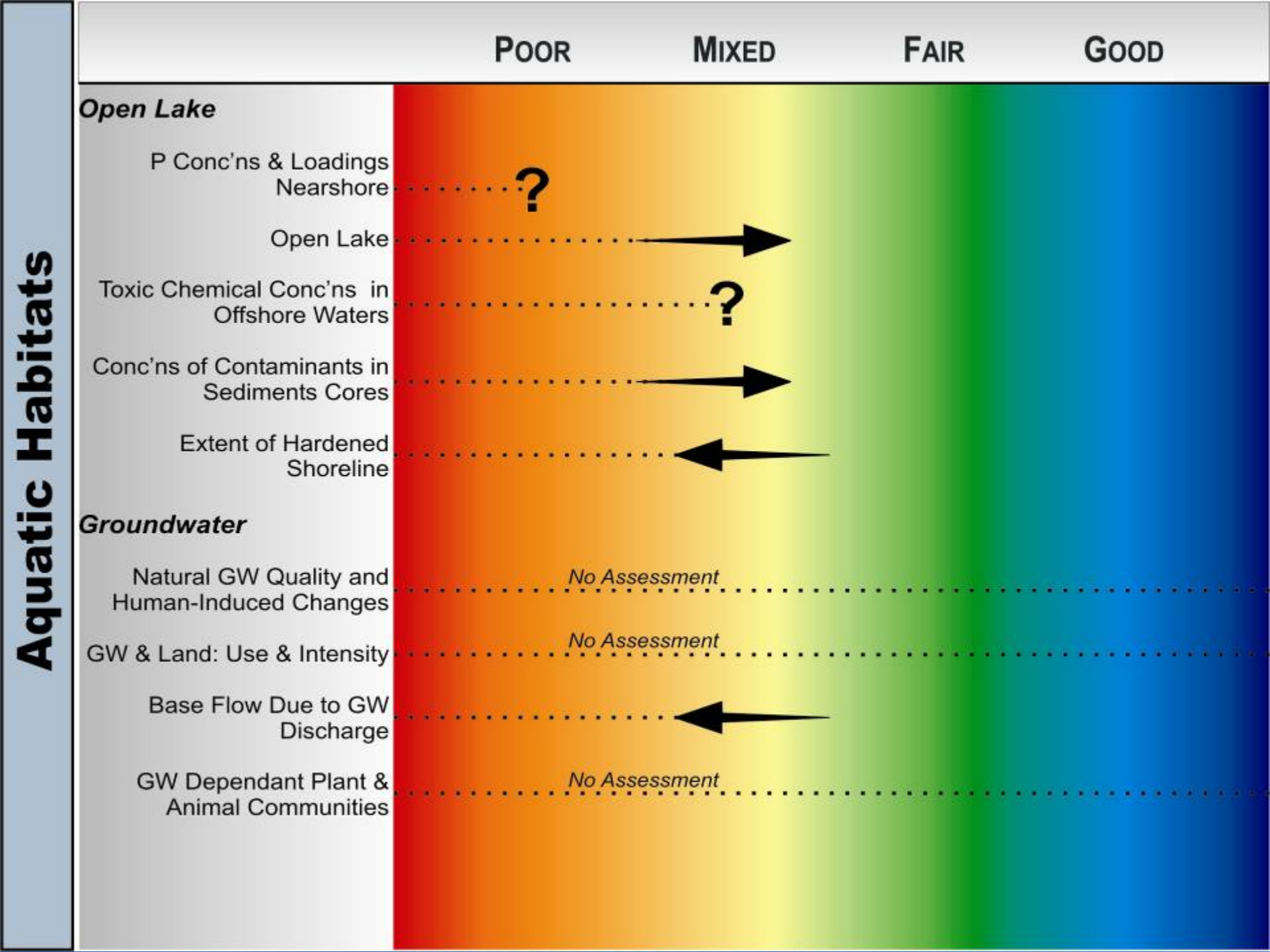


Photo Credit: USDA Natural Resources Conservation Service, Romy Myszka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GOOD
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P Conc'ns & Loadings Nearshore
?
Open Lake
Toxic Chemical Conc'ns in Offshore Waters
?
Conc'ns of Contaminants in Sediments Cores
Extent of Hardened Shoreline
Groundwater
Natural GW Quality and Human-Induced Changes
No Assessment
GW & Land: Use & Intensity
No Assessment
Base Flow Due to GW Discharge
GW Dependant Plant & Animal Communities
No Assessment

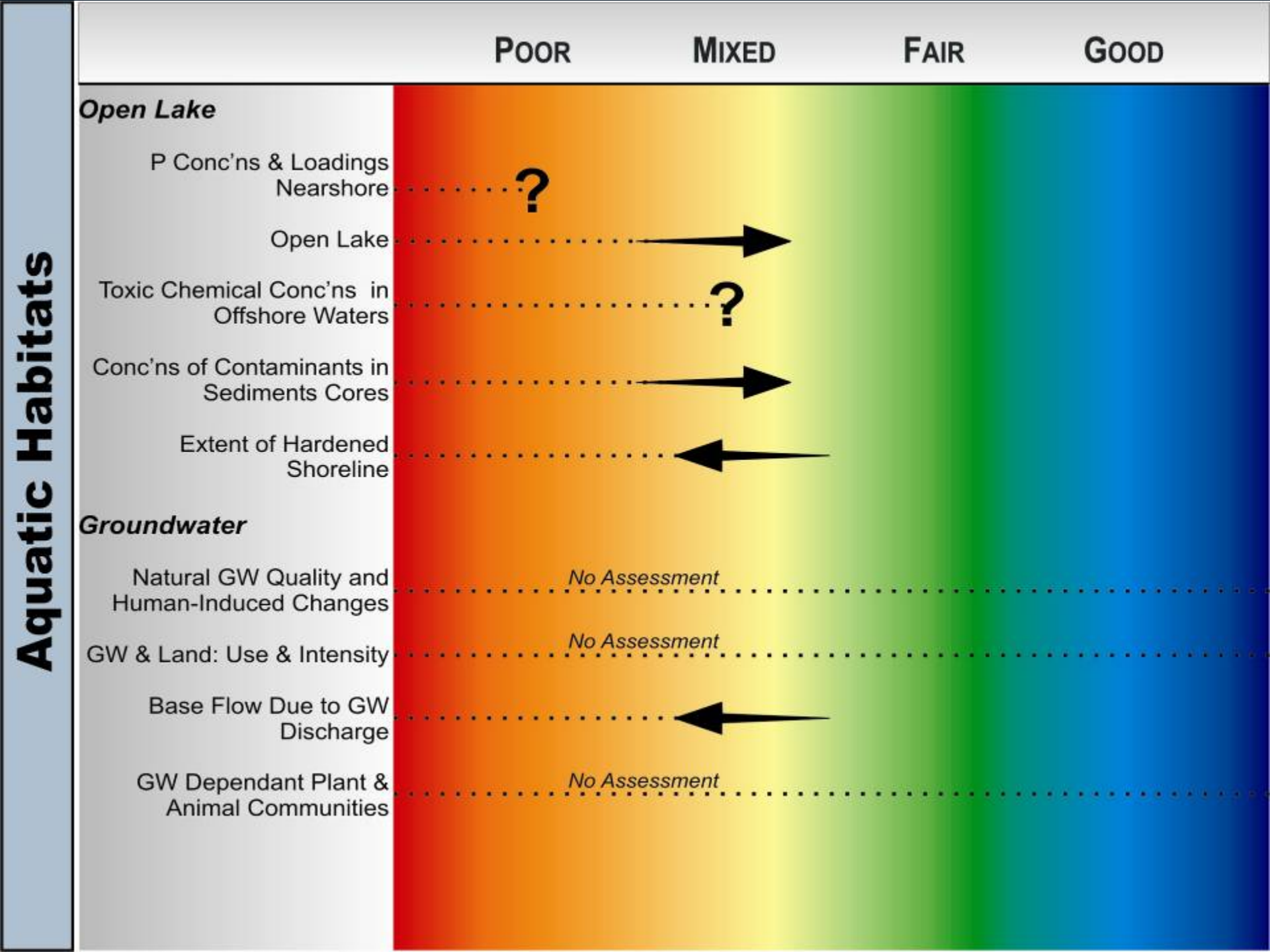
Phosphorus Concentrations and Loadings

Ohio Lake Erie P Task Force *draft* Summary Conclusions

- Soluble Reactive Phosphorus (SRP) is a primary cause of algal blooms
- SRP is stratifying in the top 2” of the soil profile
- SRP loadings are driven by runoff events
- *Dreissinids* are a factor

Ohio Lake Erie P Task Force *draft* Recommendations

- Manage P inputs
  - Land application of fertilizer
  - Land application of manure
- Amount, timing and incorporation are critical factors
- Management options include:
  - Increase use of soil tests
  - Update screening tools that account for agronomic need and environmental risk
  - Align with application recommendations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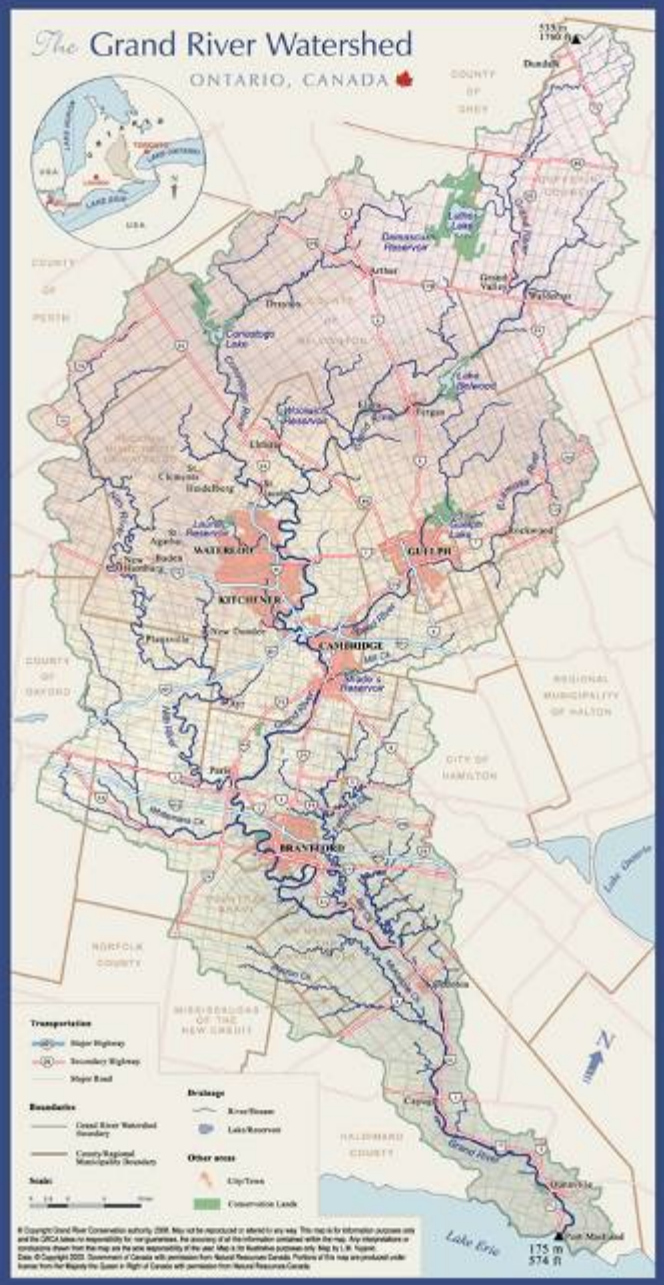
Grand River Watershed



Coastal Zones

Management Challenges

- Water levels—learn the lessons and apply basinwide
- Protect and restore wetlands and associated uplands, islands, alvars, cobble beaches, sand dunes
- Support and implement new wetland monitoring protocols
- Develop remote sensing technologies
- Project by project and landscape level

Aquatic Habitats

Management Challenges

- Develop indicators for all aquatic habitats
- Establish the connection of soluble P and nuisance algal blooms
- Collaborate and coordinate across jurisdictions