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Coastal Wetland Biodiversity Investment Areas Title Page

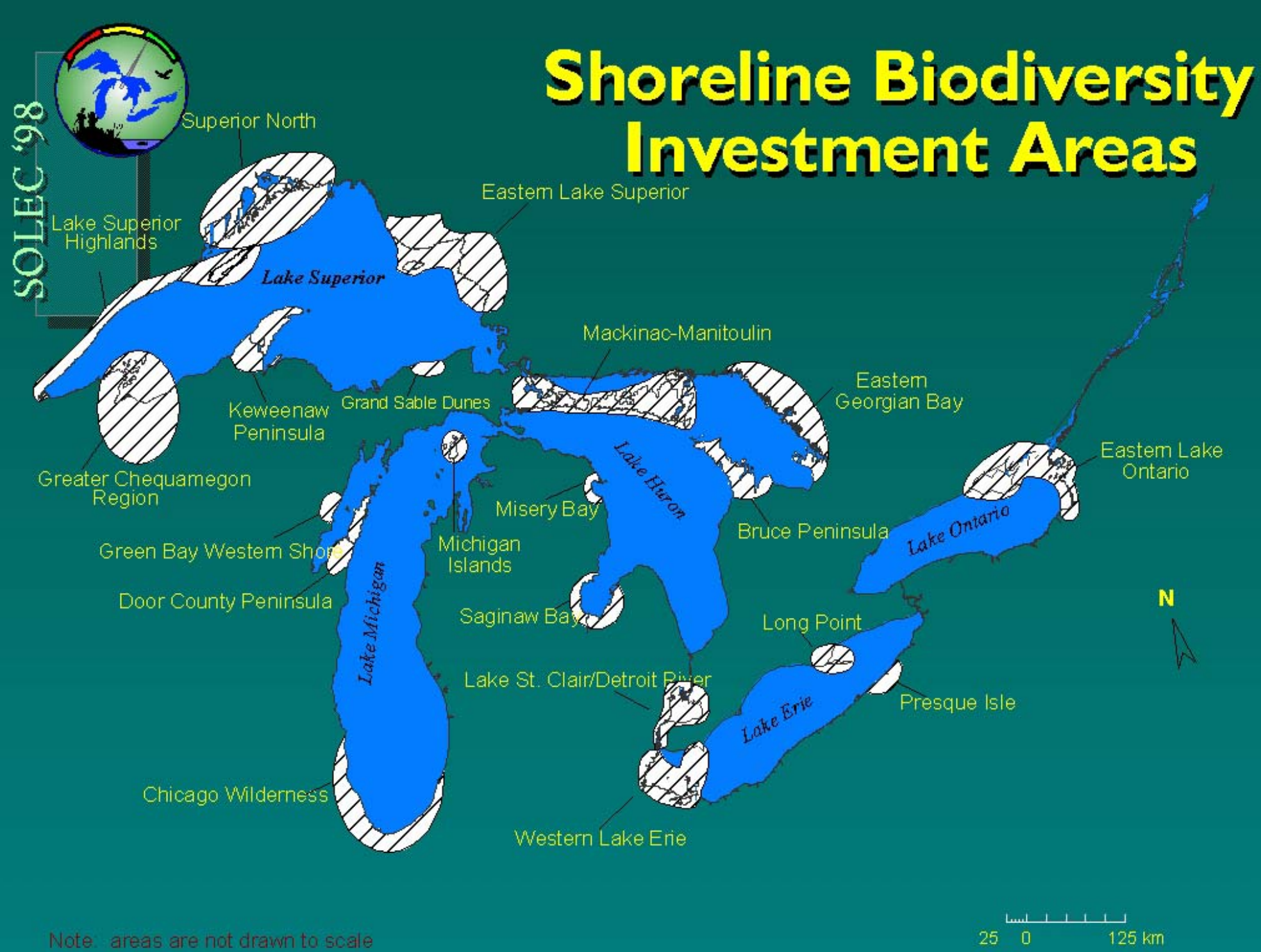
Co-Presenters:

Patricia Chow-Fraser
McMaster University
Hamilton, Ontario

Dennis Albert
Michigan Natural Features Inventory
Lansing, Michigan

Great Lakes Coastal Wetlands
– Vital Component of the Great Lakes Ecosystem

Shoreline Biodiversity Investment Areas



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Objective

To develop an approach to identify areas of the Great Lakes shoreline with

- significant concentrations of coastal wetlands, or
- ecologically distinct wetland types

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Approach

Step I – Identify Coastal Wetlands

Existing GIS Databases:

- Environmental Sensitivity Atlas (Environment Canada)
- Natural Heritage Information Centre (Ontario Ministry of Natural Resources)
- Database of Over 110 Sampled Coastal Wetlands (Michigan Natural Features Inventory)

Approach

Step 2–Classify Wetlands

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Coastal Wetlands Classification

Aquatic System (Sly & Busch, 1992)

- Lacustrine
- Connecting Channels
- Riverine
- Freshwater Estuaries

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Coastal Wetlands Classification

Site Type

- Protected Embayment
- Open Embayment
- Barrier Beach Lagoon
- Open Estuary

Protected Embayment

Barrier-Beach Lagoon

Open Estuary

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Vegetation Analysis

9 Groups
(Based on Distinct Floral Characteristics)

Described By:

- Vegetation Zones
- Key Species

Distribution of All Coastal Wetlands

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Note: U.S. database is incomplete

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Eco-Reach Delineation

- Distinctive stretches of shoreline
- Support significant concentrations of wetlands
- Distinctive climatic, bedrock and shoreline conditions and land use patterns

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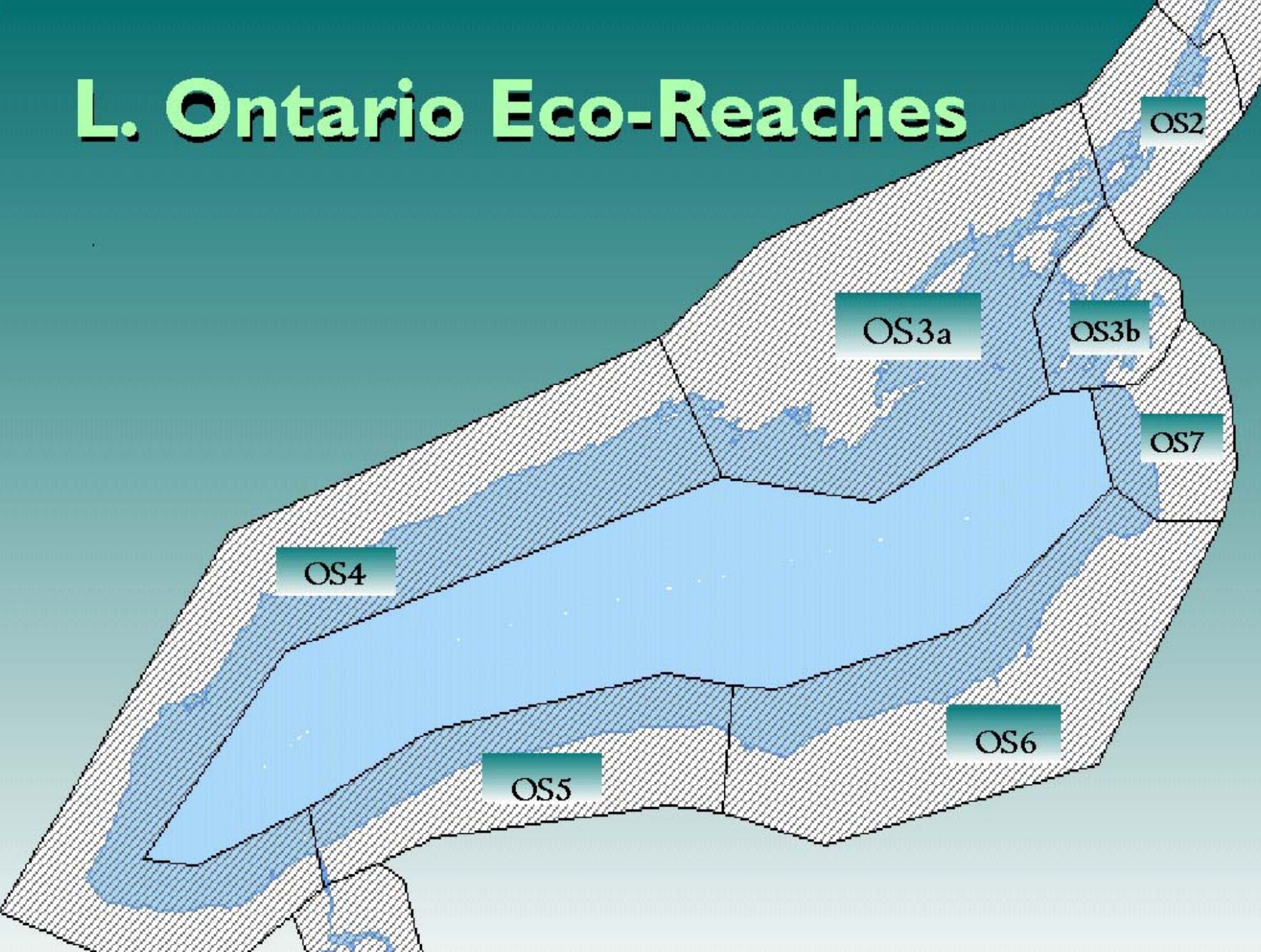
Great Lakes Shoreline Wetland Complexes

L. Ontario Eco-Reaches



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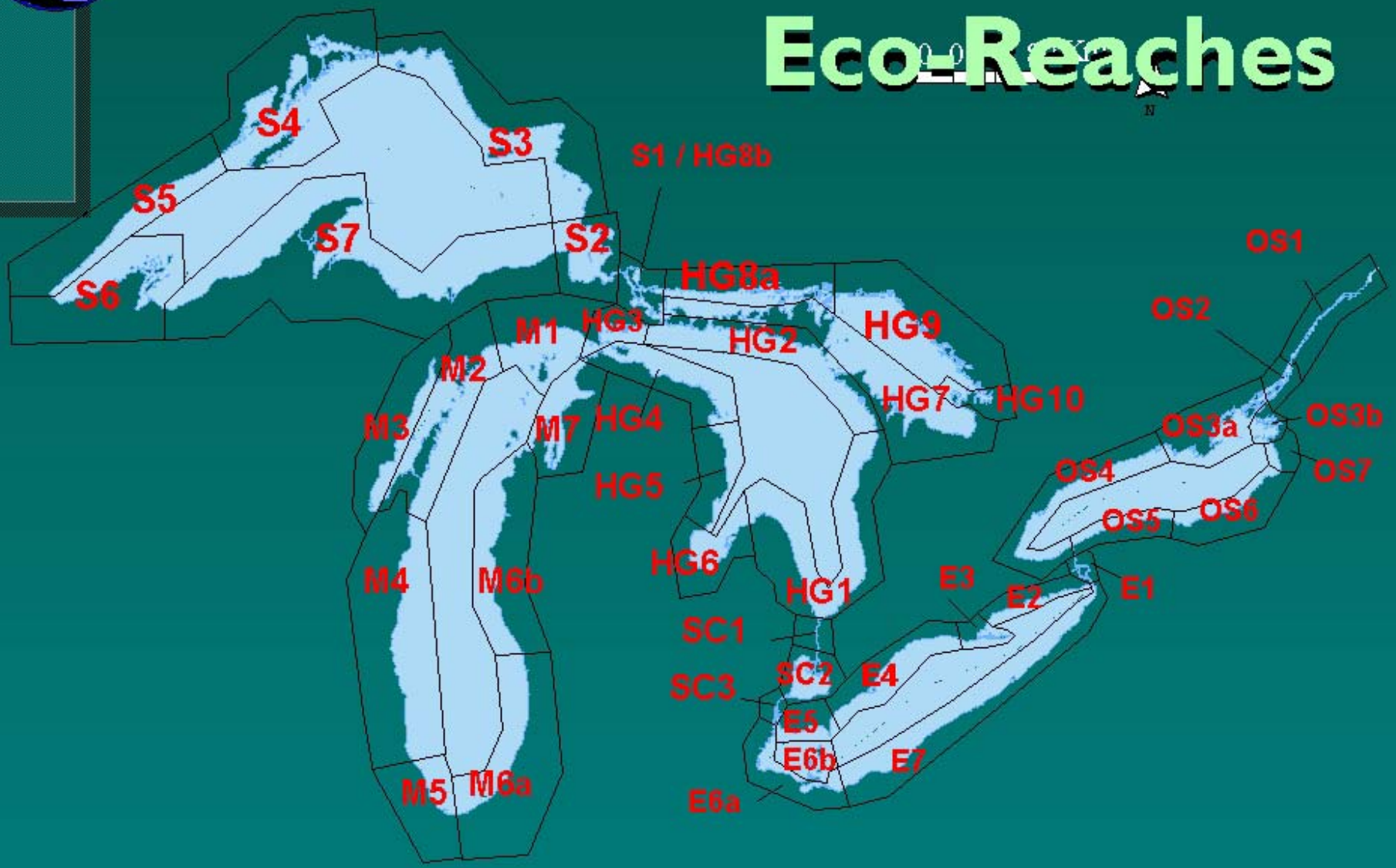
Great Lakes Coastal Eco-Reaches



44 eco-reaches identified

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Approach Taken

Step 4

- Objective, quantifiable measure of the biodiversity value of each eco-reach
- Frequency of use by fish, waterfowl, wildlife, etc.
- Systematically applied to both nations to ensure unbiased treatment of all eco-reaches
- Clearly documented consistent methodology
- Suitable for inclusion into GIS database

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Databases of Fish and Bird Habitat

- Goodyear et al. 1982. *Atlas of spawning and Nursery Areas of Great Lakes Fishes* – 139 species of fish throughout shores of all Great Lakes

- Cadman et al. 1988. *Atlas of the Breeding Birds of Ontario* – 239 species of birds on the shores of the Canadian Great Lakes

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Approach taken

Step 5

- Quantify the number of species that utilized each eco-reach for spawning, nursery, or breeding

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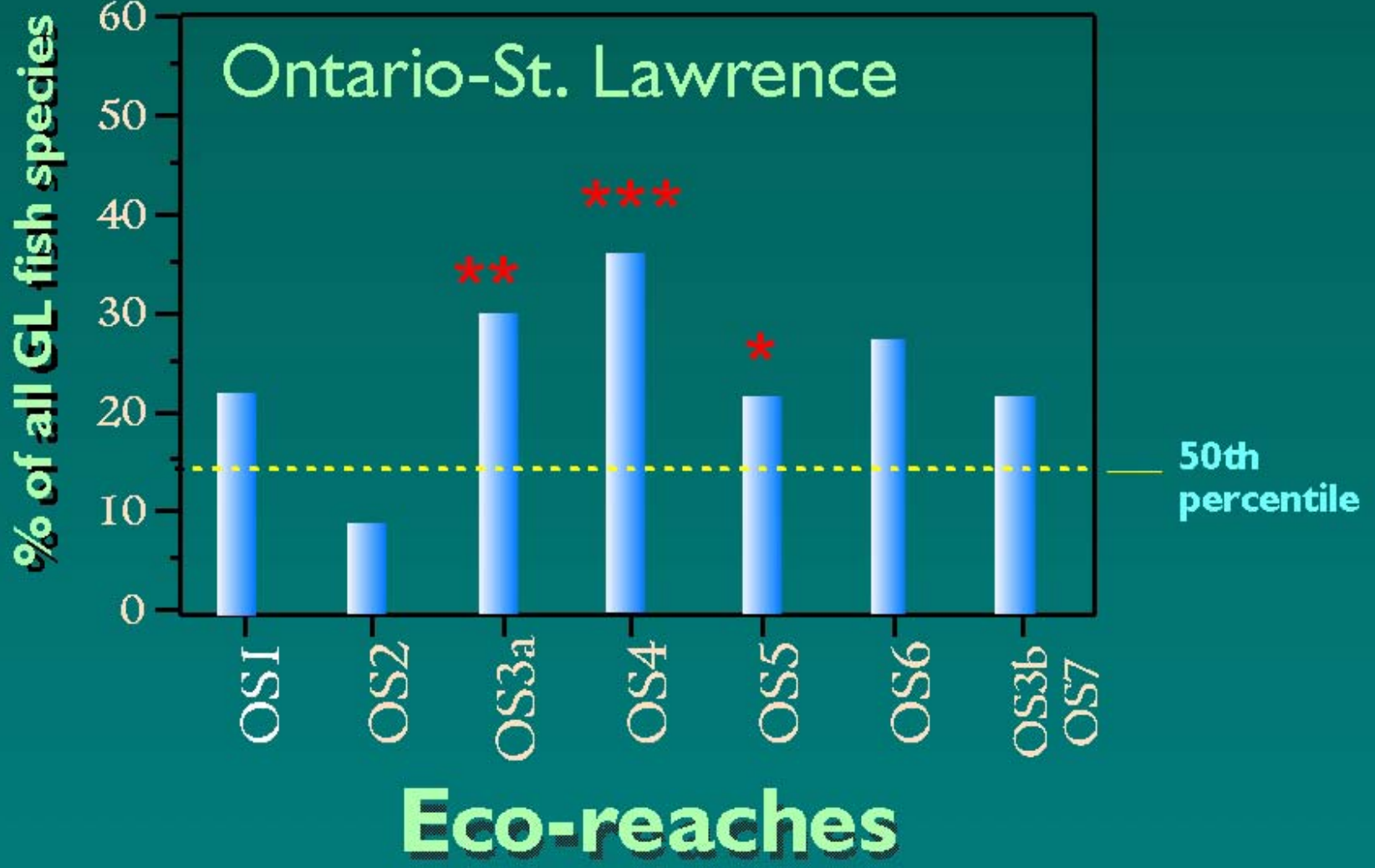
Fish Spawning Habitat

Littoral Areas of all Great Lakes



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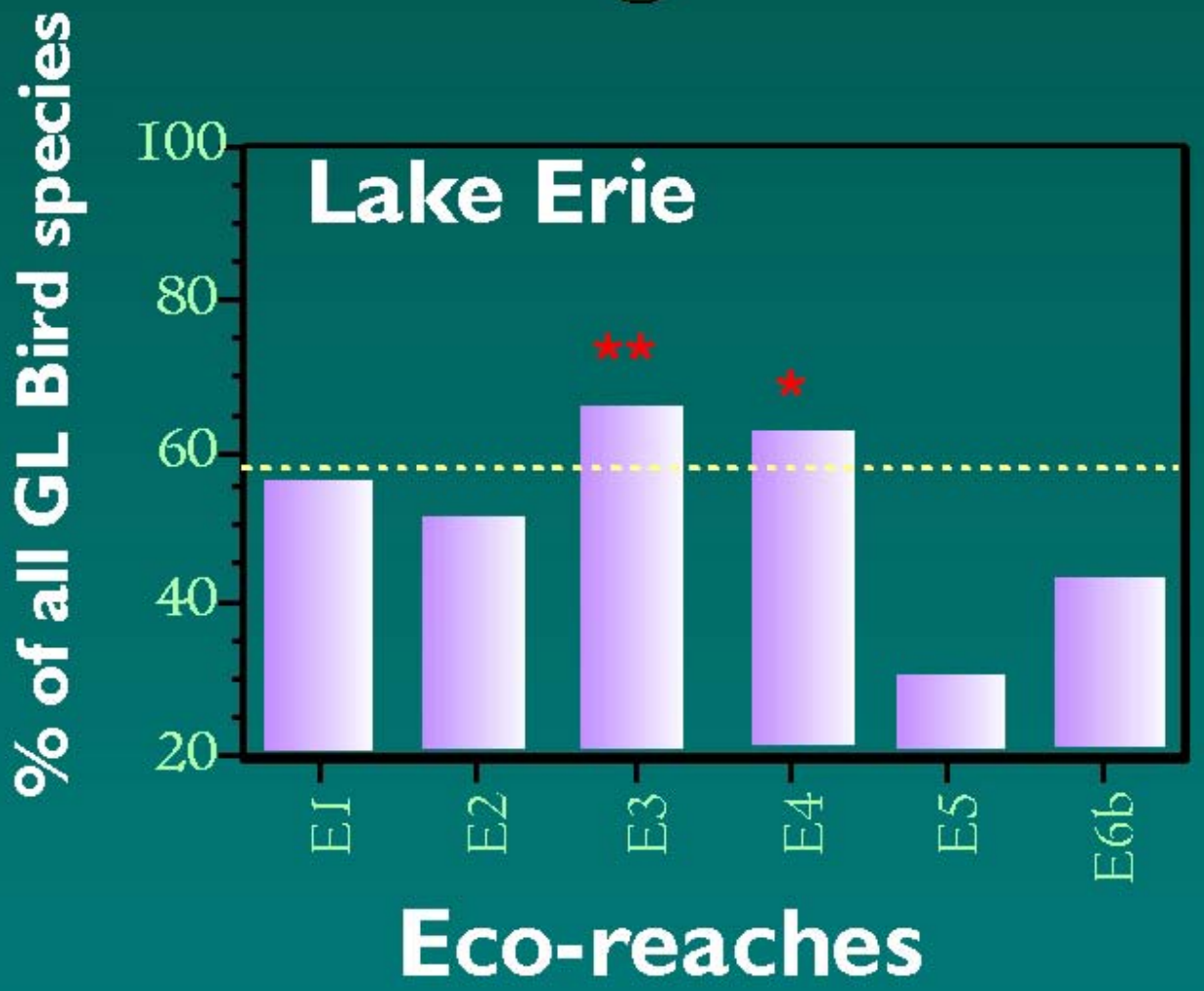
Breeding Bird Use



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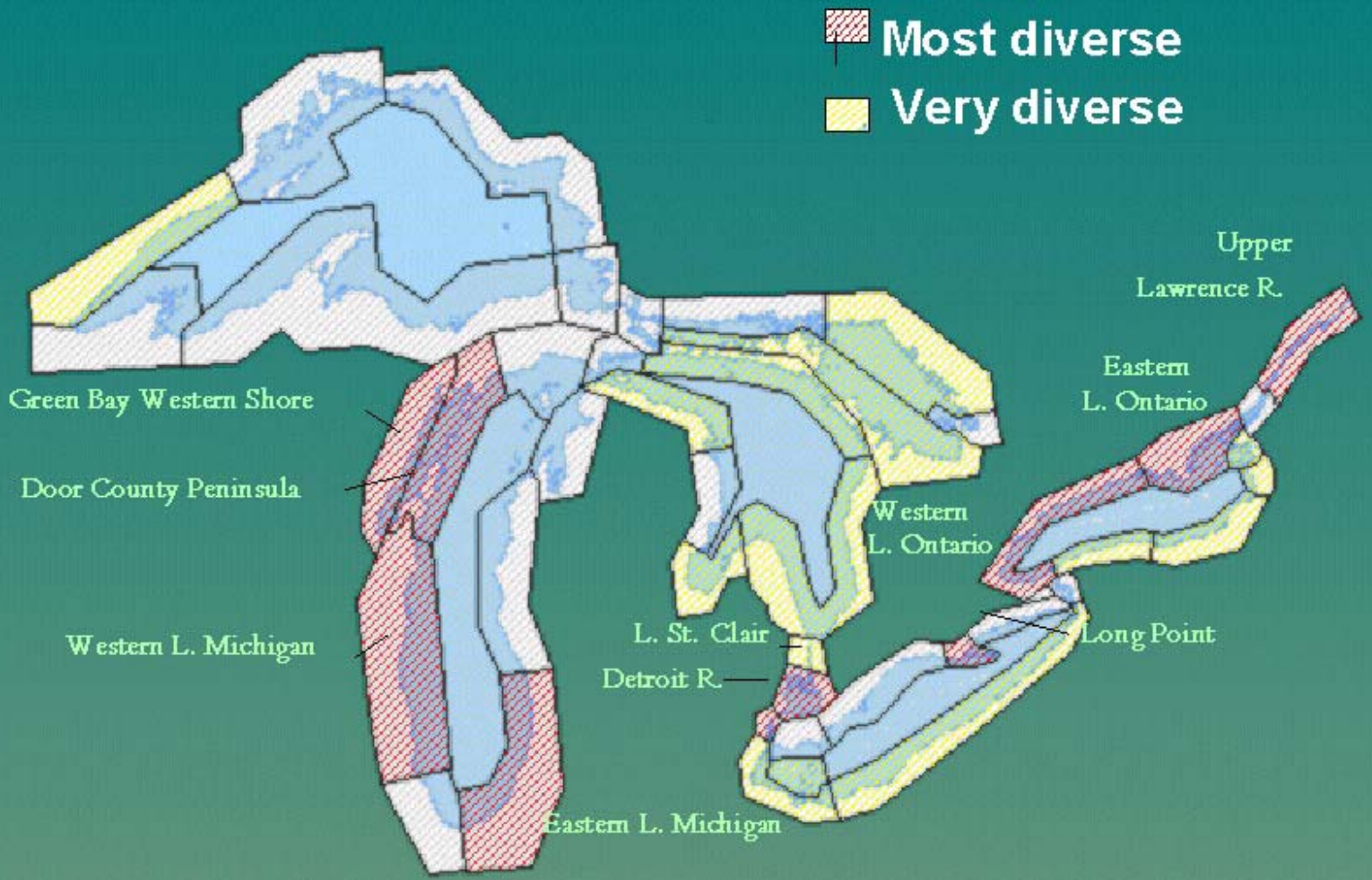
Eco-Reaches associated with habitat that support very diverse fish and bird species



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Shoreline Biodiversity Investment Areas
Superior North
Lake Superior Highlands
Eastern Lake Superior
Lake Superior
Mackinac-Manitoulin
Eastern Georgian Bay
Keweenaw Peninsula
Grand Sable Dune
Greater Chequamegon Region
Lake Huron
Misery Bay
Bruce Peninsula
Eastern Lake Ontario
Green Bay Western Shore
Michigan Islands
Lake Ontario
Lake Michigan
Door County Peninsula
Saginaw Bay
Long Point
Lake St. Clair/Detroit River
Lake Erie
Presque Isle
Chicago Wilderness
Western Lake Erie
N
Note: areas are not drawn to scale
25 0 125 km

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...a small but important step towards identification of coastal BIAs

- Consistent with BIAs identified in 1996, Detroit R., L. St. Clair and St. Clair R., and shores of L. Ontario and L. Michigan contain exceptionally diverse fish and bird habitat
- Wetlands of L. Superior support a lower diversity of fish and bird use, although the type of fish and bird may be recreationally/commercially valuable
- Wetlands of L. Huron and Georgian very important for bird use

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Limitations of study

- Deficient databases
  - Fish and bird use
  - More fauna need to be included
  - Incomplete inventory of U.S. wetlands
- Inconsistent methods used in vegetation analyses
- No centralized, widely accessible, updatable GIS database
- Applicability of out-of-date information

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Further Discussion

Other variables to identify

- Stressors applicable to eco-reaches
- Existing government protection programs
- Feasibility of implementing investment strategies
- Recreational/Commercial value of different biota