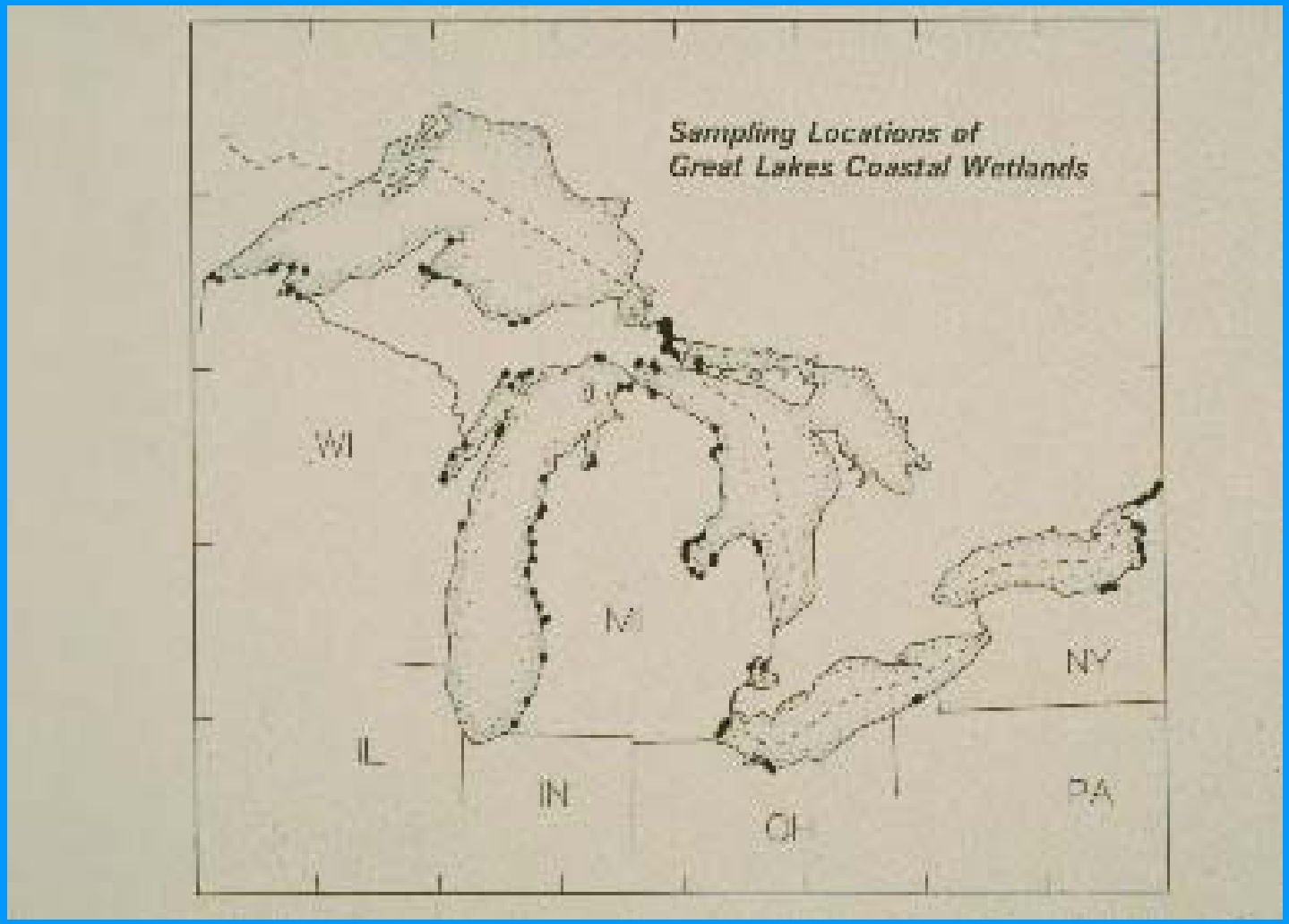
# GREAT LAKES COASTAL WETLANDS

By Dennis Albert

# Great Lakes wetland sampling sites: 1987-2001



# Coastal Wetland Sampling and Classification

- C. Herdendorf: 1980s. Mapping and Classification.
- R. Stuckey: 1970s-1980s. Plant sampling.
- E. Jaworski & C.N. Raphael: 1970s. Plant sampling/mapping.
- D. Albert/MNFI: 1980s-present: Plant sampling/classification.
- D. Wilcox: 1980s-present: Plant sampling/classification.
- P. Chow-Fraser/McMaster U.: 1990s-present: Plant sampling.
- M. Moffett/USEPA: 1990s-present: Plant sampling.
- Others.

# Great Lakes Marsh Classification: Sly and Busch's Aquatic Systems (1992)

Aquatic Systems defined by water flow characteristics and residence time.

- Lacustrine
- Connecting Channel
- Riverine
- Estuary

G. L. Marsh Classification:

Albert/Minc's Aquatic Systems & Geomorphology (1998)

Keough, Thompson, Guntenspergen, Wilcox's Hydrogeomorphic Classification (1999)

# G. L. Marsh Classification:

Great Lakes Consortium's Combined Aquatic Systems & Hydrogeomorphologic.

Albert, Ingram, Thompson, Wilcox (2001)

# Great Lakes Consortium's Combined Aquatic Systems & Hydrogeomorphologic.

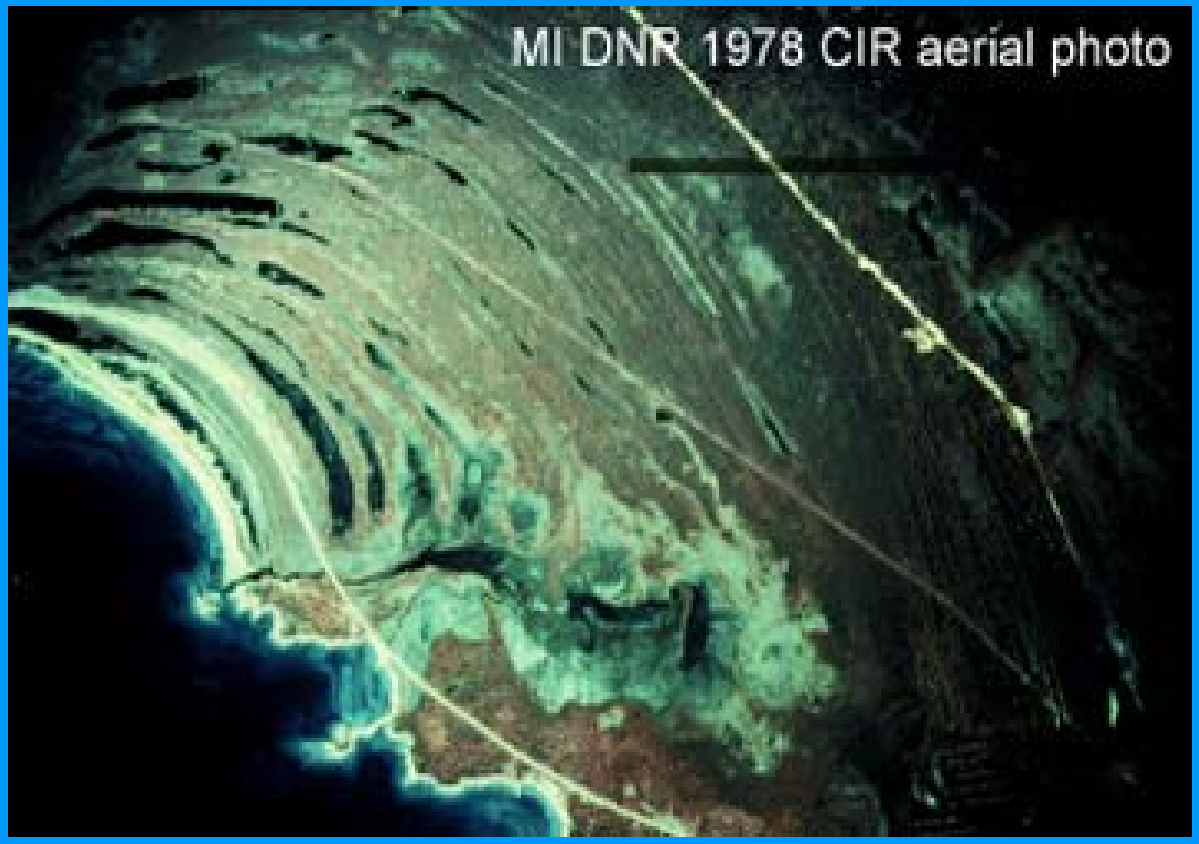
Aquatic Systems:

- Lacustrine
- Riverine
- Barrier-Protected

# Lacustrine Wetlands

# Riverine Wetlands

# Barrier-Protected



# Lacustrine Wetlands

- Open Lacustrine
  - Open Shoreline
  - Open Embayment

- Protected Lacustrine
  - Protected Embayment
  - Sand-Spit Embayment

# Lacustrine Wetlands

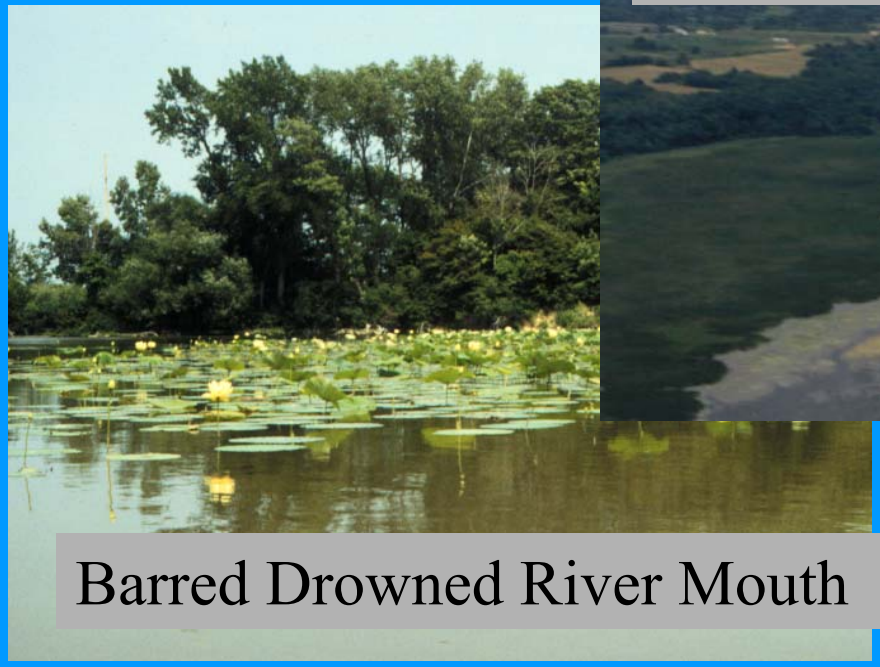
- Protected Lacustrine
  - Protected Embayment
  - Sand-Spit Embayment

# Riverine Wetlands

# Riverine Wetlands

- Drowned River Mouth
  - Open
  - Barred

Open Drowned River Mouth



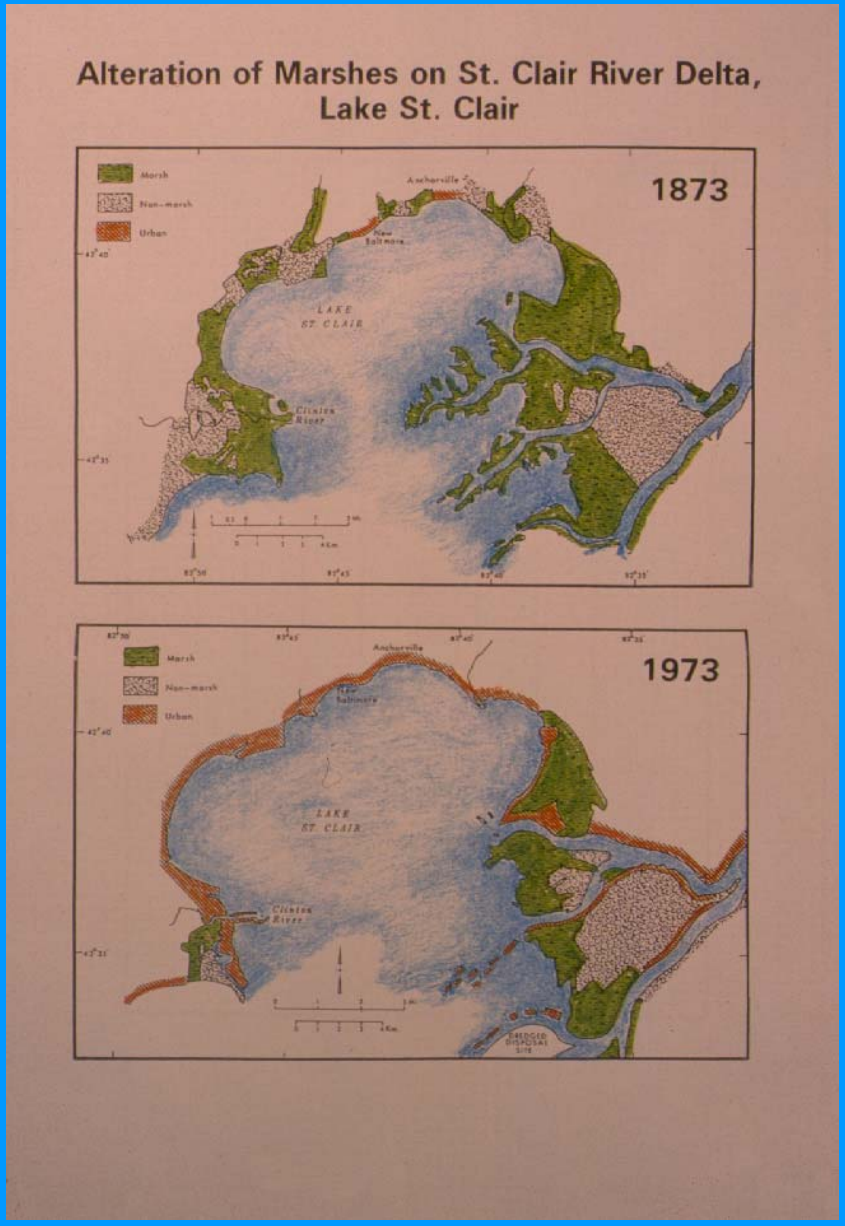
Barred Drowned River Mouth

- Connecting Channel: Detroit River

- Delta

# Riverine Wetlands

Connecting River and Delta: St. Clair River Delta



# Barrier-Protected

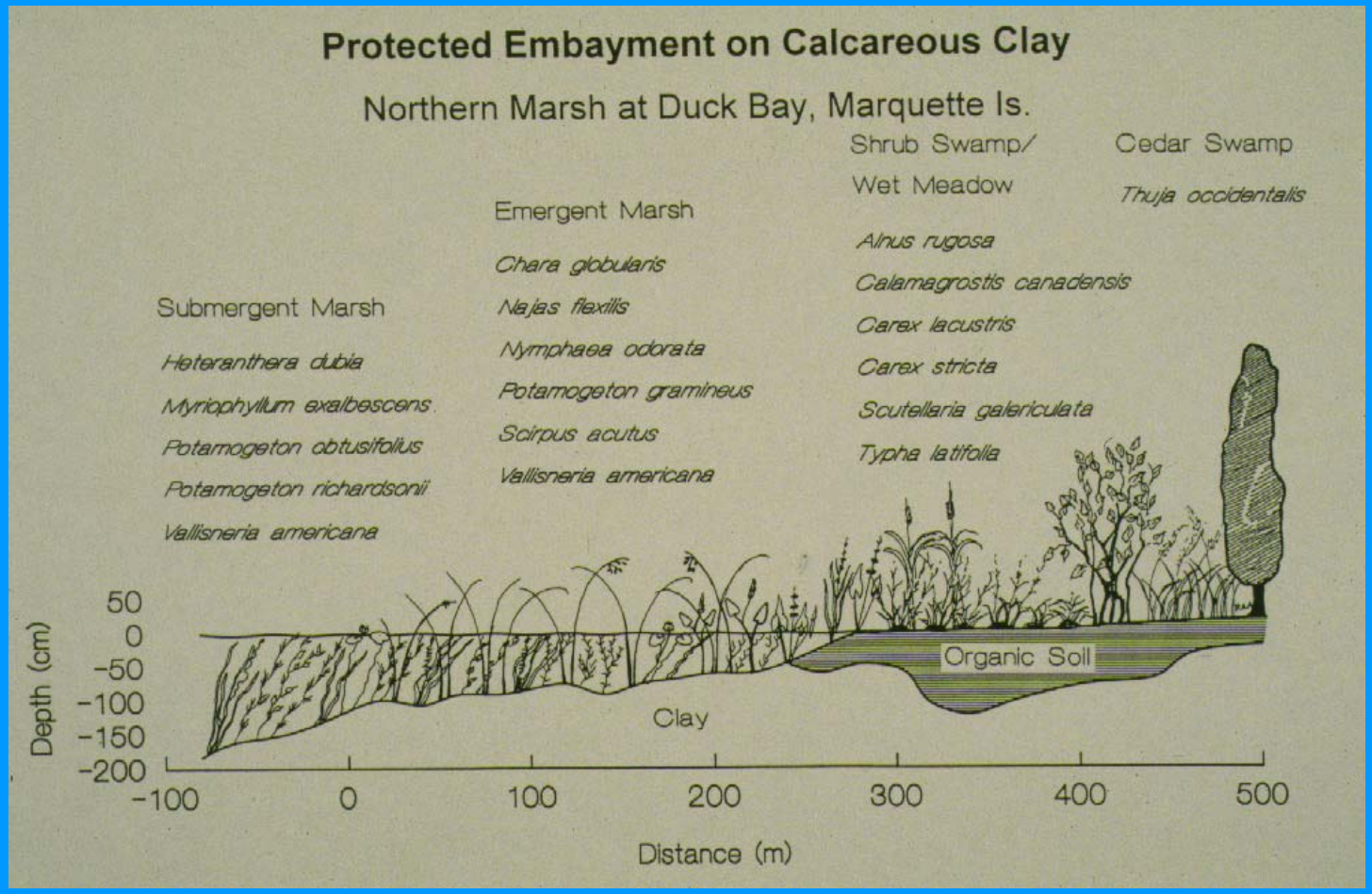
- Barrier
Beach
Lagoon



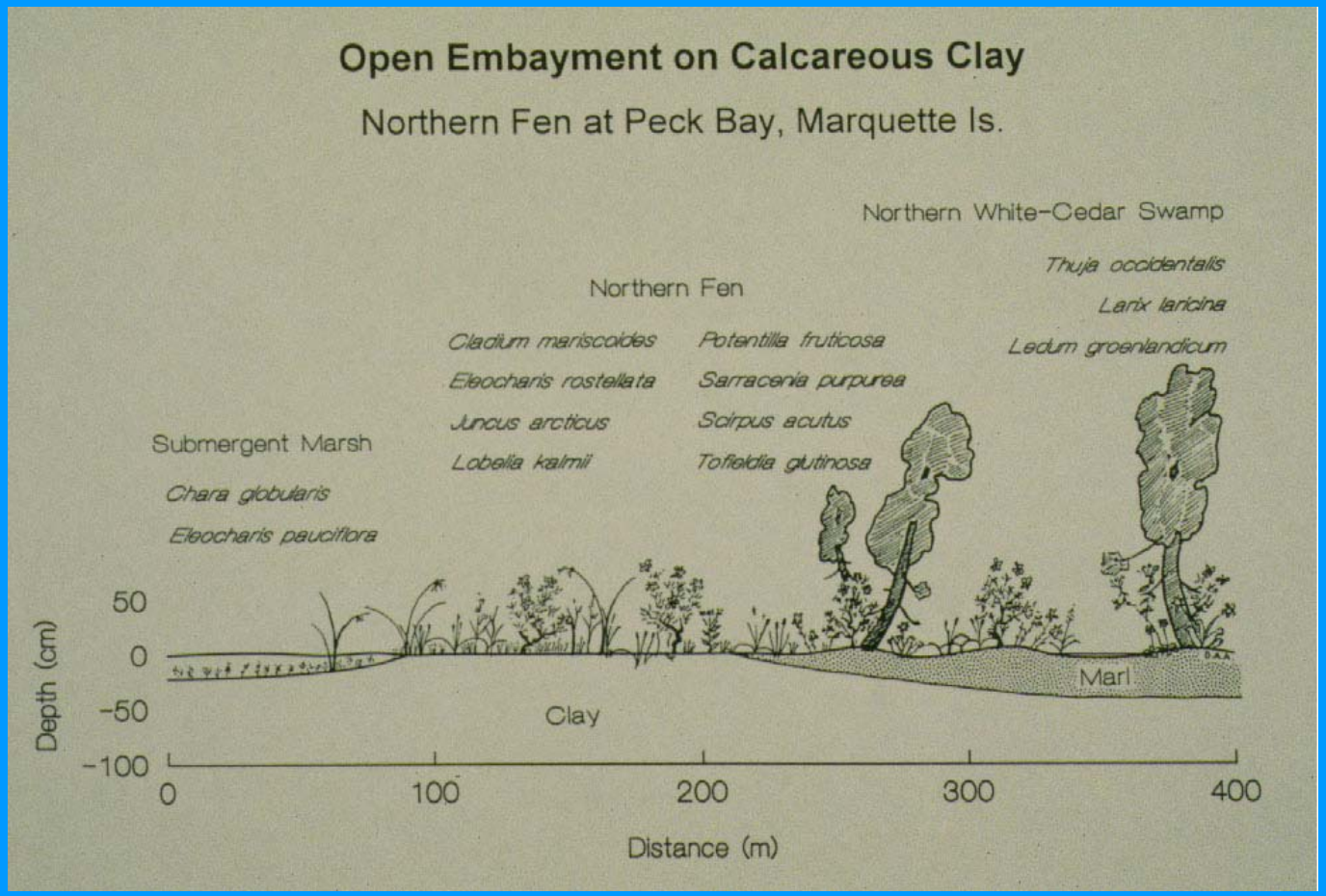

Dune and Swale Complex

- Swale
Complexes

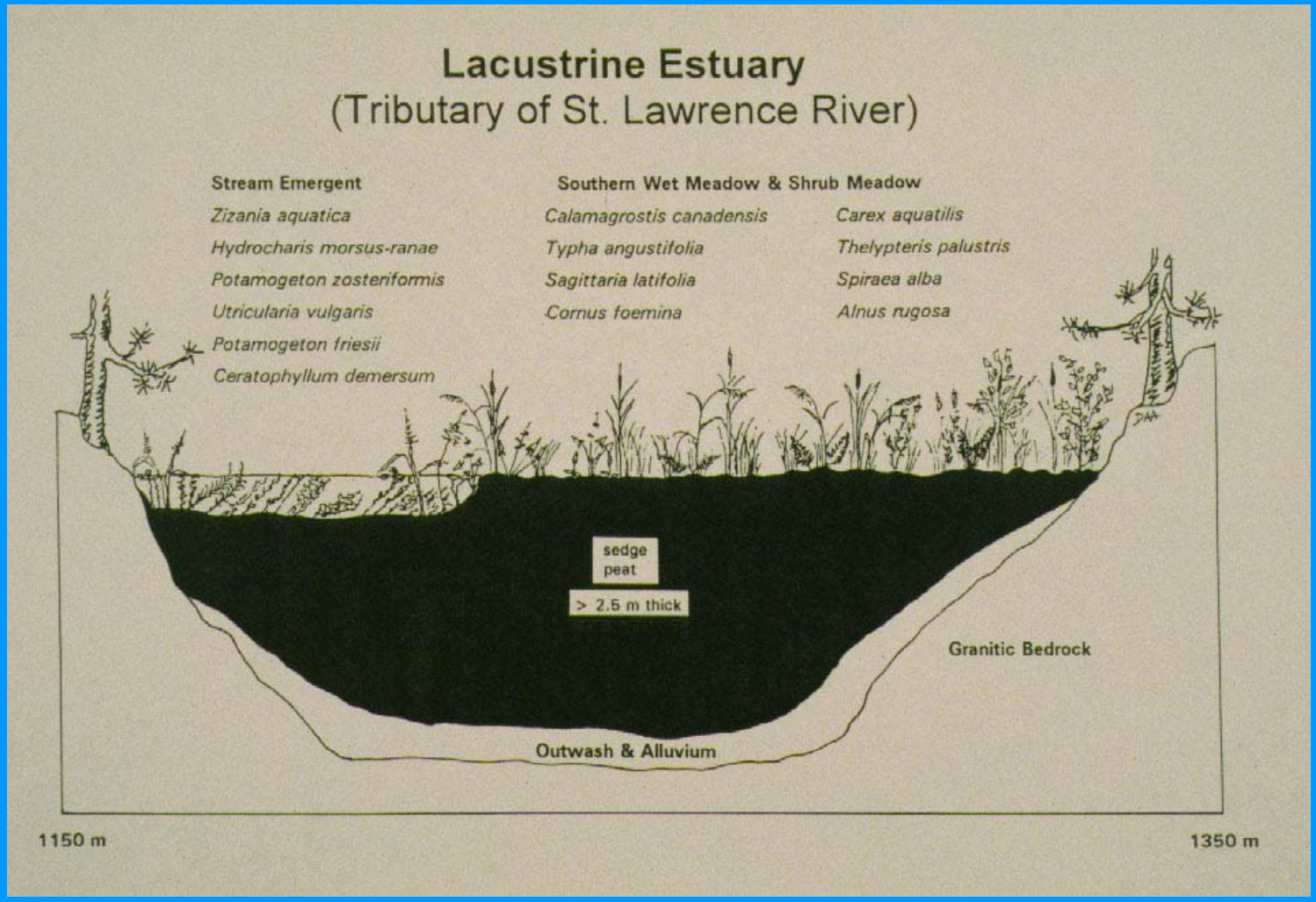
# Geomorphic Differences: Protected Lacustrine Embayment



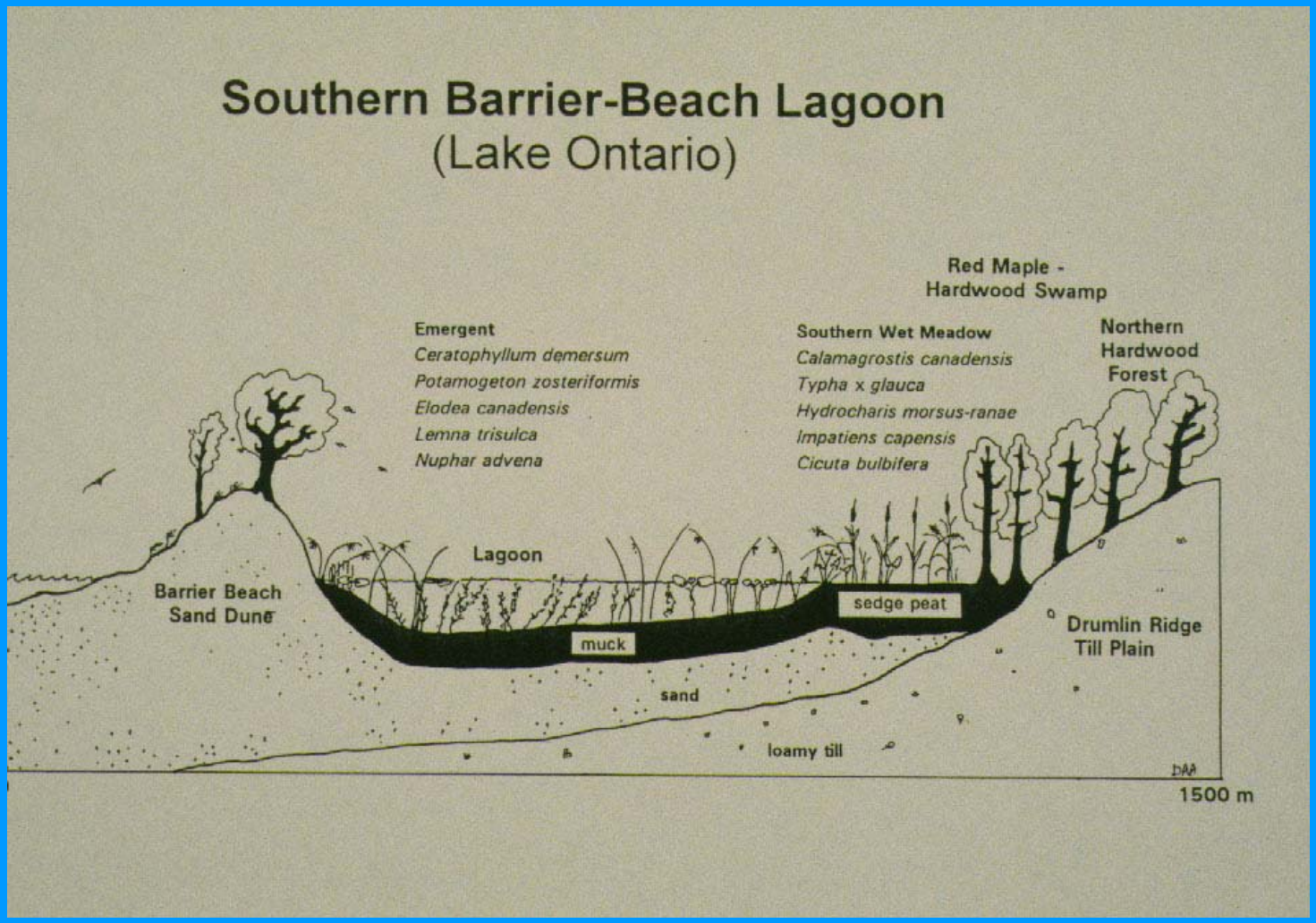
# Geomorphic Differences: Open Lacustrine Embayment



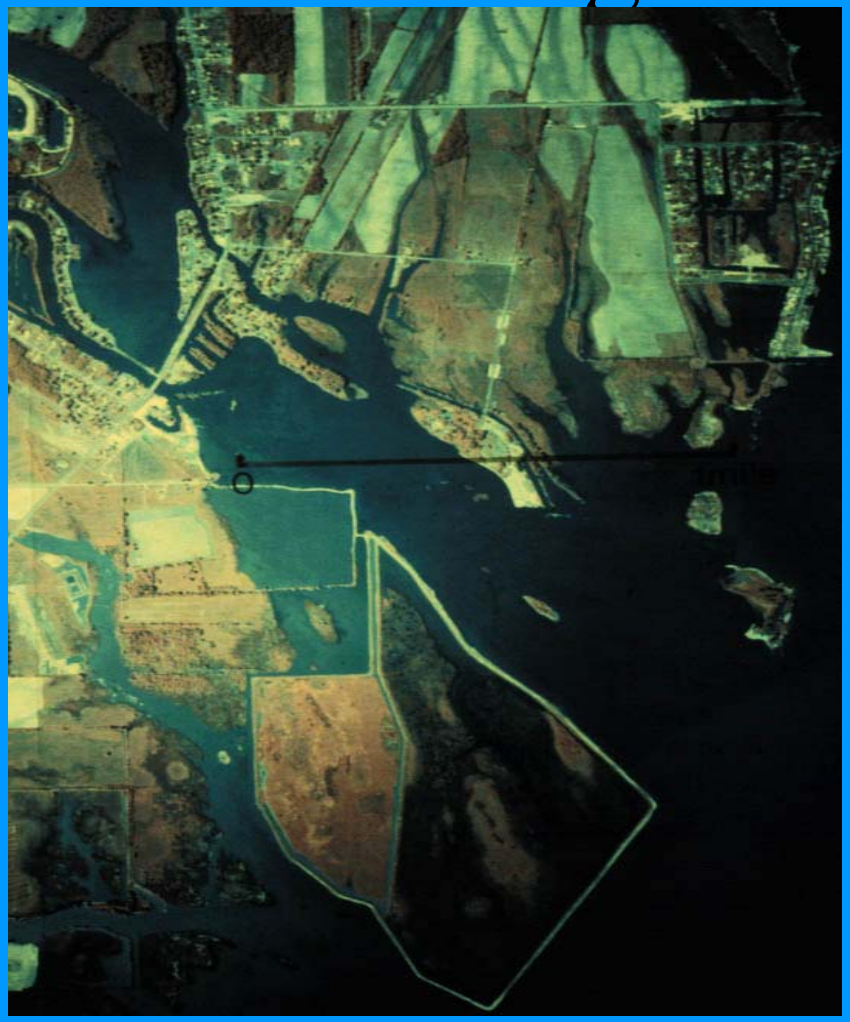
# Geomorphic Differences: Riverine: Drowned River Mouth



# Geomorphic Differences: Barrier Protected: Lagoon

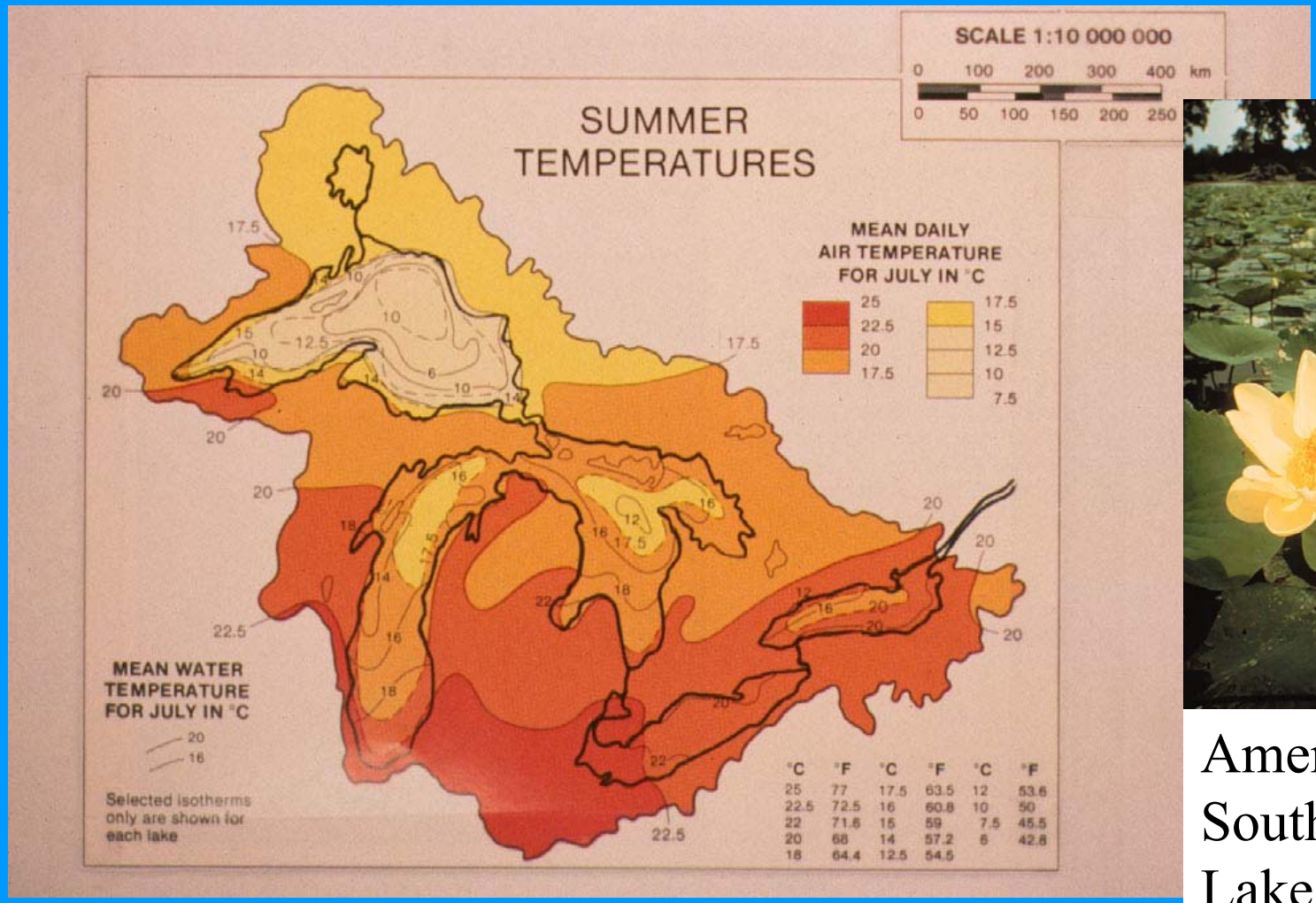


# System Modifiers: Diked Wetlands and Dredged or Jetties



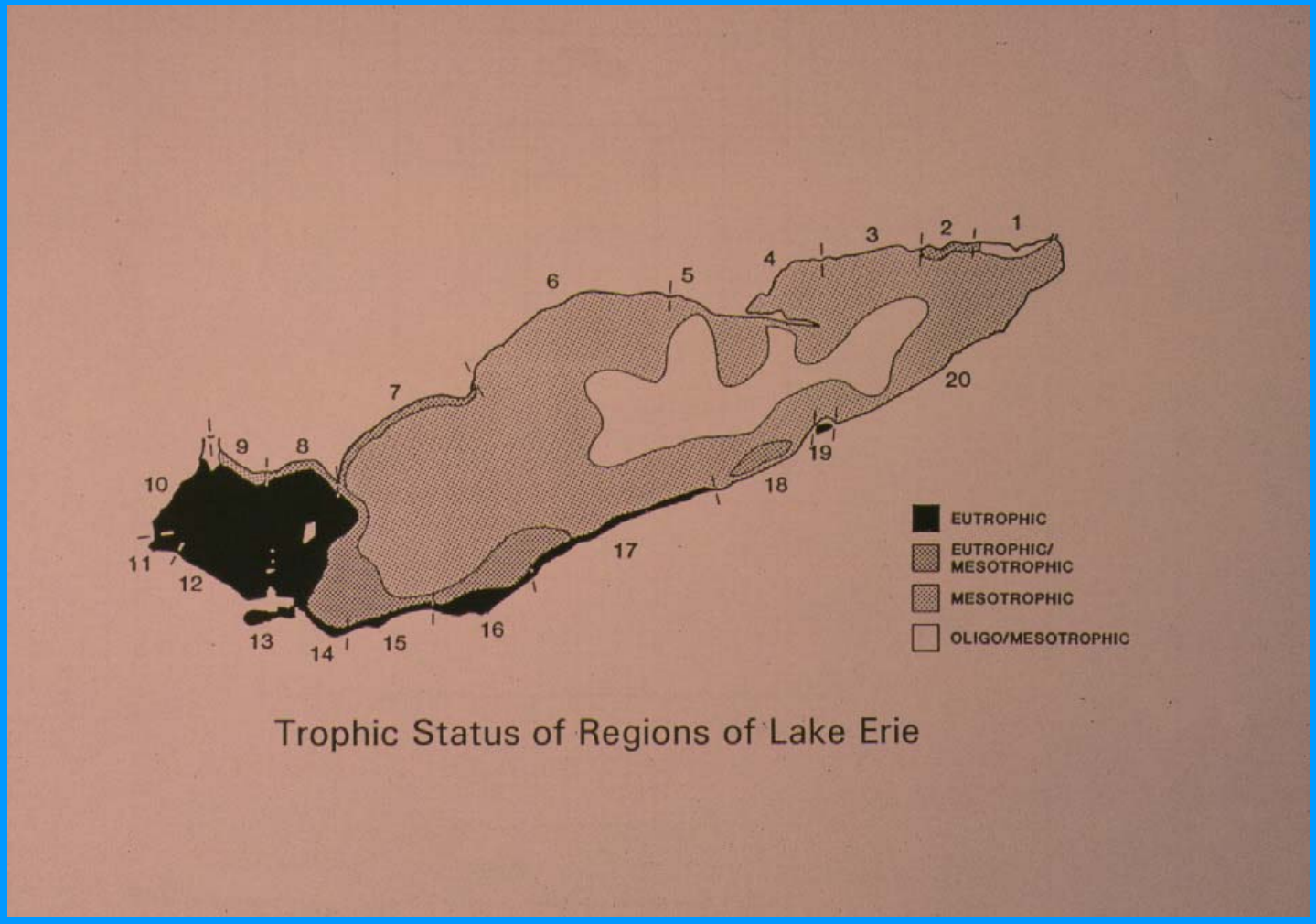
Pointe Mouille, MI

# Climatic Differences: Lake Erie Southern Wetlands




American lotus: Southern Great Lakes

# Differences: Basin chemistry




Trophic Status of Regions of Lake Erie

# Changes in water level result in major changes in vegetation

Pinconning inner bay in 1988 following 1986-87 high water: FQI=15.8

Pinconning inner bay in 2001 (low water): FQI=23.9

# Inter-annual changes in water level result in major vegetation changes

Pinconning outer bay in1988: Floristic quality index (FQI)=8.4

Pinconning outer bay in 2001: Floristic quality index (FQI)=17.7

# Differences in riverine wetlands

Large rivers with strong current (Manistee, MI): vegetated only at edges.

Small, low velocity rivers (Pine R., Ontario): largely vegetated.

# Questions?