Environment Canada Environnement Canada

ST. LAWRENCE CENTRE

The Changing Nature of a River: Aspects of the Biological Integrity of the St. Lawrence

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Overview

- Is the St. Lawrence River healthy?
- Historical changes:
  - in wetlands
  - in species composition
- Other changes
- The next step: A Monitoring Program

The St. Lawrence River: A Few Facts

- One of the largest rivers in the world
- 70% or 5 million Quebecers live along its shores

Is the St. Lawrence River Healthy?

- Little baseline data are available to determine the characteristics of a healthy St. Lawrence River

- There is no question that the physical pressures on the St. Lawrence River have undermined the biological integrity of the system

Times Have Changed…

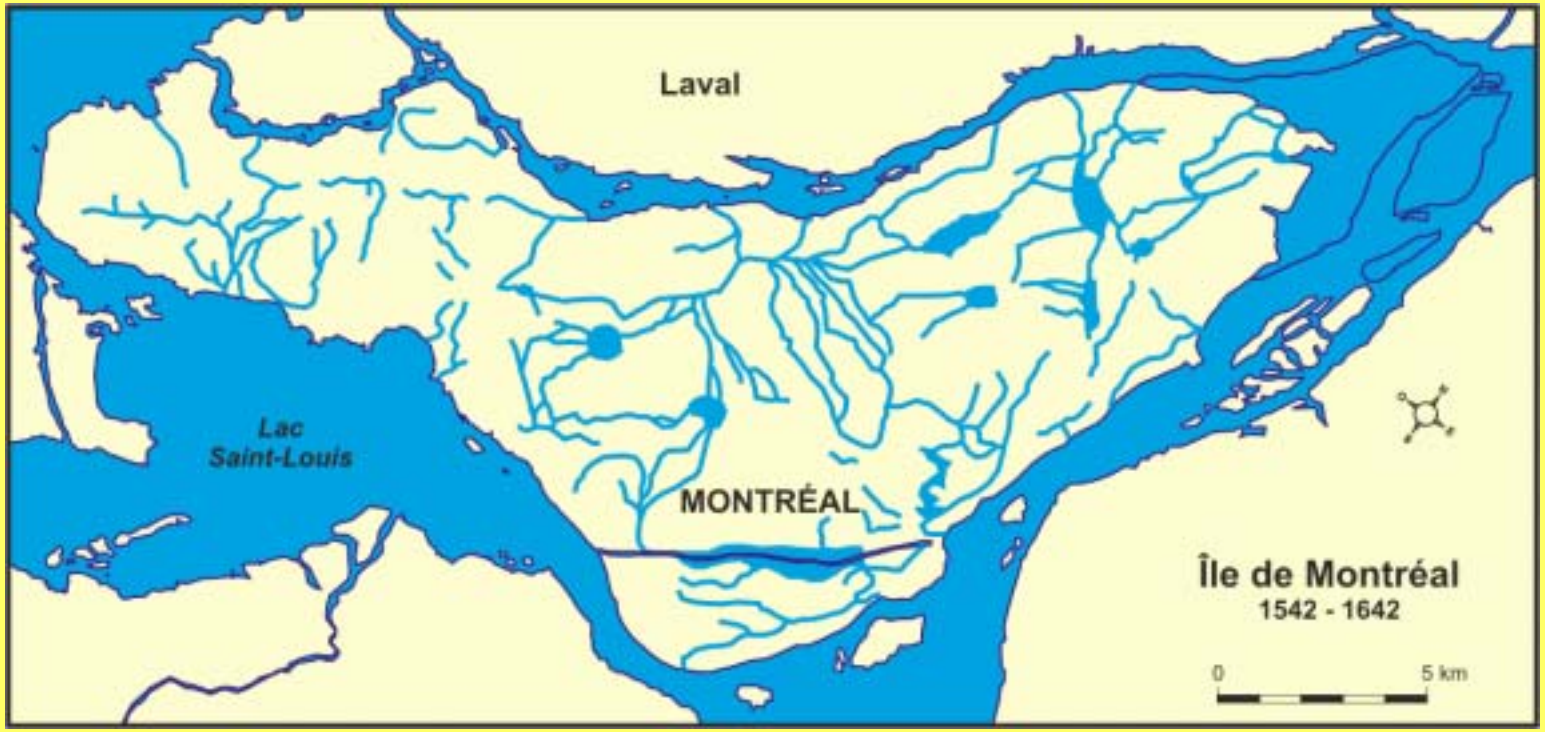
Source: La Presse, Oct. 7, 2000, B2

St. Lawrence Centre, 2002

St. Lawrence Centre, 2002

Changes in Wetlands
St. Lawrence Centre, 2000

Montreal's Wetlands and Watercourses: 1542 - 1642

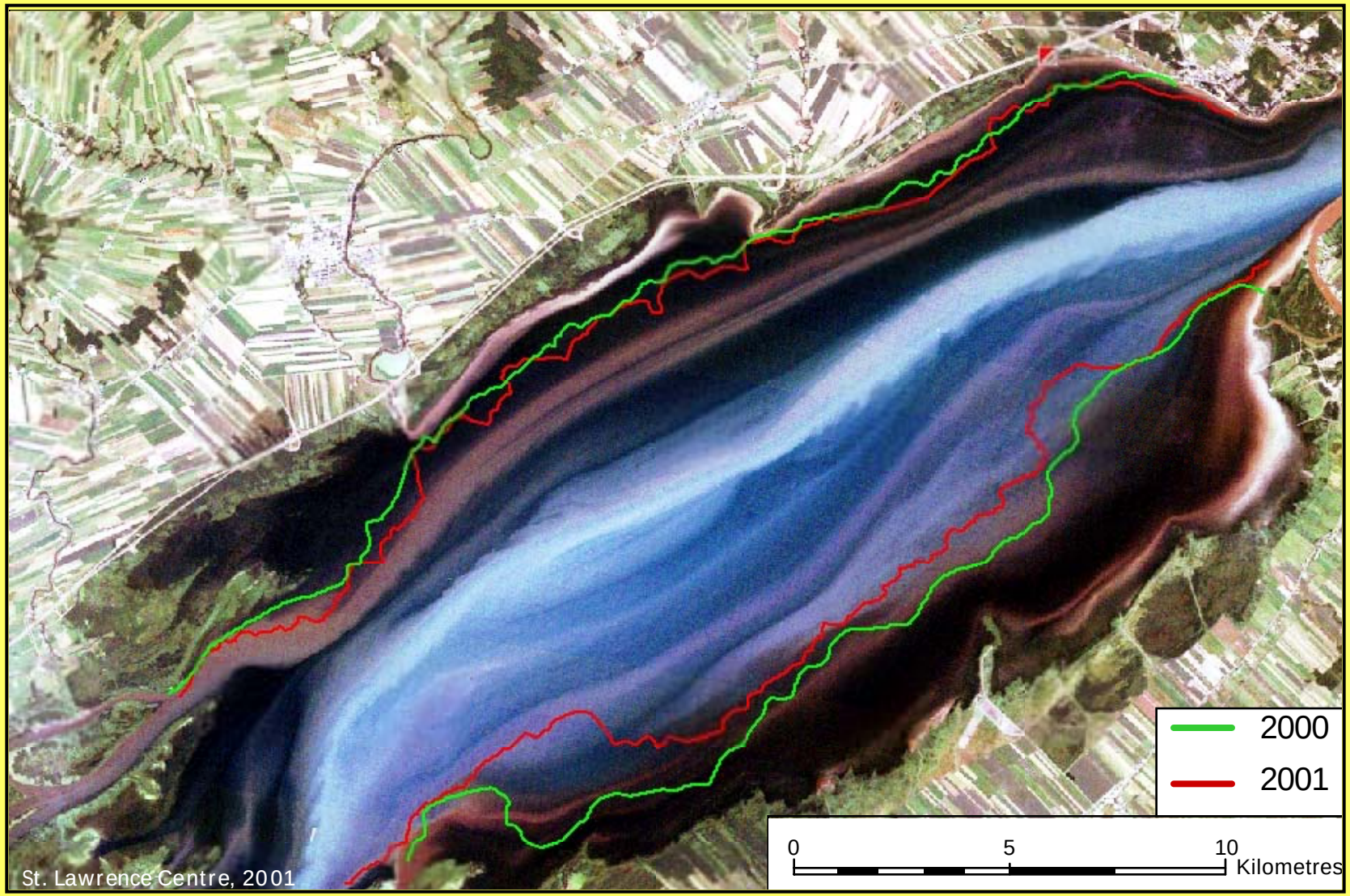


Adapted from Beaugrand-Champagne, 1942

Wetland Losses

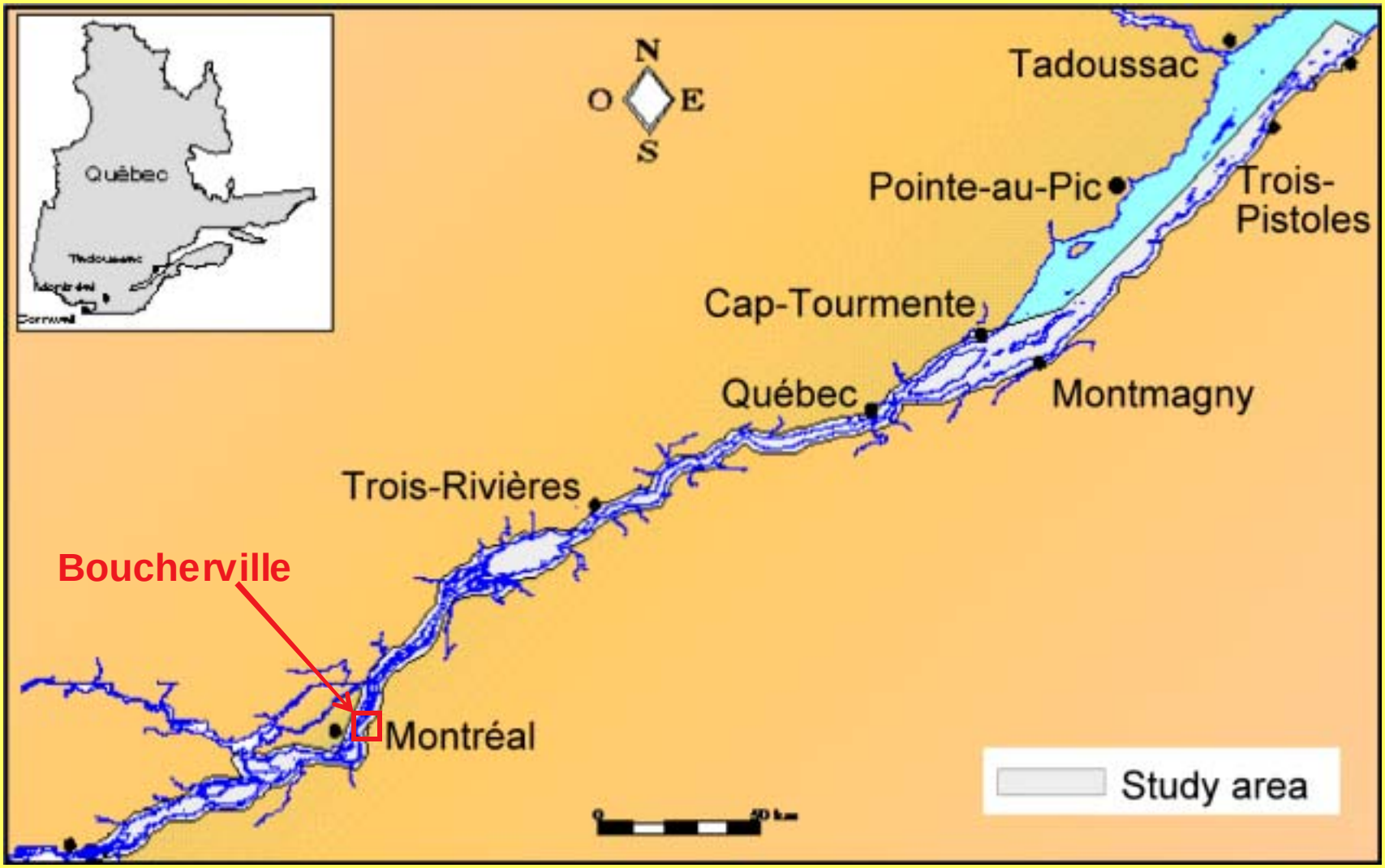
- 80% of wetlands have been lost since French settlement
- 50% of the shoreline between Cornwall and Quebec City has been altered by agriculture and urban development

Wetlands in Transition

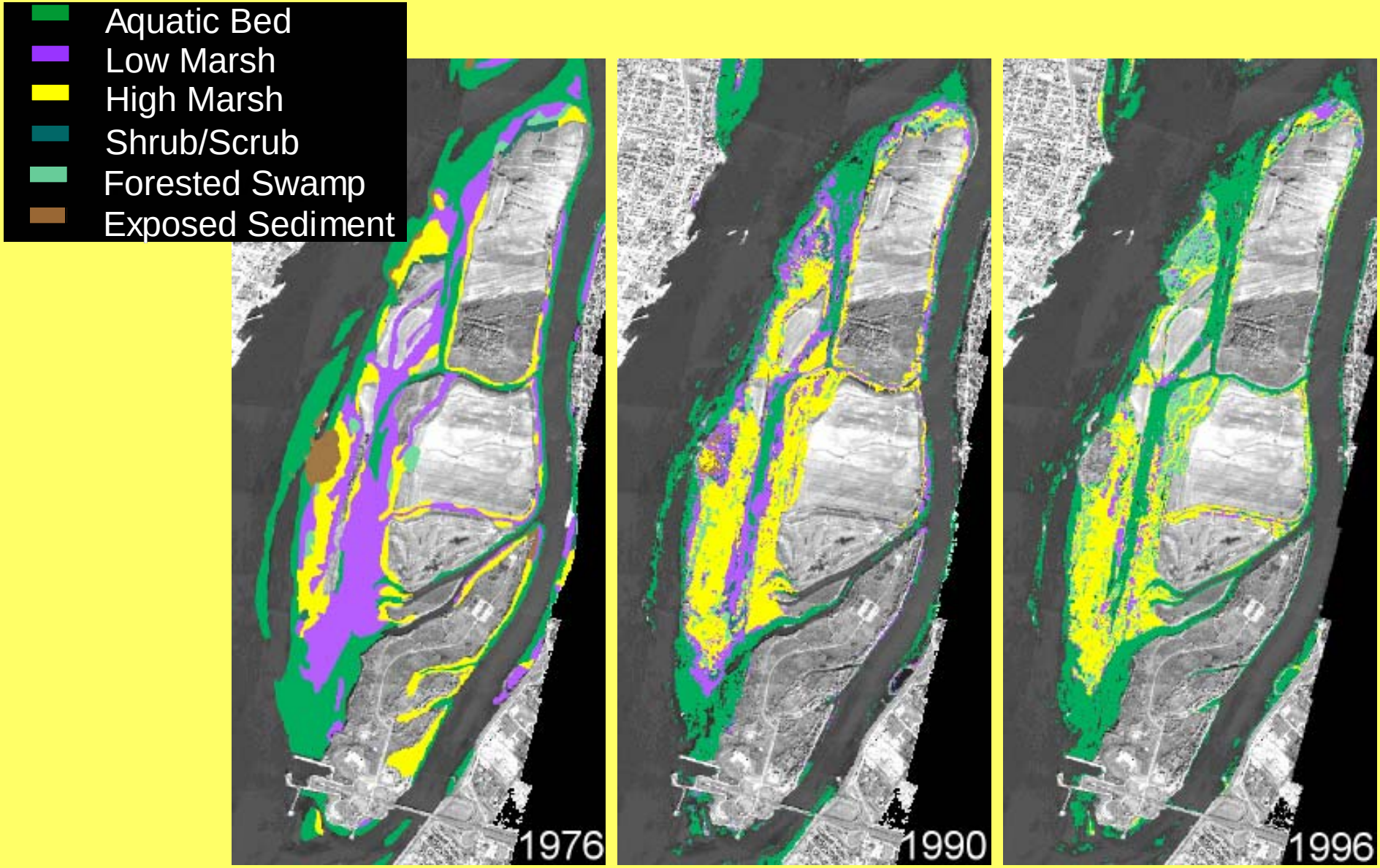


Wetlands *Can* Look Like This!

Wetland Monitoring: Study Area

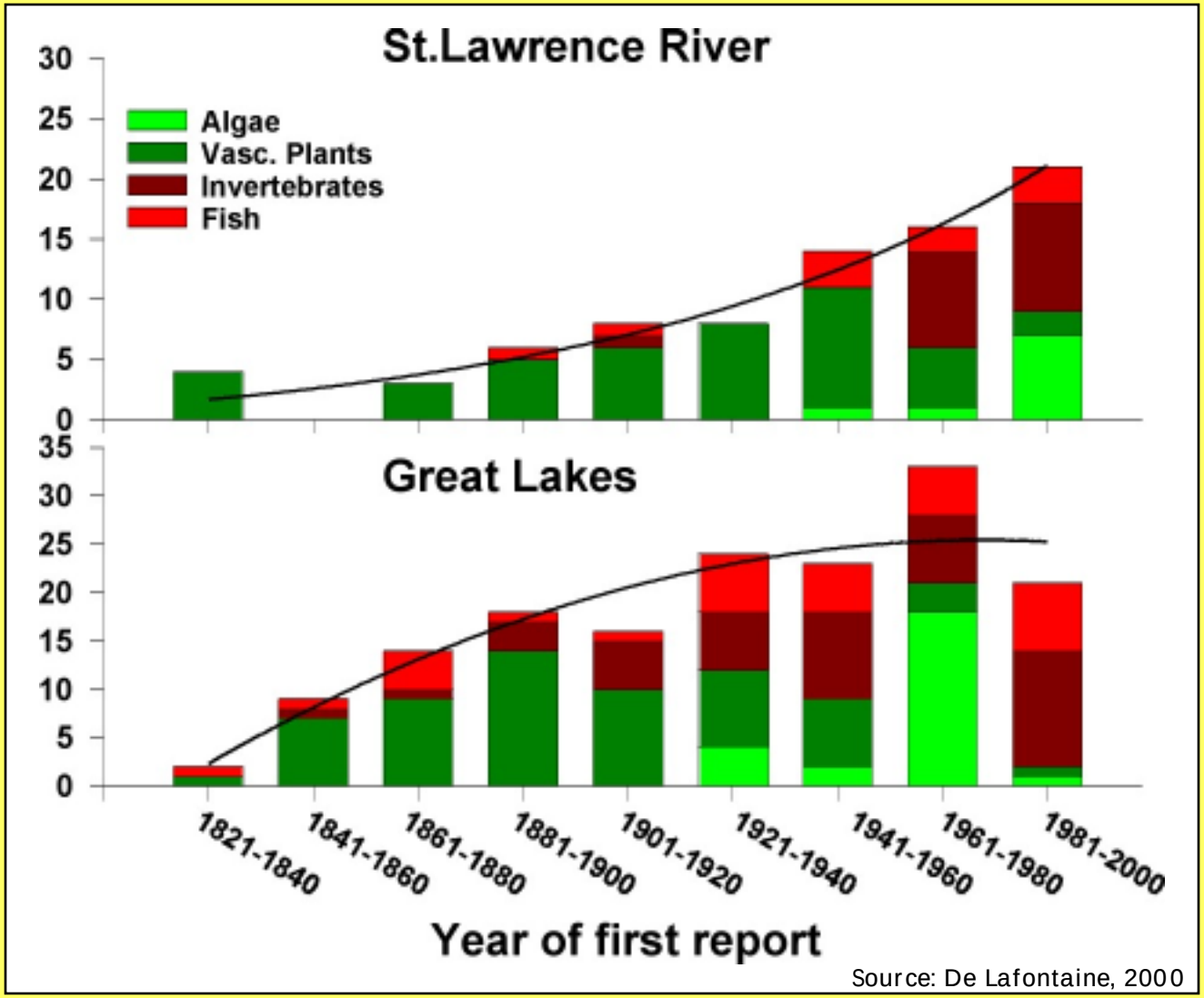


Boucherville: 1976 - 1996



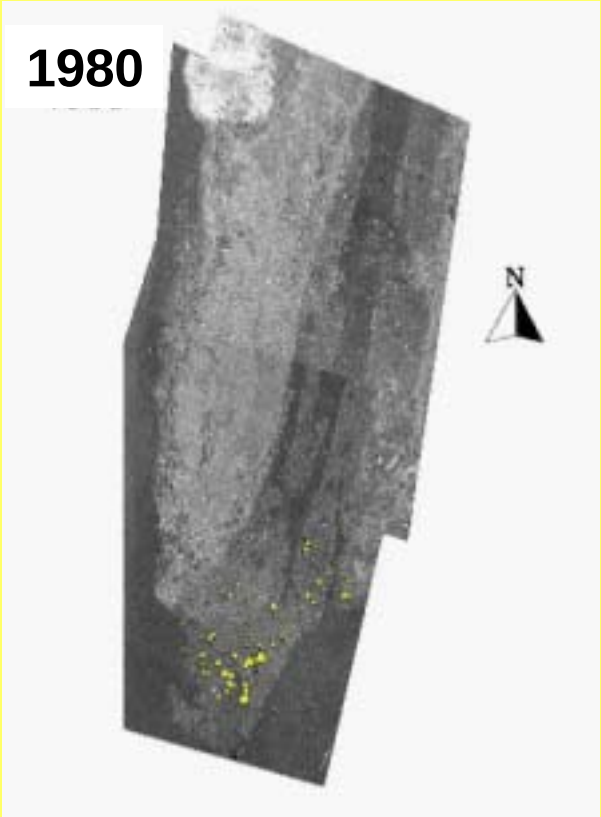
Changes in Species Composition

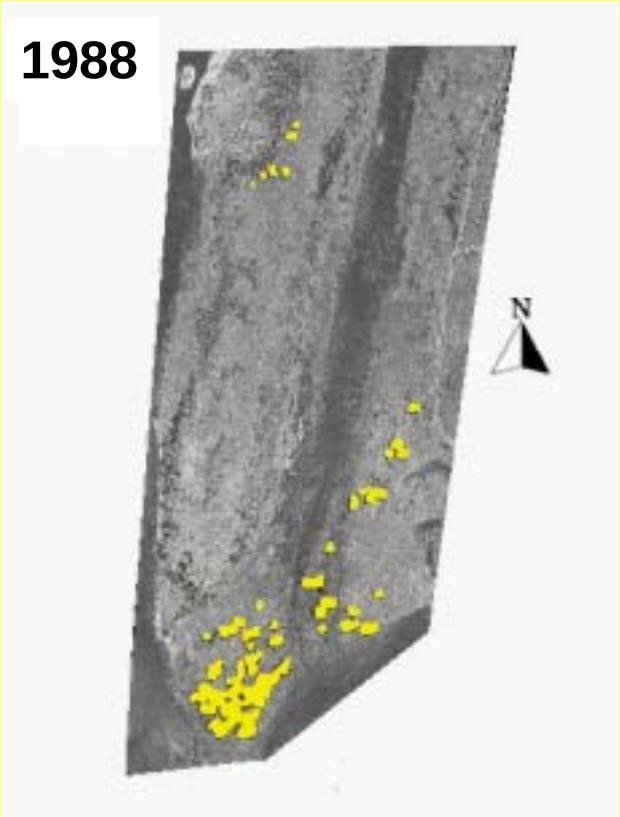
Non-Native Species:
St. Lawrence River vs. Great Lakes

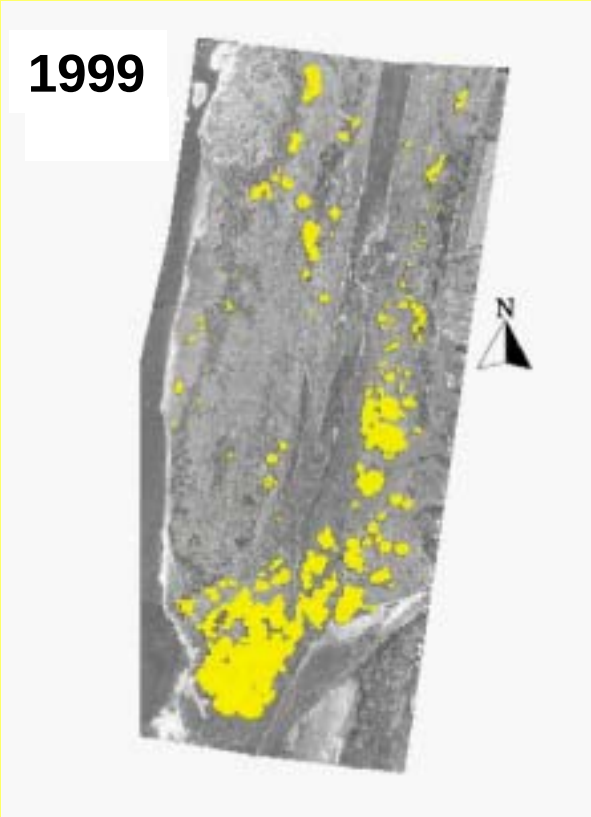


Source: De Lafontaine, 2000

Common Reed
(*Phragmites australis*)



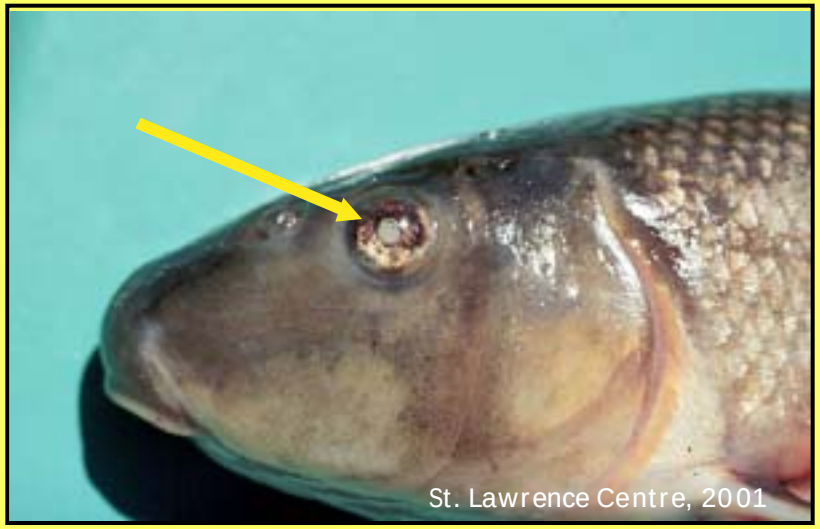




Other Changes
St. Lawrence Centre, 2000

Other Indicators of Biological Integrity

- Parasites
  - Use parasites to help evaluate food web structure and trophic interactions
  - Use parasite communities as indicators of pollution, other stressors and biodiversity



Other Indicators of Biological Integrity

- Mussels
  - Mussels are used to evaluate the impact of estrogenic chemicals
  - Mussels exposed for one year to a municipal effluent plume have an increased female/male ratio
  - Feminization of mussels apparent 11 km downstream of the plume

What is Monitored Now?

- Water
  - Toxic substances
  - Physical and chemical characteristics
  - Levels and flows
  - Water quality
- River Bed
  - Toxic substances
- Biological Resources
  - Wetlands
  - Marine plankton
  - Toxic algae
  - Fish
  - Seabirds
  - Great Blue Heron
  - Northern Gannet
  - Beluga Whale

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