

The Huron-Erie Corridor Initiative

of the Great Lakes Science Center

Huron-Erie Aquatic Habitat Workshop
February 3, 2005 Windsor, Ontario

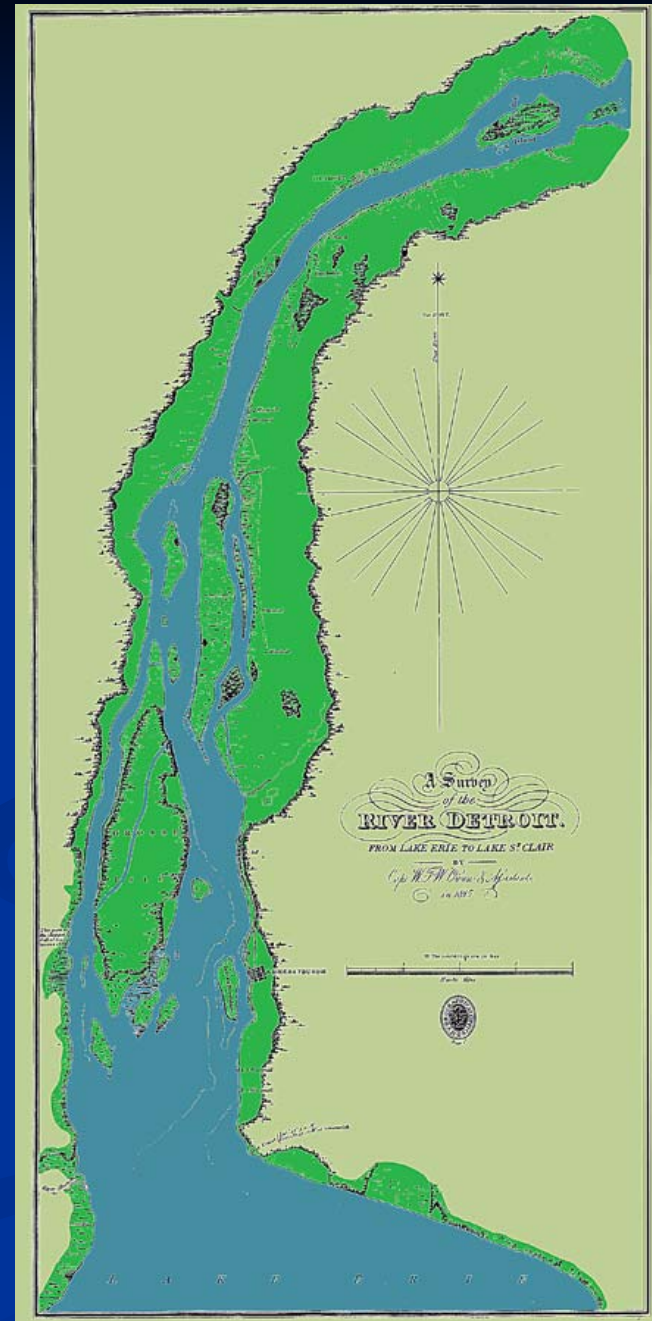
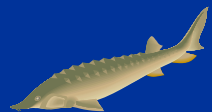


Changes in the Corridor

- The aquatic ecosystem of the HEC has been changed by shoreline development, substrate removal, shipping, recreation, water pollution, and invasive exotic species.
- Millions of cubic yards of rock and gravel were dredged from the Detroit River to build the cities of Detroit, MI and Windsor, ON and create the St. Lawrence Seaway shipping channel.



- The shoreline has been hardened.
- Coastal wetlands once existed on both sides of the Detroit River, up to a mile wide.



Changes in the Corridor (cont'd)

- 97% of the coastal wetland complex once found along both shores of the Detroit River has been destroyed by development.
- These changes have contributed to:
 - Reduction in native aquatic species and their habitats
 - Proliferation of invasive species
 - Decreased ecological resilience of the system



Two Destructive Invasive Species in the HEC



Round Goby



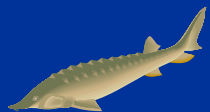
Invasives Disrupt Energy Flow and Decrease Ecological Resilience

- Zebra mussels –
 - Compete with native mussels for food and habitat
- Round goby
 - Compete with native fish for food and habitat
 - Eat eggs of native fishes



Restoration of Native Species

- The native species mix was more ecologically resilient, sustainable, and healthy than the present mix of native and exotic species.
- Restoration of native aquatic species and their habitat is a research focus of the Great Lakes Science Center.



Desirable Native Species

Lake Sturgeon



Darter



Native Mussels



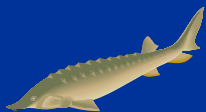
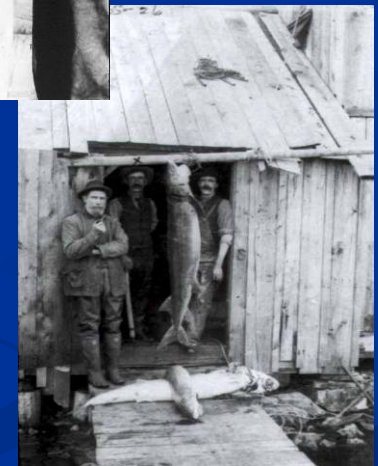
The Native Lake Sturgeon

- Lake sturgeon in the HEC

- History

1880 historic yield – 1.8 million kg (4 million lbs) per year from Lake Huron, Lake St. Clair, and the Detroit River.

- Currently at $< 1\%$ of their former abundance.



Native Lake Sturgeon (cont'd)

- Causes of population decline
 - Overfishing
 - Invasive species that prey on sturgeon eggs
 - Removal of rock substrate
- A remnant population of lake sturgeon inhabits the Huron-Erie Corridor.



What is the Relationship Between Lake Sturgeon and Certain Invasive Species?

Round goby



?

Zebra
mussel



Sturgeon Feed on Gobies & Zebra Mussels

- Round gobies

- Preferred food of lake sturgeon in the HEC (Thomas & Haas 1999).

- Zebra mussels

- Primary food source for 24" lake sturgeon in Oneida Lake, N.Y. (Dittman 2004).



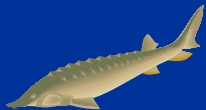
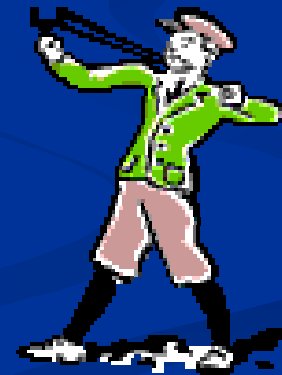
Can We Kill 2 Birds with One Stone?

Can we:

Increase native lake sturgeon populations

AND

Decrease round goby and zebra mussels?

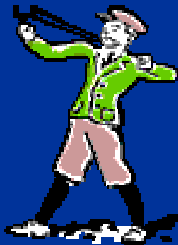


Our Research Strategy is to “Reset” the Ecosystem and Restore Ecological Resilience

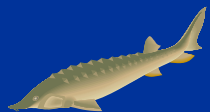
Increase the abundance of lake sturgeon
in the Detroit River by stocking large
numbers of small sturgeon.



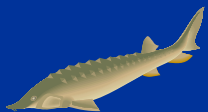
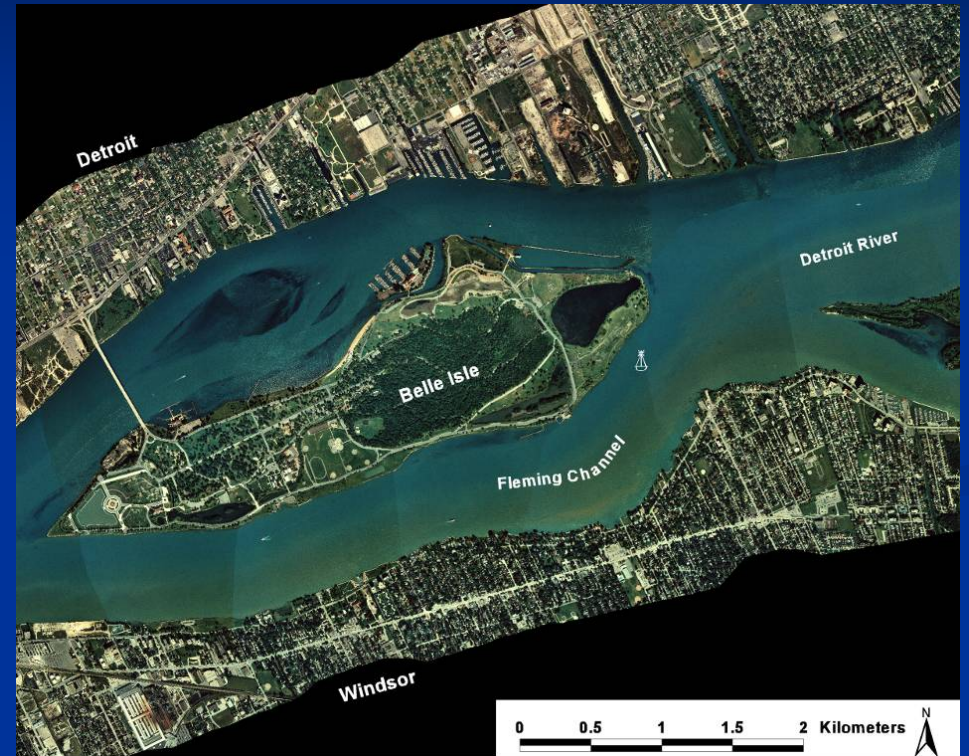
Reduce the abundance of zebra mussels and
gobies through sturgeon predation.



Ecosystem Perspective:



- First steps:
 - Surveyed historic spawning sites in the HEC.
 - We constructed spawning habitat at Belle Isle in 2004.



Summary

- Changes in the HEC have resulted in loss of aquatic habitat and a decrease in native species.
- Invasive species such as zebra mussels and round gobies compete with native species for food and habitat.
- We can reset the HEC ecosystem through lake sturgeon restoration and habitat creation.
- Collaboration and public involvement are vital to success.



The Future

