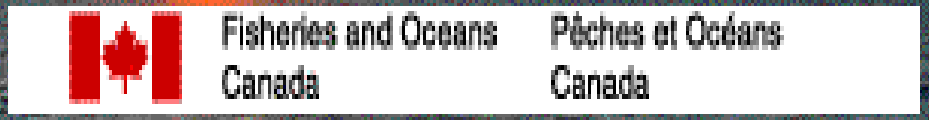
Lake Huron
The Lake in the Middle

- Larry Schleen - Fisheries and Oceans Canada
- Jim Bredin - Michigan Office of the Great Lakes

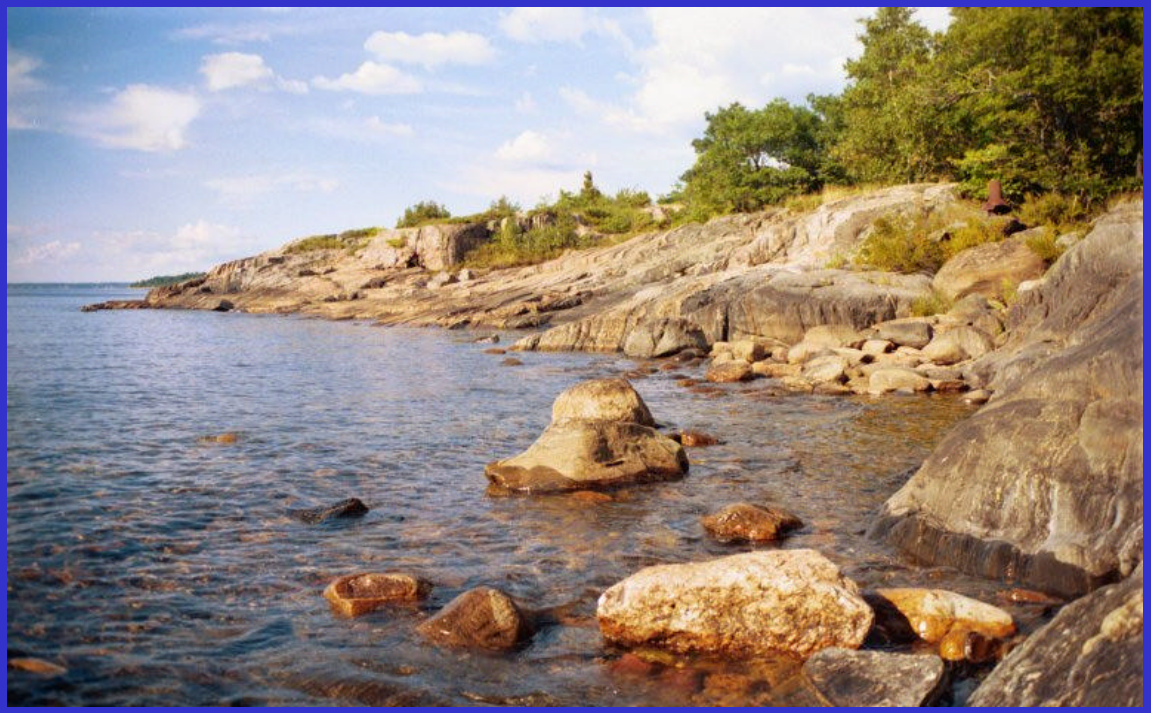


Lake Huron

From the sandy eastern shores of Michigan, USA...

Lake Huron

…to the rocky shores of northern Georgian Bay, Canada.



Courtesy of Georgian Bay Association

Lake Huron

....more islands than any other lake in the world, the largest island, Manitoulin, of any freshwater lake and the longest lakeshore when the 30,000-plus islands are included

Prepared by: Environment Canada - Atmospheric Environment Branch, Geomatics Unit

Lake Huron

Historical discharges have have caused serious problems in a number of areas within the basin.

Lake Huron

- 2.5 million people, most in southern portion of basin
- Increasing pressure for seasonal land uses, threatening wildlife habitat and unique ecosystems

Lake Huron

- Low degree of industrialization, except Saginaw Bay area and Sarnia
- Saginaw Bay still supports some of the most extensive coastal habitat in the Great Lakes

Lake Huron - The Details

- Threat of critical pollutants to human health and wildlife
- Sources of critical pollutants, recommended actions
- Remaining habitat resources
- Sources of stress to the habitat, recommended actions
- Recent successes and needed actions

Impaired Uses

- Restrictions on fish or wildlife consumption caused by high concentrations of critical pollutants
- Degradation of fish and wildlife populations caused by non-native species, sedimentation and loss habitat
- Loss of fish or wildlife habitat caused by loss of wetlands and high gradient streams, and increased sedimentation

Critical Pollutants

Critical pollutant has been identified and include:

- PCBs
- Chlordane
- Dioxins
- Mercury
- Sediment/ Suspended Solids
- DDT

Contaminant Trends

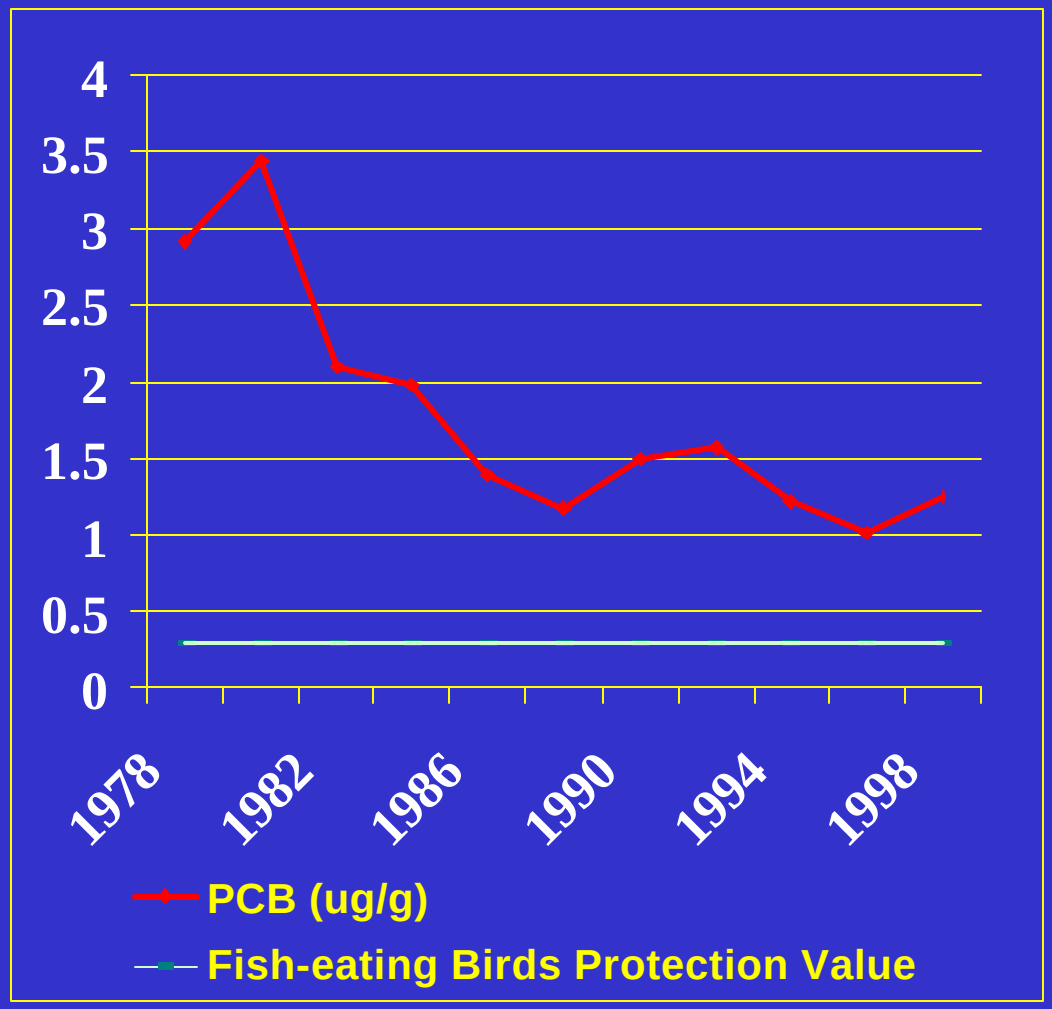
- Contaminant concentrations are relatively low
- Public health advisories exist regarding fish consumption

Fish Consumption Advisories

- PCBs
- Chlordane
- Dioxins
- Mercury
- DDT/ PBBs
- Toxaphene

Contaminant Trends

- Concentrations declined significantly in lake trout (whole fish)
- Still above the protection values for fish-eating birds and mammals



Contaminant Trends

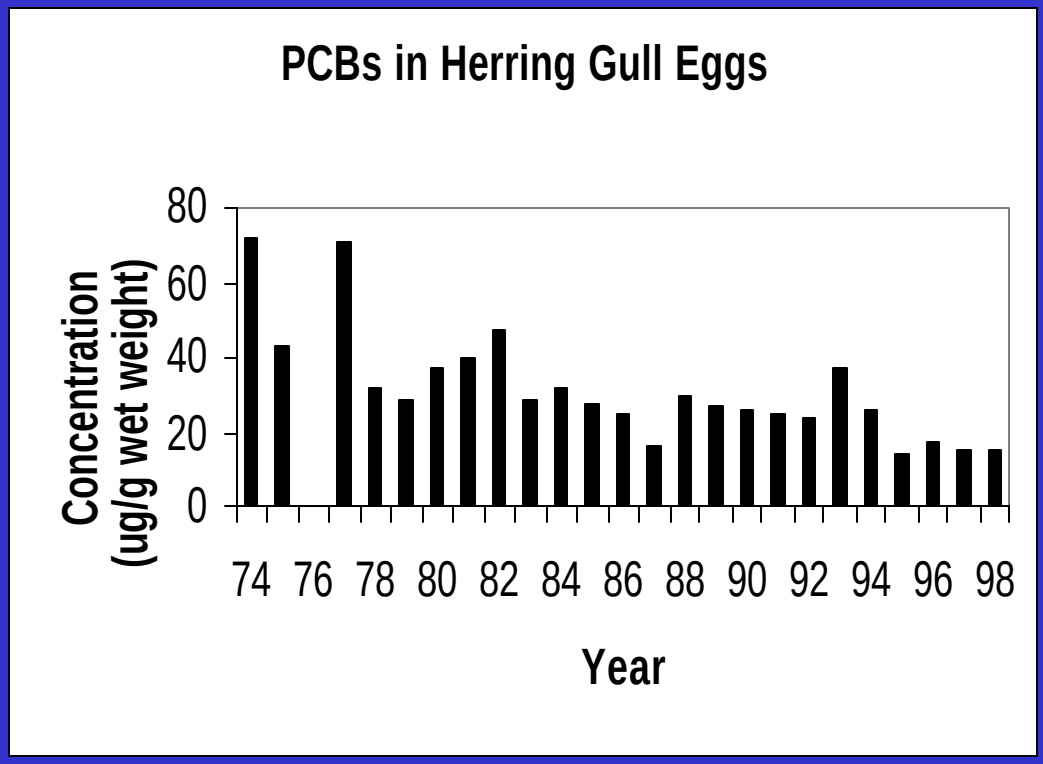
- PCB - no significant decline since the mid 1980s
- Continuing sources: historical discharges, air deposition

Contaminant Trends

Fish	Long-term	Recent
DDT	↓	↓
PCB	↓	No change
Dieldrin	↓	
Dioxins	↓	
Mercury	↓	No change

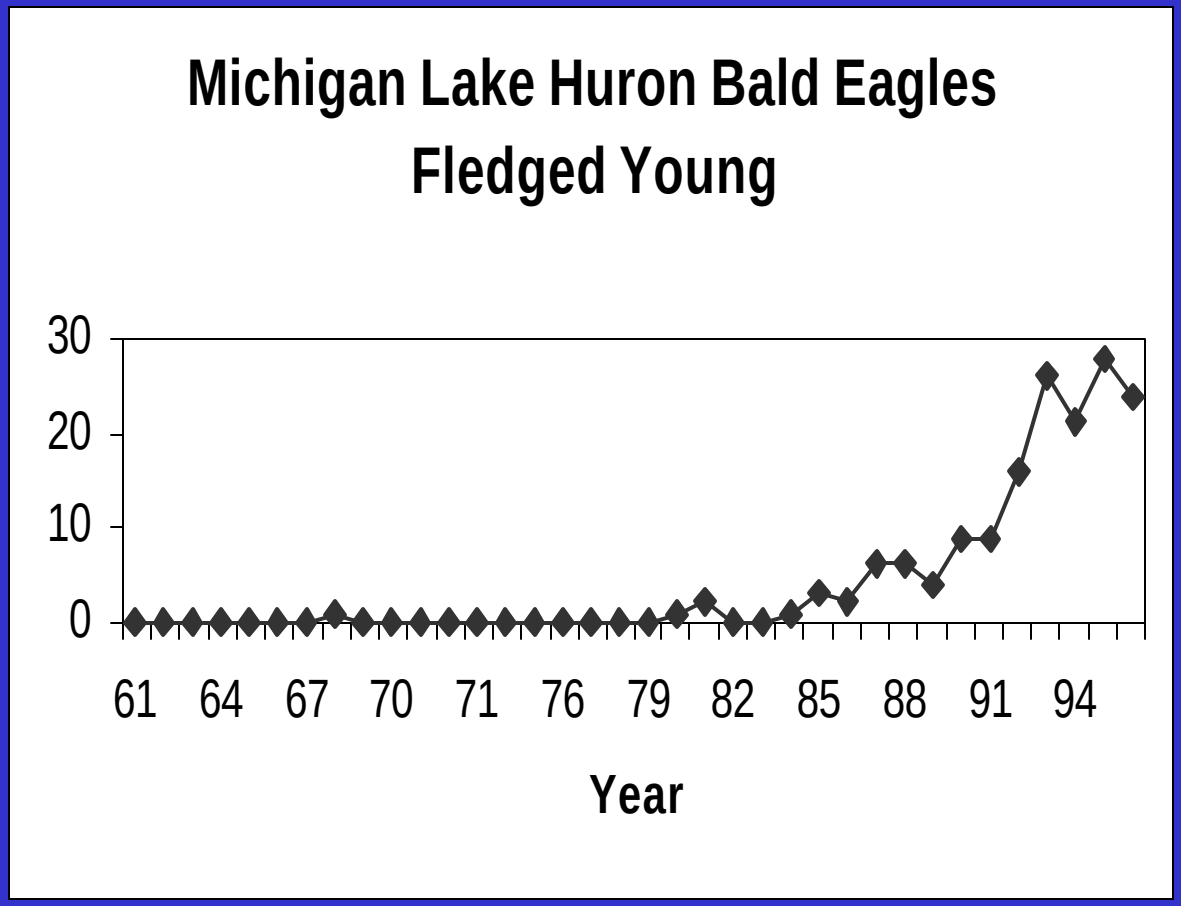
Contaminant Trends: Fish Eating Birds

- Rate of decrease has slowed
- Most populations have become re-established
- Problems continue



Contaminant Trends

- Eagle population continues to grow
- Interior breeding areas have greater productivity

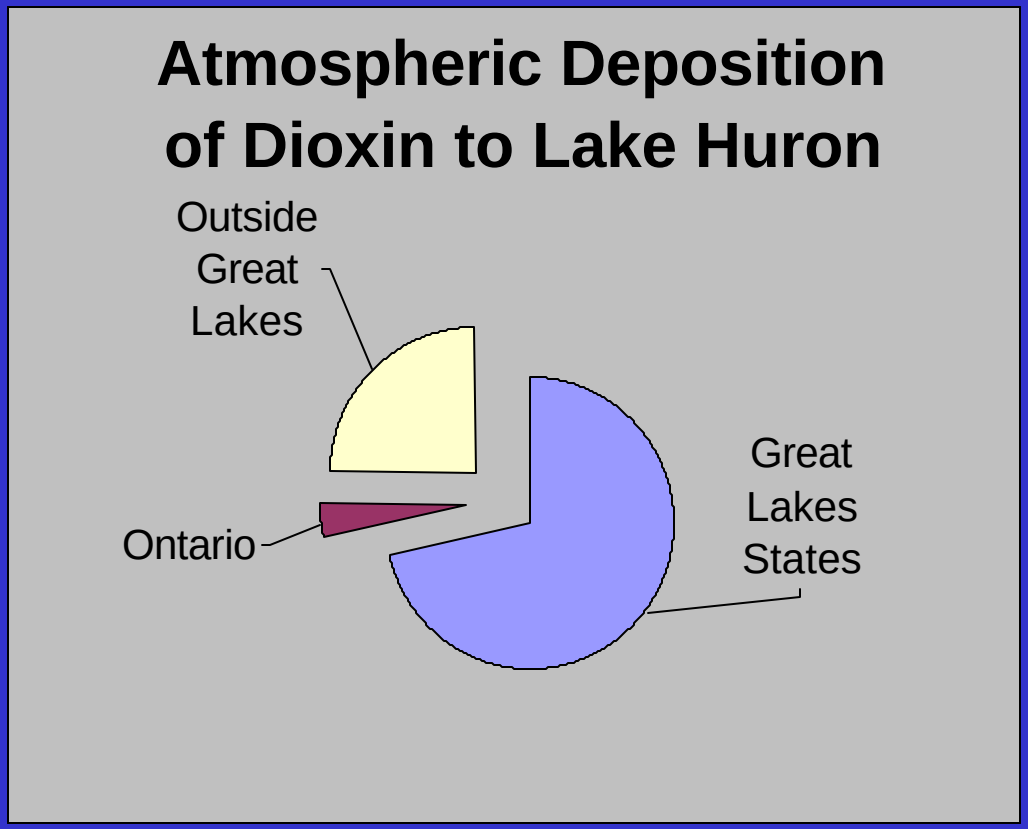


Areas of Concern

- Collingwood Harbour (delisted)
- Spanish River
- Severn Sound
- Saginaw River/Saginaw Bay
- St. Marys River
- St. Clair River

Contaminant Sources

- Loadings from water sources are the lowest of the Great Lakes
- Air sources are highest
- 80-90% of Dioxins are from atmospheric sources



Addressing Critical Pollutants

- Few sources of pollutants within the basin compared to other Great Lakes
- Need to address Areas of Concern, especially contaminated sediments
- Out-of-basin efforts required to address atmospheric deposition

Nearshore Areas

- Nearshore terrestrial ecosystems sustain an amazing diversity of wildlife

Courtesy of Ducks Unlimited

Nearshore Areas

- The nearshore area habitats at one time, encircled the lake
- Where these remain, they are an important resource for fish and wildlife

Courtesy of Lake Huron Centre for Coastal Conservation

Coastal Wetlands

- The diversity of wetland types contribute the complexity of the habitat
- Local conditions create niches for a diverse community

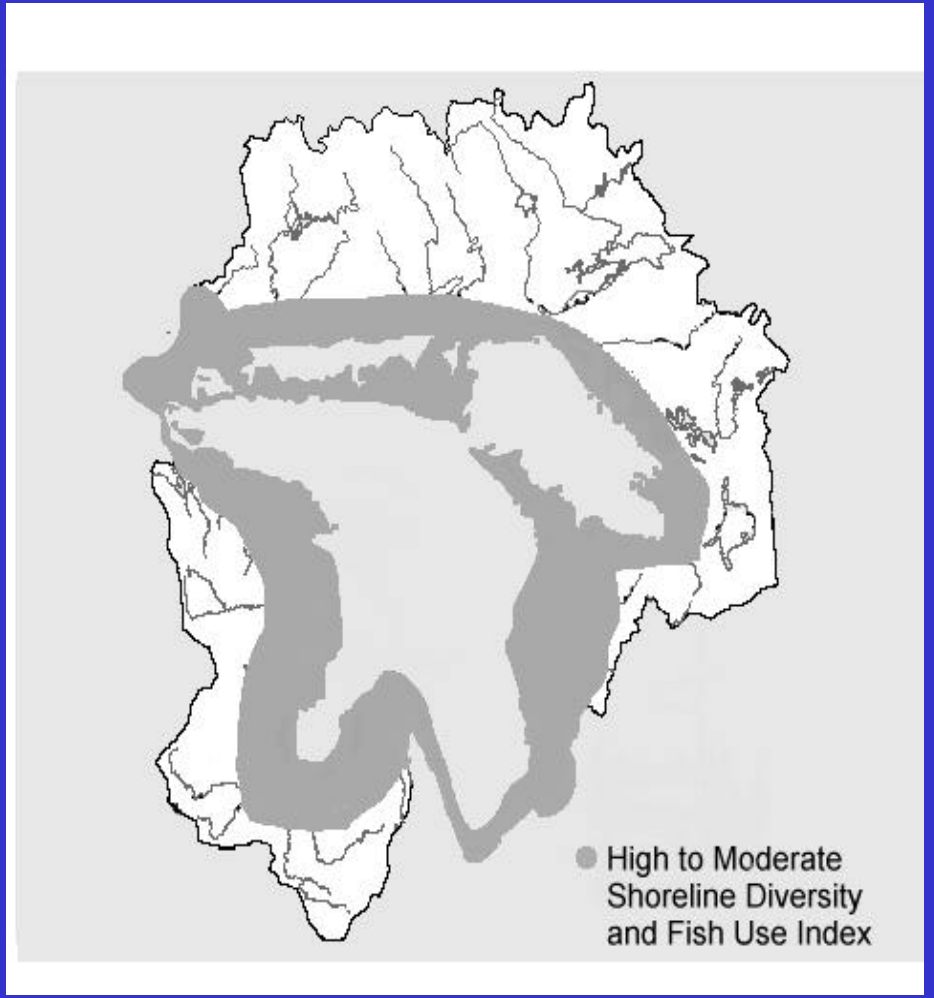
Courtesy of Ducks Unlimited

Habitat

- Saginaw Bay continues to provide essential fish and wildlife habitat
- Continued loss of wetlands is a serious threat to habitat

Biodiversity Investment Areas

- Many sections of Lake Huron have high ecological values which warrant exceptional attention.



Critical Stresses

- Degradation and loss of historical habitat in tributaries
- Degradation and loss of near shore habitat
- Non-native species, over-fishing, and reproduction failure

Fishery Concerns

- Open water habitat remains steady
- Lake trout reproduction occurring but rate is not sufficient
- Fisheries dependent on hatchery production and non-native species

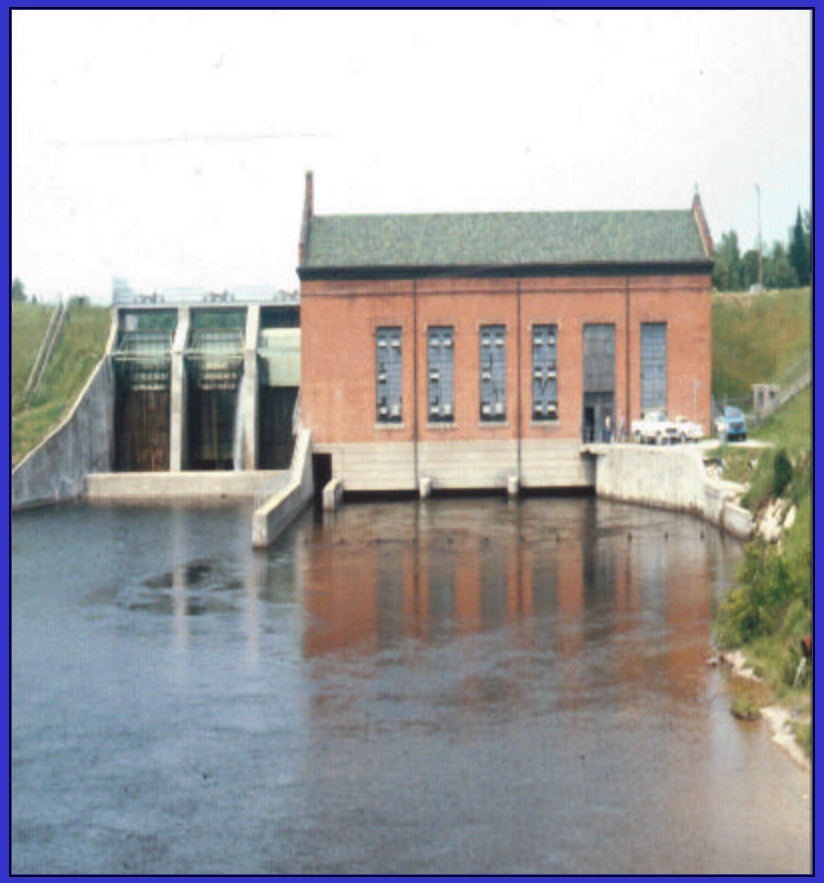
Courtesy of Michigan Department of Natural Resources

Fisheries Goals

- protect and enhance existing habitats and rehabilitate degraded habitats
- achieve no net loss of the productive capacity of habitat
- restore damaged habitats
- support the reduction of contaminants

Fishery Concerns

- Historically, tributaries were important sources of cool, high quality water serving as spawning and nursery habitat
- Fish have been excluded from many tributaries through construction of dams



Courtesy of Michigan Department of Natural Resources

Fishery Concerns

- A deterrent to achieving balanced fish communities is inadequate habitat for all life cycle stages
- Dams now fragment many streams where historical spawning occurred

Courtesy of Michigan Department of Environmental Quality

Nearshore Areas

- Many areas have been altered for shoreline protection structures
- In many cases, the band of transitional vegetation is now gone
- The cumulative impacts of these structures is significant and increasing

Coastal Wetlands

- Most losses have been around small urban centers on the lakeshore
- Losses has been due to agriculture, cottage development, road construction, dredging and channelization

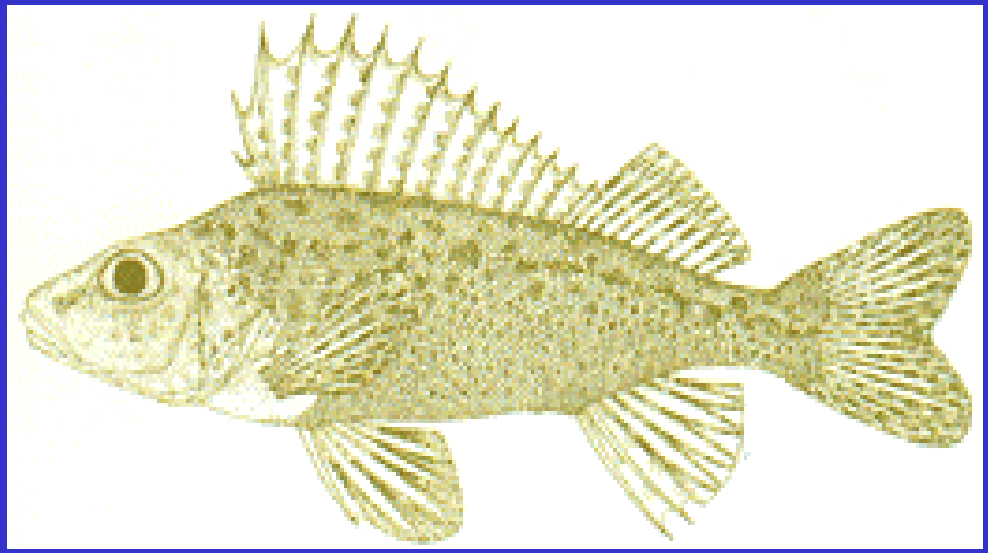
Coastal Wetlands

Current stresses on coastal wetlands include alteration of:

- habitat
- hydrology
- physical processes
- biological structure
- chemical regime

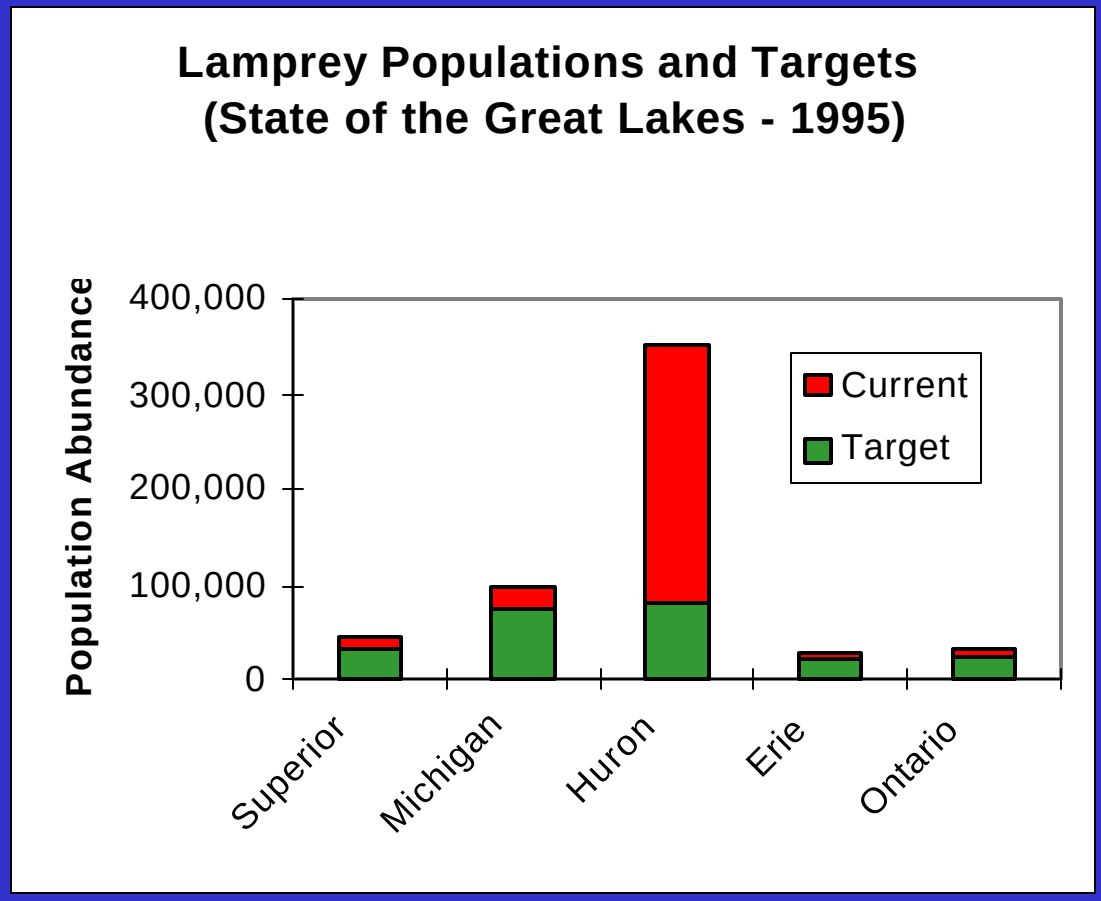
Non-native Species

- Non-native species causing significant stress include the sea lamprey, zebra mussel, ruffe, round goby, and purple loosestrife



Sea Lamprey

- The lamprey problem, associated with production from the St. Marys River, is the most severe impediment to a healthy fish community

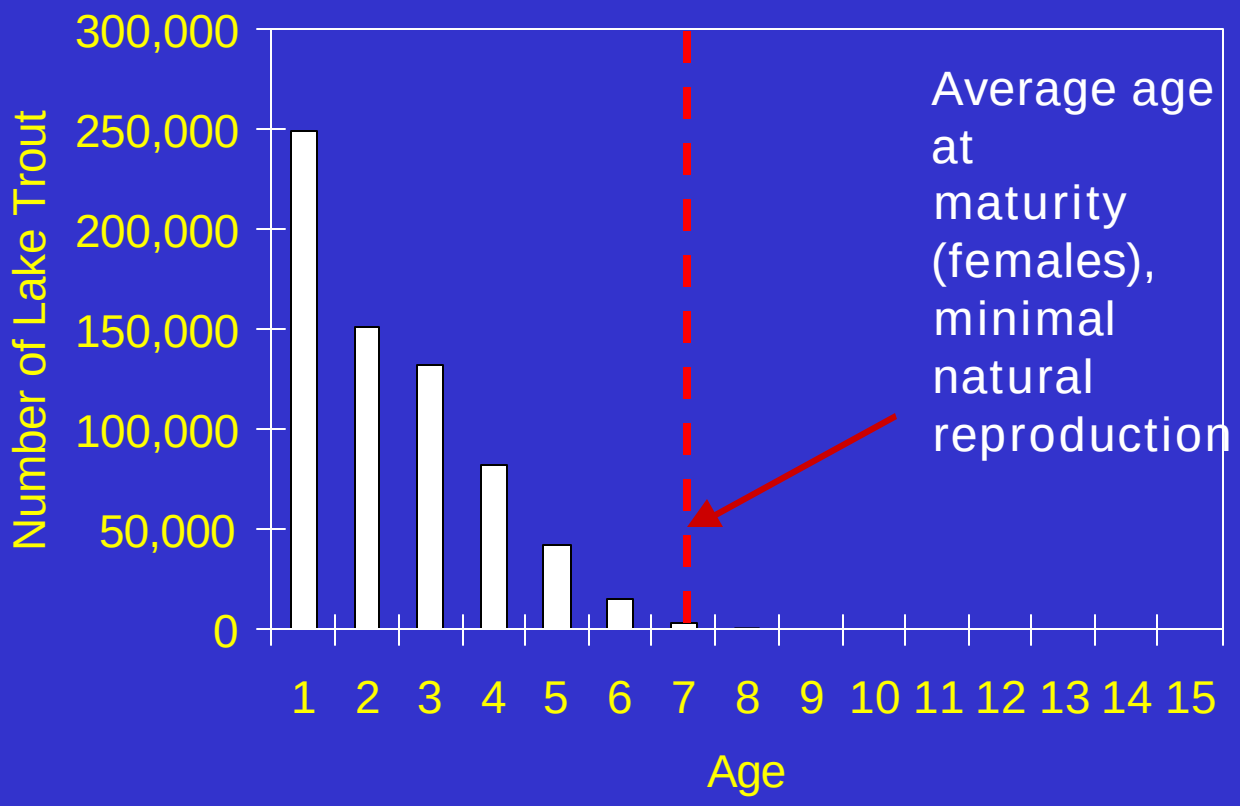


Sea Lamprey Control

- Cost-effective sea lamprey control on the St. Marys River may now be within reach
- The lamprey population is expected to be reduced by 85% by 2010

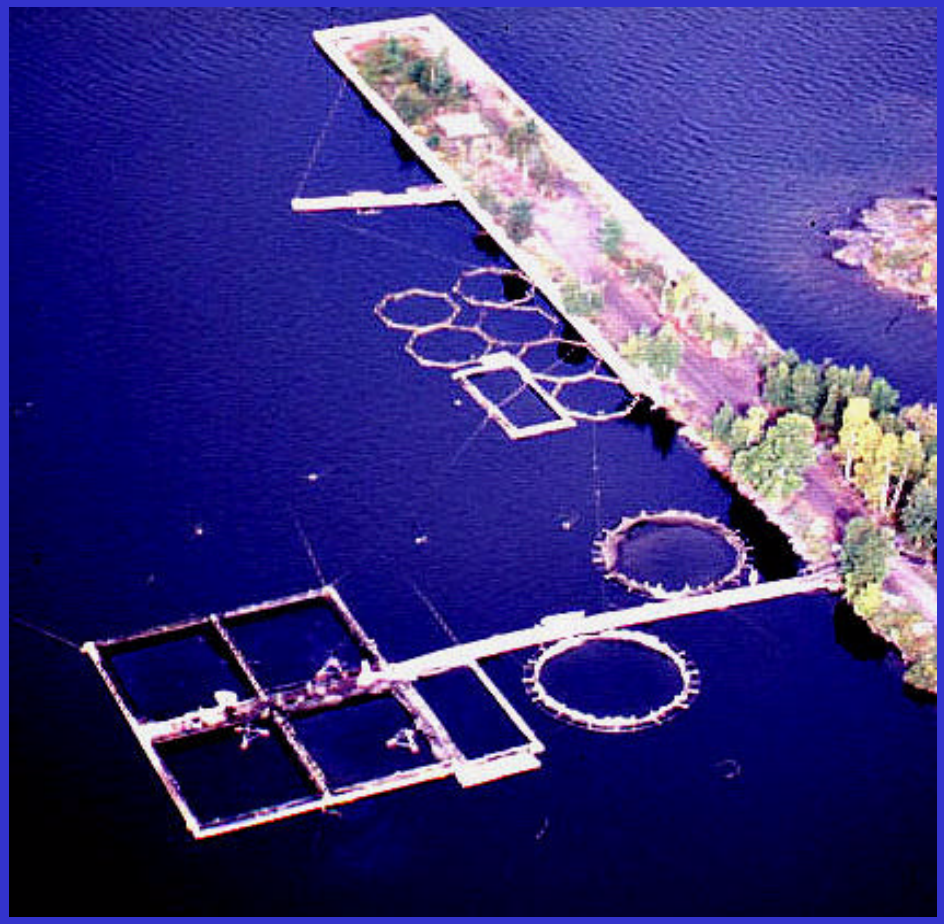
Courtesy of Great Lakes Fishery Commission

1983 TREATY NEGOTIATIONS: ENHANCED LAMPREY CONTROL LEVERAGES BETTER CONTROLS OF FISHING MORTALITY



Fish Farming - Aquaculture

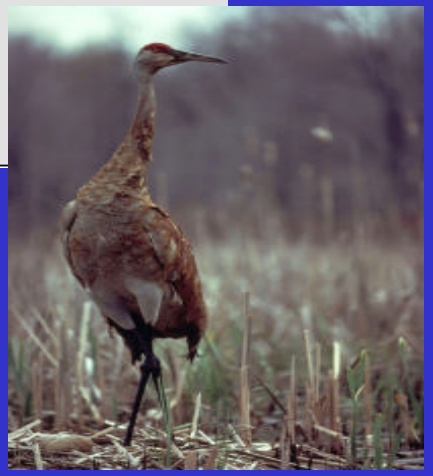
- Concern from a fisheries and environmental perspective
- Now accounts for over 60 percent of rainbow trout production in Ontario waters



Courtesy of Ontario Ministry of Natural Resources

Lake Huron Initiative Action Plan

March 2000



Prepared by:

Office of the Great Lakes
Michigan Department of Environmental Quality

Key Actions Now Underway

- Michigan and Ontario are developing a bi-national GIS system
- Dredging the Pine and Saginaw Rivers
- Protecting habitat in the Saginaw Bay watershed
- Implementing the Conservation Reserve Enhancement Program in the Saginaw Bay watershed
- Securing funding to maintain a full lamprey control program

Actions Needed

- Controlling atmospheric inputs
- Aquatic nuisance species control program
- Restoring lost habitat
- Continuing progress in Areas of Concern
- Implementing watershed management plans
- Full funding for lamprey control program
- Local protection/restoration efforts
- Lower trophic level research
- Source control for pathogens (Saginaw Bay and Southeast Lake Huron

Conclusions

Point Source Controls	Good
Nonpoint Source Controls	Mixed
Atmospheric Deposition Controls	Poor
Nearshore Area Protection	Mixed
Hardened Shorelines	Poor
Tributary Habitat Restoration	Mixed
Control of Non-native Species	Mixed
Progress in Areas of Concern	Good

Lake Huron Initiative

- For additional information regarding the Lake Huron Initiative go to:

http:www.deq.state.mi.us/ogl/huron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