

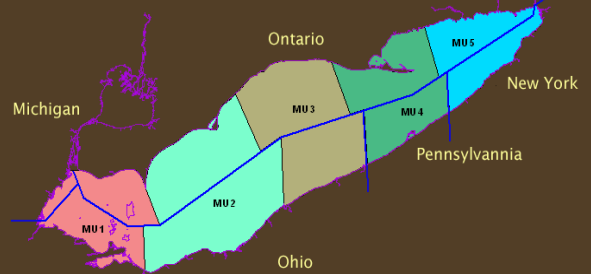
## Lake Erie Fishery



Phil Ryan

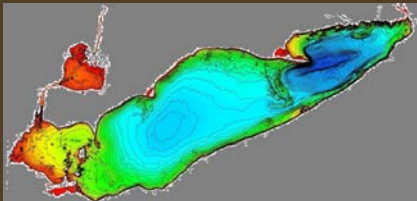
Ontario Ministry of Natural Resources

## Lake Erie walleye management units



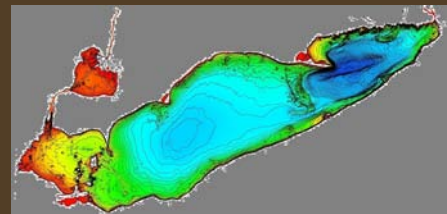
The Lake Erie Committee (LEC) provides a mechanism for coordinated management of Lake Erie's fisheries by the states of Michigan, Ohio, Pennsylvania and New York and the province of Ontario, supported by three federal agencies (USFWS, USGS, DFO-Canada) and by the Great Lakes Fishery Commission ([www.glfcc.org](http://www.glfcc.org)).

## Goals established by Lake Erie Committee (LEC) for Lake Erie's fish communities



- Recognizes that 75% of the volume supports cool-water fish community
- To secure a balanced, predominantly cool-water fish community, with walleye as a key predator in the western basin, central basin, and nearshore waters of the eastern basin
- Community of self-sustaining indigenous and naturalized species occupy diverse habitats, provide valuable fisheries, reflects a healthy ecosystem

## Goals established by LEC for Lake Erie's fish communities

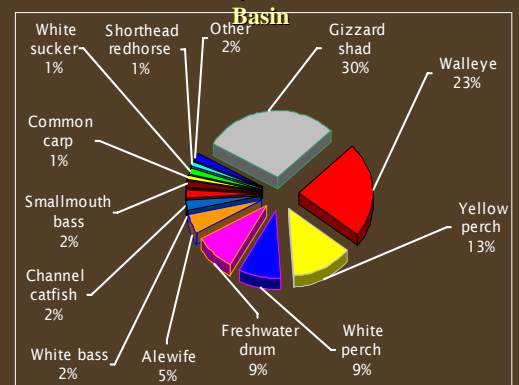


- 25% of the volume supports coldwater species
- To secure a predominately cold-water fish community in the deep, offshore waters of the eastern basin with lake trout and burbot as key predators

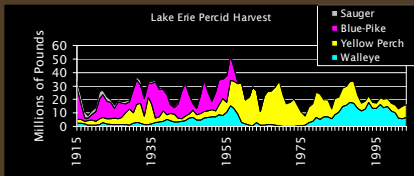
## Time lines for assessment of status

- Historical reference to establish original species list(s) for lake/basins - native biodiversity
- 1970 - perhaps worst year for eutrophication and year of intensive study of Lake under Project Hypo
- "Post GLWQA" - 1980s, phosphorus loads reach targets set under Great Lakes Water Quality Agreement (GLWQA)
- 2004 - after zebra mussel colonization, and expansion of round gobies Lakewide

## Lake Erie fish community (biomass) in Western Basin



Source : Lake Erie Partnership Index 2000



### Coolwater Community

Species	Historical Context	Post GLWQA	Status 2004	Comments
Blue Pike	extinct			
Sauger	"regionally extinct"			
Yellow Perch	more abundant	+++	Good	Natural variability
Walleye (SOLEC Indicator)	more abundant	+++	Poor	Improving
Lake Sturgeon	limited distribution	rare	Poor	Improving
Burrowing Mayflies (SOLEC Indicator)	limited distribution	+	Mixed	Natural variability

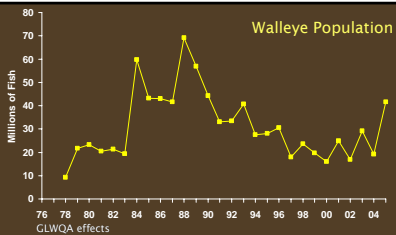
Community Status

Mixed Improving

## "Extinct" at a population or stock level

- Within North America, we have adaptation within a species, across its range (e.g., tolerance of largemouth bass to winter temperatures)
- Each Lake may have a "population" and further breakdown into "stocks" that use different spawning areas
- Extinction has a global meaning – the species no longer exists
- Loss of populations or stocks is a significant loss of genetic resources to both the species and the ecosystem
- In this usage we recognize the loss at a population level or lower at stock levels
- Blue pike is globally extinct, sauger is regionally extinct in Lake Erie

## Coolwater species



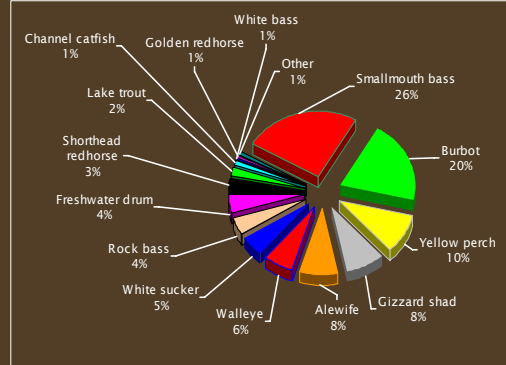
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Community Status

Mixed Improving

## Lake Erie fish community (biomass) in Eastern Basin



Source : Lake Erie Partnership Index 2000

## Coldwater species

### Coldwater and associated species

Species	Historical Context	Post GLWQA	Status 2004	Comments
Long-jaw Cisco	"regionally extinct"			
Lake Herring	rare			
Shiny Sculpin	"regionally extinct"			
Spoonhead Sculpin	"regionally extinct"			
Lake Trout (SOLEC Indicator)	regionally extinct	pre-lamprey control stocked		Improving
Diporeia hoyi (SOLEC Indicator)	"regionally extinct"	+++		
Mysis relicta	"rare"		Poor	Undetermined
Lake Whitefish	"common"	+	Mixed	Natural variability
Burbot	abundant	+	Good	Natural variability

Community Status

Mixed

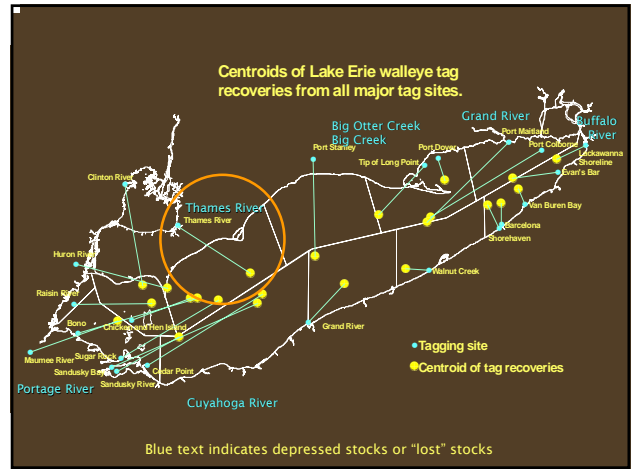
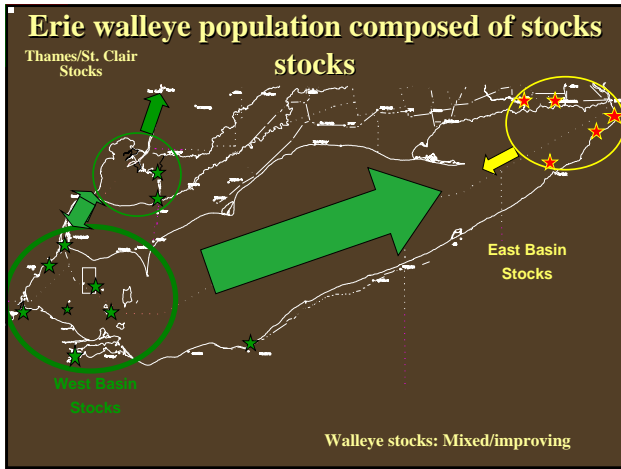
## Great Lakes indicator: Prey fish community

Status: Poor, climate effects on stability



February 14, 2001





## Summary

- Aquatic communities have lost biodiversity
- Within that context:
  - Coolwater - mixed improving
  - Coldwater - mixed
  - Prey Species - poor
- Biological integrity requires maintenance of top predators to structure community
- Rehabilitation of walleye and lake trout stocks needed
- Top predators - mixed improving