

# Sea lamprey control on the Great Lakes: Process, status, and updates

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Great Lakes Fishery Commission

October 30, 2019  
International Conference on Aquatic Invasive Species

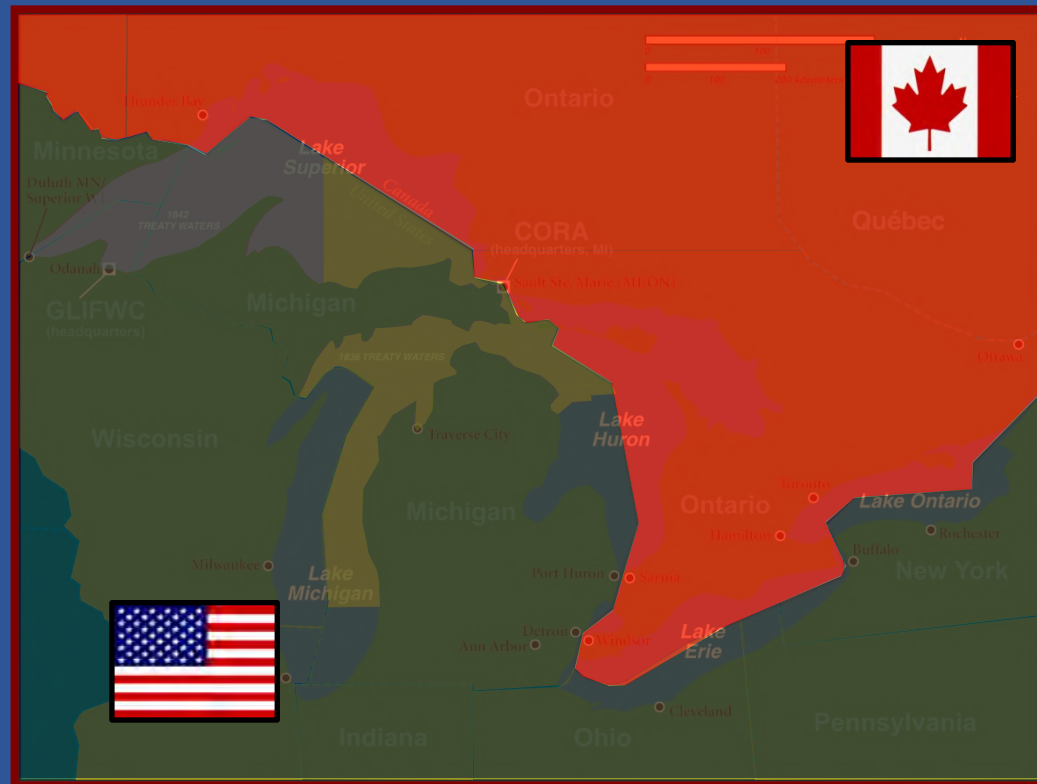


# Great Lakes Fishes



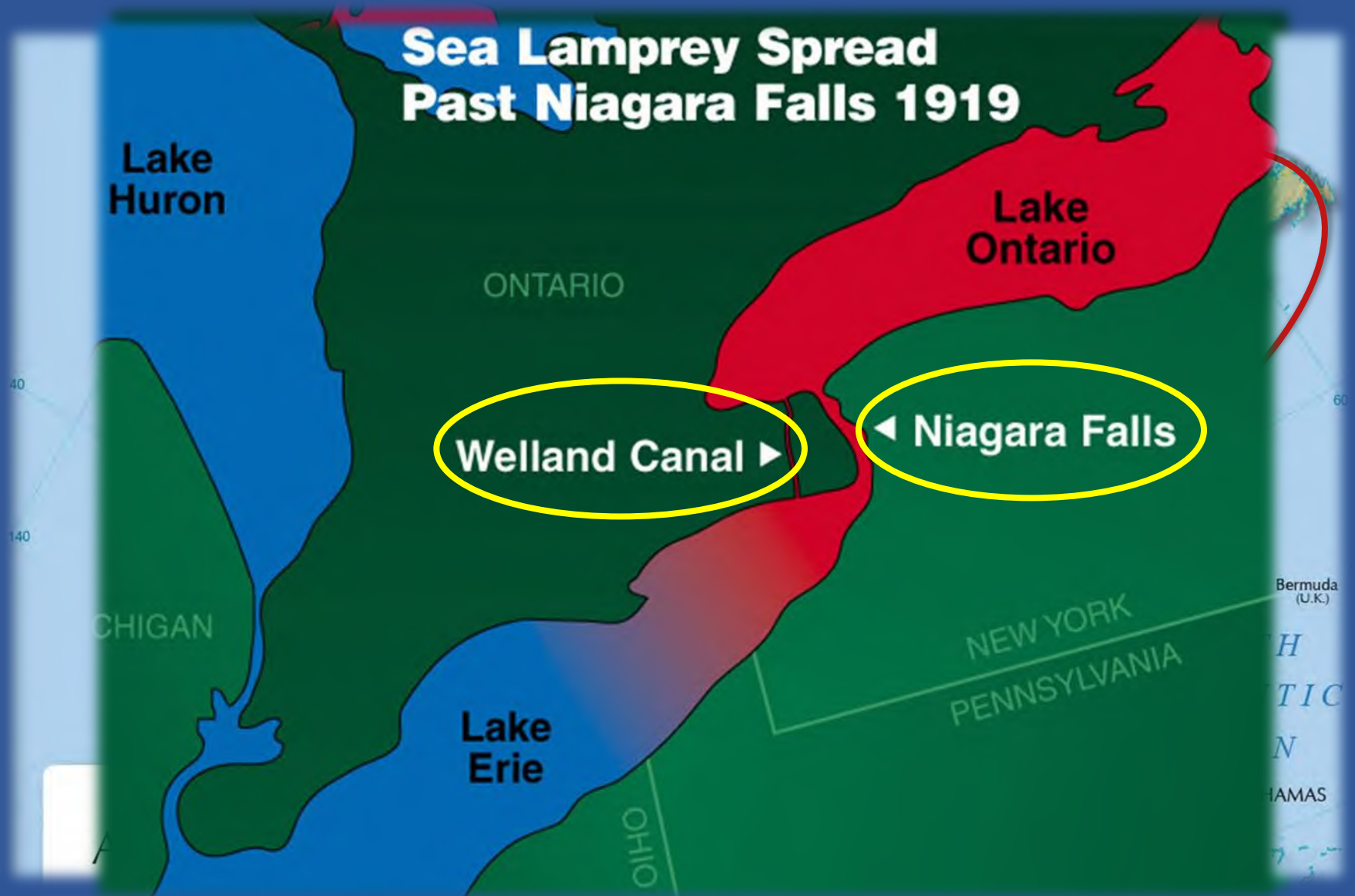
- \$7 billion fishery
- 75,000 jobs
- Backbone of local communities
- Shared resource

# Interjurisdictional fisheries



# SEA LAMPREY INVASION

## Sea Lamprey Spread Past Niagara Falls 1919





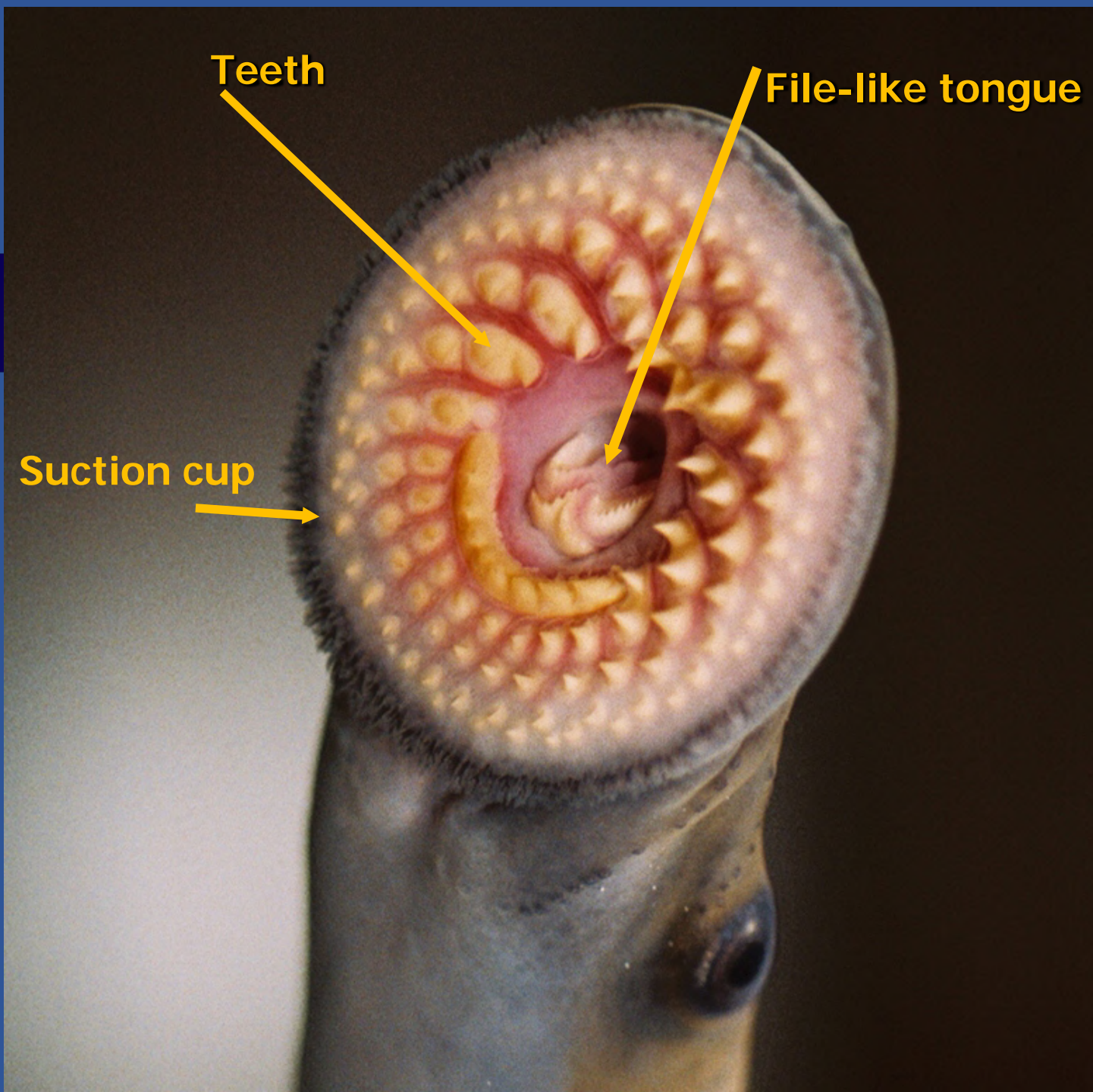




Suction cup

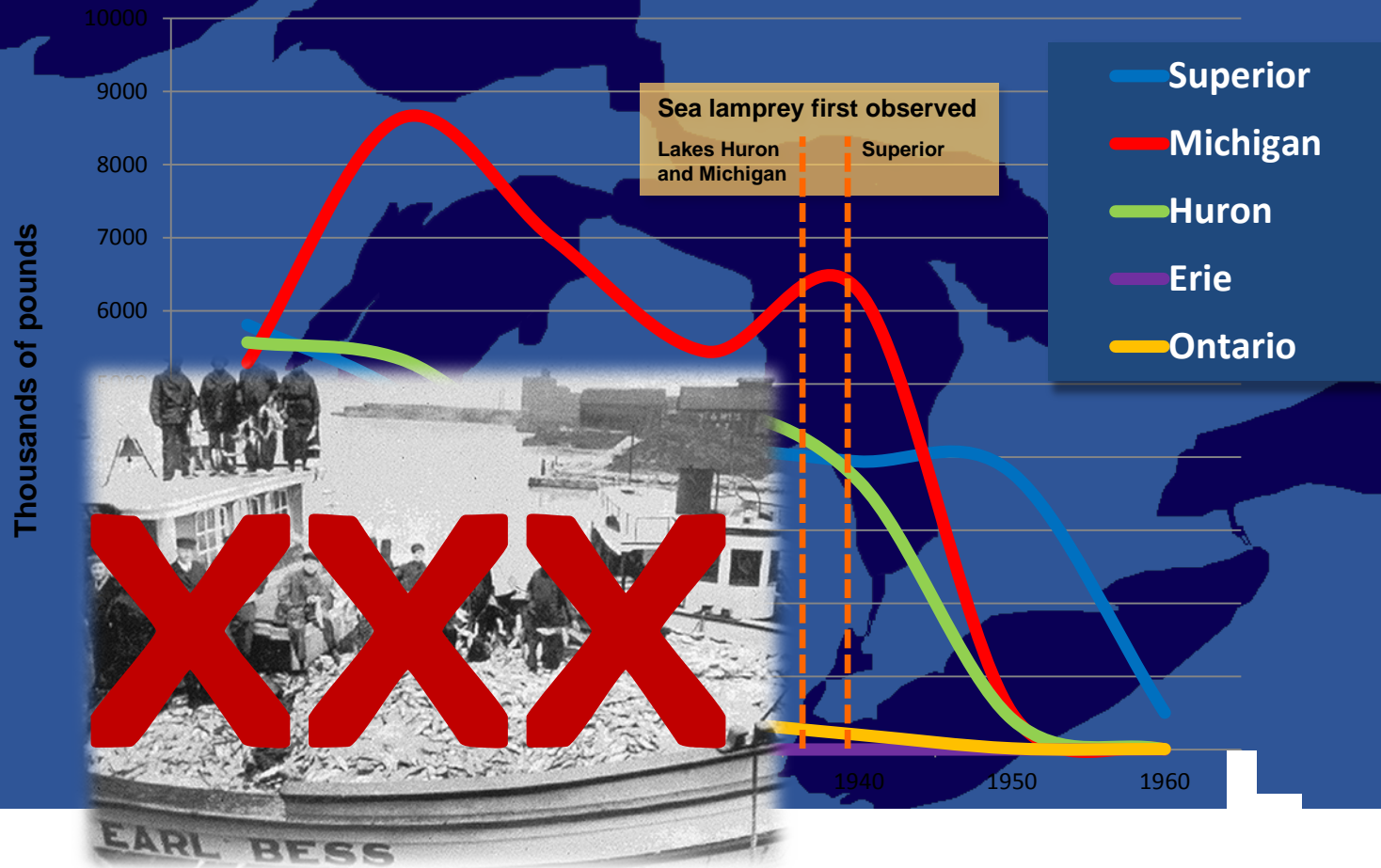
Teeth

File-like tongue



# Sea Lamprey: A Devastating Invader

## Commercial Lake Trout Harvest



# INTERNATIONAL FISHERY COMMISSIONS

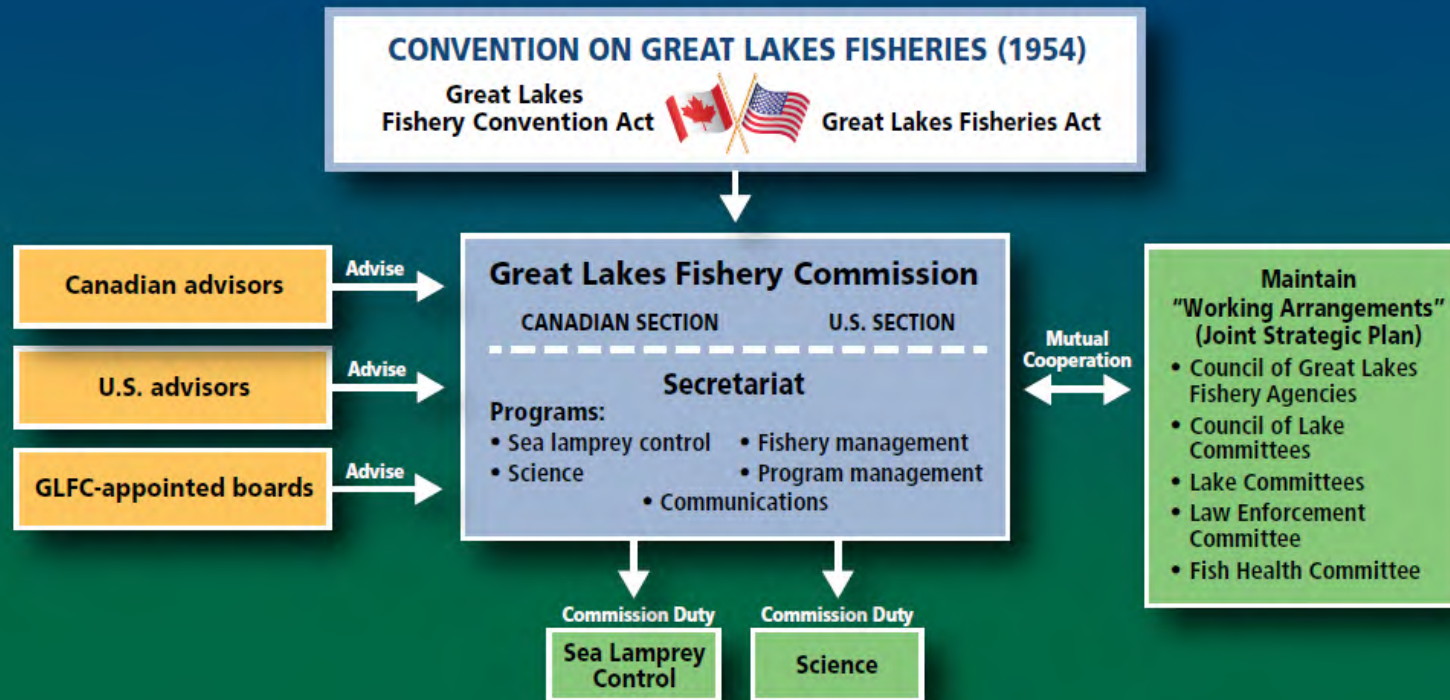
- Bi- or Multi-lateral Institutions
- Delineate rules, responsibilities, and commitments
- Forums for deliberation and policy development
- Conduct and coordinate scientific basis for management
- Establish common management practices and shared goals
- Some manage fisheries and address allocation

Goal: Multi-jurisdictional  
cooperation and  
sustainability





# GREAT LAKES FISHERY COMMISSION STRUCTURE



# GLFC DUTY: MAINTAIN WORKING ARRANGEMENTS

- Many jurisdictions on the lakes
  - Provincial, state, tribal, federal, binational
- Complex issues
  - Ecosystem/science matters
  - Translate science into management
  - Balance competing interests
- Agencies need to work together

## A Joint Strategic Plan for Management Of Great Lakes Fisheries

- Signed in 1981; revised in 1997
  - Great Lakes Fishery Commission facilitates
- Highly successful agreement!



# GLFC DUTY: COORDINATE FISHERY RESEARCH

- Fisheries Research
- Sea Lamprey Research
  - In partnership with U of Guelph, USGS, MSU
- Science Transfer
  - Get the science to those who will put it to use

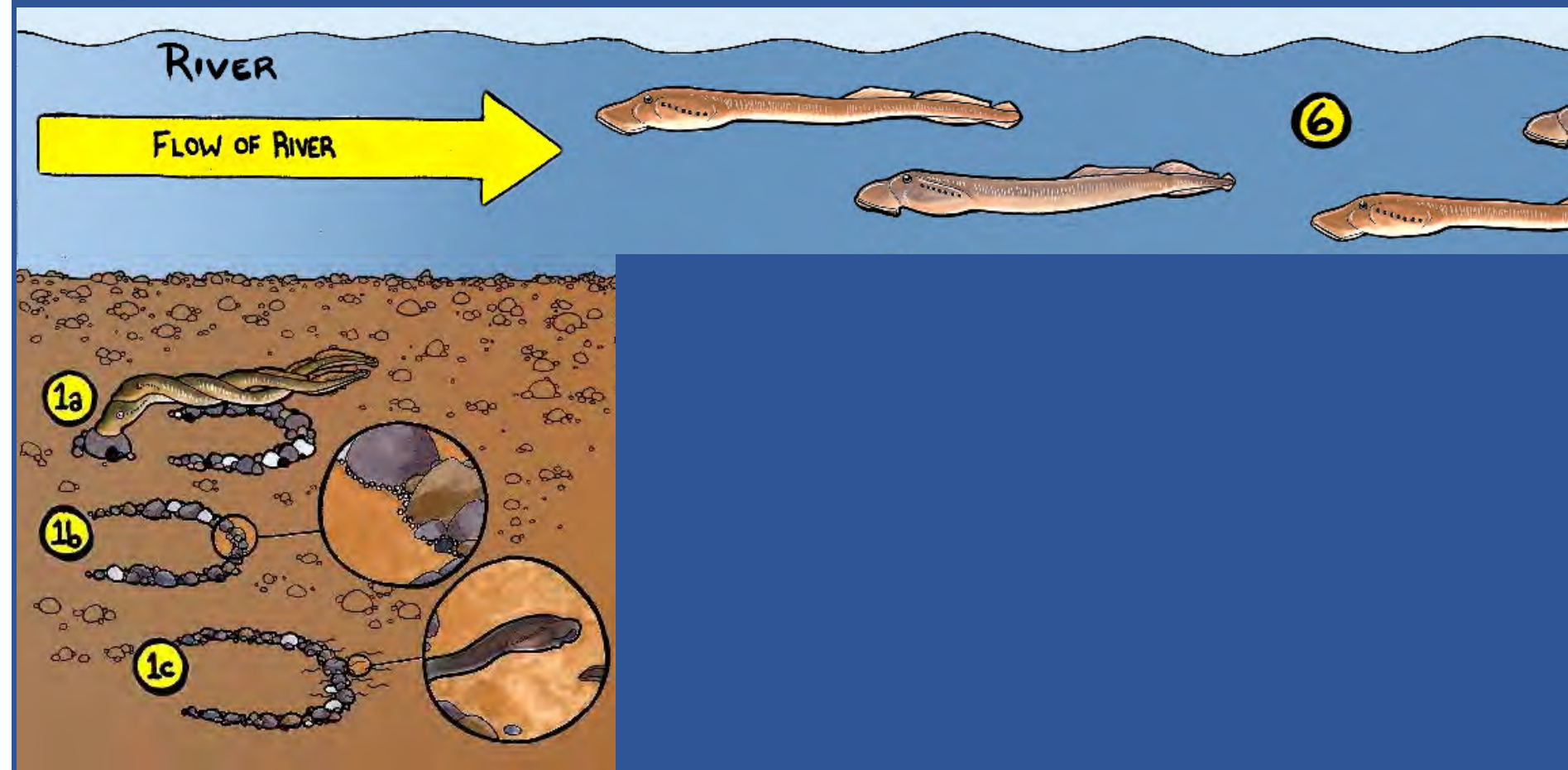




# GLFC DUTY: CARRY OUT SEA LAMPREY CONTROL



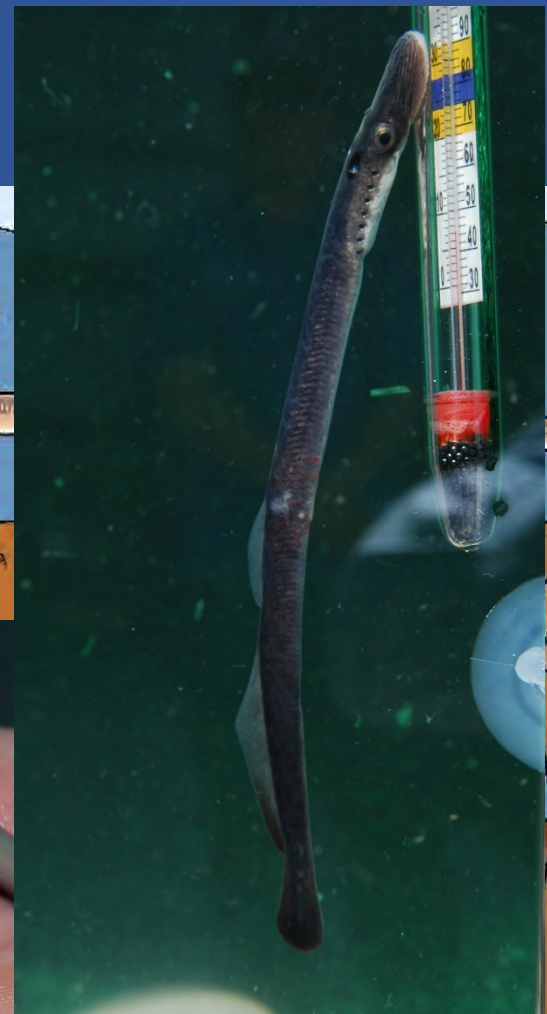
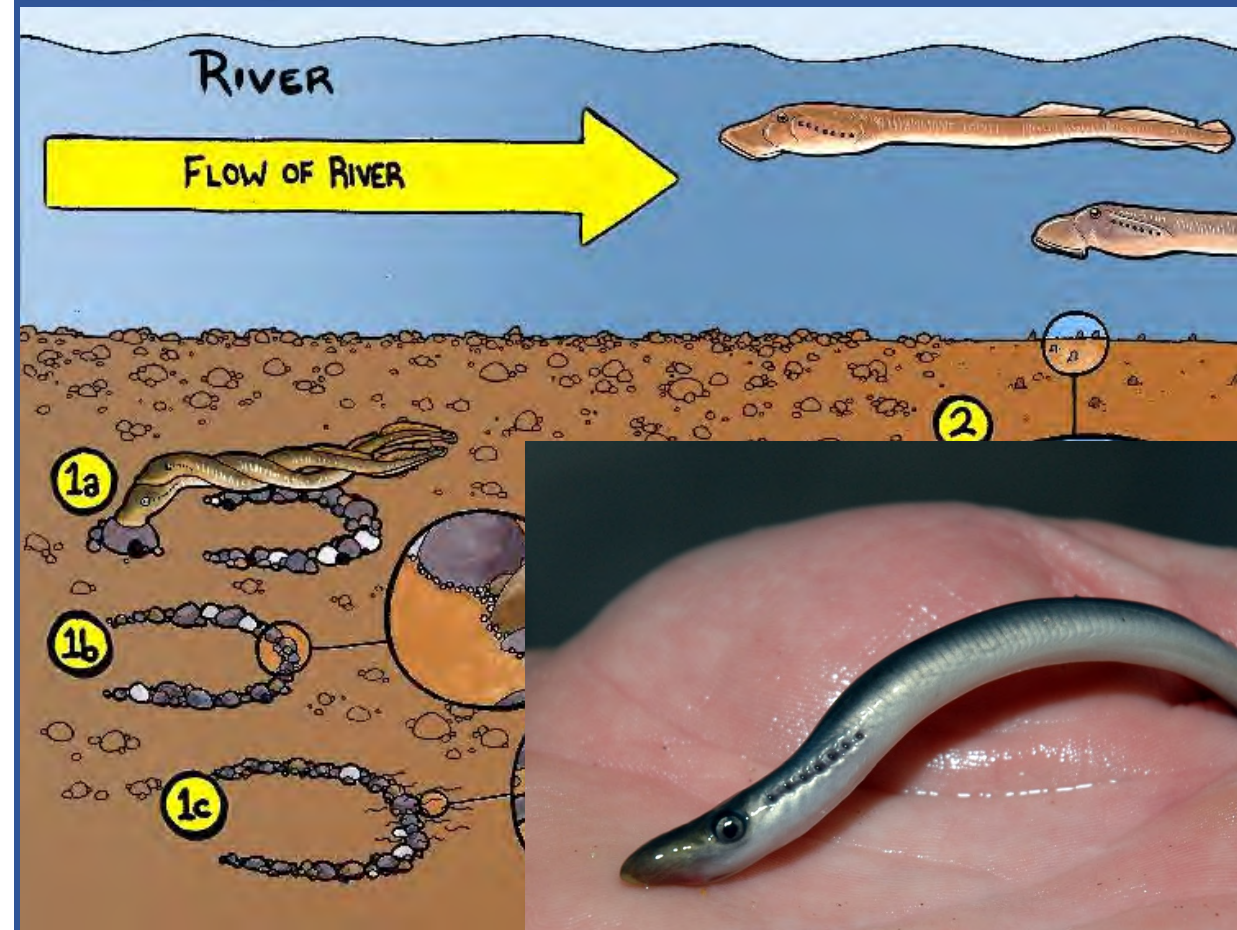
# LIFE HISTORY



- Sea lampreys swim up stream to spawn
- Each female lays up to 100,000 eggs
- 40-70% are viable
- Sea lampreys die after spawning
- Larva (ammocoetes) live in the stream bottom between 3-10 years
- Filter feed
- Have no eyes



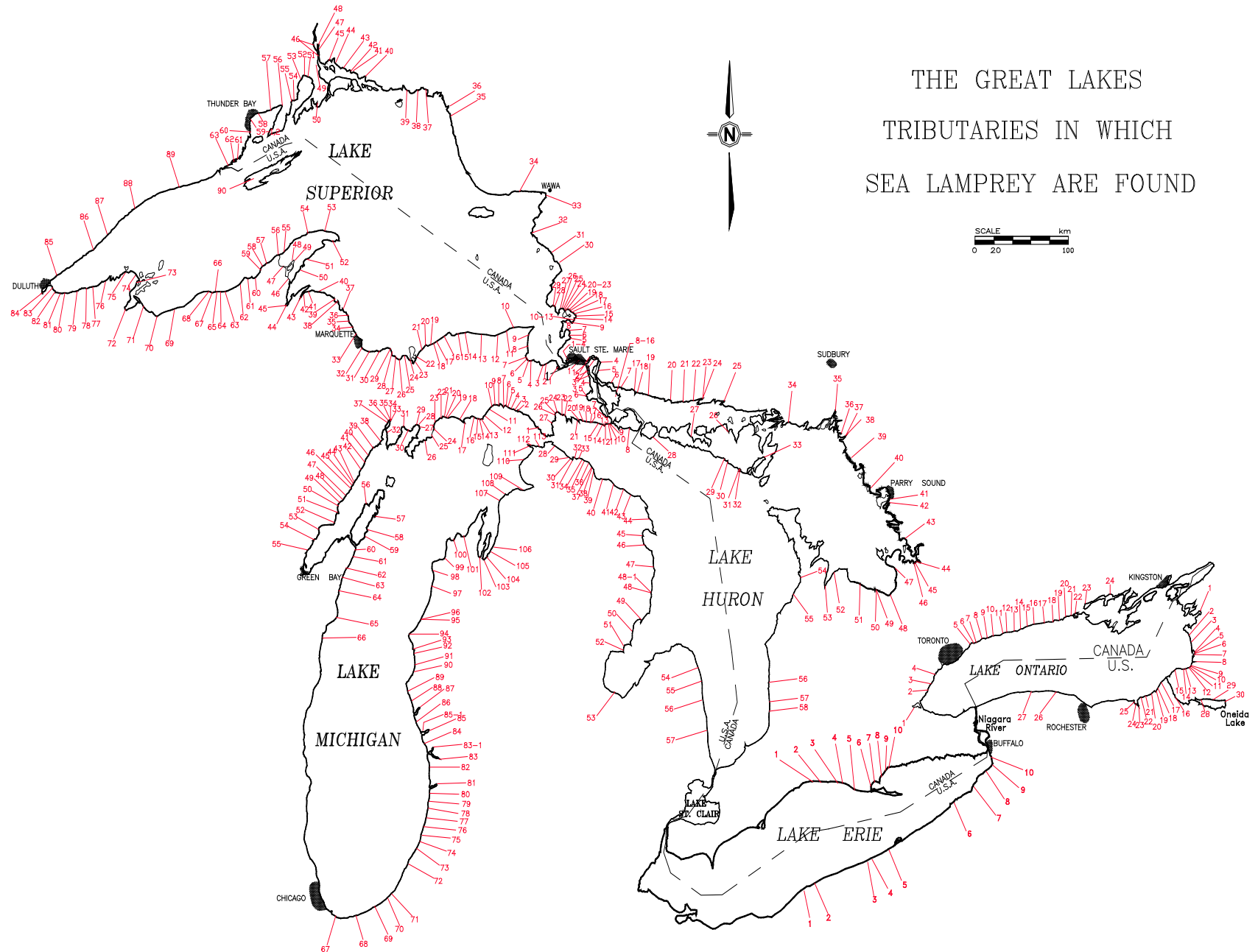
# LIFE HISTORY



- Metamorphose, grow mouth
- Drift into lake to feed



# THE GREAT LAKES TRIBUTARIES IN WHICH SEA LAMPREY ARE FOUND





- Sea lamprey entering the
- Each sea lar





# MAJOR SEA LAMPREY CONTROL METHODS



Lampricides



Sea Lamprey Barriers



Traps  
(and Pheromones)

## *A Binational Program*



U.S. Geological Survey



U.S. Fish and Wildlife  
Service



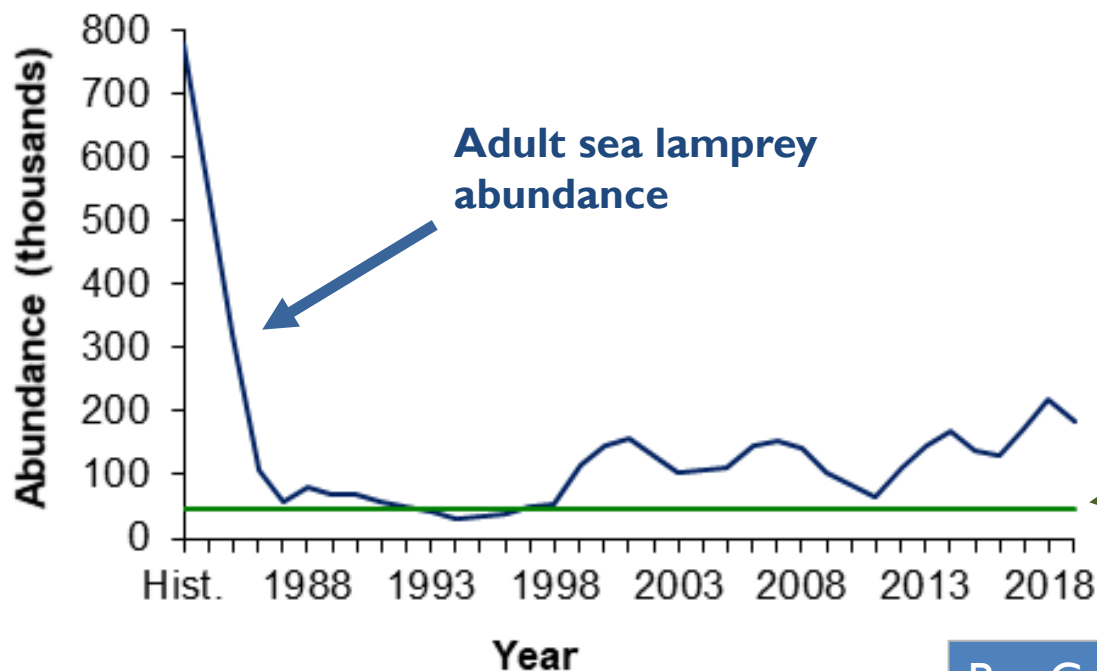
Fisheries and Oceans  
Canada



U.S. Army Corps of  
Engineers



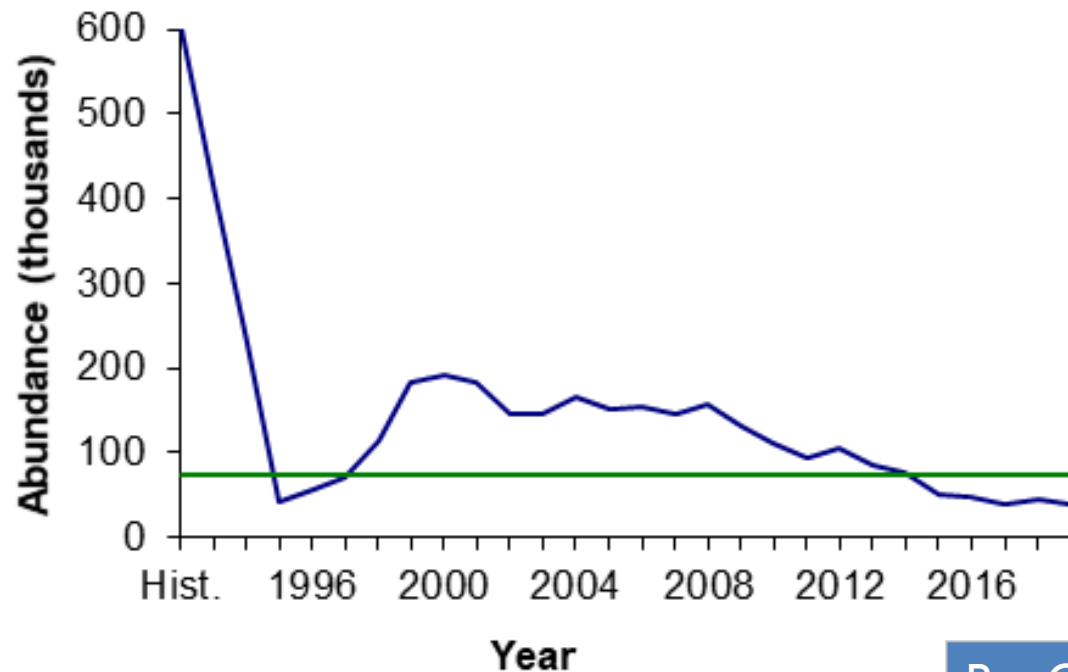
# SEA LAMPREY ABUNDANCE: LAKE SUPERIOR—2019



Adult sea lamprey  
abundance

Pre-Control: 780,000  
Target: 48,000  
3-year average: 184,000  
-76%; Above Target

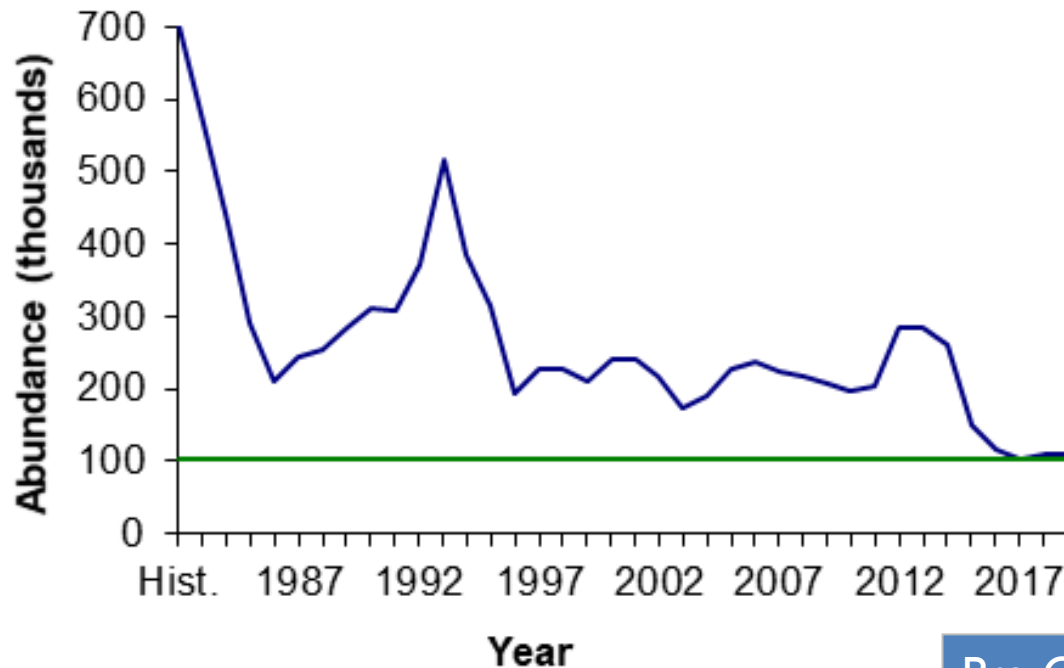
# SEA LAMPREY ABUNDANCE: LAKE MICHIGAN—2019



Pre-Control: 600,000  
Target: 72,000  
3-year average: 40,000  
**-93%; Meeting Target**

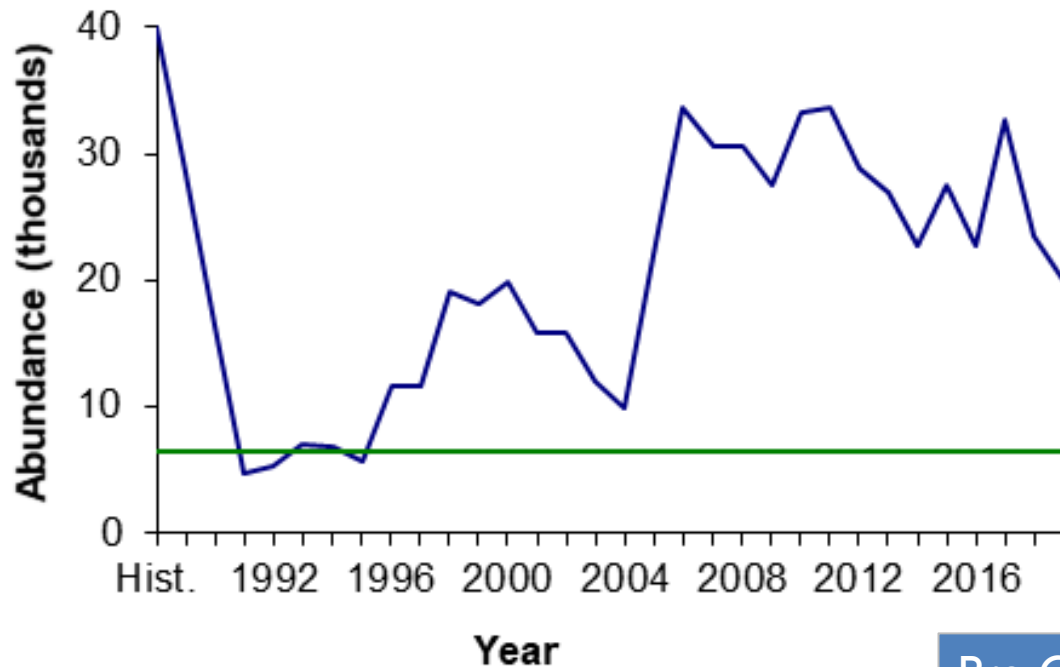


# SEA LAMPREY ABUNDANCE: LAKE HURON—2019



Pre-Control: 700,000  
Target: 103,300  
3-year average: 110,000  
**-84%; Above Target**

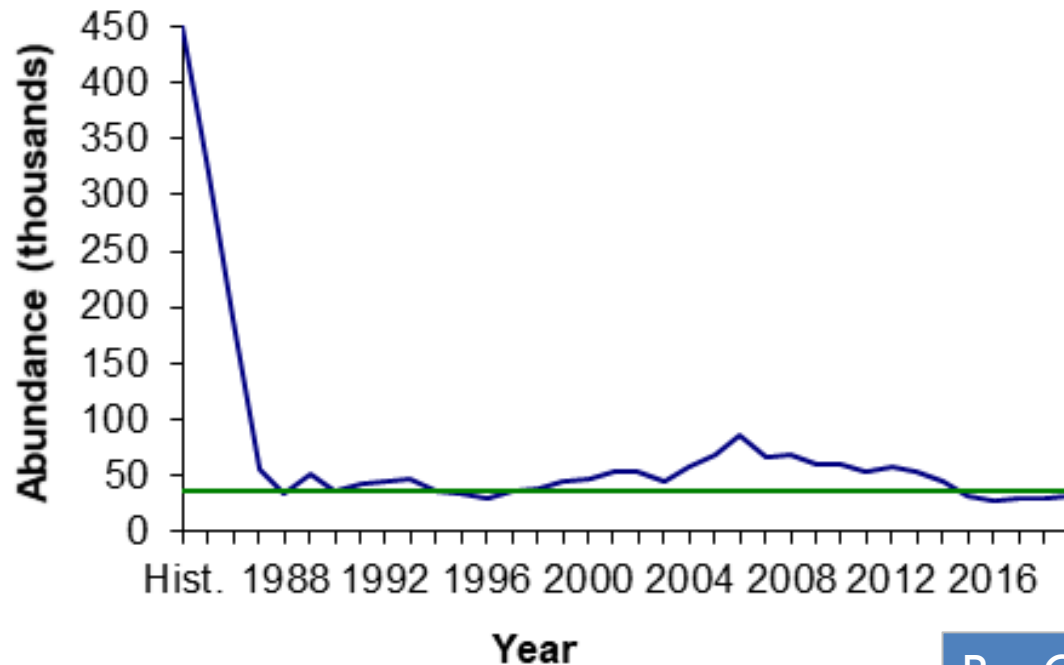
# SEA LAMPREY ABUNDANCE: LAKE ERIE—2019



Pre-Control: 40,000  
Target: 6,400  
3-year average: 20,000  
-50%; Above Target



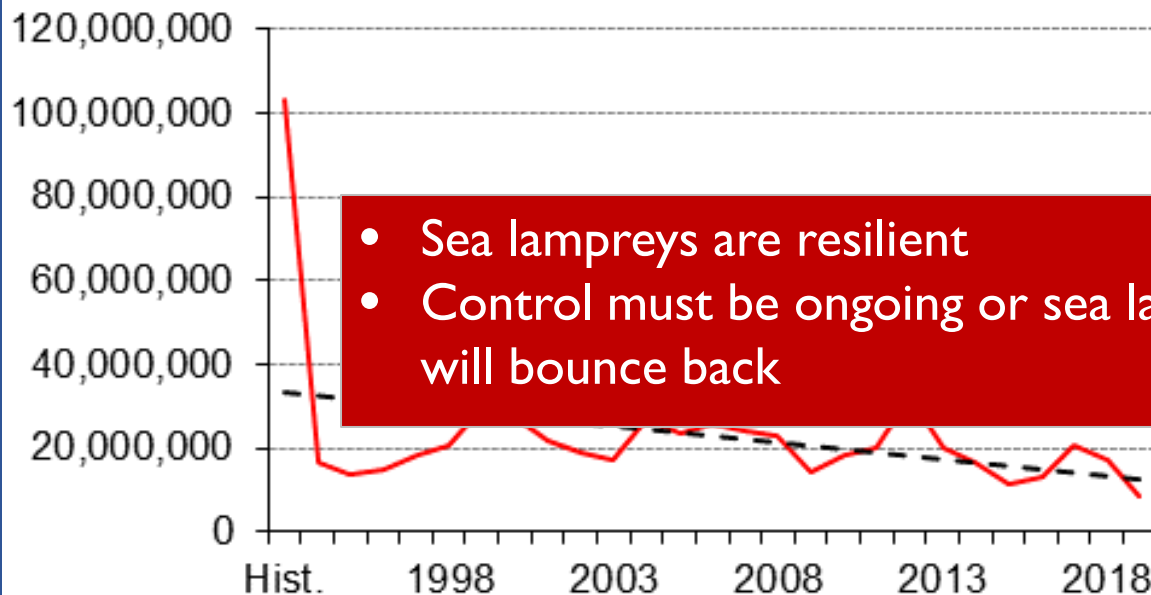
# SEA LAMPREY ABUNDANCE: LAKE ONTARIO—2019



Pre-Control: 450,000  
Target: 37,000  
3-year average: 32,000  
**-93%; Meeting Target**

# SEA LAMPREY ABUNDANCE: LAKE ONTARIO—2019

## Pounds of Fish Killed



- Sea lampreys are resilient
- Control must be ongoing or sea lampreys will bounce back



**Pre sea lamprey control:  
103 million pounds  
of fish killed per year.**

**Today: ~12 million**



Lake Superior

QUESTIONS?

Lake Huron

Lake Michigan

Lake Ontario

Lake Erie