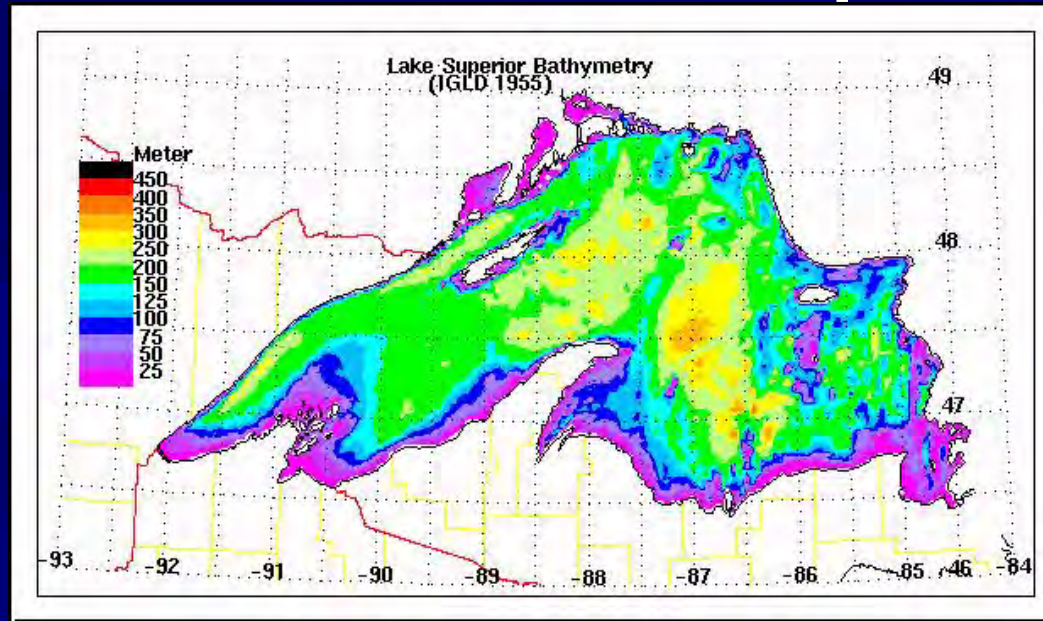


Rehabilitation of Native Fish in Lake Superior



Henry Quinlan - USFWS

Marilee Chase, Mike Friday, and Pat Furlong – Ontario MNR

Dr. Tom Pratt – DFO

Steve Schram and Mike Seider – Wisconsin DNR

Bill Mattes – GLIFWC

Mark Ebener - CORA

Species of Interest

- Lake Sturgeon
- Brook Trout (Coasters = migratory / lake dwelling)
- Walleye



Population Declines

- Lake Sturgeon spawning streams
 - 24 Historically
 - 10 Currently
- Coaster Brook Trout populations
 - 118 Historically
 - 12 Currently
- Walleye populations
 - 23 Lakewide
 - 4 Key Populations Affected

Period of Habitat Degradation / Population Depletion

1860 - 1970

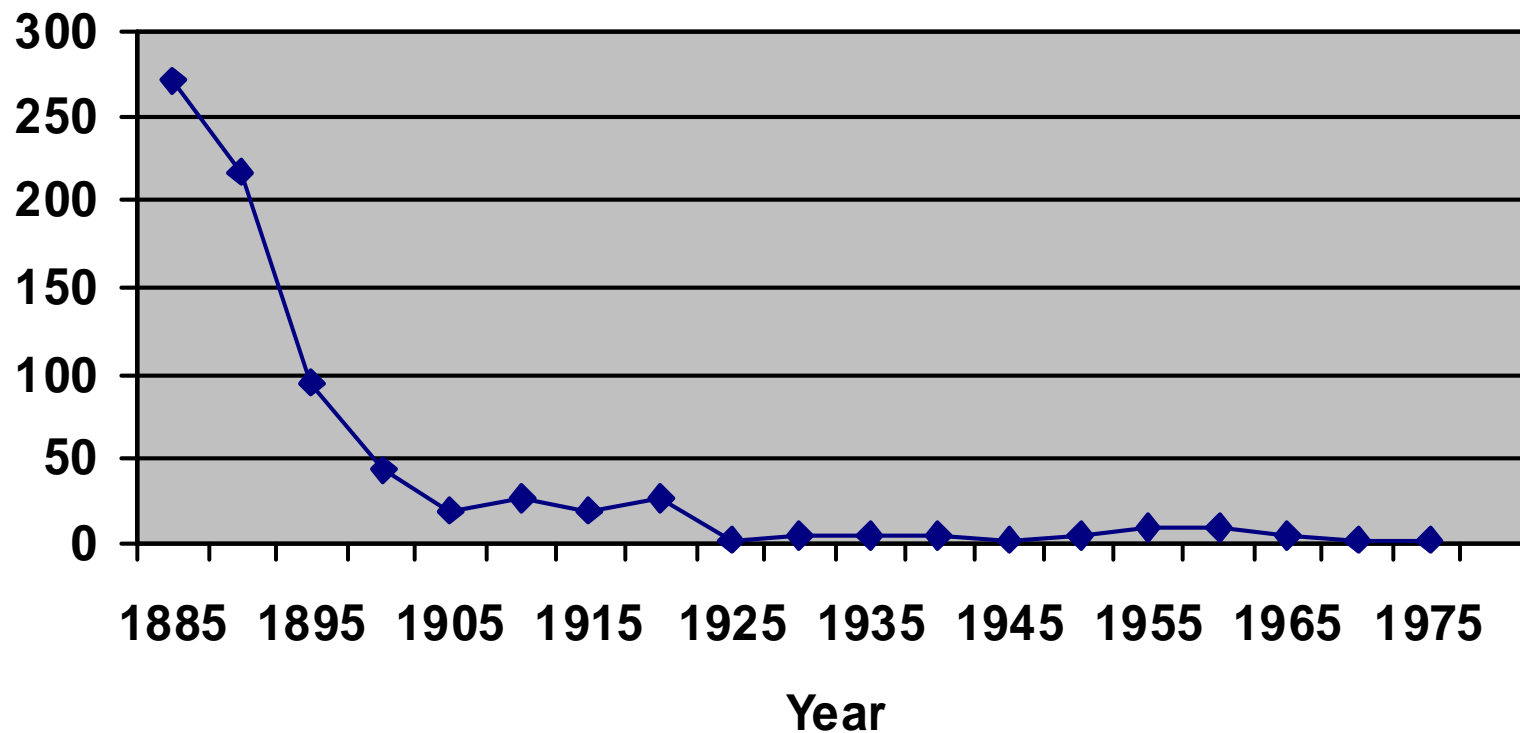
Population Growth and Development w/in Basin

- Poor Land Use Practices— Logging and Agriculture
- Log Drives on Tributaries
- Port/Harbor Development and Shipping Activities
- Urbanization – Municipal/Residential/Industrial
- Dams and Hydropower Construction
- Mining and Chemical Contamination



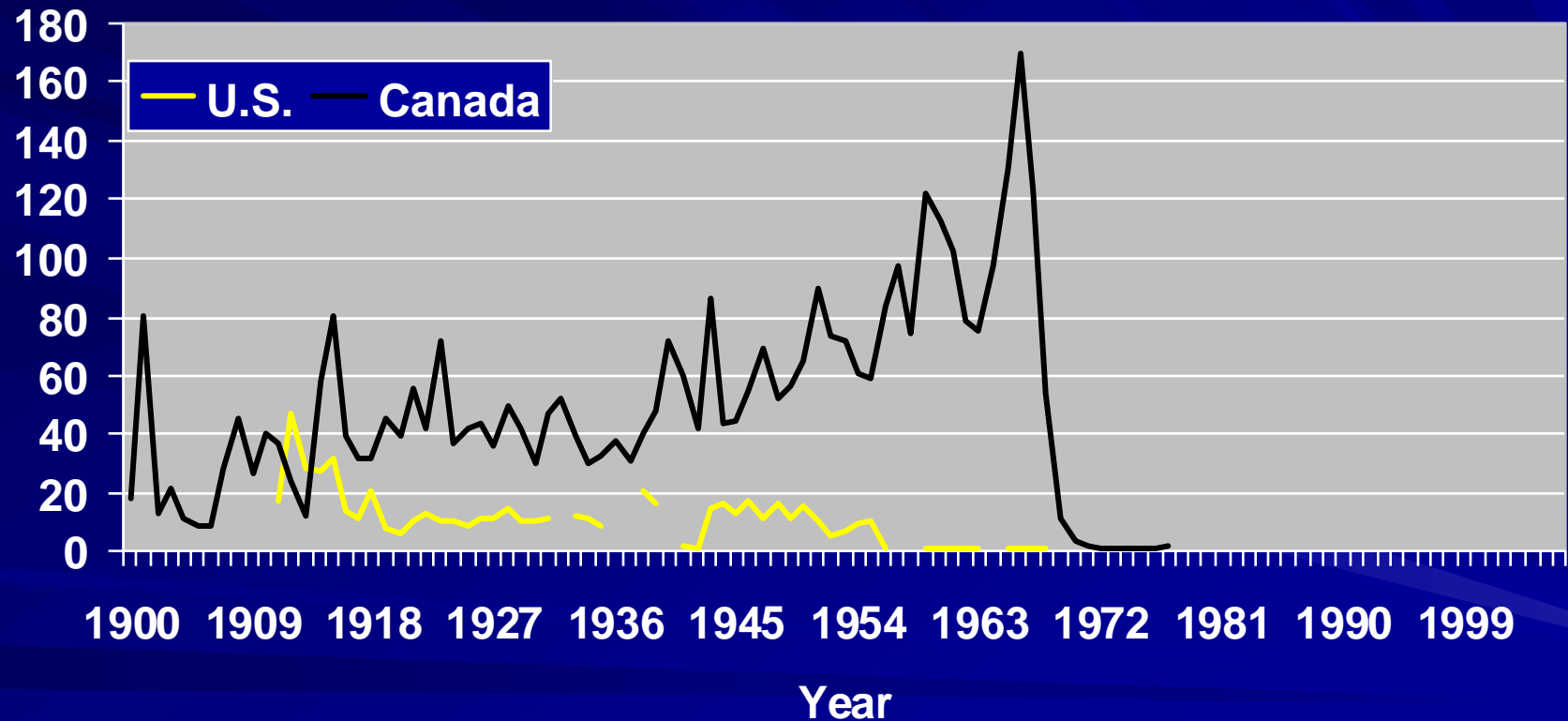
Lake Sturgeon Commercial Production

Thousands of Kilograms



Walleye Commercial Production

Thousands of Kilograms



Rehabilitation Potential

- Clean Water Act
 - Water Quality Improvements
 - Wastewater Treatment Facilities
- Designation of Areas of Concern (AOC)
 - Water Quality and Habitat Remediation Work
- Water / Land Use Agreements
 - Nipigon River Water Management Plan
 - Nipigon Basin Forest Management Plan

Rehabilitation Success

■ Lake Trout Rehabilitation



Rehabilitation Targets

■ Fish Community Objectives

- Maintain, enhance, and rehabilitate self-sustaining populations over their historical range in Lake Superior.



Rehabilitation Actions

- Restore and Protect Habitat
- Population Assessment
- Conservative Harvest Regulations
- Spawning Refuges
- Genetic Analysis
- Stocking
- Education/Outreach

Restore and Protect Habitat

Road crossings and perched culverts



Restore and Protect Habitat

Road crossings and perched culverts



Restore and Protect Habitat

Clearwater Creek, Ontario



Restore and Protect Habitat



Gapens Pool, Nipigon River

Restore and Protect Habitat

- Water Release Agreements
 - Run-of-the-River Flow at U.S. Facilities
 - Kaministiquia River Discharge Study



Black Sturgeon River Dam: A barrier to the rehabilitation of Black Bay walleye



Prepared by:
P. Furlong, R. F. Foster, P. J. Colby and Mike Friday



Harvest Regulations

■ Brook Trout

- Lake Superior - 20+” minimum size”, 1/day
- Tributaries
 - MN and Ont. – 20+” minimum size, 1/day
 - MI and WI – 7” & 8” minimum size, 5/day

■ Lake Sturgeon

- Commercial harvest prohibited
- Harvest prohibited in MN, Ont., MI, CORA, BMIC
- WI and RC mandatory registration

Harvest Regulations

■ Walleye

– Conservative / Protective Regulations

- WI Waters of Lake Superior incl. Chequamegon Bay
- St. Louis River
- Black Sturgeon River / Black Bay

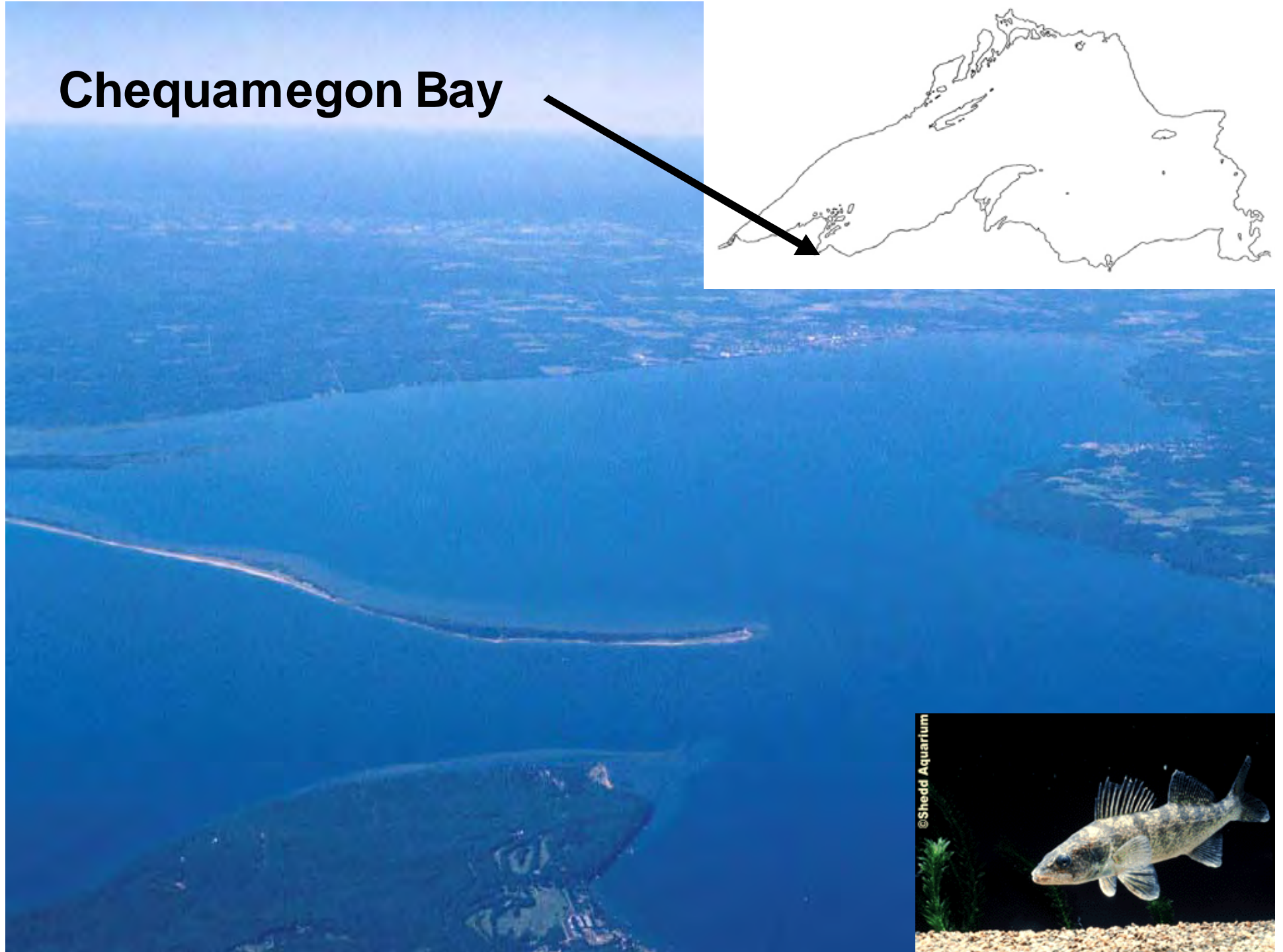


Assessment

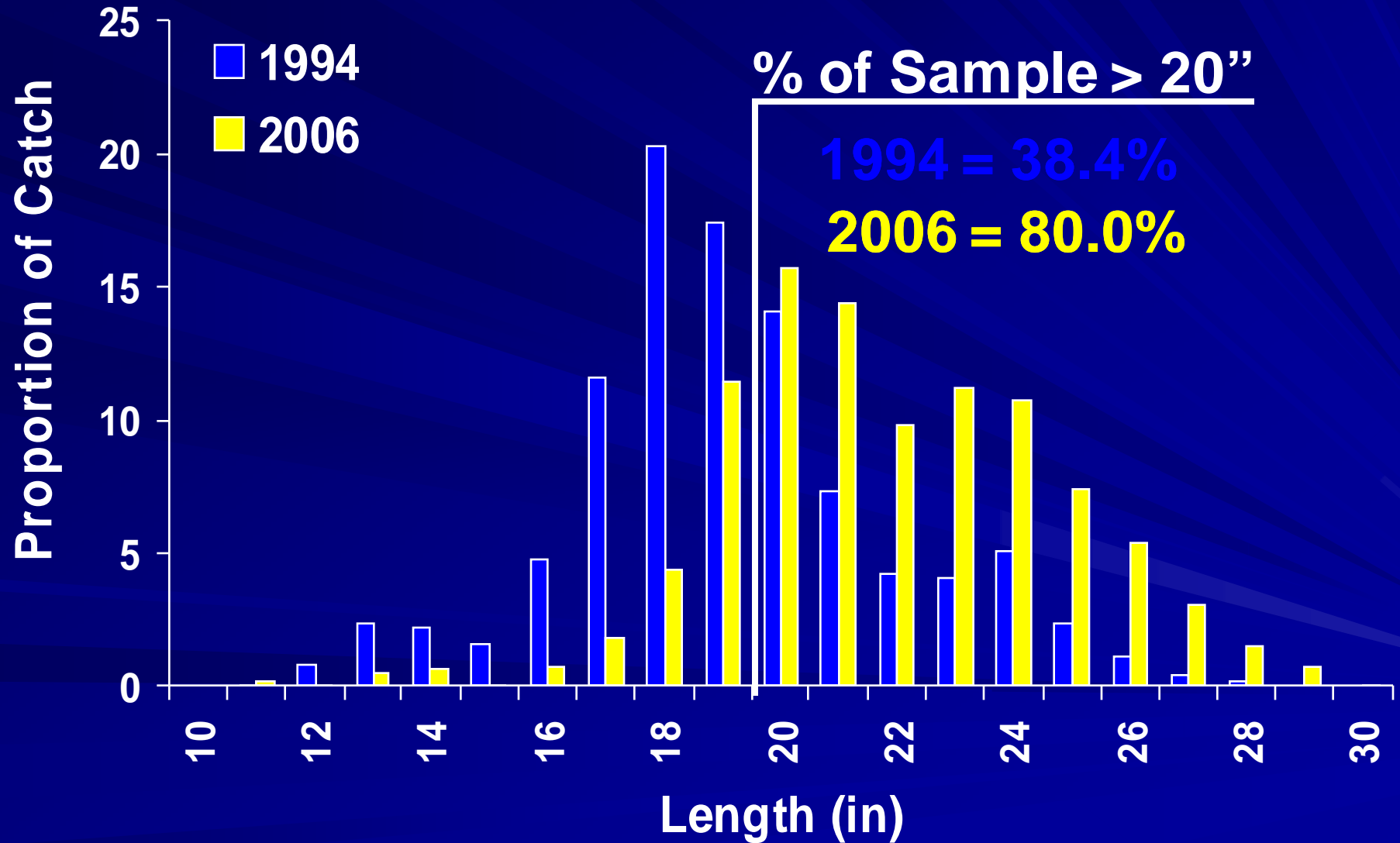
- Baseline and/or Time Series Data Critical



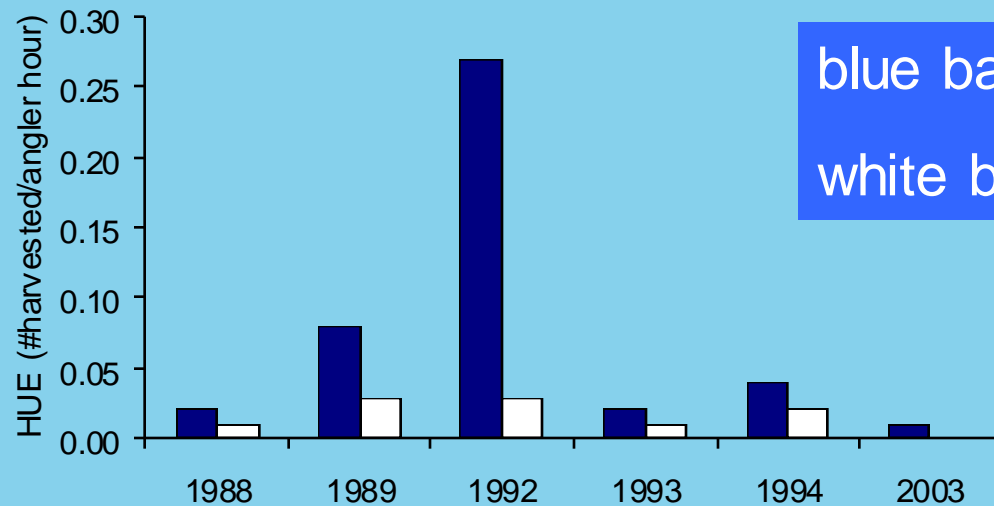
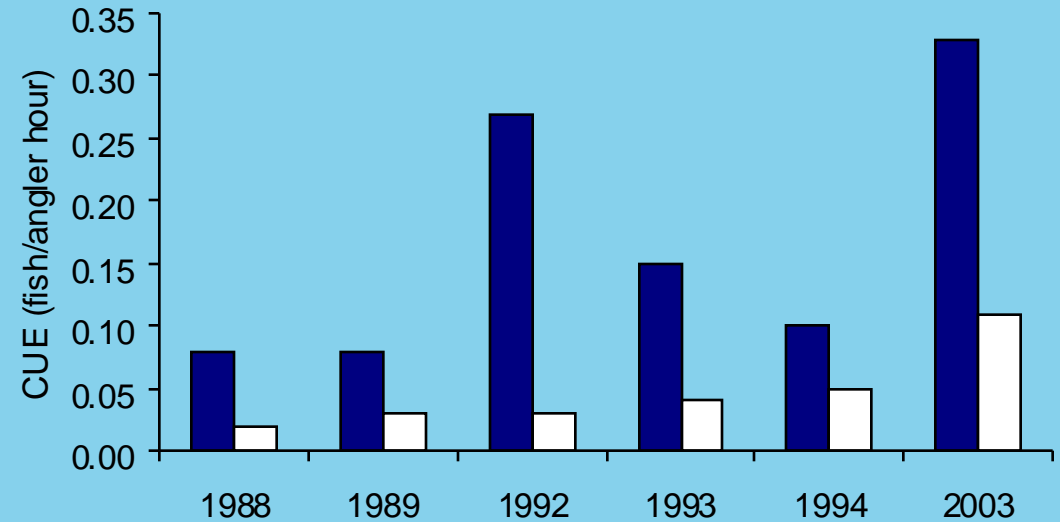
Chequamegon Bay



Walleye Spawning Population Chequamegon Bay



Nipigon River Creel Surveys

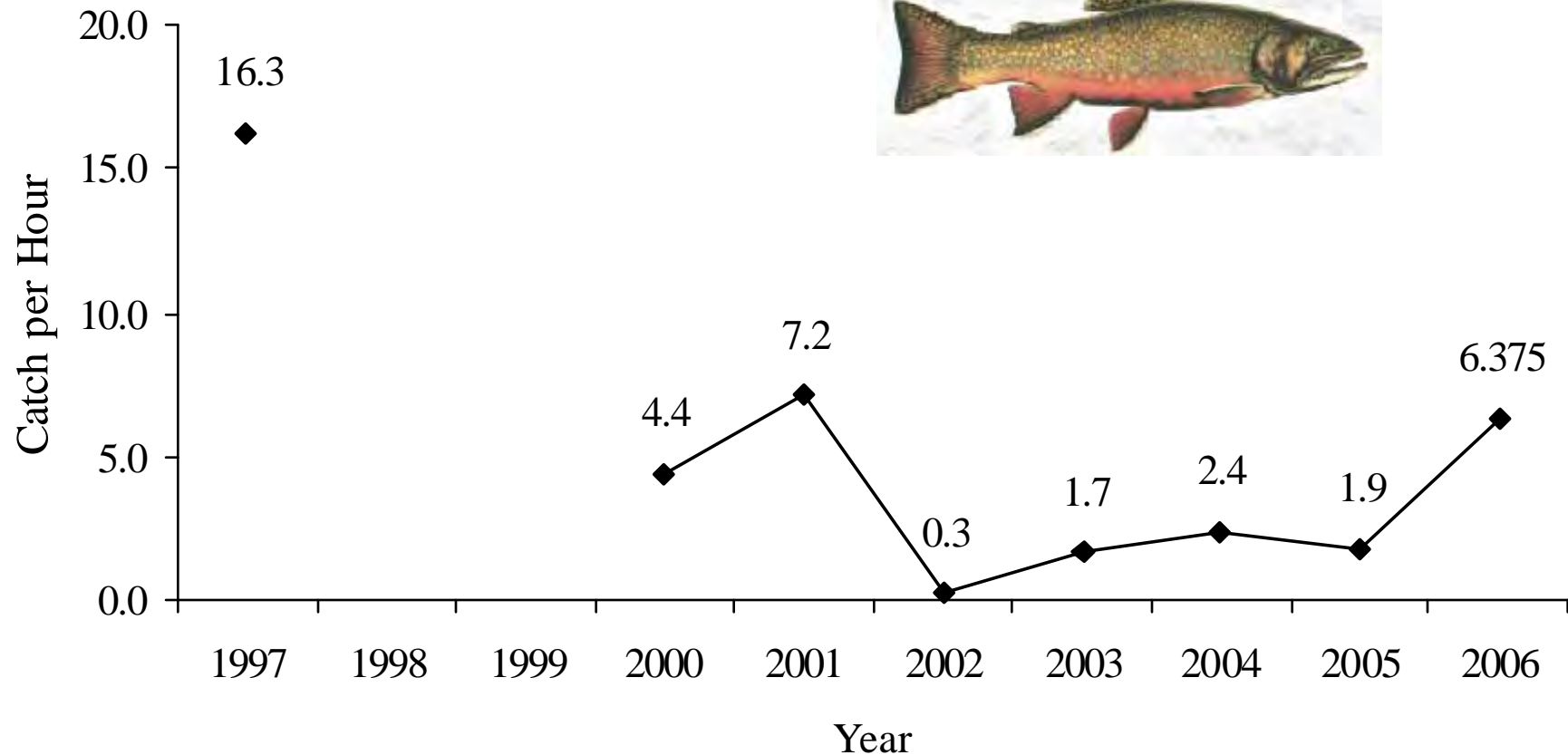


blue bars = anglers targeting brook trout
white bars = anglers targeting other fish

Coaster Index Survey

Tobin Harbor, Isle Royale

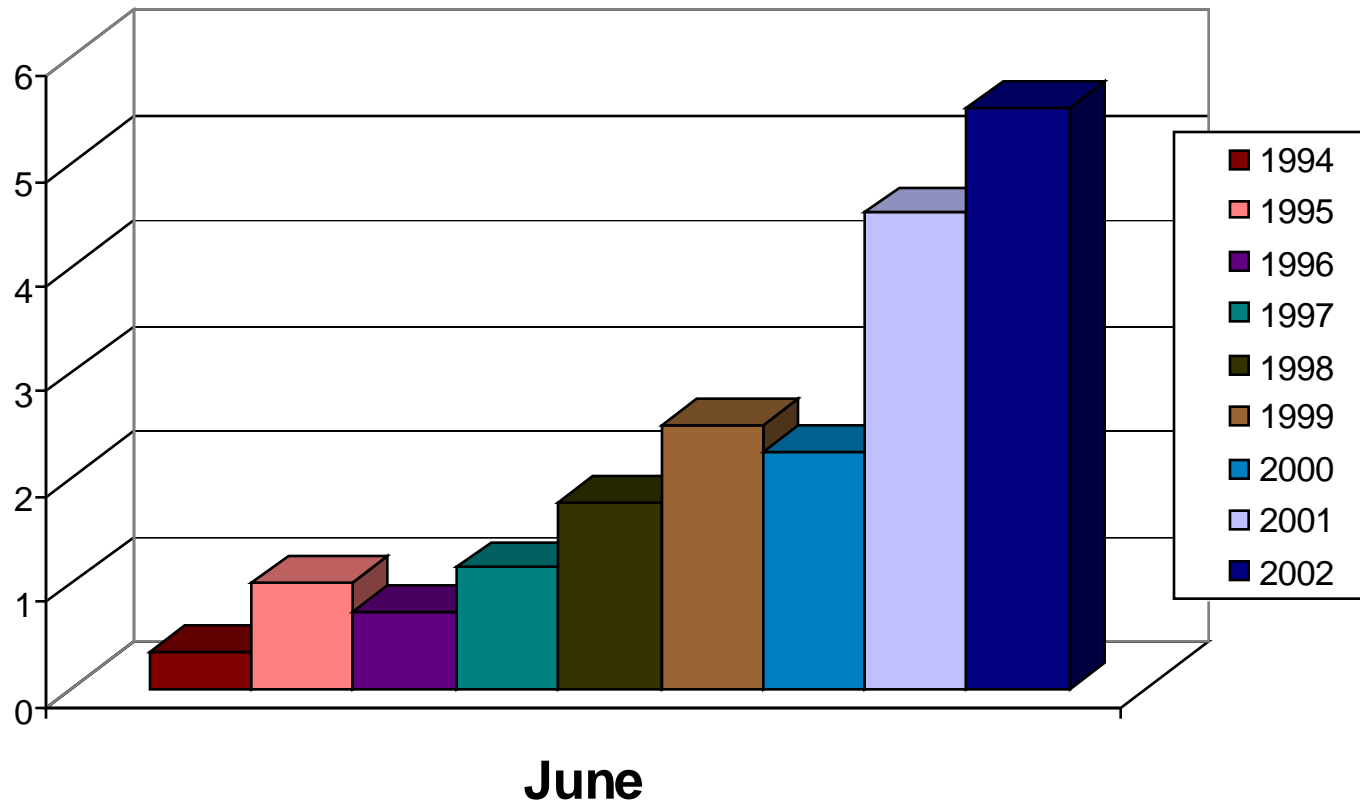
Shoreline Boat Electrofishing



CPUE of Juvenile Sturgeon in Lake Superior at the Bad River



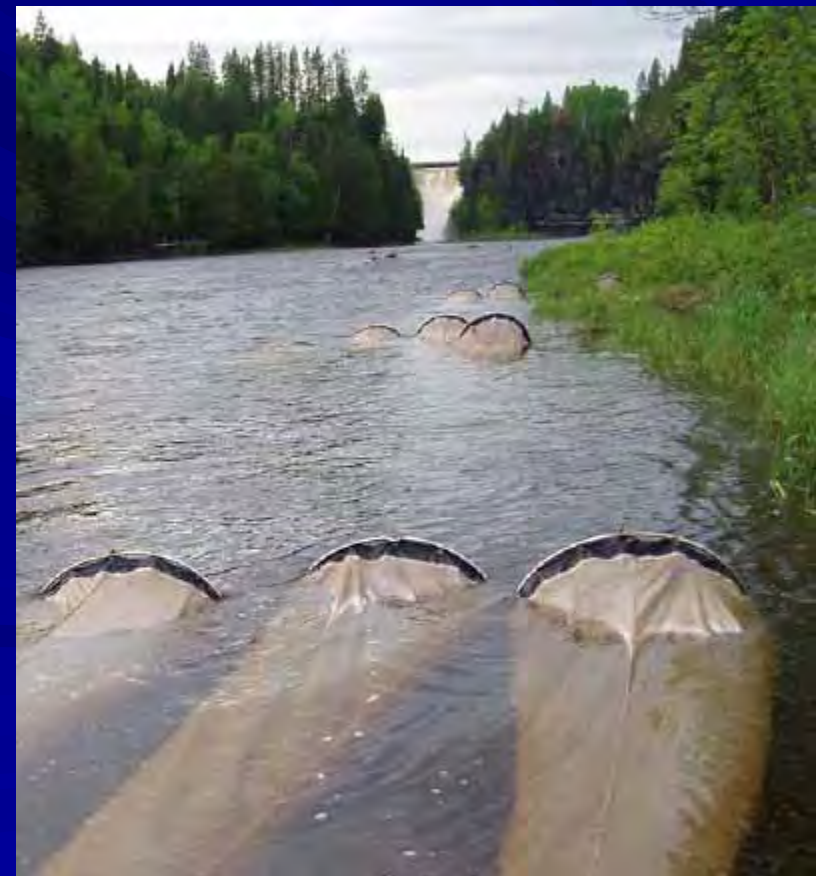
CPUE (#/night in 100 m of 11 cm mesh)



Larval Sturgeon Sampling in Kaministiquia River



- Reproduction successful at 17 and 23 cms
- Two spawning events in 2004 and 2005



Spawning Refuges

■ Walleye

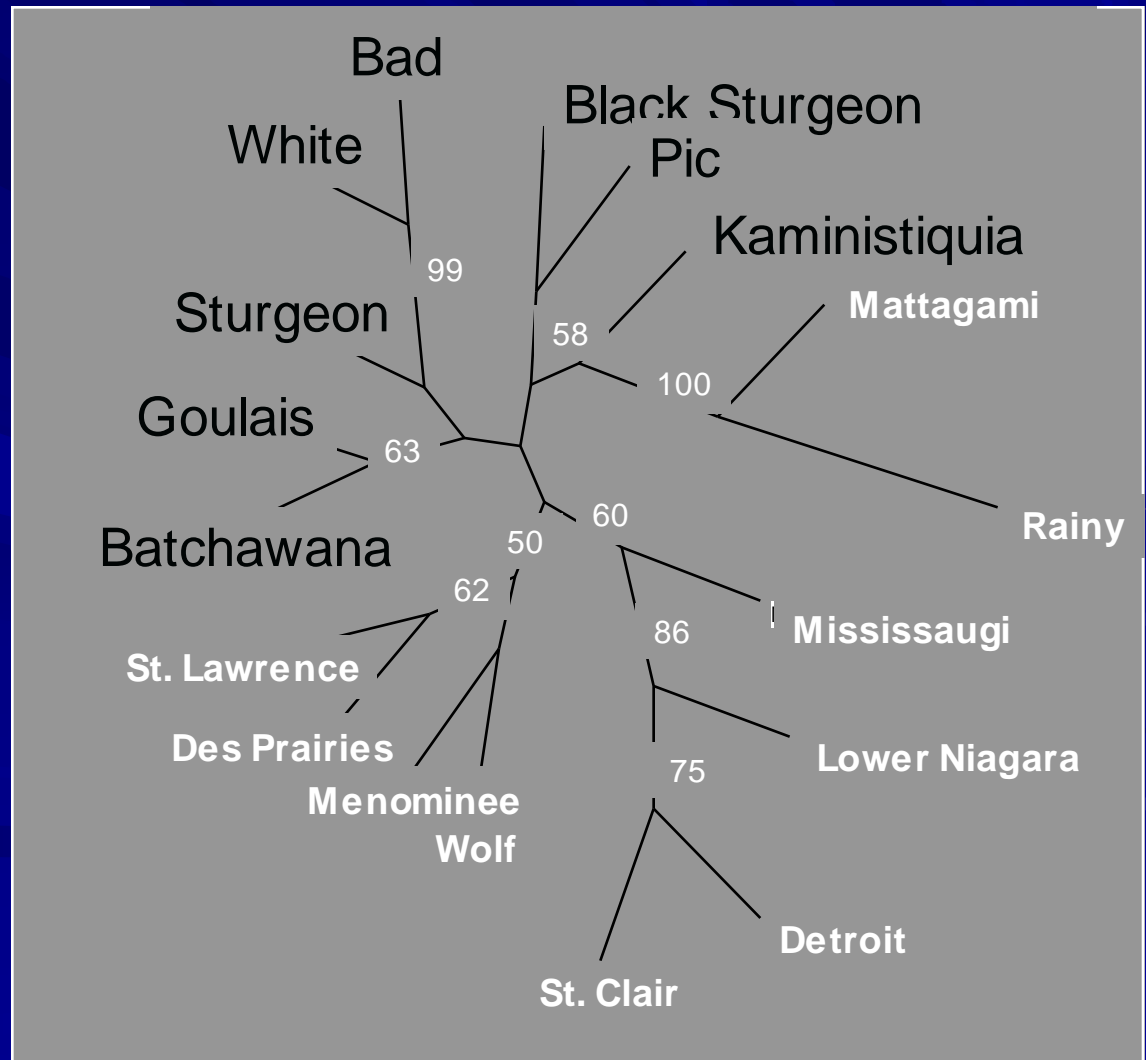
- St. Louis River - Fond du Lac Rapids
- Black Sturgeon River dam

■ Coaster Brook Trout

- No Harvest Study Streams
- Catch and Release
- Seasonal closures

Lake Sturgeon Population Genetic Structure

- Lake Superior populations differ from other Great Lakes populations
- All analyzed populations have high genetic diversity



Brook Trout Population Genetic Structure

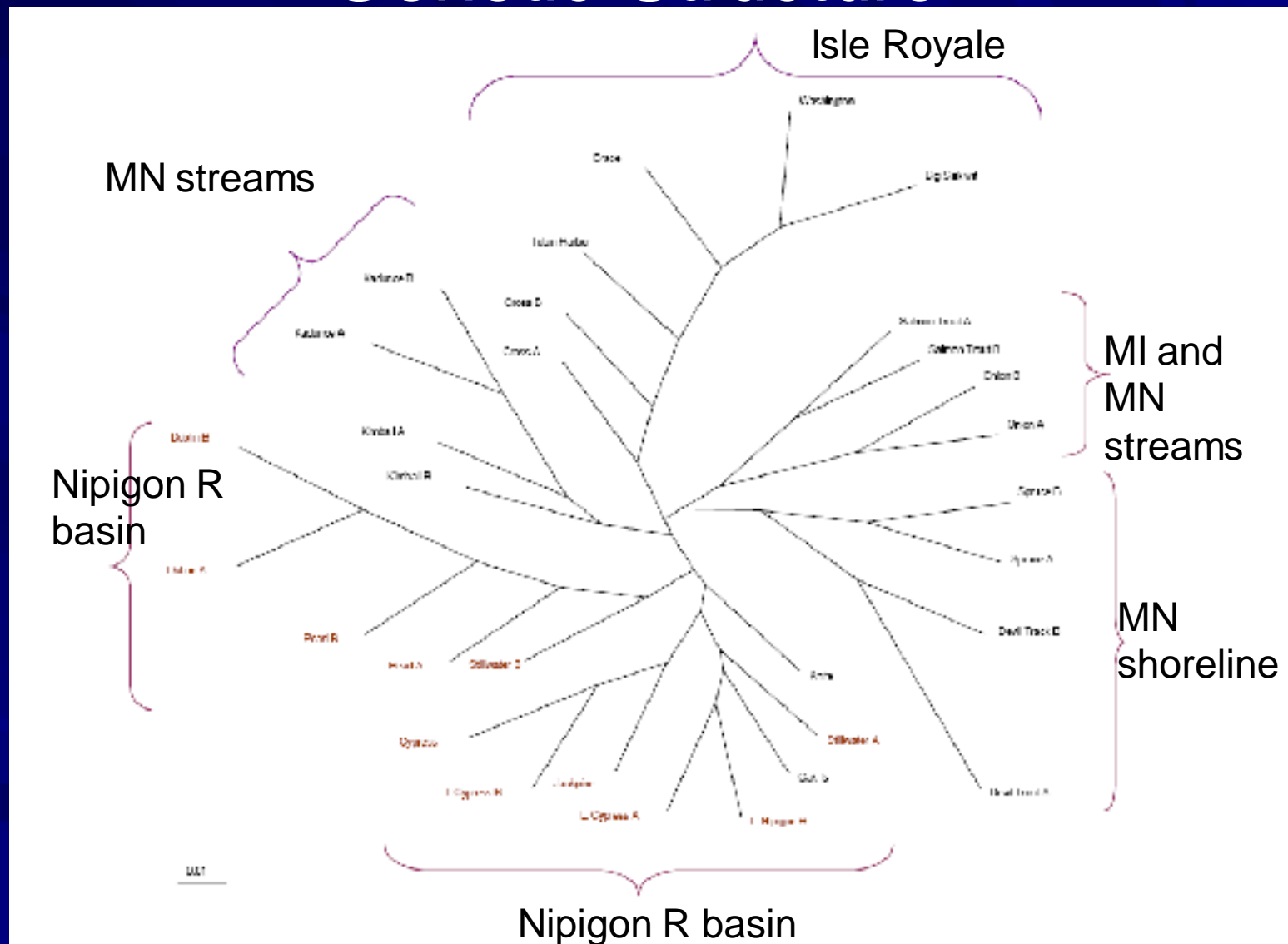
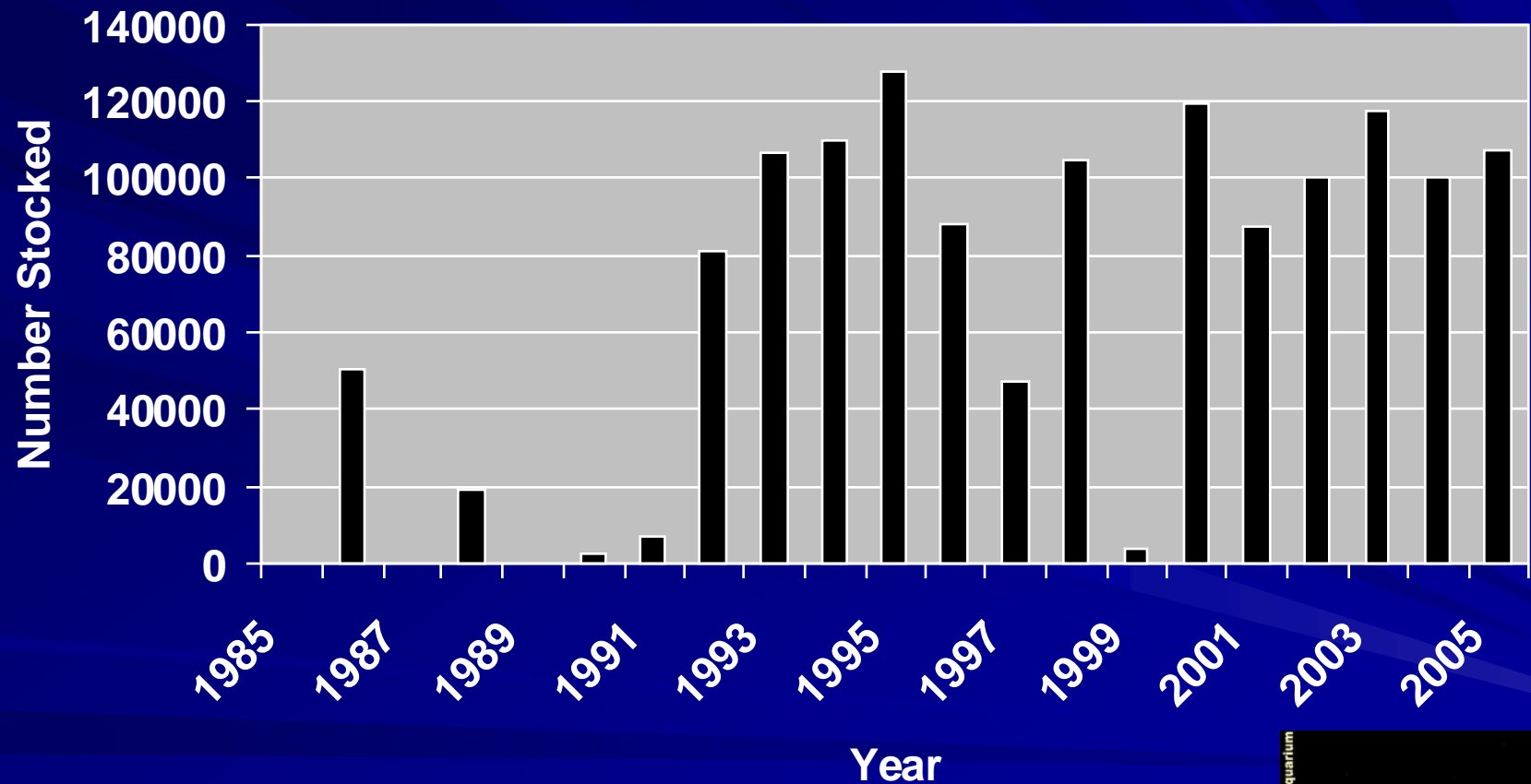


Figure 8: Minimum-spanning tree of genetic relationships among Lake Superior brook trout populations, using standardized microsatellite data from GLSC and OMNR datasets (W. Stott, USGS unpubl. data; D'Amelio and Wilson, in review).

Stocking

- Tool in Rehabilitation Repair Kit

Walleye Fingerling Stocking Upper St. Mary's River

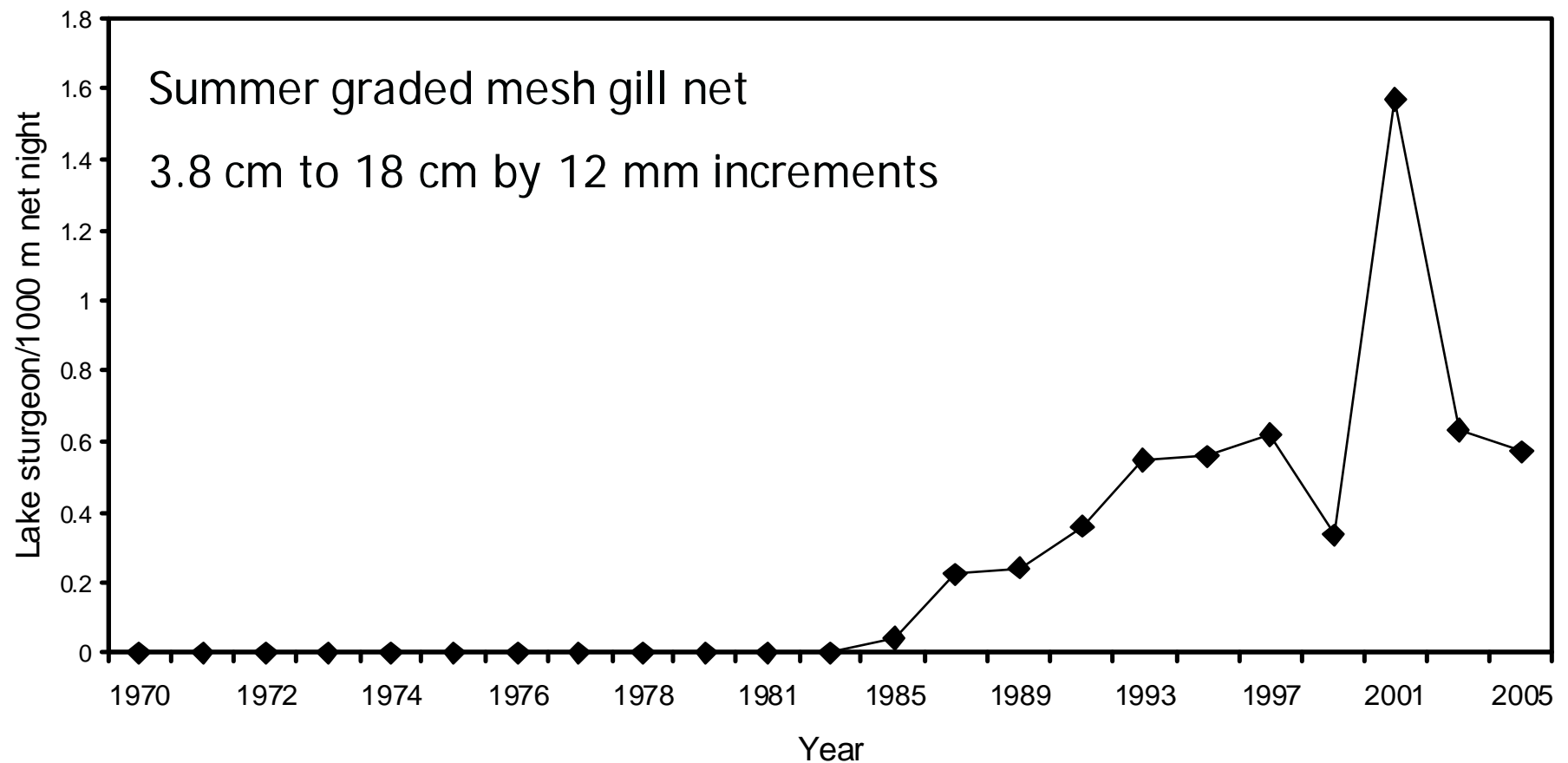


Lake Sturgeon Stocking

- Lower St. Louis River 1984-2000
- Upper St. Louis River 2000-2006
- Ontonagon River 1999 - present



Lake Sturgeon CPUE in Western Waters of Lake Superior



Review Rehabilitation Actions

- Restore and Protect Habitat
- Population Assessment
- Conservative Harvest Regulations
- Spawning Refuges
- Genetic Analysis
- Stocking
- Education/Outreach

Rehabilitation Targets

- Fish Community Objectives

- Maintain, enhance, and rehabilitate self-sustaining populations over their historical range in Lake Superior.

- Are We Achieving Objectives??

Maintain and Enhance Populations

- Remnant Populations of 3 Species being Maintained and Enhanced
 - Regulations and Habitat Restoration
 - Remnant Populations Small and Vulnerable
- Stocking is Enhancing Walleye and Brook Trout Populations
- Genetic Data Available to Assist Management Actions

Rehabilitate Populations

- Habitat Restoration and Protection Should Increase Potential for Increased Abundance and Wider Distribution
- Genetic Analysis Suggests Populations may Re-establish from Resident Stocks
- Evidence of Coaster Populations along MN, WI and MI Shorelines

Objectives Not Being Met

- Coaster Populations Not Widely Distributed
- Abundance Increased Through Stocking, but No Evidence of Reproduction