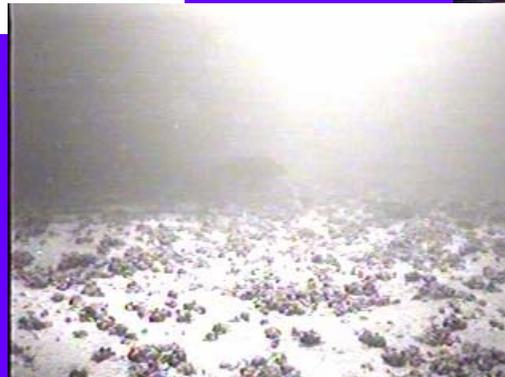
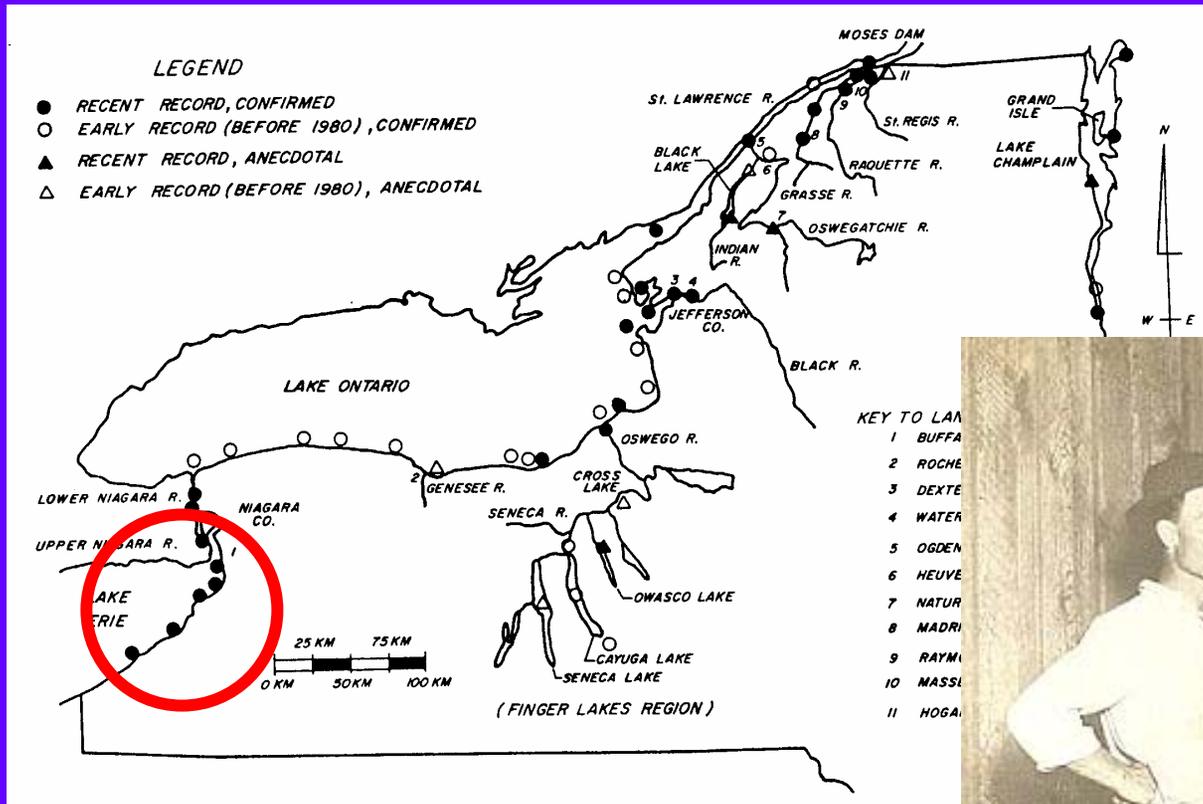


# Lake Sturgeon Restoration in Oneida Lake: Stocking, Habitat Use and Life in the Fast Lane

Randy Jackson, Tom Brooking and Tony Van De Valk,  
Cornell Biological Field Station



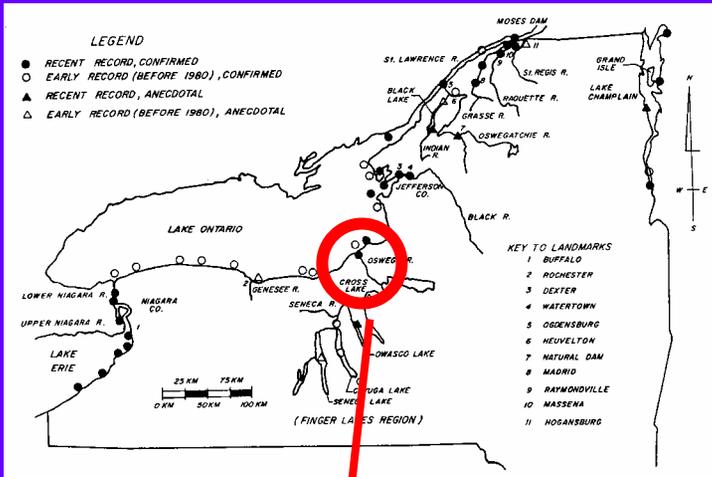
# Lake Sturgeon in New York State (from Carlson 1995)



# Sturgeon at Oswego Falls

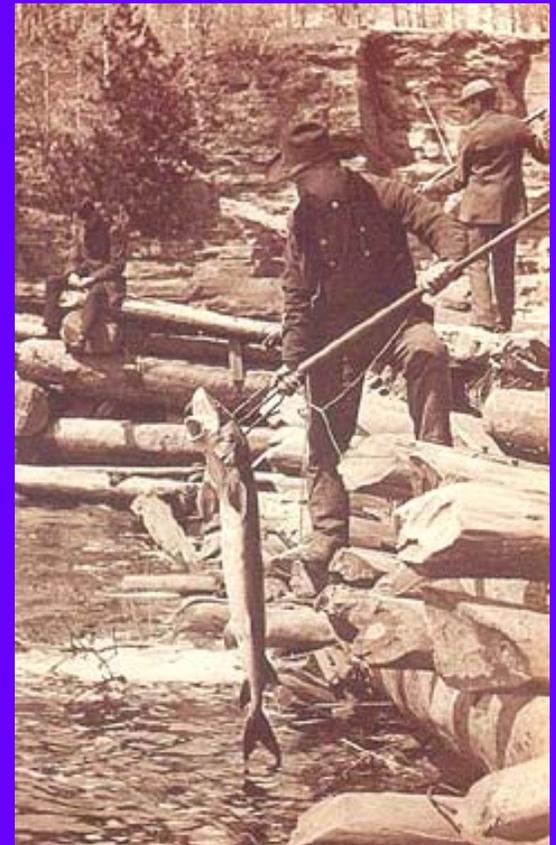
the falls abound with Sturgeon, Catfish, Oswego Bass and Salmon. The Indians spear them coming up the falls. This they do with great dexterity.

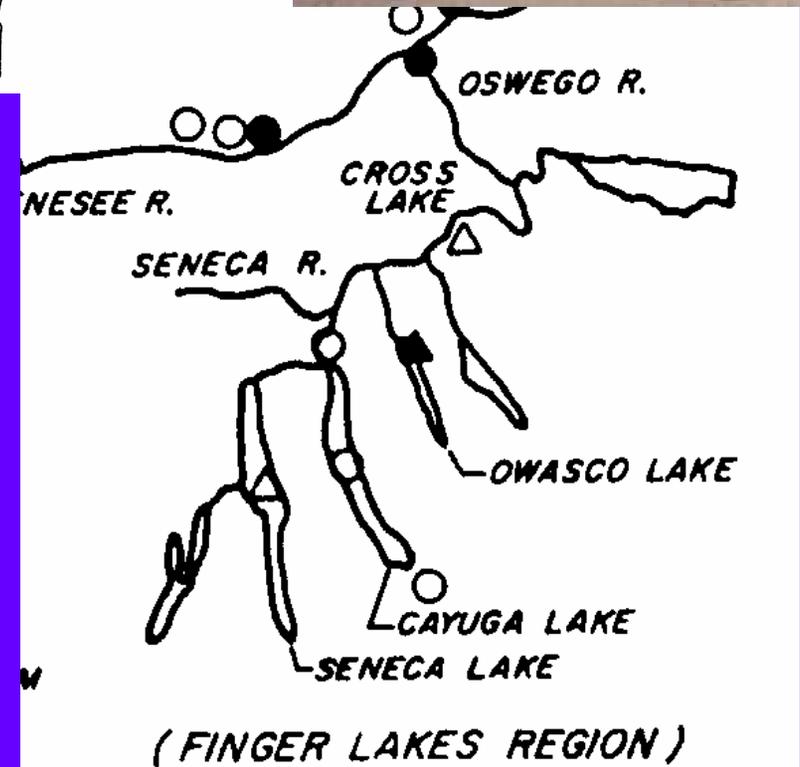
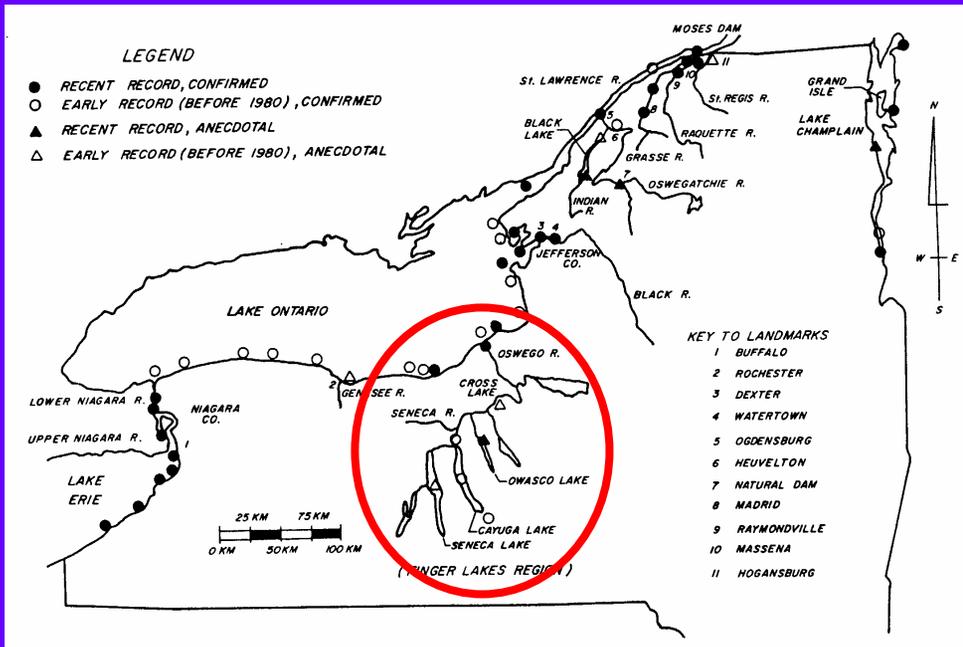
J. Cockburn, 1792



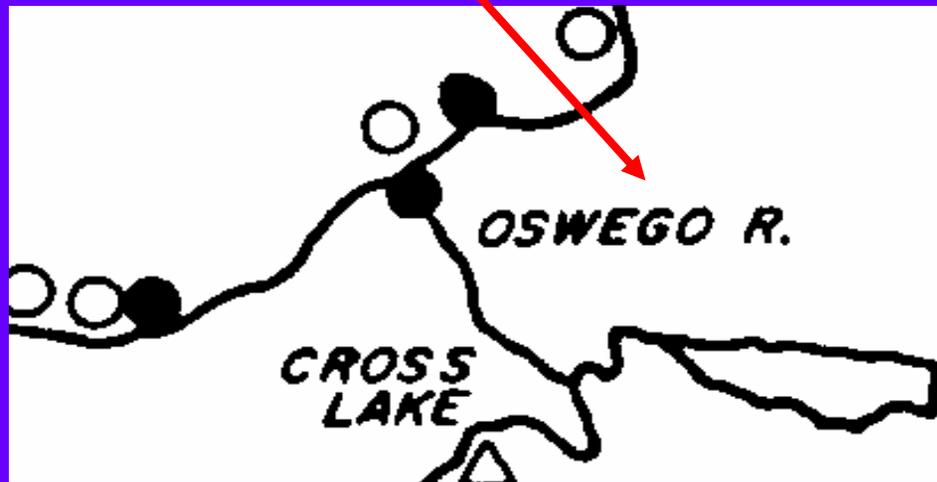
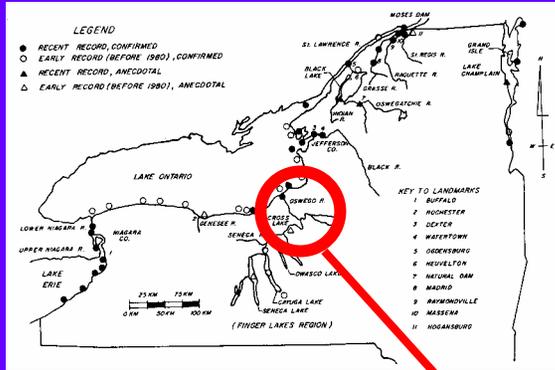
Sturgeon have been caught in the lake that weigh 100 pounds.

Dewitt Clinton, 1810





Sturgeon were known in the Finger Lakes of New York, with anecdotal evidence of a fishery in Cayuga Lake



**Scattered Records of Sturgeon have also been found from Oneida Lake**

# A 17 lb. Sturgeon Caught in Oneida Lake, Spring 1973



(from the *Oneida Lake Bulletin*, Summer Edition 1973)

# New York State Sturgeon Restoration Program

Initiated 1995 on Oneida Lake



**Lake Sturgeon Stocking History, Oneida**  
**Lake, New York**

<b><u>Year</u></b>	<b><u>Number Stocked</u></b>	<b><u>Age/Size at Stocking</u></b>
1995	5,000	Age-0 (254 mm)
1996	500	Age-0 (178 mm)
	50	Age-1 (560 mm)
1998	287	Age-1 (560 mm)
	100	Age-1 (369 mm)
1999	300	Age-0 (217 mm)
	20	Age-4 (900 mm)
2000	300	Age-0 (189 mm)
2003	368	Age-0 (233 mm)
2004	1,200	Age-0 (187 mm)

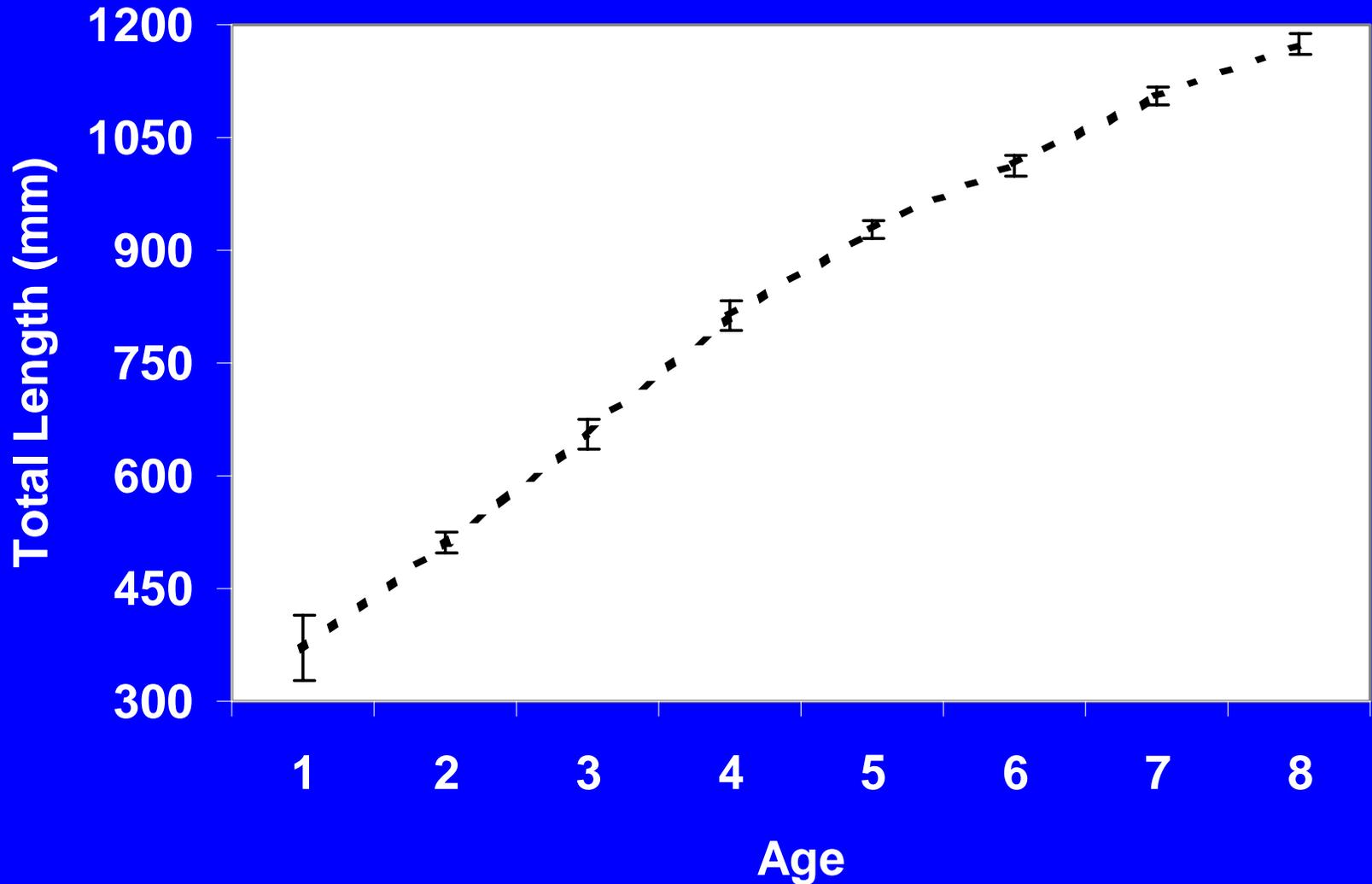
# Sturgeon Captures in Oneida Lake

- ❖ First incidental capture in 1996
- ❖ A total of 505 as of the 2004 field season
- ❖ Distribution and habitat study initiated in 2002
- ❖ Three year total of 208 sturgeon



# Observed Length-At-Age Relationship

Annual Growth Rate of 116 mm per Year



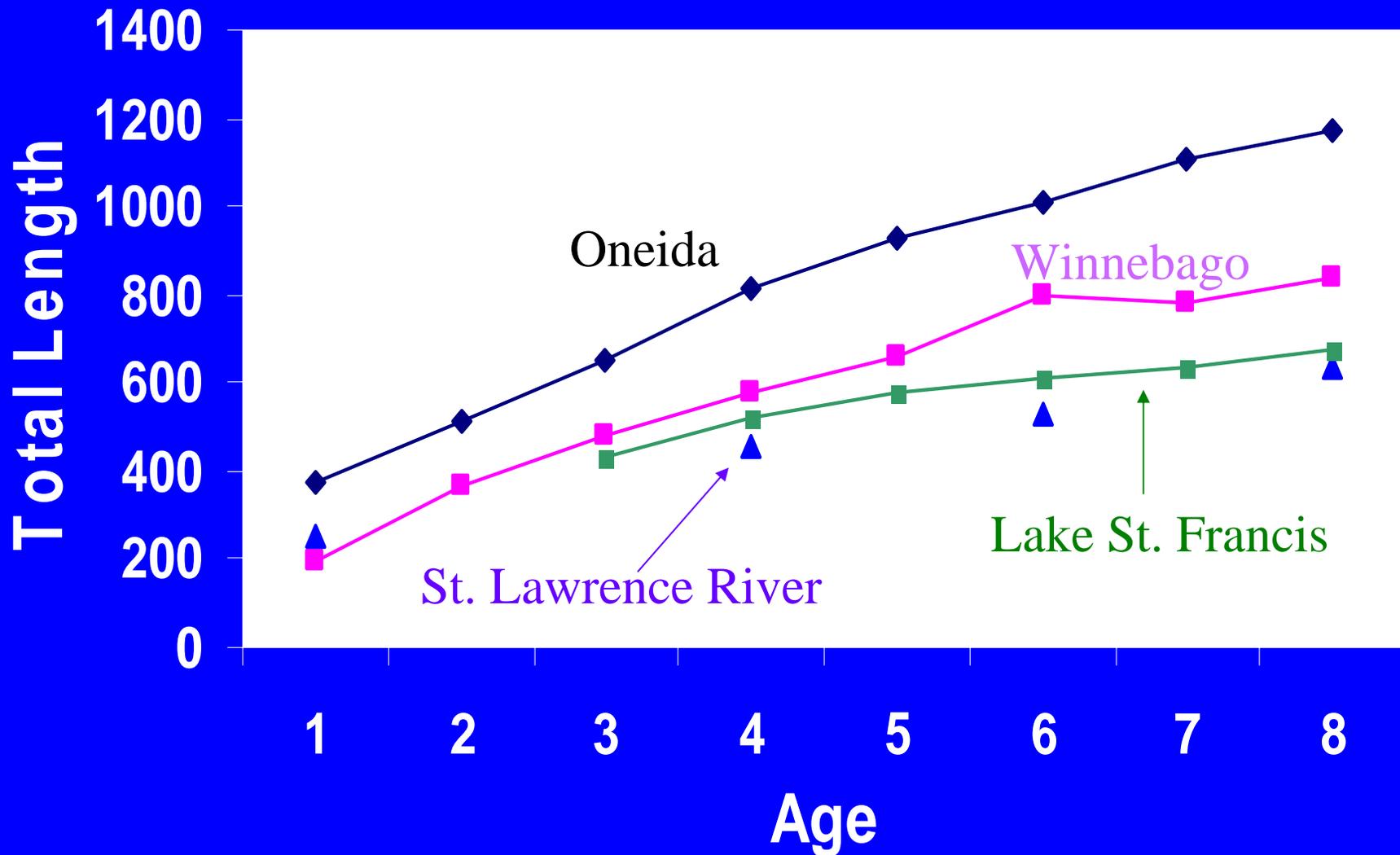
# Summer 2001: A 6 Year Old Fish



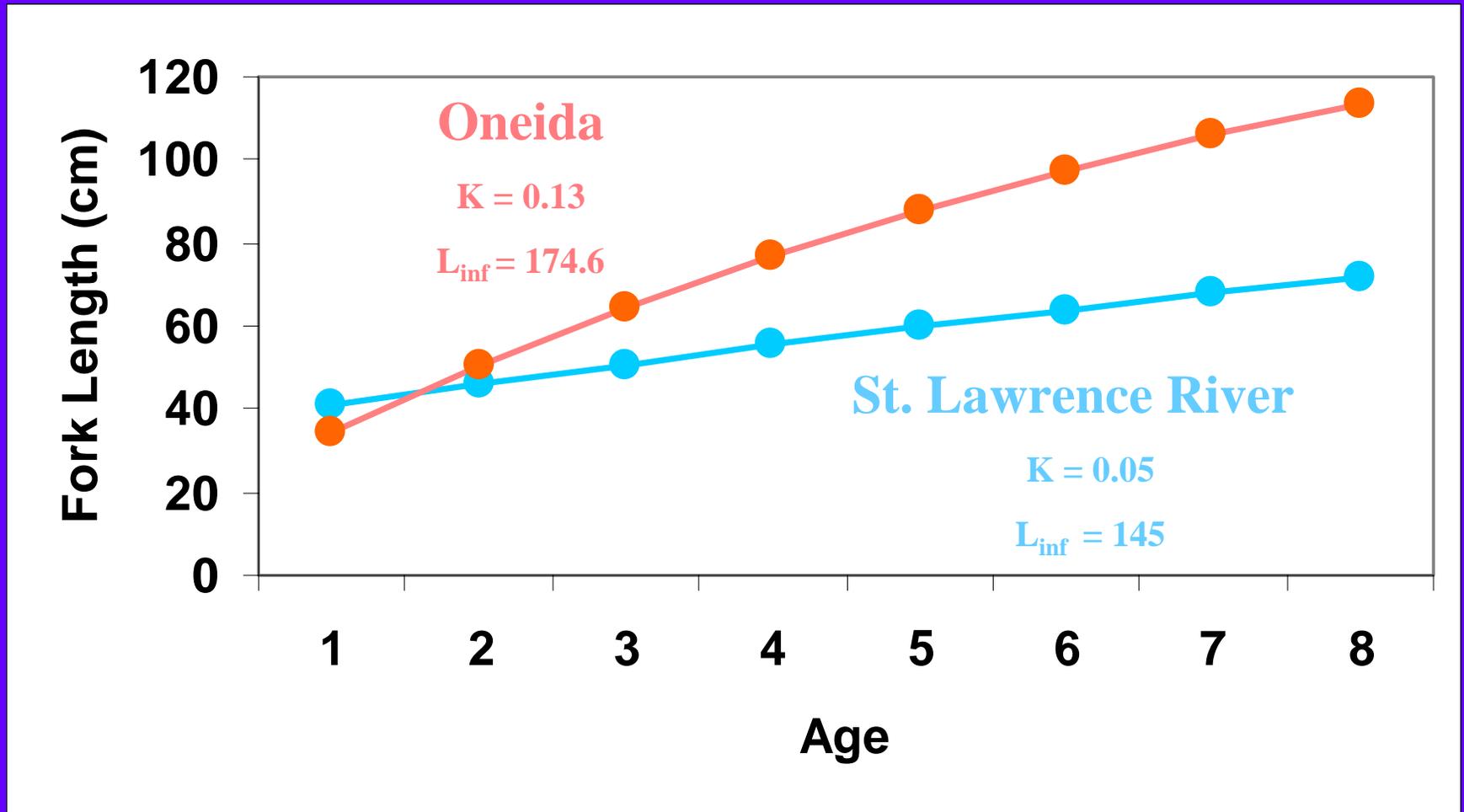
# Three Years Later at Age 9



## Comparison with Other Lakes:

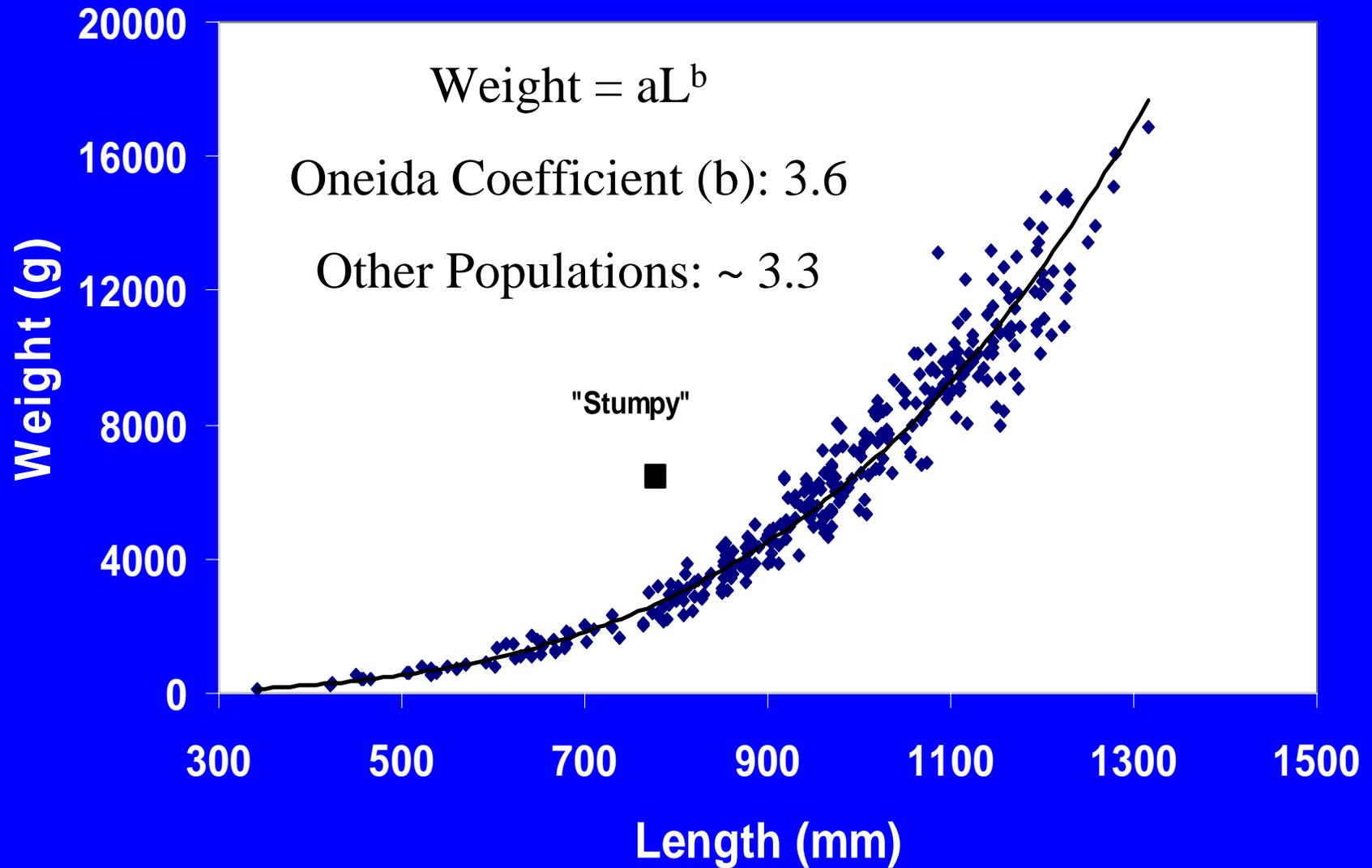


# Von Bertalanffy Growth Curves for Oneida Lake and the St. Lawrence River

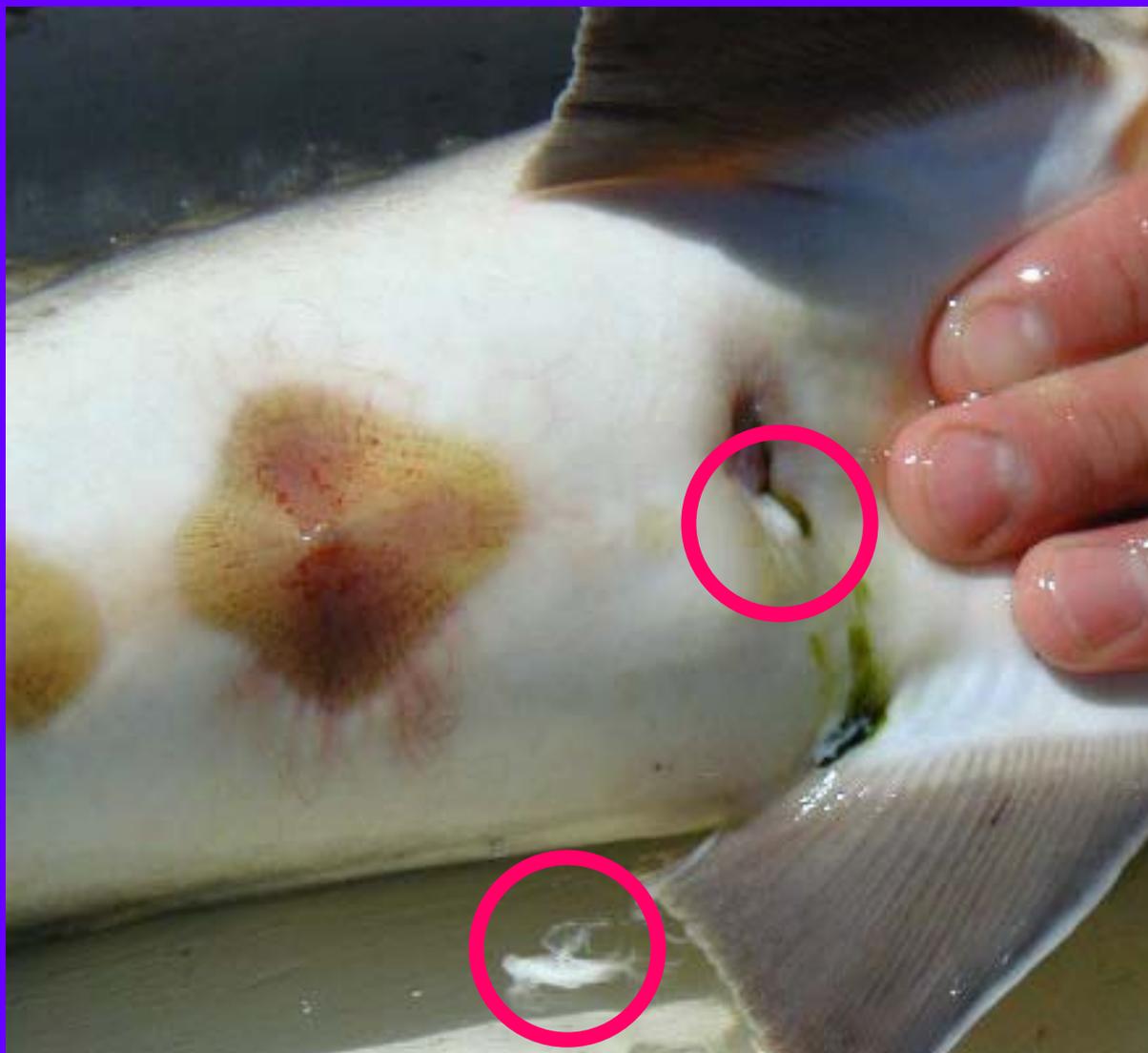


St. Lawrence parameter estimates from Johnson et al. (1998)

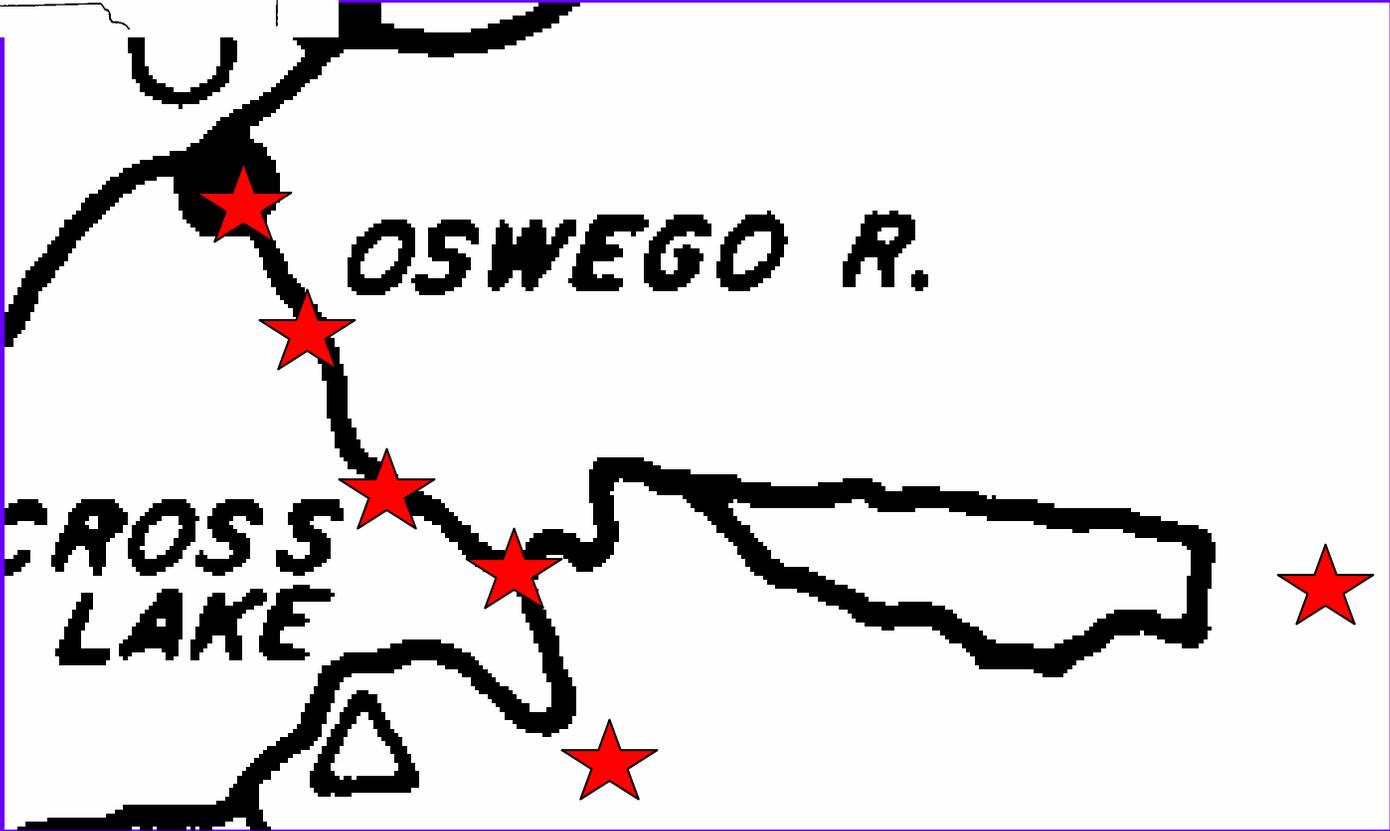
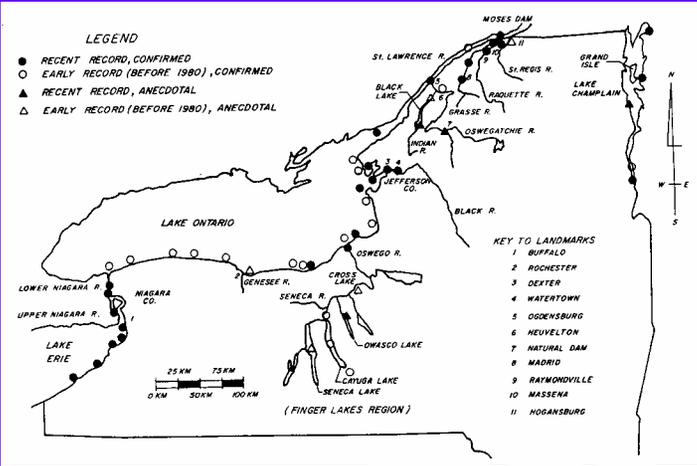
# Observed Length-Weight Relationship



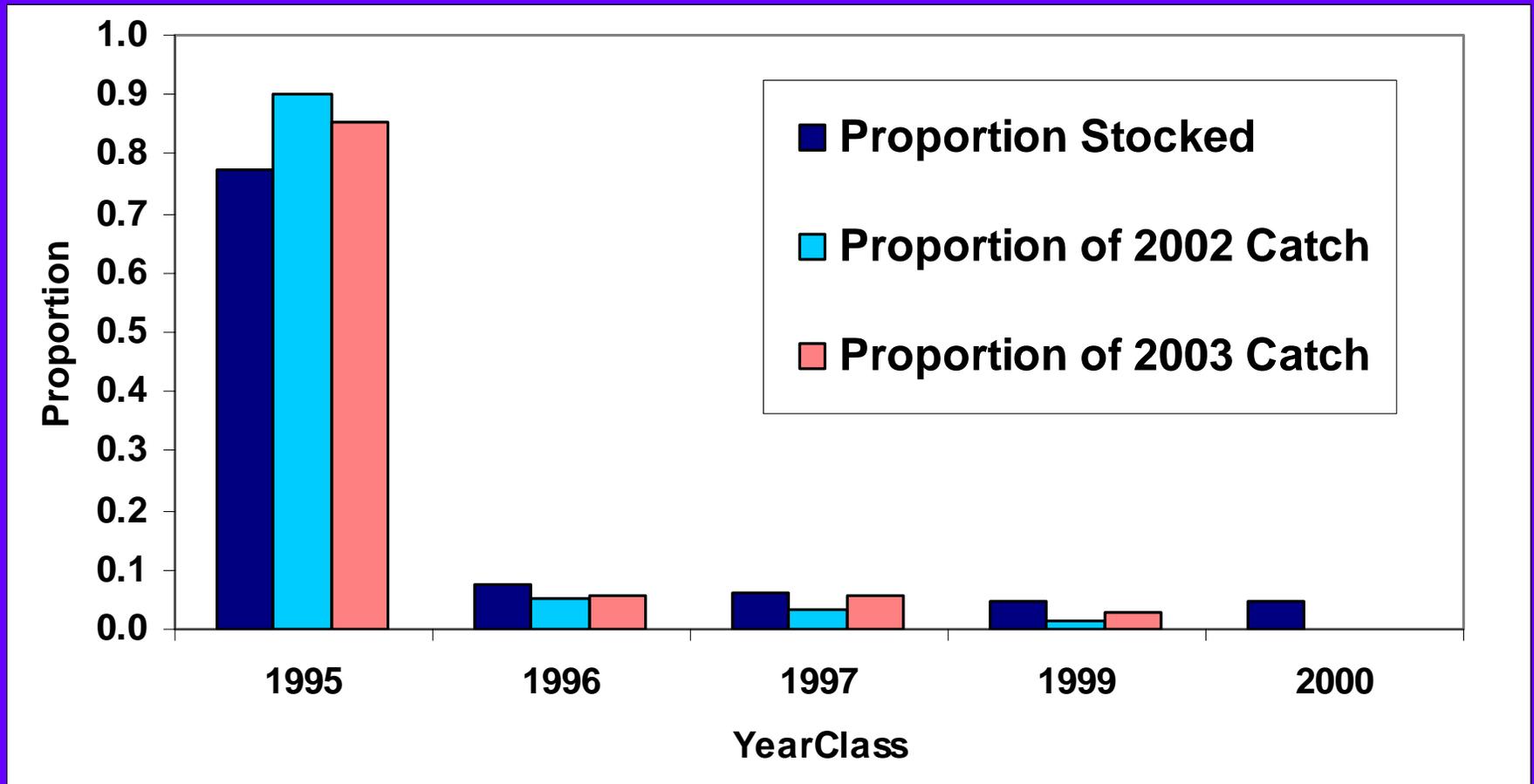
## New in 2003 – Ripe Male Sturgeon



# Extensive Outmigration

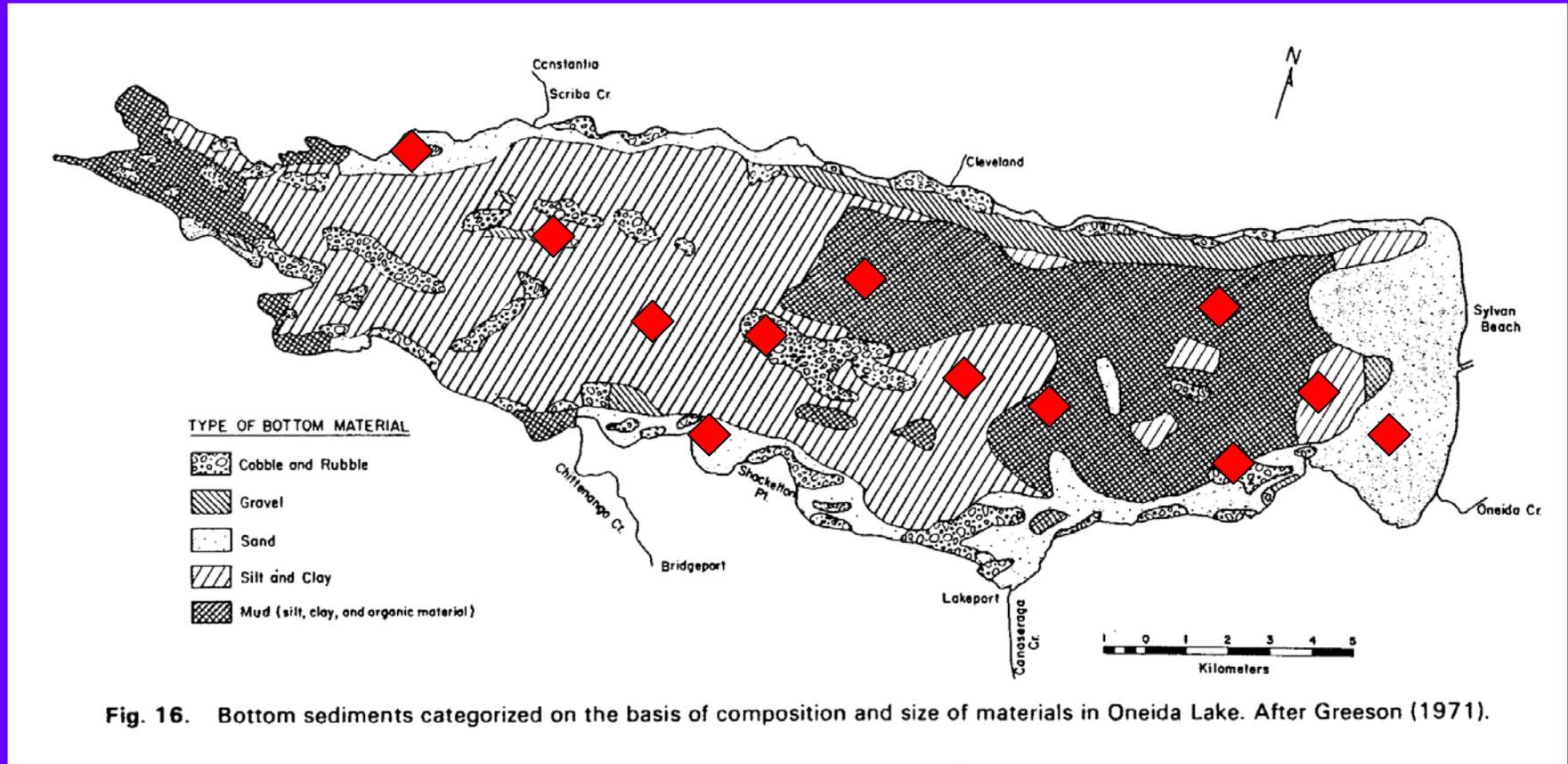


# All Stockings Represented in Gill Net Catches



# Current Study: Sturgeon Distribution and Habitat Use

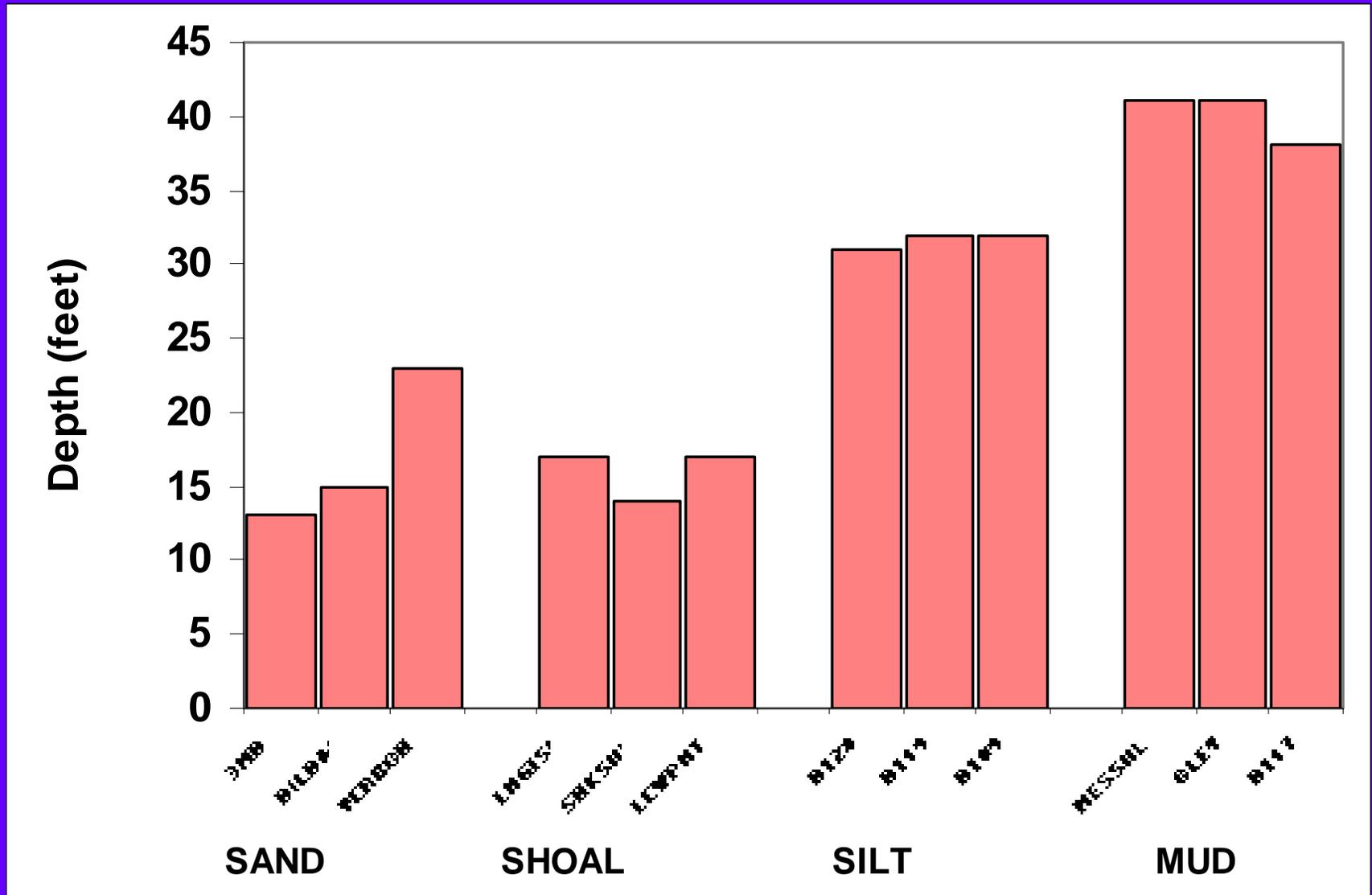
## Major Substrate Types and Lake Sturgeon Sampling Locations in Oneida Lake, New York



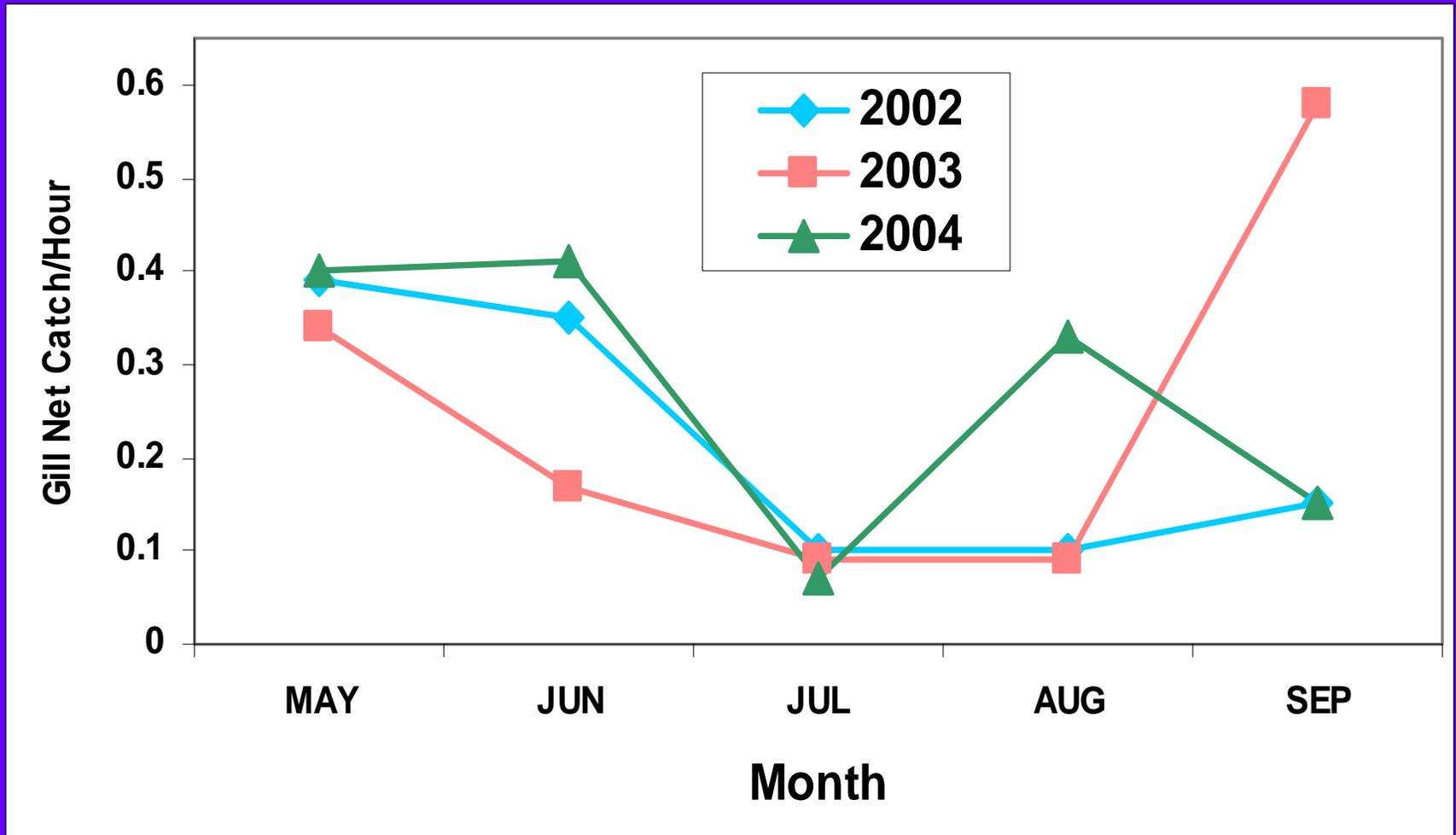
12 sites, 3 in each of 4 substrate types

Sampled monthly May – September, Gill nets, 6-12” mesh

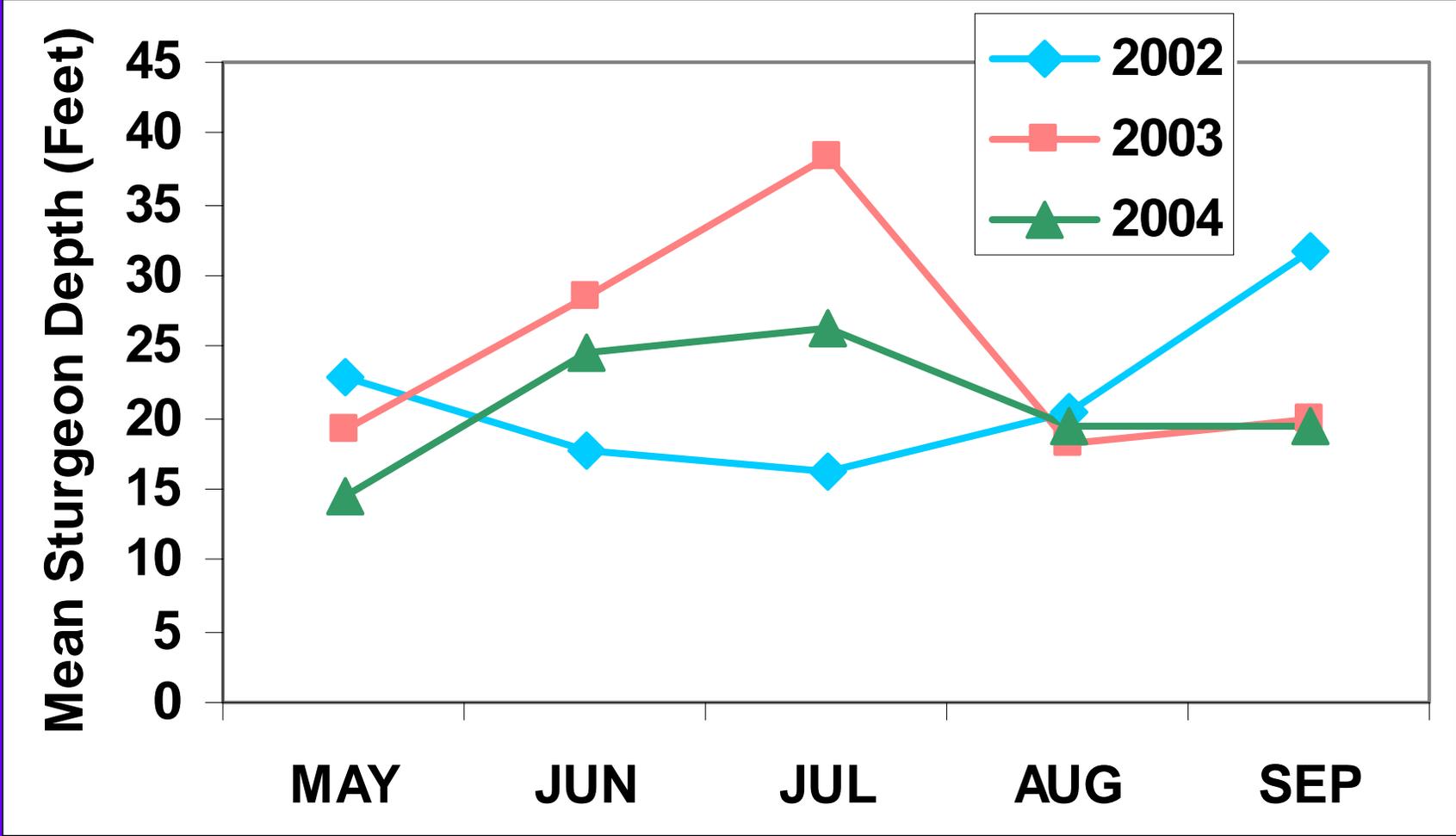
# Sites also Represent Range of Available Depths



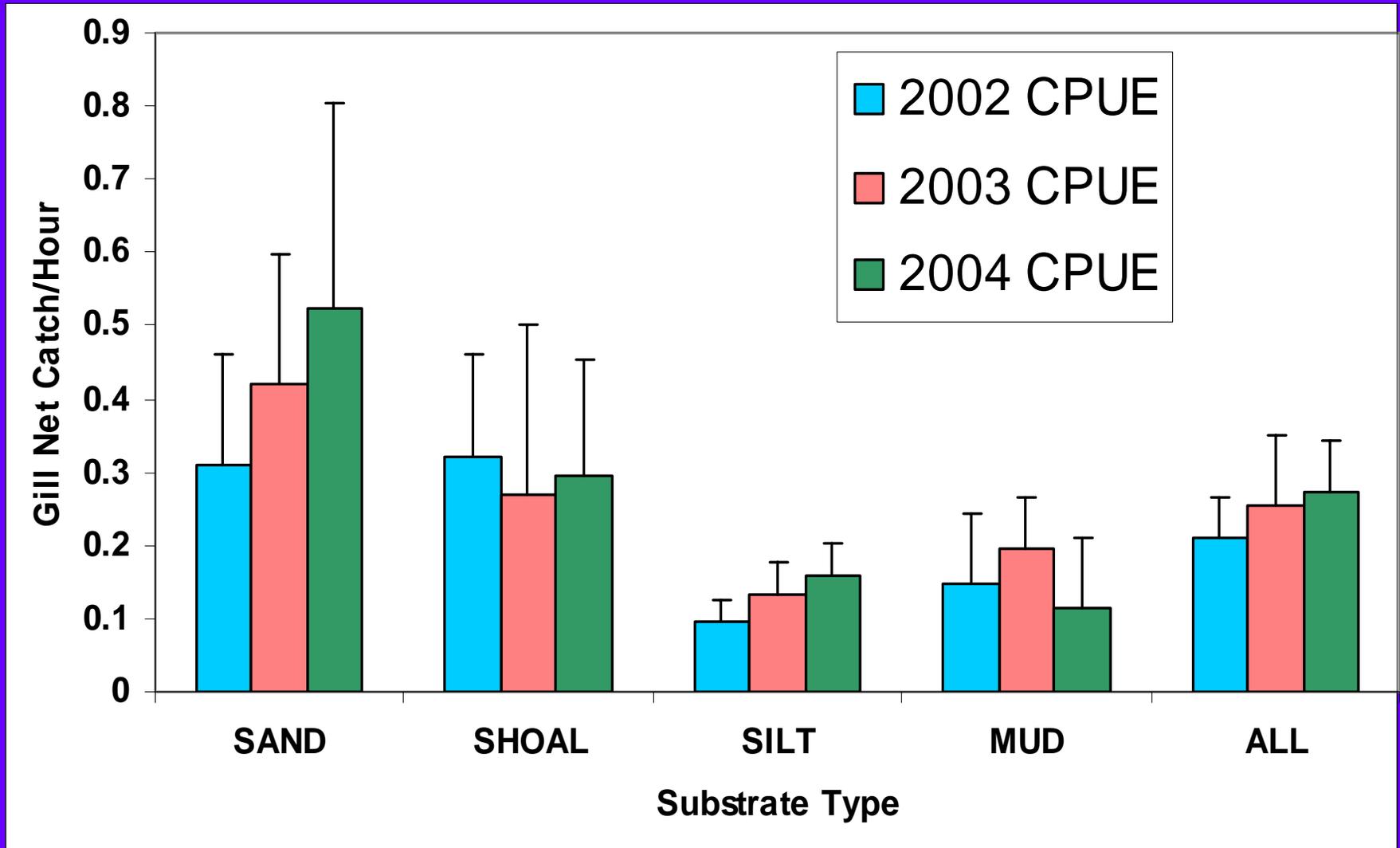
# Sturgeon Catches by Season



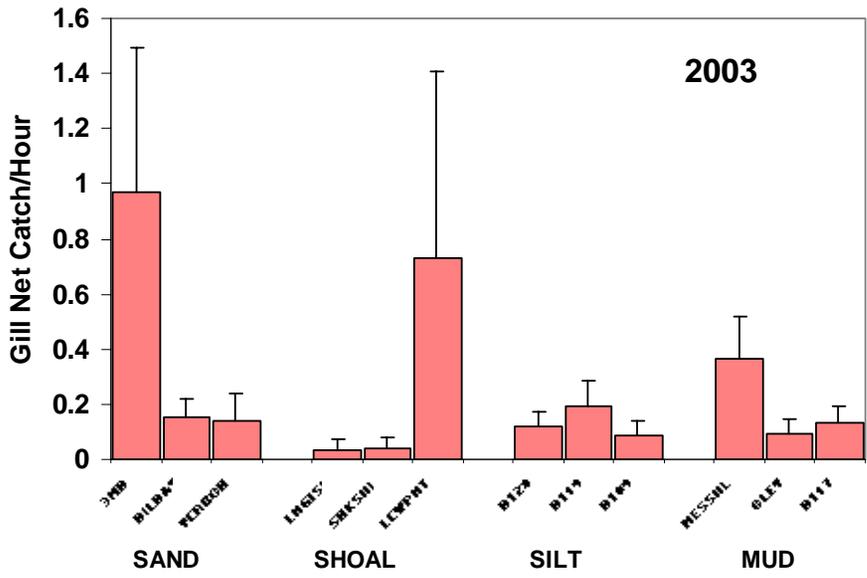
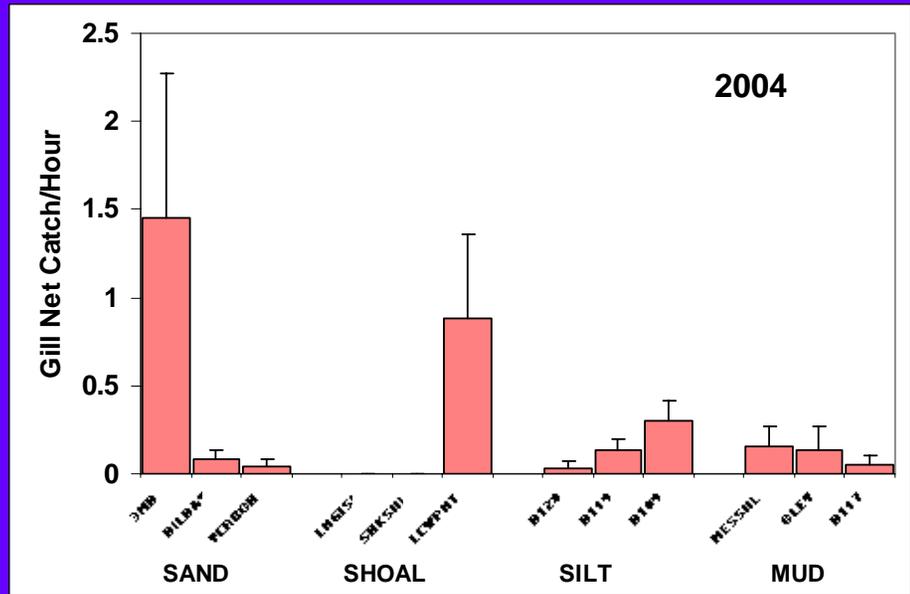
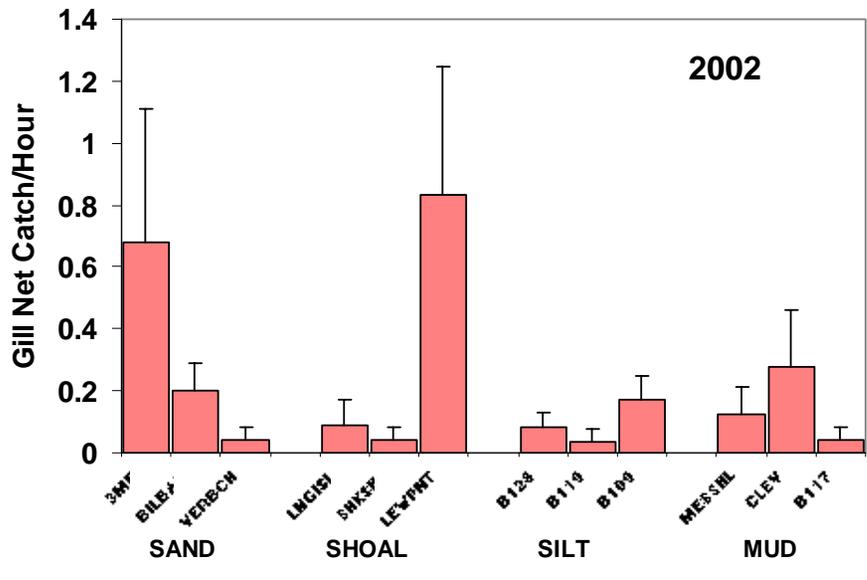
# Seasonal Catches by Depth



# Sturgeon Catches by Substrate



# Sturgeon Catches by Site



# The Two “Hot” Sites

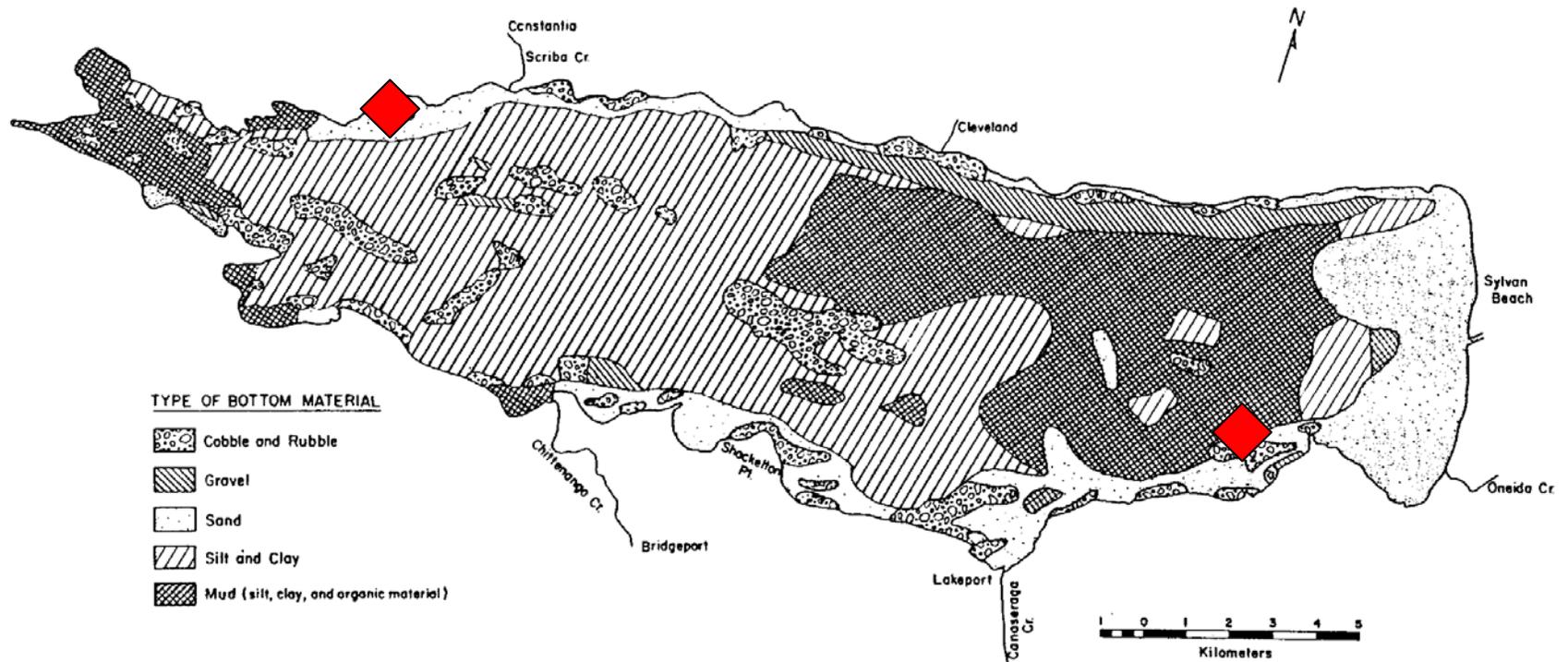


Fig. 16. Bottom sediments categorized on the basis of composition and size of materials in Oneida Lake. After Greeson (1971).

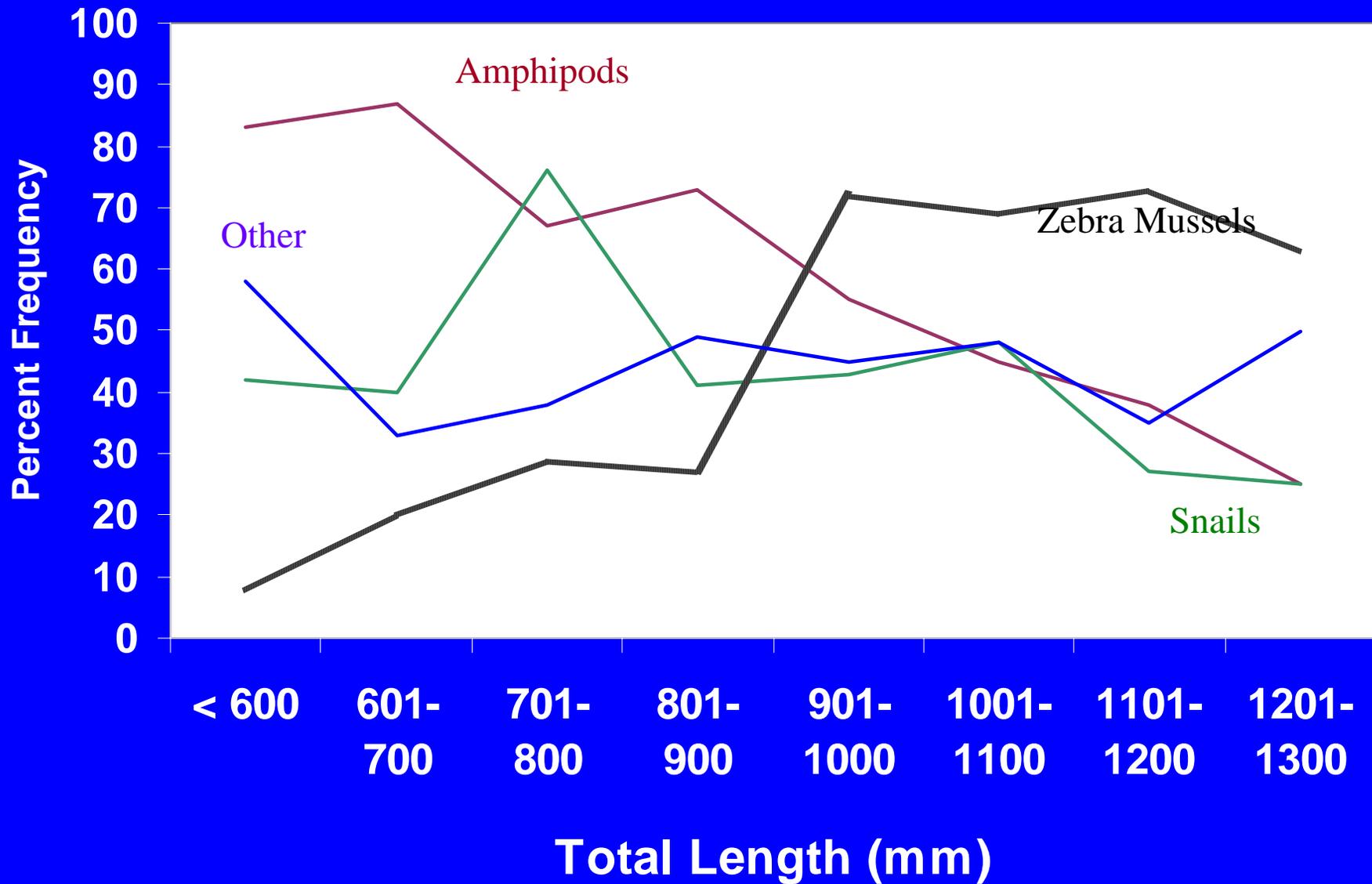
# Sampling Sturgeon Diets



## Frequency of Occurrence of Foods in Sturgeon Diets

	<u># of Sturgeon</u>	<u>%</u>
Amphipods	128	58
Zebra Mussels	116	52
Snails	97	44
Chironomids	51	23
Isopods	37	17
Caddis Flies	12	5
Oligochaetes	4	2
Water Mites	3	1
Leeches	3	1
Zooplankton	3	1
Fish Larvae	2	1
Clams	2	1

# Size-Related Patterns in Sturgeon Diets





## Sampling Benthic Sturgeon Food

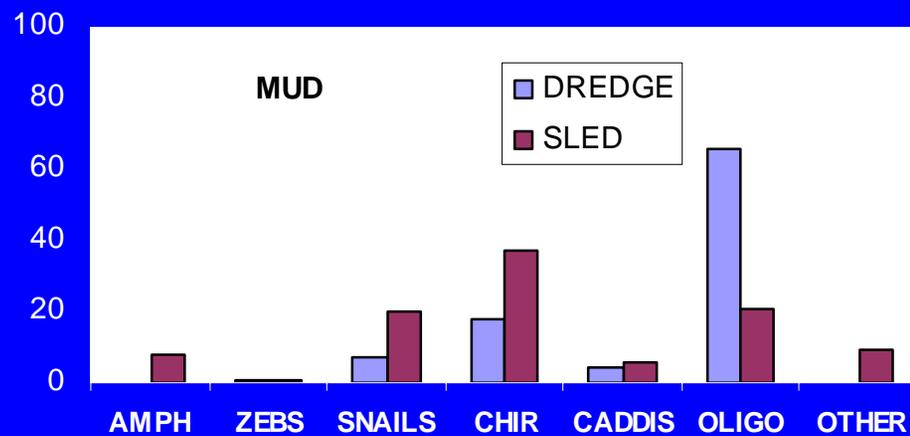
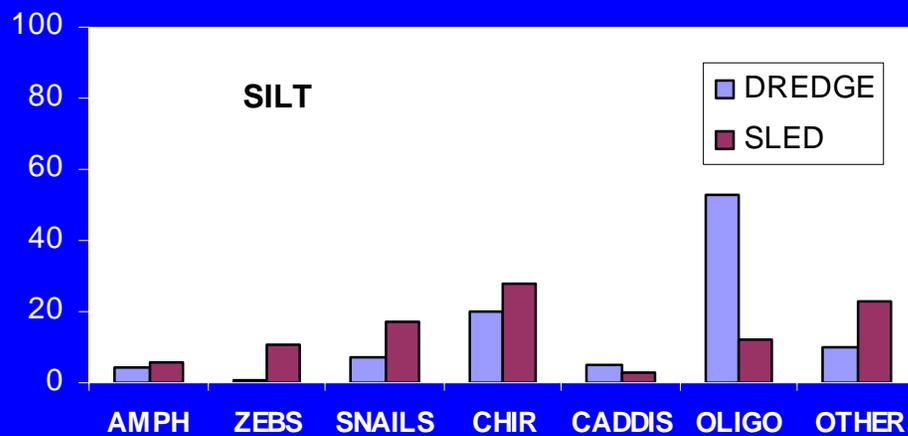
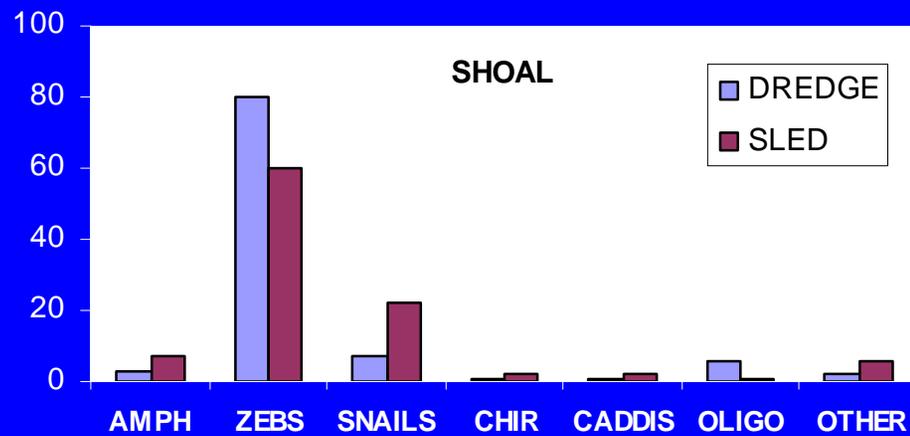
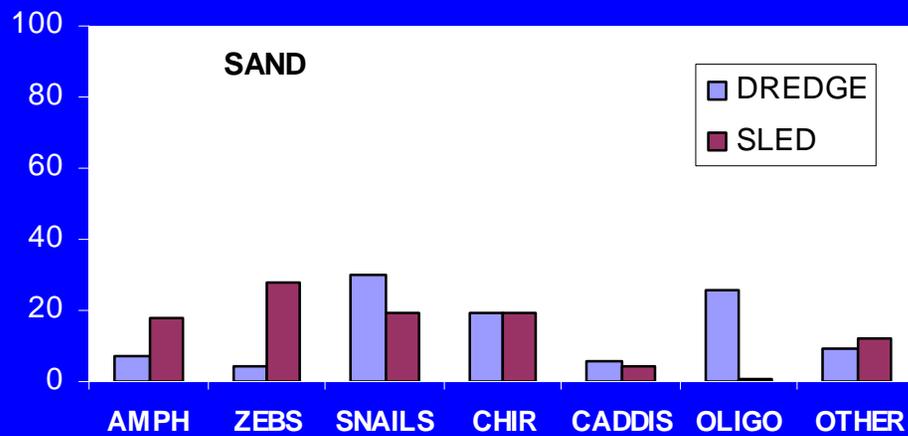




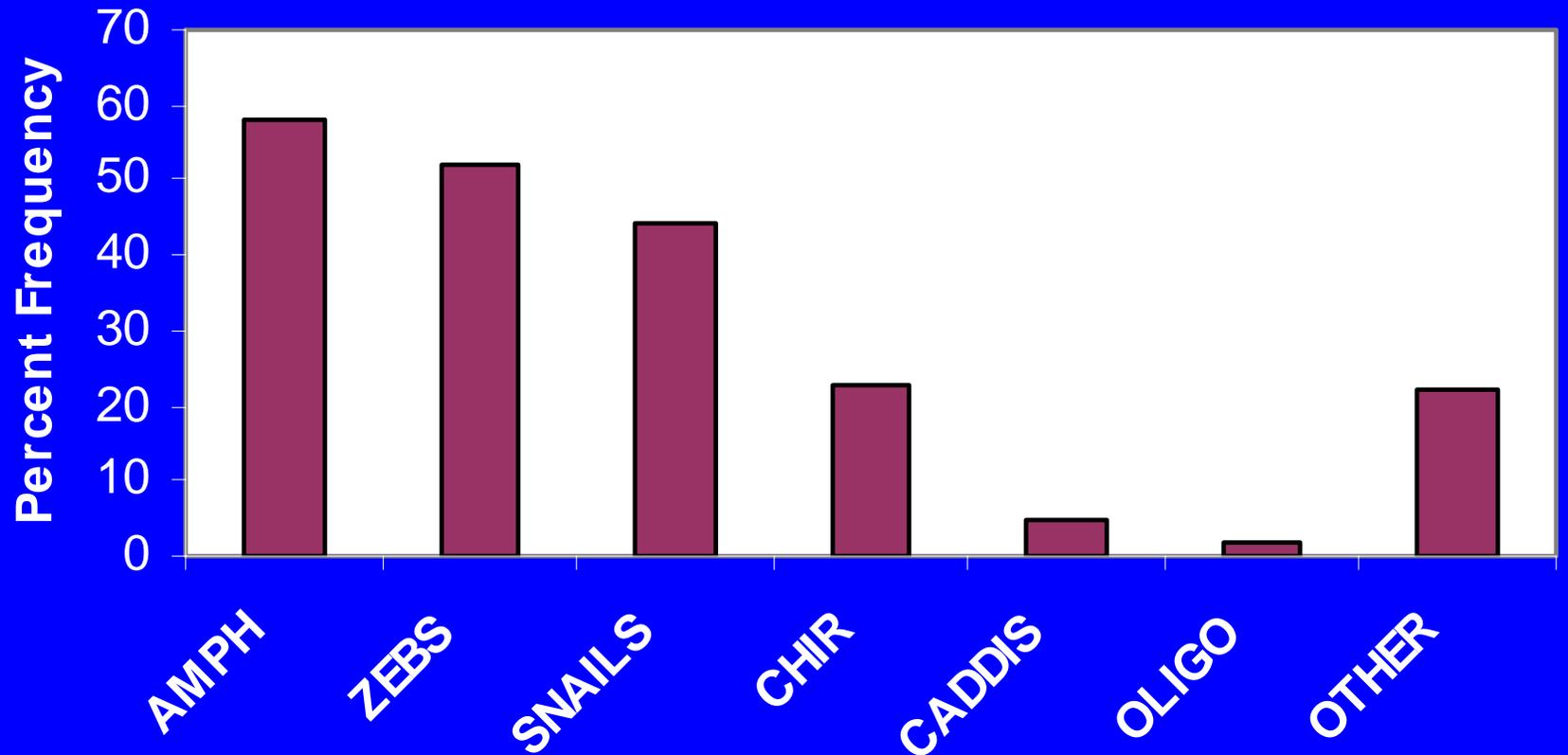
# Sampling Benthic Sturgeon Food



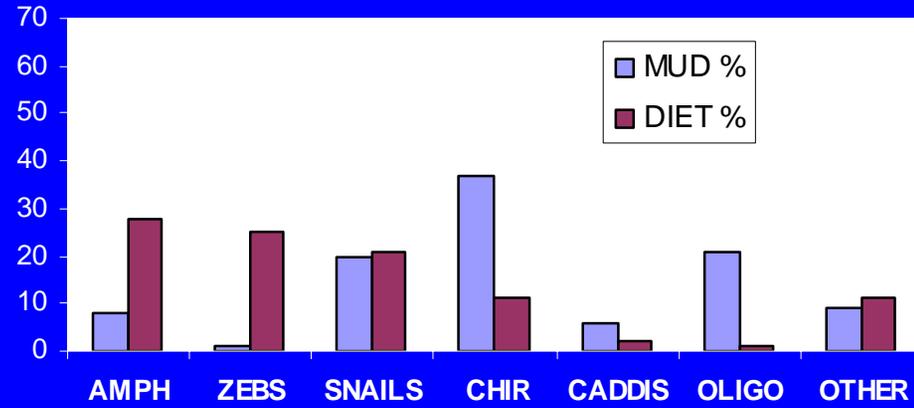
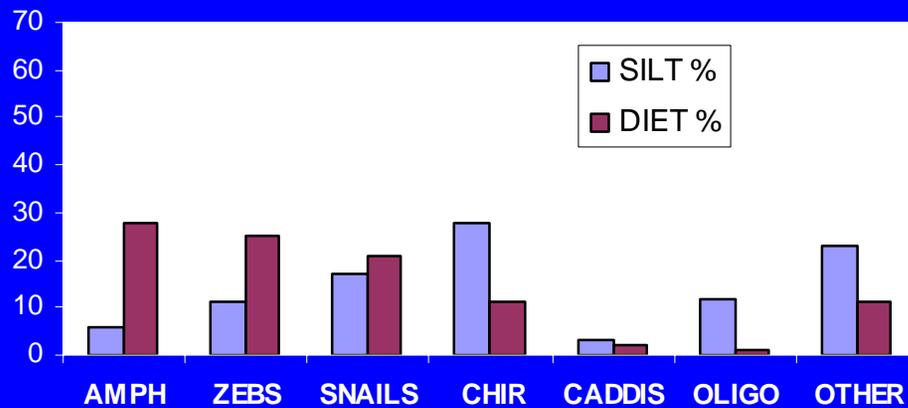
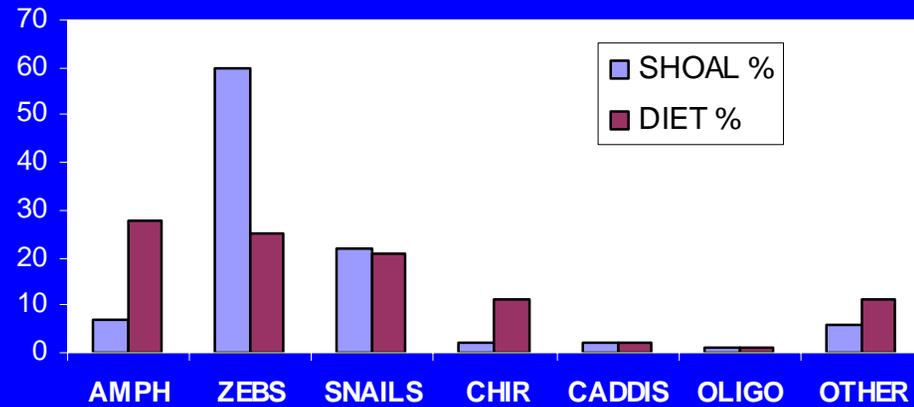
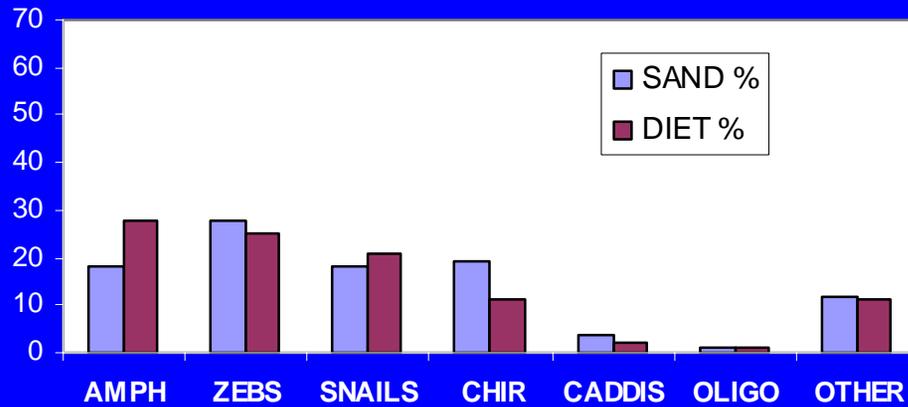
# Comparison of Dredge and Sled Catch Composition

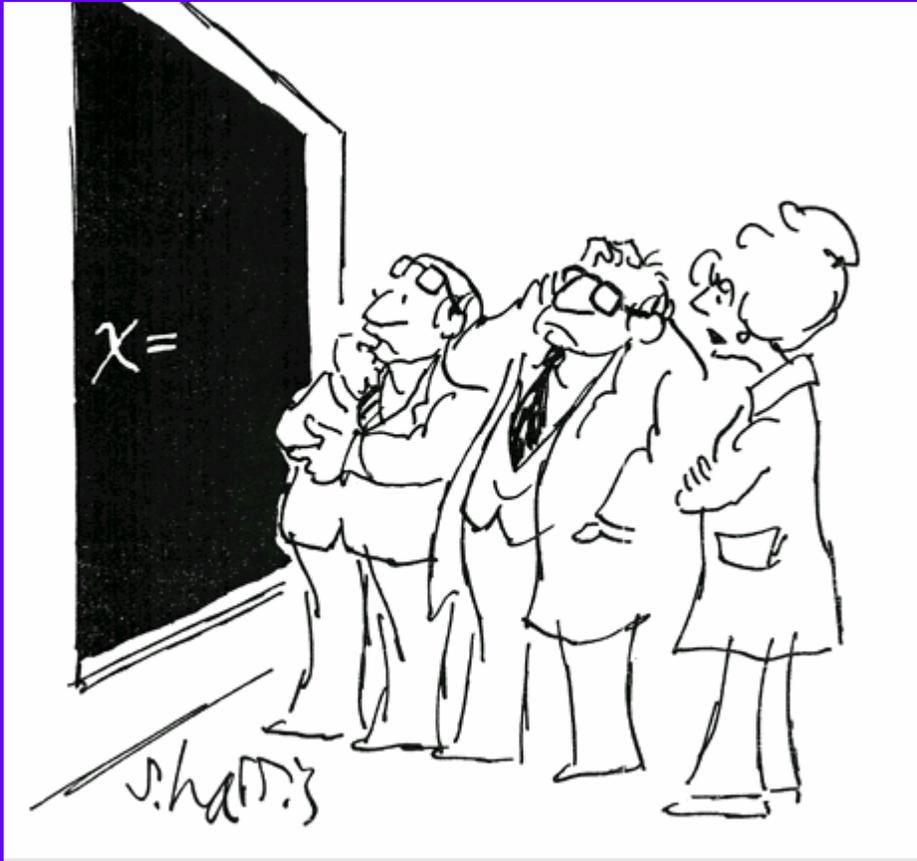


# Common Benthos in Sturgeon Diets



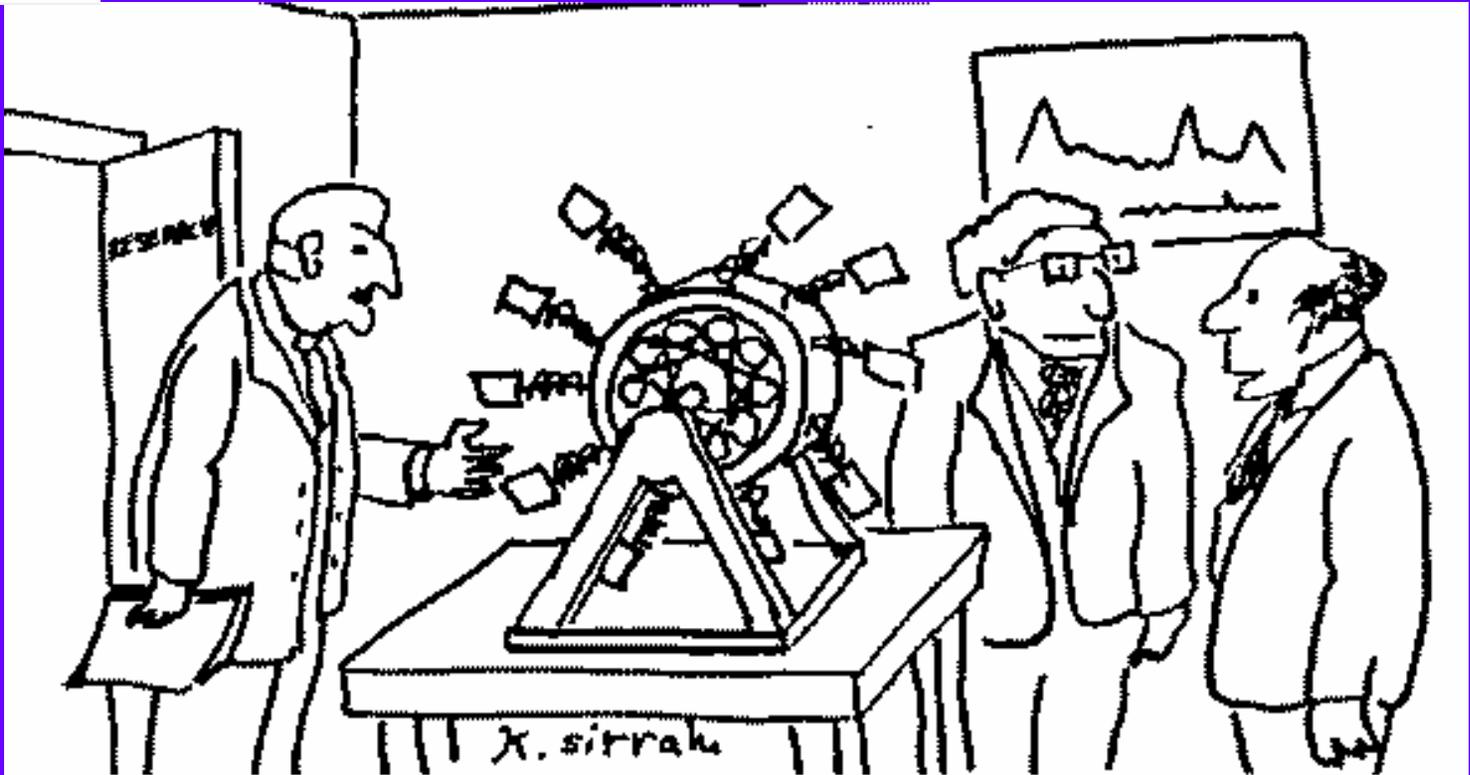
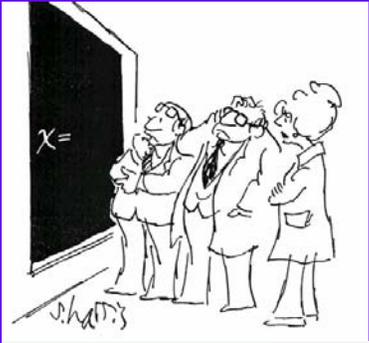
# Comparison of Sturgeon Diets and Substrate-Specific Benthic Communities (from Sled)





**Have We  
Learned  
Anything Yet?  
(i.e., Conclusions)**

# 1. Sturgeon are captured in all habitats of Oneida Lake

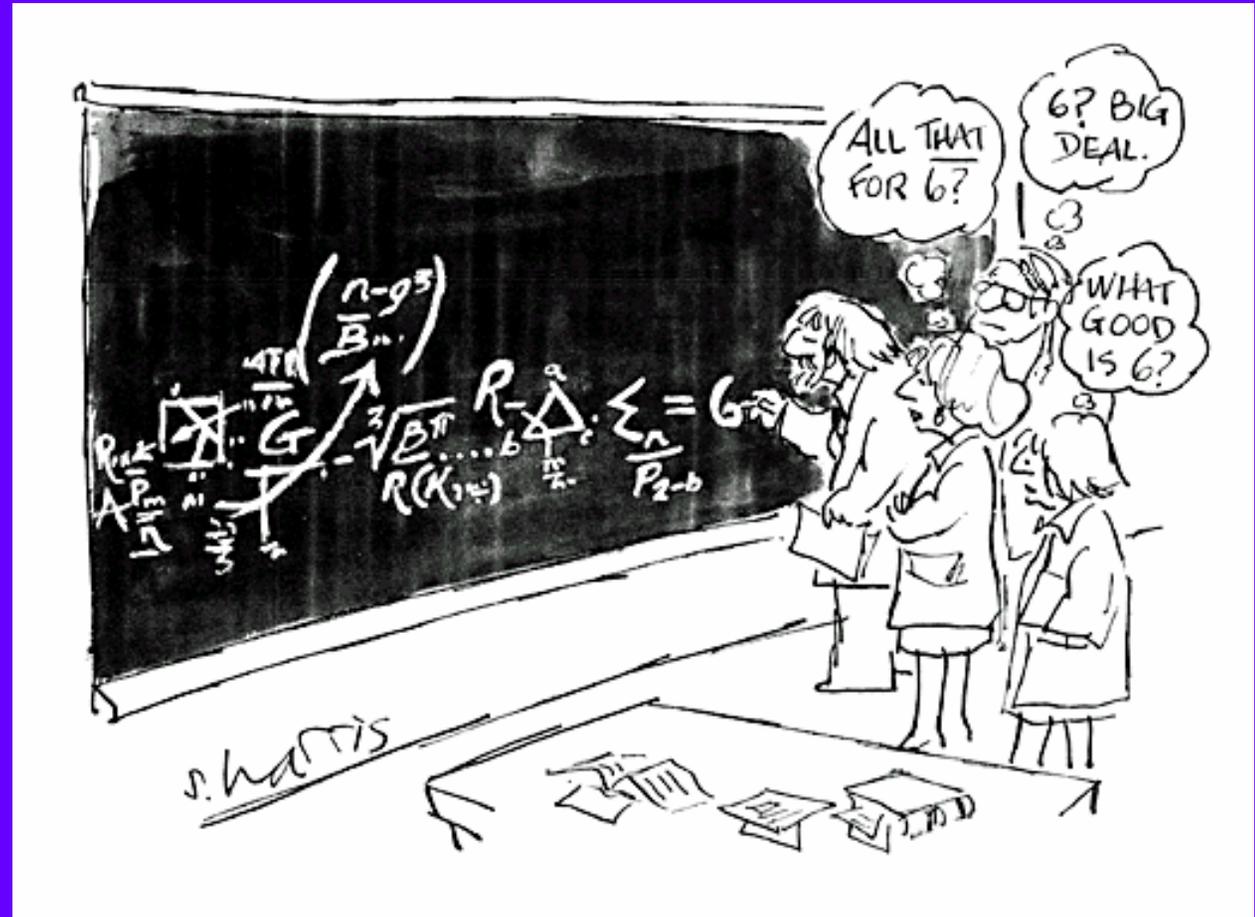
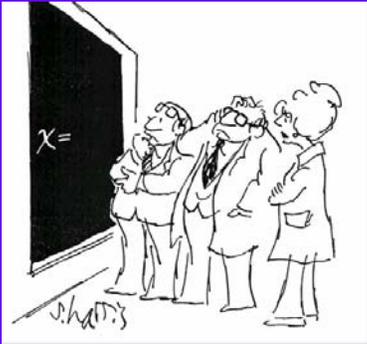


**"It may be perpetual motion, but it will take forever to test it."**

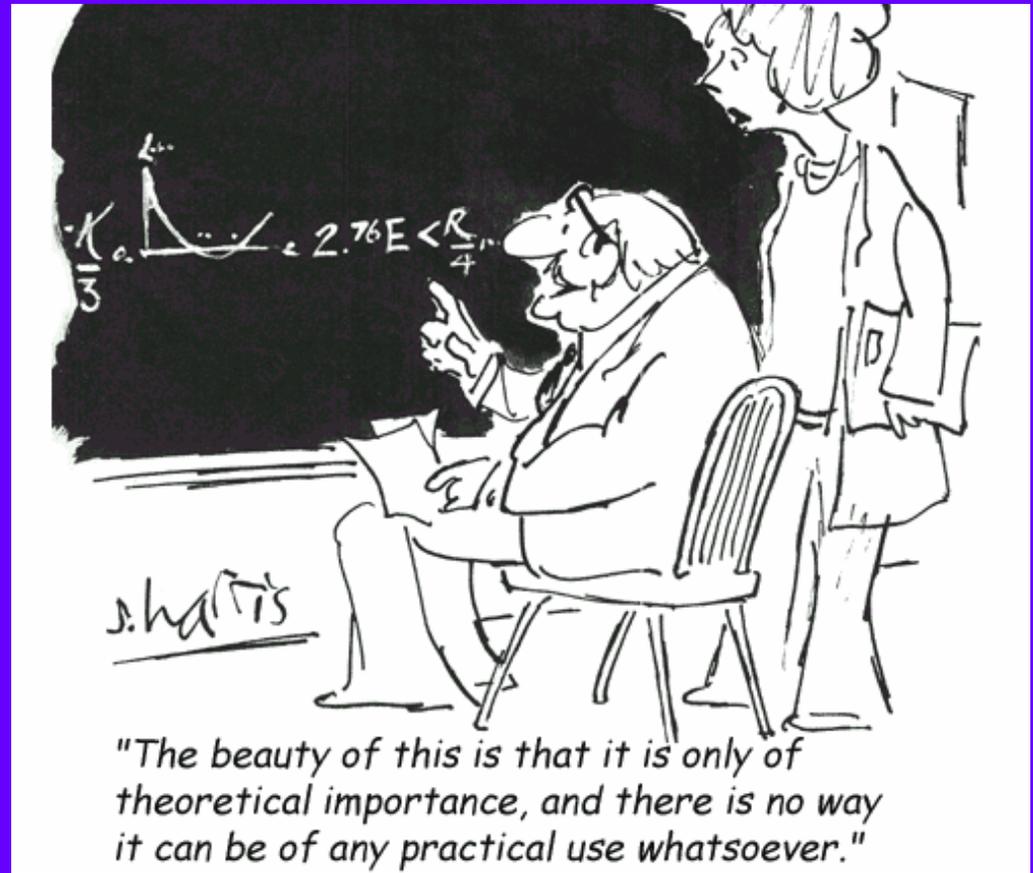
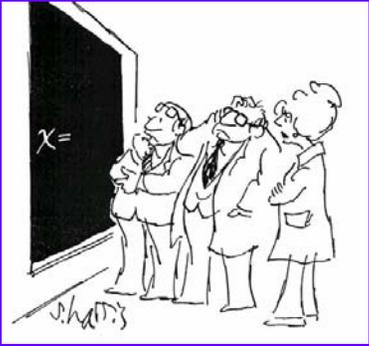
Cartoon by Donald Simanek.



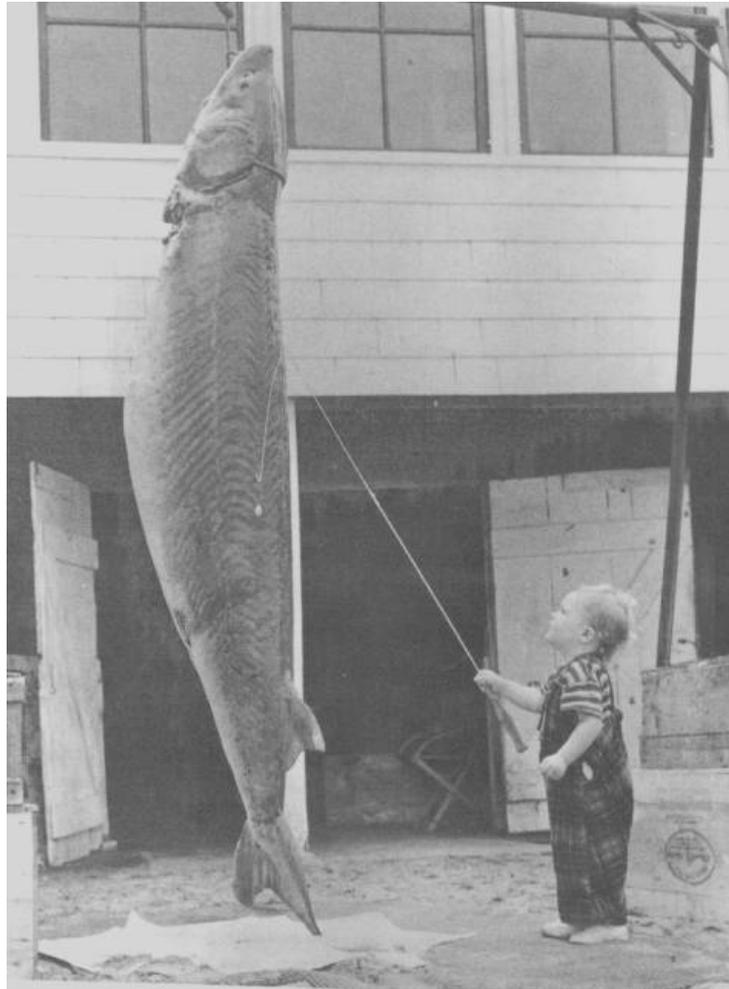
### 3. And benthic communities in sand and shoal habitats are most similar to observed sturgeon diets



#### 4. Oneida Lake offers excellent conditions for growth, we need telemetry to truly understand what is most important



# Our Hope for the Future



**Fisheries History Section Commemorative Print**  
**134<sup>th</sup> Annual Meeting of the American Fisheries Society**  
**Madison, Wisconsin 2004**

A lake sturgeon taken from the Niagara River near Fort Erie, Ontario in 1946. It measured 6 feet, 8 inches and weighed 230 pounds.

Source: Harkness, W.J.K. and J.R. Dymond. 1961. The Lake Sturgeon. Ontario Department of Lands and Forests. Permission provided by Ontario Ministry of Natural Resources

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**Other Stuff:**

## **Double Tagging Study**



The tag then transmits a unique digital code back to the transceiver/reader where the code is displayed and/or stored. The tag only transmits its unique code when the tag is present in the transceiver's

electromagnetic activation field. With no battery to fail, PIT tags are expected to last 100 years or more. The tag detection and display is almost instantaneous.

Other Stuff:

# Development of Gill Net Selectivity Curves?

