

*Management lessons  
from ocean fisheries -  
can they benefit lake sturgeon  
and other  
Great Lakes species?*

- **Nancy A. Auer**      2008 GLFT Lake sturgeon workshop
- **Department of Biological Sciences**
- **Michigan Technological University**



# NATIONAL MARINE SANCTUARIES

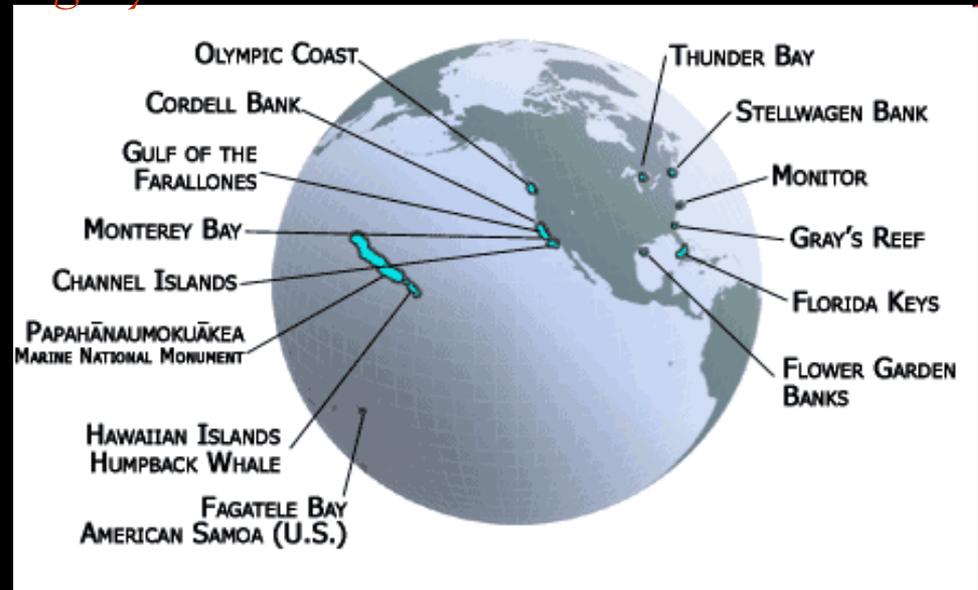


U.S. Marine Sanctuaries Program, developed in 1972, as it became clear there was a need to protect *spawning grounds* and *nursery areas* of VALUED species.

October 23, 1972

Marine Protection, Research and Sanctuaries Act which, among other things, establishes the National Marine Sanctuary Program. Title III of the law is later renamed the National Marine Sanctuaries Act.

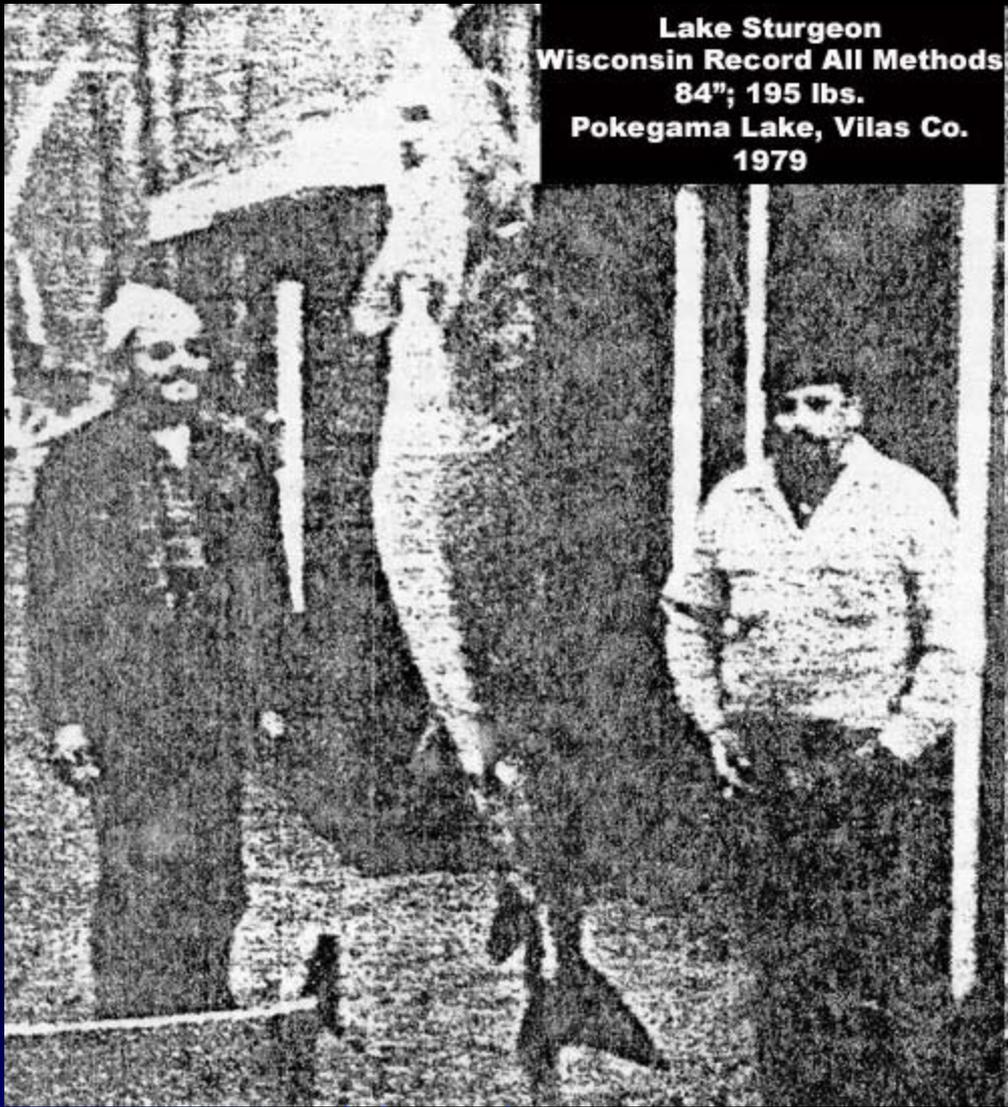
Purpose: to conserve, protect, and enhance the biodiversity, ecological integrity and cultural legacy of MPAs.



# Scientific Findings of Protection

- Benefits of protected areas:
  - Beneficial changes are seen within 3 years
  - Average density of species increases 2 x's
  - Average weight of individuals increases 3 x's
  - 20% greater diversity
  - Series of small reserves  $\geq$  1 large reserve
    - From Raloff 2001, Halpern 2003

Lake Sturgeon  
Wisconsin Record All Methods  
84"; 195 lbs.  
Pokegama Lake, Vilas Co.  
1979



# Size Matters



[http://dnr.wi.gov/fish/sturgeon/images/record\\_spearsturgeon.jpg](http://dnr.wi.gov/fish/sturgeon/images/record_spearsturgeon.jpg)

Lake Michigan – 134 pounds, 77 cm TL  
June 2005

## SIZE MATTERS !

Fishing regulations worldwide support the catch of the largest individuals.

We impose a selective force on any population exposed to fishing – over time selecting for smaller fish.

(Conover and Munch 2002, Jorgensen et al. 2007)



# *U.S. MPA Classification System*



Conservation Focus

Natural, Cultural, Sustainable

Level of Protection Afforded

6 levels of use

Permanence of Protection

Perm., Cond., Temp.

Constancy of Protection

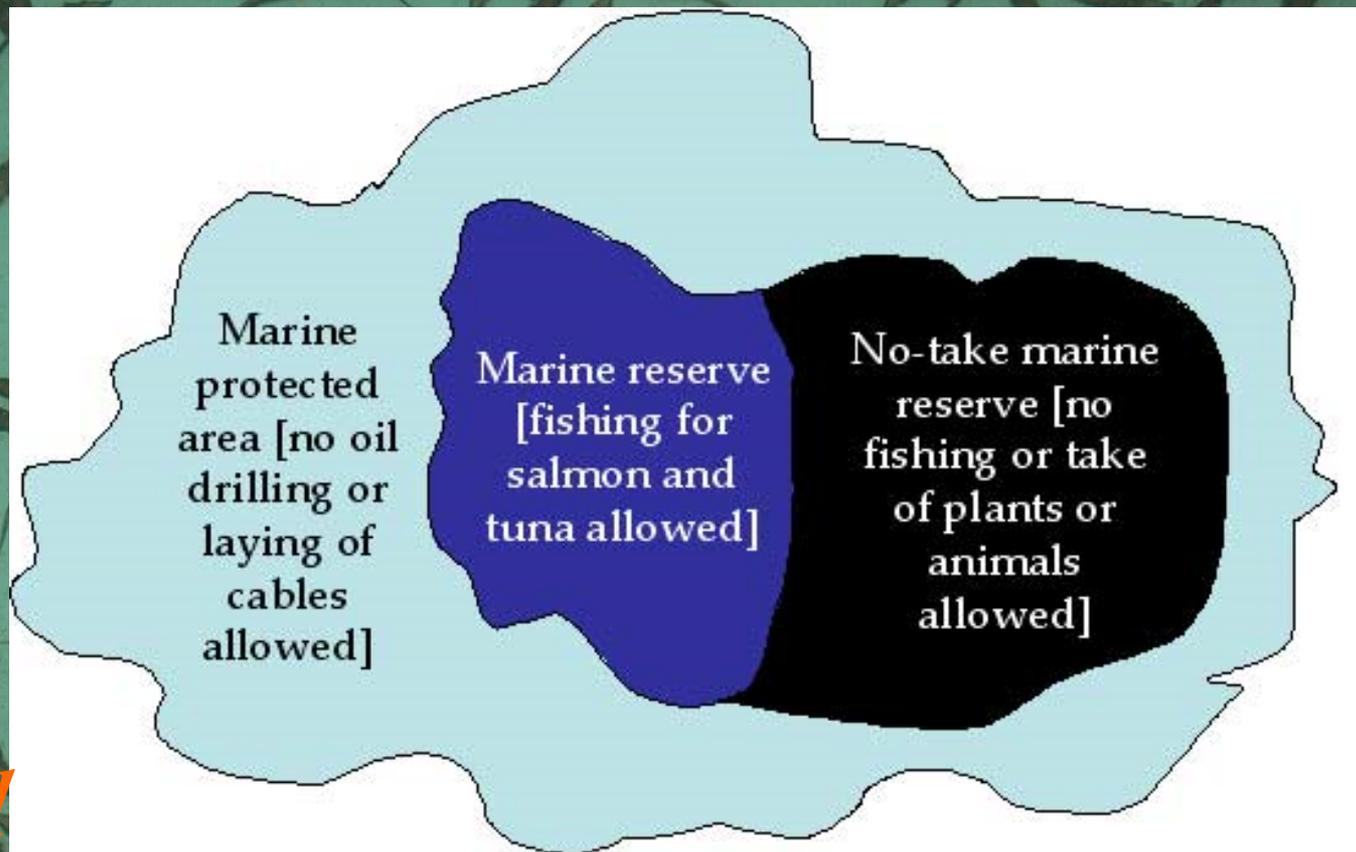
Seasonal, All-year, rotation

Ecological Scale of Protection

Ecosystem, focal resource

(Wahle and Uravitch 2006)

*Marine  
Reserve  
Vs  
Marine  
Protected  
Area*



Hypothetical example of a marine protected area, a marine reserve, and a no-take marine reserve. Regulations in brackets are examples only, though a no-take marine area means no fishing is allowed.

*Lake Superior Fish Community  
Objectives have individual plans  
for three species (GLFC ...)*

- **Brook Trout/ Coasters – Huron Mountain Watershed**
- **Walleye - Ontonagon and Huron Bay/Mountain watersheds (overlooking Portage Lake watershed)**
- **Lake Sturgeon – Sturgeon River – Houghton, Baraga Co.**
- **GLFC special publications 2003-01,-02,-03.**

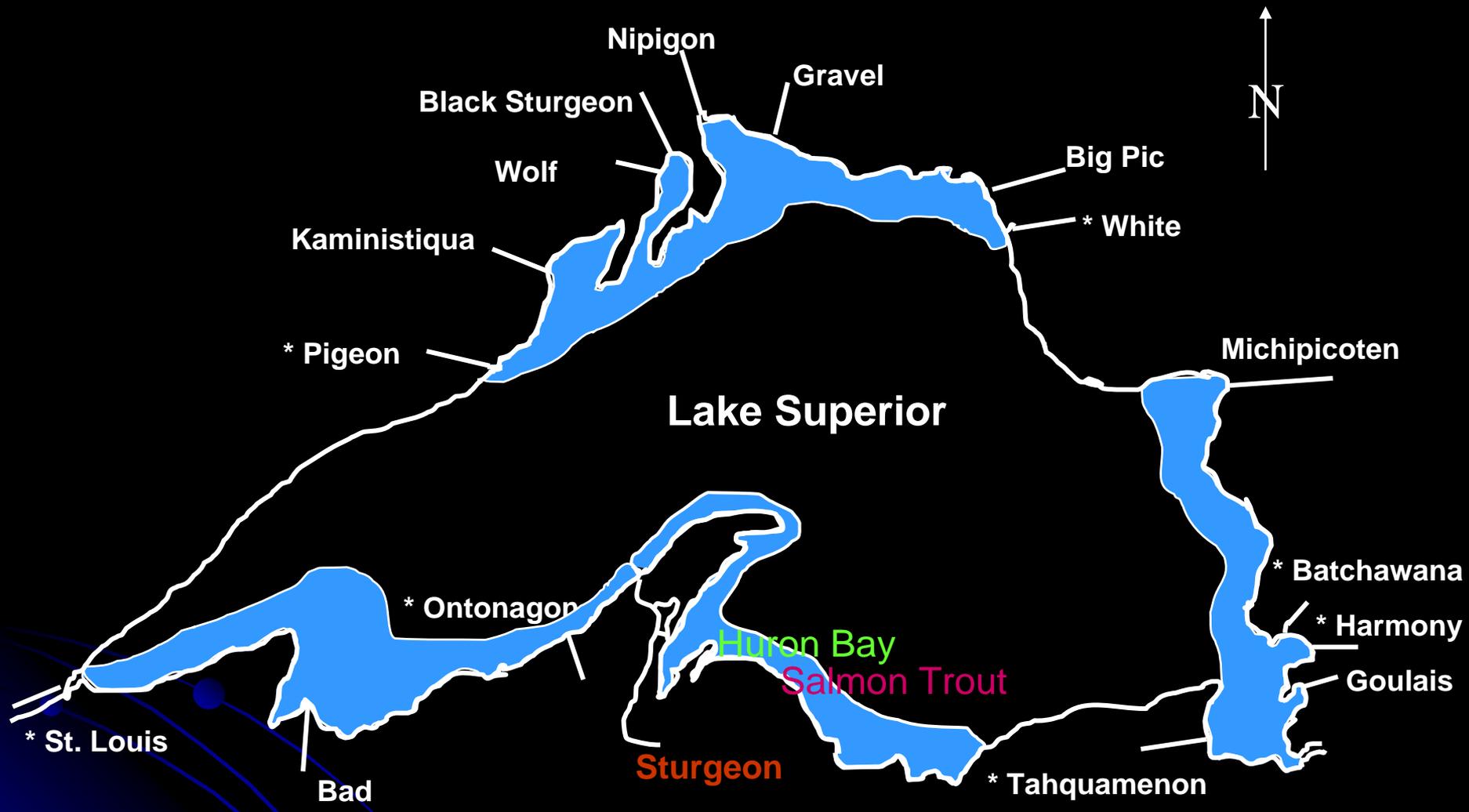
# *Applying the MPA concept to Future Fisheries Management in Great Lakes Waters*

A Lake Superior Example:

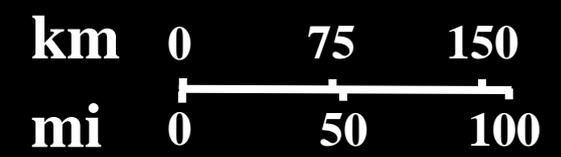
In U.S. waters designate the Sturgeon River lake sturgeon population as the one in Lake Superior for MPA status.

Canadian waters?

Other Great Lake Water Bodies?



\*rivers which need or are undergoing rehab



# Sturgeon River/Portage Lake/Keweenaw Bay MPA

- Allows a stock of lake sturgeon in Lake Superior to achieve natural growth and reproduction.
- Can be coordinated with brook trout (Salmon Trout River) and walleye (Huron Bay) rehabilitation goals in region.
- Can be tailored to Tribal and State needs.

# References

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- Raloff, J. 2001. Underwater Refuge. *Science News* Vol 159, 264-266
- Wahle, C.M. and J.A. Uravitch 2006. A functional classification system for Marine Protected Areas in the United States. [www.mpa.gov](http://www.mpa.gov)
- Three GLFC Rehab Plans for Brook Trout, Lake Sturgeon and Walleye. 2003-01, 2003-02, 2003-03.

The beginning...

