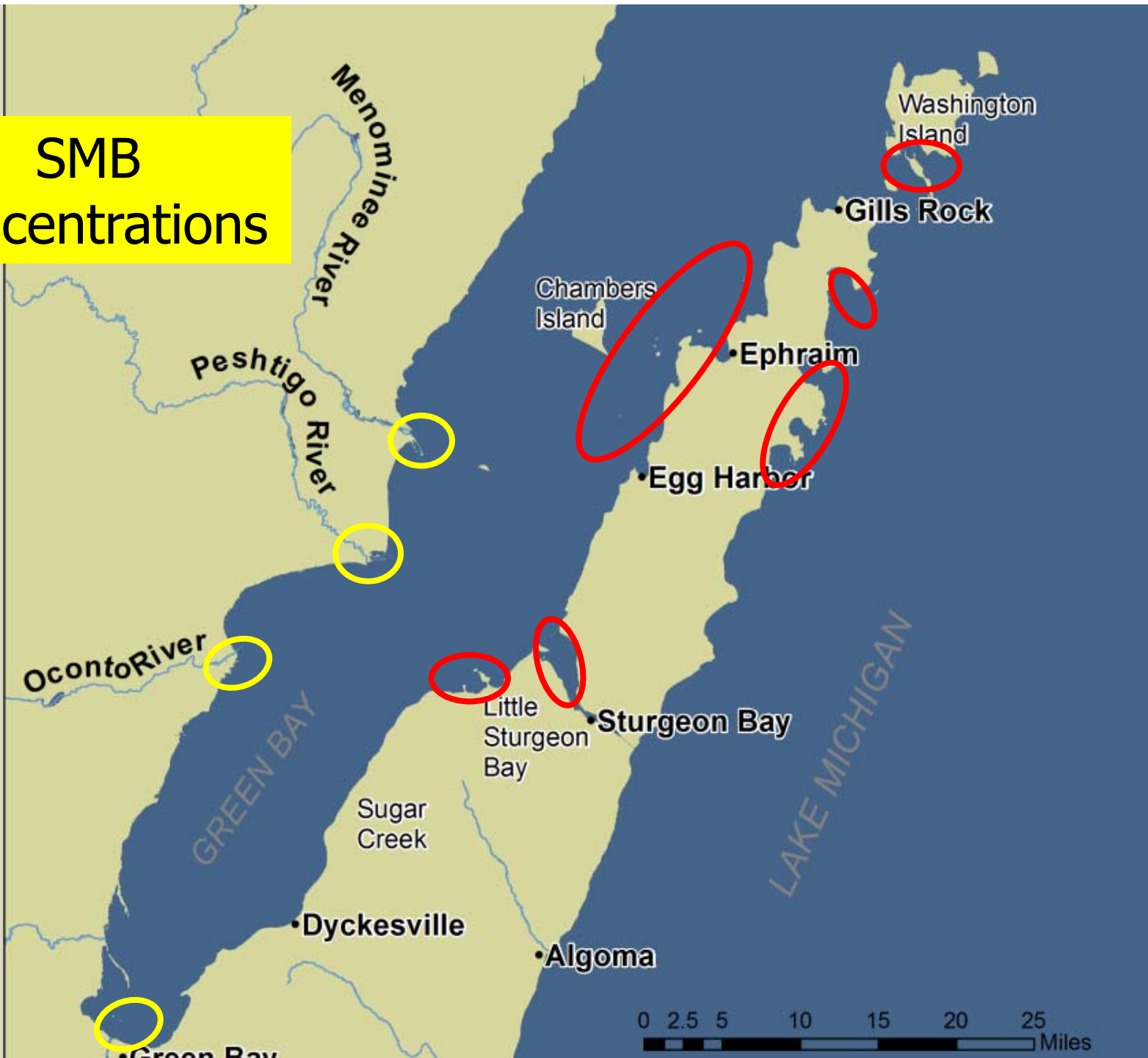


A man with a mustache, wearing a grey baseball cap, sunglasses, a light blue t-shirt, and an orange life vest, is holding a large, dark green smallmouth bass. He is standing in a metal boat on a body of water. The background shows a clear blue sky, green trees, and tall grasses along the shore. A semi-transparent blue banner with white text is overlaid across the middle of the image.

Smallmouth Bass in Door County

Door Co. SMB Mgt. Mtg.
Sturgeon Bay, WI
18 October 2017

SMB Concentrations



The Smallmouth Fishery

- Diverse opportunities, diverse interests
 - Bass mecca (tournaments/guides/sport fishers)
 - Shore/family opportunities
 - Catch and release predominant
- Why does Door County have such a good smallmouth population?
 - Quality habitat for all life stages
 - Areas protected from high energy
 - Abundant forage
 - Moderate harvest



Smallmouth Bass Assessments

- Spring population assmnt.
 - Pre-spawn period (mostly adults)
 - Rotate among populations
 - Fish Creek area never sampled
- Smallmouth YOY (recruits)
 - Inconsistent results
 - Mini fyke nets/seining
 - Goby interaction
 - Year class strength
 - Stock-recruitment relationship?
- Snorkeling assessments
 - Nest success
 - Goby impacts
 - Angling pressure

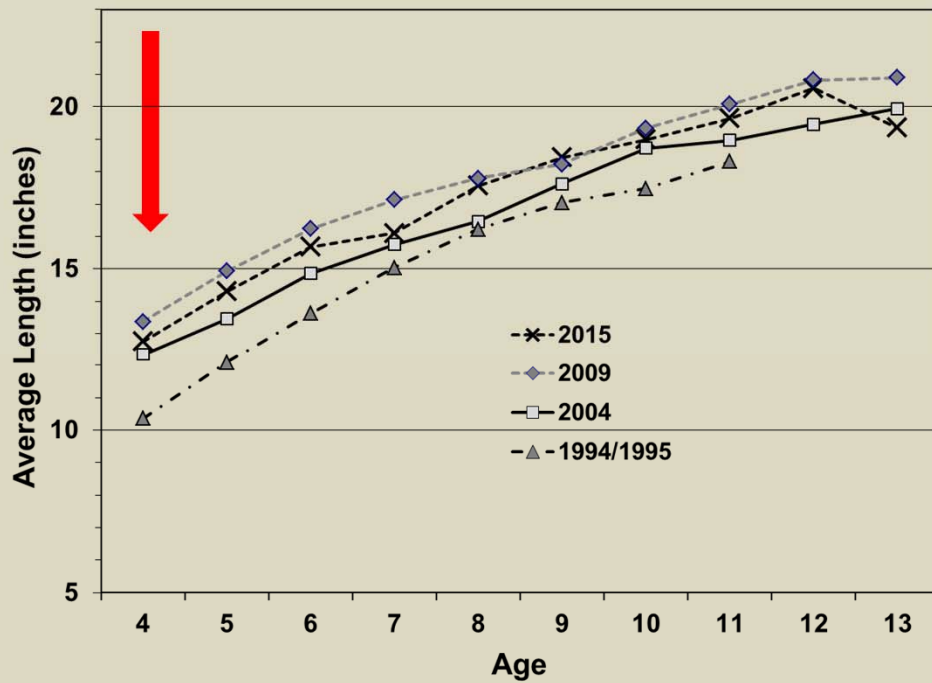
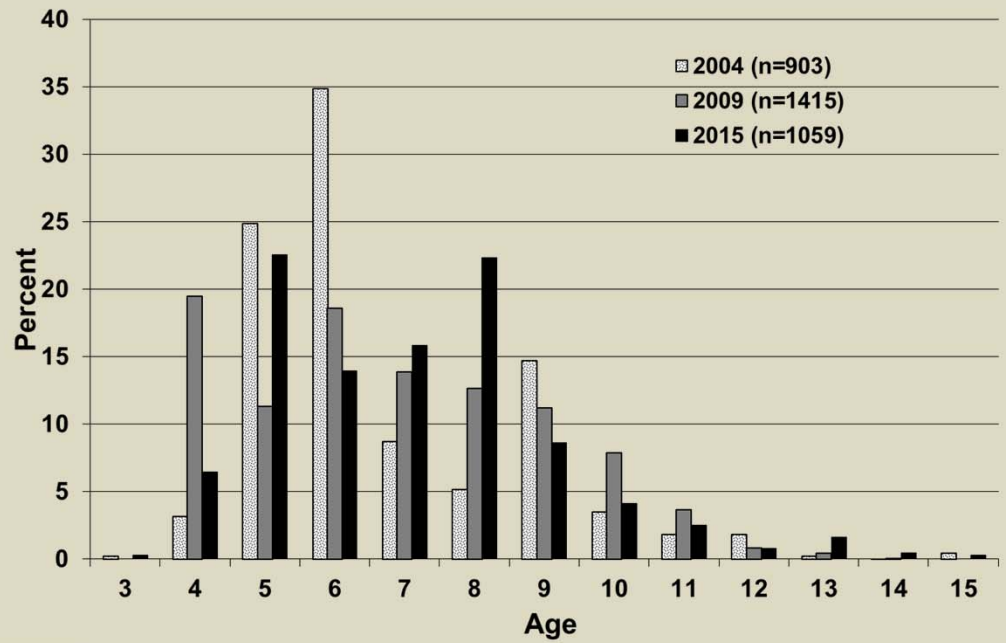


Adult Assessment Data



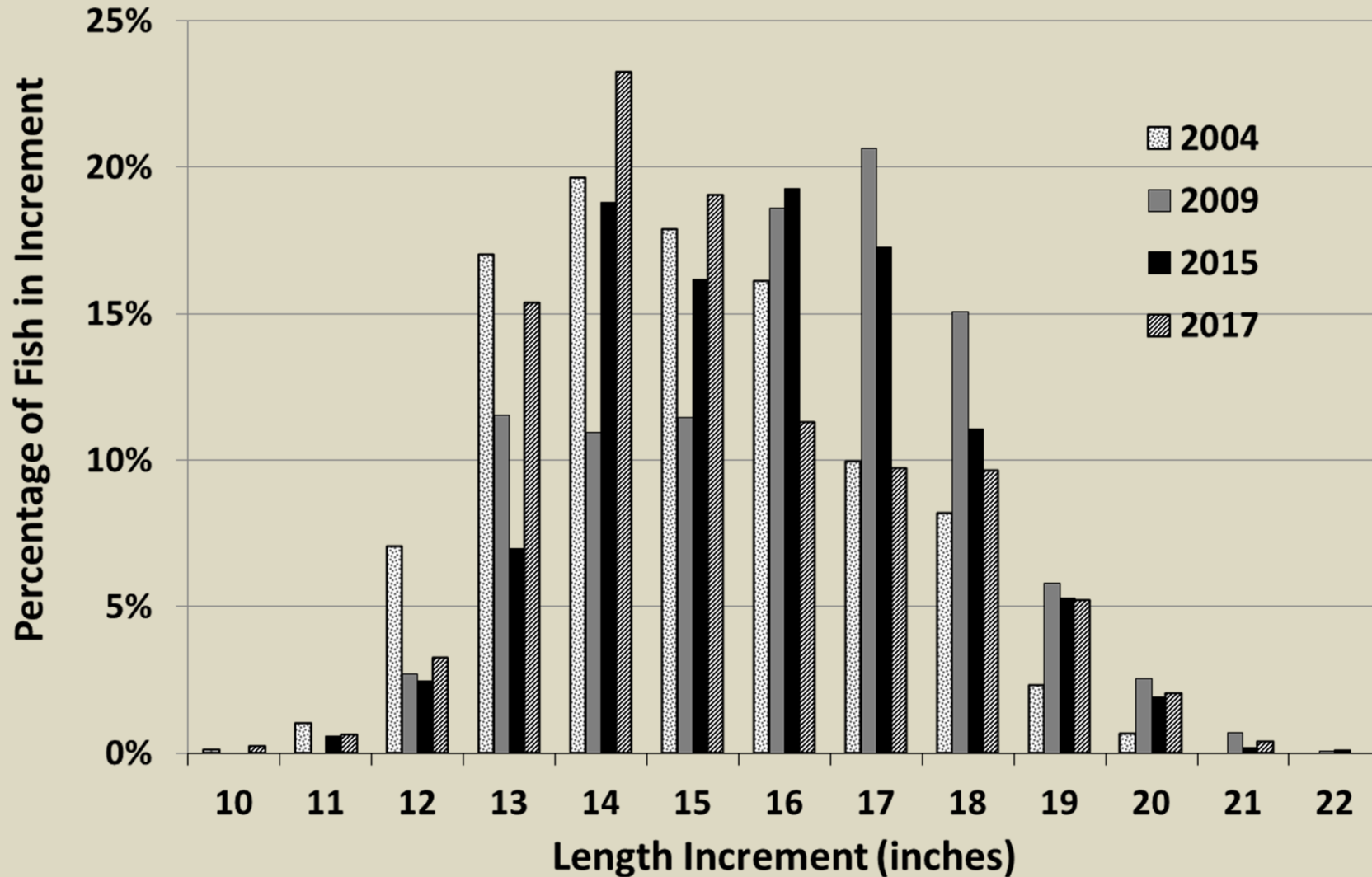
Sturgeon/Little Sturgeon Bay

Good recruitment.....



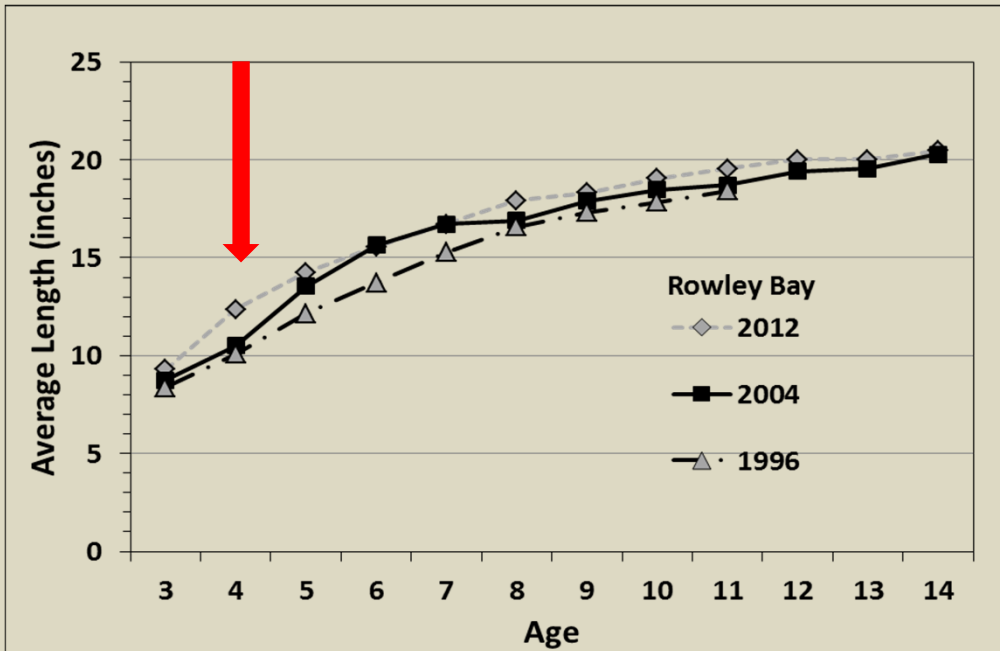
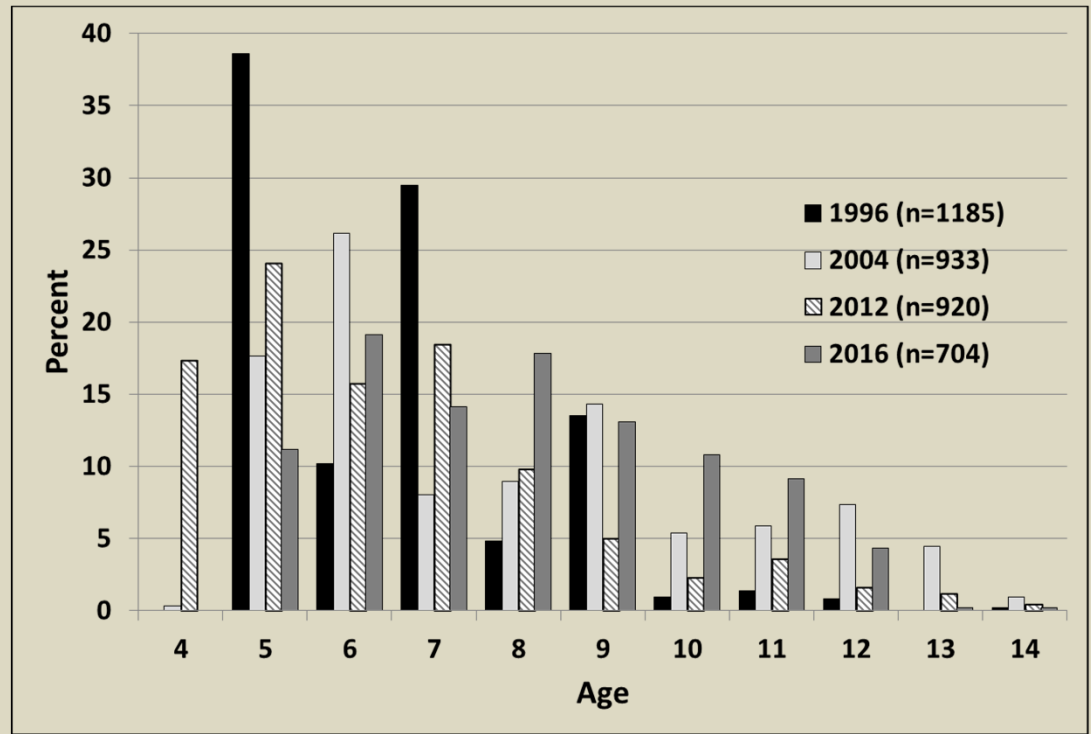
Improved growth.....

Sturgeon Bay Size Structure



Rowley Bay

- Good recruitment historically
 - Recently diminished
 - CPE decline 2012-2016
- Lower growth than Sturgeon Bay
 - 2016 approx. same size at age
 - 2014 Washington Isl. fish similar



Relative Stock Density

Location	YEAR	RSD-18*
Sturgeon Bay/Little Sturgeon	2009	24
Sturgeon Bay/Little Sturgeon	2015	18
Rowley Bay	2012	17
Washington Island	2014	23

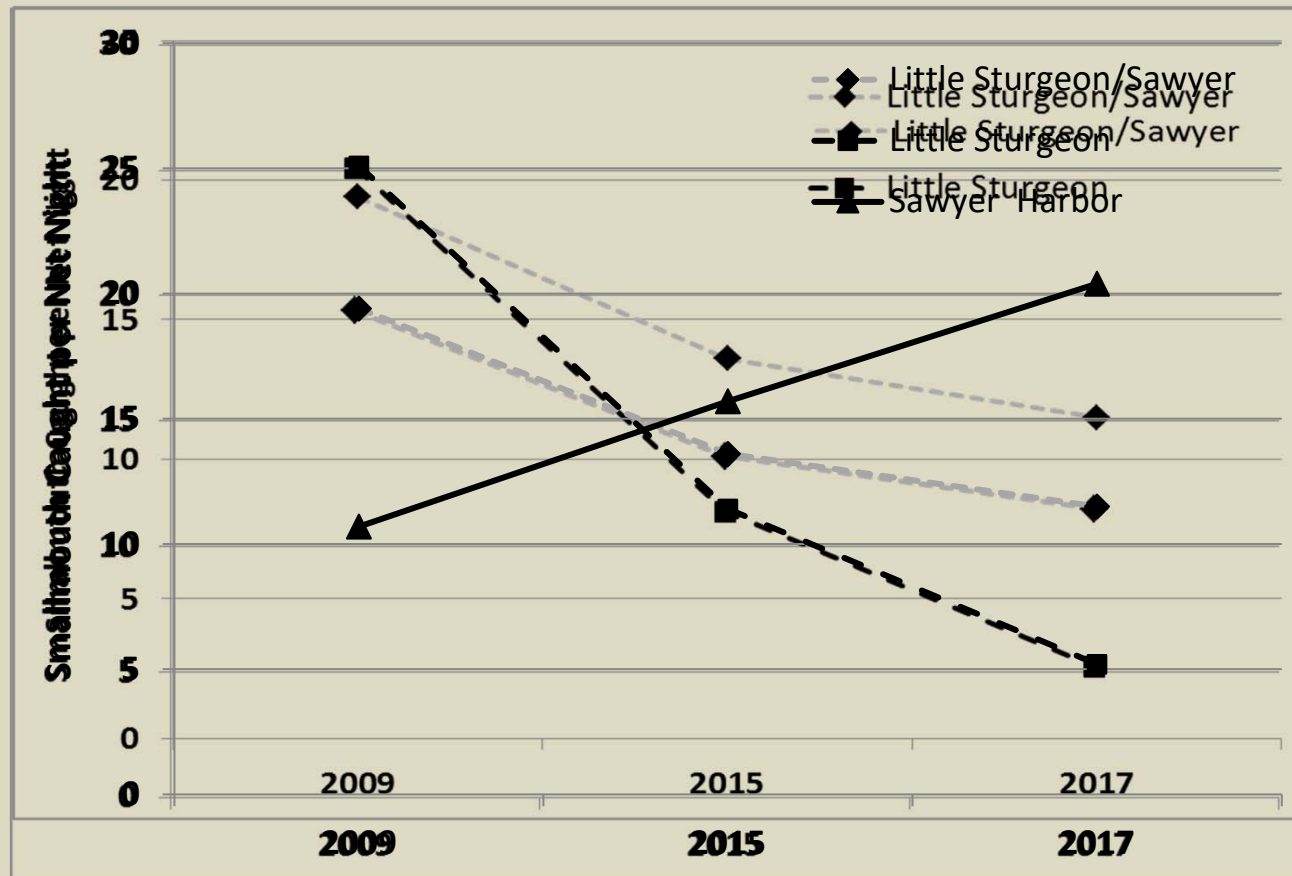


- Typically near or above statewide 95th percentile

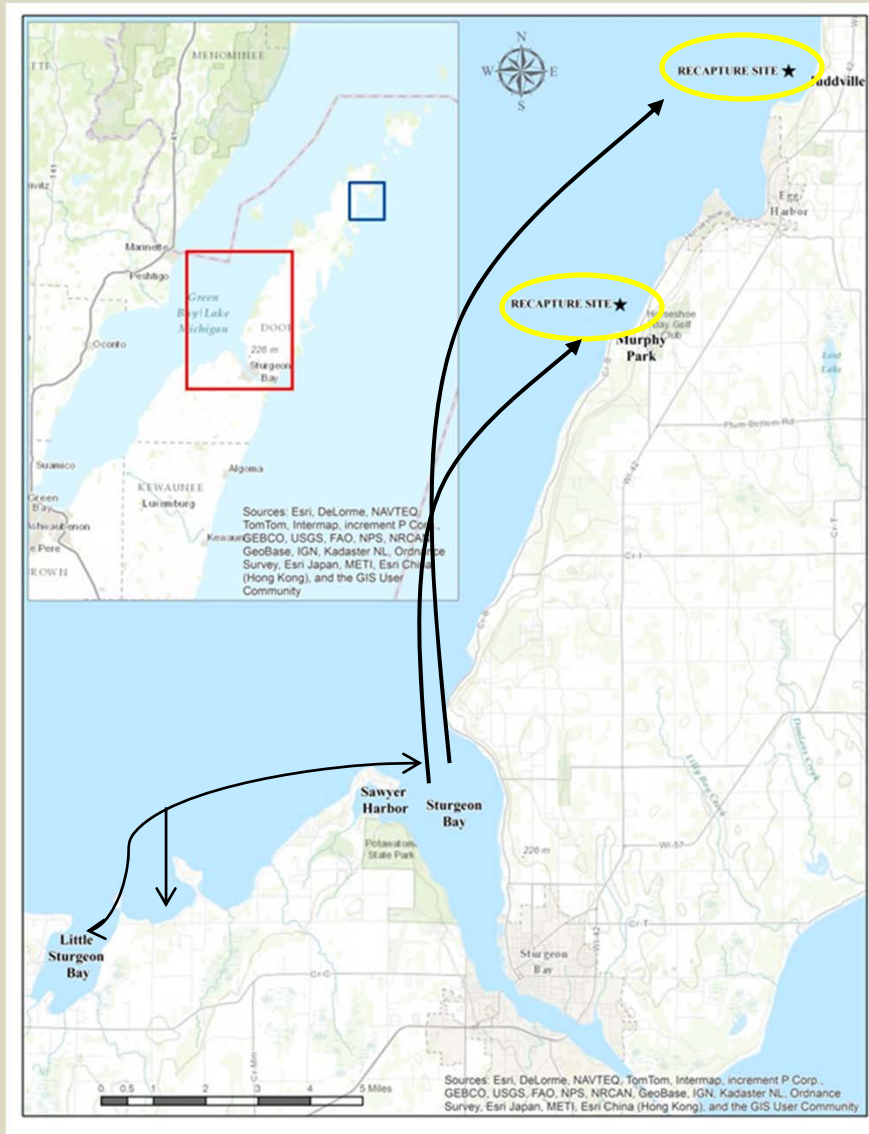
$$* \frac{\text{No. fish} > 18''}{\text{No. fish} > \text{stock} (7'')} \times 100$$

Catch Per Unit Effort

- Index of relative abundance
 - Spring fyke netting
 - Need consistency in sampling time, conditions



Bass Movement



- Floy tagging during 2009 Sturgeon Bay area survey
- All but one of 53 survey recaps in same area tagged
- Of 79 angler recaps, 8 moved out of area of tagging
 - Most between SB and LS (9-10 mi)
 - Longest movement: Sturgeon Bay to Juddville (15.5 mi) and Sawyer Harbor to Murphy Park (11 mi)

Recruitment

- Young-of-year (YOY) index
 - Typical for other species – challenging for smallmouth
 - Beach seine
 - Mini-fyke net
- Index of production
 - Late summer/early fall
 - Forecast year class strength?
 - Year class set?



Beach Seining*

	1995	1996	1997	2007	2008	2014
WA Island (Detroit Harbor)	-	-	1.5 (9)	-	-	0.5 (8)
Newport State Park	15 (5)	9 (6)	0 (7)	3 (3)	-	-
Rowley Bay/Mink R	1 (2)	0 (4)	0.5 (2)	-	-	-
North Bay	50 (7)	6 (6)	1.5 (3)	-	-	-
Moonlight Bay	4 (4)	3.5 (13)	0 (4)	2 (9)	-	-
Peninsula Park	?	3 (12)	3 (1)	?	-	-
Fish Creek	4 (6)	0 (1)	0 (1)	-	-	-
Egg Harbor	3 (3)	3 (5)	0 (2)	0.5 (3)	-	-
Murphy Park	1.5 (2)	1.5 (4)	1.5 (2)	0 (1)	-	-
Stone Quarry	-	66 (2)	4 (1)	-	-	-
Sunset Park	-	39 (2)	1 (5)	1 (1)	-	-
Little Sturgeon	-	-	0 (1)	.5 (3)	-	-
Sawyer Harbor					0.5 (3)	

*Young of year per haul (No. hauls)

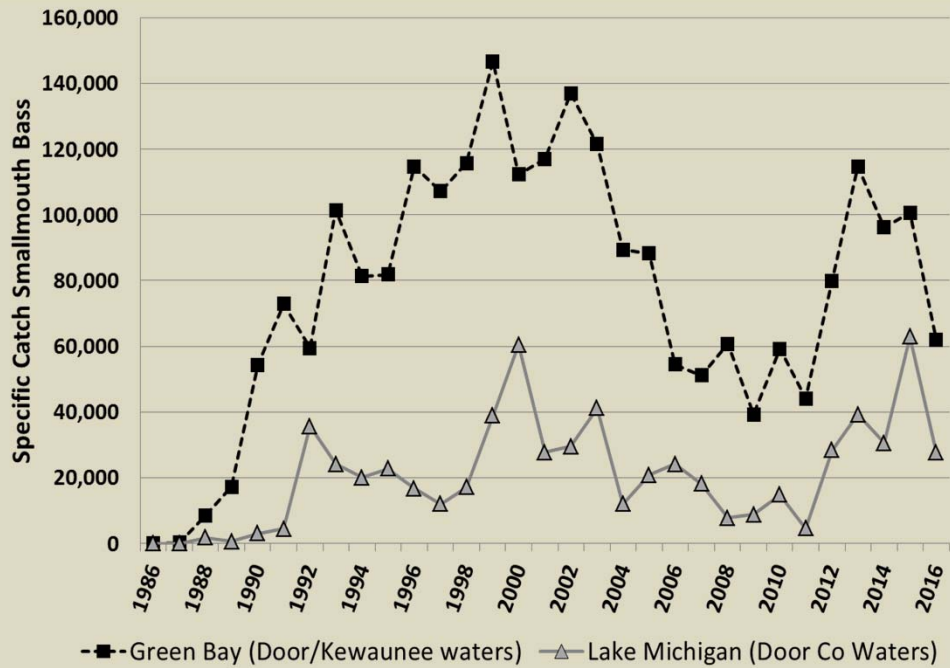
Mini Fyke Nets*

	2007	2008	2009	2010	2011	2013	2017
Rowley Bay/Mink R	-	0.5 (4)	-	-	-	-	-
North Bay	8 (4)	-	-	-	-	-	-
Moonlight Bay	2 (4)	-	-	-	-	-	-
Egg Harbor	1 (1)	-	-	-	-	-	-
Little Sturgeon	0.5 (3)	0 (7)	2 (6)		0.5 (6)	1 (5)	< 0.5 (11)
Sawyer Harbor	1 (4)	1.5 (5)	4.5 (5)	1 (5)*	0.5 (5)	3 (4)	< 0.5 (11)
Flats	-	0.5 (8)	1 (14)	-	-	-	-

*Young of year per net/night (No. Nets)

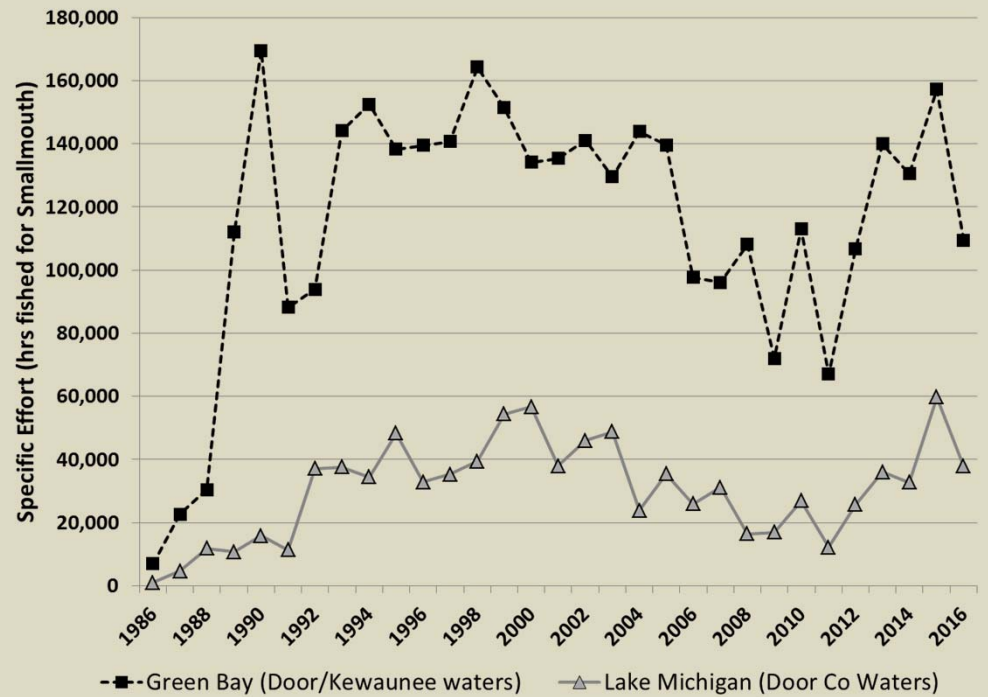
Sport Fishery Data





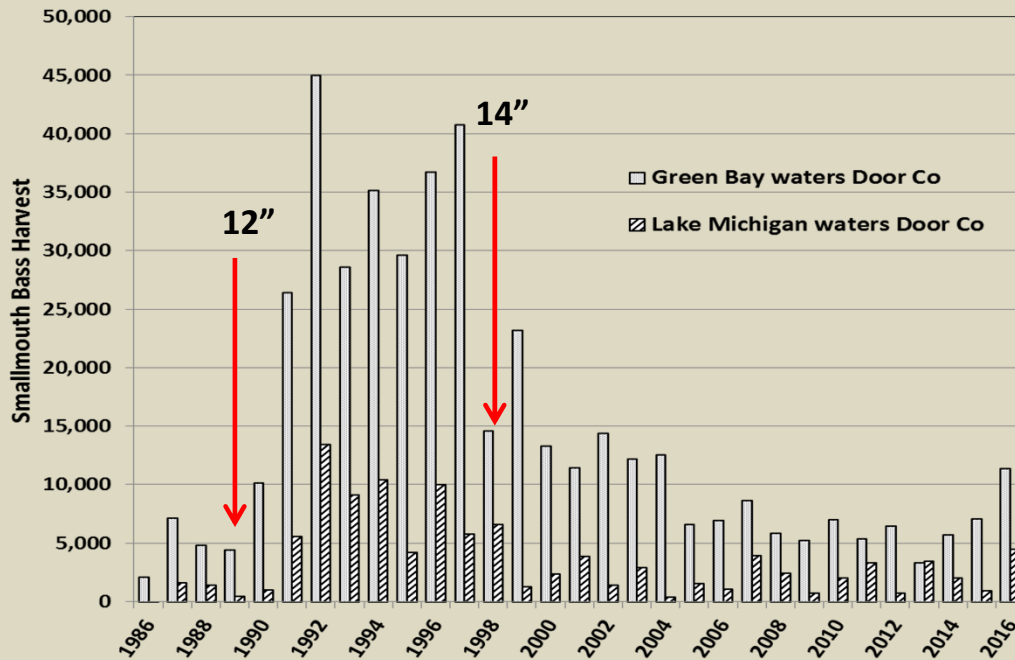
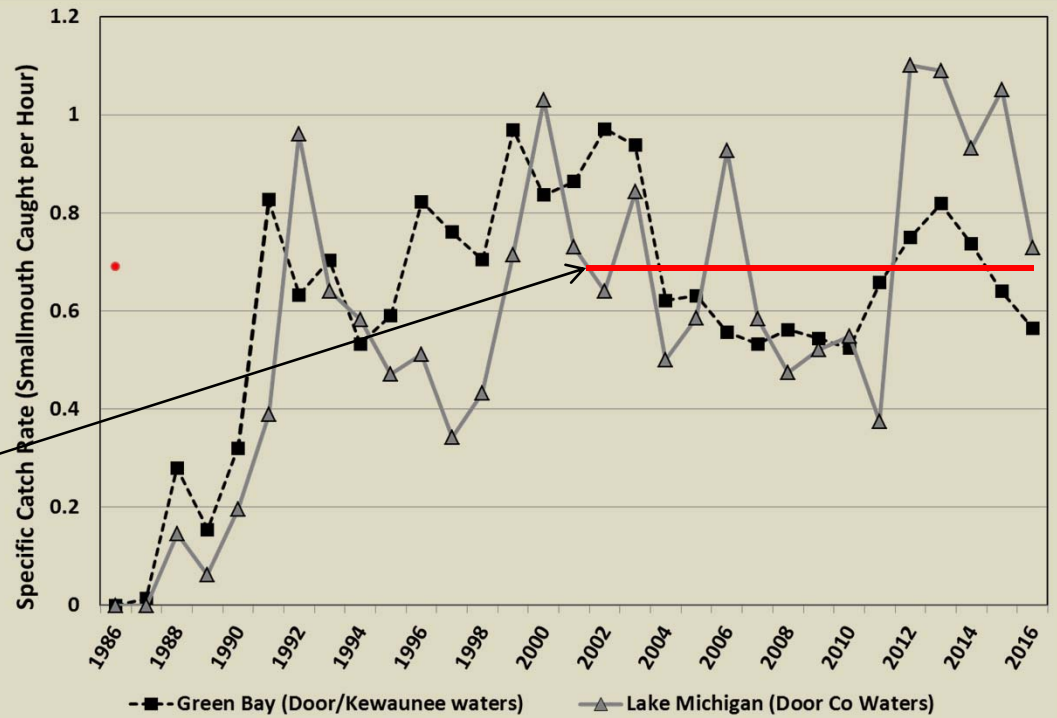
Smallmouth Catch

Smallmouth Effort



Catch rates.....

Prev. 15 yr avg.
Green Bay



Increased harvest 2016? (↑SD)

Bassmaster's 100 Best Bass Lakes of 2014 announced

By James Hall

APR 28, 2014

Bassmaster Magazine

ranking of America

has been announced

champion. Lake Michigan

beat out the hottest

to take the No. 1 spot

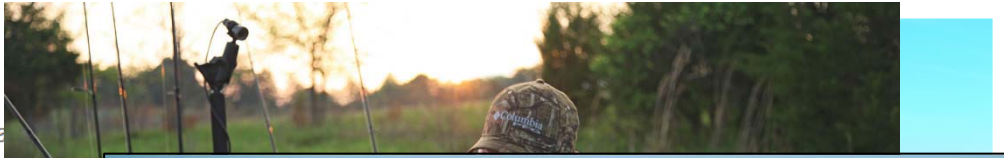
and California tied

m

la

st

co



DOOR COUNTY



COMMUNITIES



ly
t:

Management

- Catch
 - Generally declining, though from very high levels
 - Sport CPE recently declined below
 - Recruitment variable - better in Sawyer Harbor (Sturgeon Bay)
 - Rowley Bay CPE decline
 - 75% lower in 2016 versus 2012
 - May be normal population cycling, density dependence.....
- Tournaments:
 - Controversial locally and increasing in number
 - Pre-spawn/spawn tournaments especially concerning
 - Many fish relocated long distances
 - Population genetics concerns
 - Some smallmouth bass populations are isolated w/apparently little movement between areas
 - Further research to address the boundary controversies

Concerns

- Disease
 - High prevalence of lesions in 2009 and 2015
 - VHS/secondary infection, *Columnaris* suspected in 2015

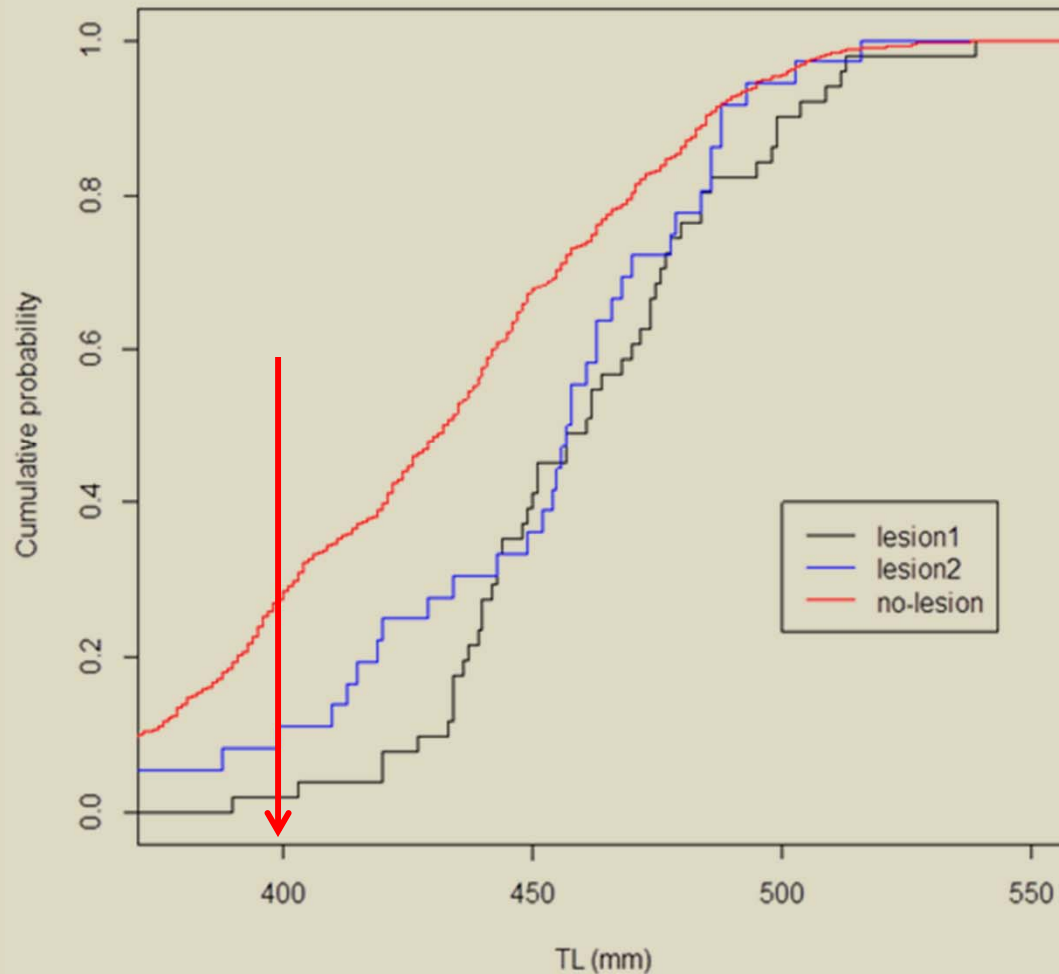


Concerns

- Disease

- High prevalence of lesions in 2009 and 2015
 - VHS/secondary infection, *Columnaris* suspected in 2015
- Diagnosis from 2016 **inconclusive**
 - Prevalence low in 2017
 - Only able to rule out diseases - diagnosis pending
- Larger fish appear pre-disposed to infections
 - Up to 15% infection in tournament-caught fish
 - Lower in overall population (7% and 12% Rowley Bay)
 - Have observed apparently healed fish
 - Apparently not happening elsewhere

Size Distribution of Affected Fish



Proportion of fish that are less than each observed length for each group of affected and unaffected fish in Rowley Bay 2016.

- **Lesion1 = fish with most severe lesions**
- **Lesion2 = fish with minor or healed over lesions**
- **No-lesion = unaffected fish**

Information Needs

- Better discrete population assessments (LMIFMP)
 - Recruitment surveys important
- Smallmouth movement characteristics – may help w/tournament management concerns
 - Acoustic telemetry
 - Receiver arrays (GLATOS)

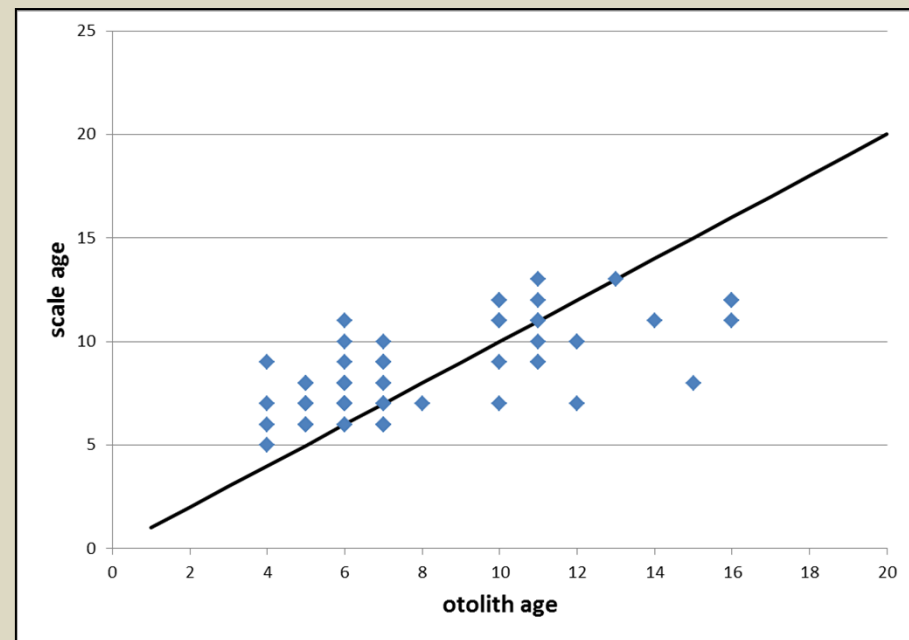


Information Needs

- Better discrete population assessments (LMIFMP)
 - Recruitment surveys important
- Smallmouth movement characteristics – may help w/tournament management concerns
 - Acoustic telemetry
 - Receiver arrays (GLATOS)
- Specific habitat requirements
 - Impacts from riparian and in water activities
 - Can we do better (e.g., Best Management Practices) to minimize fisheries impacts?
 - Estimating scale of dredging/solid structure impacts

Current Research

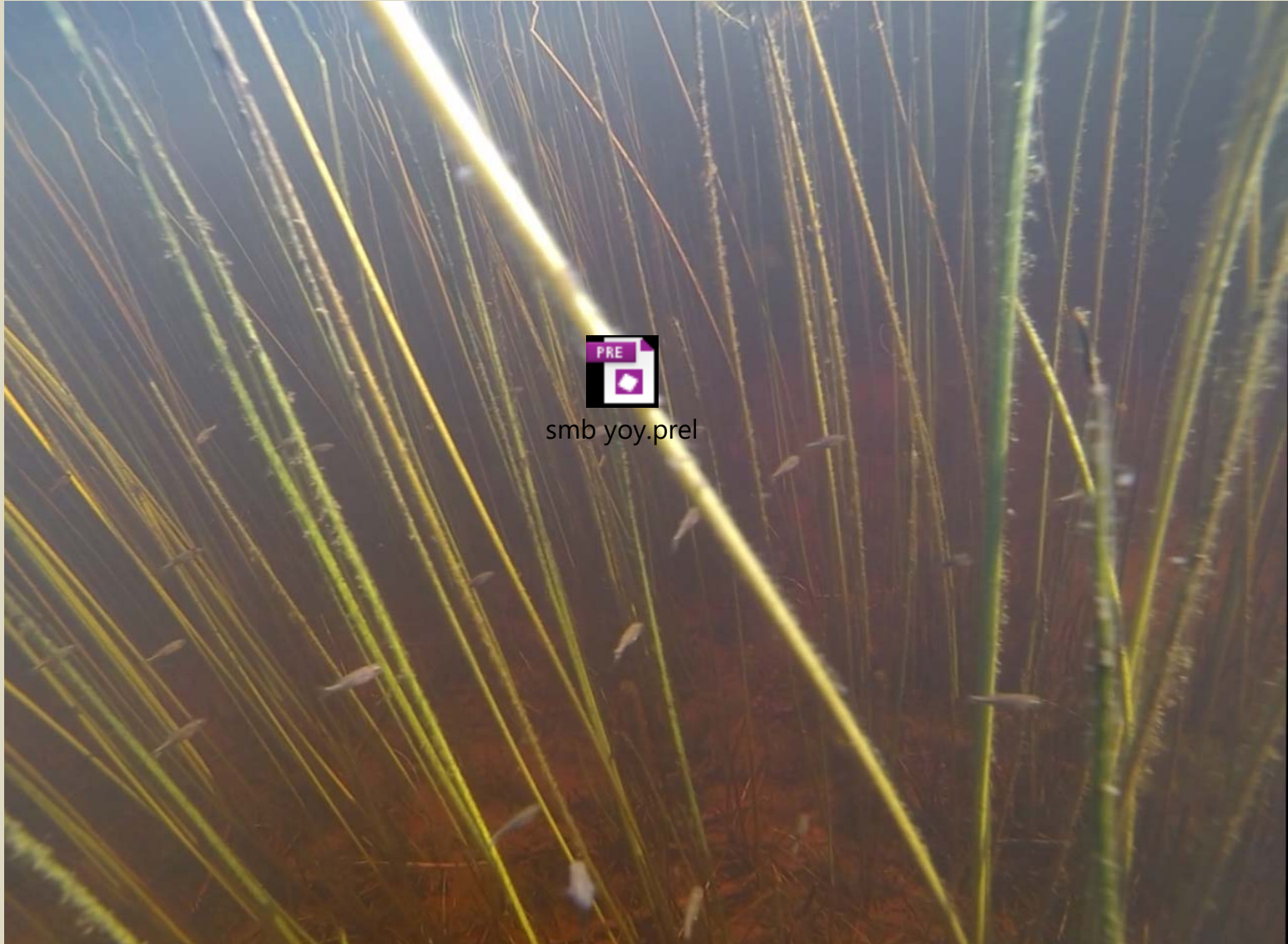
- Genetics
 - Currently assessing 8 Green Bay populations including four around Door Co.
 - Population level management
- Aging error
 - Otolith sampling



Outlook

- Pops generally okay
 - Abundance and size structure relatively good, recruitment gaps TBD
- Operational budget limitations
 - Recruitment sampling needed
 - Sub-adults
 - Large area to cover with multiple populations (Fish Creek area)
 - Specific research funding
- How to handle more controversial issues?
 - Tournaments
 - Fishing during the spawning period
 - Overharvest perceptions
 - Ethics

Questions/Discussion



Little Sturgeon Population Estimates

Year	Population Estimate	95% Confidence Interval
1994	8,494	5,916 – 12,650
2004	7,641	4,678 – 13,173
2009	8,513	5,988 – 12,056