WF4313/6413-Fisheries Management



In the news & announcements

Lab next week...

- WADERS
- Bug Spray
- Water
- Sunscreen

Group 1 will go! Meet in the parking lot in front of Thompson

Exam I



Exam I

- Exam was 127 points...2 extra points for you
- Add 4.7pnts to Exam grade to account for bad questions (AKA-I wrote a crappy question or I thought I hit on something in class but it totally missed)
- Will add to Blackboard this AM

WE LEFT OFF DISCUSSING SIZE STRUCTURE IN AGE STRUCTURED POPULATIONS

We can potentially manage size structure but if we overfish the population, size structure is the least of our concerns. We also need to preventing or minimizing growth overfishing!

MANAGING YIELD IN AGE STRUCTURED POPULATIONS

Pool 7



500



FIGURE 3.—Simulated yields for selected shovelnose sturgeon populations in the upper Mississippi River with a conditional natural mortality of 10%. The simulations were conducted with five different minimum length limits except in the case of Pool 16, for which only three minimum length limits were simulated because the 685- and 710-mm length limits exceeded the asymptotic maximum length of the fish in the pool.

Yield-per-recruit (YPR) models

- Predicts fishery yield
- Age structured
- Evaluate varying:
 - Fishing mortality
 - Length limits
 - Natural mortality

North American Journal of Fisheries Management 29:84–100, 2009 © Copyright by the American Fisheries Society 2009 DOI: 10.1577/M08-115.1

	North American Journal of Fisheries Management 32:731–744, 2012 © American Fisheries Society 2012 ISSN: 0275-5947 print / 1548-8675 online DOI: 10.1080/02755947.2012.686956		
	ARTICLE		
	Differences in Paddlefish Populations among Impou of the Arkansas River, Arkansas	ndments	
	Frank J. Leone Arkansas Game and Fish Commission, 2 Natural Resources Drive, Little Rock, Arkansas 7	72205, USA	
Joseph N. Stoeckel North American Journal of Fisheries Management 22:537–549, 2002		ussellville,	
© Copyright by the	American Fisheries Society 2002	,	
	Potential Influence of Harvest on Shovelnose Sturgeon	72205, USA	
	Populations in the Missouri River System		
	J. Appl. Ichthyol. 23 (2007), 465–475 © 2007 The Authors Accep Journal compilation © 2007 Blackwell Verlag, Berlin doi: 10.1111/j. ISSN 0175–8659	Received: June 15, 2006 oted: December 20, 2006 1439-0426.2007.00886.x	
	Effects of barvast and langth limits on shovelness sturgeon in the unne	or Wabash	
29.84_100_2009	River, Indiana		
)9	By A. J. Kennedy and T. M. Sutton		

Effects of Commercial Harvest on Shovelnose Sturgeon Populations in the Upper Mississippi River

Potential for overfishing?

- Growth overfishing
 - 864-mm
 - Exploitation > 30%
 - Weak at 965
- Suggests increasing length limit

<u>But, commercial fishery</u> <u>targets ovarian tissue not</u> <u>biomass!</u>



FIGURE 6.—Predicted paddlefish flesh yield (per 1,000 recruits; top) and spawning potential ratio (bottom) versus exploitation for three different minimum length limits in Kentucky Lake in 2003–2004.

Predicted biomass and roe yields



MANAGEMENT CASE STUDY: LAKE WASHINGTON, MS



MANAGEMENT CASE STUDY LAKE WASHINGTON CRAPPIE HARVEST

Species Description

- Black and White Crappie
- Managed as one species



Study Area

- 25 miles from Greenville MS in Washington County
- One of state's largest natural lakes (5,000 acres)
- World renowned crappie fishing





Current Regulations

- Minimum length limit was 10"
 - -30 fish bag limit
 - -5 fish under 10"



"5 Under Rule"

- Anglers allowed to keep 5 crappie under 10" limit
- Most say they would keep an 8" or above fish
- Provides subsistence

What is the problem?

- 595 anglers sign petition
 - Increase length limit to 12"
 - Claimed catch rates and size had decreased
- Recreational anglers and subsistence anglers

Harvest per Hour



Average Weight



Objectives

- Evaluate potential for growth overfishing at current and proposed length limits
- Evaluate at different mortality rates between 8" and MLL
 - "5 under" rule

What are we looking for?



What are we looking for?







New and improved



What we need?

- 1. Mortality
- 2. Length Weight Relationship
- 3. VBGF (Age & Growth)
- 4. Yield per Recruit Models

1. Mortality

• 66% annual mortality

– Weighted catch curve done in 2012

• 41% annual exploitation rate

- 400 tagged fish > 10"

2. Lengths & Weights

- Lead nets and trap nets
- 12 of each at 24 different locations





2. Lengths & Weights

- Every fish caught was measured
- Species other than crappie were released
- 5 crappie from each cm bin kept to be weighed

2. Length-Weight Relationship



3. VBGF

- Aged by 2 technicians and consensus reach when a disagreement occurred
- Ages used to make VBGF





4. Models

- Using length limits 10", 11", and 12"
- 5 models showing different rates of conditional fishing mortality below MLL

- 0, 0.01, 0.05, 0.1, and 0.2

• Evaluate potential for growth overfishing



Conditional fishing mortality below min. length limit = 0



Conditional fishing mortality below min. length limit = 0.01



Conditional fishing mortality below min. length limit = 0.05



Conditional fishing mortality below min. length limit = 0.1



- Potential for growth overfishing
- "Free for all" on 8" to 12" fish

In a nutshell

- Growth overfishing potential-NO
- Supports data from MDWFP

Harvest rates and Average Weight

- Effect of "5 under" is minimal when MLL is low
- Management impact?

Press Release

Thursday, May 26, 2016

Mississippi Wildlife, Fisheries, and Parks 1505 Eastover Drive, Jackson, MS, 39211 Phone: 601-432-2400

Fishing Regulation Changes Approved for Lake Washington

JACKSON - The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) Fisheries Bureau announced new fishing regulations on Lake Washington. The new regulation sets the minimum length limit for crappie at 11 inches, but anglers will be allowed to harvest five fish under the length limit each day. The daily creel limit for crappie will remain 30 per angler. The new crappie regulations and the current black bass regulations will include the outlet channel from Lake Washington to the weir at Paul Love Park.

In addition, anglers fishing with yo-yos are required to attend these fishing devices at all times. Attend means that the anglers must remain in sight of the yo-yos if the gears are set and baited or set and tripped. Anglers will be allowed to leave their yo-yos unattended between 11 a.m. to 1 p.m. Yo-yos must be tripped with the hook out of the water during this two hour time period. MDWFP Law Enforcement officers have the authority to seize or confiscate unattended untripped yo-yos during this two hour period and unattended yo-yos other times of the day.

The new regulations become effective on June 23, 2016.

For more information regarding fishing in Mississippi, visit our website at www.mdwfp.com or call us at (601) 432-2212.

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Caveat emptor- on growth overfishing....



Recruitment overfishing

when there aren't enough fish of reproducing age to replenish the population