Effects of Proposed Length Limit Changes and "5 under rule" on Lake Washington Crappie Populations and Harvest

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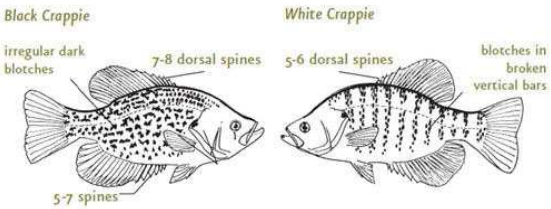
Acknowledgements

- MDWFP
  - Chad Washington
  - Donte Green
- MSU-WFA
  - Madelyn Ruble
- Funding: Undergraduate Student Research Program (USRP)

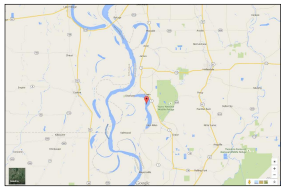
Species Description

- Black and White Crappie
- Managed as one species



Study Area

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



Current Regulations

- Current length limit is 10"
  - –30 fish bag limit
  - –5 fish under 10"

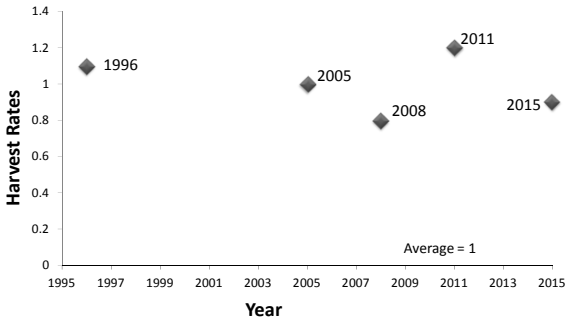
"5 Under Rule"

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

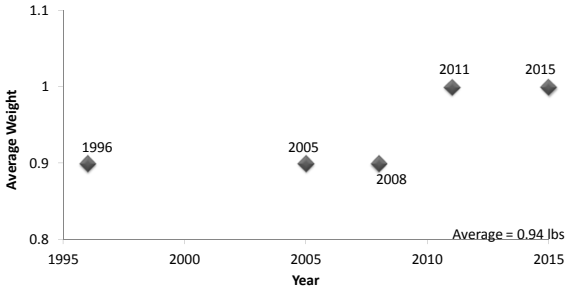
Why are we doing this?

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

Harvest per Hour



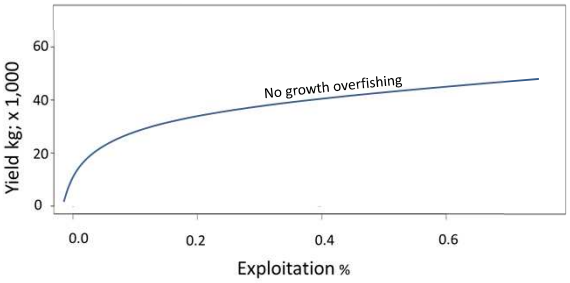
Average Weight



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?



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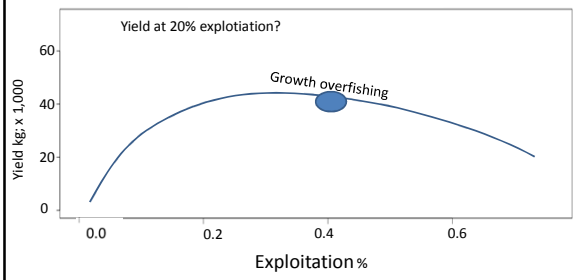
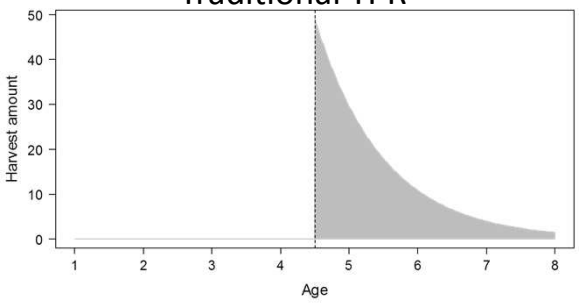
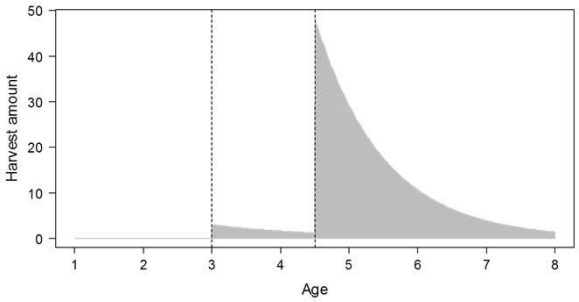


Traditional YPR



New and improved



What we need?

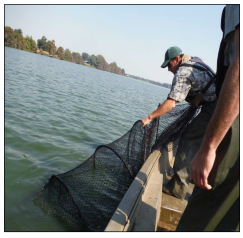
1. Mortality
2. Length Weight Relationship
3. VBGF (Age & Growth)
4. Yield per Recruit Models

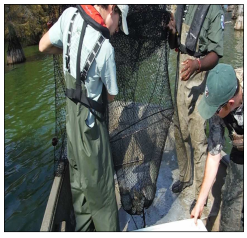
1. Mortality

- 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

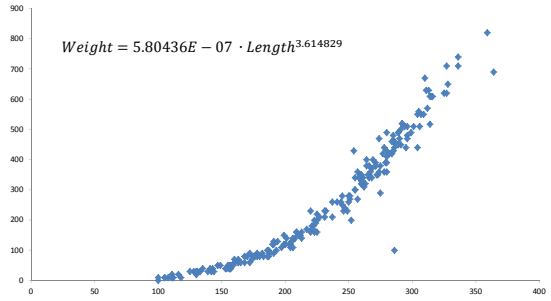




2. Lengths & Weights

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

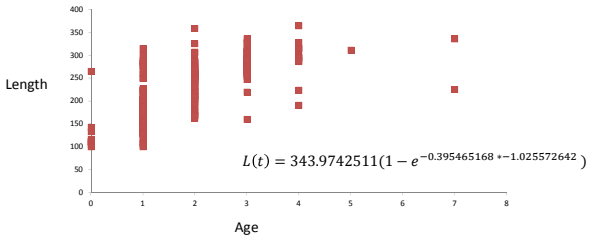
2. Length-Weight Relationship



3. VBGF

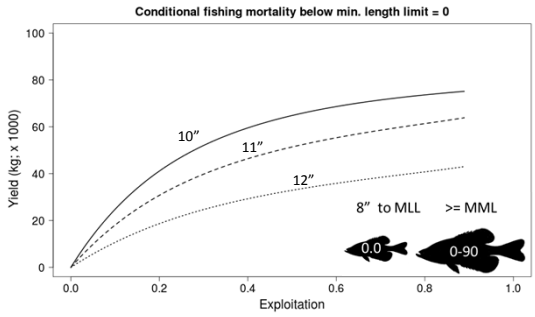
- Aged by 2 technicians and consensus reach when a disagreement occurred
- Ages used to make VBGF

VBGF

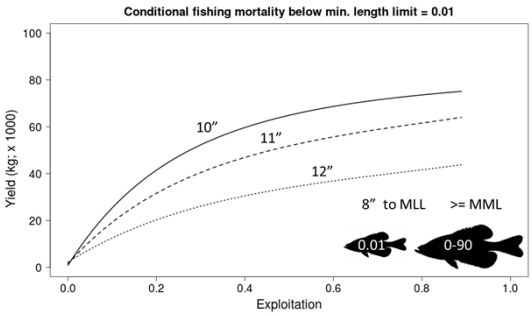


4. Models

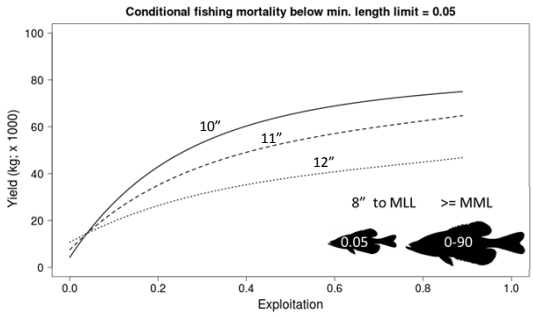
- Using length limits 10”, 11”, and 12”
- 5 models showing different rates of conditional fishing mortality below MLL
  - 0, 0.01, 0.05, 0.1, and 0.2
- Evaluate potential for growth overfishing



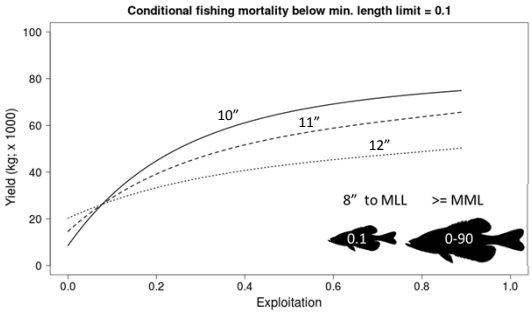
YPR: No harvest under MLL



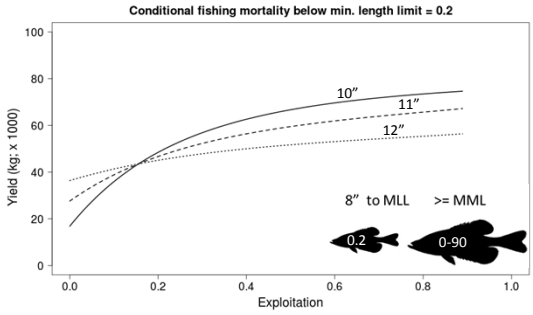
YPR: Fishing Mortality under MLL = 0.01



YPR: Fishing Mortality under MLL = 0.05



YPR: Fishing Mortality under MLL = 0.1



YPR: Fishing Mortality under MLL = 0.2

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

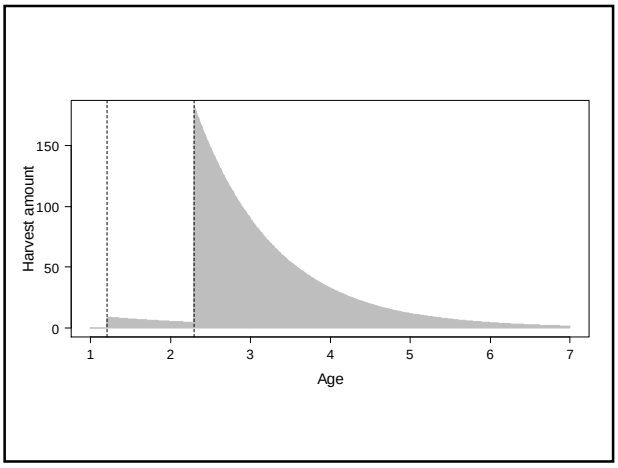
Take Home Message

- Growth overfishing potential-NO
- Supports data from MDWFP
  - Harvest rates and Average Weight
- Effect of "5 under" is minimal when MLL is low

Questions?

Harvest amount
0
50
100
150
1
2
3
4
5
6
7
Age

Harvest amount
0
50
100
150
1
2
3
4
5
6
7
Age


Harvest amount
0
50
100
150
1
2
3
4
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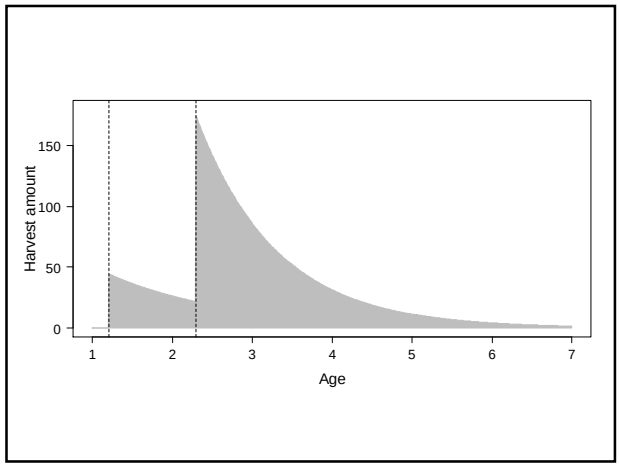
6
7
Age


Harvest amount
0
50
100
150
1
2
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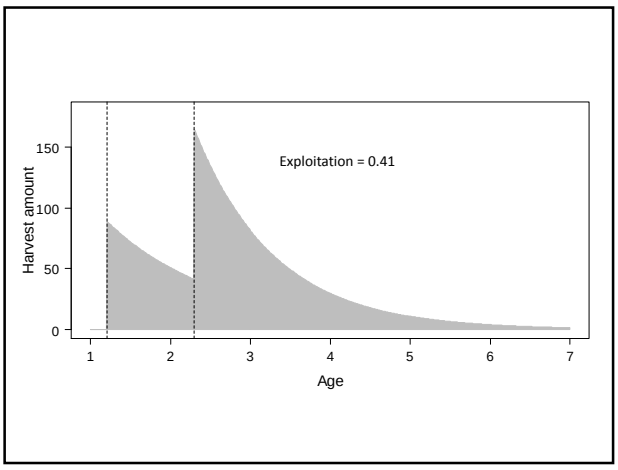
6
7
Age


Exploitation = 0.41
Harvest amount
0
50
100
150
1
2
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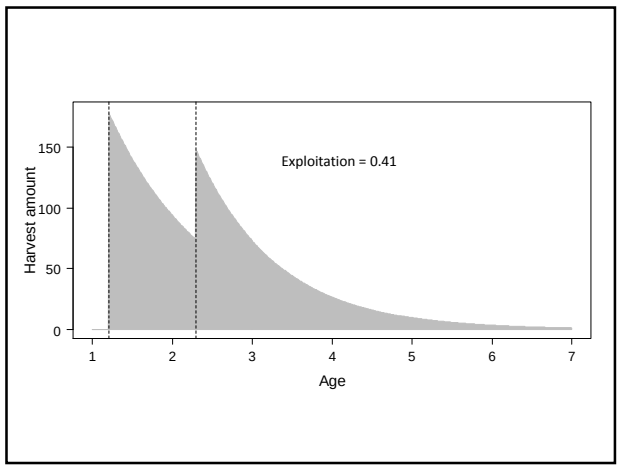
6
7
Age


Exploitation = 0.41
Harvest amount
0
50
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Age