Fish Lake Informational Meeting

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MN DNR Fisheries - Duluth

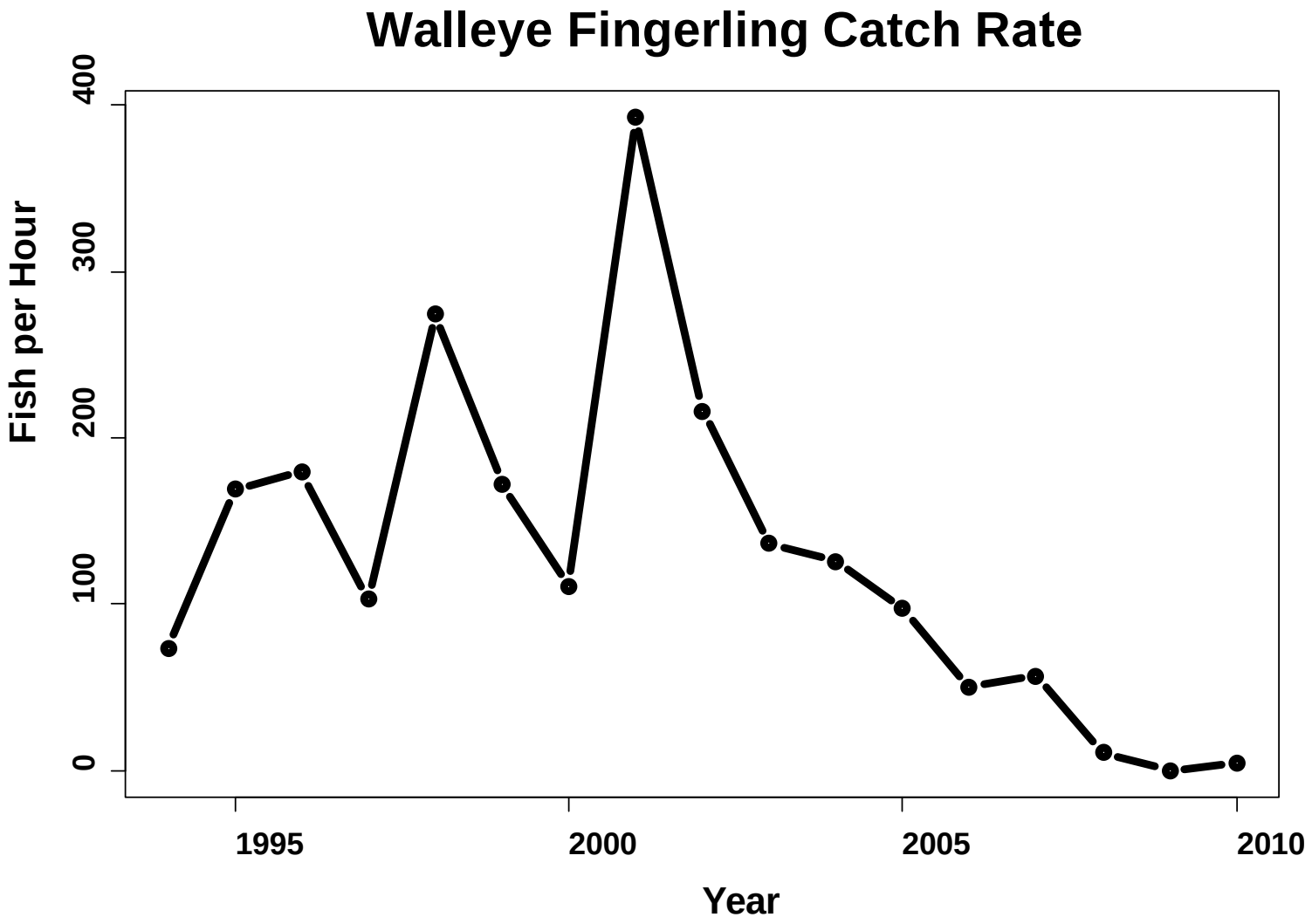
MNDNR

Why are we here tonight?

- Provide background info on fish community shifts within Fish Lake to those that may be unaware
- Update on the results of research completed on Fish Lake since 2011
- Reaffirm DNR Fisheries commitment to quality angling on Fish Lake with details on how we plan to proceed going forward
- Solicit comments since implementation of Walleye special regulations

Background info

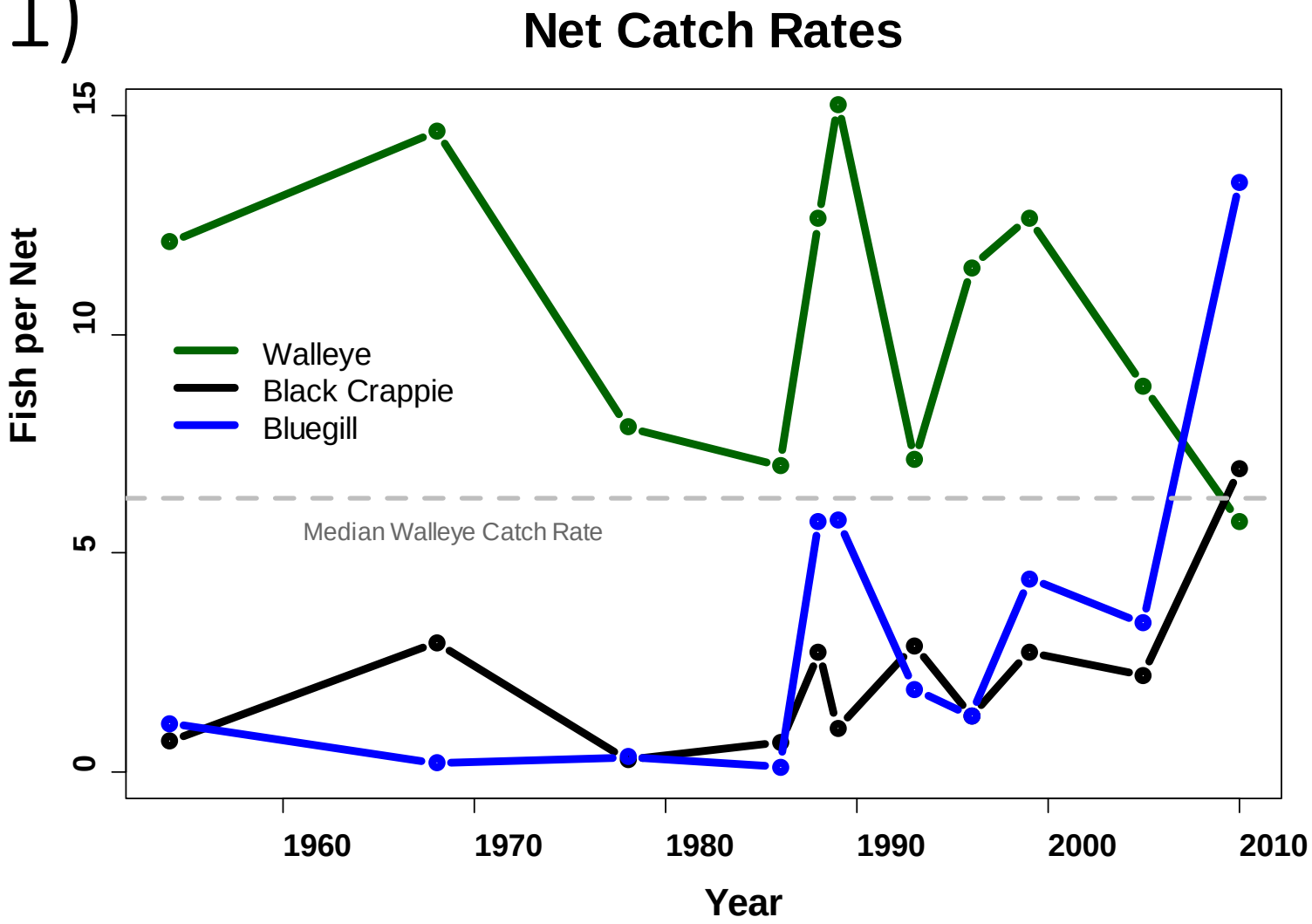
- Biological changes
  - Walleye production had declined



Background info (1)

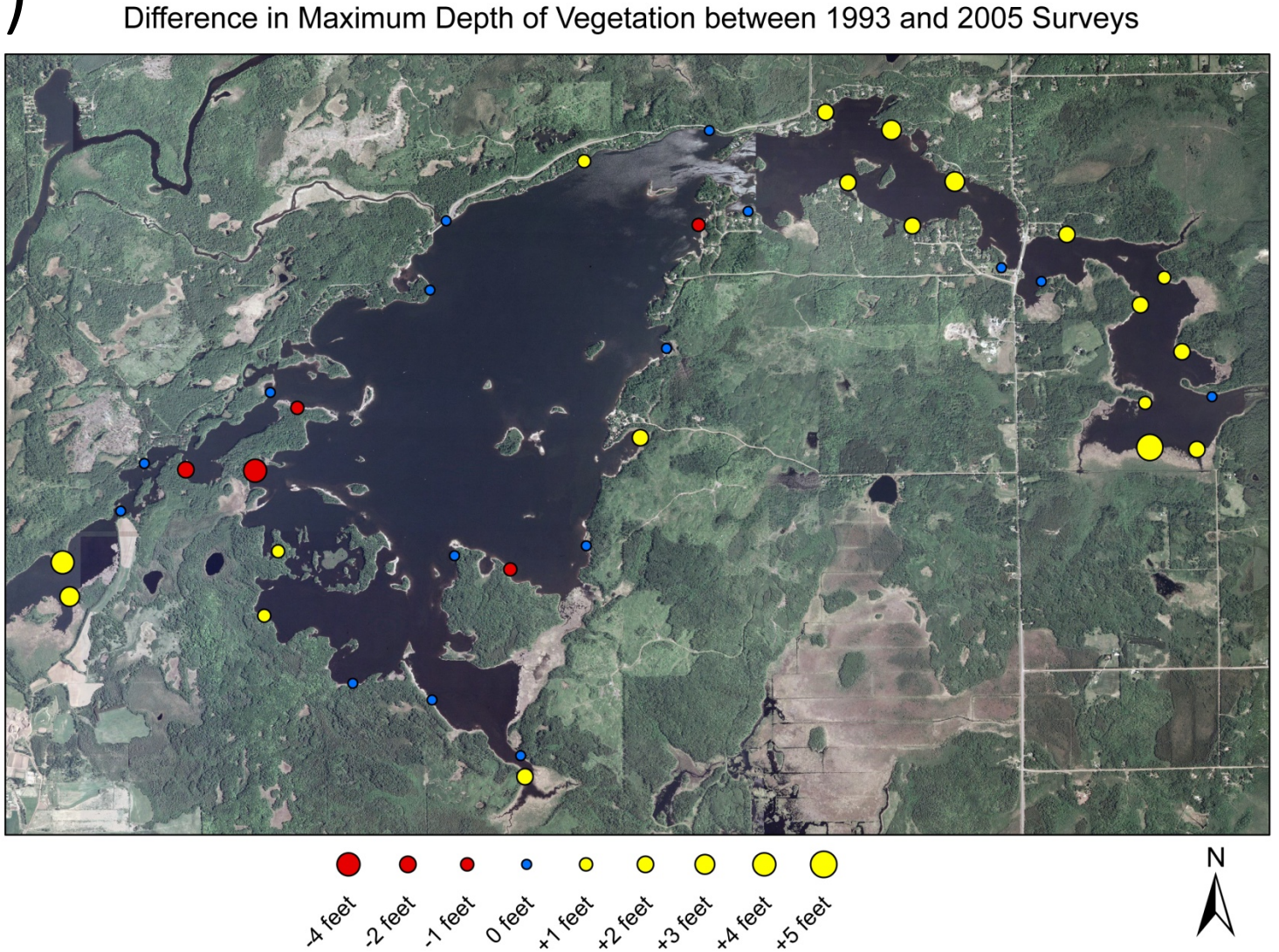
- Biological changes
  - Walleye production had declined
  - Bass, bluegill and crappie have increased

Photos: Eric Engbretson



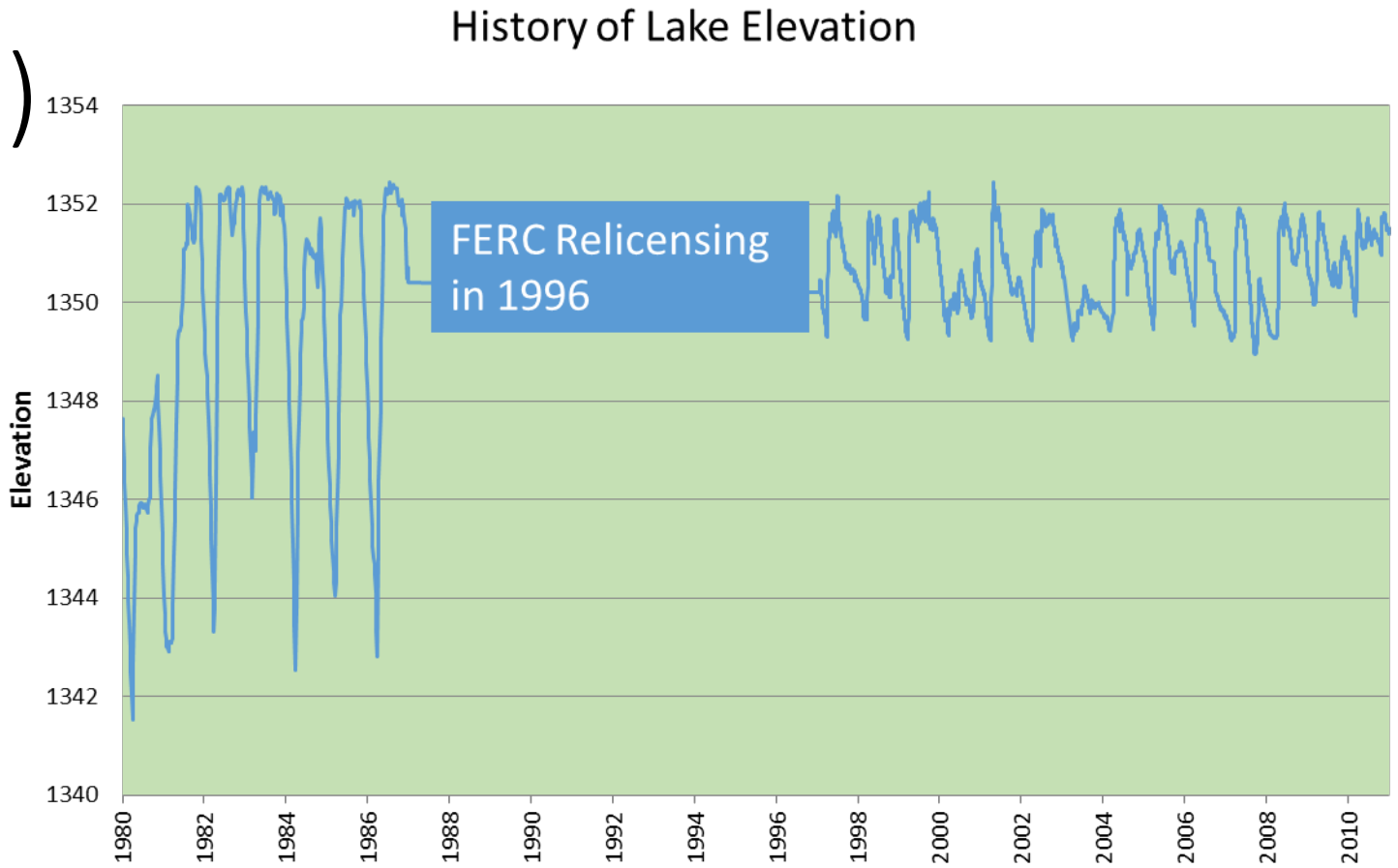
Background info (2)

- Biological changes
  - Walleye production had declined
  - Bass, bluegill and crappie have increased
  - More aquatic plants



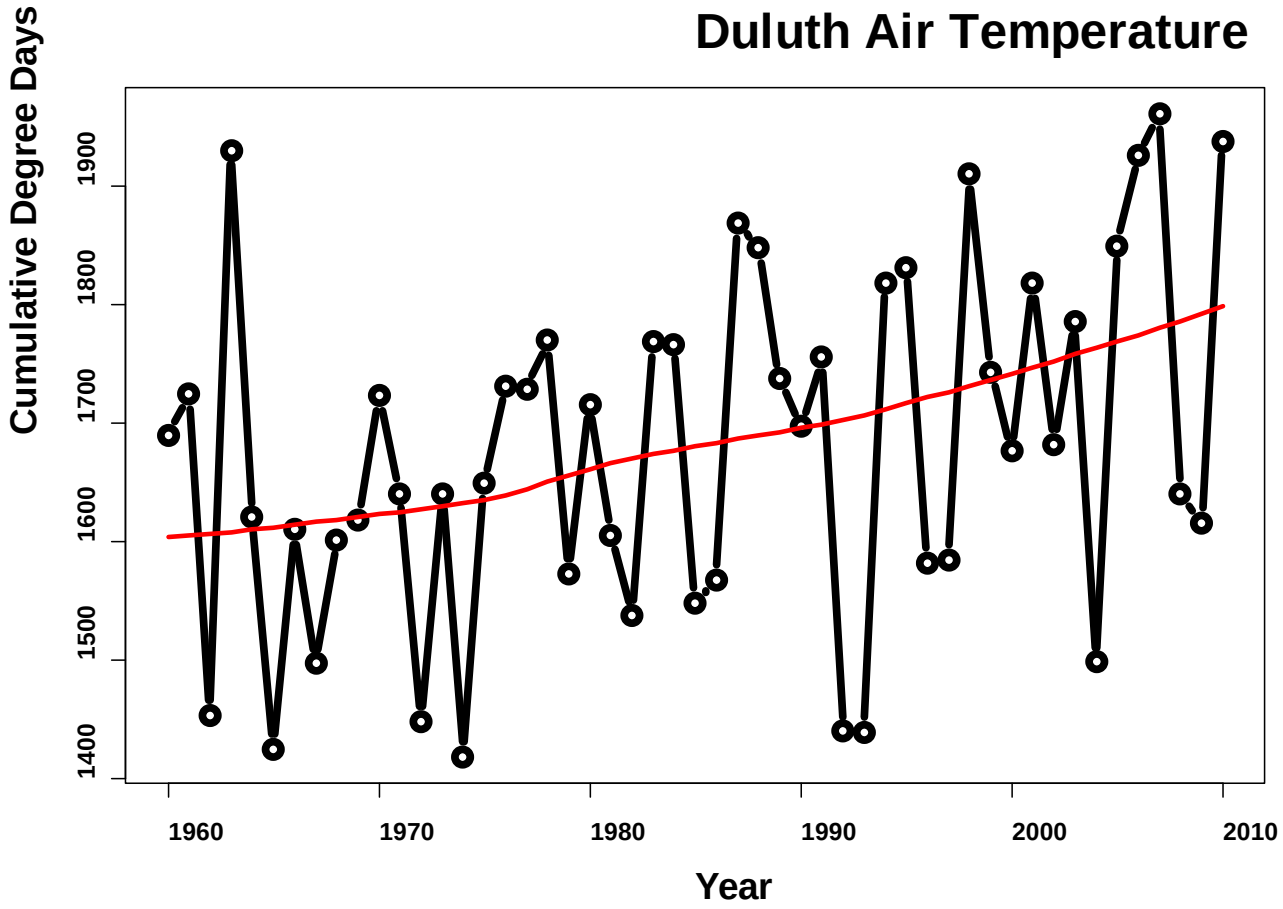
Background info (3)

- Biological changes
  - Walleye production had declined
  - Bass, bluegill and crappie have increased
  - More aquatic plants
- Physical changes
  - Water level regulation changes



Background info (4)

- Biological changes
  - Walleye production had declined
  - Bass, bluegill and crappie have increased
  - More aquatic plants
- Physical changes
  - Water level regulation changes
  - Temperature (longer growing seasons, warmer)



Background info (5)

- In response to concerns about changes to Fish Lake, an advisory committee was formed (2011)
  - Included many important stakeholder groups (16 people)
    - Anglers (4)
    - Business owners (3)
    - Shoreline property/lease owners (4)
    - MN Power (1)
    - Tribal representative (1)
    - MN DNR Fisheries (1)
    - Twin Ports Walleye Association (1)
    - Tournaments (1)
  - The committee met frequently and provided input to address issues

Quick Recap

- Advisory committee recommendations:
  - Implement an emergency harvest regulation for Walleye
    - 13”-17” harvest slot, possession limit 3 (December 2012)
  - Implement a study on Walleye population dynamics to reduce uncertainty of what may be causing Walleye production decreases

Study Objective #1

Are there issues with the adult Walleye population?

- Too few spawners?
- Insufficient egg production?
- Habitat changes that result in excessive pre-hatch mortality?
- Excessive harvest?

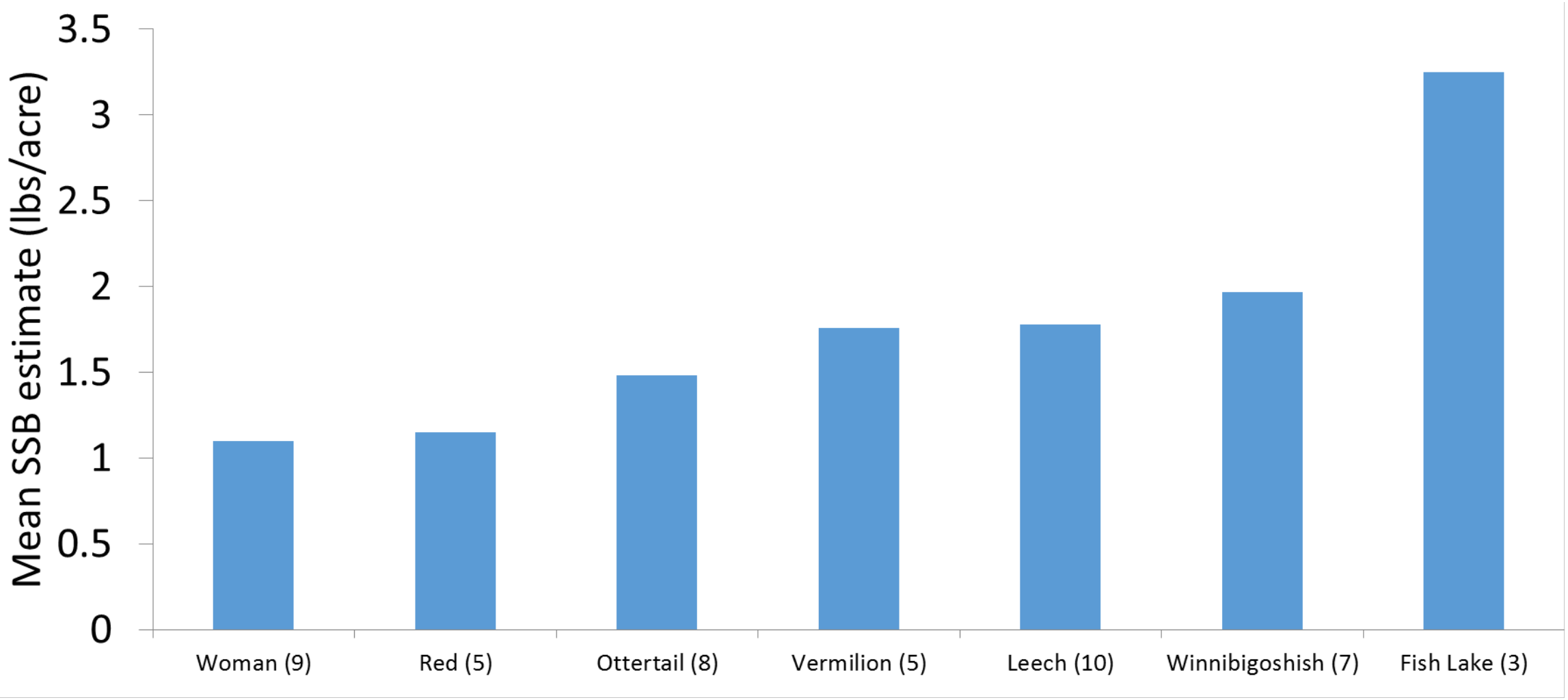
- <u>Quantify Walleye spawning stock biomass (SSB) and compare to lakes with robust populations</u>

  - What is SSB?
    - Total weight of all mature female fish in the population
    - Expressed as a rate, usually pounds/acre
    - Data obtained from fall gillnetting (2013, 2014 and 2015)

Study Results – Walleye Spawning Stock (SSB)

Year	Total Walleye Catch	Spawning Stock Biomass		
		Population estimate	Total lbs	lbs/acre
2013	118	3,586	10,224	3.14
2014	190	3,032	9,322	2.86
2015	222	3,835	12,229	3.75
Mean	177	3,484	10,592	3.25

Study Results – Comparing SSB to other lakes



Study Results – Egg production

Year	lbs/acre	Potential Egg Production
2013	3.14	n/a
2014	2.86	310,357,346
2015	3.75	407,140,097
Mean	3.25	358,748,722

- Egg production increases with the biomass of adult females
  - No evidence that egg production is limiting

Study Results – Excessive harvest

- No new info but adult harvest has been heavily restricted since 2011
  - No fish over 17” in possession except 1 over 26”
- Based on a creel survey from 2005-2006, harvest was sustainable
  - Walleye fishing mortality was 19.1% and was considered low to average compared to other reservoirs and area lakes
- Harvest data is lacking from 2006-2016
  - Need updated creel

Study Objective #2

Is there poor Walleye survival to the first fall?

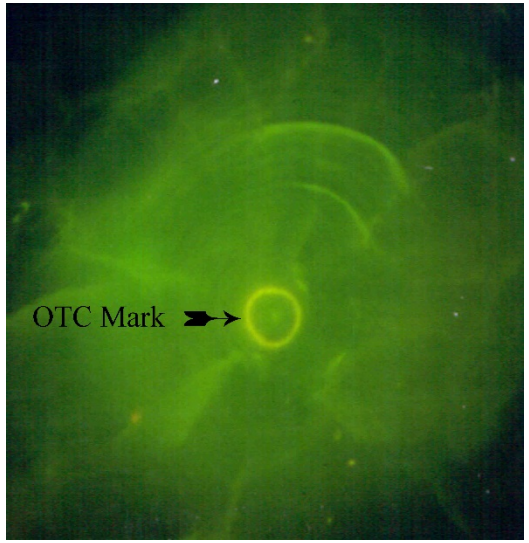
- Eggs not hatching due to habitat changes?
- Excessive post-hatch mortality?
  - Are fry being preyed upon at unsustainable rates?

- <u>Quantify Walleye natural reproduction by looking closely at Walleye egg hatch rates and wild fry abundance</u>
  - Stock Oxytetracycline (OTC) marked Walleye fry
    - Powerful tool for estimating wild fry production and total fry density
  - Fall young-of-the-year (YOY) electrofishing
    - The proportion of marked fish captured allows us to estimate wild fry abundance

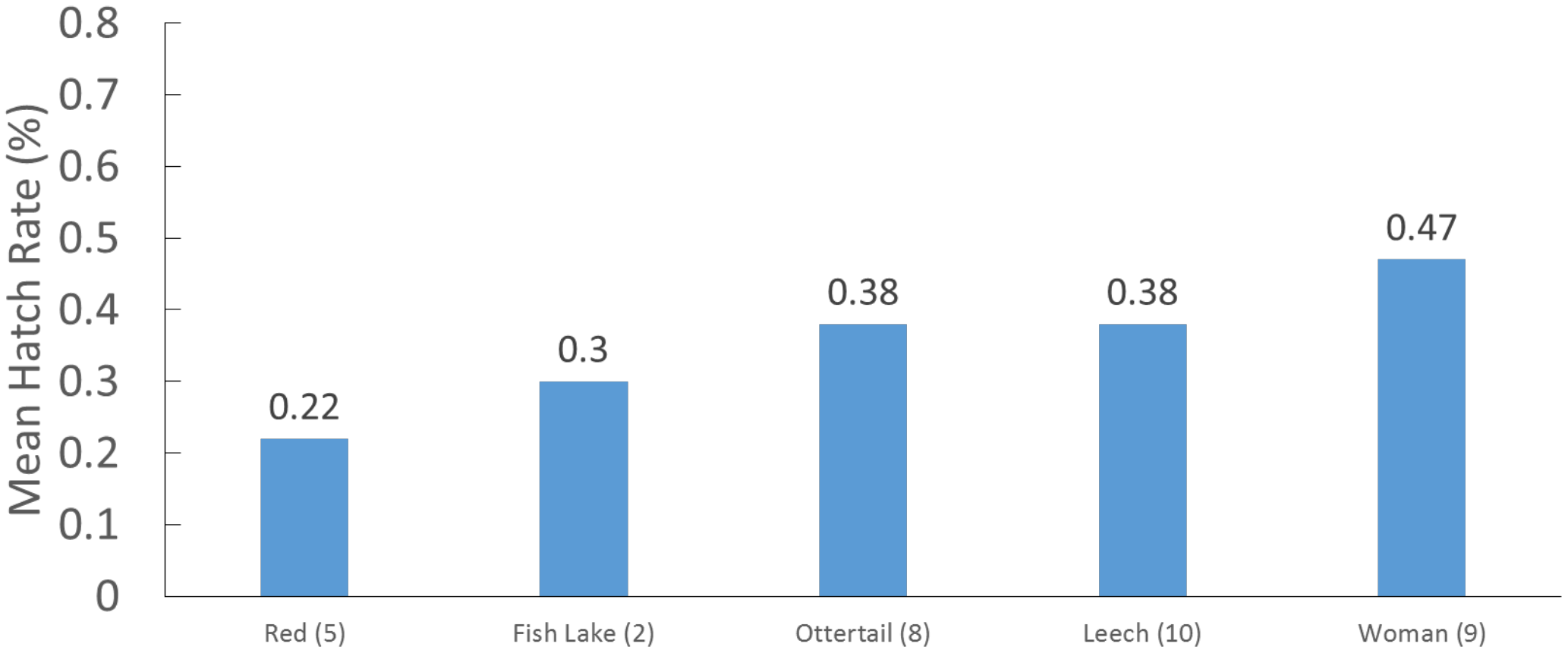
Stocking OTC marked Walleye fry

2013	Walleye	Fry	OTC	2,900,000
2014	Walleye	Fry	OTC	3,000,000
2015	Walleye	Fry	OTC	3,000,000

- Prior to 2013, no Walleye stocking since 1989

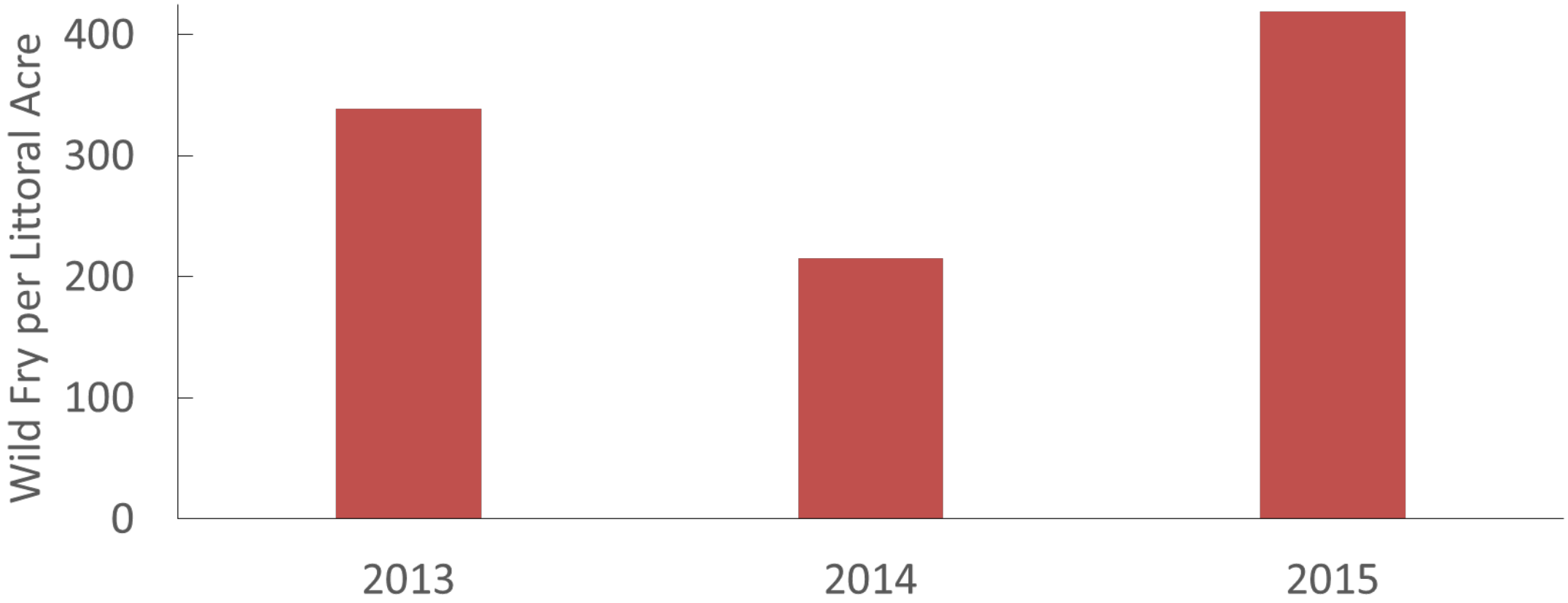


Study Results – Hatch Rates



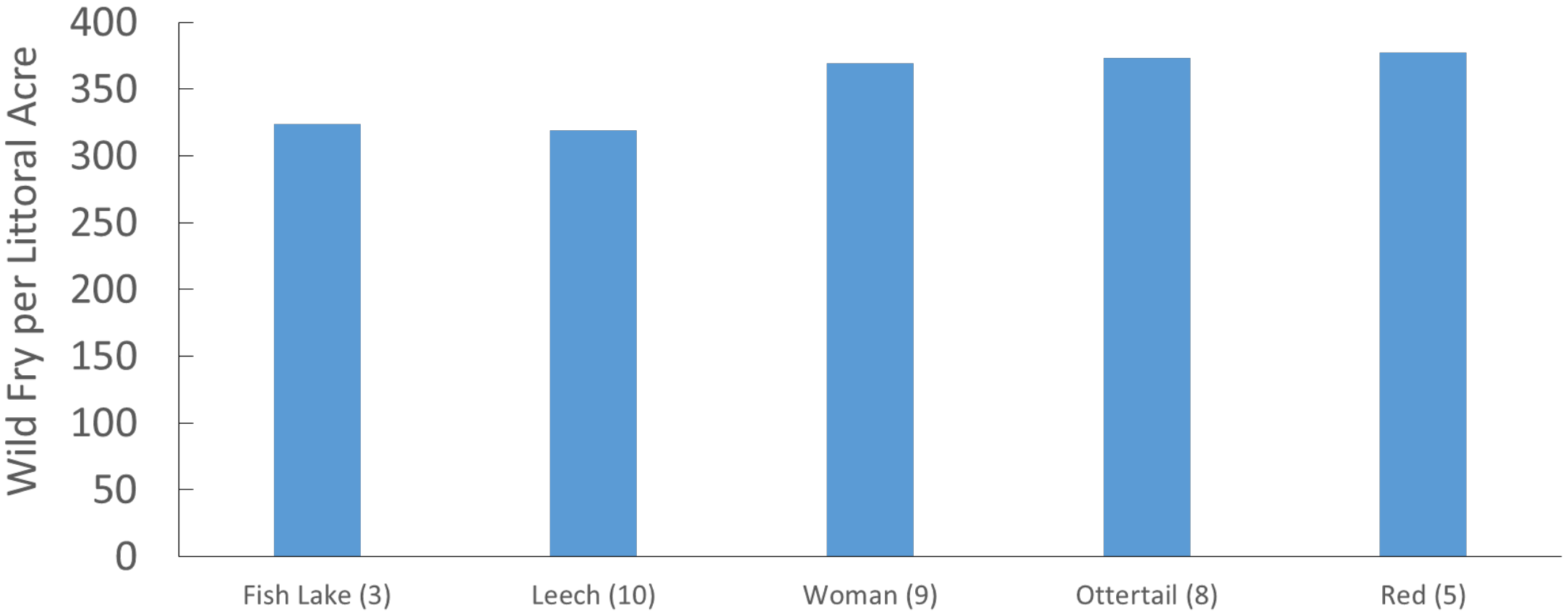
- No evidence that hatch rates are limiting

Study Results – Wild Fry Estimates Fish Lake



- Average estimate from 2013-2015 was 324 fry/LA

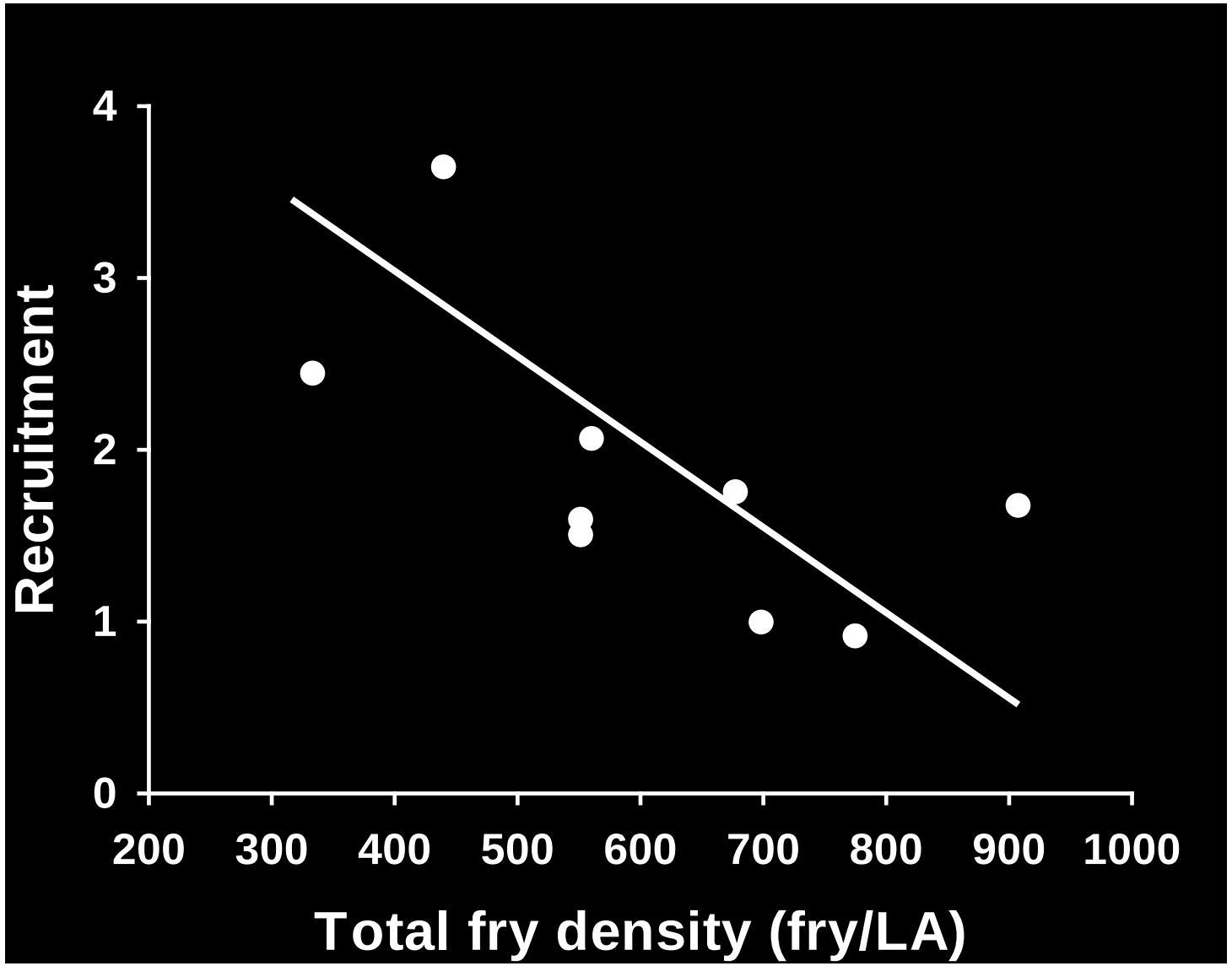
Study Results – Wild Fry Estimates



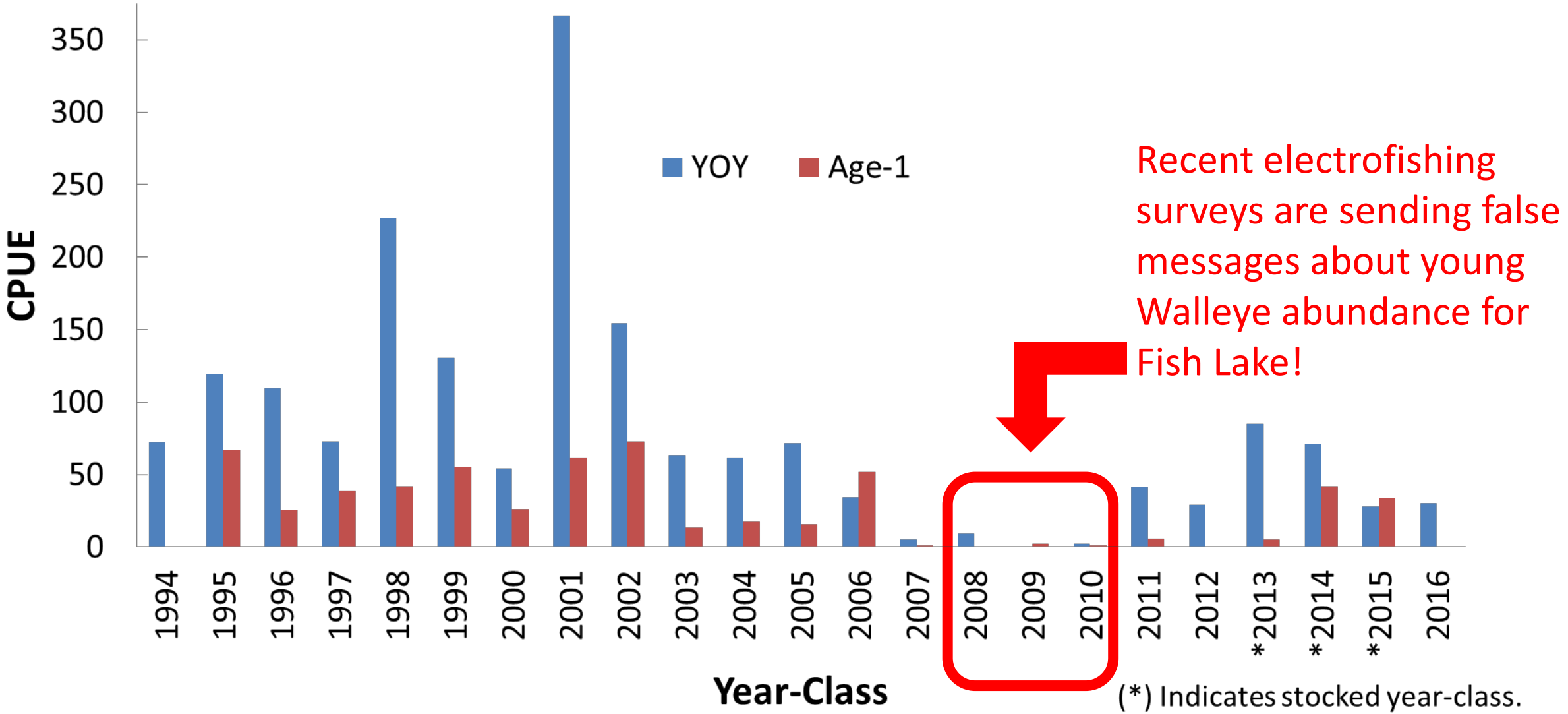
- Cumulative mean for all lakes was 380 fry/LA
- Ward (2016): 300-600 fry/LA resulted in the strongest year-classes

Optimum fry densities

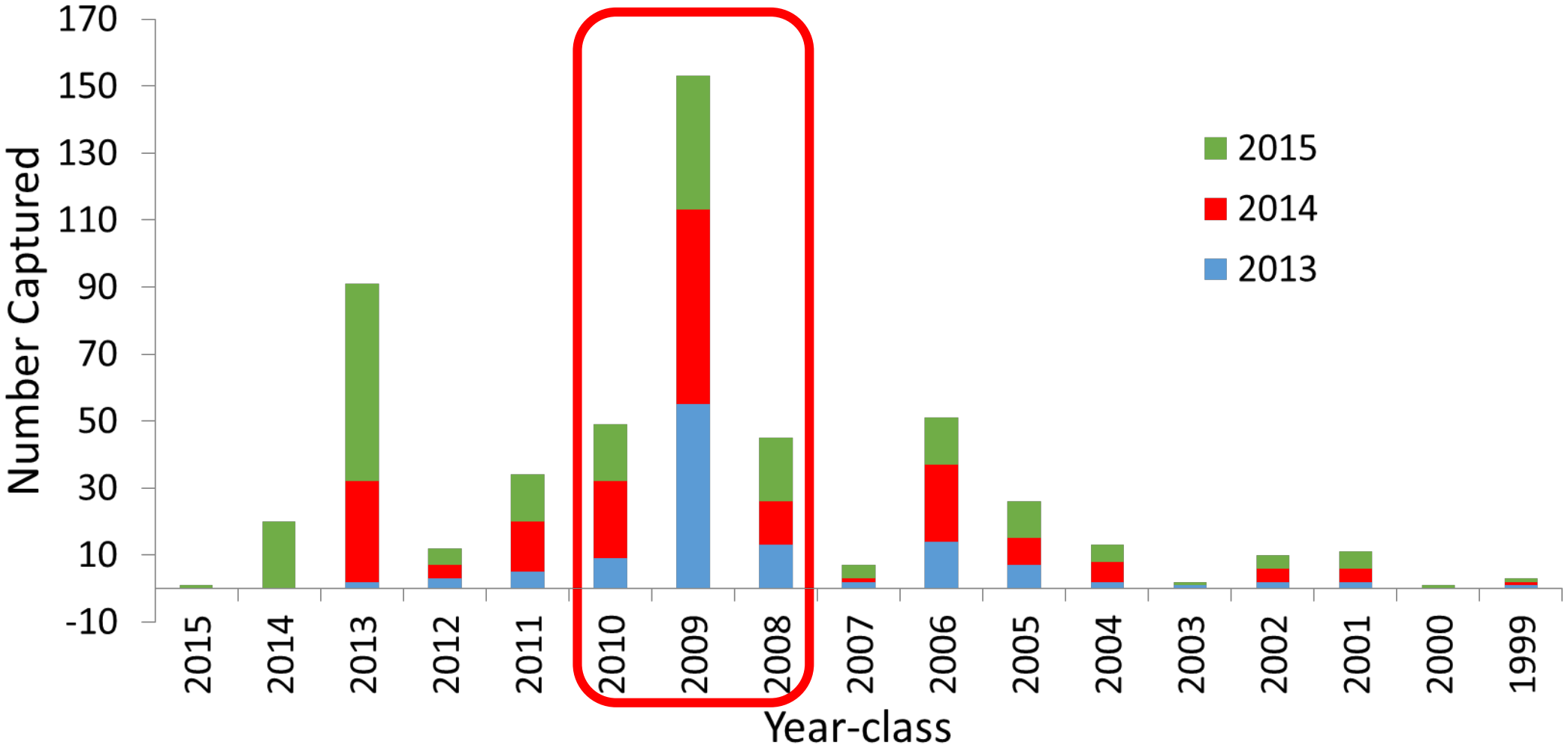
- New research suggests that less is more when it comes to Walleye fry densities (Ward 2016)
  - Recruitment strongly dependent on first-year growth
  - Growth influenced by growing season & fry density



Study Results – Age-0 Walleye Electrofishing



Study Results – Fall gillnetting age-class distribution



Study Conclusions

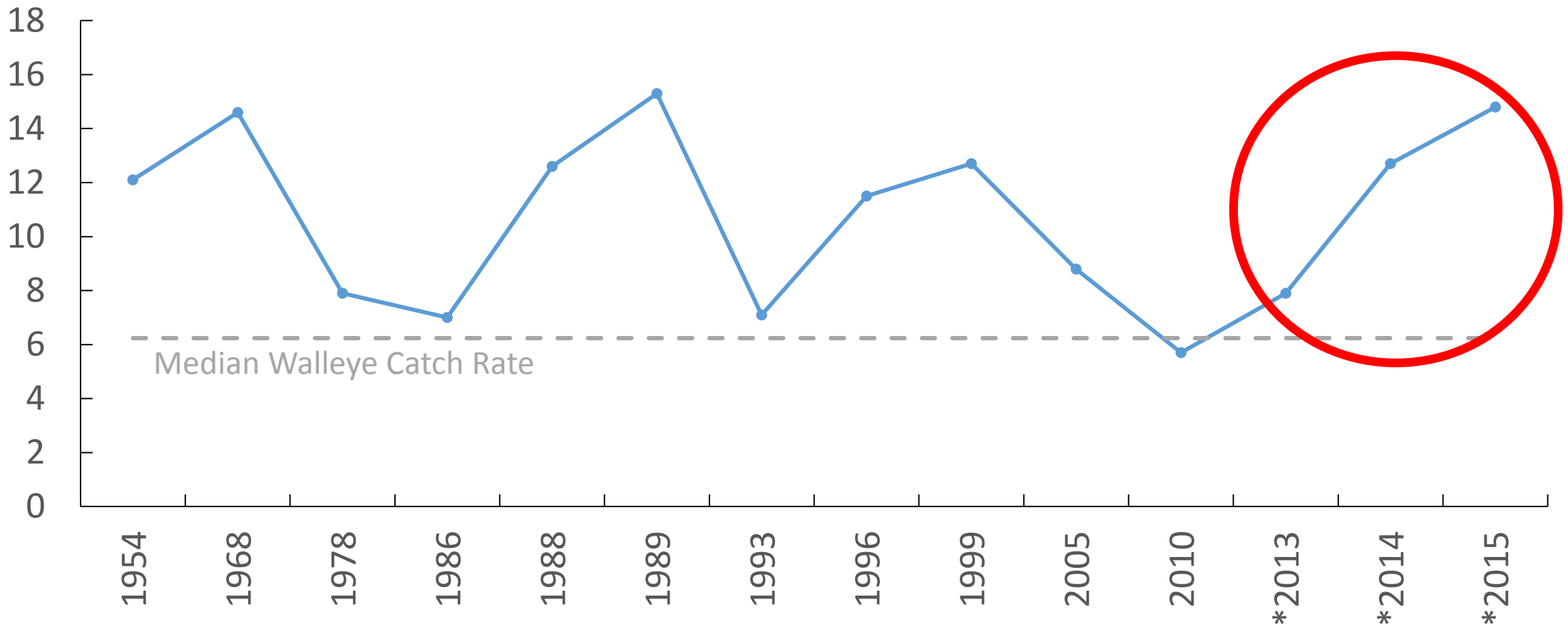
- Data collected indicate that..
  - Spawning stock biomass
  - Egg production
  - Hatch rates
  - Wild fry production to the 1st fall

…are likely **not** currently limiting Walleye in Fish Lake.

- This is good news!

- Year-class variability is normal for natural Walleye populations

Study Conclusions – Updated Gillnet Catch Rates



(*) Indicates Fall Gillnetting

What's next?

- Continue standard assessments (next 2020)
- Consider eliminating Young-of-Year electrofishing due to lack of correlation with adult abundance
- Creel survey proposed for 2020 (dependent on funding)
  - Update info on angling pressure and harvest
  - Gauge angler sentiment towards special Walleye regulation
  - Evaluate the effectiveness of the special regulation for Walleye


Questions?
Please take a moment to fill out our survey
MNDNR