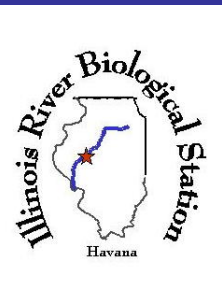


Environmental and Economic Impacts of Asian Carps in the Illinois River

Photo by Nerissa Michaels



Greg G. Sass
Illinois River Biological Station
Illinois Natural History Survey



Environmental and Economic Impacts of Asian Carps

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- VI. Potential Solutions

I. Brief History of Asian Carps in the United States

1973

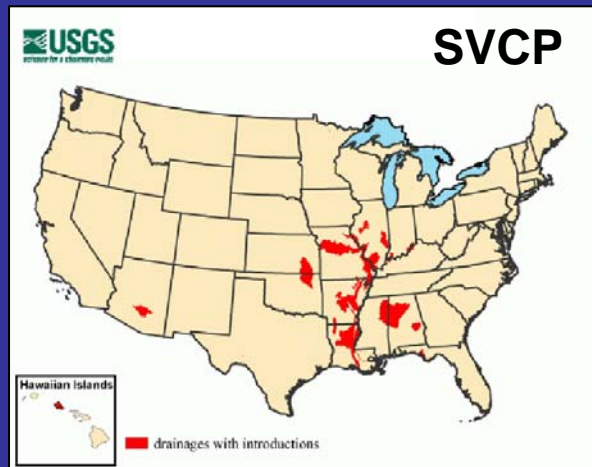
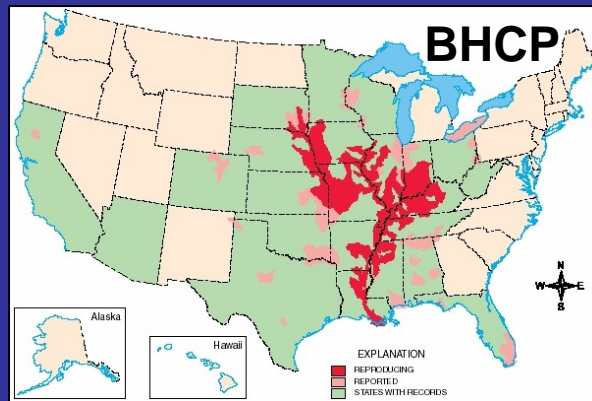
1980

1990

2000

2007

BHCP and SVCP introduced to U.S. (AR)



1995 - BHCP in La Grange Reach, IL River

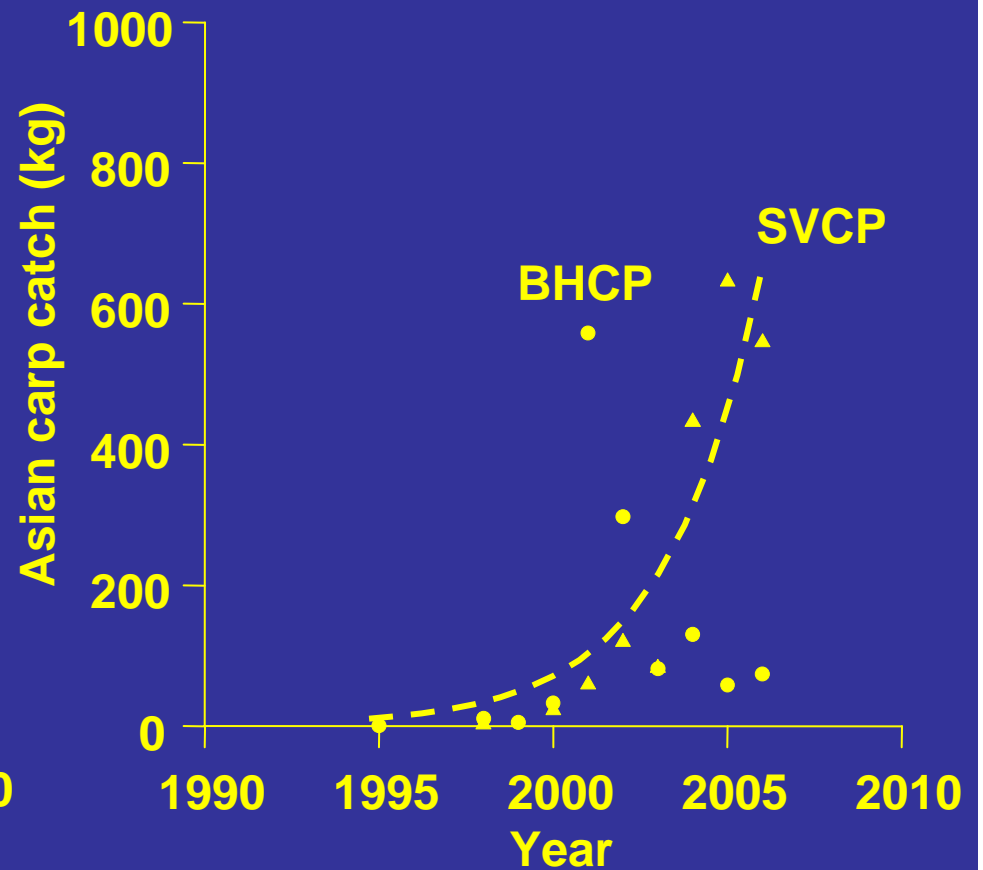
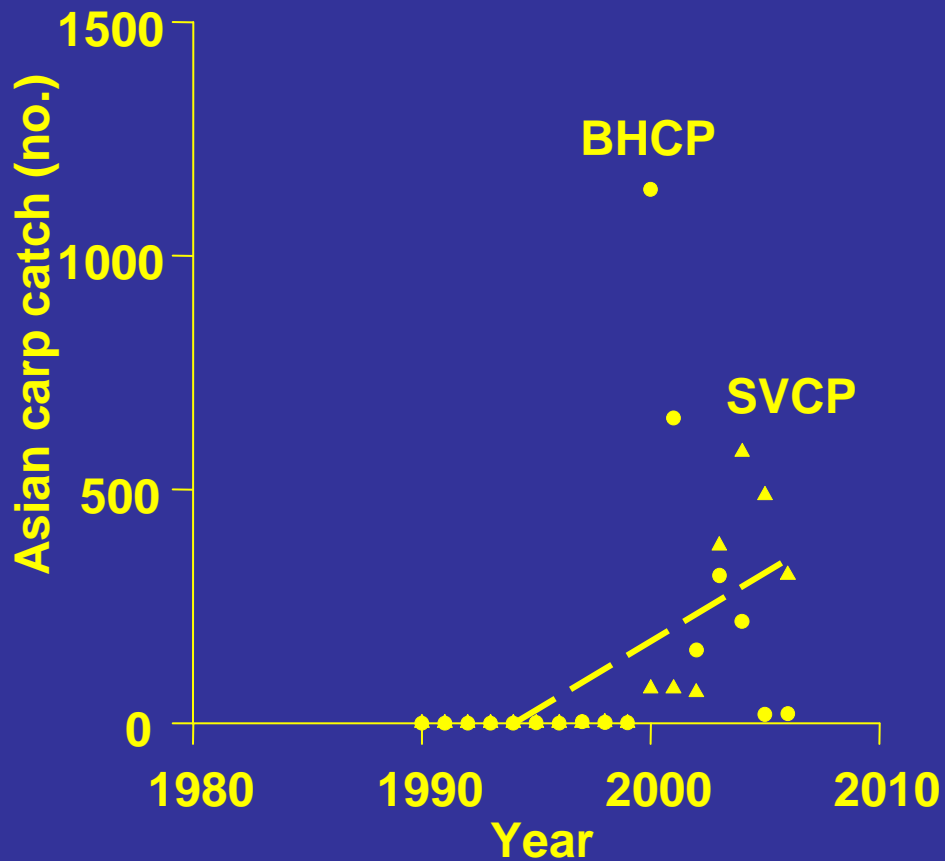
1998 - SVCP in La Grange Reach, IL River

**Increase in BHCP and SVCP
in La Grange Reach, IL River**

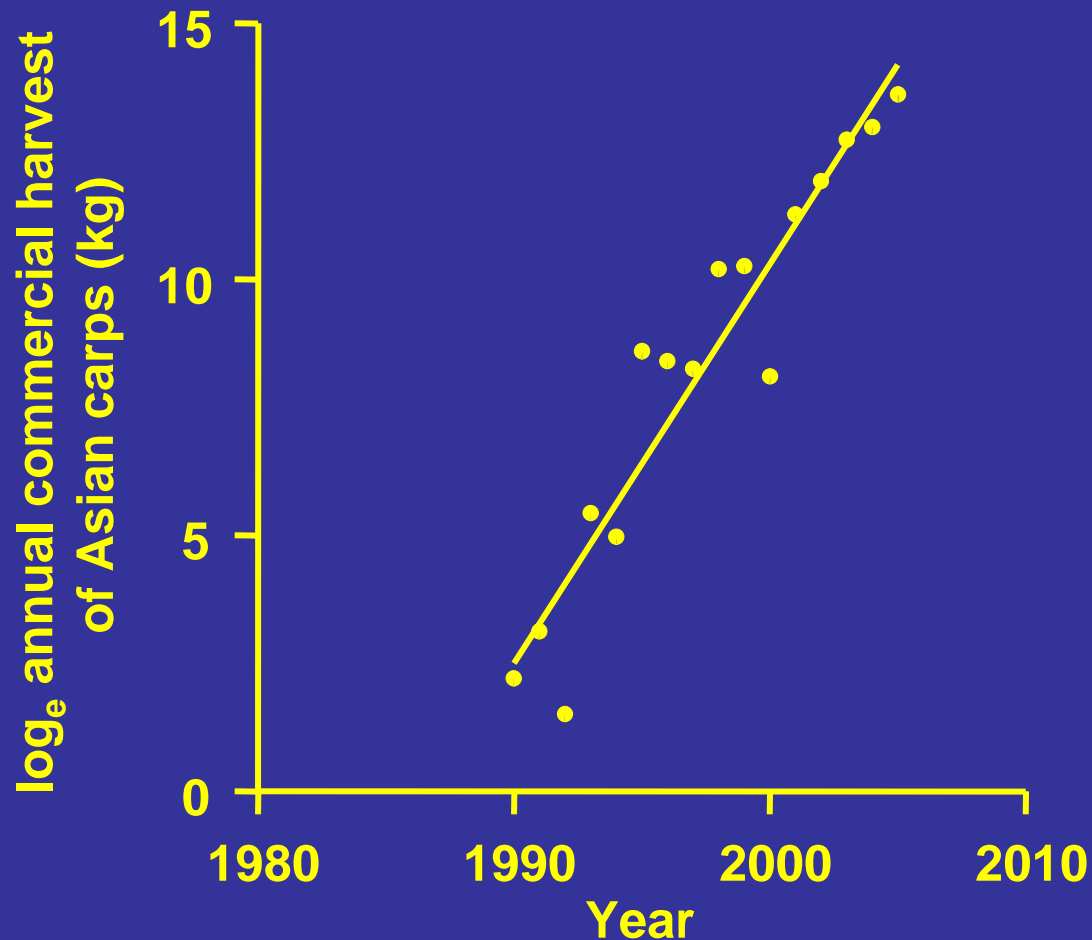
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II. Trends in Asian Carp Catches – LTRMP, La Grange Reach, IL River



II. Trends in Asian Carp Commercial Landings – IL River



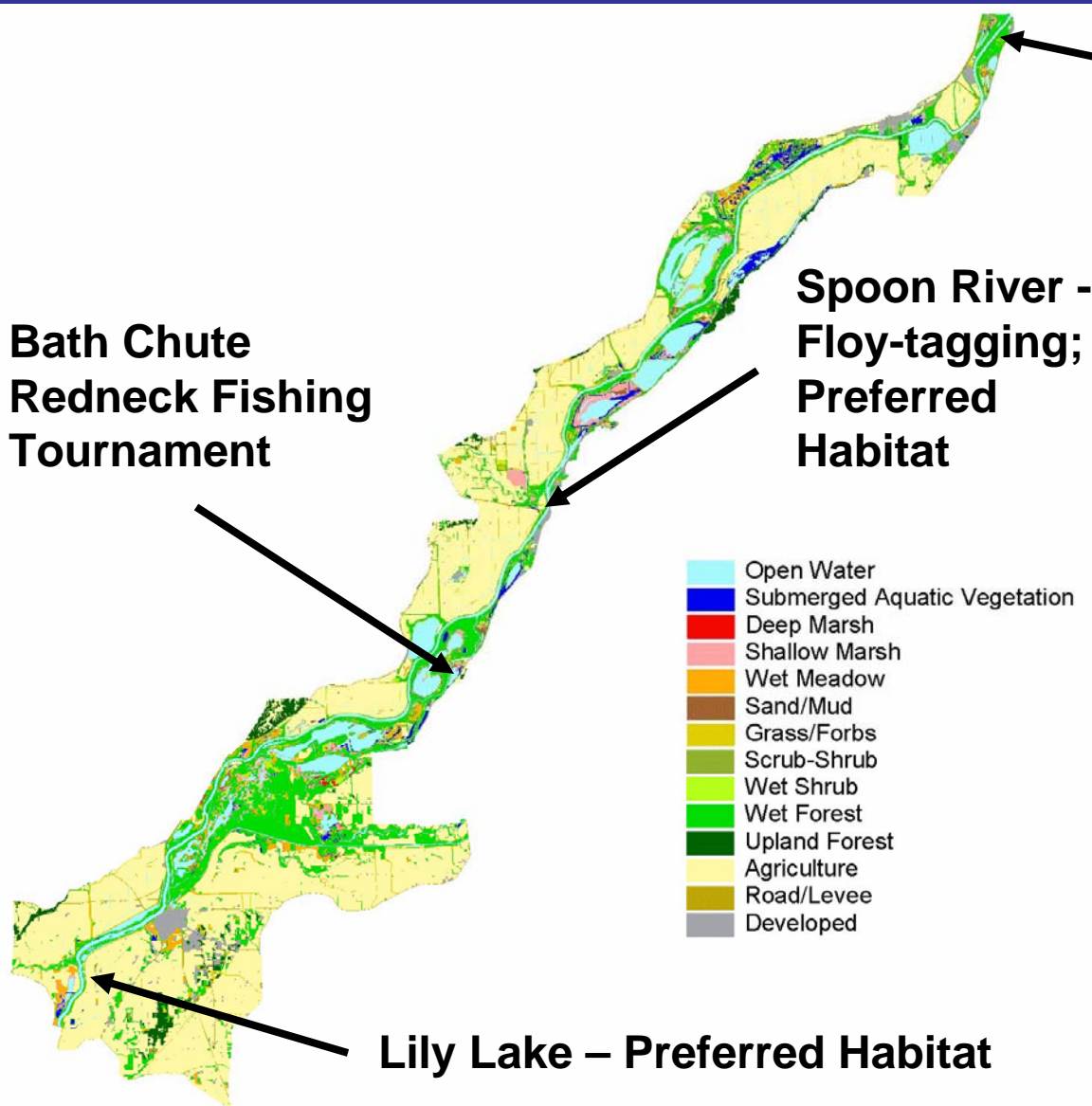
-Still, questions about whether Asian carps are increasing in abundance in IL River

* Rob Maher (IDNR) unproofed, draft quality data

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III. 2007 IRBS Mark-Recapture Population Estimate for Asian Carps

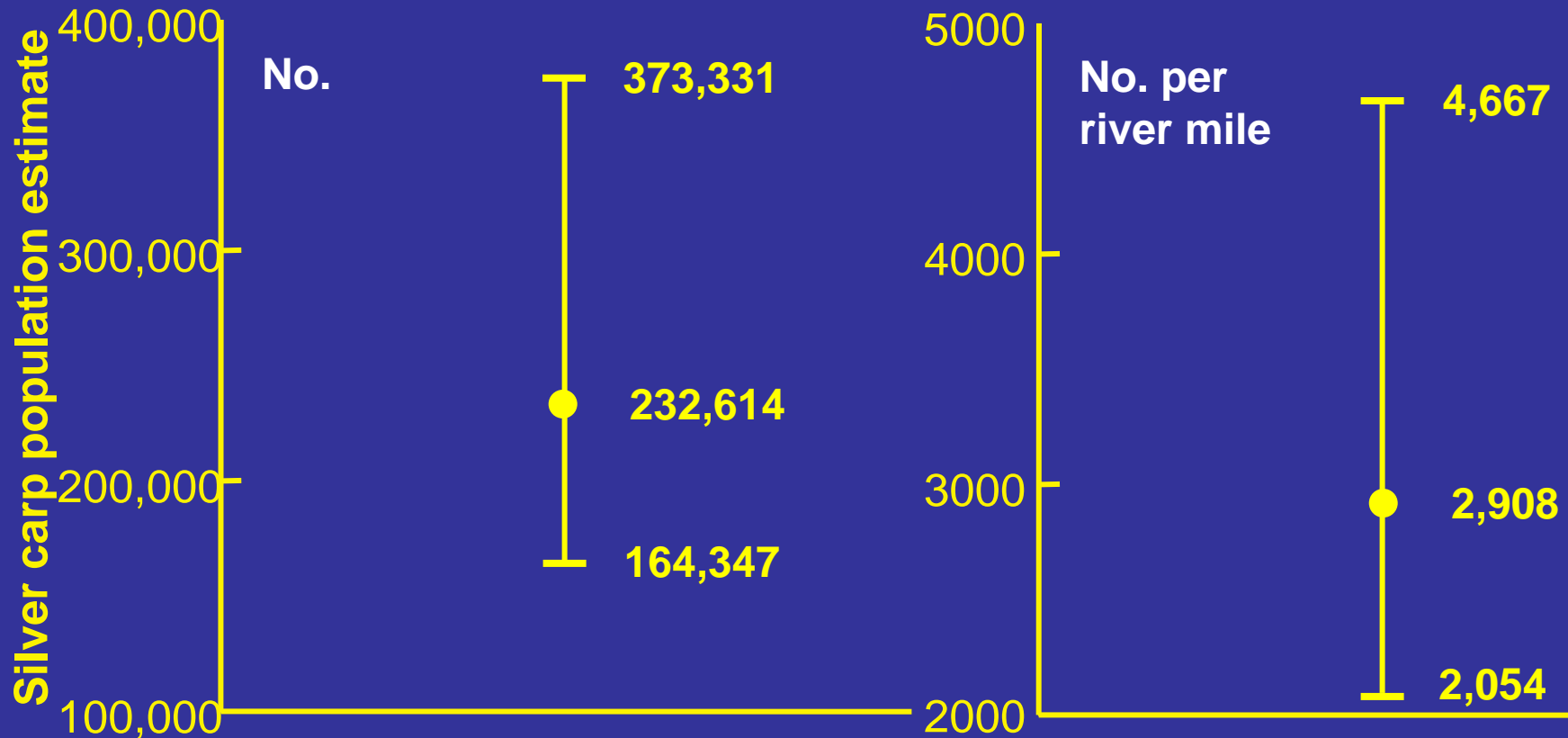


**Peoria Lock and Dam
Floy-tagging**

Goals:

1. Mark-recapture PE for each area and La Grange Reach
2. Estimates of daily growth on recaptured carp
3. Characteristics of preferred habitat (*target for reduction*)
4. Aging and catch curves
5. Comparison to MS River with Tim Spier's group (WIU)

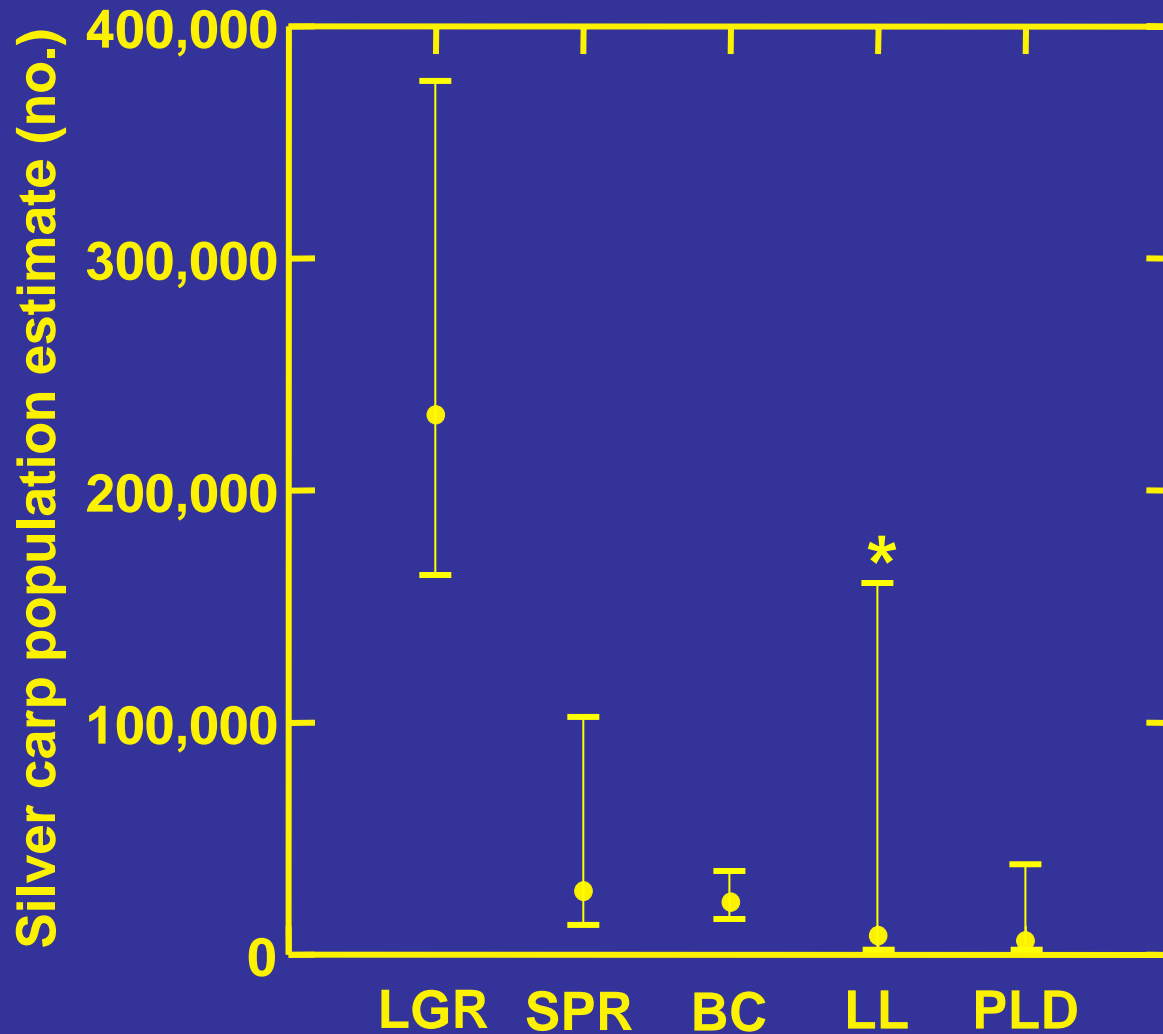
III. 2007 IRBS Mark-Recapture Population Estimate for Silver Carp



*As of September 11

La Grange Reach, Illinois River

III. 2007 IRBS Mark-Recapture Population Estimate for Silver Carp



1. La Grange Reach (LGR)
= 232,614

2. Spoon River (SPR)
= 27,294

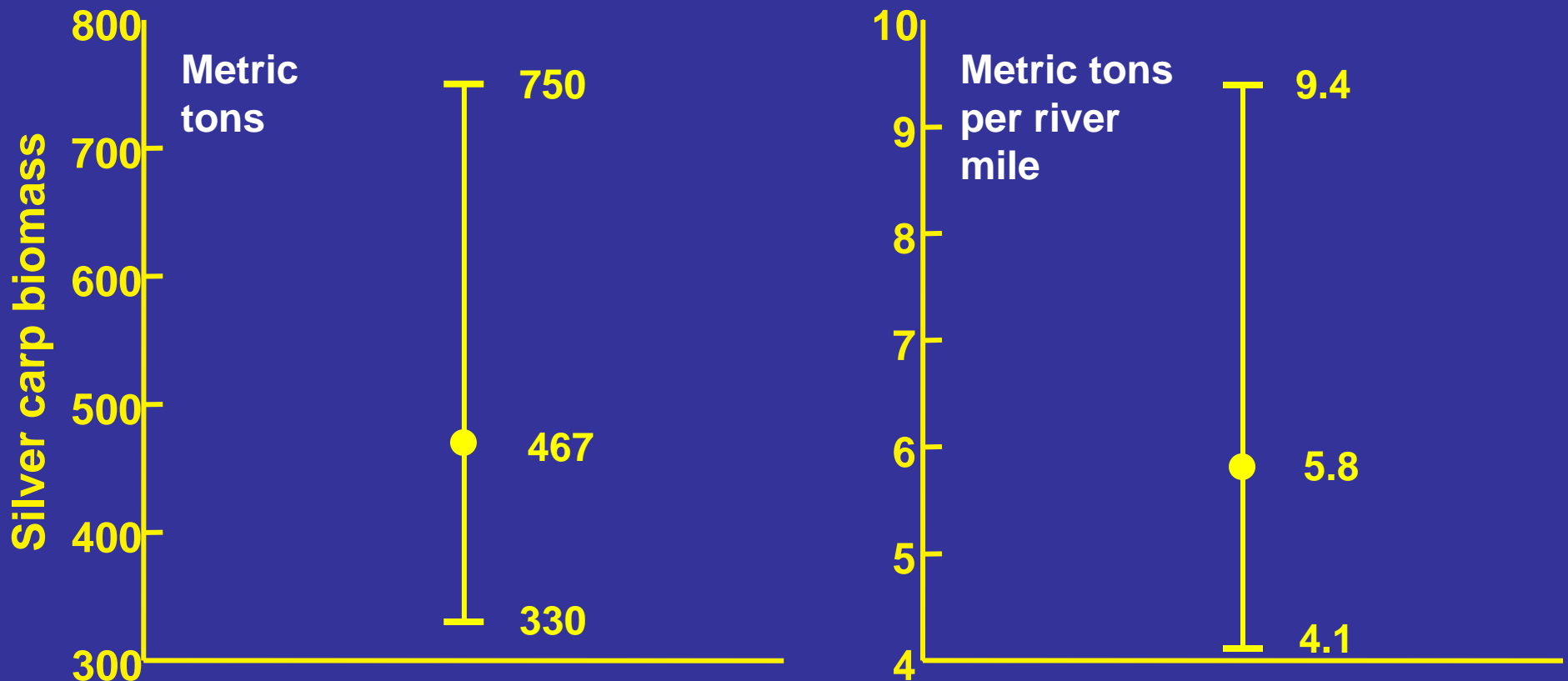
3. Bath Chute (BC)
= 22,553

4. Lily Lake (LL)
~ 8,006

5. Peoria Lock and Dam (PLD)
= 5,842

*As of September 11

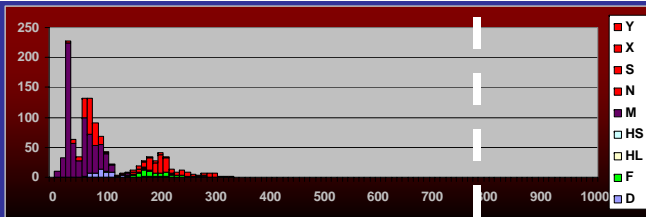
III. 2007 IRBS Mark-Recapture Population Estimate for Silver Carp



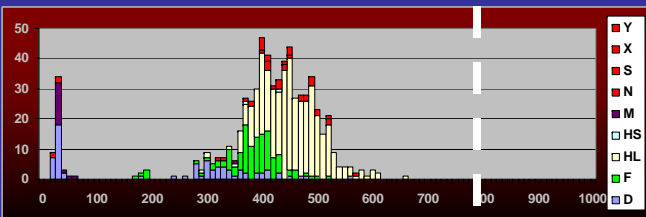
*As of September 11

La Grange Reach, Illinois River

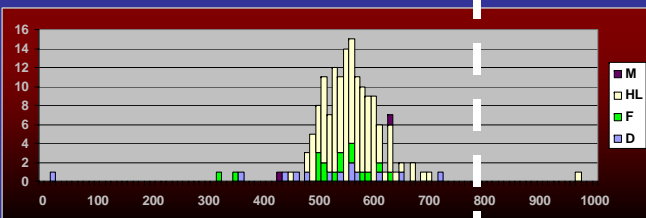
Bighead carp



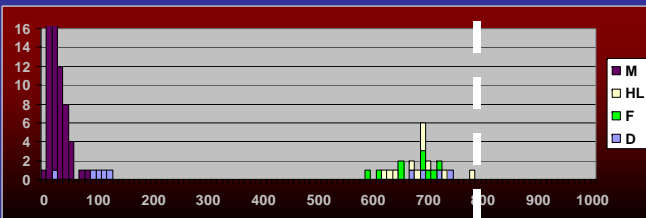
2000



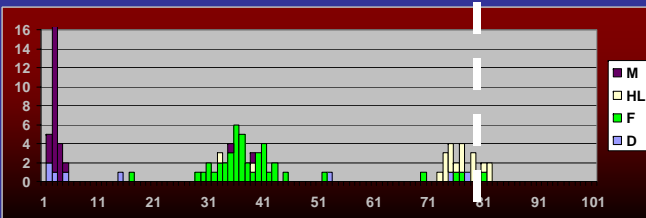
2001



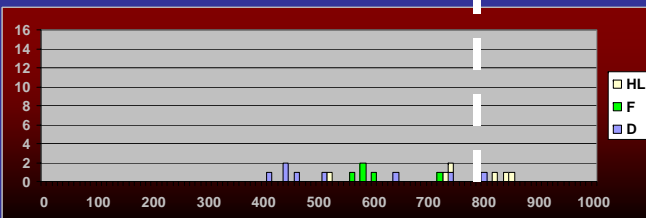
2002



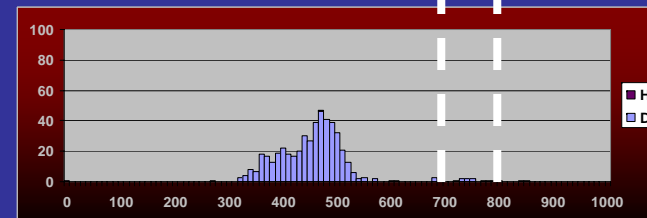
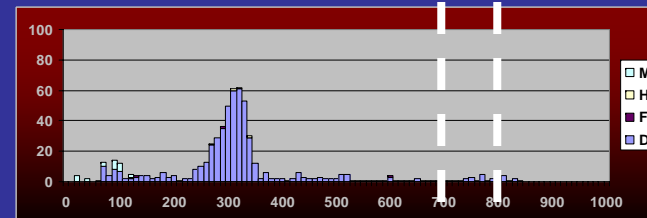
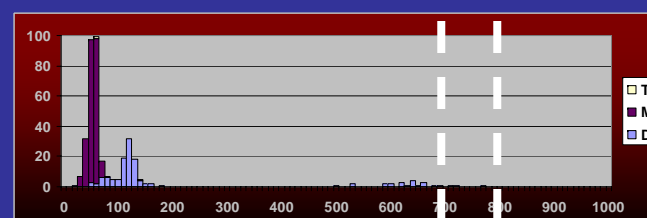
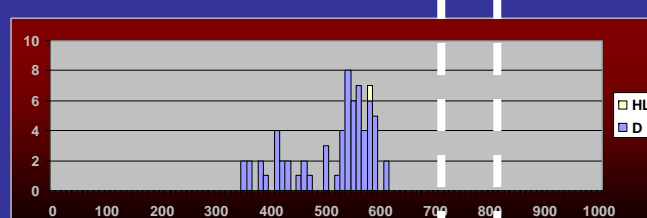
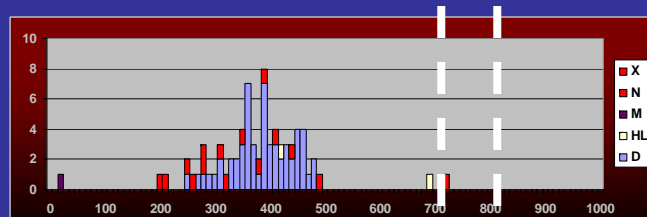
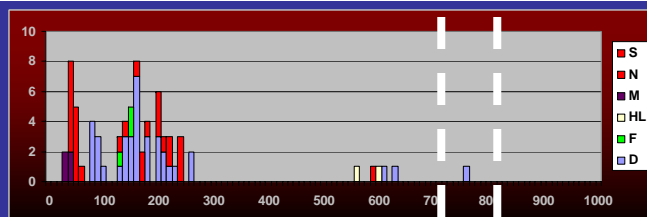
2003



2004

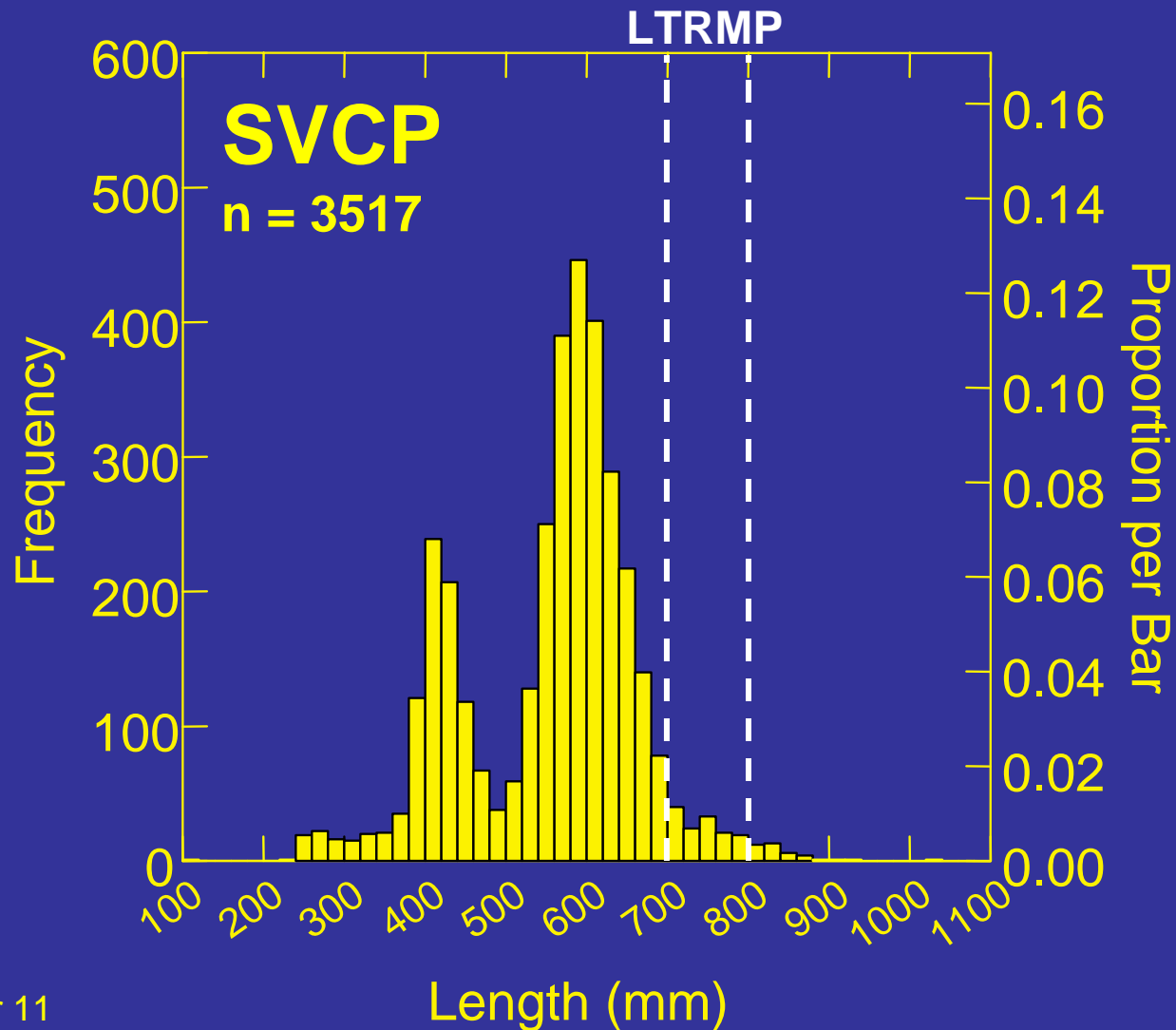


2005



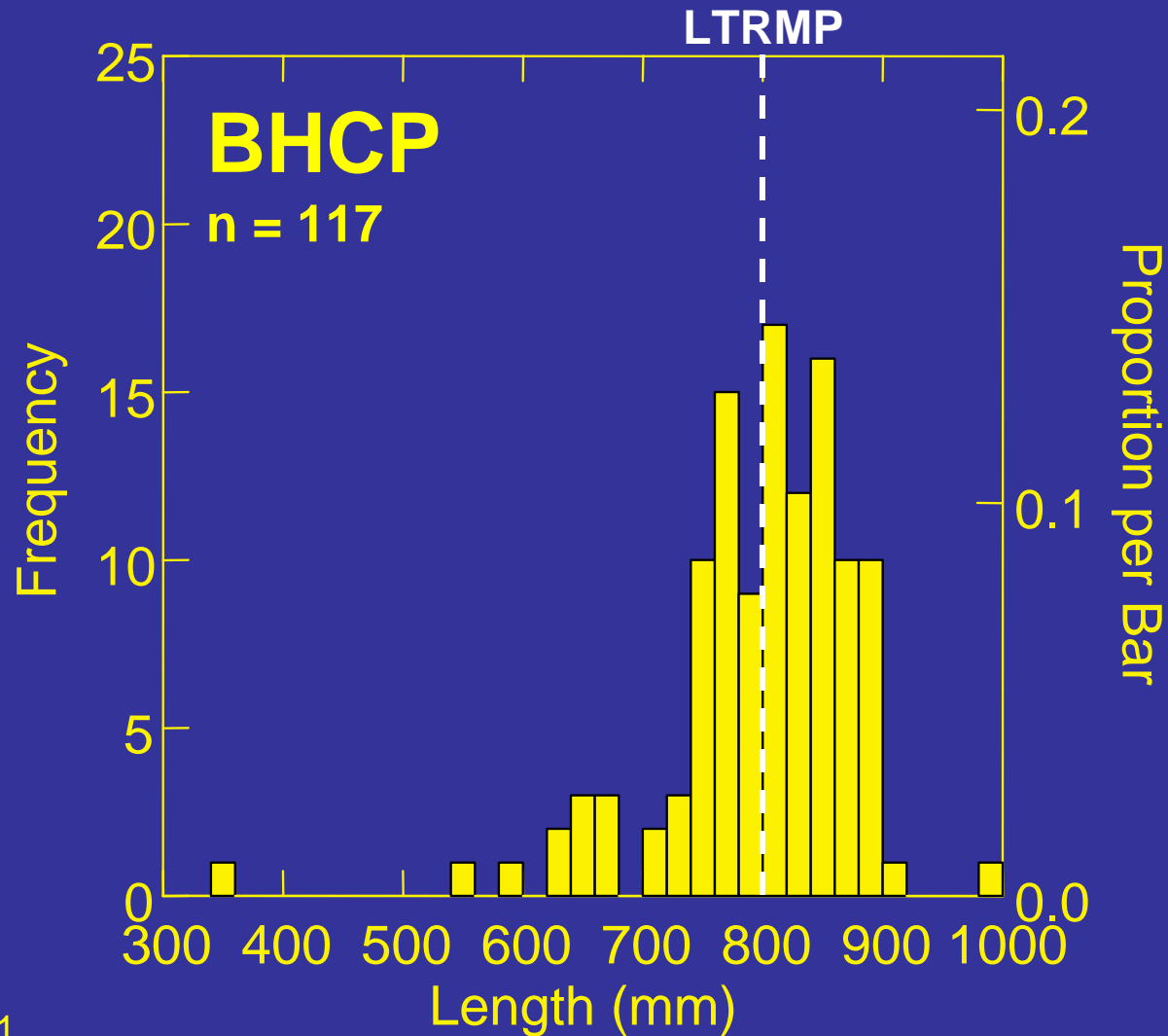
Silver carp

III. 2007 IRBS Asian Carps Mark-Recapture Population Estimate



*As of September 11

III. 2007 IRBS Asian Carps Mark-Recapture Population Estimate

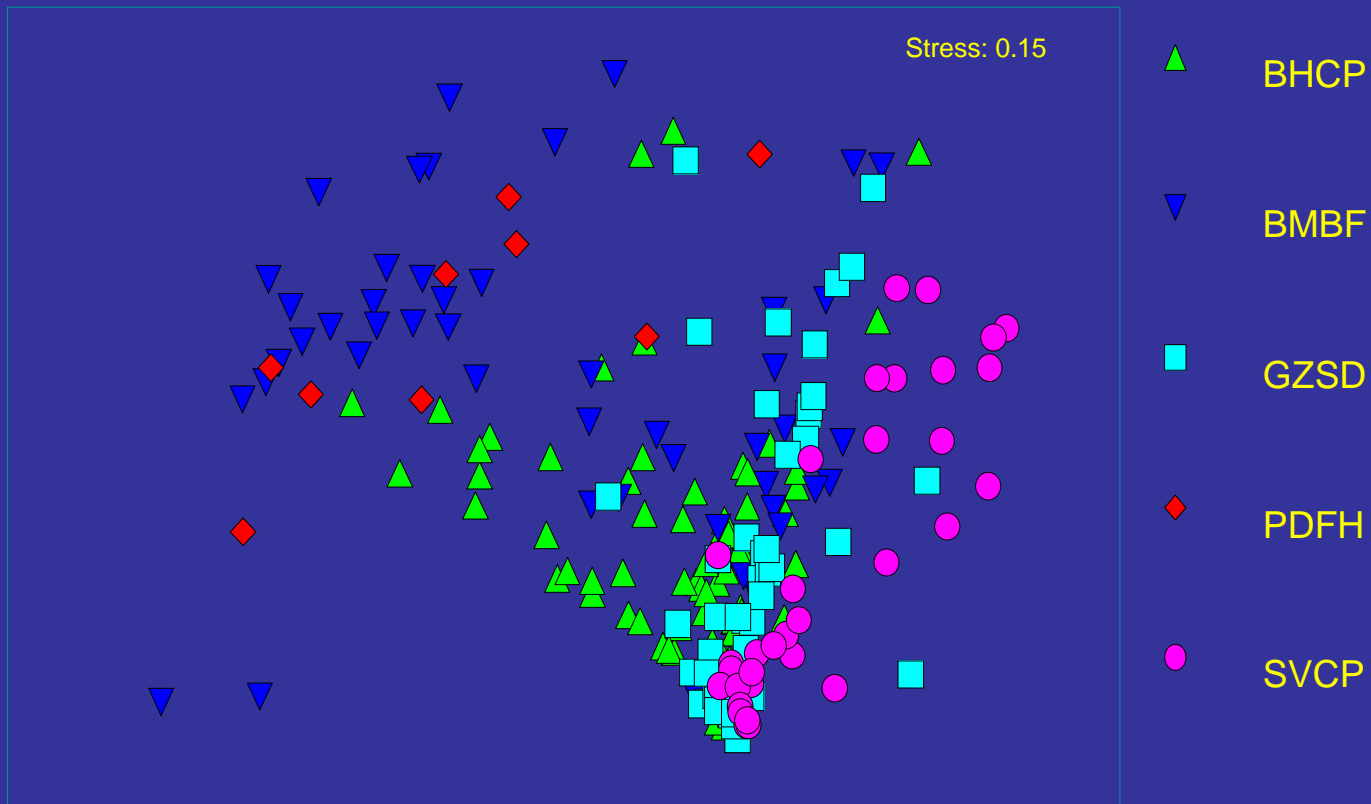


*As of September 11

Environmental and Economic Impacts of Asian Carps

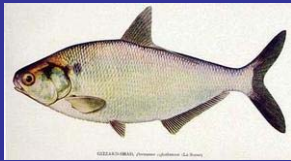
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IV. Dietary Overlap of Native Planktivores and Asian Carps

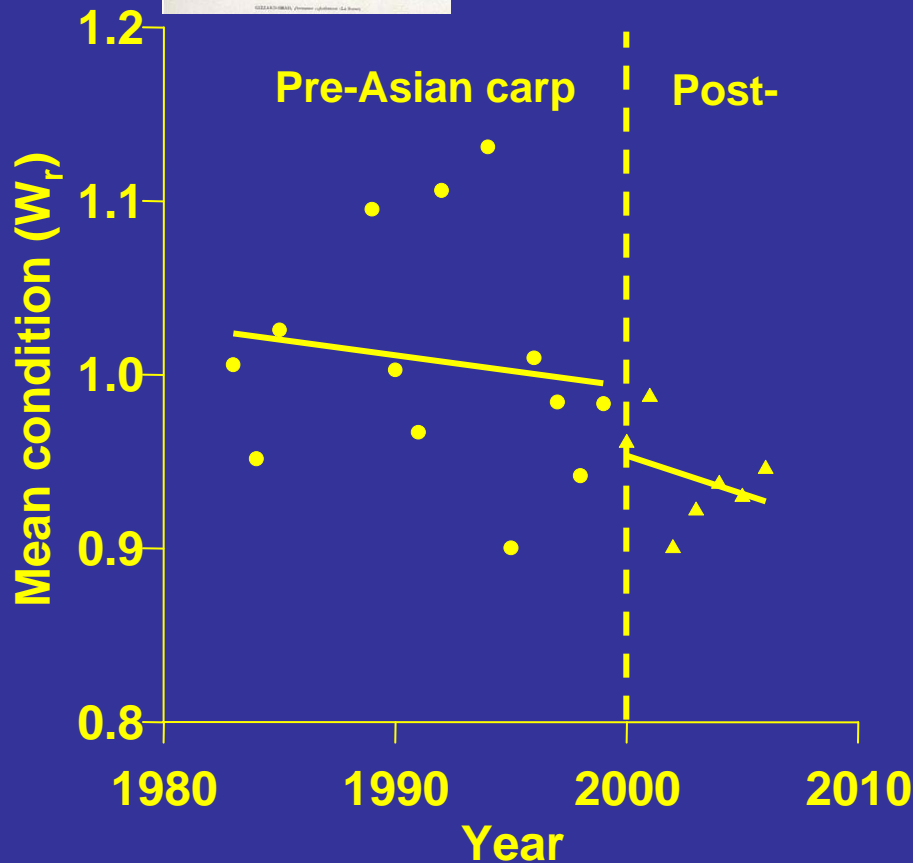


Sampson, S.J. 2005. Dietary overlap between bighead carp (*H. nobilis*) and silver carp (*H. molitrix*) with three native filter-feeding fishes of the Illinois and Mississippi rivers. Master's Thesis. University of Illinois-Urbana-Champaign.

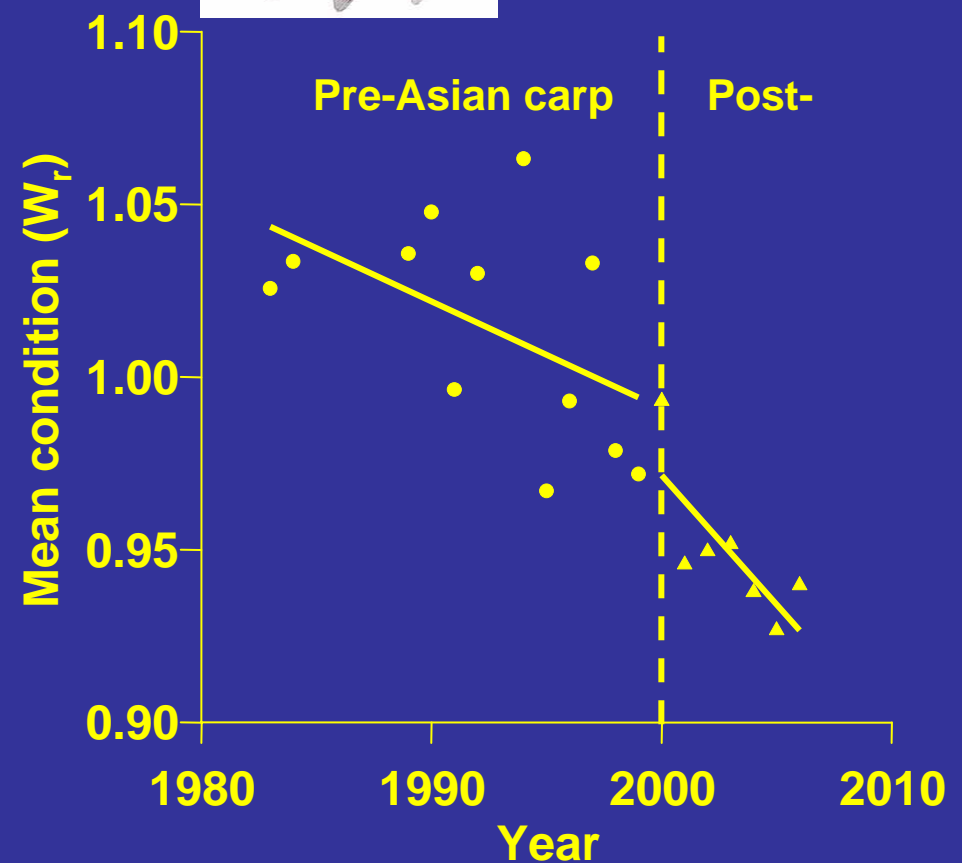
IV. Have Asian Carps Influenced Native Planktivore Body Condition?



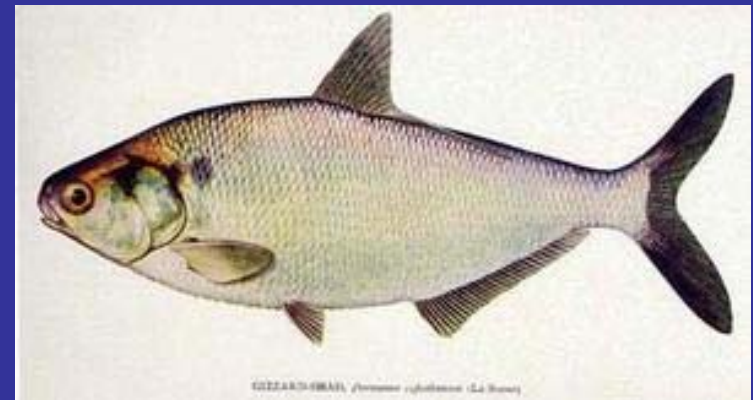
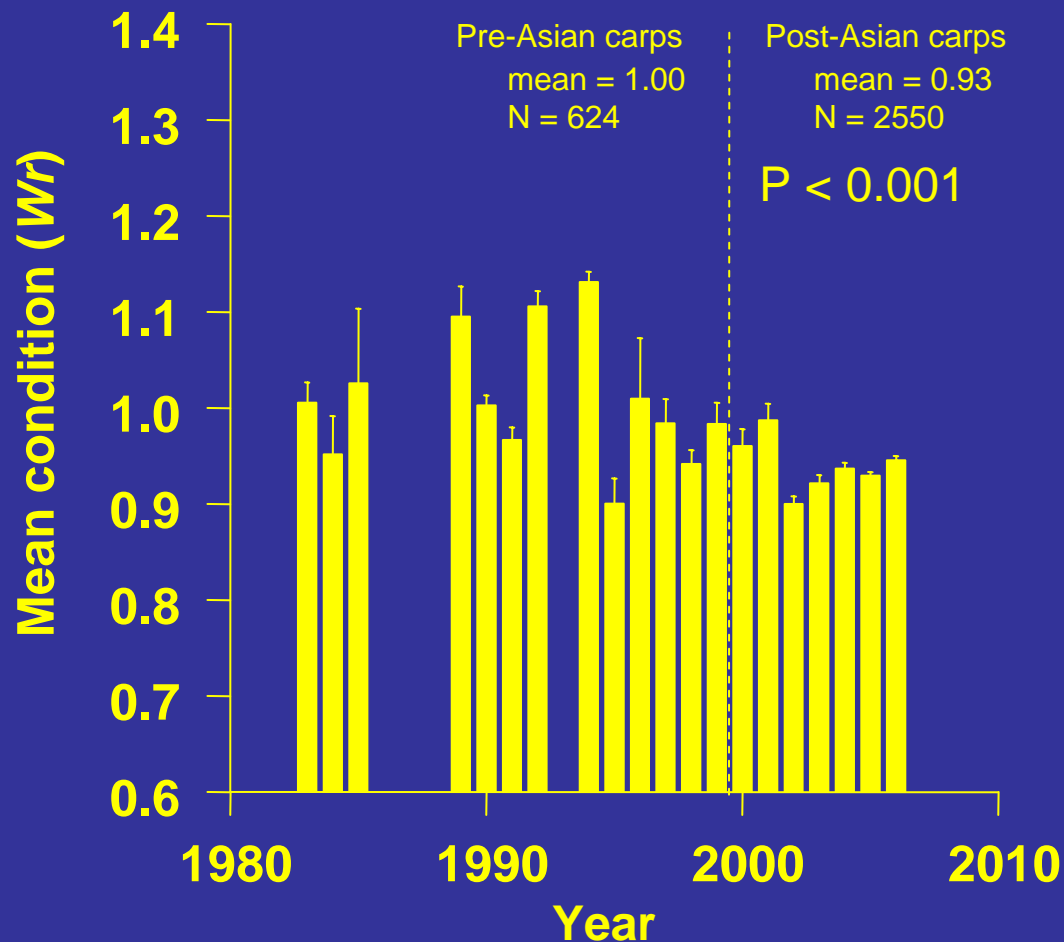
gizzard
shad



bigmouth
buffalo



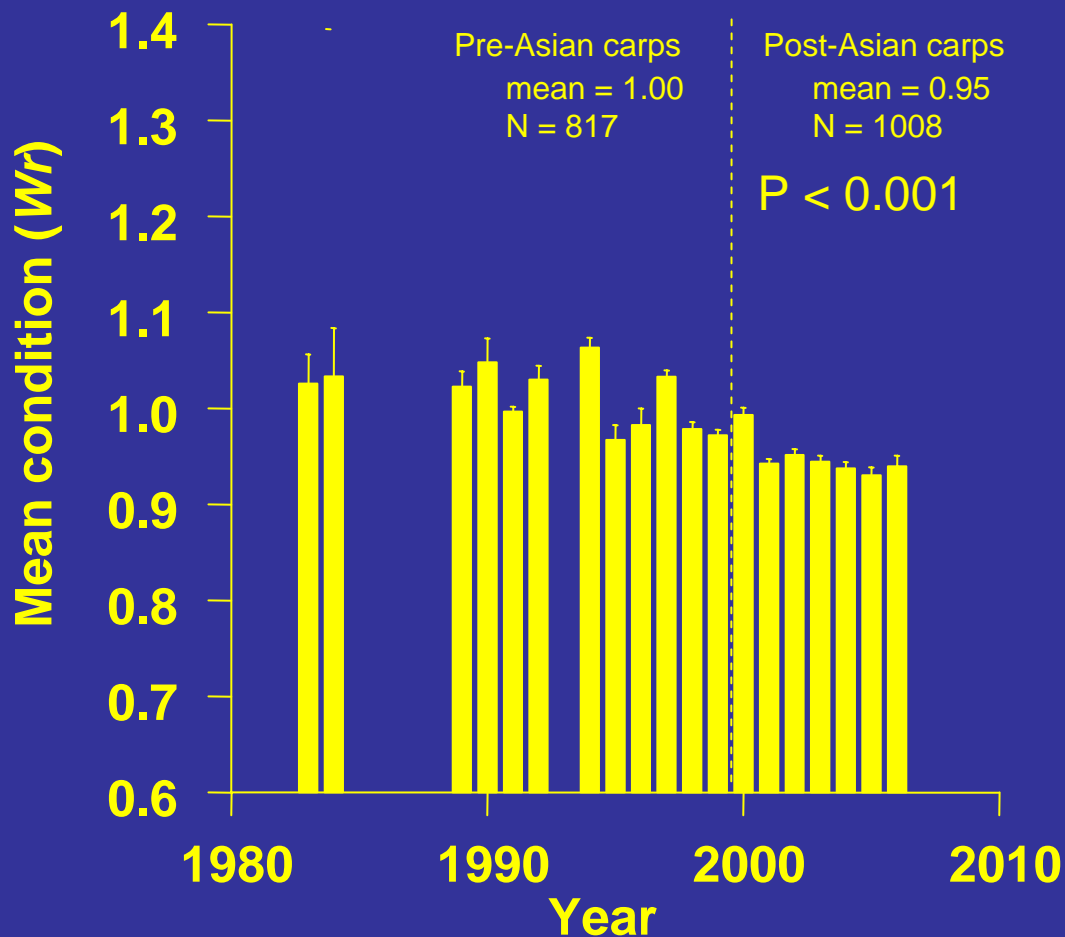
IV. Have Asian Carps Influenced Native Planktivore Body Condition?



-7% decrease in gizzard shad body condition following Asian carps establishment

-Only Asian carp commercial harvest explained significant variability in condition decline

IV. Have Asian Carps Influenced Native Planktivore Body Condition?



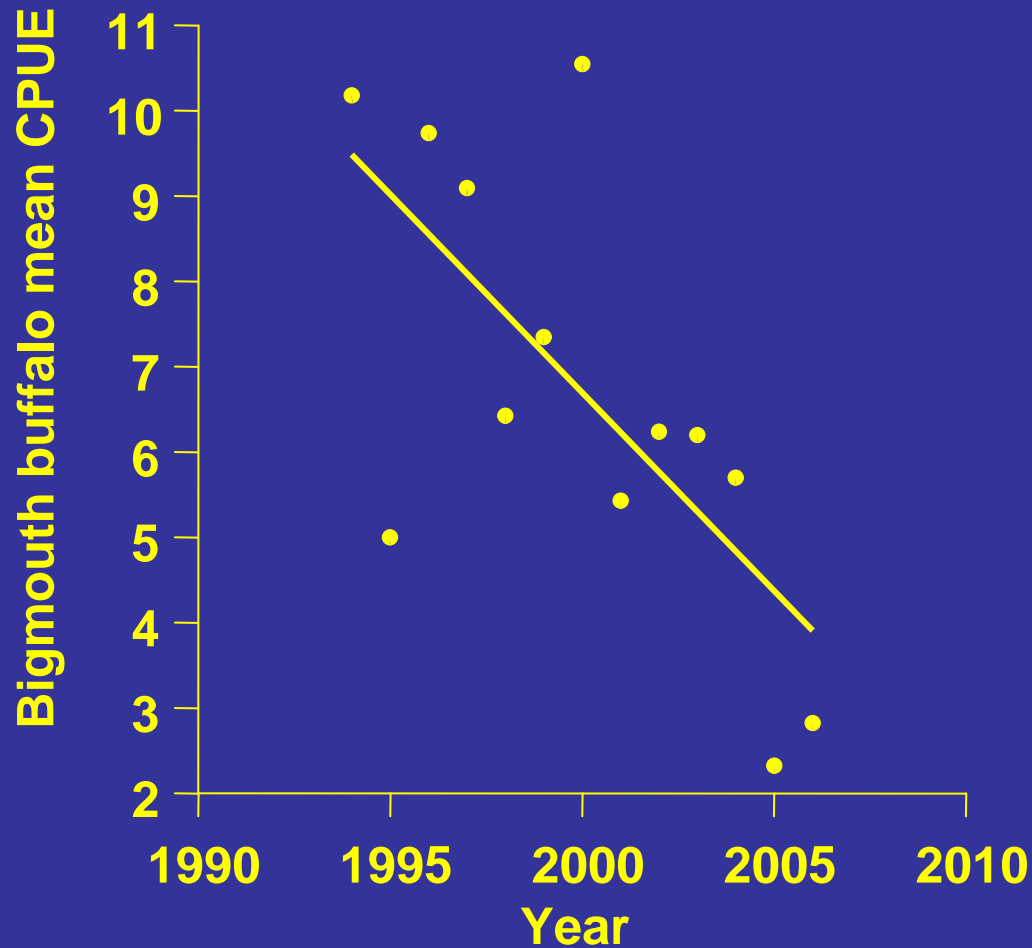
-5% decrease in bigmouth buffalo body condition following Asian carps establishment

-Only Asian carp commercial harvest explained significant variability in condition decline

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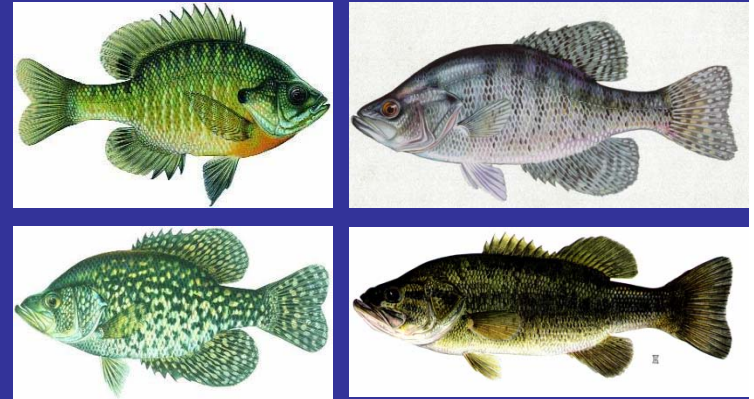
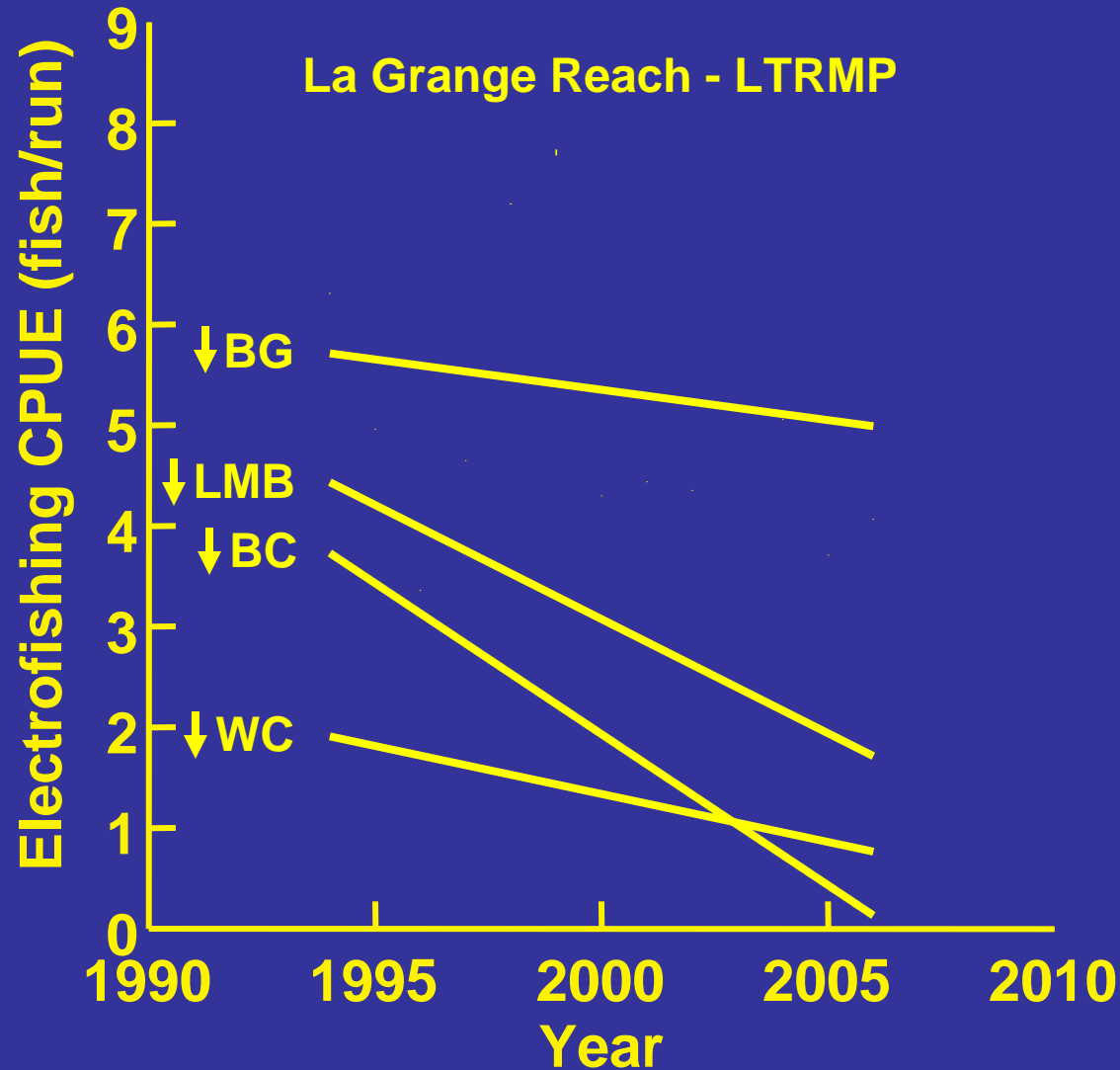
V. Economic Impacts – Commercially Important Species



**-Statistical significant declines
in bigmouth buffalo CPUE over
time in LTRMP**

**-Lowest recorded CPUE in 2005
and 2006**

V. Economic Impacts – Recreationally Important Species



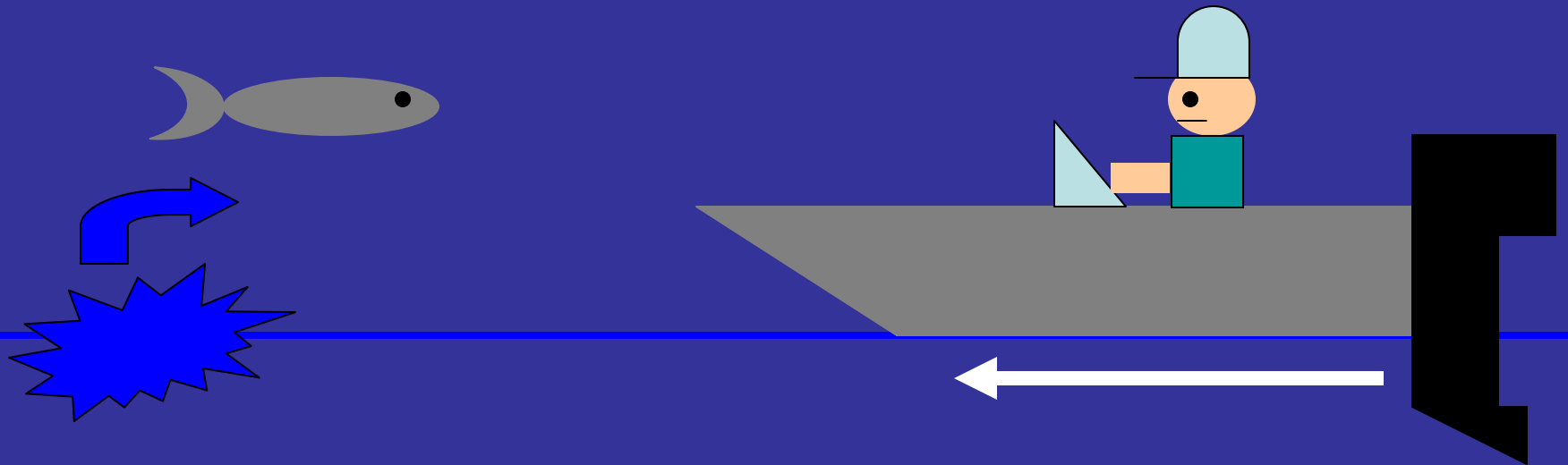
-Statistically significant declines in centrarchid catches over time in LTRMP

-Cannot be solely attributed to Asian carps, but may be compounding effects

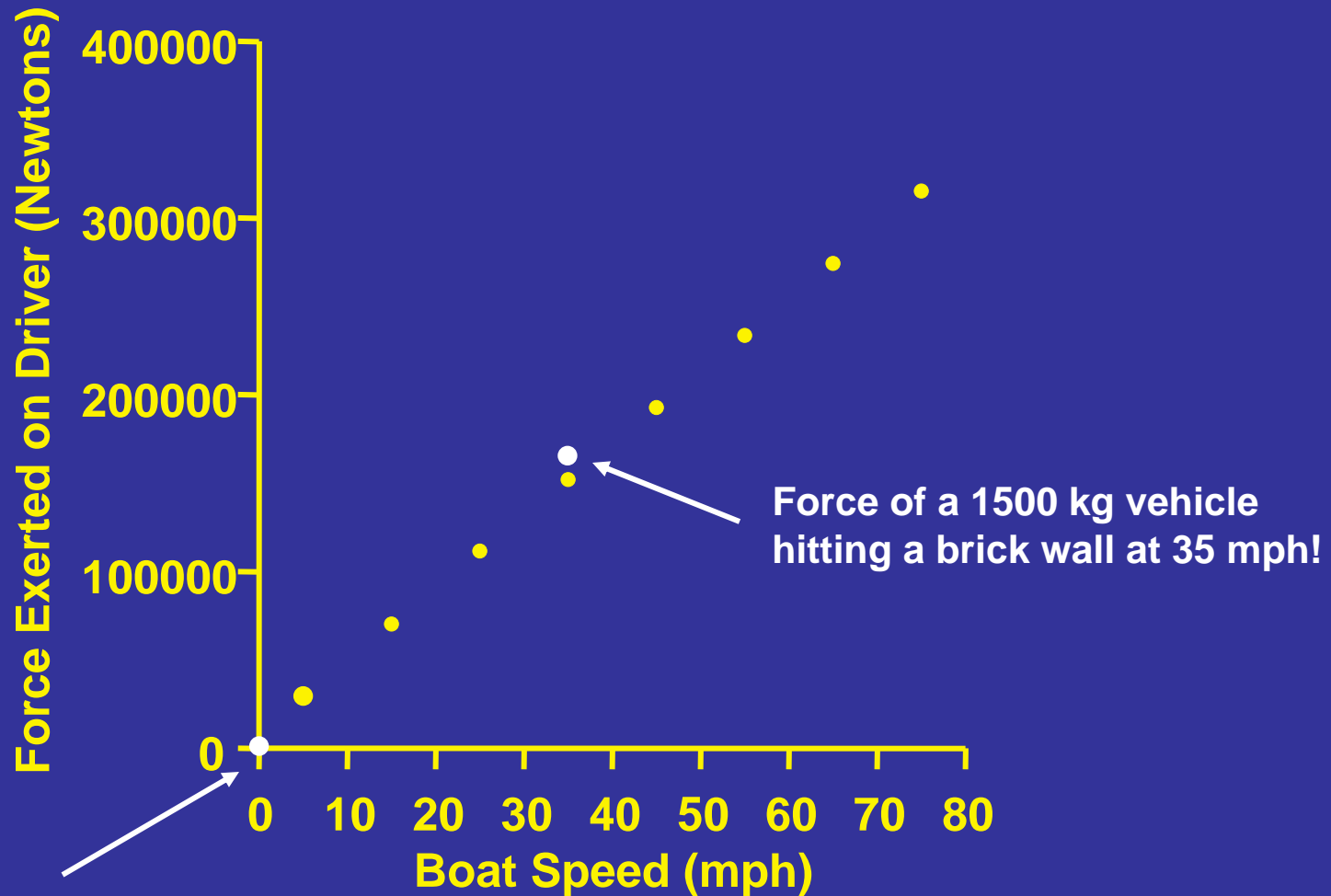
V. Economic Impacts – Hypothetical Physics of Collision

- Boat + Passenger = 907.2 kg
- Initial Velocity = - 2.25 to 33.75 m/s
- Final Velocity = 1 m/s
- Collision Time = 0.1 s

What is the force of the collision on the boat driver?



V. Economic Impacts – Hypothetical Physics of Collision



Force of a middleweight boxer's punch!

Potential Solutions

- Prevention of Introduction
- Population Reduction
 - Market development
 - Commercial fishing
 - Pinpoint preferred habitats
- Electric Barrier
- Disconnection of Illinois River to Lake Michigan?



Pertinent Question

“The pertinent question may not be whether Asian carps can survive in the Great Lakes, but rather, which tributaries will be suitable habitat for Asian carps establishment”?



Asian carp spawning below Peoria Lock and Dam

August 23, 2007

Photograph by Kevin S. Irons, Illinois River Biological Station



Acknowledgements

- The Long-term Resource Monitoring Program
- The U.S. Army Corps of Engineers
- The USGS Upper Midwest Environmental Sciences Center
- The Illinois Natural History Survey
- The Illinois Department of Natural Resources
- The U.S. Fish and Wildlife Service