Evaluation of Low-frequency Electrofishing Pulse Rates for Sampling Blue Catfish (*Ictalurus furcatus*)

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Acknowledgements

- ATU
  - Dr. Joe Stoeckel
  - Dr. John Jackson
  - Technicians
- AGFC
  - Tony Fernando
  - Blair Harvey

Blue Catfish

- Largest N. American catfish
- Found in large rivers and reservoirs
  - Introduced throughout America

- Highly sought after by commercial and sport anglers

Sampling

- Gill nets
  - Low catch rates
  - Biased against fish <250mm
- Hook and line
  - Effective for catching fish >635mm
  - Low catch rates

Photo courtesy of Peter Leonard

Sampling

- Low-frequency electrofishing
  - Electrofishing with <30 pps
  - Most effective form of sampling
  - Odd surfacing response
- Improvements in electrofishing technology

- Need to standardize sampling

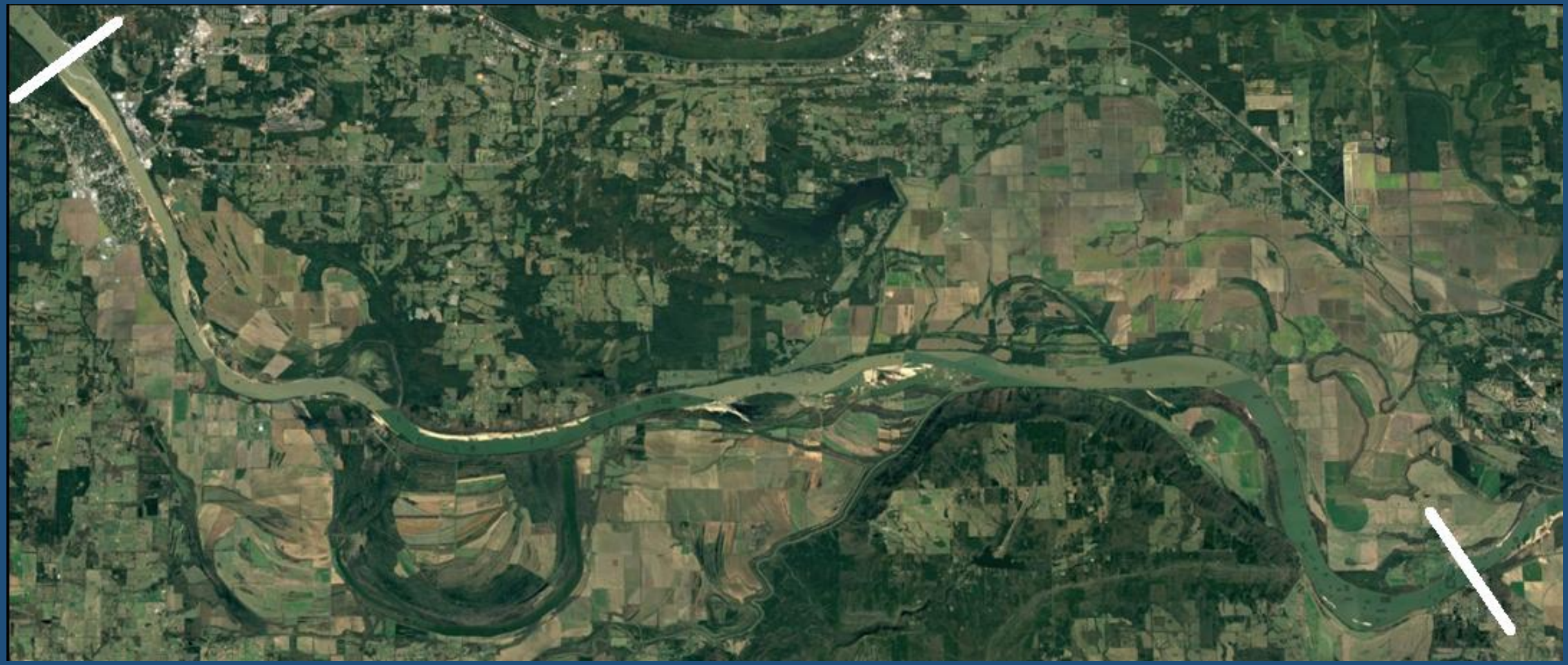
Objective

- Evaluate low-frequency electrofishing pulse rates for sampling Blue Catfish
  - 7, 10, 12, and 15 pps

Photo courtesy of Zach Moran

Study Area

Winthrop Rockefeller Lake (Pool 9)



Sampling Methods

- Four pulse rates were selected to be evaluated
  - 7, 10, 12, and 15 pulses/sec (pps)
  - Test difference in catch rate and length frequency
- 20 wing dikes were randomly selected in Pool 9
  - All wing dikes sampled once with each pulse rate
  - Four day rest period between sample runs
- Sampling was conducted in July 2017

Photo courtesy of Zach Moran

Sampling Methods

- Electrofishing was conducted with a Midwest Infinity Box
  - 200V, 35% duty cycle, and ~30A
- Sample runs lasted 5 min
- Move in the direction of the highest concentration of fish
- Total length was recorded to nearest mm

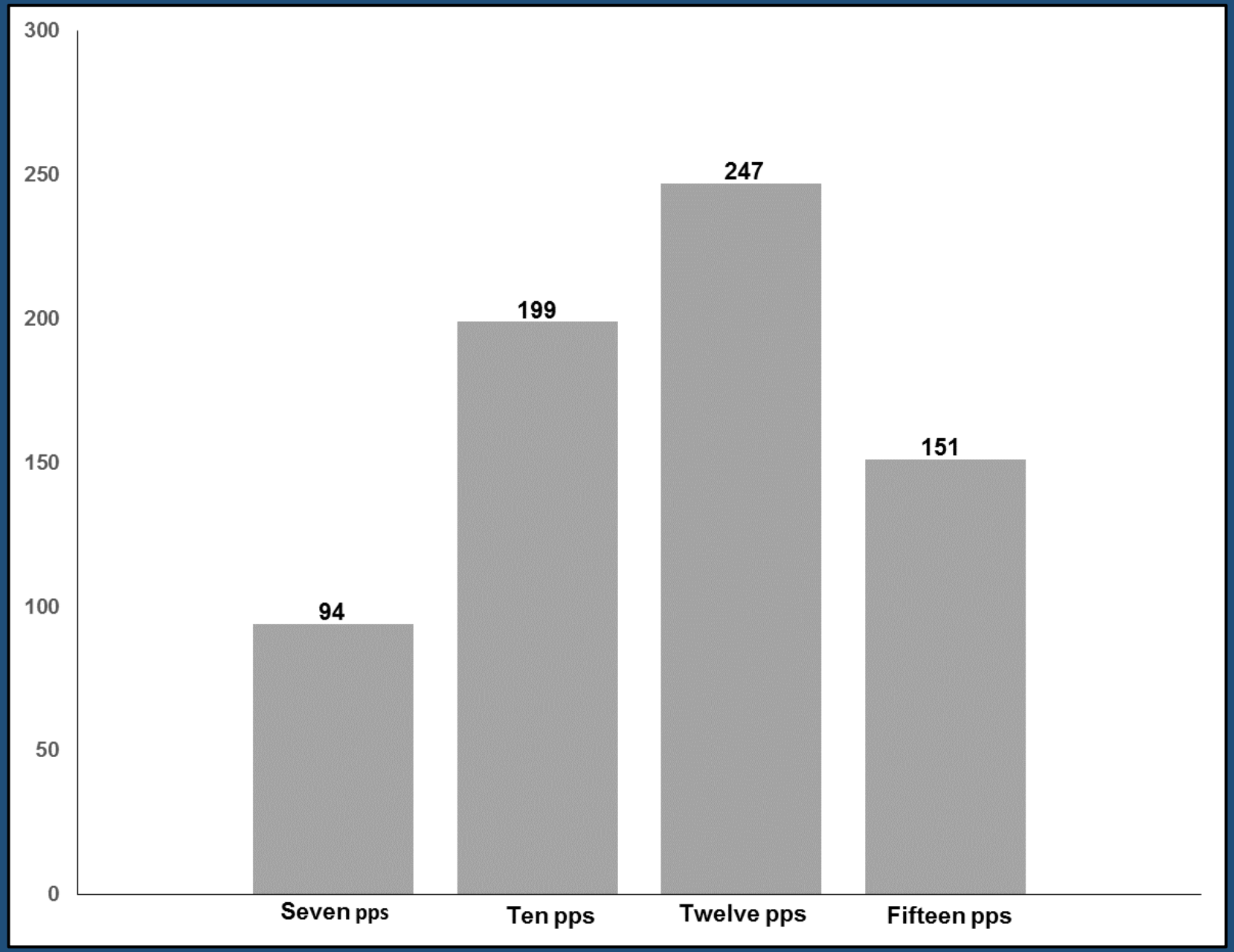
Statistical Analysis

- Catch Rate
  - Calculated as fish/minute and transform using $Log_{10}(n+1)$
  - One-way repeated measures ANOVA with Bonferronis post hoc test
- Length Frequency
  - Kolmogorov-Smirnov test
- All values considered significant at $\alpha<0.05$

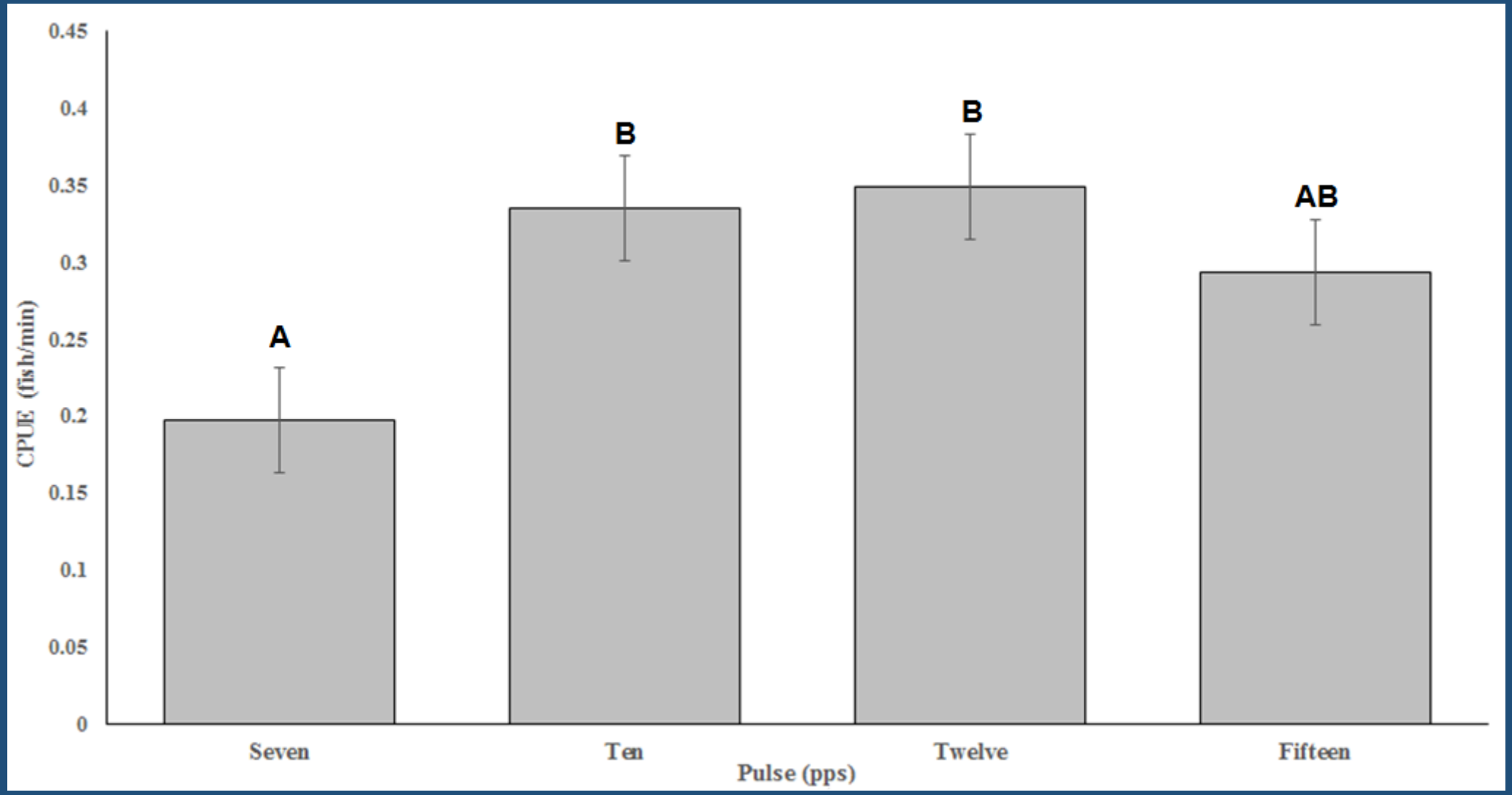
Results

- Temperature 28.7-31.7 C
- Conductivity 537-712 µS
- Total of 691 fish collected

Total Catch

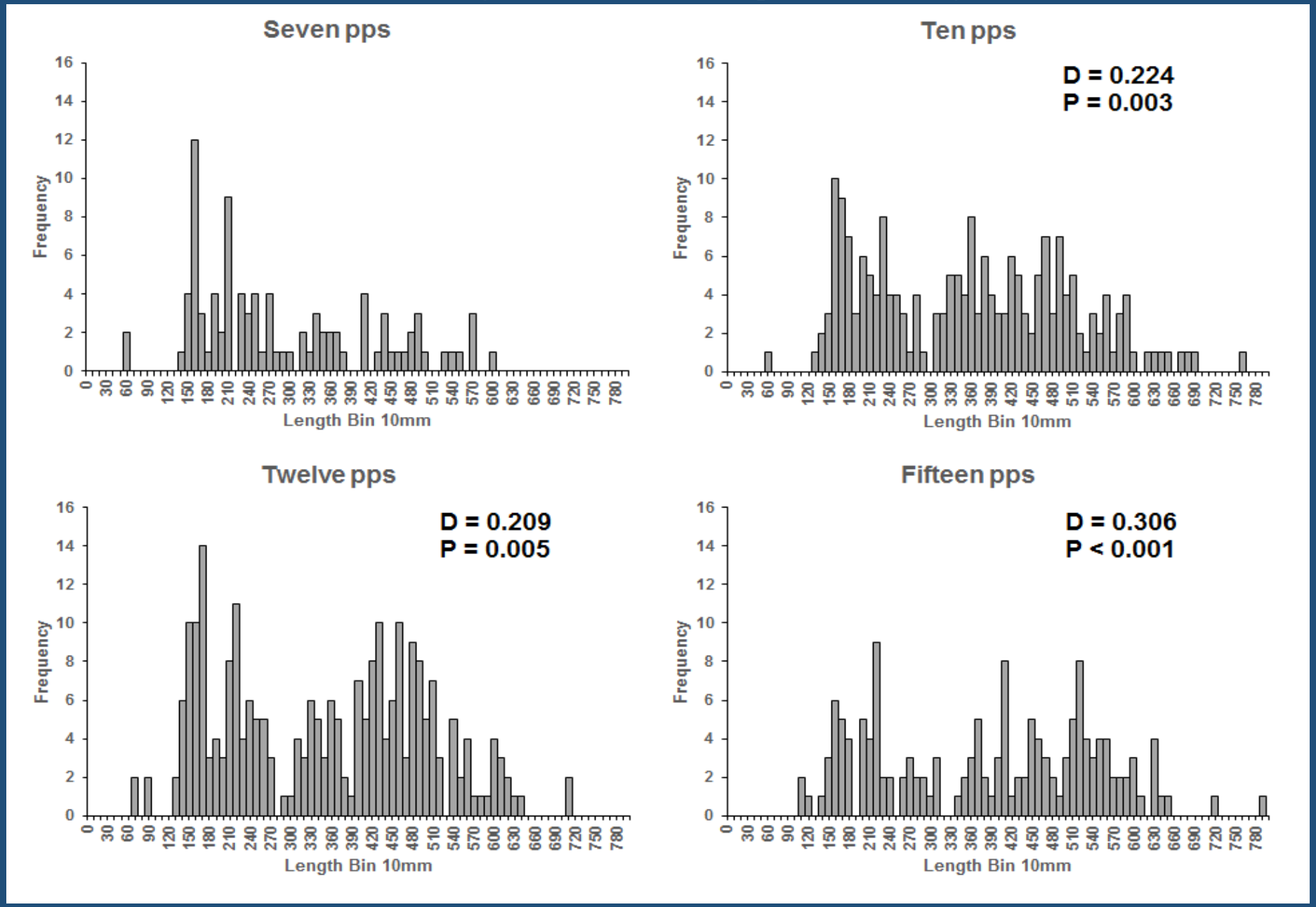

300
250
200
150
100
50
0
94
199
247
151
Seven pps
Ten pps
Twelve pps
Fifteen pps

Catch Rate

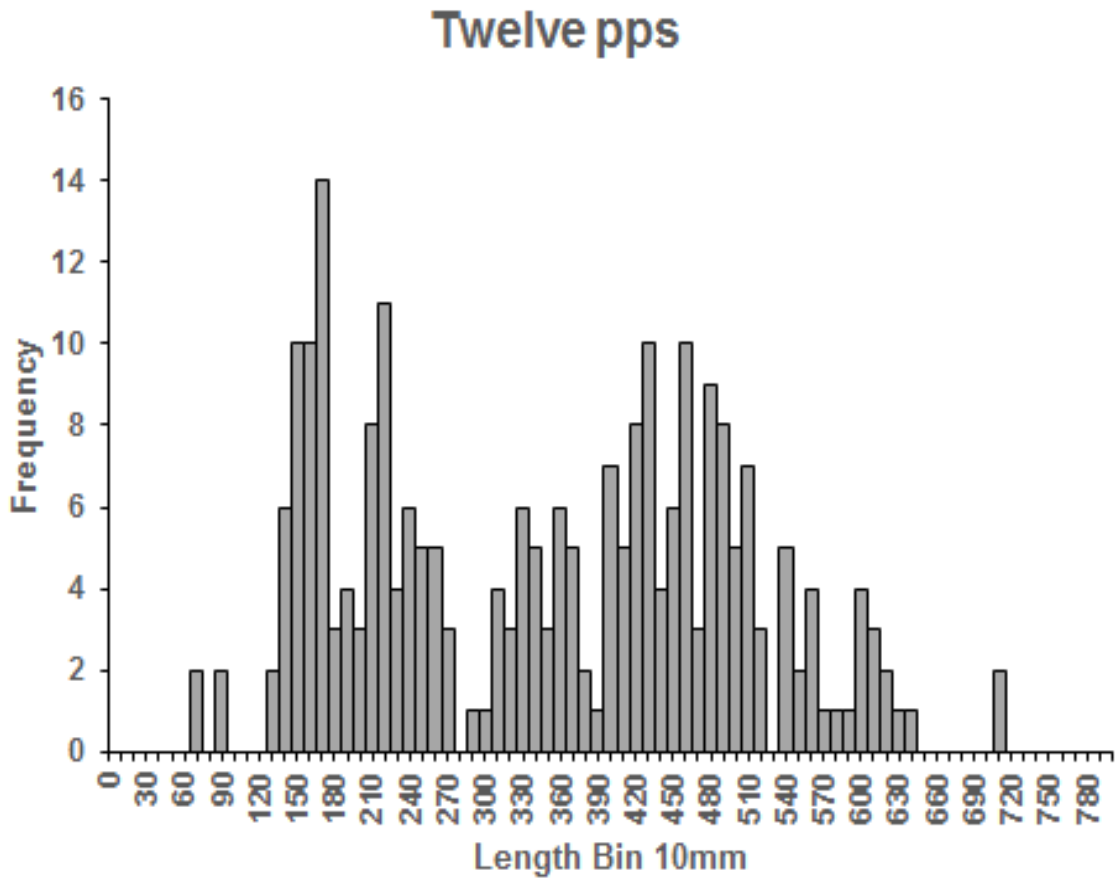


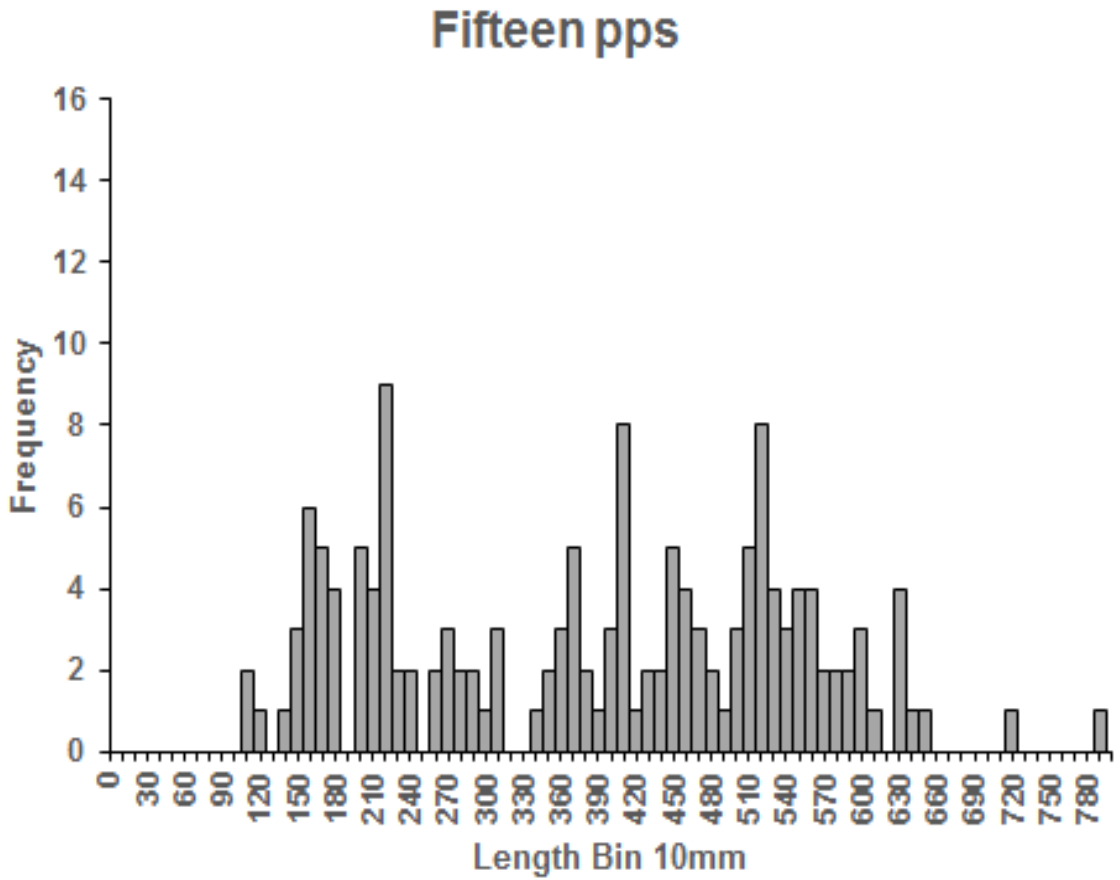
$F_{3, 54}$= 4.06, P=0.01

Length Frequency



Length Frequency





D = 0.164, P = 0.013

Conclusion

- 12 pps is most efficient pulse rate for collecting Blue Catfish
  - Use 12 pps when possible
  - Use a combination of 7 and 15 pps, if 12 pps is not possible

Future Needs

- Evaluate pulse rates at different conductivities
- Evaluate pulse rates in other lotic environments
- Evaluate pulse rates in a lentic systems
- Evaluate different duty cycles
- Standardize pulse rates for other catfish species

Questions