

Howdy Neighbor!

The Behavioral Variation Between Neighboring Stickleback (*Gasterosteus aculeatus*) Populations.

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“The specific ecological constraints acting in a novel environment could directly affect the benefits associated with expressing a given behaviour.” [1]



The Reed College Canyon Pond and Ritmanis Pond present two ecosystems potentially differing in water quality, organisms present, and a number of other variables.

Hypothesis: Ecological conditions cause behavioral divergences between stickleback from the Reed Canyon Pond and those from Ritmanis Pond.

Experimental Design: Sets of stickleback behavior were sampled and recorded. The statistical significance of their behavioral differences were tested. Threespine Sticklebacks from each ecosystem were tested for:

Boldness:

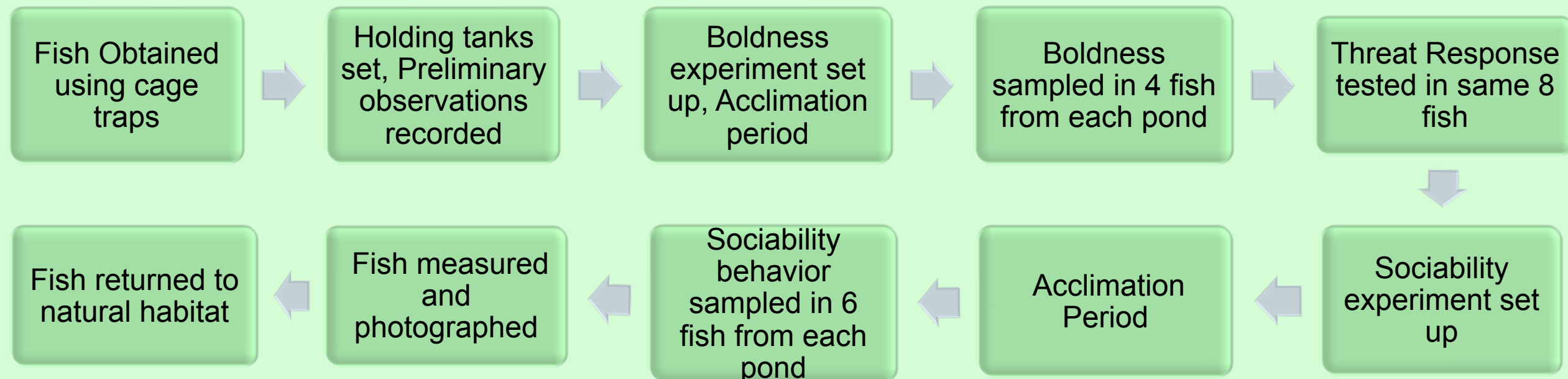
- Response to food when scared

Threat response:

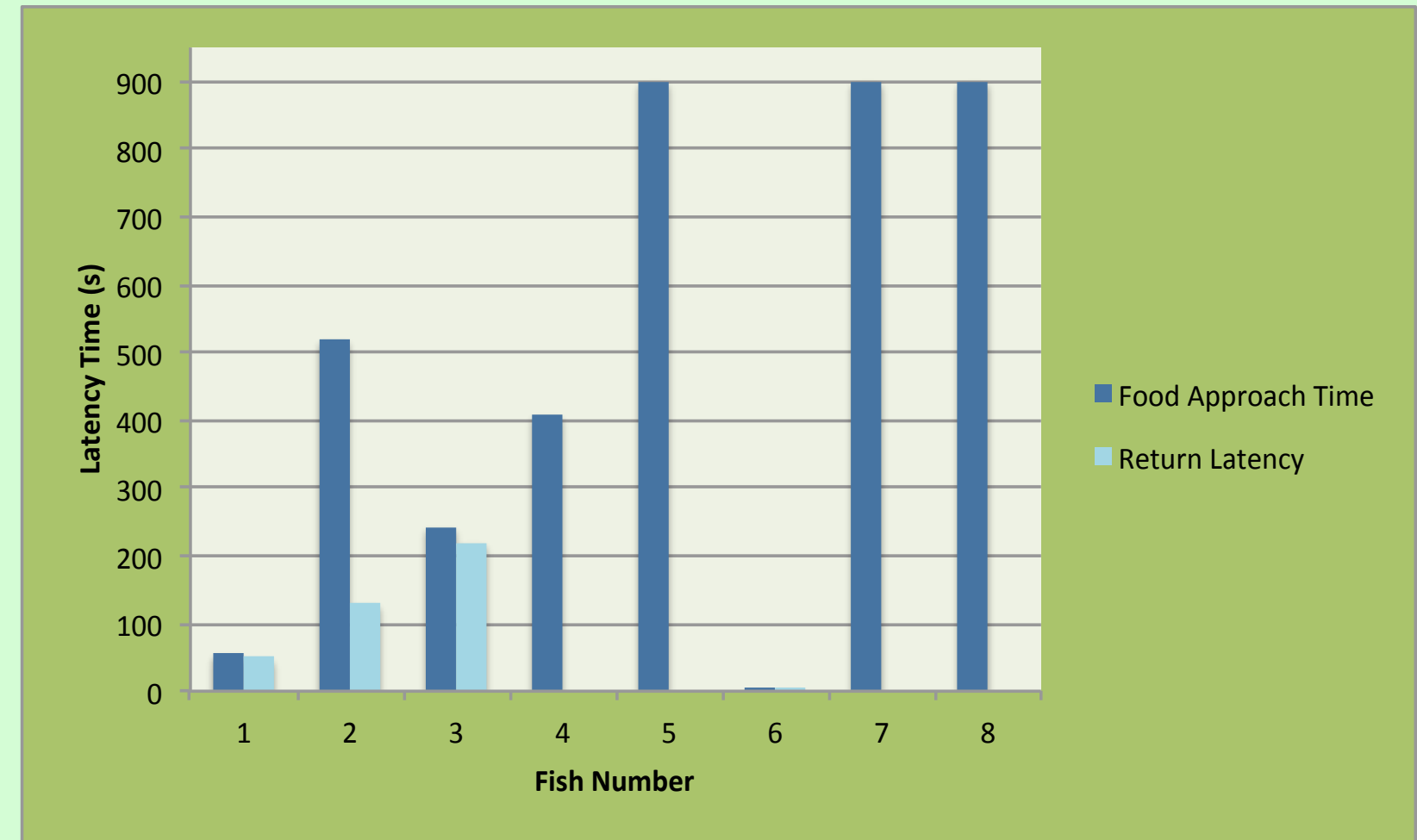
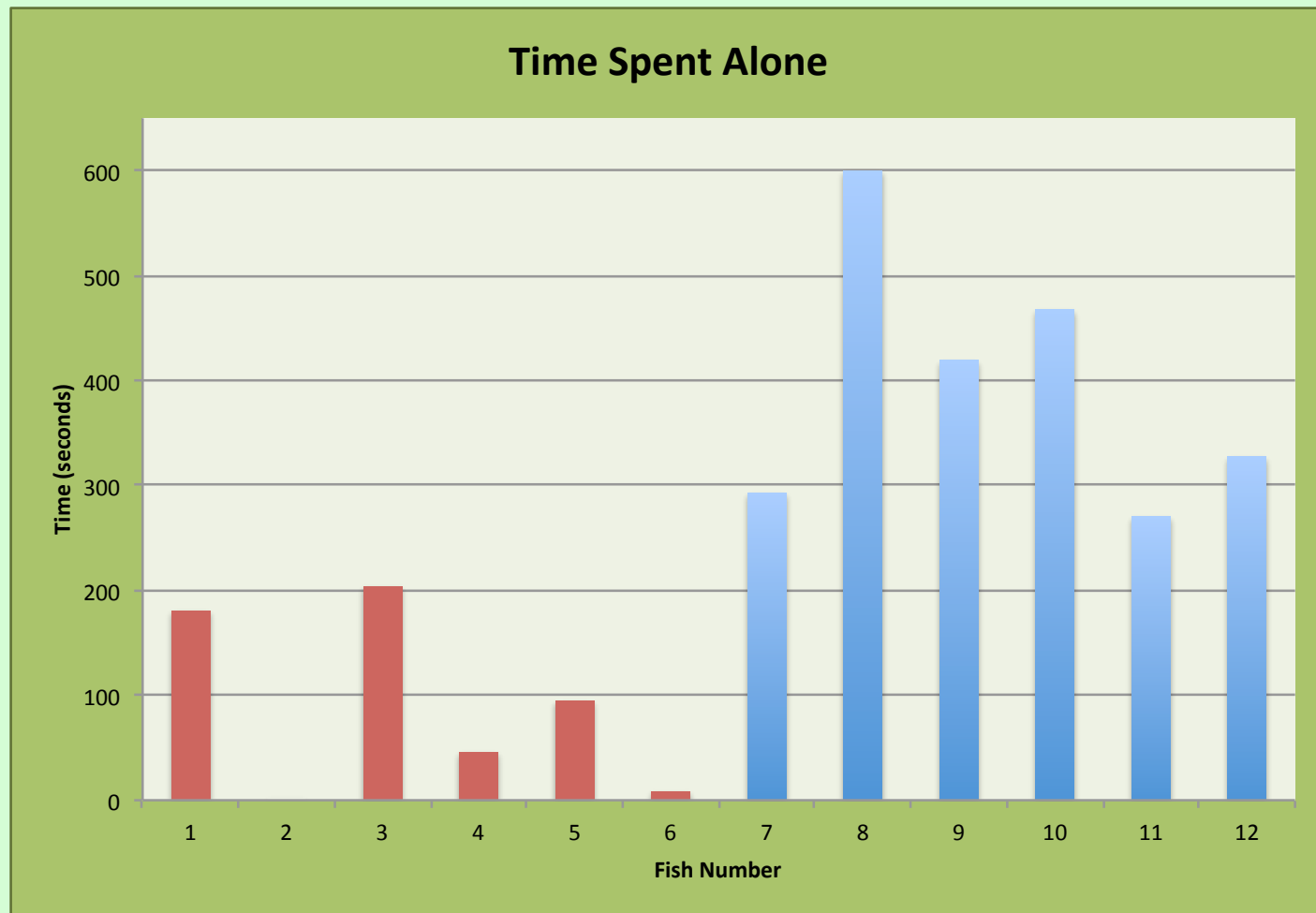
- Spine Raising and Lowering latency
- Flee distance

Sociability:

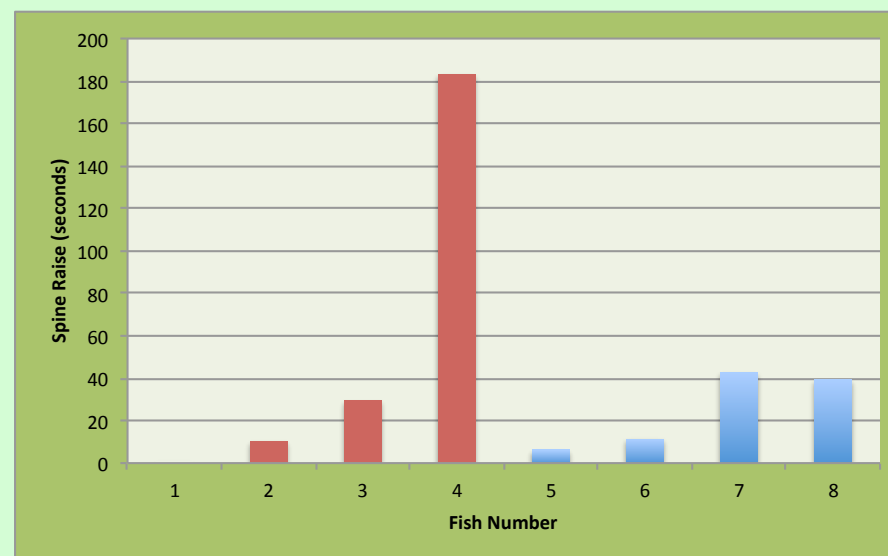
- Time spent alone
- Group number preference



Results: While there was no significant difference in attack response between populations, the difference in boldness between each population was statistically significant, as were the differences in sociability of each population.



Conclusion: The behaviors between each set of fish vary based on their ecological origin.



The factors which affect each behavior within populations are still unknown.

Future Directions:

- Similar experiments executed with larger sample sizes
- Similar experiments executed in a more controlled environment
- Behavioral analyses measuring conspecific aggression
- Water quality testing of each ecosystem

References:

1. Di-Poi C, Lacasse J, Rogers SM, Aubin-Horth N (2014) Extensive Behavioural Divergence following Colonisation of the Freshwater Environment in Threespine Sticklebacks. PLoS ONE 9(6): e98980. doi:10.1371/journal.pone.0098980
2. Teather K, Parrott J (2006) Assessing the chemical sensitivity of freshwater fish commonly used in toxicological studies. Water Quality Research Journal of Canada 41(1): 100-105.
3. Spence R, et al. (2013) Ecological causes of morphological evolution in three-spined Stickleback. Ecology and Evolution 3(6): 1717-1726.
4. Symons, P. E. K., (1966) Analysis of spine-raising in the male three-spined stickleback. Behavior 14: 1-75.