Predator-Prey Interactions: Spiny Water Flea (Bythotrephes longimanus) and Fish

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DISCUSSION

- The feeding behavior enabling small pumpkinseed to overcome Bythotrephes’ defensive spine might be explained by their specialized ability to feed on snails as adults (11, 12). Manipulating and separating shells from small bodies could be analogous to manipulating and separating the spine from Bythotrephes.

- The broader goal of our research is to eventually develop a remedial treatment for aquatic systems that have been invaded by Bythotrephes. This study fits into that goal because we have found a species of juvenile fish that is able to break through Bythotrephes’ defensive adaptation. This research raises the question of whether pumpkinseed have the potential to influence the distribution of Bythotrephes in time and space.

FUTURE WORK

- Enclosure experiments and whole lake studies to determine if pumpkinseed actively select the spiny water flea as a food source in natural settings and if they are able to influence the abundance of Bythotrephes in invaded water.

ACKNOWLEDGMENTS

- We thank the scientists and staff at Voyageurs National Park, especially Ryan Maki for his help and expertise.
- Nick Schlesser, Bar Vondra, and Kevin Paterson from the MN DNR assisted in seining efforts.
- Casey Huckins supplied sampling advice and guidance.
- Thomas Drummer assisted with statistical analysis.
- Thank you to MTU staff and graduate students, in particular Lucille Zelazny, Patricia Asselin, and Emily Berkrecx.
- Funding was provided by GLNF CESU Task Agreement No. J6067080012.

REFERENCES


METHODS

- Bythotrephes used in experiments were caught by towing a 120um mesh plankton net and kept alive in transportable coolers.
- All fishes were seized and cultured in aquaria on a diet of commercial flake food for a two week acclimation period.
- Multiple adult Bythotrephes were offered to individual fishes.
- The feeding behavior of each presentation was recorded, describing in particular whether or not the fish ingested the Bythotrephes whole or spit out the spine. Handling times were measured as the period of buccal and opercular activity.
- The proportion of instances that each fish spit out the spine and the average handling time for each fish were calculated and compared between fishes using a Wilcoxon Rank Sum test, a Kruskal-Wallis rank sum test, and a one-way ANOVA with a Tukey’s Post Hoc test.

RESULTS

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