Behavioral Response of Small Everglades Fish to Hydrological Variation, Predator Cues and Parasites

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The Experimental Design: A modified version of the experiment reported in [19] was followed with minor modifications. A parallel experiment was also performed in collaboration with [20] with a few additional modifications. In brief, female mosquitofish were captured in the field, housed at NSU in tanks, and kept for one week in the dark. On the day of the experiment, they were returned to the lab and released into a circular tank (diameter = 0.5 m). The tank was filled with water from a nearby stream and was illuminated by a 40 W fluorescent light. The water temperature was maintained at 25 ± 1°C. A model of a fish was placed in the center of the tank and the fish were allowed to acclimate for 30 min before the experiment began. The model was a 3D printed version of a fish, scaled down to a size that would be visible to the mosquitofish. The experiment consisted of four treatment groups: Control (no model), Model, Food, and Model + Food. Each group had five replicates, for a total of 20 fish. The experiment was conducted in a randomized block design, with each replicate representing a block. The order of treatments was randomized within each replicate to control for any potential order effects. The experiment was replicated three times, with each replicate consisting of the same number of fish. The experiment was conducted over three consecutive days.

The Results: The mosquitofish showed a significant increase in the time spent in the central region of the tank in the presence of the model, compared to the Control group. There was also a significant increase in the number of fish that approached the model in the Model group compared to the Control group. The Food group showed a significant increase in the time spent eating in the presence of the food, compared to the Control group. The Model + Food group showed a significant increase in the time spent in the central region of the tank in the presence of the model, compared to the Control group. The Model + Food group also showed a significant increase in the number of fish that approached the model in the Model group, compared to the Control group. The Food group showed a significant increase in the time spent eating in the presence of the food, compared to the Control group.

The Discussion: The results of this study support the hypothesis that mosquitofish use a variety of visual cues to navigate their environment. The mosquitofish showed a significant increase in the time spent in the central region of the tank in the presence of the model, which suggests that they are able to use this cue to orient themselves. The Model + Food group showed a significant increase in the number of fish that approached the model in the Model group, which suggests that they are able to use this cue to locate food. The Food group showed a significant increase in the time spent eating in the presence of the food, which suggests that they are able to use this cue to locate food. The Model + Food group showed a significant increase in the time spent in the central region of the tank in the presence of the model, which suggests that they are able to use this cue to orient themselves and locate food.

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References: [19], [20], [21], [22], [23], [24], [25].

For videos of our work and process, see [26].

For further details, see [27].