Lab: Fish Behavior

(MAKEUP VERSION)

Background:

There are many behavioral activities exhibited by fish. Fish mate, feed, forage, hunt, avoid predators, and school among other activities. Mating is a rare behavioral event to witness, but for many species they mate or spawn every month and can occasionally be observed. Typically mating occurs around the crepuscular time of day (dawn and dusk). Groups of individuals will form and exhibit schooling patterns. Feeding patterns depend on the fish being observed. Some fish, like parrotfish, will scrape at the reef for algae. Others will forage for invertebrates, small fish and other food items, in algal patches and loose sediment. Piscivores are usually fast-moving and eat other fish. The behavior of avoiding predators is species dependent. Schooling behavior is one form of predator avoidance, as the predator will struggle to focus on a single fish and cannot lock onto a target. Rapid swimming and darting movement by smaller fish is also a predator avoidance strategy.
(modified from Ocean First Education)

What We Did in Class:

Students caught a fish from our large class tanks (which were previously caught from the wetland) and submitted them to various stimuli within a smaller individual tank. Fish behavior was first observed when food was introduced. Then a second fish was introduced. Then a drop of food coloring was introduced and allowed to spread through the tank. In each case, the location of the fish within the tank and the respiratory rate was measured. No fish was physically harmed during this lab, though it's possible there was slight mental anguish.

Analysis:

1. Before any stimulus was presented to a fish, students first recorded movement and respiration without any stimulus. Why was this important?

2. What do you think the reaction to food might have been?

3. What do you think the reaction to a second fish might have been?

4. What do you think the reaction to a drop of food coloring might have been?

5. How would the measurement of fish behavior in this lab setting differ from fish behavior in the wild?

Watch the video located at https://www.nature.com/news/animal-behaviour-inside-the-cunning-caring-and-greedy-minds-of-fish-1.17614 (alternate video link - https://youtu.be/giNH6oHPGmw) to learn about the behavior of groupers in the wild and in a controlled setting.

6. Describe the grouper behavior that inspired Dr. Bshary to perform his experiment.

7. How did the behavior of the grouper and eel change when prey was inside versus outside the crevasses of the reef?

8. Identify two specific ways in which the grouper and eel communicate.

9. Describe the controlled lab setup designed to learn more about grouper behavior.

10. What were the results of the study?