

Example of a written report

Effect of Daphnia swarm density on the attack rate of a predator fish, the stickleback

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Category: Life Sciences

Introduction

For animals, living in groups offer many advantages. One of them is the protection against predators. For example, more individuals there are in a group, the greater the chances of detecting the approach of a predator. Also, the more individual there are, the harder it may be to the predator to concentrate on just one and successfully catch it. In the same way that it is difficult for a person to catch a ball when a dozen are thrown at him or her at the same time, it may be confusing for a predator to capture a particular prey when a great number of them are milling around overtaking one another or moving in all directions.

On the other hand, dense groups may be more easy to detect by predators and may therefore draw more attacks upon themselves. Therefore, it may be hard to predict whether prey should aggregate in dense groups or in less dense ones. It is also unclear what the predator itself should do: go for the dense group because of great number of prey there, or for the small group because of the ease of catching prey without getting confused.

In this experiment, we tested whether the three-spined stickleback, *Gasterosteus aculeatus*, which is a predator of the *Daphnia* (also called the water flea), prefers to attack big or small groups of its prey.

Method

In the Fall, we captured six three-spined sticklebacks with minnow trpas in a small tidal pool along the petitcodiac River near Moncton. Four were females and two were males. They were kept together in a 40-liter aquarium filled with freshwater. We also obtained *Daphnia* by filtering water from a freshwater pond. Some of these *Daphnia* were given to the sticklebacks to get them used to this kind of prey,.

All tests took place in a separate 40 liter aquarium covered with gravel at the bottom and with the water temperature varying between 15 and 20. One of the six sticklebacks was placed in this aquarium and given time to get used to these new surroundings. Then a row of three test tubes were lowered into the aquarium. Each tube was 10cm long, 2 cm wide, and separated from its neighbour by 15 cm. One tube contained 40 *Daphnia*, the second contained 10 *Daphnia*, and the last one contained 2 *Daphnia*.