



Which Behavior Has More Success?

Activity

There are many aquatic animals that use spawning behavior for reproduction. Spawn is the eggs and sperm that are released into the water by aquatic animals. Spawning is the process of releasing these eggs and sperm into the water. It consists of the eggs being released by the females at the same time the sperm are released by the males. Some of the eggs will become fertilized and others will not. Some aquatic animals spawn all at the same time while others spawn over time.



There are many cues that tell fish when to spawn. The cause for this phenomena can be the temperature of the water, the phase of the Moon, or the chemical signals in the water.

Procedure

1. Draw a data table similar to the one bellow in your lab journal.

Spawning Trials							
	Trial 1	Trial 2	Trial 3	Trial 4	Trial 5	Total Fertilizations	Probability of Success
Spawn over 5 nights							
Single event spawn		X	X	X	X		

2. Set up the box top in the middle of your table or desk.

Part 1

Some species of fish spawn over a five-night period.

1. Scatter five of the paperclips inside the box top. Make sure they are not touching each other.
2. One by one, toss another five paperclips into the box top.
3. Record in your data table the number of paperclips that strike another paper clip.
The first five paperclips represent the eggs of a fish that have been released into the water. The second five paperclips represent the sperm of the same species of fish that were released into the water at the same time, in the same area. Each time one paperclip hits another paperclip, fertilization occurred.
4. Pick up all the paperclips and repeat for trials 2-5, keeping track of the number of fertilizations in each trial.



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Activity, continued

Part 2

Some aquatic animals spawn all at the same time

1. Place 25 of the paperclips inside the box top.
2. One at a time, toss the remaining 25 paperclips into the box top. Be sure to leave them where they land.
3. Record the total number of times a paperclip hit another paperclip.
4. These represent a species of fish that all spawn on the same night.
 - a. Determine the probability of fertilization for both species. Probability is calculated by dividing the number of favorable outcomes (fertilization) by the number of events (25).
 - b. Answer the following questions in your lab journal.

Questions

1. Which method of spawning had the greater number of fertilizations?
2. Why do you think this is true?
3. Look at your data again. Subtract $\frac{1}{5}$ of the fertilizations from each trial due to predators such as turtles or other fish. How does your probability of success change?

Write a scientific explanation for which type of spawning behavior is more successful. What is your claim, evidence, and reasoning?