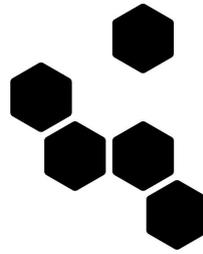


HOW TO HIDE IN THE OCEAN



SUPERNOVA

DALHOUSIE UNIVERSITY | HALIFAX, NOVA SCOTIA

OVERVIEW

Description

Participants will explore the different methods that animals in the ocean use to hide from predators and/or prey

Learning Outcomes

- Strategies in ocean camouflage
- Predator-prey interactions

Outline

1. How to Hide in the Ocean
 - a. Make a sample fish out of newspaper before the activity begins (5 mins)
 - b. Set up while participants are on recess/break (5 mins)
 - i. Game
 - c. Explanation (10 mins)
 - i. Adaptations
 - ii. Fish hiding strategies
 - d. Game P2 (30 mins)
 - e. Wrap up (5 mins)

Materials

Item	Quantity Per Child	Quantity Per Class
<ul style="list-style-type: none">• Newspaper• Coloured construction paper• Clear plastic sheet covers• Scissors• Markers	<ul style="list-style-type: none">• 1/2 sheet• 2 sheets• 1 sheet cover• NA• NA	<ul style="list-style-type: none">• NA• NA• NA• 10 pairs, shared• 3 packages, shared
<ul style="list-style-type: none">• Sticky tack/tape	<ul style="list-style-type: none">• 1 piece	<ul style="list-style-type: none">• NA

KEY INFORMATION

Topic 1: The ocean is a large and dangerous place, there are many predators who are on the hunt for food. To avoid being eaten many fish have evolved appearances/strategies which make them harder to detect. In order to keep up, predators have also evolved strategies and appearances which make it easier for them to sneak up on their prey.

Topic 2: Adaptation- the process by which an organism or species becomes better suited to its environment. Adaptive traits are acquired genetically and traits that make a species more successful are the ones passed down to the next generation.

(For example, early giraffe ancestors had very short necks- similar to a deer. Some giraffes that had a *slightly* longer neck than the rest had an easier time reaching for tall tree leaves and were more successful at sparing with other male giraffes. This slight advantageous trait made those giraffes more successful to breed and therefore pass down a longer neck.)

Topic 3: Ocean Adaptations:

Small Size (Prey)	
Small size makes visual detection difficult. A disadvantage of small size is the inability to move quickly over distances.	<ul style="list-style-type: none"> • Phytoplankton • Zooplankton
Transparent Body (Prey)	
In the photic (light) zone of the ocean, many of the zooplankton are transparent. In addition, many organisms, such as fish and crabs, which later have body coloration are transparent in their vulnerable juvenile forms.	<ul style="list-style-type: none"> • Jellyfish • Salps • Larval fish • Shellfish
Cryptic Coloration (Predator)	
Many fish have dark coloration on their dorsal (top) sides and shading to light coloration on their ventral sides. Seen from above, they blend with dark waters below; seen from below, they blend with light from the sky	<ul style="list-style-type: none"> • Cod • Tuna • Dolphin
Disruptive Coloration (Prey)	
This type of camouflage helps hide the outline of the fish, especially if its habitat includes a variety of shapes and colors. The coloration of the clown anemone fish is helpful for its coral reef habitat, but would make in conspicuous in the open ocean.	<ul style="list-style-type: none"> • Clown anemone
Mimicry of Surrounding (Prey)	

<p>Some organisms are colored and shaped to appear part of the surrounding habitat. Some flatfish can even change their color by altering the distribution of pigment in specialized cells called chromatophores.</p>	<ul style="list-style-type: none"> • Flounder • Sargassum fish • Cuttlefish
<p>Bioluminescence (Predator)</p>	
<p>Some mid-water fishes have specialized cells called photophores which can emit light. In lantern fish, these cells are arranged along the ventral or bottom side. It is thought that in dimly-lit waters the bioluminescence from these cells helps mimic the faint light reaching mid-water from above.</p>	<ul style="list-style-type: none"> • Anglerfish

LESSON PLAN & PROCEDURE

How to Hide in the Ocean

1. Make a sample fish out of newspaper and several out of construction paper before the activity begins (5 mins)
2. Set up while participants are on recess/break
 - a. tape sample fish in the classroom on a newspaper
 - b. Game
 - i. Ask participants to count how many fish are in the classroom (30 second limit)
 - c. Explanation
 - i. Bring up the theory of adaptation and how it helps many fish hide in the ocean
 - ii. Go through the different strategies to hide and catch prey- small size, transparency, coloration, mimicry, bioluminescence
 1. Show pictures of example fish for visual aids
 - d. Game P2
 - i. Split participants into groups of 2 or 3 and distribute supplies to each group
 - ii. Instruct them to work together and make a fish that hides the best
 - iii. Allow class time for the examining of the room for a good location for each team's fish and time for the creation of the fish.
 - iv. All the students must leave the room while each team hides its fish. Teams should take turns entering the room and placing their fish, then going out.
 - v. When all the fish are hidden, call the class back in.
 - vi. Two or three minutes is enough time for the fish hunt.
 - vii. Each student should mark on a map of the classroom where each fish is placed.

- viii. Tally the number of students who found each fish. The best-hidden fish (fewest times seen) wins a prize

Debrief

- Discuss which strategies were best for hiding fish
- Discuss which adaptations are better for predators or prey.
- Discuss ways (other than hiding) that can help prey not get eaten

REFERENCES & RESOURCES

Fish Adaptations and game

- http://www.sea.edu/academics/k-12_detail/how_to_hide_in_the_ocean