

Activity Title: Identifying Fish from Underwater Photos

Subject (Focus/Topic): Science, Fish Identification

Grade Level: 6-8

Average Learning Time: 50 minutes

Lesson Summary (Overview/Purpose): Fish Look Differently When They Are Underwater. Students will try to identify fish species from underwater photos. This lesson is a precursor to the MeanCount lesson where students count the number of different fish species from a photograph.

Overall Concept (Big Idea/Essential Question):

How can we identify fish in underwater photographs if colors look differently underwater?

Specific Concepts (Key Concepts):

Although we can't rely on color to identify fish from underwater photos, we can look at their body shape, fin shape, fin location, and markings to help us identify them.

Focus Questions (Specific Questions):

What physical characteristics help us identify different fish species?

Objectives/Learning Goals:

1. Students will be able to match a photo of a fish species taken underwater with a drawing or a photo of that same fish species above water, with at least 90% accuracy.

Background Information: Not applicable.

Common Misconceptions/Preconceptions:

A fish that is red in color will look red when it is in deep water.

Materials:

1. Fish Identification Cards (see attached)
2. Video: MeanCount- Using GoPro to Collect Fish Data.mp4
This video can be accessed at: <https://vimeo.com/118430541>
3. A computer, with internet access, and a data projector, to show the video to the class.

Teacher Preparation:

To do in advance: You will need to make color copies of the fish identification cards for each

group. If you laminate the cards, they will last longer. Make enough color copies for each group (and laminate the copies). Then, cut out each card along the lines. This will take time. Shuffle the cards for each group in order to mix the up the order.

Helpful hint: It is a good idea to mark the back of each set of cards in case they get mixed up. For example, you can write the number 1 on the back of each card for Group 1, so that these cards will not be confused with another group's fish identification cards.

Keywords:

The names of these fish species are the key words for this lesson:

Black Sea Bass

Blue Angelfish

Butterflyfish

Hogfish

Scamp (a type of grouper)

Spottail Hogfish

Spottail Pinfish

Tiger Shark

Tomtate

Vermilion Snapper

White Grunt

Lesson Procedure:

A. Warm Up (5 minutes):

Ask the class the following questions:

- a) Why is it important to try to count the number of fish in the ocean?
- b) How do people count the number of fish in the ocean?

B. Whole Class Activity (the "Hook"). Discussion and Video (10 minutes)

1. After the students have discussed their ideas from the warm up, explain to the class that one method used to count fish in the ocean is to actually catch the fish with a fishing pole or with a trap. Once the fish are brought to the surface,

people can count each type of fish caught.

However, this method doesn't necessarily give us a true picture of the fish population because there are fish that just swim by the bait and don't actually go into the trap or get hooked.

So, scientists are using technology to help get a better idea about the number of fish in the ocean. One way to do this is with a waterproof video camera, like a Go Pro camera.

Scientists attach video cameras to their traps. By using the cameras, they get to see not only the fish that get caught in the trap, but they also get to see the fish that decided not to go into the trap.

2. Video – Explain to the students that they will get to be a fisheries biologist today and will examine the video footage from one trap deployment. Show them the MeanCount video at: <https://vimeo.com/118430541>. You don't need to show the entire video.

C. Small Group Activity (5 minutes)

After the students have watched the video as a class, let them know that the first step in being able to count fish species is to be able to correctly identify fish in the video.

Divide the class into groups of approximately four students.

Tell students that they will be given a group set of photos and drawings of fish. Their job is to match the underwater picture of a fish with the matching drawing or photo of that same fish species above water.

Pass out the cards and give them about 5 minutes to match them up. As you go around the room, make sure that they are able to explain why they think the pictures are of the same species. Challenge them to give at least two reasons based on their observations of body shape, fin shape, fin location, and markings.

Also, have them try to match the correct name of the fish to its underwater photo and drawing.

D. Whole Class Activity (5 minutes)

After students have tried to match the fish cards, have them share their answers with the class and explain why they have matched them the way that they did. If they are incorrect, they should fix their matches.

Assessment and Evaluation:

This lesson is assessed informally. Check the student's matches when the students are sharing their answers. This is also a good time to introduce the names of each fish species so the kids begin associating the names of the fish with their photos or drawings. Reteach, if necessary.

This lesson will help them with the next lesson called “Using a GoPro Camera to Count Fish Like a Fisheries Biologist.”

Standards:

• **National Science Education Standard(s) Addressed:**

49. Changes in Environments.

50. Science and Technology in Local Challenges

• **Ocean Literacy Principles Addressed:**

Essential Principle 6. THE OCEAN AND HUMANS ARE INEXTRICABLY INTERCONNECTED.

D. Humans affect the ocean in a variety of ways. Laws, regulations, and resource management affect what is taken out and put into the ocean... In addition, humans have removed most of the large vertebrates from the ocean.

G. Everyone is responsible for caring for the ocean. The ocean sustains life on Earth and humans must live in ways that sustain the ocean. Individual and collective actions are needed to effectively manage ocean resources for all.

Correlation to Next Generation Science Standards:

MS-ESS3: Earth and Human Activity

HS-ESS3: Earth and Human Activity

• **State Science Standard(s) Addressed:**

- S6CS9. Students will investigate the features of the process of scientific inquiry.

(Optional) Additional Resources:

- A. Kevin M. McMahon, GoPro Science, July 11, 2014, <https://teacheratsea.wordpress.com/2014/07/13/kevin-mcmahon-gopro-science-july-11-2014/>
- B. As an extension, some students may explore why colors of fish look differently at different depths. See, “What is Bright, Red and Invisible? “ at http://oceanexplorer.noaa.gov/explorations/02hudson/background/edu/media/hc_bright_red.pdf
- C. Photos and Drawings of Fish Species can be found at the following websites:

www.fishwatch.gov (drawing of black sea bass)

<http://flowergarden.noaa.gov/about/fishlist.html#angel> (photo of blue angelfish)

<http://www.marinefishesofgeorgia.org> (drawings of scamp, spottail pinfish, tiger shark, tomtate, vermilion snapper, white grunt)

<http://portal.ncdenr.org/web/mf/fish-finder> (drawings of hogfish)

<https://teacheratsea.wordpress.com/category/kevin-mcmahon/> (photo of butterflyfish)

The photo of the spottail hogfish taken by Kevin McMahan.

Note: you may have to search for the name of the fish to find its drawing or photo on these websites.

Author:

Kevin McMahan
Renfroe Middle School
220 W. College Avenue
Decatur, GA 30030
kcmcmahon@csdecatur.net

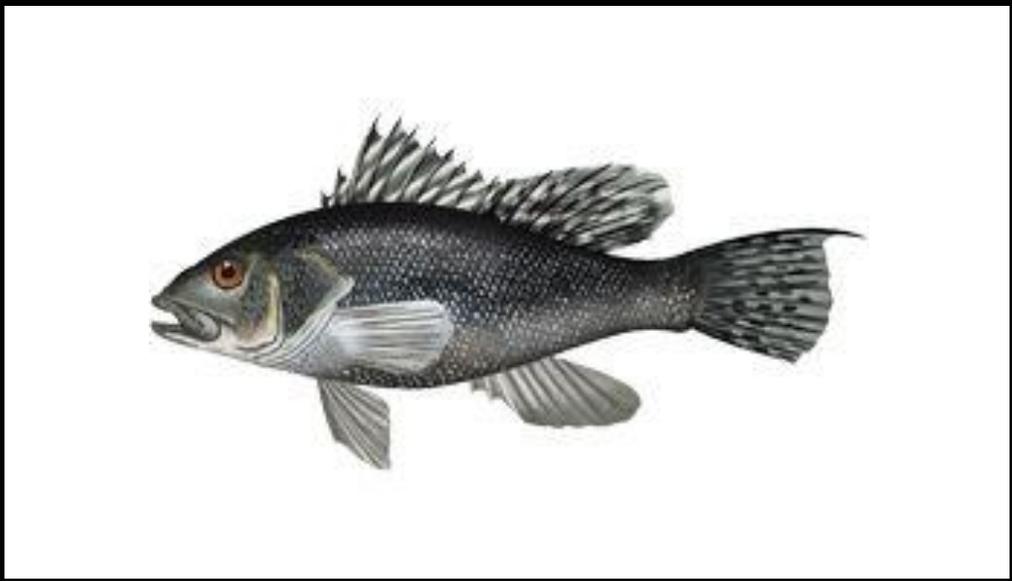
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WHITE GRUNT





BLACK SEA BASS



TIGER SHARK





TOMTATE



VERMILION SNAPPER





BUTTERFLYFISH



SPOTTAIL PINFISH





HOGFISH



BLUE ANGELFISH





SPOTTAIL HOGFISH



SCAMP



