



Author Name: Shana Lawrence	Content Areas: Science, Reading, Geography, Math, Peace and Geometry
Lesson Plan Title: Fish Size Estimation and Identification	State: NJ
Lesson Time Frame: 40 minutes/ one week	Inspired by an Earthwatch Expedition: Coastal Ecology of the Bahamas
Student Level: Elementary	

ACADEMIC STANDARDS: NJ Core Curriculum Content Standards for Science

5.3 (Mathematical Applications) All students will integrate mathematics as a tool for problem-solving in science, and as a means of expressing and/or modeling scientific theories.

5.5 (Characteristics of Life) All students will gain an understanding of the structure, characteristics, and basic needs of organisms and will investigate the diversity of life.

ABSTRACT: The students will develop observational skills necessary to identify and measure fish. Actual size paper fish will be displayed and the students will learn how to look for distinguishing features such as, bars, eyespots, stripes, etc. They will also practice estimating the size of the fish by sight from a short distance.

GOAL: Recognize that living organisms are diverse but individual species have characteristics that distinguish them from other species.

PERFORMANCE INDICATORS:

- The students will be able to apply knowledge about distinguishing characteristics of fish by identifying at least 3 fish pictures.
- The students will be able to synthesize the size of fish by estimating the size of 50% of the fish pictures within 30% accuracy.

BACKGROUND INFORMATION:



- **Standard length (SL):** the length of a fish measured from the tip of the snout to the posterior extremity of the hypurals, the expanded bones at the end of the backbone that support the caudal fin

MATERIALS:

Paper cut outs of various fish species found in the Bahamas in their actual size
Rulers
Fish identification guides

TECHNOLOGY: Students may use websites to assist in identifying fish.

INSTRUCTIONAL PROCEDURE:

Introduction: “Did you know that there are more than 25,000 different sorts of fish in the world? How can an ichthyologist, a scientist who studies fish, tell them apart? (size, characteristics, fin shape, location) I was fortunate to have the opportunity to learn about fish while on an Earthwatch expedition in the Bahamas. As a volunteer, I helped the scientists to gather some data about the number and types of fish found along the coast. Knowing this information now will allow them to see if human development on the island will have big effect on the population of the fish. Today we are going to pretend that we are snorkeling and practice measuring and describing fish.

Activities:

1. Students will measure a body part (finger, hand, etc) with a ruler to use as a reference to estimate the size of the fish.
2. With a partner, students will take turns holding up a paper fish about 3 feet away, while the other partner uses their measured body part or their eyes alone to estimate the size of the fish. The actual size will be on the back of the fish so that the student can adjust their estimation if they tend to give higher or lower numbers.
3. After students have ample time to practice the class will be split into teams to compete with each other for the most accurate measurement of a fish.
4. Discuss features that help to identify fish. Using the paper fish, students can fill in a checklist of features found on the paper fish and then try to locate the picture of that fish in an identification book after the paper fish has been taken out of view.

Closure: “Who can name a way to identify one fish from another type of fish? Why is it important to make your observations about a fish quickly? (the fish may swim away) If you counted many types of fish one year and 3 years later that number decreases a lot, how is that information helpful?”

ASSESSMENT: A set of fish will be posted and labeled with a letter. The students will record the letter of the fish and their estimation of its size next to it. Results should be within 30% of the actual measurement for 50% of the fish.

CONNECTION TO OTHER CONTENT AREAS: math and science.

EXTENSIONS: Student can have the opportunity to estimate and identify real fish in a classroom tank and then check their estimates by measuring the fish with a ruler.

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CONTACT INFORMATION: Shana Lawrence (201) 407-7195 shanalawrence@hotmail.com
Terry Durando (732) 438-0902 TDurando2003@aol.com

