Fish Adaptations Activity

Objective

- Students will examine various structures of fish and explain what they indicate about the fish's lifestyle.
- Students will understand the connection between form and function in living organisms.
- Students will research lifestyle habits of selected fish.

Overview

- This activity should occur after students have learned the basic concepts of evolution. Students should know that over time, species adapt to their environment and those that have traits best suited to it will survive and produce more offspring. Form is related to function.
- Students will examine fish mouths, fins, body shape, and eyes to determine what they indicate about its lifestyle.
- Then students will compare their predictions to the real answers.

Options for Use

- This activity could be completed either as a lab (with all five fish) or as a demonstration (using only one fish). Students could look up actual answers to their fish for homework, if there is not enough time to do so during class.
- If fish specimens are not available, this activity could be done using pictures of fish obtained from magazines or the Internet.

Materials (for Lab Activity)

- 5 whole fish (fresh, frozen, or preserved) labeled with their common name and scientific name, if available
  - **NOTE:** You may want to consider choosing fish that are sustainable choices for your area. Consult the Seafood WATCH list provided by the Monterey Bay Aquarium at http://www.mbayaq.org/cr/SeafoodWatch/web/sfw_regional.aspx?region_id=2
- Gloves (for preserved fish)
- 5 dissecting pans

Lab Activity

- Prior to the lab, the teacher should write each fish's name on the board/overhead.
- Students should copy down names into the table below and examine the diagram of the external anatomy of a typical fish and the table of adaptations and their purposes (below).
- Divide students into five groups.
- Place each fish in a dissecting pan and distribute one to each group.
- Instruct students to examine their fish's mouth shape and orientation, fin and tail shape, body shape, and eye location and size.
- Using the diagram of fish anatomy and table of adaptations below, students should complete the data chart for their fish by writing a description of the adaptation and what its purpose is in the table below.
- Students should rotate until they have recorded data for all five fish.
- Assign each group of students a fish to research. They should attempt to find out what each fish eats, where it feeds in the water column, how it catches prey, where it tends to live in the water column, if it is generally found in shallow or deep water, how quickly it swims, and if it has any defenses from predators.
- Each group should present their findings to the class and students should correct their data charts, if necessary.

External Anatomy of a Typical Fish

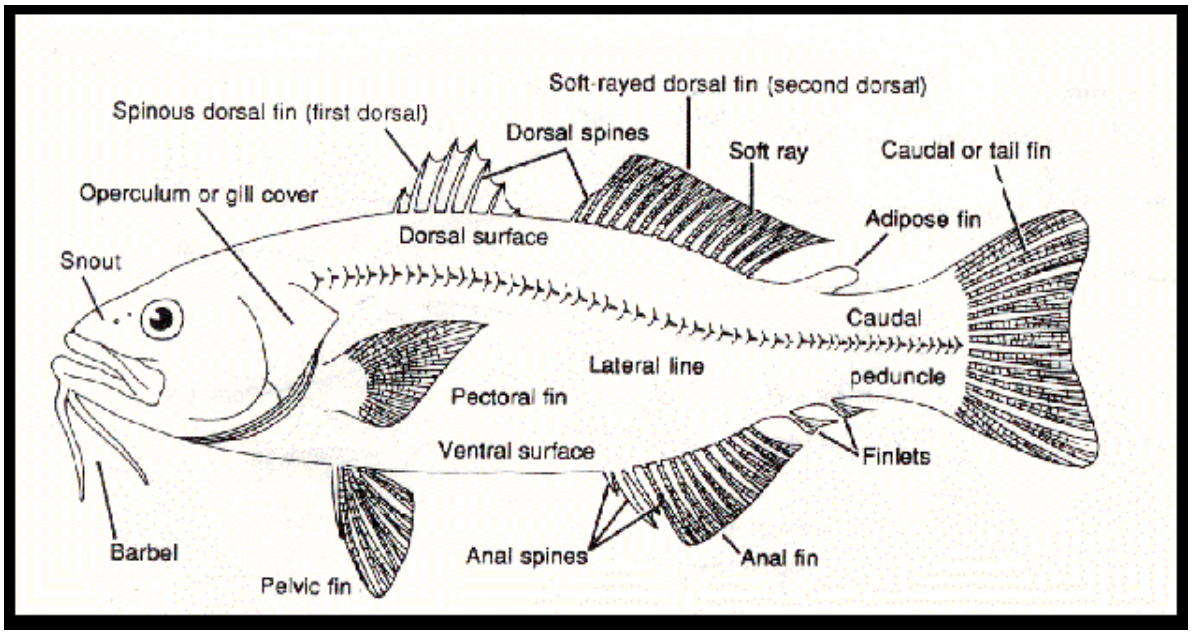

Image courtesy of Georgios Pavlineris http://www.gpavlineris.com/id28.htm

Table of Adaptations and Their Purposes

Body Part	Adaptation	Purpose
Mouth	at the end of the snout, symmetrical	open water feeder
	angled downward/longer upper jaw	feeds on prey below it, bottom feeder
	angled upward/longer lower jaw	feeds on prey above it, surface feeder
	strong jaws - teeth	preys on other fish
	sucker-shaped	eats small plants and animals
	barbels	feeds off bottom, senses food in murky water
	duckbill jaws	grasps its prey
	no teeth	eats plankton
	very large mouth	surrounds prey
Eyes	both on the same side of the head	lies flat on the bottom of the ocean
	small	shallow water fish
	large	usually deep water fish
Fins	Large, forked caudal fin	strong, fast swimmer
	spines on fins	protection, more difficult to swallow, can be poisonous
	large pelvic fins	bottom dweller
	small pelvic fins	open water swimmer
Body shape	round	difficult to swallow, slow swimmer
	flat bottomed	feeds on the bottom
	long, eel-like	hides in rocks and weeds
	torpedo shaped	high speed swimmer
	flat from side to side	almost invisible from the front and rear, feeds above and below
	flat from top to bottom	hides on the bottom
	hump backed	stable in fast moving water

Above table modified from
http://www.geocities.com/sseagraves/Adaptationsinfish.doc

Data Table

Fish's Common Name	Mouth/Purpose	Eyes/Purpose	Fins/Purpose	Body Shape/Purpose