Fish SD: Fashion a Fish

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Background: Review Chapter 6: *Fish Anatomy* in Going Fishing

Duration: 30-45 minutes

Materials: One copy of adaptation cards per student group, paper or posterboard, markers, paint, crayons or colored pencils AND/OR modeling clay or playdough

Objectives: Students will describe adaptations of fish to their environments, describe how adaptations can help fish survive in their habitats and interpret the importance of adaptation in animals.

Background: All animals are the product of countless adaptations that occurred over long periods of time. Those adaptations are, for the most part, features that increase the animals' likelihood of surviving in their habitat.

When a habitat changes, either slowly or catastrophically, the animals with adaptations (that allow them many options) are the ones most likely to survive. Some species have adapted to such a narrow range of habitat conditions that they are extremely vulnerable to change. These species are usually more susceptible than other animals to individual death or species extinction.

In this activity, the students design a fish. Students will choose the adaptations that their fish will have. As those adaptations become part of the fish's design, the fish becomes better suited to the habitat in which it lives. Because of the variety of conditions within each habitat, many different fish can live together and flourish.

Warm up: Begin a discussion by asking the class to define what an adaptation is: An adaptation is a characteristic of an organism that increases its chance of survival in its environment. How do species adapt: Those individuals that are best equipped for life in a specific habitat are more likely to survive to the age where they can reproduce. Therefore, their genes and characteristics are more likely to be carried on. Over countless years, those characteristics become common in the species.

Activity:

Part 1:
Assign students to find a picture or make a drawing of a species of animal that has a special adaptation. For example: a picture of a giraffe with a long neck for reaching vegetation in tall trees, or an owl with large eyes that gather light to aid with night vision.

Conduct a class discussion on the value of different kinds of adaptations to animals. As part of the discussion, ask the students to identify different kinds of adaptations in humans.

Collect the students' pictures or drawings of adaptations. Categorize them into the following groups:

- protective coloration and camouflage
- body shape or form
- mouth type or feeding behavior
- reproduction or behavior
- other (any categories the students establish, in addition to the four above that will be needed for the rest of the activity)

Part 2:
Divide the adaptation cards into five sets of four cards each: one coloration, one mouth type, one body shape and one reproduction in each group.

Break up the students into 5 groups. Pass one complete set of cards to each group of students.

Review the adaptations by asking each group what they think the advantages are to the adaptations they were given. Record a list of the advantages to each adaptation on the board.

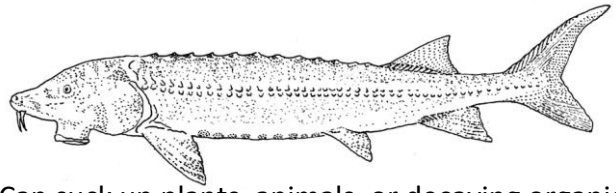
Ask the students to "fashion a fish" from the characteristics of the cards in the set they receive. Each group should:

- create a drawing, painting or sculpture that represents their fish
- name the fish
- describe and draw the habitat for their fish

Wrap up: Ask each group to report on the attributes of the fish they have designed, including identifying and describing its adaptations. Ask the students to describe how this kind of fish is adapted for survival.

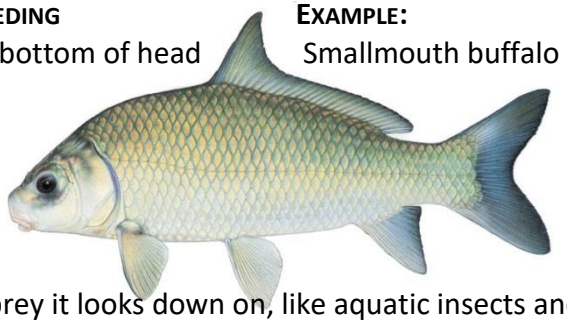
OPTION: Have the groups create the habitat that their fish would be best suited for. Students can draw, paint, make a diorama, or outfit a fish bowl. Each group reports on why this habitat would be best for the fish.

MOUTH/FEEDING **EXAMPLES:**
Sucker shaped mouth Sturgeon



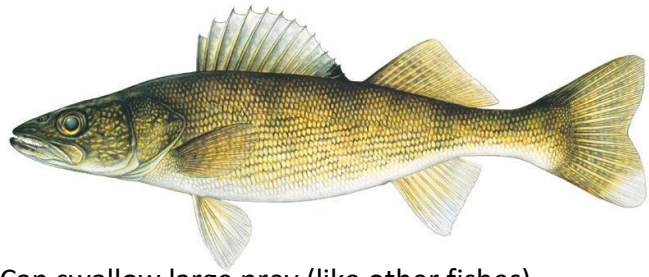
Can suck up plants, animals, or decaying organic matter from the bottom of a lake or stream

MOUTH/FEEDING **EXAMPLE:**
Mouth on bottom of head (inferior) Smallmouth buffalo



Feeds on prey it looks down on, like aquatic insects and crustaceans found at the bottom of the water column

MOUTH/FEEDING **EXAMPLE:**
Very large mouth Walleye

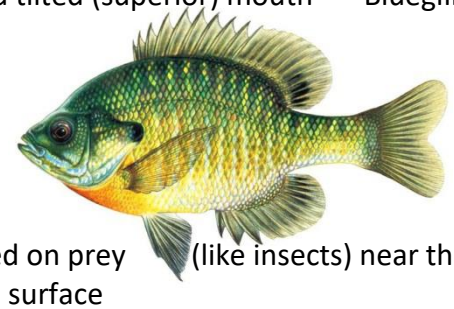


Can swallow large prey (like other fishes)

BODY SHAPE **EXAMPLE:**
Torpedo shaped Northern pike

Can swim fast through open water

MOUTH/FEEDING **EXAMPLES:**
Upward tilted (superior) mouth Bluegill

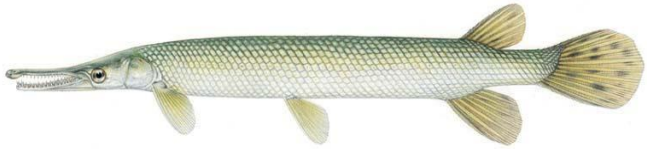


Can feed on prey (like insects) near the water's surface

BODY SHAPE **EXAMPLE:**
Flat bellied Flathead catfish

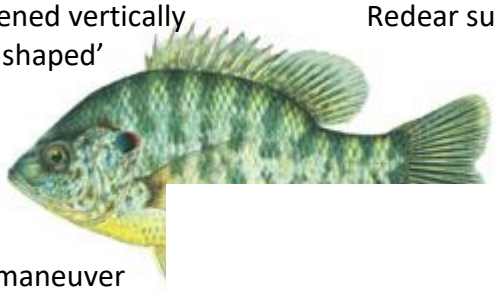
Can lie motionless on the bottom

MOUTH/FEEDING **EXAMPLE:**
Long, toothed jaws Shortnose gar

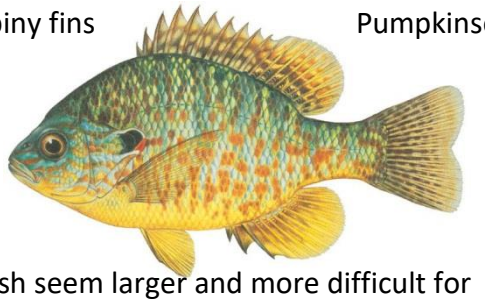
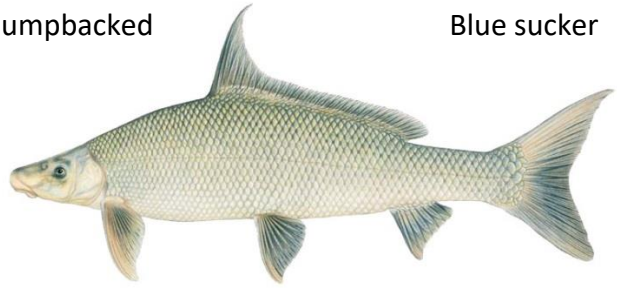
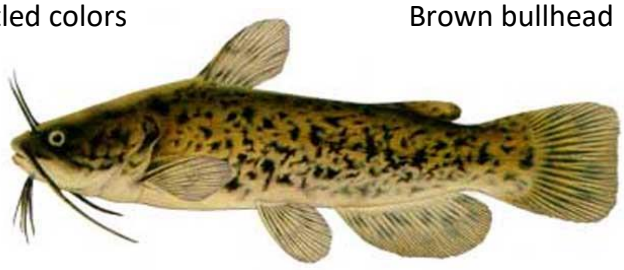
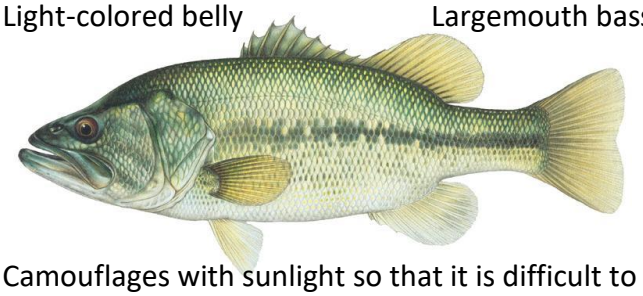
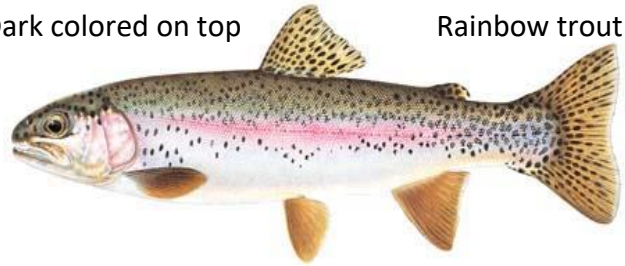


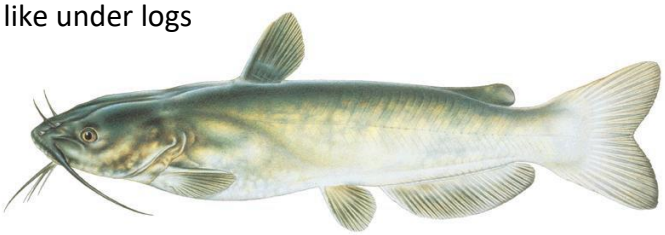
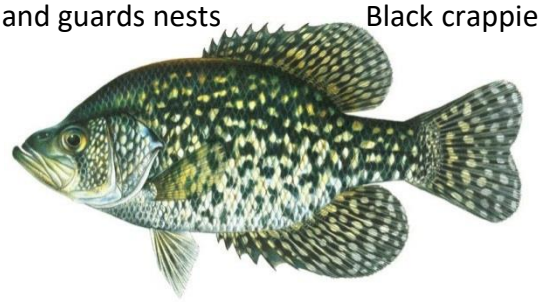
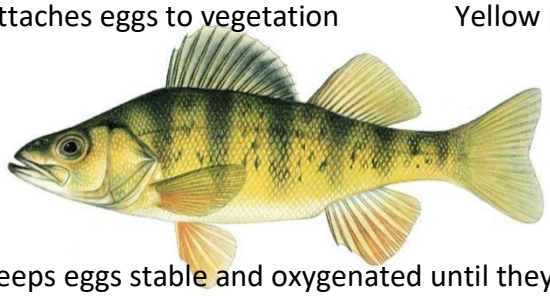
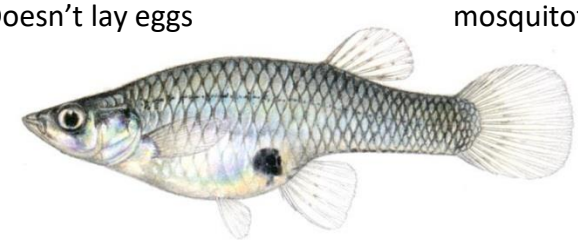
Helps to grasp prey firmly

BODY SHAPE **EXAMPLE:**
Flattened vertically 'disc shaped' Redear sunfish



Can maneuver :s or submerged trees

Body Shape — Large, spiny fins **Example:** Pumpkinseed  Makes fish seem larger and more difficult for predators to eat	**Coloration** — Vertical stripes **Example:** Northern plains killifish  Allows fish to hide in vegetation
Body Shape — Humpbacked **Example:** Blue sucker  Helps fish stay stable in flowing water	**Coloration** — Mottled colors **Example:** Brown bullhead  Helps fish hide in rocks or on the bottom
Coloration — Light-colored belly **Example:** Largemouth bass  Camouflages with sunlight so that it is difficult to see from below	**Coloration** — Silvery color **Example:** Gizzard shad  Helps fish camouflage in open water
Coloration — Dark colored on top **Example:** Rainbow trout  Camouflages with bottom so that it is difficult to see from above	**Reproduction** — Buries eggs in gravel at bottom of stream **Example:** Brook trout  Hides eggs from predators, keeps oxygenated

REPRODUCTION Lays eggs in cavities, like under logs **EXAMPLE:** Channel catfish  Hides eggs from predators	**REPRODUCTION** Creates and guards nests **EXAMPLE:** Black crappie  Keeps eggs safe from predators
REPRODUCTION Attaches eggs to vegetation **EXAMPLE:** Yellow perch  Keeps eggs stable and oxygenated until they hatch	**REPRODUCTION** Livebearer, Doesn't lay eggs **EXAMPLE:** Western mosquitofish  Increases survival rates