Fashion a Fish

Objectives

Grades K–2

Students will classify fish according to body shape and coloration.

Grades 3–4

Students will (1) describe adaptations of fish to their environments, (2) describe how adaptations can help fish survive in their habitats, and (3) interpret the importance of adaptation in animals.

Method

Students design a fish adapted for various aquatic habitats.

Materials

Grades K–2

Body shape and coloration are the only cards needed for younger students. The first three steps in this activity are optional for younger students. Steps four through seven can include the adaptation cards for body shape and coloration; reproduction and mouth cards are optional

Grades 3–4

Five cards are needed for each adaptation from the masters provided on pages 59 and 60: mouth, body shape, coloration, reproduction; art materials; paper

Grade Level: K–4

Subject Areas: Science, Expressive Arts, Environmental Education

Duration: one or two 20-minute sessions for younger students, two 30- to 45-minute sessions for older students

Group Size: any; groups of four students each

Setting: indoors or outdoors

Conceptual Framework Topic Reference: CAIIA1b, CAIIA1c, CAIIB

Key Terms: adaptation, coloration, camouflage, habitat

Appendices: Using Local Resources

Background

Aquatic animals are the products of countless adaptations over long periods of time. Those adaptations, for the most part, are features that increase the animals' likelihood of surviving in their habitat.

When a habitat changes, either slowly or catastrophically, the species of 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 death or extinction.

In this activity, the students design a fish. Students choose the adaptation that their fish will have; each choice would actually take countless years to develop. 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. Some adaptations of fish are shown on page 59 and 60.

Procedure

1. Assign students to find a picture or make a drawing of a species of animal that has a special adaptation. For example, giraffes have long necks for reaching vegetation in tall trees, while owls have large eyes that gather light and aids with night vision.
2. Conduct a class discussion on the value of different kinds of adaptations to animals. As a part of the discussion, ask the students to identify different kinds of adaptations in humans.
3. 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, and
   - other (one or more categories the students establish, in addition to the four above that will be needed for the rest of the activity).
4. Divide the adaptation cards into five groups of four cards each: one for coloration, mouth type, body shape, and reproduction.
5. Pass one complete set of cards to each group of students. There might be five groups with four to six students in each group. If the class size is larger than about 30 students, make additional sets of adaptation cards.

Adaptation	Advantage	Examples
Mouth		
Sucker-shaped mouth	Feeds on very small plants and animals	Sucker, carp
Elongated upper jaw	Feeds on prey it looks down on	Spoonbill, sturgeon
Elongated lower jaw	Feeds on prey it sees above	Barracuda, snook
Duckbill jaws	Grasps prey	Muskellunge, pike
Extremely large jaws	Surrounds prey	Bass, grouper
Body Shape		
Torpedo shape	Fast moving	Trout, salmon, tuna
Flat bellied	Bottom feeder	Catfish, sucker
Vertical disk	Feeds above or below	Butterfish, bluegill
Horizontal disk	Bottom dweller	Flounder, halibut
Hump backed	Stable in fast-moving water	Sockeye salmon, chub, razorback
Coloration		
Light-colored belly	Predators have difficulty seeing it from below	Most minnows, perch, tuna, mackerel
Dark upper side	Predators have difficulty seeing it from above	Bluegill, crappie, barracuda, flounder
Vertical stripes	Can hide in vegetation	Muskellunge, pickerel, bluegill
Horizontal stripes	Can hide in vegetation	Yellow and white bass, snook
Mottled coloration	Can hide in rocks and on bottom	Trout, grouper, rockbass, hogsucker
Reproduction		
Eggs deposited in bottom	Hidden from predators	Trout, salmon, most minnows
Eggs deposited in nests	Protected by adults	Bass, stickleback
Floating eggs	Dispersed in high numbers	Striped bass
Eggs attached to vegetation	Stable until hatching	Perch, northern pike, carp
Live bearers	High survival rate	Guppies

continued

6. Ask the students to "fashion a fish" from the characteristics of the cards in the set they receive. Each group could
   - create an art form that represents their fish,
   - name the fish, and
   - describe and draw the habitat for their fish.
7. 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.

   Grades 3–4

   Ask the students to make inferences about the importance of adaptations in fish and other animals.

Extensions

1. Take an adaptation card from any category, and find a real fish with that adaptation.

NOTE: A collection of books about fish is useful. Do not be as concerned about reading level as much as the accuracy of the illustrations.

2. Look at examples of actual fish. Describe the fish, and speculate on its habitat by examining its coloration, body shape, and mouth.

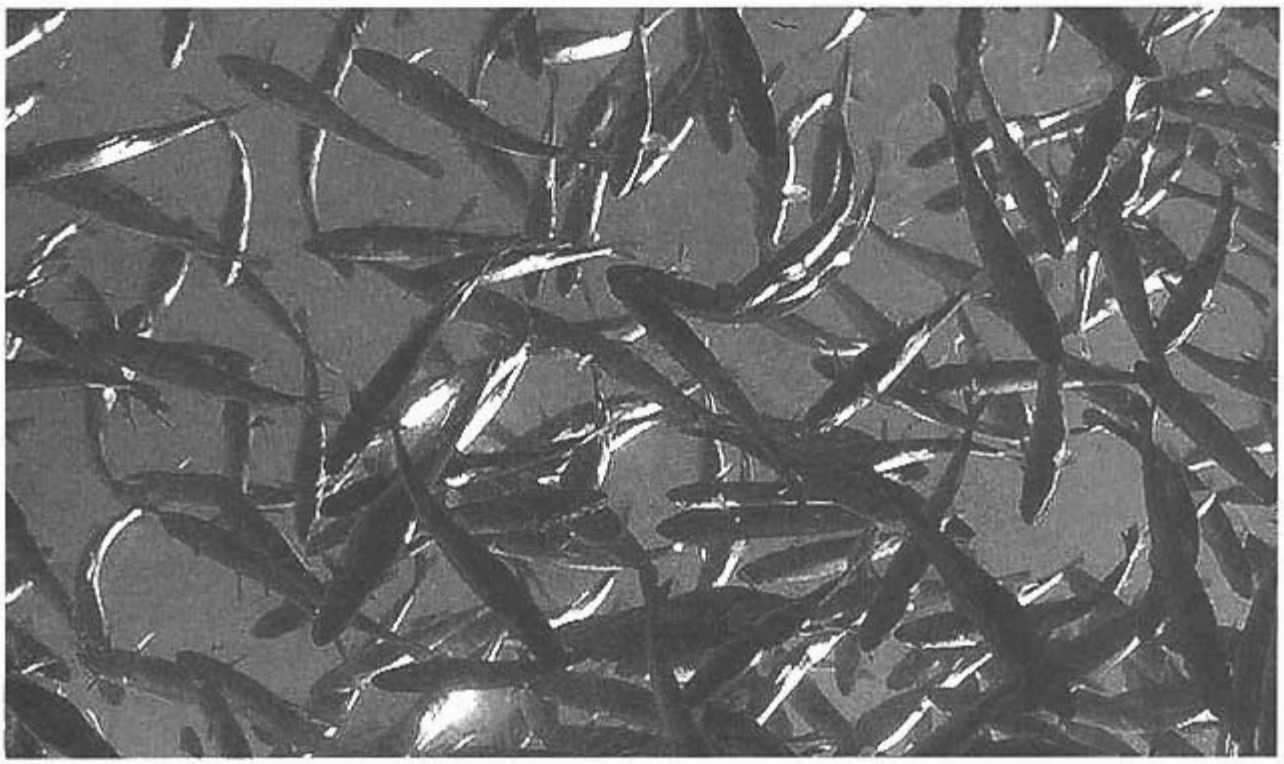
Evaluation

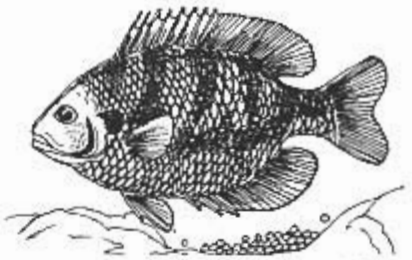
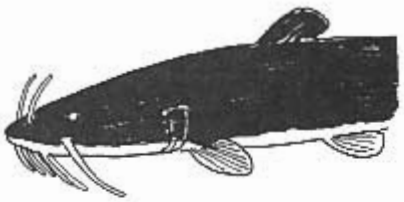
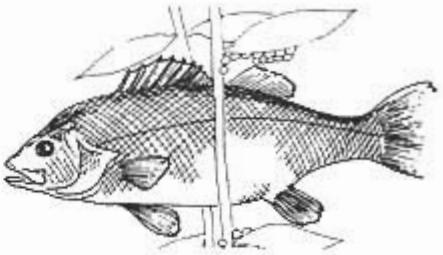
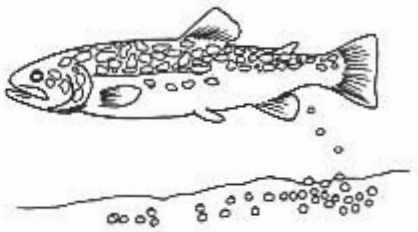
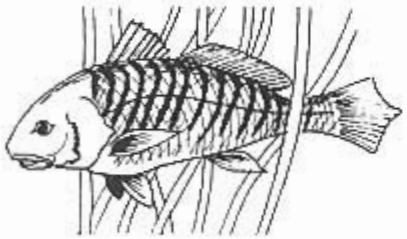
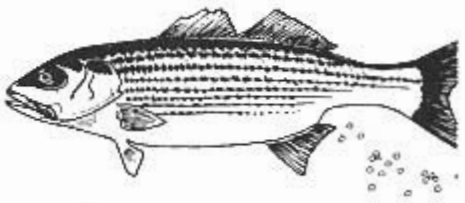
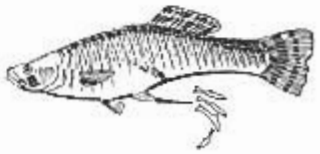
Grades K–2

Circle the fish with vertical stripes. Circle the fish with the horizontal, flat shape. Circle the fish that would be difficult to see from above. (Use the masters provided on pages 59 and 60 for drawings of fish.)

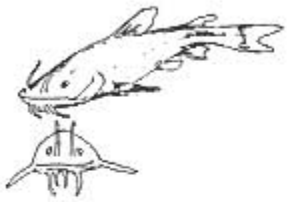
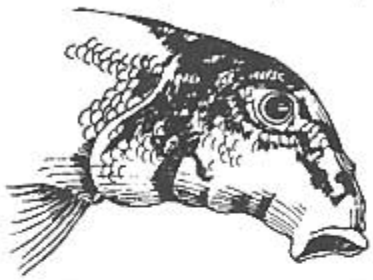
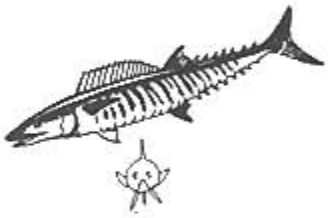
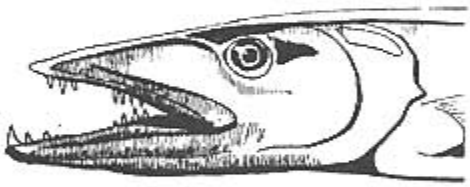
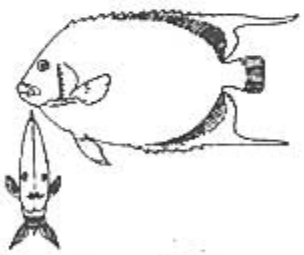
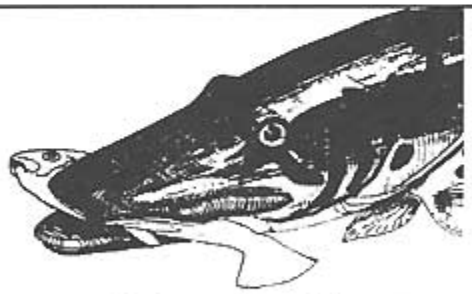
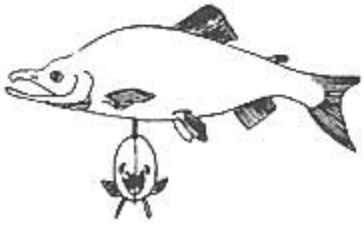
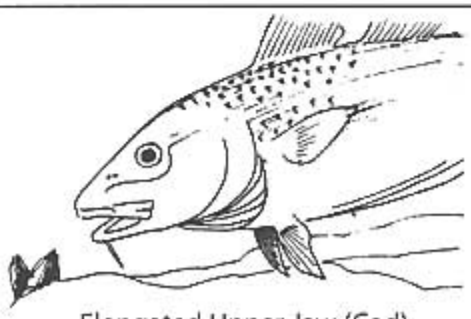
Grades 3–4

1. Name two fish adaptations in each of the following categories: mouth and feeding, shape, coloration, and reproduction. Then describe the advantages of each of these adaptations to the survival of the fish in their habitats.
2. Invent an animal that would be adapted to live in your community. Consider mouth, shape, coloration, reproduction, food, shelter, and other characteristics. Draw and describe your animal.



 Coloration Light Colored Belly (Albacore)	 Reproduction Eggs Deposited in Nests (Blue Gill)
 Coloration Dark Upper Side (Catfish)	 Reproduction Eggs Deposited on Vegetation (Yellow Perch)
 Coloration Mottled (Crappie)	 Reproduction Eggs Deposited on Bottom (Trout)
 Coloration Vertical Stripes (Croaker)	 Reproduction Free Floating Eggs (Striped Bass)
 Coloration Horizontal Stripes (Yellow Bass)	 Reproduction Live Birth (Gambusia)

continued

Shape Flat Bellied (Catfish) 	Mouth/Feeding Sucker Shaped Jaw (Sucker) 
Shape Torpedo Shape (Wahoo) 	Mouth/Feeding Extremely Large Jaws (Grouper) 
Shape  Horizontal Disc (Halibut)	Mouth/Feeding Elongated Lower Jaw (Barracuda) 
Shape  Vertical Disc (Butterfish)	Mouth/Feeding  Duckbill Jaws (Muskellunge)
Shape  Humpbacked (Sockeye)	Mouth/Feeding  Elongated Upper Jaw (Cod)