



# Survival of the Fishiest

Adaptations

Time Frame: 2 hours

Grade: 4

## Overview

Adaptations are traits that help an animal survive. By closely observing adaptations of an unknown species, we can often learn a lot about its behavior and habitat. In this activity, students will look at some fish body adaptations and try to explain how they would help the fish to survive in its environment. Then they will use these adaptations to create a new fish. Finally, the students will look at native Arizona fish and determine what adaptations they have.

*This lesson is modified from Project WILD Aquatic's "Fashion a Fish" © Council for Environmental Education, 2000.*

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## Essential Questions

- What factors contribute to the survival of wildlife species?
- What are some common adaptations found in Arizona wildlife species?

## Objectives

- Define "adaptation."
- Identify two adaptations that freshwater fish have to help them survive.
- Analyze adaptations of Arizona native fish to describe their habitats.

## Arizona and National Academic Standards

### Science

- S4.C4.PO1
- S4.C4.PO2

### Arizona College and Career Ready – ELA

- 4.W.4 (including AZ 4.W.4)
- 4.W.7

### Next Generation Science

- 4-LS1-1

### Association of Fish and Wildlife Agencies

- 1.5.3
- 1.7.1

## Materials and Resources

- *Fish Adaptations Guides: Body Shape, Coloration and Mouth Design* (one per group)
- Arizona Native Fish Poster

## Teacher Preparation

- Make a copy of the *Fish Adaptations Guides* for each group.
- Acquire a copy of the Arizona Native Fish Poster from the Arizona Game and Fish Department by contacting [focuswild@azgfd.gov](mailto:focuswild@azgfd.gov).

## Background Information

Adaptations help animals survive in their environment. Most adaptations are a result of natural selection that occurs over a long period of time. When an animal has a trait that is more successful in a population, it may produce more offspring. As a result, that trait is passed down

through generations. Over time, that trait becomes more common in the population.

In this lesson, students will analyze various adaptations commonly found in freshwater fish to determine how they might help the fish survive. Then, they will apply their knowledge by describing the habitat and natural history of

a fish they recently “discovered.” As a final assessment, students will look at images of native Arizona fish and describe their habitat and basic natural history simply by the adaptations they can identify.

### Procedures

1. Divide the class into small groups of three or four students.
2. Ask two or three students to come to the front of the class and draw a picture of a fish. It is best if the students do not see each others’ drawings.
3. When all the drawings are finished, ask the class if they are the same fish. If they say that they are, then you will need to indicate differences between the drawings.
4. Ask the students how we know that they are different fish. Make a list of differences. Ask the students why they think there are so many differences between fish.
5. Inform the students that we are now going to look at three of these differences in detail: body coloration, body shape, and mouth design. In small groups, you will have the opportunity to look at a few different types within each of these categories and try to determine how they would be beneficial to a fish.
6. Assign the students to groups and hand out a set of the *Fish Adaptation Guides* to each group.
7. Instruct the students that they will have about 10 minutes to look at each of the different adaptations and come up with some advantages that each one has. Why would a fish look like that? What purpose or function does it serve?
8. Give the students about 10 minutes to work.
9. When all the groups have had enough time to finish, discuss their answers. Write down each adaptation on the

board and some of the benefits that the students have identified.

10. Inform the students that they are now going to go on a pretend adventure. They have been traveling along a river in Arizona when they see a fish. They look through their field guides and realize that it has not been discovered yet. Since it is a new species, it must be documented. However, their camera is broken. They must draw a picture of the fish. In addition, they need to describe the fish in detail. They should include what type of water it lives in (fresh, salt, lake, river, etc.), what it eats, what eats it, and anything else they can think of. Since they are the discoverers of the fish, they have the right to name it. They must come up with a descriptive scientific name in proper format (*Genus species*) as well as the common name that most people will call it.
11. Give the students plenty of time to complete their drawings and descriptions.
12. When they have finished, have each group share their discoveries with the class.
13. Show the students the Arizona native fish poster and have them look closely at the illustrations. Ask them to find the adaptations described in class and identify the habitat that these fish live in.



### Differentiated Instruction

#### *Extensions:*

- Have the students identify other fish adaptations not discussed in class and find fish with those adaptations. These could include reproduction strategies and types of fins. See if the students can identify their purpose.
- Have the students identify adaptations in nonaquatic animals to see if they can determine their purpose.
- Allow the students to research nonnative fish and how the human-altered environment has allowed these fish to outcompete the native fish.

#### *Modifications:*

- Rather than requiring students to find all the adaptations on the native fish poster, call out specific ones (such as a humpback) and ask them to name one fish with that adaptation.



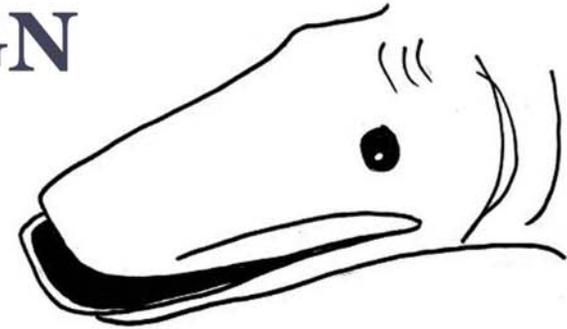
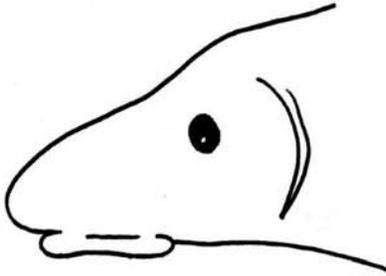
### Reflection

Use the space below to reflect on the success of the lesson. What worked? What didn't? What changes would you make? These notes can be used to help the next time you teach the lesson. In addition, the Department would appreciate any feedback. Please send your comments to [focuswild@azgfd.gov](mailto:focuswild@azgfd.gov). We'd love to see pictures of the students' fish discoveries as well!

# MOUTH DESIGN



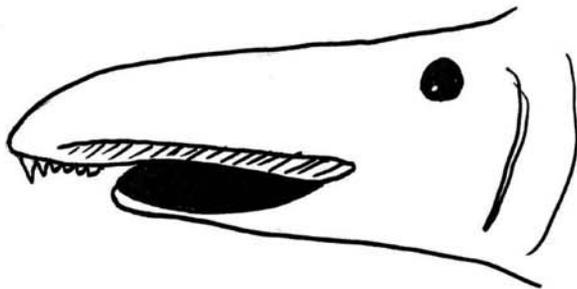
**Sucker Shaped Jaw**



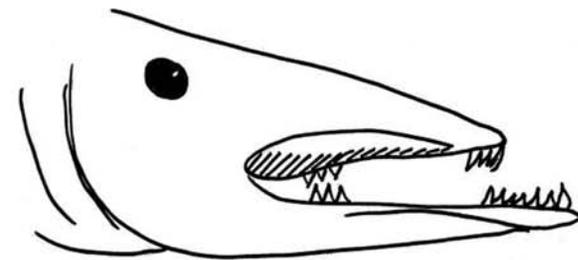
**Duckbill Jaw**



**Extremely Large Jaw**



**Elongated Upper Jaw**

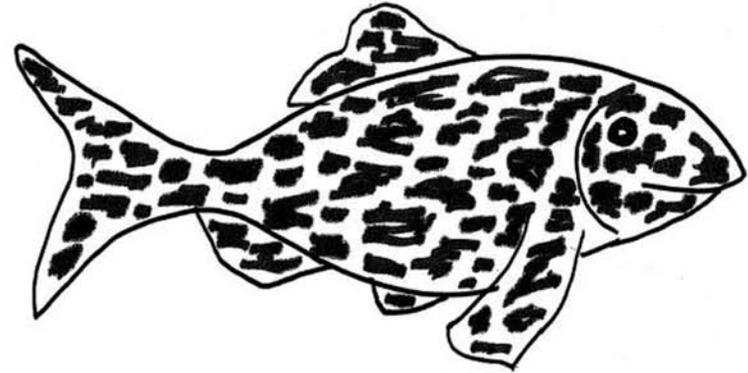


**Elongated Lower Jaw**

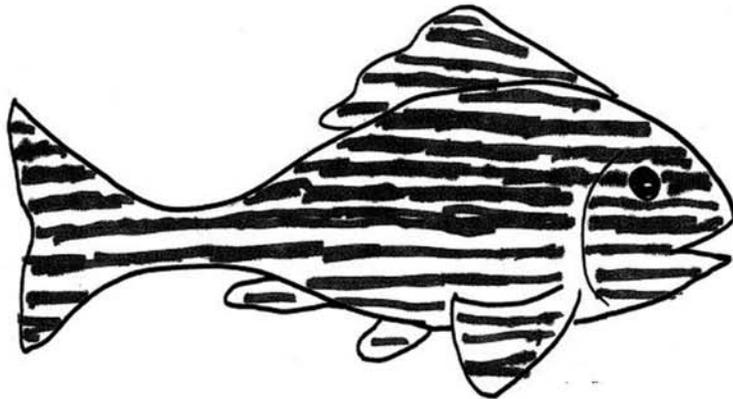
# COLORATION



**Top Dark, Bottom Light**



**Mottled**

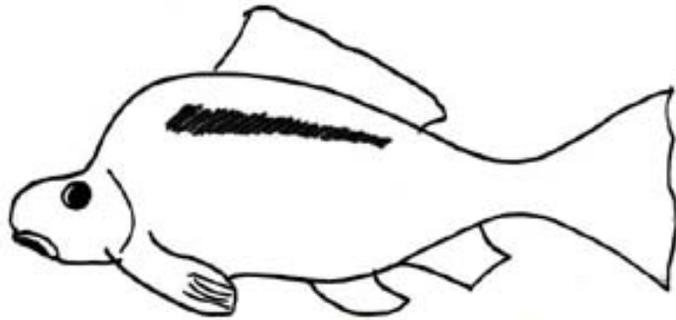


**Horizontal Stripes**



**Vertical Stripes**

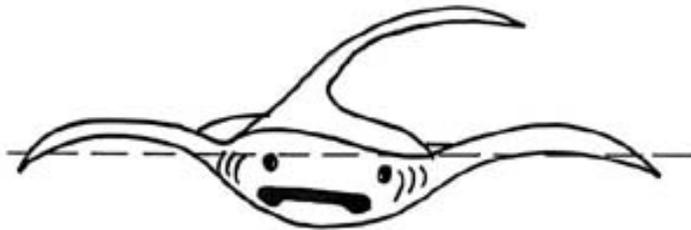
# BODY SHAPE



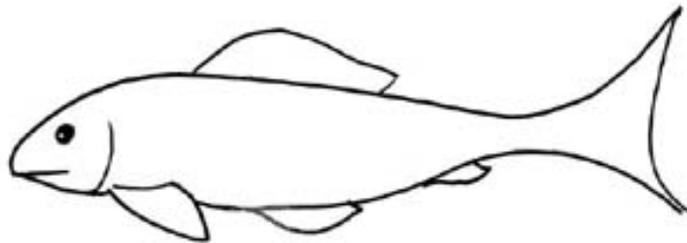
**Hump-backed**



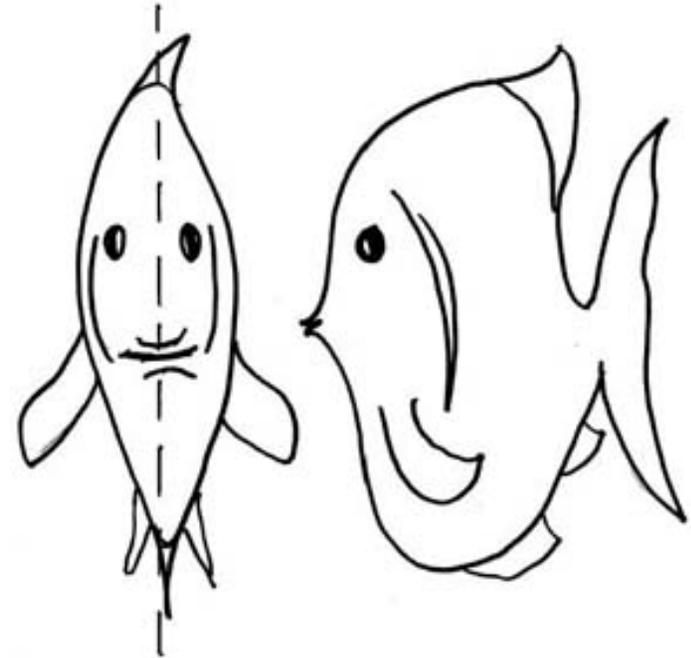
**Flat Bellied**



**Horizontal**



**Torpedo**



**Vertical**