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# Unit 7: Activity 1: Fish Anatomy

## Students learn...

- The form and function of specific fish adaptations; and
- Important water quality standards necessary to maintain populations

## By doing...

- Detailed drawings of fish anatomy; and
- Observation of live fish and creation of field guides

## Then reflecting on...

- How the physical features of living things are related to their purpose;
- How fish are one type of indicator for monitoring watershed health; and
- Environmental conditions that affect the status of salmon species

3. Identify head features and gill location. Discuss the form and function of gills.
4. Finally draw in lateral lines as the unique feature of fish species and compare some field identification marks for different fish families (catfish, sunfish, trout).

As students are continuing to practice drawing fish species, allow enough time for students to explore the many different kinds of fish. Students may want to draw some unique ocean fish and compare different physical features.

If possible, you can have students make presentations on different fish species – native and local species as well as endangered or threatened.

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## Getting Started

Begin by asking students to draw a fish from memory. Give students enough time to include as

### Materials

*Per team of 2:*

- Journal drawing paper
- Goldfish in a small clear bowl or cup
- Diagrams of Steelhead trout and salmon
- Water quality data
- Simple salmon outline on 11" x 17" paper

many details as possible. Students may be able to draw a few different kinds of fish.

Share drawings with the class to identify common understandings about fish anatomy. Then give students a second chance to do a drawing by observing a live fish, such as fish in cups, or in a classroom aquarium, or at a natural history center.

After students have drawn the live fish, lead the class in a step-by-step drawing of a Steelhead trout, identifying physical features as you go along.

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## Introduce the steps

1. Have students begin by identifying the dorsal, ventral, anterior and posterior of a fish.
2. Have students label all the fins on their drawing and explain what they are used for.

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## Model the steps

5. Have students study different drawings of fish and discuss why fish are shaped differently, what features and adaptations are unique to certain species, and general characteristics that make fish different from other living things.
6. Have students create a "fish field guide" that summarizes some of what they have learned. A "fish field guide" can be created by enlarging a simple drawing of a salmonid species from an 8.5" x 11" size to an 11" x 17" size. This will give you an elongated outline to work with.
7. Have students label the drawing for form and function.
8. Have students divide the guide into 4 sections.
9. On the back, have students write in four water quality tests (one in each section) that are most important when studying fish habitat such as: temperature, rate of flow, dissolved oxygen, and turbidity.
10. Where students have labeled each water quality test, have students fill in data for each test and an explanation of why monitoring this data is important for healthy fish habitat (temperature needs to be cool enough, rate of flow needs to be fast enough, DO needs to supply oxygen to fish, and turbidity needs to allow gills to function, etc.).

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### Share observations

- Have students review water quality data and discuss seasonal changes that may affect fish species.
- Have students share explanations of important minimum and maximum readings of water quality variables in relation to survival of salmon species.
- Include discussions of other riparian features that affect the health of fish populations (vegetation, stream substrate).

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### Scientific explanations

- Show labeled diagrams of fish species. Discuss form and function.
- Show comparison of different field species, noting field identification and seasonal changes for male and female.
- Show charts and graphs on species numbers in native habitats.
- Share charts on water quality monitoring standards for healthy fish habitat.

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### Journal reflection

Now that students have explored the biology and natural history of fish, allow time for students to write and draw about what they have learned.

Use these bullets as a guide for journaling :

- Have students draw a detailed picture of their favorite native fish showing anatomy features, field identification marks, and special adaptations.
- Have students create their own imaginary species, writing a complete natural history for their species.
- Have students create a creek plan of action, both short term and long term, to improve fish habitat.
- If possible, have students present their short term creek plan to the local water district.
- In their journals, have the students list the conditions needed for cold water fish species to survive. Have students place the conditions in order of importance and explain how each condition needs to be monitored for the fish populations to be able to succeed.

### ***Tips for facilitators...***

If at all possible, it is very intriguing to elementary students to be able to make a drawing from a live fish but you need to be very careful to model care and concern for fish and keep captive fish comfortable and safe.

*Under no circumstances should aquarium fish be released into a creek!*



### ***Tip for teachers...***

The *Salmon and Trout Education Program (STEP)* is an excellent companion curriculum! Being able to raise Steelhead eggs for your local watershed brings lessons to life. For more information on STEP, visit: [www.steponline.info](http://www.steponline.info)