



CONNECT | ENRICH | TRANSFORM

External Fish Anatomy

Introduction:

In science and other fisheries professions, it is important to know the difference between one animal and another. This can be challenging – especially when animals look alike. It is easy to tell the difference between people and fishes. Keep in mind that when talking about one type of fish, we use the term “fish”, but when talking about multiple types, the correct term is “fishes”. We know that humans and fishes have some very different body parts, so it is easier to tell them apart. However, some fishes look a lot like other fishes because they have similar body parts. If someone comes across a fish that they do not recognize, looking at WHERE those body parts are located and their shapes can help in identifying a fish.

In this activity you will learn common terms and body parts that can help with fish identification. Having the right vocabulary will allow you to communicate with scientists and other fisheries professionals.

How to get started:

1. Learn the terms used to talk about the position of features on the body (page 3).
2. Get familiar with the external body parts found on fishes (Page 4).
3. Once you think you know all the terms and body parts complete the fill-in-the-blank activity using the terms and feature names (Page 5).
4. When you are ready, go to the last two pages and see if you can use all your new knowledge to identify the fishes in the photos.
 - a. There are 4 short descriptions of a fish.
 - b. Read each description and look carefully at the photos.
 - c. Match each description to the correct photo by drawing a line from the description to the photo of the fish that it describes.
 - d. Check your answers. Answers are provided at the bottom of the page.

Anatomical Positions:

To start, we need to begin by learning the terms that describe the anatomical positions used for all life forms on earth. Anatomical positions are terms that are used to give an idea of where on the body a feature can be located.

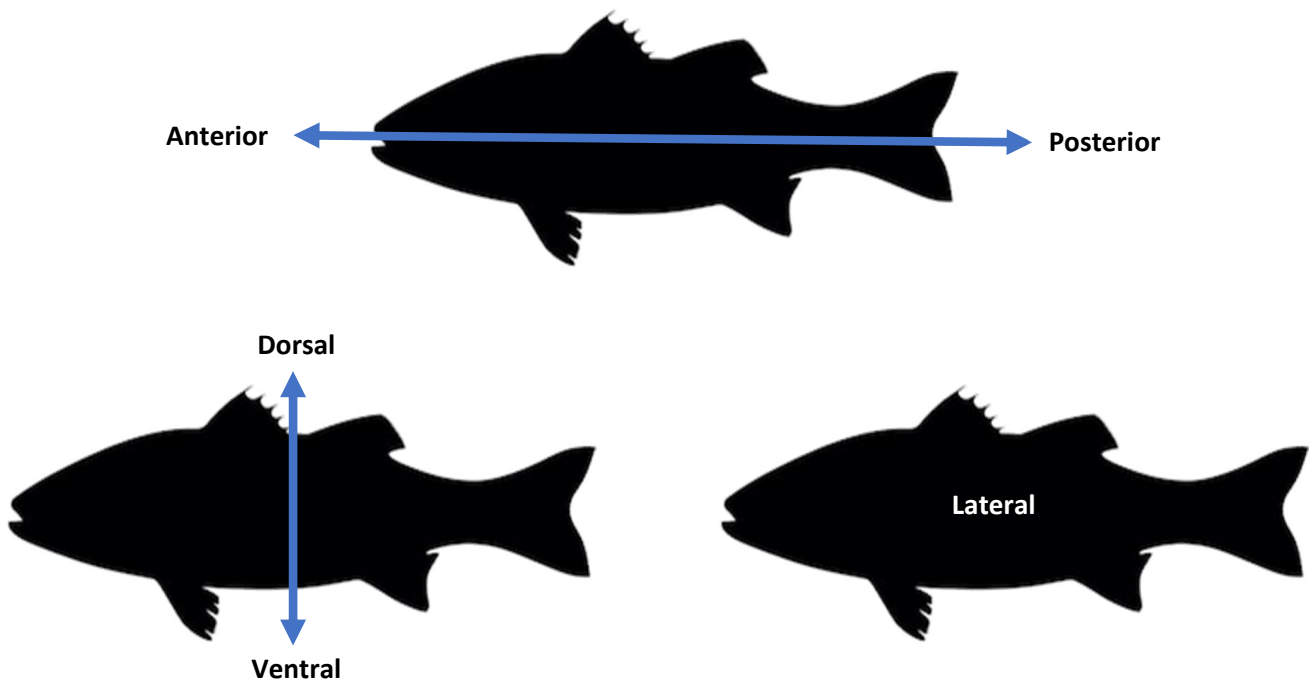
Two examples of this using a human body would be:

1. The eyes of a human are located on the anterior end of the body. *This just means that your eyes are more towards your head than your backside.*
2. The human body has a belly button that is located ventrally and a backbone that is located dorsally. *This just means that our belly buttons are on the front of our bodies while our backbones are on the back of our bodies.*

The terms are listed below. The images shown give you some idea of where the anatomical positions are on fishes.

Anatomical Position Terms:

- Anterior – head end (used to say something is closer to the head)
- Posterior – tail end (used to say something is closer to the tail)
- Dorsal – top or back
- Ventral – front (belly) or bottom
- Lateral – side of the body

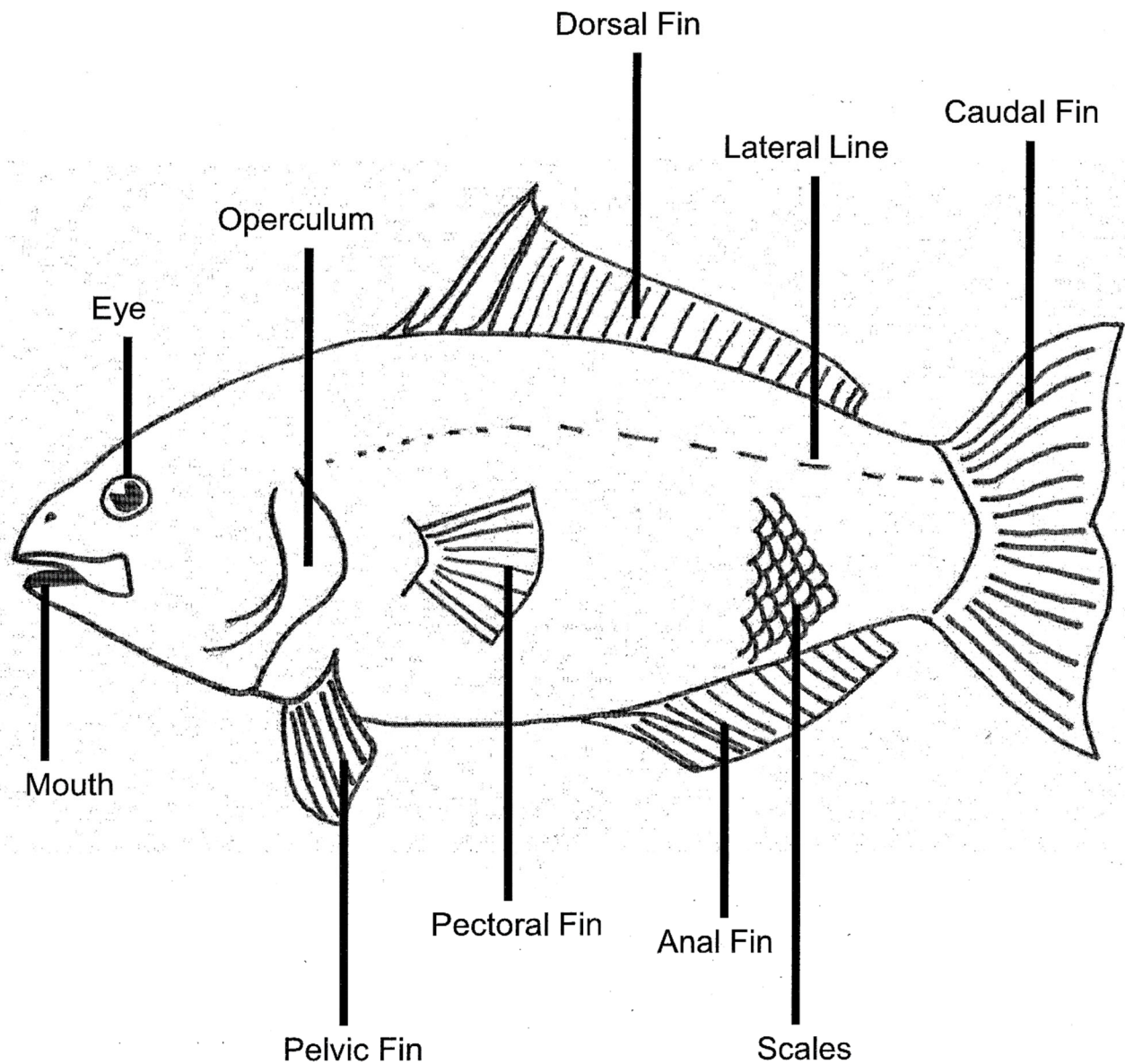


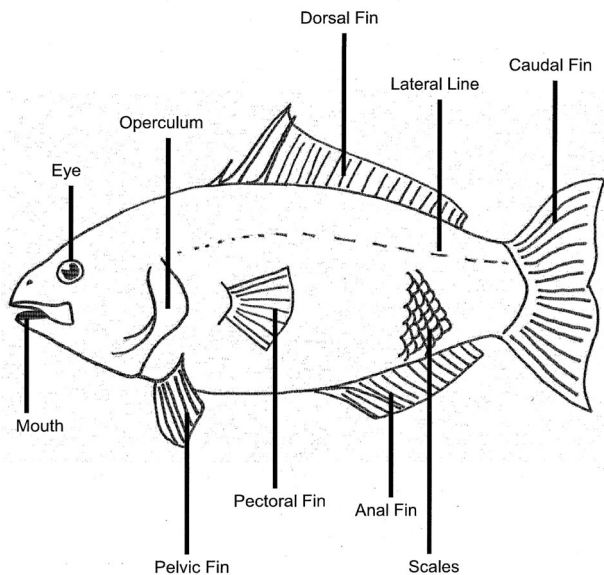
Now that you know the terms for anatomical positions we can learn the names of body parts that are found externally (on the outside) of a fish's body. Continue to the next page to learn more about each of these body parts.

External anatomy of fishes:

Just like on the human body, fishes have external body parts. The body parts help them move, breathe, locate things, avoid enemies, know more about the environment around them, and many more things.

These body parts might look very different from one kind of fish to another, but you can use the size, shape, and location of these body parts to identify any fish. Knowing the names, general locations, and their functions is the first step in becoming an expert in identifying fishes. Study the image below to learn the names of each body part. Color each body part as you learn them to help you remember. The next page lists each body part separately and tells you what it is used for.





Mouth: is located on the anterior end of the body. The mouth is used to take in food. It also plays a big role in getting water to the gills so that oxygen can be supplied to the body. The mouth of fishes might look different and have different kinds of teeth. These things depend on what that fish eats and how it hunts food.

Eye: is located on the anterior end of the body, usually dorsal to the mouth. Eyes allow animals to see in the water. Depending on the fish, the eyes could be very big, very small, or somewhere in between.

Operculum: is located laterally on the anterior end of the body. It is posterior to the mouth. The operculum is a bony plate that protects the fish's gills and helps pump water through the gills so that oxygen can be taken up by the gills and delivered to the rest of the body.

Pelvic Fin: is typically located ventrally on the body, anterior to the anal fin (when it is present). Pelvic fins help fishes keep their balance in water. When we think about pelvic fins, we typically think of the rounded fins used for turning and swimming. However, pectoral fins can look quite different and serve many functions. Some look more like legs and allow fish to "walk" on the seafloor. Some pelvic fins are sucker-like and enable fishes to suction themselves onto various objects or even other organisms.

Pectoral Fin: is located laterally on the fish, posterior to the operculum. These fins can be used for changing direction and hovering just above the seafloor. They can also be modified to act as legs and help fish "walk" along the sea floor and feel out their environment around them.

Dorsal Fin: is- you guessed it- dorsal on the body. The dorsal fin is used for steering, balance, and even defense- the spines (hard spiky things that poke our fingers) can be raised, poking predators that try to eat a fish. Fins can also have rays (these are also used for the structure of the fins but are not hard or spiky).

Anal Fin: is located on the ventral side of the fish, anterior to the caudal fin. The anal fin is used for balance and steering. Not all fish have anal fins, but they can also be very tiny and hard to see.

Lateral Line: is located laterally on each side of the body. The lateral line is a sensory system that enables fish to feel the vibrations and movement of the water. Fishes can feel where other animals, including a predator, are coming from even if they cannot see it, thanks to these lateral lines.

Scales: are located laterally on the body. They protect fishes from attacks, parasites, and injuries they could receive from brushing up against hard substrates. Scales are covered in something called the slime layer. The slime layer is very important to the health of fishes.

Caudal Fin: also known as the tail fin- it is located at the posterior end of the body. The caudal fin propels the fish forward through the water column- it is how the fish swims. There are many different types of caudal fins, which can provide hints at how fast, slow, or for how long a fish can swim.

Fill in the Blank

Using the vocabulary on pages 2 and 3, use your new terms by filling in the missing words.

1. The _____ is located on the side of a fish. It allows the fish to feel vibrations in the water caused by other organisms.
2. The _____ is located on the anterior end of the body. It can have many kinds of teeth depending on what the fish eats and how it hunts.
3. The anal fin (when present) is located on the _____ side of the fish, and is _____ to the caudal fin. It is used for balance and steering.
4. The _____ fin is located on the lateral side of the fish, posterior to the operculum. These fins can be used for changing direction and hovering.
5. Pelvic fins are located on the _____ side of the fish. They are anterior to the _____ fin (when it is present). These fins could look like legs that allow a fish to “walk”, or they could be sucker-like and allow the fish to suction onto objects or other fishes.
6. The _____ fin- or tail- is found on the _____ end of the body. It propels the fish to move it forward in the water. It is how they swim.
7. The _____ is located on the anterior end on the lateral side of the body. It is posterior to the mouth. This feature is a bony plate that protects the fish’s gills and helps pump water through them to help the fish get oxygen.
8. _____ are plates found all over the fish’s body. They protect the fish from predators, parasites, and hard surfaces.
9. The _____ of the fish allows it to see in the water. It is located on the _____ end of the body, just dorsal to the mouth. Depending on where the fish lives, the structure and function of this feature may differ from that of another fish.

Which Fish is Which?

On one side of the page there are 4 pictures of fishes. On the other, there are four short statements. Match each statement with the fish it is describing by drawing a line from the description to the image of the fish. No statement, nor fish, is used more than once. Be sure to fully read each statement to make sure you match the correct fish to each statement.

Bighead Sea Robin- My ventral side appears white, while the scales on my lateral and dorsal side appear yellow and black. When I swim my pectoral fins expand like wings to help me glide through the water, but three modified spines on my pectoral fin also help me “walk” on the seafloor and sense what is around me.



Atlantic Croaker- My ventral side appears white, while my dorsal side is a silver/gray color. My lateral line begins at my operculum and moves posterior all the way to my caudal fin. I have a dark spot where my pectoral fin meets my body.



Seatrout- My ventral side appears white, but I have dark spots and appear blue along the dorsal side. I have a slender body, with a very big mouth. My mouth also has two very sharp teeth that help me eat other fishes.



Least Puffer - My ventral side appears white, while my dorsal side is darker in color. I have a large eye on the anterior end of my body and a small mouth. My dorsal fin is closer to the posterior end of my body.

