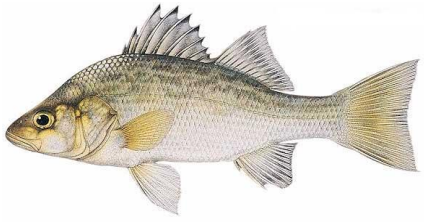
Honors Biology
Unit 6: Anatomy & Physiology

Due by Monday April 18th!
Worth 15 lab points (plus 5 cleanup points)

Name: _____ Period: _____



Grey Perch Dissection

Introduction:

The fish in the class Osteichthyes have bony skeletons. There are three groups of the bony fish --- ray-finned fish, lobe-finned fish, and the lung fish. The perch is an example of a ray-finned fish. Its fins have spiny rays of cartilage &/or bone to support them. Fins help the perch to move quickly through the water and steer without rolling. The perch also has a streamline body shape that makes it well adapted for movement in the water. All ray-finned fish have a swim bladder that gives the fish buoyancy allowing them to sink or rise in the water. The swim bladder also regulates the concentration of gases in the blood of the fish. Perch have powerful jaws and strong teeth for catching and eating prey. Yellow perch are primarily bottom feeders with a slow deliberate bite. They eat almost anything, but prefer minnows, insect larvae, plankton, and worms. Perch move about in schools, often numbering in the hundreds.

Materials:

Forceps	Dissection needles	Grey Perch Fish (preserved)
Scalpels	Hand lens	
Scissors	Dissecting Tray	
T-Pins	Ruler	

Procedure:

External Anatomy

1. Obtain a perch & rinse off the excess preservative. Place the perch in your dissecting pan.
2. Label the anterior, posterior, dorsal, and ventral sides of the perch on Figure 1.
3. Use your tape measure to determine the total length, fork length, and girth of your fish. Record this in Table 1.
4. Locate the 3 body regions of the perch --- head, trunk, and tail. Label these on Figure 1.
5. Open the perch's mouth and observe its bony jaws. Locate and label the upper jaw or maxilla and the lower jaw or mandible.
6. Feel the inside of the mouth for the teeth.
7. Locate the nostrils and label on Figure 1.
8. Locate and note the location of the eyes. Label on Figure 1.
9. Find the bony covering on each side of the fish's head called the operculum. The opercula cover & protect the gills. Label these on Figure 1.
10. Use a probe to lift the operculum and observe the gills. Note their color on Figure 1 next to the label for the gills.
11. Use a scissors to cut away one operculum to view the gills. Find the gill slits or spaces between the gills.
12. Use your scalpel to carefully cut out one gill. Find the cartilage support called the gill arch and the soft gill filaments that make up each gill. Label these parts of the gill in Figure 2.
13. Observe the different fins on the perch. Locate the pectoral, dorsal, pelvic, anal, and caudal fins. Label these on Figure 1. (Note caudal fins are easy to remember because they could be used to “cuddle” or give someone a hug!)
14. Find the lateral line on the side of your perch. Label this line on Figure 1.

Due by Monday April 18th!
Worth 15 lab points (plus 5 cleanup points)

Figure 1

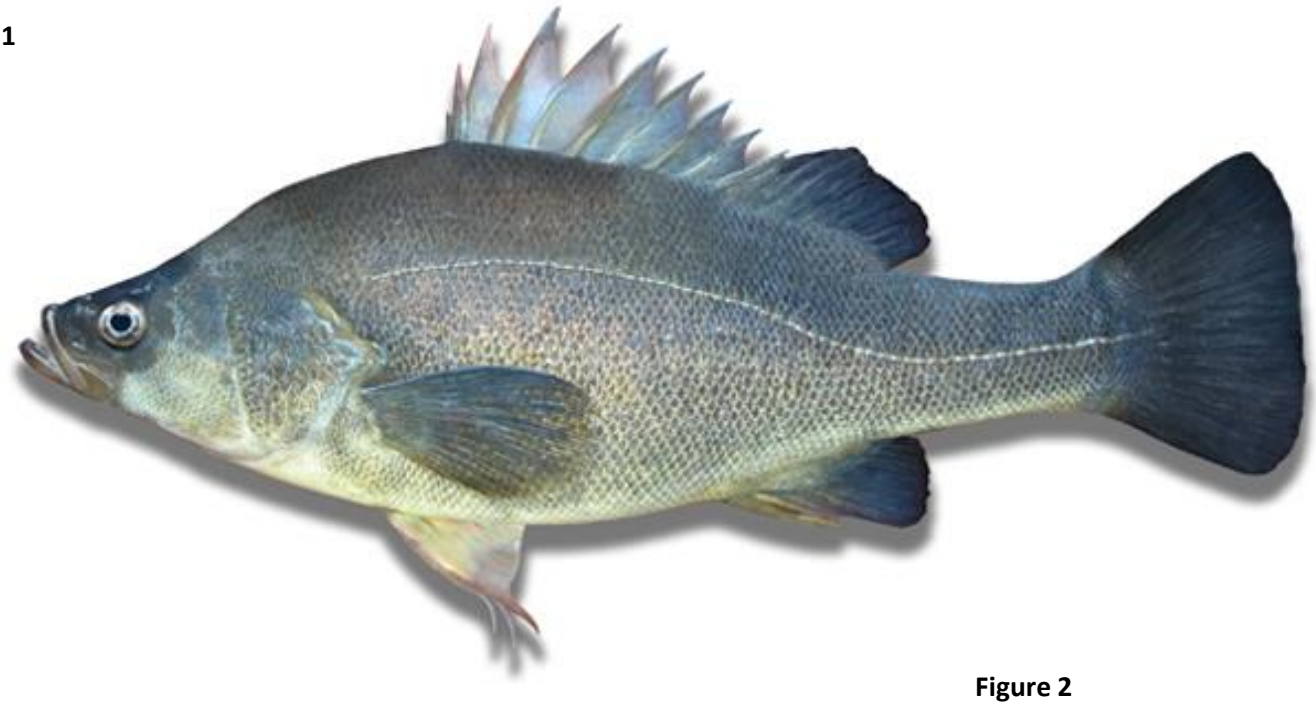
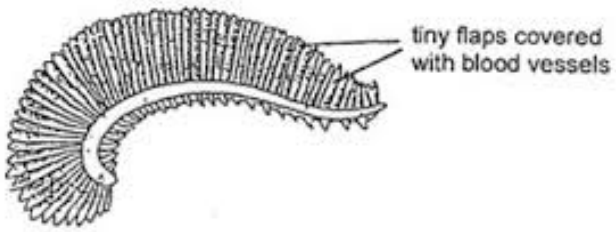


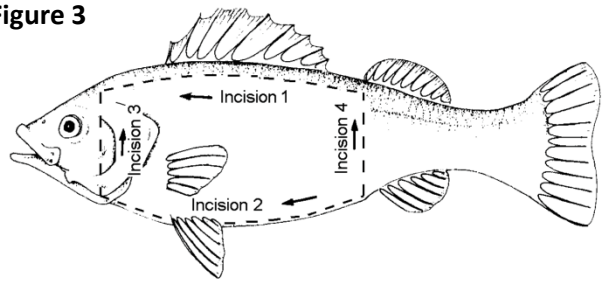
Figure 2



Internal Anatomy

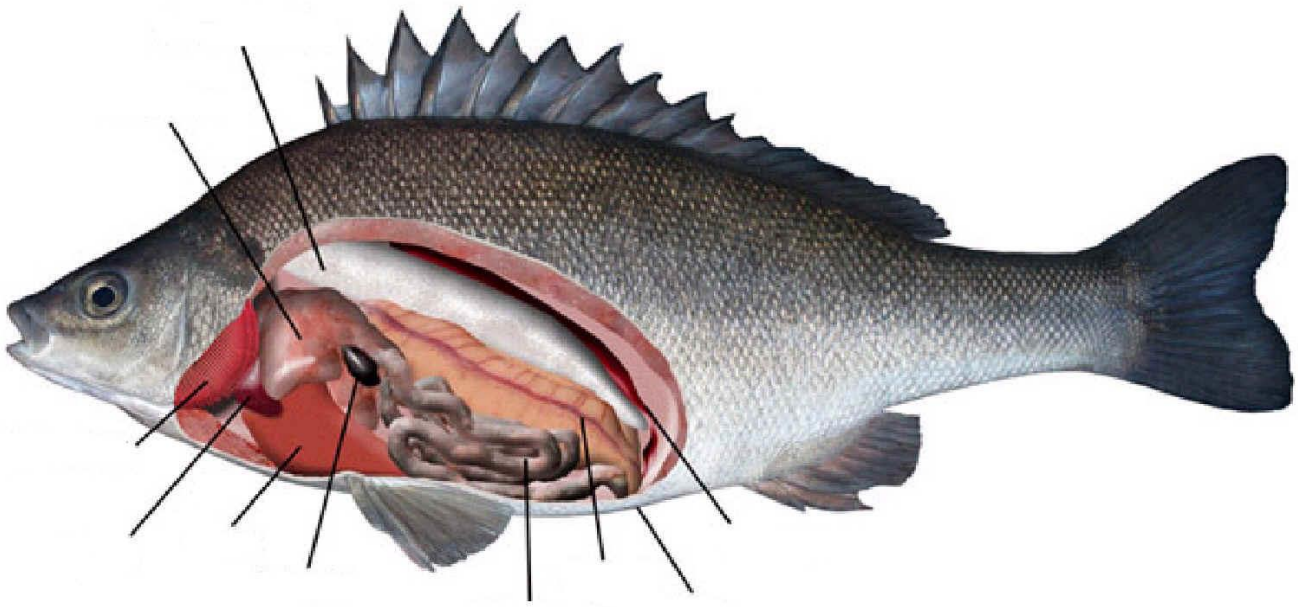
1. Use dissecting pins to secure the fish to the dissecting pan. Use scissors to make the cuts through skin and muscle shown in Figure 3.
2. After making the cuts, carefully lift off the flap of skin and muscle to expose the internal organs in the body cavity.
3. Locate the cream colored liver in the front of the body cavity. Also locate the gall bladder between the lobes of the liver. Label these on Figure 4.
4. Remove the gall bladder & liver to observe the short esophagus attached to the stomach. Label the stomach on Figure 4.

Figure 3



5. At the posterior end of the stomach are the coiled intestines. Locate and then label these on Figure 4.
6. Below the operculum, are the bony gill rakers. Locate these and label them on Figure 4.
7. In front of the liver & behind the gill rakers is the pericardial cavity containing the heart. The heart of a fish only has 2 chambers --- an atrium & and a ventricle. Locate the heart & label it on Figure 4.
8. In the upper part of the body below the lateral line is the swim bladder. This sac has a thin wall and gives the fish buoyancy. Label the swim bladder on Figure 4.
9. Find the 2 long, dark kidneys in the posterior end of the perch. These filter wastes from the blood. Label the kidneys in Figure 4.

Figure 3



Analysis Questions:

1. How many gills are located on each side of the perch? What covering protects them?

2. What might be a reason the gills of a fish need a protective covering?

3. Explain how gas exchange occurs at the gills. (You may need to do some quick research to find this out!)

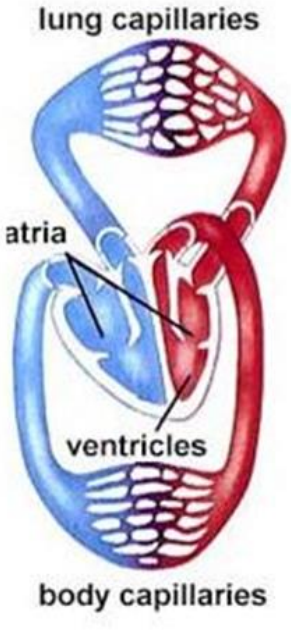
4. What structure in human anatomy are gills similar to? How are they similar? How are they different?

5. What might be an advantage to having gills like perch rather than lungs like humans or other terrestrial animals?

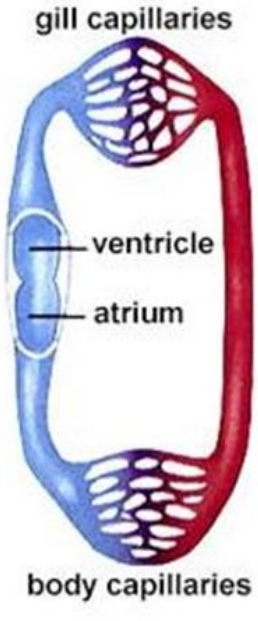
6. How many chambers do perch hearts have? How many chambers do human's hearts have?

7. Below is a diagram of the circulatory systems in fish (1) and mammals/humans (2). Compare and contrast these two systems. How are their structures similar? Different? How are their functions similar? Different? (*Note that capillaries are itty bitty blood vessels [one cell thick walls!] that allow for nutrients, gases, and waste products to move in and out of the blood stream).

Mammals



Fish



8. Based on your observations of the circulatory and respiratory systems in fish and mammals/humans, which organism do you think is more "complex"? Explain your answer.