The Perch

Purpose: To investigate the internal and external anatomy of the perch.

Materials: Perch, dissecting tray, pins, scalpel, scissors, tweezers, apron, goggles.

Procedure:

Part A--External Anatomy

1. One person needs to retrieve your fish and wash it off.
2. Put the fish in the tray along with the instruments needed.
3. Members of Class Osteichthyes are the fish that are common in our lakes, streams, and oceans. These animals possess bony skeletons and their gills are covered with flaps called opercula(singular = operculum).

   Locate the **operculum** on your dissection specimen.
4. Open the mouth of the preserved fish.

   Question #1--Does the mouth have teeth?

   Look for the **gill arches** and the **gill rakers** in the back of the mouth.

   Question #2--Where does the water go which is taken in through the mouth?

   Question #3--Why does the fish take in water if it does not swallow it?

   Remove the operculum from one side of the fish. Observe the pairs of gills.

5. Study the fins of the preserved specimen. Observe the paired **pectoral** and **pelvic fins**. Also observe the two **dorsal fins** (one spiny and one soft), the **caudal fin**, and **anal fin**.

Question #4--Which fins show the greatest flexibility when you move them at the base?

6. Locate the **nostrils**. Probe them to see where they open into.

Question #5--What is the function of the nostrils?

7. Note the **lateral line** on the sides of the fish.

Question #6--What is the function of the lateral line?

8. Observe the scales on the preserved specimen. Gently rub your finger over the side of the fish from anterior to posterior.

Question #7--How are the scales arranged?

Question #8--What might be a function of the scales and the way they are arranged?

Remove one scale carefully with your fingers or tweezers. **Read the article included with this lab about the scales.** Observe the scale under a binocular(dissection) microscope. **Draw the scale as it appears under the scope.(Drawing #1)**

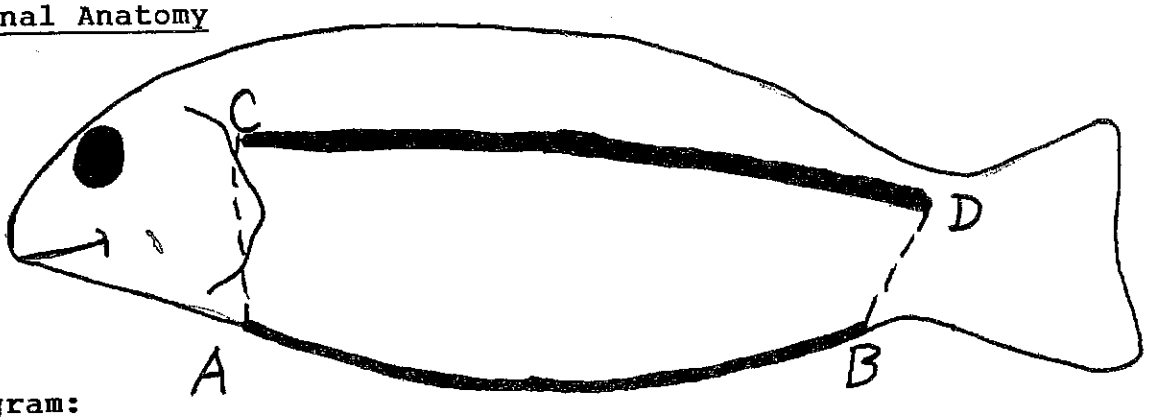
9. Examine the eyes of the fish. Remove and open the eye. Look for the lens, which is whitened in the preserved specimen.

Question #9--How would you describe the vision of fish?

10. Draw a lateral (side) view of the external anatomy of the fish. Label the following structures: **(Drawing #2)**

anal fin, **anal opening**, **anterior dorsal fin**, **caudal fin**, **eye**, **lateral line**, **mouth**, **nostril**, **operculum**, **pectoral fin**, **pelvic fin**, **posterior dorsal fin**, **scales**.

Part B--Internal Anatomy



Refer to Diagram:

1. Make an incision just anterior to the anal opening and continue forward to the base of the gills. (cut from B to A)

   From the anal opening, cut dorsally to the lateral line. (B to D)

   From the base of the mouth, cut dorsally to the lateral line. (A to C)

   Remove the flap of skin by cutting along the lateral line. (C to D)

2. With the internal anatomy exposed, look for the **heart**. It lies anteriorly just below the mouth. Remove the heart with the scalpel and examine it. Notice the two chambers. The darker, softer portion is the auricle. The more muscular part is the ventricle.

3. Locate the swollen **swim bladder** which resembles a balloon.

   Question #10--What is the function of the swim bladder?

   Lying just above the swim bladder is the **kidney**.

4. Cut the intestines free at the anus. Lift up the digestive tract and cut it loose at the back of the mouth. Locate the **stomach**, **liver**, **gall bladder**, **pyloric caeca** (fingerlike projections where the stomach and intestine join), **intestine**, **urinary bladder**, and **gonad**.

Question #11--What is the function of the pyloric caeca?

Question #12--What is the gonad and what is its function?

Be certain you are familiar with the location and the function of all structures in **bold print**.

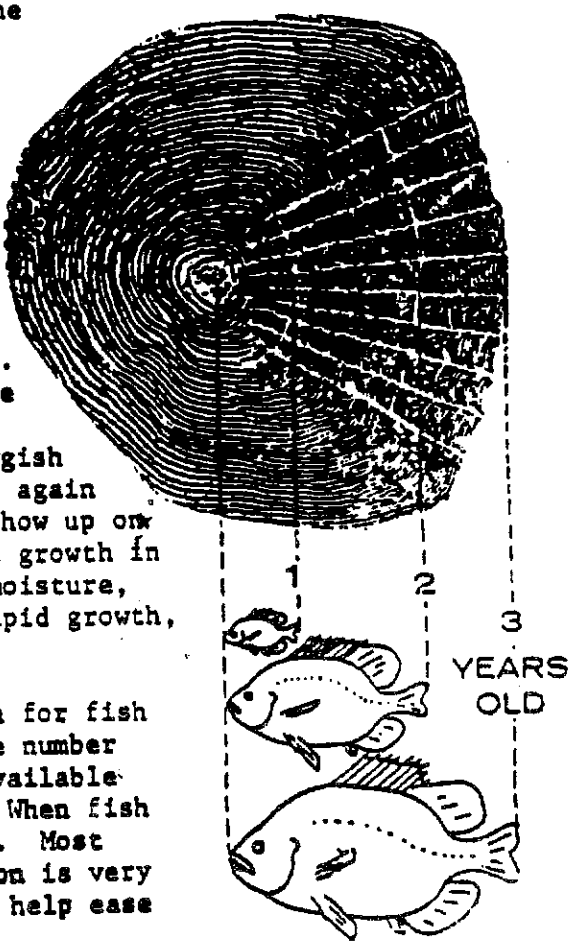
Note:

There are no data tables or graphs for this lab, but there are two drawings (fish scale and external anatomy) that should be included in your write-up.

FISH SCALES ARE LIKE TREE RINGS

Do you know that a fish scale grows in proportion to the length of the fish? The annual marks on the scales, called annuli, are similiar to growth rings on trees. They tell you the fish's age when caught, its growth rate and what size it was in previous years.

Suppose you catch a 6-inch bluegill. A scale tells you it's three years old. The first annuli would be 25% of the length from the center to the edge of the scale, or .25x6=1.5 inches long the first year. The second annuli is 70% of the length which means the fish was 4.2 inches long by the second year. Notice that the bluegill's growth during the second year is much greater during the growth during the first and third years. This means growth conditions were more favorable then.

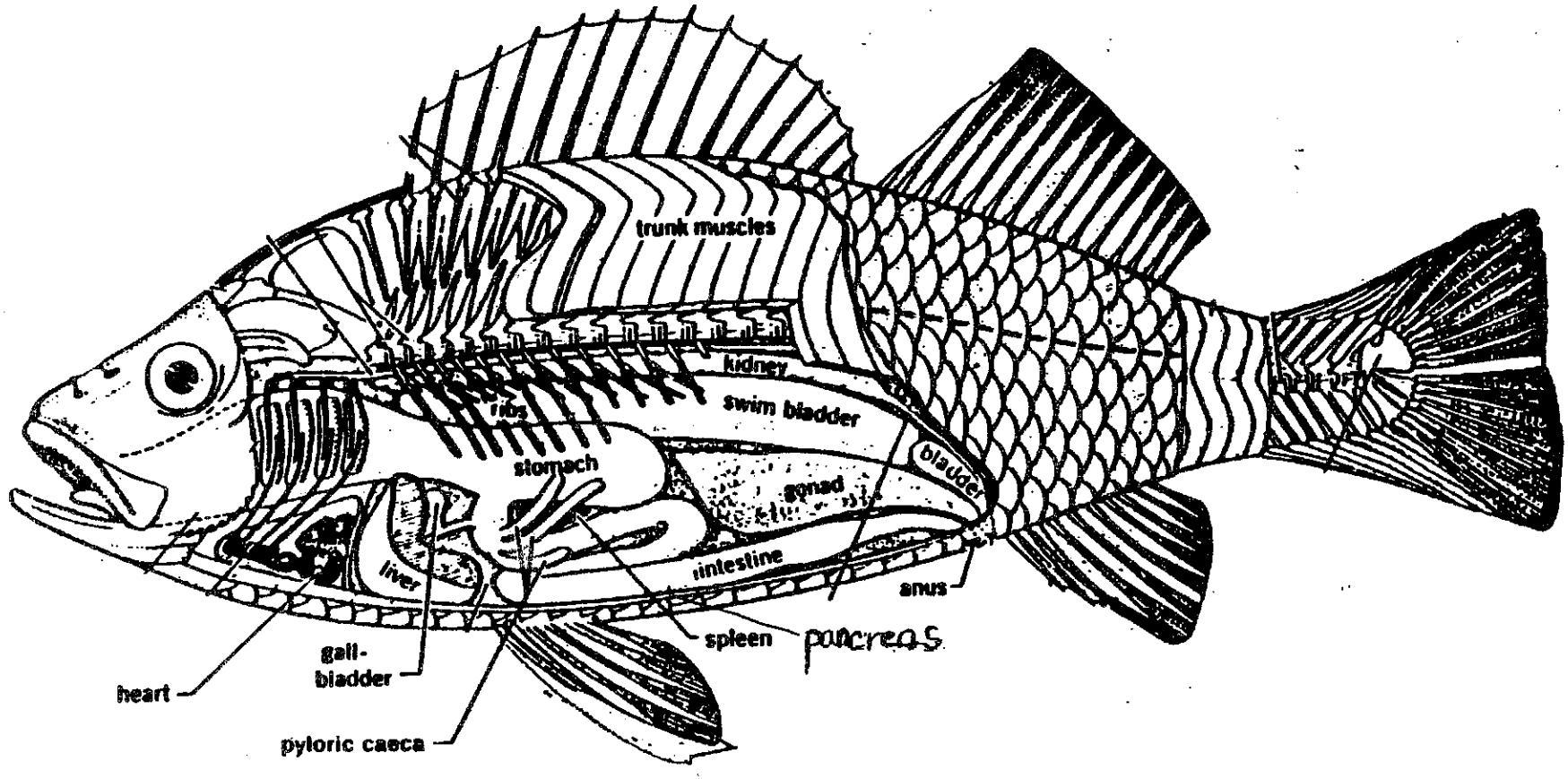


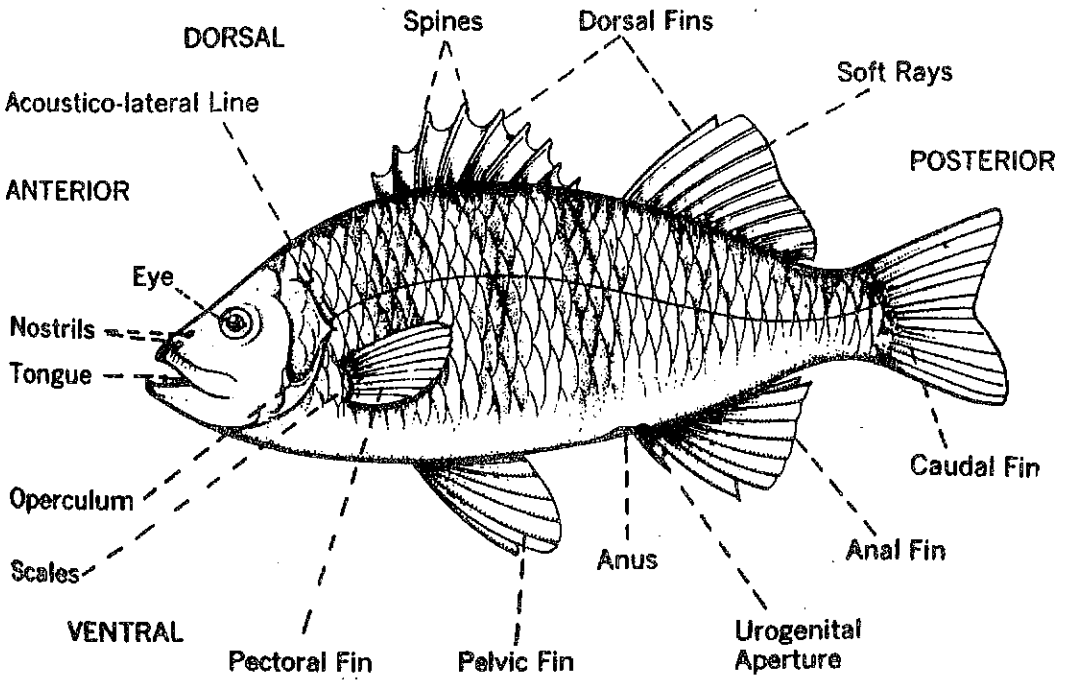
Variation in growth among fish populations is dependent upon several factors. Fish are cold-blooded - their body temperature is only slightly higher than the surrounding water. When the water is cold, fish are sluggish and almost stop growing. When water warms up again they grow faster. This is why annual marks show up on the scales. The process is comparable to tree growth in dry and wet years - when there isn't enough moisture, trees grow slowly. A wet year then causes rapid growth, which creates a wider annual ring.

Although it can vary, the growing season for fish is about five months per year. This plus the number of fish in the lake and the amount of food available for each fish determine the rate of growth. When fish are overcrowded, growth is usually very slow. Most aren't even keepers. In such cases, predation is very important. Predators consume small panfish, help ease overcrowding and encourage faster growth.

Another factor related to growth is the water fertility. Excessive fertility causes overabundant vegetation which limits predation on small forage fish and causes overcrowding.

Yellow perch: general structure. Operculum, pectoral fin, most of the skin and scales, and some trunk and tail muscles have been removed.





External Anatomy of the Perch: *Perca flavescens*.