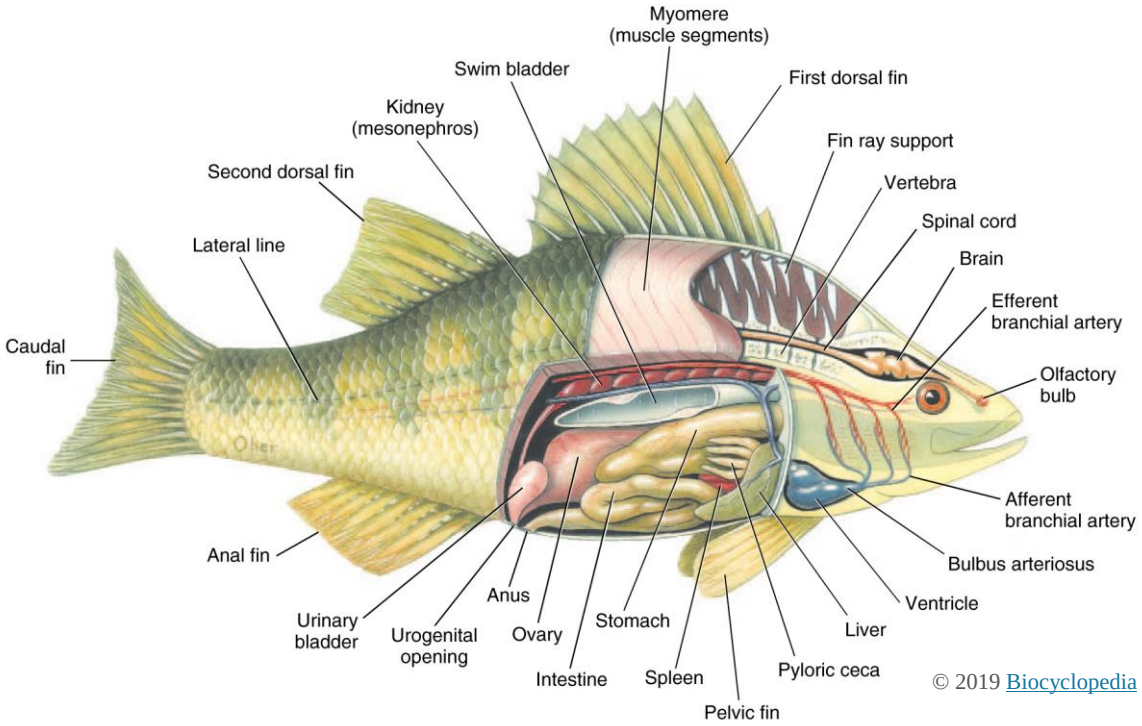
Dissection of a teleost



External anatomy

Identify the paired (**pectoral** and **pelvic**) fins.
Identify the **dorsal**, **anal**, and **caudal** fins.
Questions:

- Does your specimen have an **adipose fin**?

- If no, find a species with an adipose fin and examine it. Describe the difference between the adipose fin and a dorsal fin.

Find the **nostrils**, **mouth**, **tongue**, **opercular bone**, **anus**, and **lateral line.**
Open your fish's mouth. How wide does it open compared to its body? What direction does it open? Examine the **teeth** of your specimen (they could be located in the mouth or throat).

Fish Mouth Types

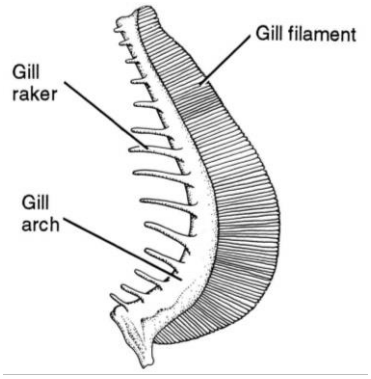
terminal superior inferior protrusible

Questions:

- What does the morphology of the mouth tell you about where your fish species likely feeds and what it eats?

- What do the teeth tell you about their prey?

Cut off one of the **opercular bones** (gill cover) and study the morphology of the gills. Cut off one **gill arch** and study the **gill rakers,** both how they look and where they are placed.
Question:
Compare the gill rakers of a cyprinid and a percid. How are they different?



Using boiling water remove the skin from the **opercular bone.** Set aside to dry.

Internal anatomy

Open up the abdominal cavity by cutting up the abdomen, from one centimetre anterior to the anus all the way up past the pelvic fin. Remove the left part of the abdominal wall so that you fish looks like the illustration on page 1.

To be able to see where the different organs start and end it is necessary to take out the **stomach** and **intestine**. You can do this by first separating the intestines from the other organs using your fingers and then by cutting the intestines off at the throat and then at the anus.
Question:

- Open the stomach and intestines and examine the contents. Can you clearly distinguish anything that your fish ate? If yes, what?

In the anterior part of the abdominal cavity, you will find the **liver**. Attached to the liver you will find the gall bladder**,** which is small and filled with yellow(ish) bile.
Question:

- Study the liver, do you see any cysts or parasites? Did you find parasites on the gills or in the intestines?

Fish have internal paired sexual organs that can take up a huge proportion of the body cavity during mating season.
Question:

- Can you clearly identify the gonads (**testes** or **ovaries**)? Is your fish male or female? Find a group with the opposite sex and compare.

Once you have removed the intestines and the gonads you will be able to find the dorsally placed **swim bladder**. The swim bladder is used to regulate depth and the structure can differ between different species. Some species such as pike and herring have a connection between the swim bladder and the oesophagus; this can be used to quickly control the amount of gas in the bladder. In fish species lacking this connection, an organ positioned on the dorsal side of the swim bladder controls the amount of gas in the bladder.

If you carefully remove the swim bladder you will see two **kidneys** dorsally placed along the spinal column. The kidneys are thus outside the abdominal cavity in fishes. Two ureters merge into a single tube in the posterior part of the kidney and discharge into the urinary bladder.

The heart is anterior to the membrane that separates the abdominal cavity from the pericardial cavity. Identify the **heart**.

Return to your dry(er) opercular bone. Using a stereomicroscope examine the opercular bone. You can age a fish by examining the growth lines, each white line is winter (where growth is slow), the more transparent sections are warm seasons when the fish is growing quickly.
Question:

- How old is your fish? (see below for an example)