Salmon Anatomy

Stillaguamish Tribe of Indians

Funds provided by the EPA
Salmon Anatomy

- SHAPE
- PROPULSION
- FINS
- BREATHING
- EATING
- SMELLING
Shape, Propulsion and Fins

- A fish is designed to get around in water, so it is streamlined to allow it to slip easily through water (hydrodynamic).
- The fins act to steer the fish, the tail fin or caudal fin does the pushing (propulsion).
- When a fish wiggles, its whole body pushes against the water like a big fin, and this adds to its swimming efficiency.
External Anatomy - Fins

- **Dorsal fin** provides stability
- **Adipose fin** is removed on hatchery raised salmon, so we can tell the difference between hatchery and wild salmon
- **Caudal fin**, also called the tail fin is used to move the fish through the water.
- **Anal fin** provides stability
- **Pelvic fins** come in pairs, helps the fish aim itself, and keeps the fish balanced
- **Pectoral fins** come in pairs, helps the fish aim itself, and keeps the fish balanced
External Anatomy

- Salmon have well developed **sight**. They can see above, below, ahead and to the side at any time.
- **Nares** or the nose of a salmon provide a great sense of smell.
- **Lateral Line** detects vibrations in the water.
- **Slime** protects the salmon from bacteria and makes them slippery to avoid getting caught by predators.
- The **snout** is the forward most part of the salmon's head.
Breathing, Eating and Smelling

- Fish have **gills** instead of lungs. Blood flowing through the gills picks up oxygen from the water flowing past them.

- **Gill Rakers** (in the throat) filter plankton from seawater and hold them for swallowing. Foods like fishes are swallowed whole; note they lack chewing teeth.

- **Nostrils** or **nares** are especially well-developed and scientists believe salmon use their sense of smell to find their home stream.
Scientists use scales to determine the age of a salmon.

They are made of hard stuff like our fingernails.

They have approximately 8000 scales throughout their life, as the salmon grows so do their scales.

They protect the body like thousands of tiny shields over its skin.
Using Scales to Age a Fish!

- Each scale grows at its outer edge, it has rings like growth rings of a tree.
- A tree grows one ring per year, salmon scales form 10 to 20 rings per year.
- When the rings are far apart the salmon is eating well and growing fast (summer, when there is lots of food available).
- When the rings are close together or even touching, the salmon is growing slowly (winter, when there isn't much food available).
Internal Anatomy

- **Ovaries** or Egg Sacks (females), makes and holds eggs until they are ready for spawning
- Female Chinook salmon can hold from 3000 - 5000 eggs
- Testes and **Sperm Sacks** (males) makes and holds milt for fertilizing the eggs
Internal Anatomy

- **TOP:** Swim bladder can shrink or swell with generated body gases to change the buoyancy of the fish. Helps it move up and down in the water column.

- **MIDDLE:** Heart pumps the blood, just like with humans.

- **BOTTOM:** Kidneys, remove waste from the blood and produces urine. They are also critical in the smolting process (going from fresh to salt water).
Internal Anatomy

- The salmon brain is responsible for processing the five senses (sight, touch, smell, taste, and sound (vibration))
- Because of their small brain, salmon rely heavily on instinct for decision making and survival
Internal Anatomy

- **Digestive System**

  - **TOP:** The **Pyloric Caeca** (pie-lor-ick see-ka) absorbs nutrients into the blood. It is similar to the small intestine in people.

  - **MIDDLE:** The **spleen** is a storehouse of blood for emergencies and recycles worn-out red blood cells.

  - **BOTTOM:** The **stomach** breaks down food with digestive juices.