UNIT 4B. EXTERNAL CHARACTERISTICS OF SALMONIDS

TIME	LEVEL
45-60 minutes	Introductory

BENCHMARKS	
Common Core State Standards–ELA/Literacy	CCRA.SL.2
OR Social Sciences Academic Content Standards	HS.63

OBJECTIVES:

Students will know and understand:

- the external characteristics of salmonids in terms of form and function.

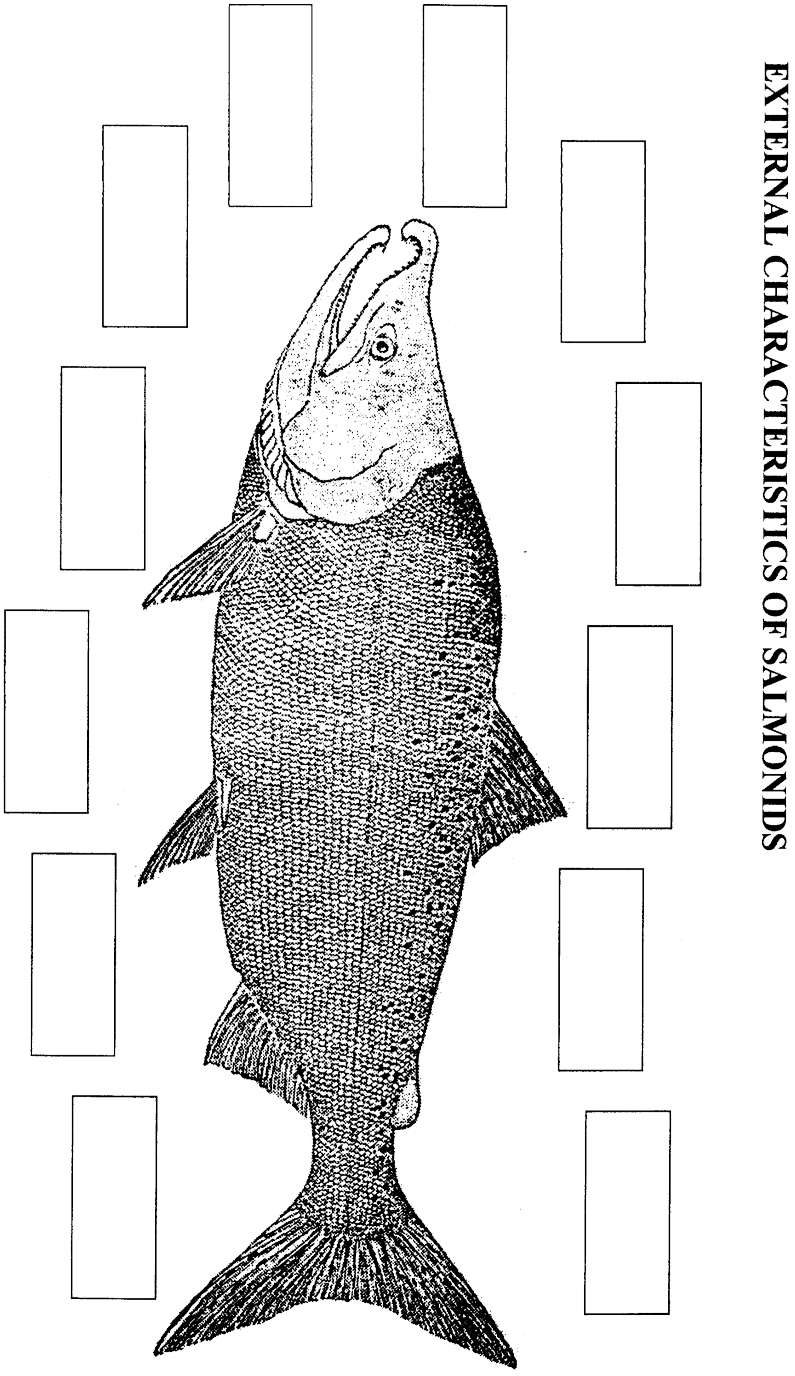
MATERIALS:

- STUDENT HANDOUT 4B: *External Characteristics of Salmonids*
- TEACHER PAGE 4B: *External Characteristics of Salmonids*

PROCEDURE:

1. Make an overhead transparency of STUDENT HANDOUT 4B: *External Characteristics of Salmonids* and use the TEACHER PAGE 4B as a guide. Have the students fill in the blanks with you as you facilitate a discussion about the external characteristics of salmonids. Challenge them to hypothesize why a salmon has developed into their design and the function of each of their external parts. Have students also define and explain the characteristics of the salmon like the fin structure, body shape, mucus covering, etc.

STUDENT HANDOUT 4B



EXTERNAL CHARACTERISTICS OF SALMONIDS

STUDENT HANDOUT 4B

FINS

DORSAL & ANAL

PECTORAL & PELVIC FINS

CAUDAL OR TAIL FINS

ADIPOSE FIN

BODY SHAPE

MUCOUS COVERING

STUDENT HANDOUT 4B

EYES

NOSTRILS

HEARING

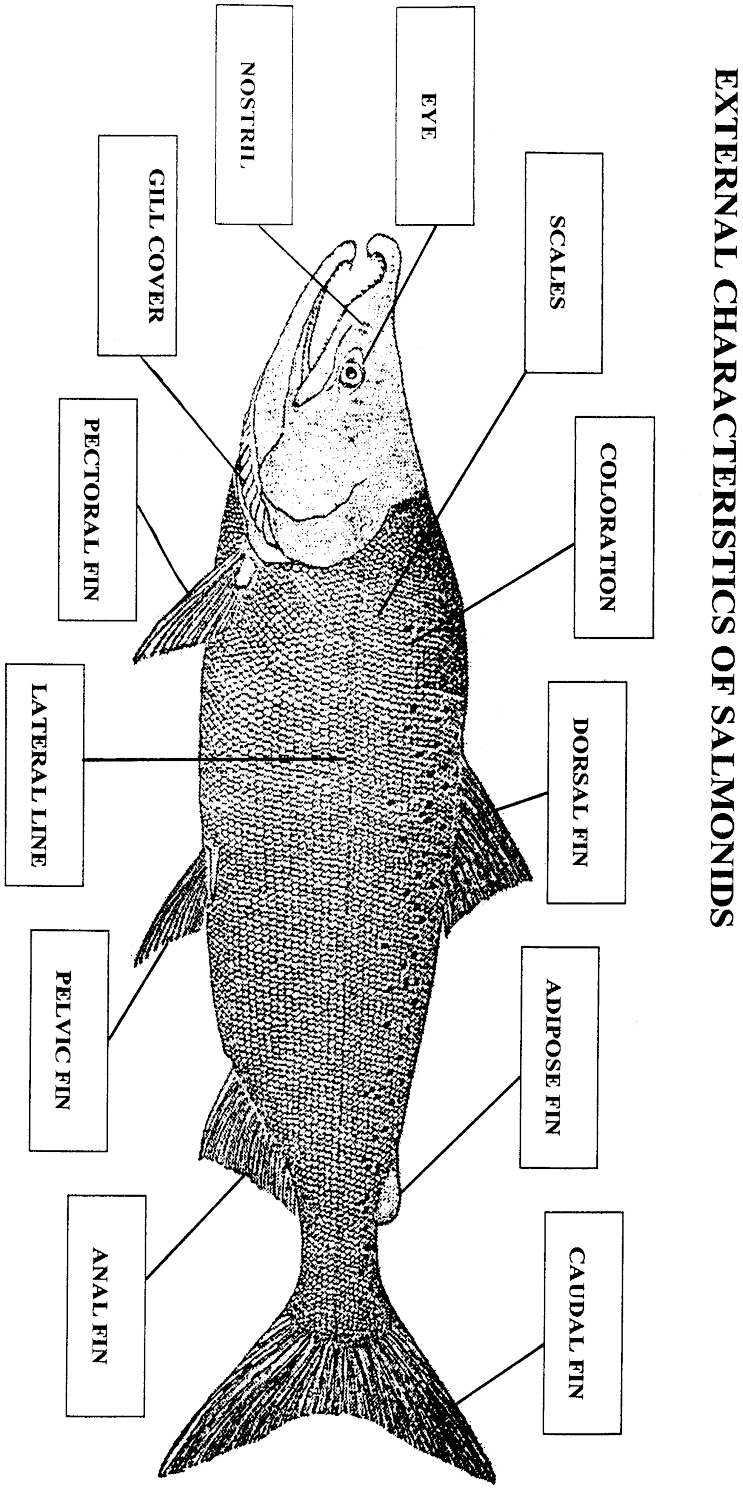
GILLS

COLORATION

LATERAL LINE

SCALES

Answers to STUDENT HANDOUT 4B



Answers to STUDENT HANDOUT 4B

FINS help a fish swim. Salmonid fins are supported by branched, flexible rays rather than stiff sharp spines. Thus, they are placed in the "soft rayed" family of fish.

DORSAL & ANAL FINS help keep the fish balanced so its body won't tip from side to side. One function of the anal fin may be to sense the size and texture of the gravel that is best suited for spawning

PECTORAL & PELVIC FINS are found on each side of the body, like arms and legs in animals. These fins are used for turning, backing up and stopping, in addition to balancing.

CAUDAL OR TAIL FINS sweep from side to side and push the fish forward.

ADIPOSE FIN is small and fleshy and has no apparent use.

BODY SHAPE: The shape of a salmonid fish is highly efficient and streamlined for movement and stability in swift water. Salmon can move at an estimated speed of 14 mph and have been observed to jump to a height of 10 feet.

MUCOUS COVERING: A mucous coating covers the skin of the fish and protects it from fungal and bacterial attack. The slippery texture of the mucous also allows the fish to swim more easily through the water. To prevent damage to its mucous protection, it is important to wet your hands before handling live fish.

EYES: A fish has eyes that can see in all directions. Each eye works by itself, so the fish can see to the front and back at the same time. Eyelids and tear glands are not needed. Water keeps the eyes wet and clean. It is important to note that most fish are nearsighted, using other senses to detect food at a distance then moving closer to visually identify it. Their eyes are large and pupils do not contract in response to light. Consequently, they are more likely to remain in shaded areas.

NOSTRILS: A fish uses its nostrils for smelling, but not for breathing. Salmon have an extremely sensitive sense of smell. They return to the spawning area by following the faint scent of the stream in which they were reared.

HEARING: Although the salmonid lacks external ear openings, the inner ear and swim bladder sense can detect sounds in the water.

GILLS: Just like people, fish must breathe oxygen in order to live. While we get oxygen from breathing the air around us, fish get the oxygen they need from the water, which flows through their mouths and passes by their gills. Gills are found under a flap just behind the head. They have many folds and pieces of thin skin, which take oxygen from the water.

Answers to STUDENT HANDOUT 4B

COLORATION: The dorsal or top surface of salmonids is dark colored and the ventral or bottom surface is a silvery white. A predator viewing the fish above sees a dark back, which blends in with the color of deep water or stream bottom. If viewed from below, the white belly blends with the lighter color of the water surface.

LATERAL LINE: Most fish have a line running along each side of their body. The lateral line has a series of pores that detect low frequency vibrations and pressure changes near the fish's body.

SCALES: The bodies of most fish are usually covered with thin overlapping scales. Just like the cross section of a tree trunk, the oval scales of the salmon show annual growth rings. And just like a tree, annual rings can be used to learn the age. During the summer or other times when growing conditions are good, the fish grows quickly and the rings are far apart. In the winter when living conditions are not as good, the fish grows slowly so the rings are closer together.