

What Are Fish, Amphibians, and Reptiles?

Chapter 2 Lesson 3
Part 1

ByDesign Science, Level 5
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Characteristics of Vertebrates



- ♦ Vertebrates have a spinal column, or backbone, as part of the skeletal system.
- ♦ The spinal column is composed of bone or cartilage.
- ♦ The spinal column is both strong and flexible.

Characteristics of Vertebrates

- ◆ Vertebrates belong to the phylum Chordata.
- ◆ This phylum included fish, amphibians, reptiles, birds, and mammals.
- ◆ These animals are further classified by other characters.
- ◆ One of these characteristics is thermoregulation.



Characteristics of Vertebrates

- ♦ Thermoregulation describes how an animal regulates and maintains body temperature.



- ♦ Endotherms are animals that produce body heat internally.
- ♦ Birds and mammals are described as endothermic.



- ♦ Ectotherms are animals that depend on outside sources for heat.
- ♦ Most fish, amphibians, and reptiles are ectothermic.

Characteristics of Vertebrates



- ◆ You can classify an animal based on whether it keeps its body temperature constant almost all the time.
- ◆ Animals that maintain a constant body temperature almost all the time are called **homeotherms**.
- ◆ These are animals that do not tolerate a big swing in body temperature.
- ◆ Most birds and animals are homoeothermic.
- ◆ There are few species of reptiles and fish that are classified as homeotherms.

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Mammals	5,500	Endotherm	Hair, fur, mammary glands	Platypus, kangaroo, dog, bear, human

Fish



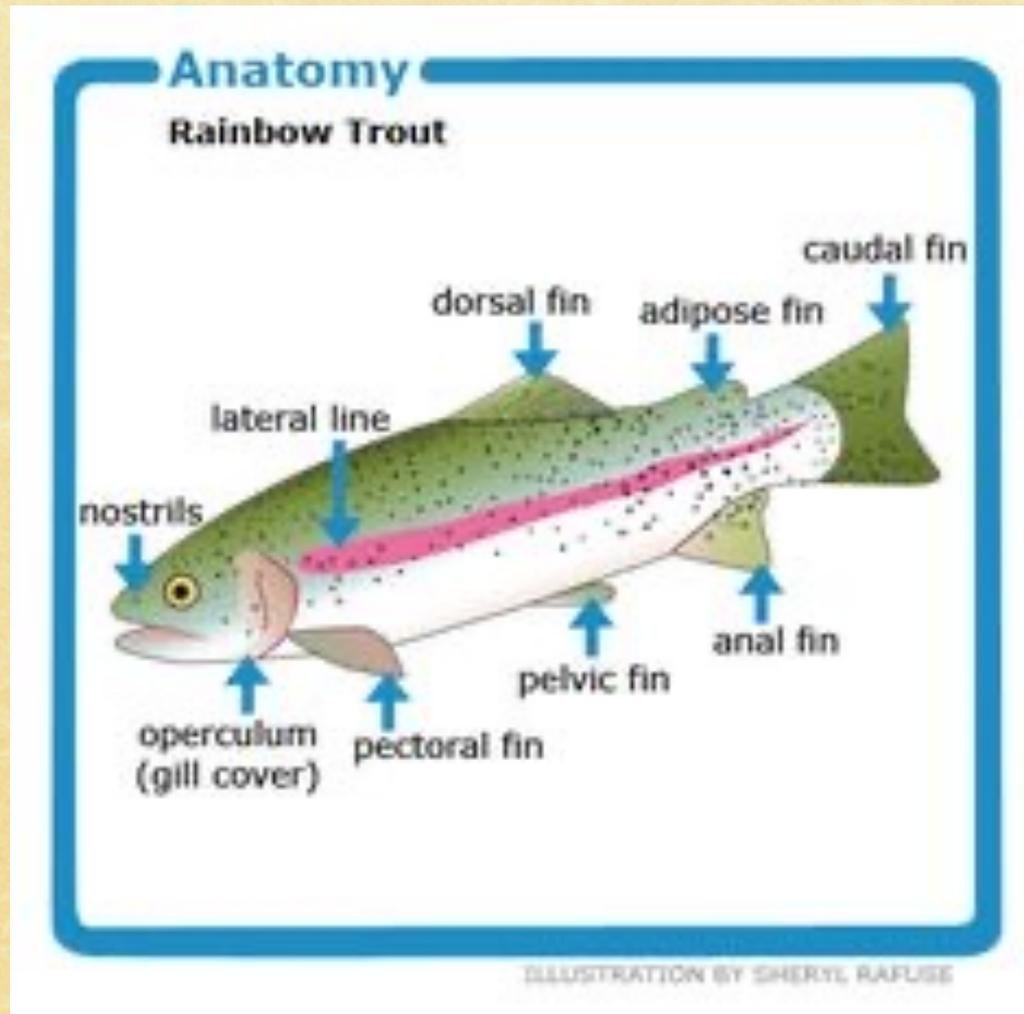
- ◆ God designed fish with an incredible variety in body structure.
- ◆ Scientists classify fish into three categories.
 - ◆ *Bony Fish*: skeletons made of bone, such as salmon and trout
 - ◆ *Cartilaginous Fish*: skeletons made of cartilage, such as sharks and rays
 - ◆ *Jawless Fish*: lack a jaw, such as hagfish

Fish

- ◆ The following are some common characteristics of fish.
 - ◆ Lives in water
 - ◆ Uses gills to breathe
 - ◆ Moves with fins
 - ◆ Has a swim bladder (bony fish only)
 - ◆ Has a lateral line
 - ◆ Most species have scales
 - ◆ Is ectothermic



Fish



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<u>Lateral Line</u>	<ul style="list-style-type: none">• External organ that runs the length of a fish's body• Consists of a series of sensory cells• Used to gather information about the environment, such as water current and depth

Behaviors of Fish

- ◆ Many fish perform elaborate mating behaviors to find a secure a mate.
- ◆ The African electric fish contains an organ in its tail that emits a weak electrical field.
- ◆ Male and female fish use this organ to produce “sounds” before, during, and after mating.



Behaviors of Fish

- ◆ Other behaviors involve the care of the eggs and young fish.
- ◆ For example, a male sea catfish holds the eggs of its offspring in its mouth until they hatch.
- ◆ The male and female flathead catfish, build nests for their eggs in hollow logs or underwater caves.



- ◆ Once the eggs are deposited and fertilized, the male will chase away the female. Then he will guard the eggs and care for the young.

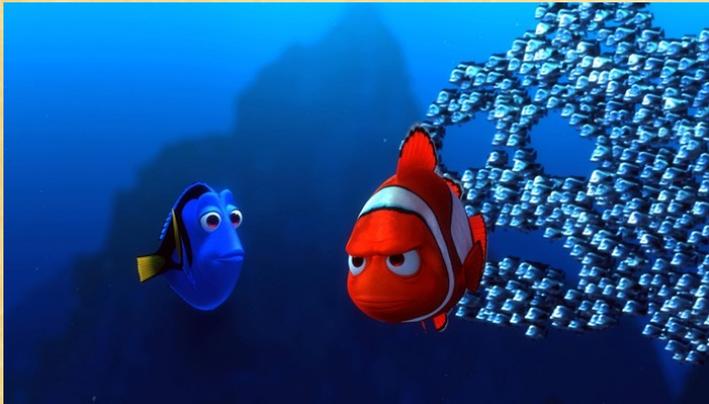
Behaviors of Fish



- ◆ Some fish, like the salmon, return to their place of birth in rivers and small streams.
- ◆ The fish must swim upstream the length of the river, against the flow of water, to lay eggs.
- ◆ Some fish are social, and live in groups. Usually, these are groups of females that are guarded by a male.

Behaviors of fFish

- ◆ Fish sometimes live in a large collection called a *school*.
- ◆ A school consists of many fish of the same species that move in unison throughout the ocean.



- ◆ The fish use their lateral lines to make quick simultaneous changes in direction to avoid predation and move toward food.

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Hydrothermal Vents	<ul style="list-style-type: none">• Deep sea structure	Eelpout fish