

# OBJECTIVE

- ❖ The student will be able to know about animal kingdom vertebrates
- ❖ The student will be able to understand the classification of animal
- ❖ The student will be able to give examples of each of the 7 main classes of Chordata

# The Animal Kingdom

## GENERAL CHARACTERISTICS:

- Most complex of all kingdoms
- Multicellular (made of many cells)
- They obtain food from *OUTSIDE SOURCES* (heterotrophic)
- They move from place to place to get food
- They swallow their food and they digest food inside the body.

Lack cell walls.

Presence of nervous and muscle tissue

Reproduce sexually

# Classification of Animals

Scientists have divided the **Animal Kingdom** into two main groups:

**vertebrates**  
(animals with a  
backbone)



and

**invertebrates**  
(animals without a  
backbone)

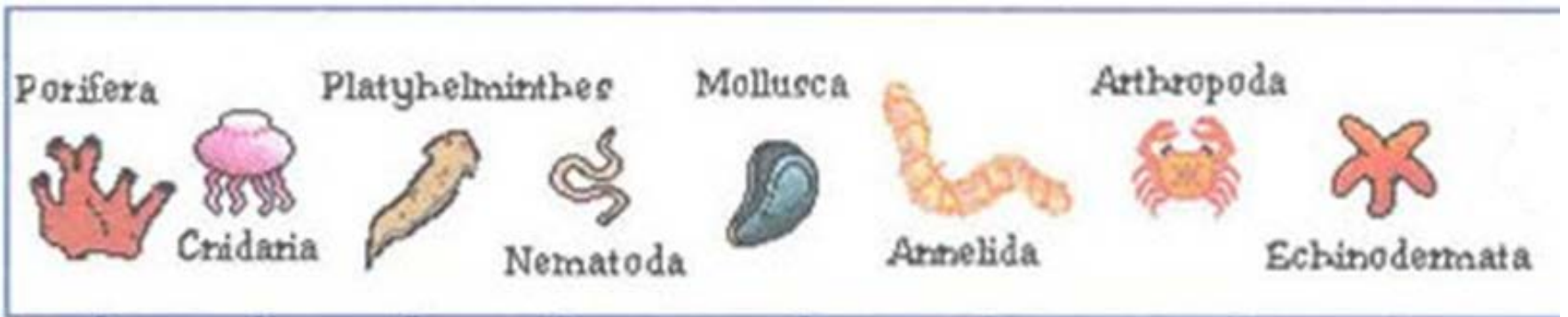


# Invertebrates



Animals without a backbone.

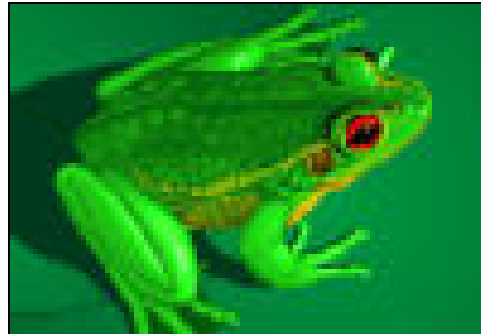
There are eight phylum of invertebrates



Members of Phylum **Chordata** have a backbone (they are vertebrates).

## PHYLUM CHORDATA

CLASS: ~~Fish~~, amphibians, reptiles, birds, mammals



Phylum Chordata can be subdivided into 7 classes:

AGNATHA  
CHONDRICHTHYES  
OSTEICHTHYES  
AMPHIBIA  
REPTILIA

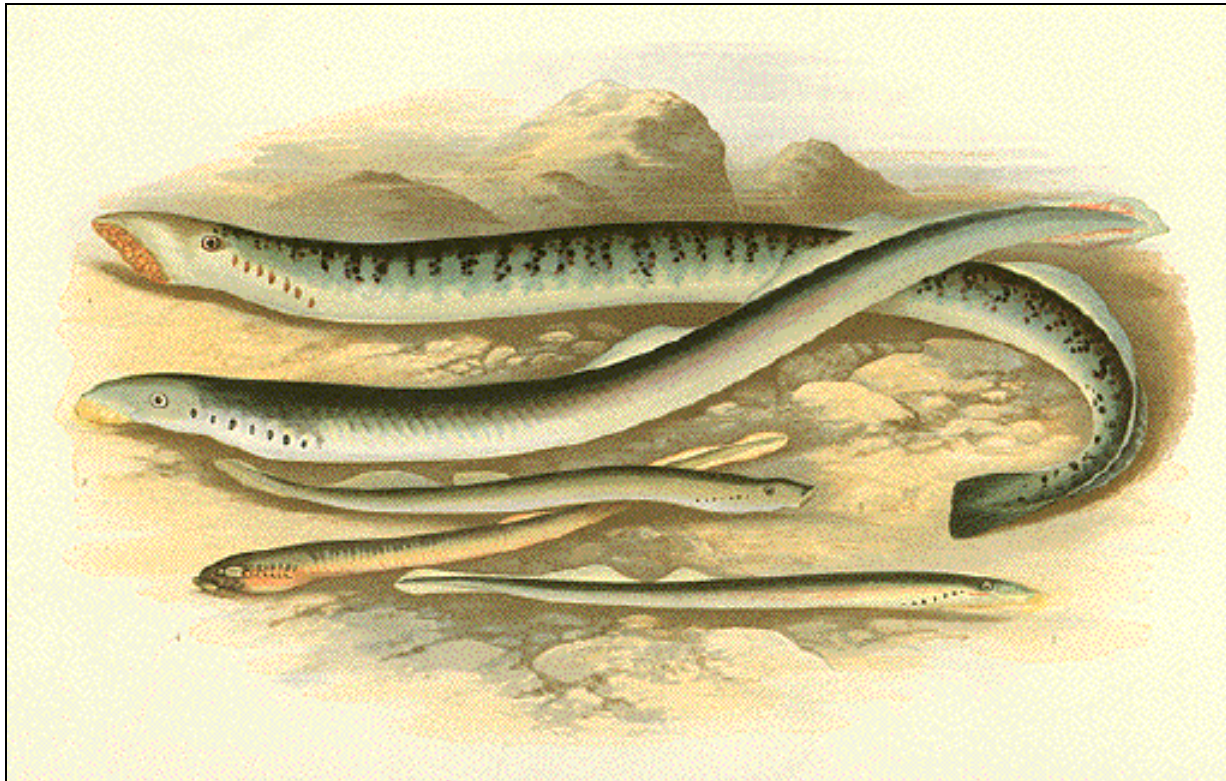
**Cold-blooded  
(ectothermic)**

AVES  
MAMMALIA

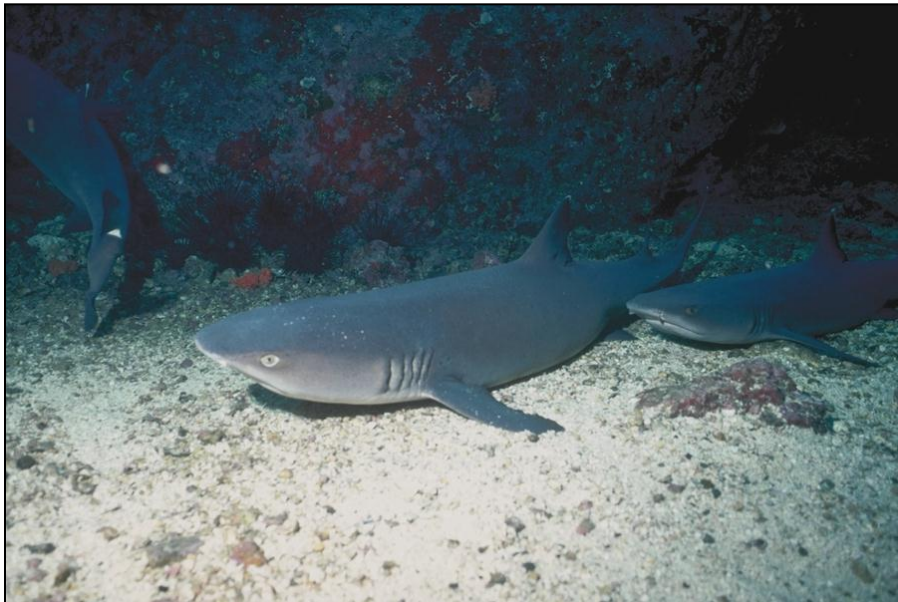
**Warm-blooded  
(endothermic)**



Class Agnatha includes jawless fish such as **lampreys**. They are **parasites** on other fish.



Class Chondrichthyes includes fish whose skeletons are made of **cartilage**, such as **sharks, rays, and skates**.  
The mouth is in a **ventral position**, and the gill slits open separately to the exterior.



Class Osteichthyes includes fish whose skeletons are  
made of bone.

Most abundant class of all vertebrates 49,000  
species

The mouth is terminal and gills are covered by a  
bony flap called **operculum.**

**Flattened scales. Eg., Tuna, Salmon**





# Fish - skeleton



# Amphibians

- Are cold-blooded (ectothermic).
- The word amphibian means two-life (**semi-aquatic**)
- Lead a “**double**” life with time spent on land and water
- They must return to the water to breed.



Lay jelly coated eggs.

Have a **smooth, moist skin**.

All amphibians begin their life in water with gills and tails. As they grow, they develop lungs and legs for their life on land.



Frog embryos develop into **tadpoles**,  
which undergo **metamorphosis** to  
become adults.

Modern amphibians include  
salamander, frogs and toads



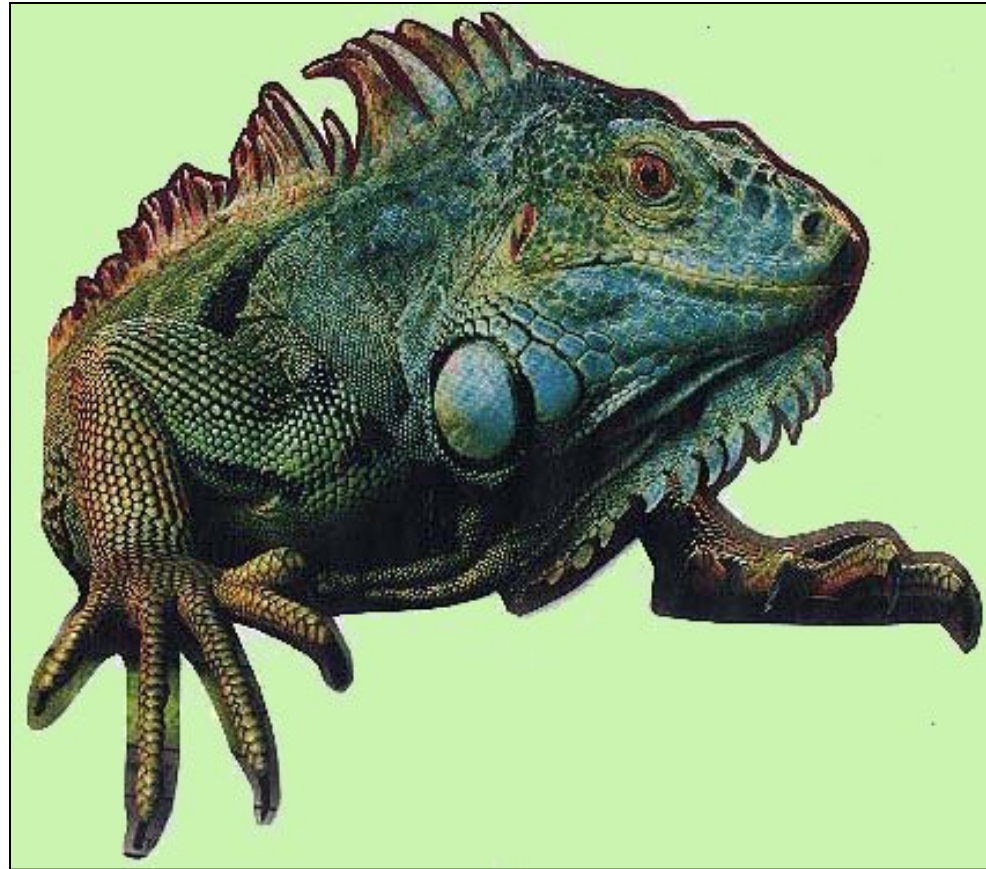


# Frog - skeleton





Class Reptiles includes snakes, lizards, turtles, crocodiles, alligators and iguanas. They have dry, scaly skin with horny scales.



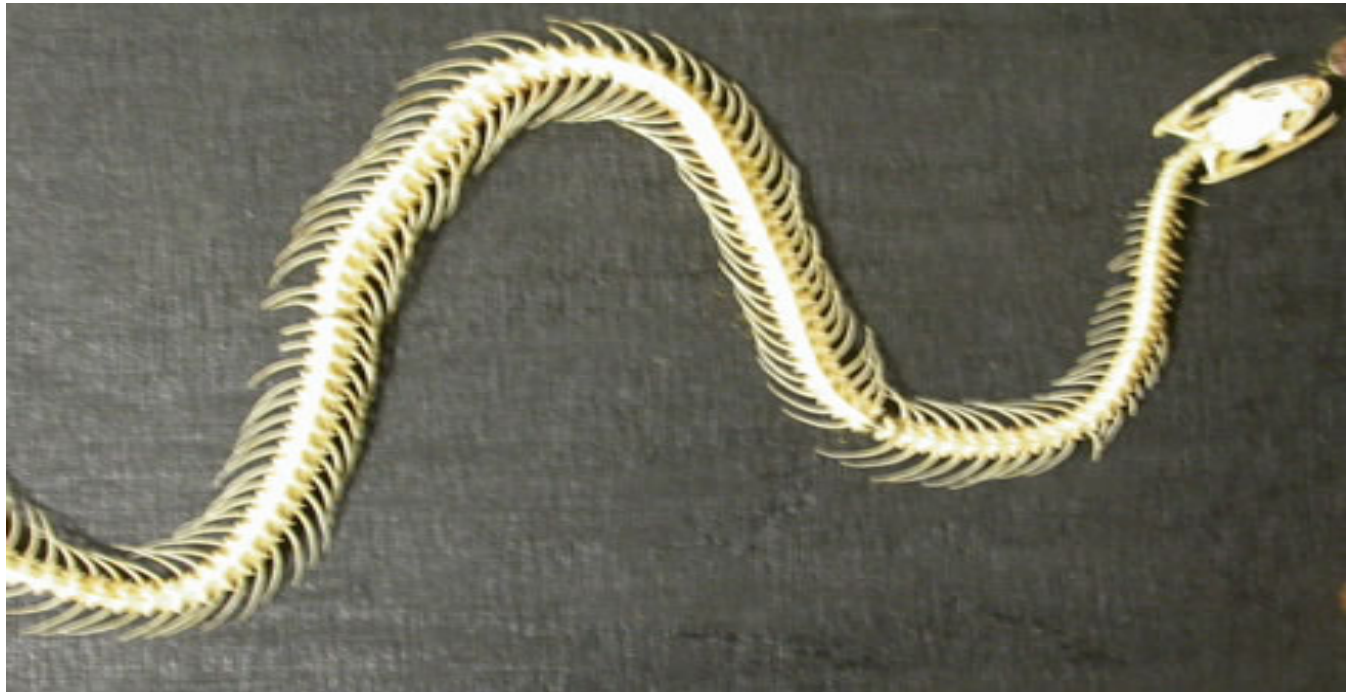
# Reptiles

- Are cold-blooded (ectothermic).
- Reptiles are **amniotes**
- Lay **leathery shelled** eggs.
- They lay their eggs on land.
- Kidneys are good at conserving water





# Snake - skeleton



# Lizard - skeleton



# Reptiles

- Reptiles (including birds) and mammals are amniotes. The major derived character of this class is the **amniotic egg**, inside of which the embryo develops within a protective, fluid-filled sac called **amnion**.

# AVES (Birds)

- Are warm-blooded (endothermic).
- Have **wings and feathers**.
- Light, hollow bones and large lungs allow for flight.
- They all **lay hard-shelled eggs**.
- **Scales** are on the lower parts of their legs.





- They excrete solid metabolic wastes (uric acid)
- Birds have a well developed nervous system and excellent vision and hearing
- Birds **communicate with simple calls** and complex songs, as well as with colour and behaviour



# AVES (Birds)

- Birds alone have feathers, which they **use in flight, in heat conservation**, and in **socially significant communication** displays.



# Bird - skeleton

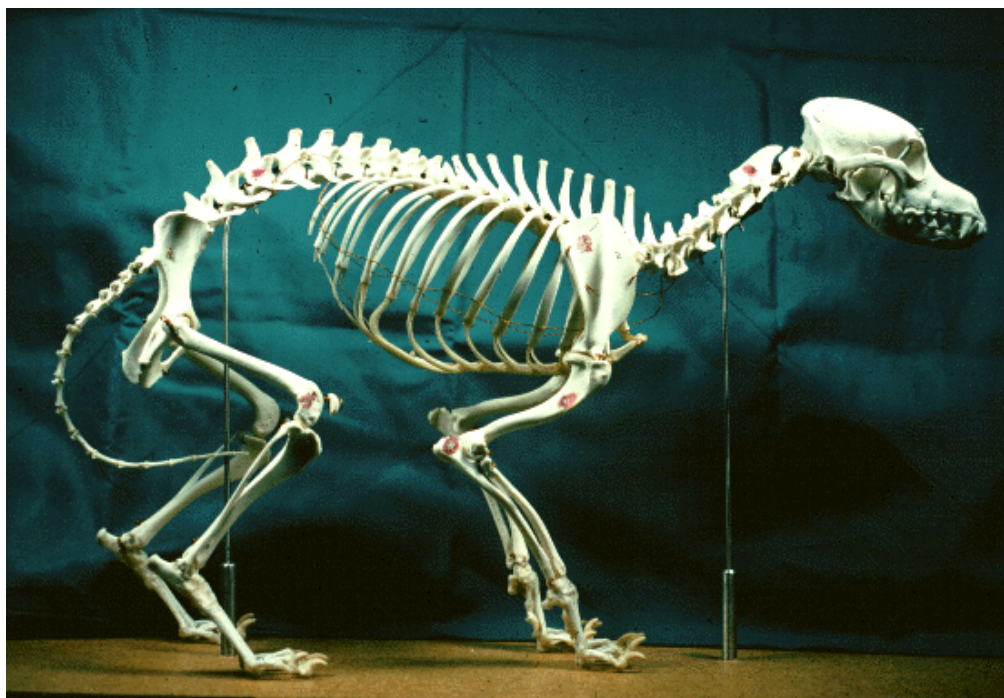


# Mammals

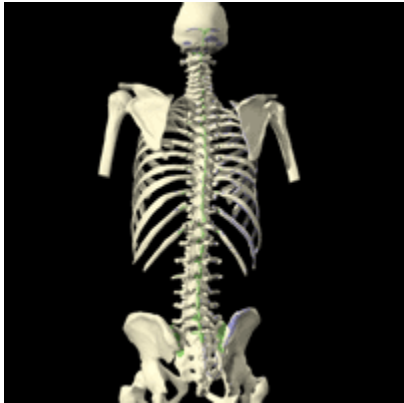
- Are warm-blooded (endothermic).
- Give birth to live young.
- Feed their babies with their own milk.
- Are more or less covered with hair.
- Differentiated teeth.
- Advanced nervous system



# Dog - skeleton



# Human skeleton



# What am I?

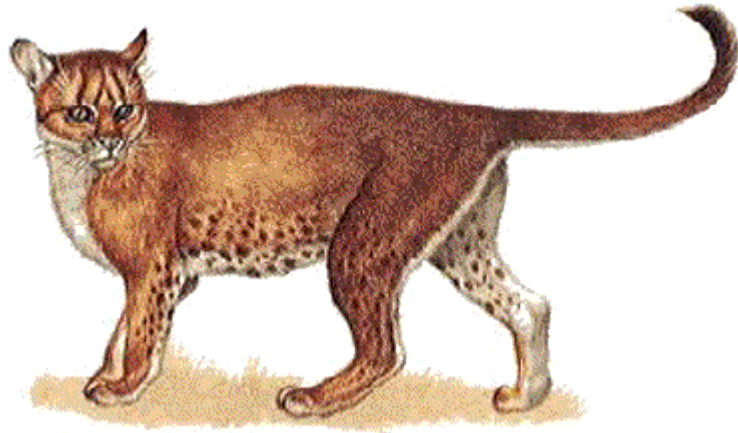
Mammal, Bird, Fish, Amphibian or Reptile?



I am a mammal. My body is warm and furry. I feed my babies on milk. I give birth to live young.

# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



I am a mammal. My body is covered in hair, or fur. I feed my babies on milk. I give birth to live young.



# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



I am an amphibian. My body is moist and smooth. I lay eggs. I like to live in or near to water.

# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



I am a bird. My body is warm and covered with feathers. I lay eggs which hatch out into chicks.



# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



Although I have wings, I am in fact a mammal.  
My body is covered in hair, not feathers. I  
feed my babies on milk. I do not lay eggs.

# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



I am a reptile. My body is covered in dry scales. I lay eggs.

# What am I?

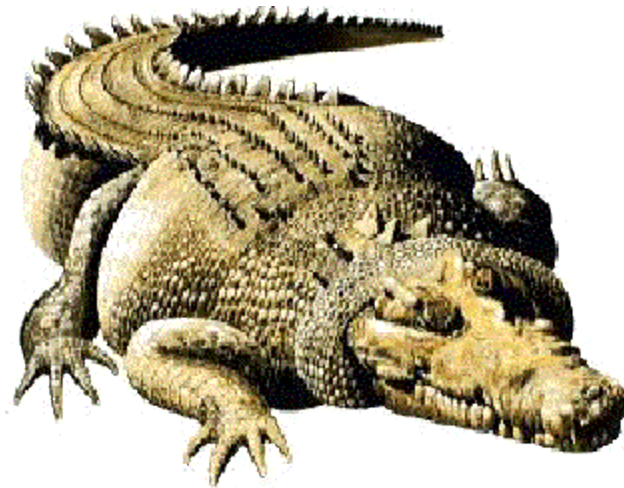
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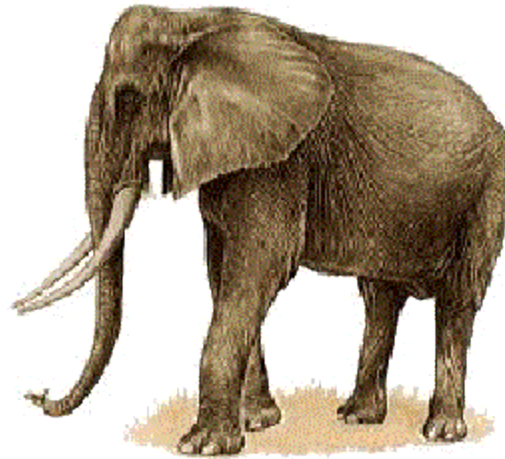
Mammal, Bird, Fish, Amphibian or Reptile?



I am a fish. My body is cold to touch and is covered in scales. I lay eggs. I use gills to breathe with under water.

# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



I am a mammal. If you stand very close to me, you will see I have hairs on my body. I feed my babies on milk. I do not lay eggs.

# What am I?

Mammal, Bird, Fish, Amphibian or Reptile?



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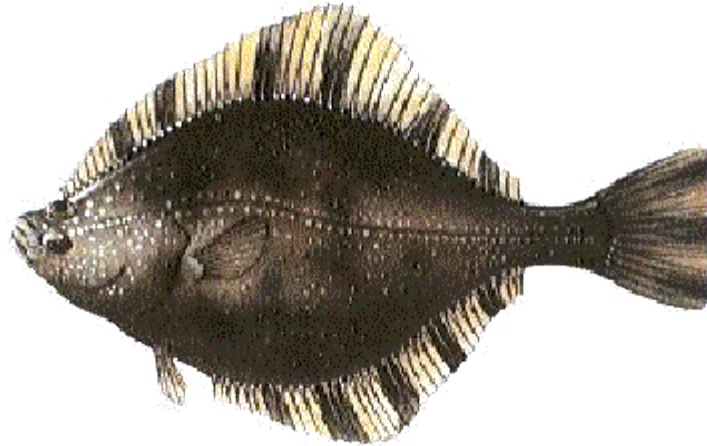
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# Summary

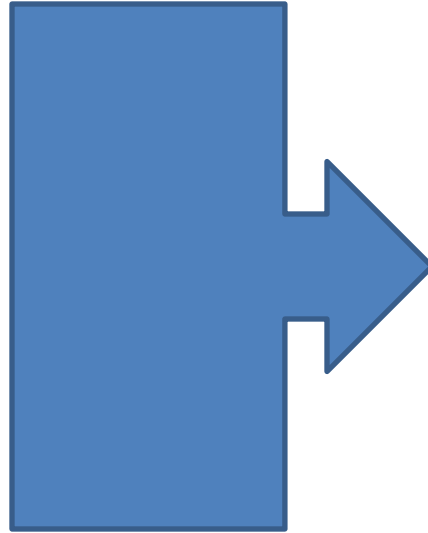
- Agnatha, the jawless fishes, includes the lampreys and hagfishes.
- Chondrichthyes, the cartilaginous fishes, includes the sharks, rays, and skates. These fishes have jaws, two pairs of fins.
- Osteichthyes, the bony fishes includes freshwater and saltwater.

# Summary

- Amphibians return to water to reproduce, have moist skin.
- Reptiles are amniotes, most terrestrial, has a dry skin with horny scales.
- Birds have many adaptations for flight, including feathers, wings, and light, hollow bones containing air spaces.
- Mammals have hair, mammary glands, and differentiated teeth.

# Summary

- Reptiles
- Aves
- Mammals



**amniotes**

# Question

- List the classes of the phylum chordate.
- What are two hallmarks of mammals?
- What does the word "amphibian" mean?
- Give the main characteristics of birds.
- What is the difference between a reptile and an amphibian?
- What group of animals was the first to make a partial transition from water to land?