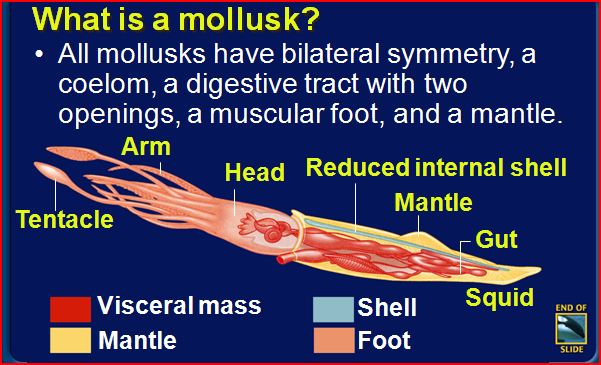
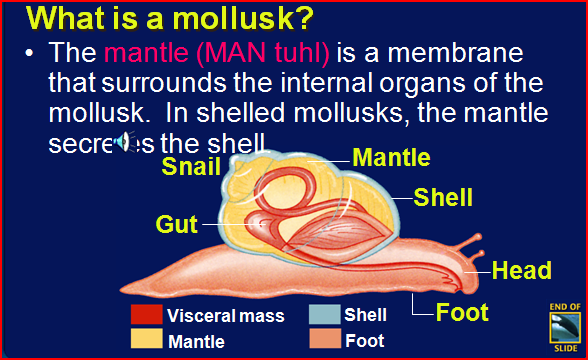
**Integrated Biology(Animals) 7-9**

**Mollusks**

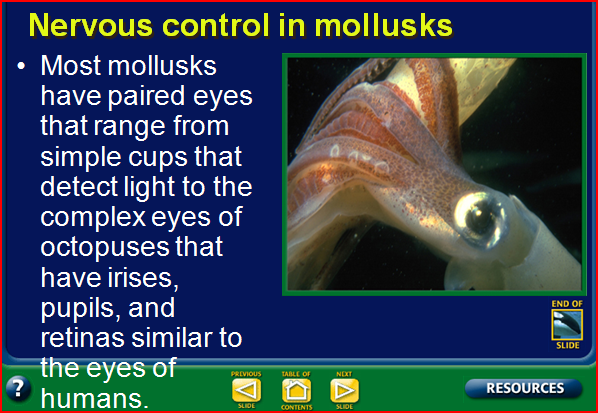
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**-mollusks have a well-developed circulatory system that includes a three-chambered heart**

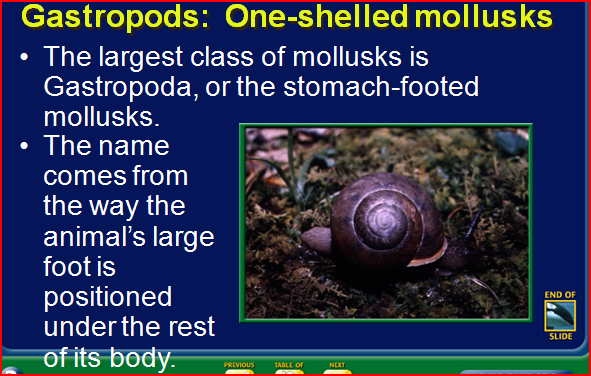
**-some like the octopuses have nutrients and oxygen moving through a closed circulatory system which is enclosed by a series of blood vessels**

**-many have gills which are specialized parts of the mantle that consist of a system of filamentous projects that contain a rich supply of blood for the transport of gases**

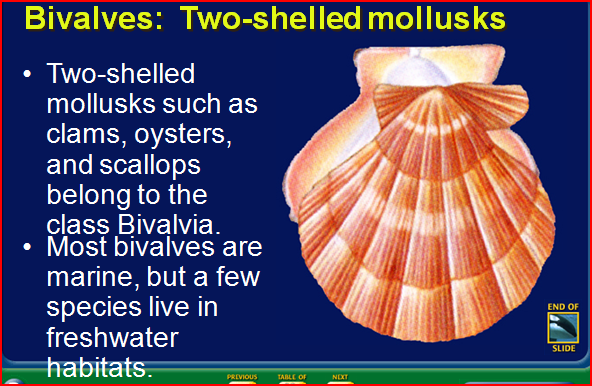


**-they are the oldest known animals to have evolved excretory structures called nephridia**



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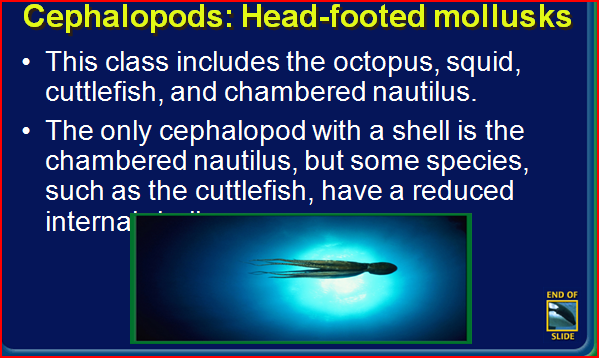


**-they have no distinct head or radula and most use their large muscular foot for burrowing in the mud or sand**

**-a ligament like a hinge connects their two shells called valves**

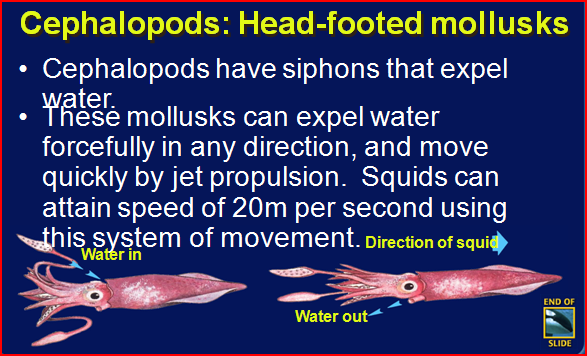
**-they are filter feeders and as water moves over the gills, food and sediments become trapped in mucus**

**-anything that needs to be expelled goes through the excurrent siphon, or the foot**

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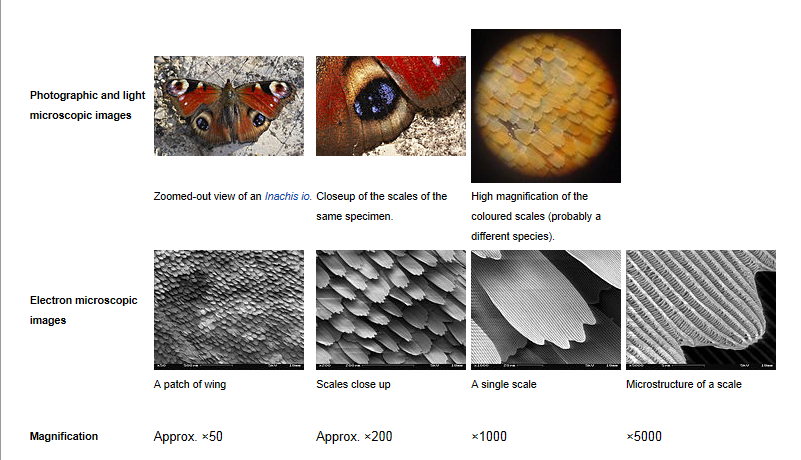
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**Butterflies**

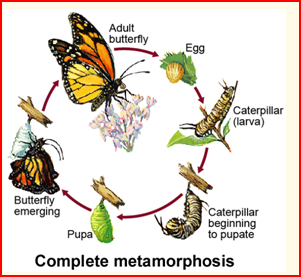
**A butterfly is a mainly day-flying insect of the order Lepidoptera, which includes the butterflies and moths. The butterfly's life cycle consists of four parts: egg, larva, pupa and adult. Most species are diurnal. Butterflies have large, often brightly colored wings, and conspicuous, fluttering flight. Butterflies comprise the *true butterflies* (superfamily Papilionoidea), the *skippers* (superfamily Hesperioidea) and the *moth-butterflies* (superfamily Hedyloidea). All the many other families within the Lepidoptera are referred to as moths. The earliest known butterfly fossils date to the mid Eocene epoch, between 40–50 million years ago.**



**Complete metamorphosis**

**Metamorphosis-**

**Pupa**

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**Fish**

**Fish**

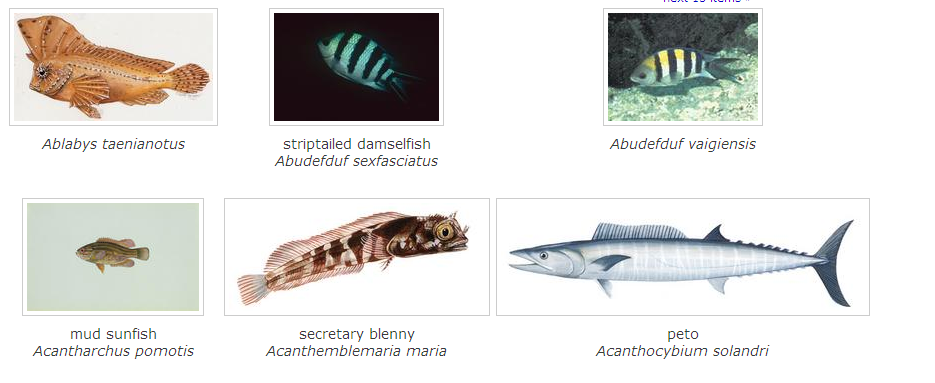
**lateral line system**

**Swim bladder-**

**Operculum-**

**Modern major groups of bony fish**

**1.Actinopterygii**

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**2.Sarcoptergii-**

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**Fish exhibit five key characteristics**

**1.vertebral column-**

**2.jaws and paired appendages**

**3.internal gills**

**4. single-loop blood circulation-**

**5.nutritional deficiencies-**

**Major classes of fish**

**1.Actinopterygii-ray finned fishes**

**2.Sarcopterygii-lobe finned fish**

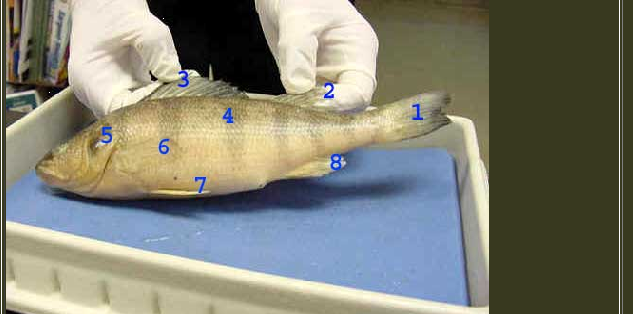
**3.Chondrichthyes-sharks, skates, rays**

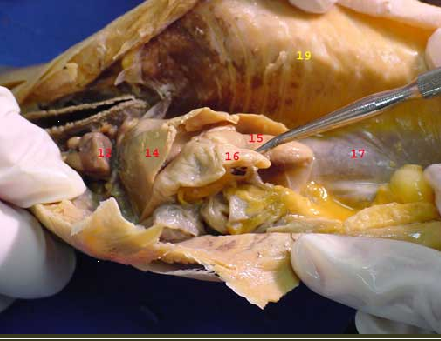
**4.Myxini-hagfishes**

**5.Cephalaspidomorphi-lampreys**

**6.Placodermi-armored fishes (extinct)**

**7.Acanthodii Ostracodermi-spiny fish (extinct)**

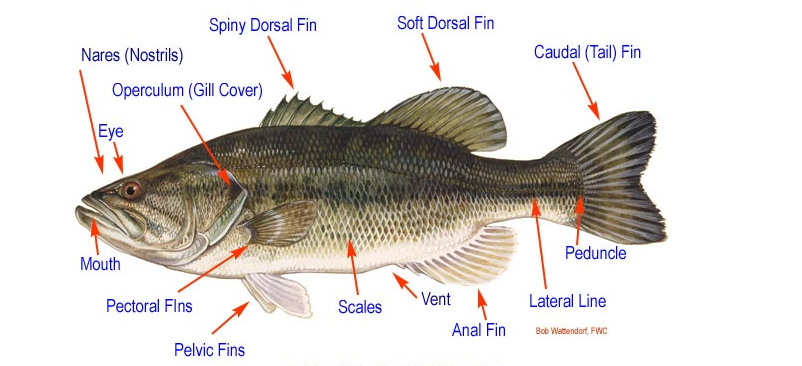
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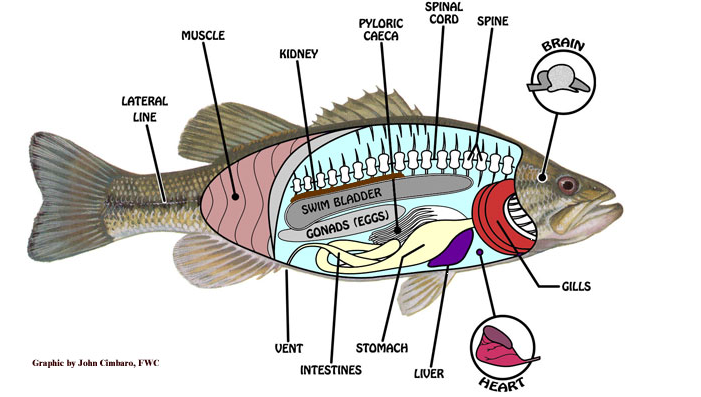
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