



Figure 7: Lamprey

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GNATHOSTOMES



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- Two major developments in vertebrate evolution were the appearance of **jaws** and **paired appendages**
- Jaws are used in **feeding** and are partly responsible for a transition to more active, **predatory lifestyles**
- **Pectoral fins** of fishes are appendages usually just behind the head, and pelvic fins are usually located ventrally and posteriorly
- Both sets of paired fins give fishes a more **precise steering mechanism** and increase **fish agility**
- Two classes of Gnathostomes still have living members:
 - Cartilaginous fishes (class **Chondrichthyes**)
 - Bony fishes (class **Osteichthyes**)

PLACODERMS

- **Placoderms**
- They are the armored fishes
- The earliest jawed fishes
- They are now extinct
- They have apparently left no descendants



Figure 8: Dunkleosteus

ACANTHODIANS

- **Acanthodians**
- Ancient, extinct fishes
- may be more closely related to the bony fishes



Figure 9: Acanthodes bronni

CLASS CHONDRICHTHYES

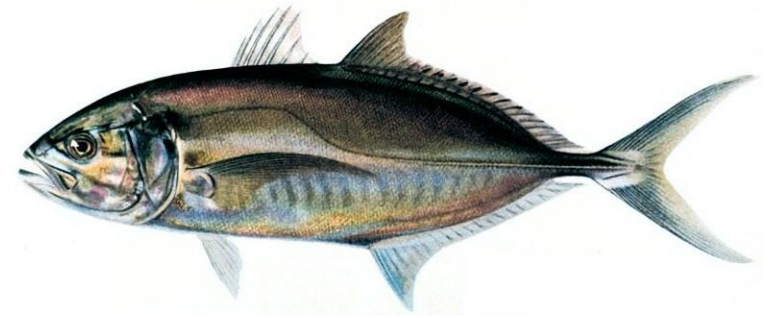
- Members of the class Chondrichthyes **sharks, skates, rays,** and **ratfishes**
- Most chondrichthians are **carnivores** or **scavengers**
- Most are **marine**
- They possess
 - Biting mouthparts
 - Paired appendages
 - Epidermal placoid scales
 - Cartilaginous endoskeleton

SUBCLASS ELASMOBRANCHII

- Includes the sharks, skates and rays
- Has about 700 species
- Sharks arose from early jawed fishes midway through the Devonian period, about 375 million years ago
- There is absence of certain features characteristic of bony fishes
 - Swim Bladder
 - Gill Cover
 - Bony Skeleton

CLASS OSTEICHTHYES

- Osteichthyes have 20,000 species
- They are characterized by having
 - Some bone in their skeleton and/or scales
 - Bony operculum covering the gill openings
 - Lungs or a swim bladder





LINKS

- *Eptatretus stoutii* (Hagfish) feeding
<https://youtu.be/tKTRv3hx1s0>
- The best of lampreys! | COMPILATION | River Monsters
- https://youtu.be/dYcl4FZK_ms
- Paddlefish Parasites | Wild Mississippi
- <https://youtu.be/AzZao6SVMyc>