

## OSTEICHTHYES

Bony Fish  
Largest group of vertebrates  
More than 30,000 species.

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## OSTEICHTHYES

1. internal bony skeleton
2. a lung or its derivative

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## Bony Fish Characteristics

1. Operculum
2. Bony scales
3. Teeth fused to mandibles

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Osteichthyes

1. Two Major Groups [table 6.1, fig. 3-14]
  - A. Actinopterygii
    - a.
    - b.
  - B. Sarcopterygii
    - a.
    - b.

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SUBCLASS ACTINOPTERYGII

1. Fin rays
2. Fins controlled by muscles in body wall.
3. Caudal fin primitively heterocercal; homocercal in advanced forms.

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SUBCLASS ACTINOPTERYGII

1. hyostylic jaw support.
2. Internal nostrils absent.
3. Large eyes (primitively).
4. Scales ganoid, cycloid, ctenoid or none.

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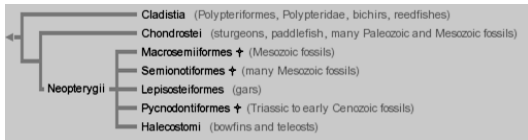
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## Actinopterygii: ray-finned fish



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## Primitive Ray-Finned Fish

1. Chondrosteans:
  - A. Polypteriformes
  - B. Acipenseriformes
2. Characteristics
  - 1.
  - 2.
  - 3.
  - 4.
  - 5.

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## ORDER POLYPTERIFORMES (CLADISTA)

1. most primitive living actinopterygians.
2. 11 species
  - A. bichirs (fig 6-6a) and reed fish
3. African, fresh water

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ORDER POLYPTERIFORMES  
(CLADISTIA)

1. Elongate
2. Dorsal fins with anterior spine
3. Symmetrical caudal fin
4. obligate air breathers
5. fleshy base to the pectoral fins

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ORDER ACIPENSERFORMES  
sturgeons and paddlefish

1. Scales reduced.
  - A.
  - B.
2. Heterocercal tail.
3. Cartilaginous endoskeleton.
4. Swimbladder.

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ORDER ACIPENSERFORMES

1. Sturgeons
  - A. 4 genera and 25 species
2. *Acipenser* [fig 6-6b]
  - A. 17 species
  - B. important economically

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ORDER ACIPENSERFORMES

1. *Huso* - beluga:

- A. sturgeon group
- B. largest freshwater fish
- C. black caviar.

\$150 for 50 grams (1.7 oz)

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ORDER ACIPENSERFORMES

*Polydon* [fig 6-6c]

- A. Paddlefish
- B. up to 2 meters and 200 lbs
- C. Disjunct distribution
- D. Planktivore
- E. electrosensory pores

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Infraclass NEOPTERYGII

- 1. Includes the holosteans and teleosts..

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DIVISION HOLOSTEI

1. gars and the bowfins.
2. mobile maxilla
3. Near symmetrical caudal fin.
4. Lungs

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Order Lepisosteiformes (gars)

1. Toothed infraorbital bones.
2. Ganoid scales.
3. fish eaters
4. now restricted to North America

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Order Amiiformes (bowfin)

1. one living species (*Amia calva*) found in North American rivers.
2. predator
3. long dorsal fin.
4. Ganoine
5. Solid jaws
6. Gular plate

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## Teleostei

1. 96% of all fishes and half of all vertebrates.
2. 10 millimeters to 17 meters
3. up to 900 kilograms
4. 5,000 meters above sea level to 8,000 meters below.
5. hot springs
6. under Antarctic ice

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## Teleost characteristics

- A. Mobile premaxilla
- B. Maxilla without teeth, mobile; often excluded by premaxillary from border of mouth
- C. scales cycloid, ctenoid or none
- D. swimbladder

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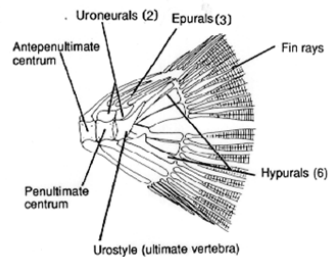
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## Teleost Caudal Fin

1. homocercal



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### Elopomorpha

1. Eels and Tarpons [Fig. 6-10a, b]
2. leptocephalus larvae.
3. 800 species

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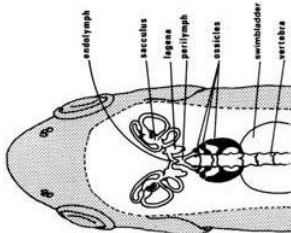
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### Ostariophysi

1. Minnows, suckers, catfishes, etc.
2. Make up about 80% of freshwater fishes
3. ca. 6,500 species
4. Weberian apparatus (Fig. 6-11)



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### Acanthopterygii

1. The most successful fish, includes 14,000 species in 250 families in 13 orders.
2. The most diverse is the Order Perciformes, A.
3. Maximum upper jaw mobility and protrusibility
4. Pelvic fins moved anteriorly
5. Swim bladder ductless.

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