

Neoteleostei

- More than 15.000 species
- Incredible diversity
- Not established systematics

Stenopterygii

- Stomiiformes, Ateleopodiformes
- Long independent evolution
- Tropical – temperate deep sea fishes
- Photophores, large mouth, (adipose fin)
- Black (silvery)

Bristle mouth *Cyclothone* sp.



Viperfish *Chauliodus sp.*



Dragonfish *Idiacanthus sp.*



Scopelomorpha

- Aulopiformes, Myctophiformes, Lamproiformes, Polymixiiformes
- Similar to salmoniform fishes but different in many characteristics
- Adipose fin
- 14 families 600 species
- Deep sea

Daggertooth *Anotopterus pharao*



Lancetfish Alepisaurus sp.



Lanternfish Myctophum sp.



Percopsiformes

- 3 families 9 species
- small fish 5 – 20 cm
- freshwater habitats in North America

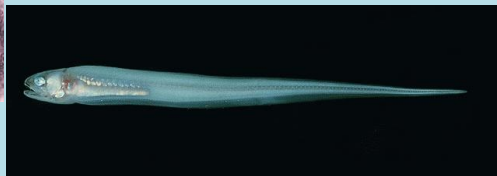
Sandroller *Percopsis* sp.



Ophidiiformes

- 3 families, 200 species
- Seawater, freshwater and brakishwater, Deep-sea
- Also in caves (blind)
- Eel-like fishes

Pearlfish *Carapus sp.*



Gadiformes

- 4 families, 500 species
- Bottom-oriented fish
- Mainly marine, deep sea, continental shelf, freshwaters

Cods - Gadiformes

- Macrouridae



- Moridae



- Merlucciidae



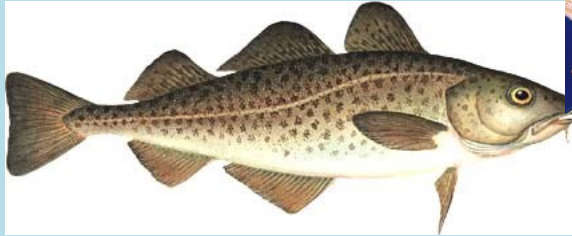
- Gadidae



Codfish-*Gadus morhua*

Ordo: *Gadiformes*

Family: *Gadidae*



Burbot-*Lota lota*

Ordo: *Gadiformes*

Family: *Gadidae*



Hake - *Merlucius merlucius*



Batrachoidiformes

- 1 family, 69 species
- Toadfish
- Shallow marine waters of North America
- Loud noise – vibrating swimming bladder



Lophiiformes

- 16 families, 300 species
- anglerfish
- Illicium
- Shallow water/drifting seaweed
- Deep sea bottom

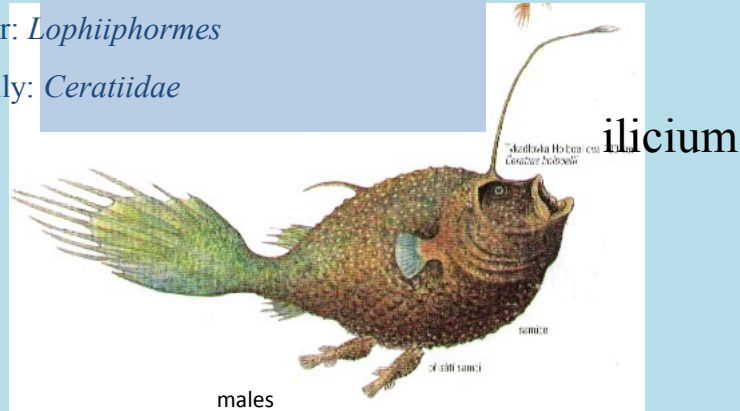
- darkness
- coldness
- huge space



Ceratias holboelli

Order: *Lophiiformes*

Family: *Ceratiidae*



Atheriniformes

- 300 species
- Elongate species, terminal mouth, large eyes
- Marine and secondary freshwater

<http://www.youtube.com/watch?v=ZVEPkC9LBEQ&feature=related>

Mugiliformes

- 1 family, 80 species
- Mulletts
- Taxonomically treated also as a family Mugilidae of the order Perciformes



Atheriniformes

- Atherinidae



- Melanotaenidae



Beloniformes

- 5 families, 200 species
- Marine, freshwater

<http://www.youtube.com/watch?v=40Y2zIUxrHo>

Beloniformes

- Killifish-like medakas *Adrianichthyidae*
- Flyingfishes *Exocoetidae*
- Halfbeaks *Hemiramphidae*
- needlefishes *Belonidae*
- Surries *Scomberesocidae*



Cyprinodontiformes

- 4 families, 600 species
- Extreme conditions (temperature, salinity, oxygen)
- Small fish
- Top-minnows

Cyprinodontiformes

- killifish Aplocheilidae
- killifish Fundulidae
- pupfish Cyprinodontidae
- livebearers Poeciliidae



Synbranchyformes

Beryciloformes and Stephanoberyciloformes

- 200 species
- Deep sea nocturnal



Zeiformes

- 6 families, 39 species
- Marine
- Dorries (Zeidae)



Gasterosteiformes

- 4 families 260 species
- Marine and freshwater
- Often bizzare fish

Gasterosteiformes

- Sticklebacks Gasterosteidae
- Seamoths Pegasidae



- Pipefishes Singnathidae

Scorpaeniformes

- 24 families, 1300 species
- Mainly marine and rarely freshwater
- Bottom oriented

Scorpaeniformes

- Rockfishes Scorpenidae



- Sculpins Cottidae



- Searobins Triglidae

Perciformes

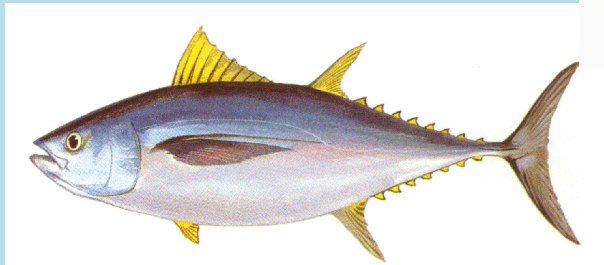
- largest order of vertebrates (10 000 species) over 100 families
- double dorsal fin
- front of dorsal fin rays with spines
- ktenoid scales
- gas bladder is connected with the esophagus
- $\frac{1}{4}$ of global fish catches
- number of families: for example Mackerels, perches, cichlids

European perch *Perca fluviatilis*



Tuna Tuna sp.

Family Scombridae



Macrel *Scomber scombrus*

Family Scombridae



Lates niloticus – Nile perch family
Latidae_ (introduced to Lake Victoria)



Sea bass (*Dicentrarchus labrax*) family Serranidae



Sea bream (*Sparus aurata*) – family Sparidae

- **Freshwater, brakish water**
- **America, Africa, Asia**
- **Interupt lateral line**
- **One dorsal fin**
- **Mouth breedrs,**
- **Cichlidae - Cichlids**

Pterophyllum altum



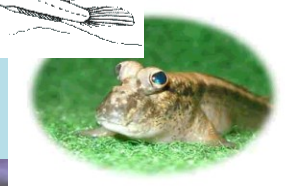
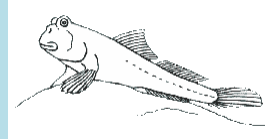
Cichlidae - Nile tilapia (*Oreochromis niloticus*)



Amphiprion ocellaris , Pomacentridae

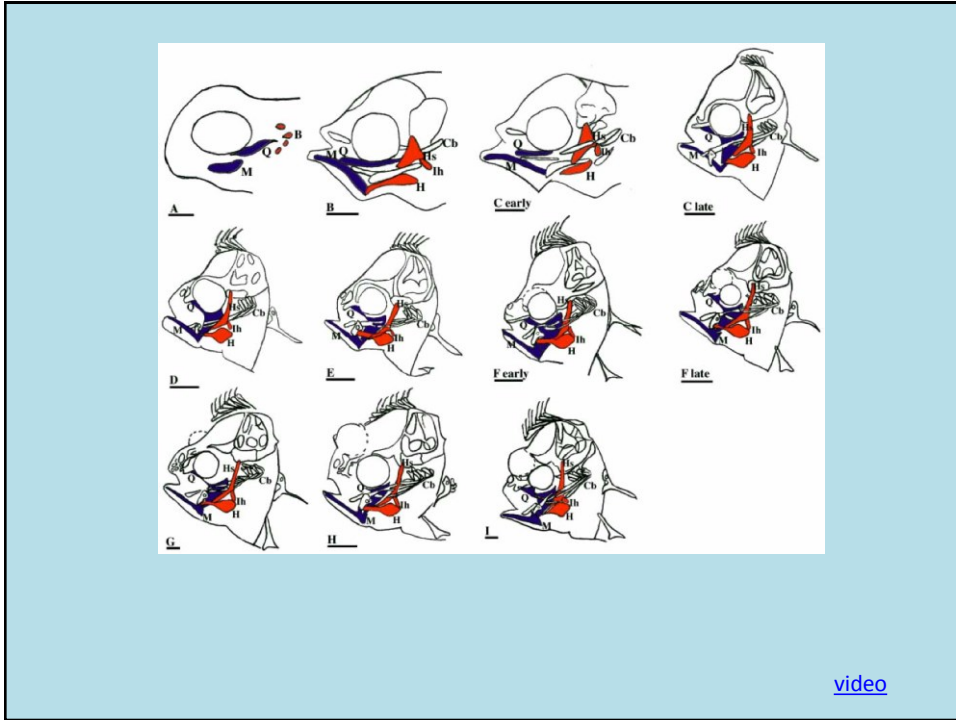
Gobids *Gobiidae*

- Climbers (*Periophthalmus* spp.)
- without water lasts several days
- Eyes on the surface - see the land
- mangroves



Pleuronectiformes

- 11 families, 600 species
- adult-slim body without bilateral symmetry
- from eggs to larva symmetrical
- body gradually begins to move one eye to another,
- the body flattens



Flat fishes Pleuronectiformes



Tetraodontiformes

- 6 families, 300 species
- Evolutionary very derived group



Takifugu vermicularis

Family tetraodontidae - čtverzubcovití

