

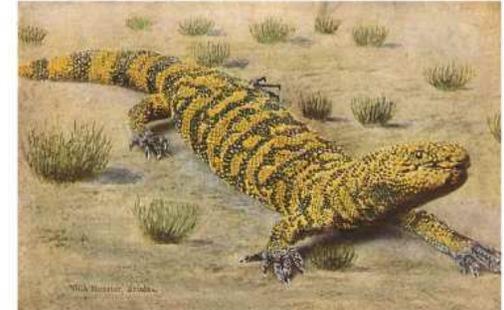
Phylum Chordata

Chapter 14 - 2

The Fishes

Vertebrata– The Backboned Animals

- Characteristics
 - Most numerous & complex of Chordates
 - NTK 7 Classes
 - Agnathis, Chondrichthyes, Osteichthyes,
 - Amphibia, Reptilia, Aves, Mammalia
 - Spinal column replaces notochord
 - Anterior end of nerve cord modified into brain
 - Body usually divided into head, neck & trunk
 - Two pair of appendages (arms & legs)
 - Heart w/ 2, 3 or 4 chambers
 - Respiration – gills & lungs
 - Closed circulatory system
 - Endothermic or exothermic



The Fishes

- Water dwellers usually w/ gills, scales and fins
- 3 main groups
 - 1. Agnatha - Jawless: lampreys and hagfish
 - 2. Chondrichthyes : Cartilaginous fishes: Sharks, skates and rays
 - 3. Osteichthyes: Bony Fishes: Tuna, salmon and bass

Agnatha

- Agnatha – is a “super”class of the subphyla Vertebrata and of the phylum Chordata
 - Greek “a” - without
 - Greek “gnatha” - jaw
- Called the **Jawless Fishes** - **Hagfish & Lampreys**
- Characteristics
 - Some **do not consider them a true fish** because they have a backbone only a notochord. Skeleton is **cartilaginous**
 - Marine & freshwater, parasitic or scavengers with external fertilization
 - Eel-like bodies, with **2 brains !! & 4 hearts** (1 main brachial heart & 3 accessory hearts pump blood to liver, kidneys & to the body!!)
 - Round sucker-like mouth w/ teeth used to bore into the side of their host fish



Chondrichthyes

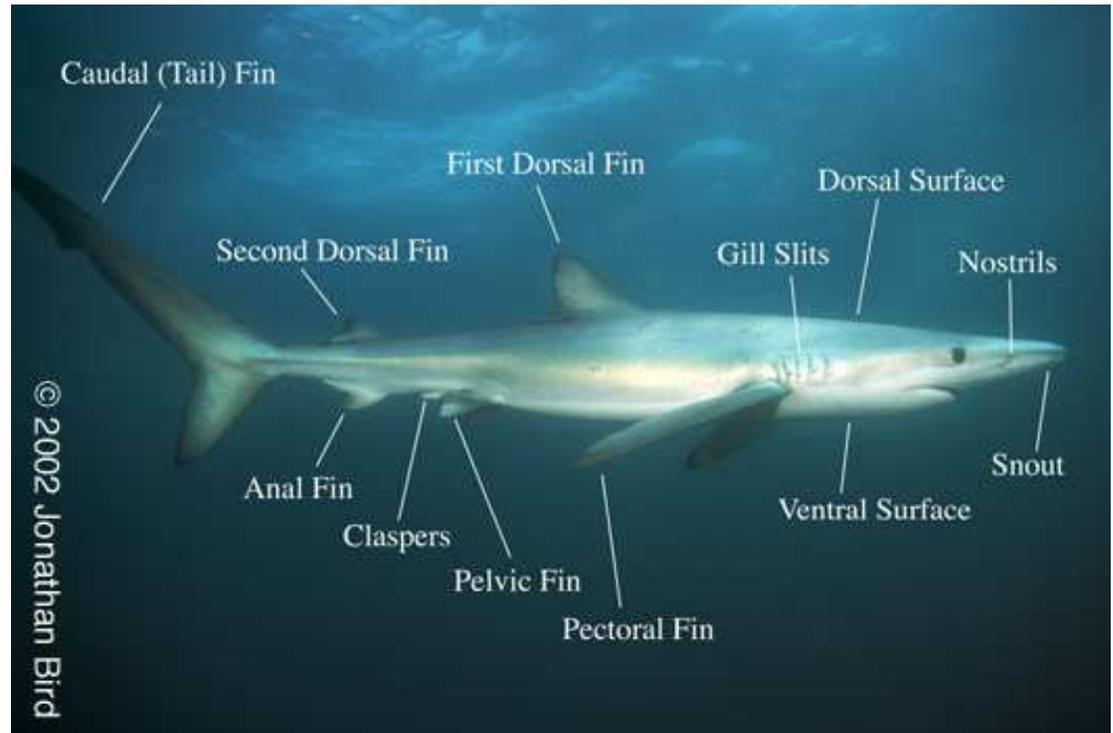
- Cartilaginous Fishes, they are true fish
- Sharks, skates and rays
- Skeleton is cartilaginous, only teeth are “calcified” a few sharks have some of their cartilage calcified (different from “bone”)
- internal fertilization
- Two chambered heart
- Skates & rays have flattened wing-like bodies; some w/ whip-like tails & poisonous spines
- Largest fish is the whale shark – reaching over 40 feet long & feeds on plankton



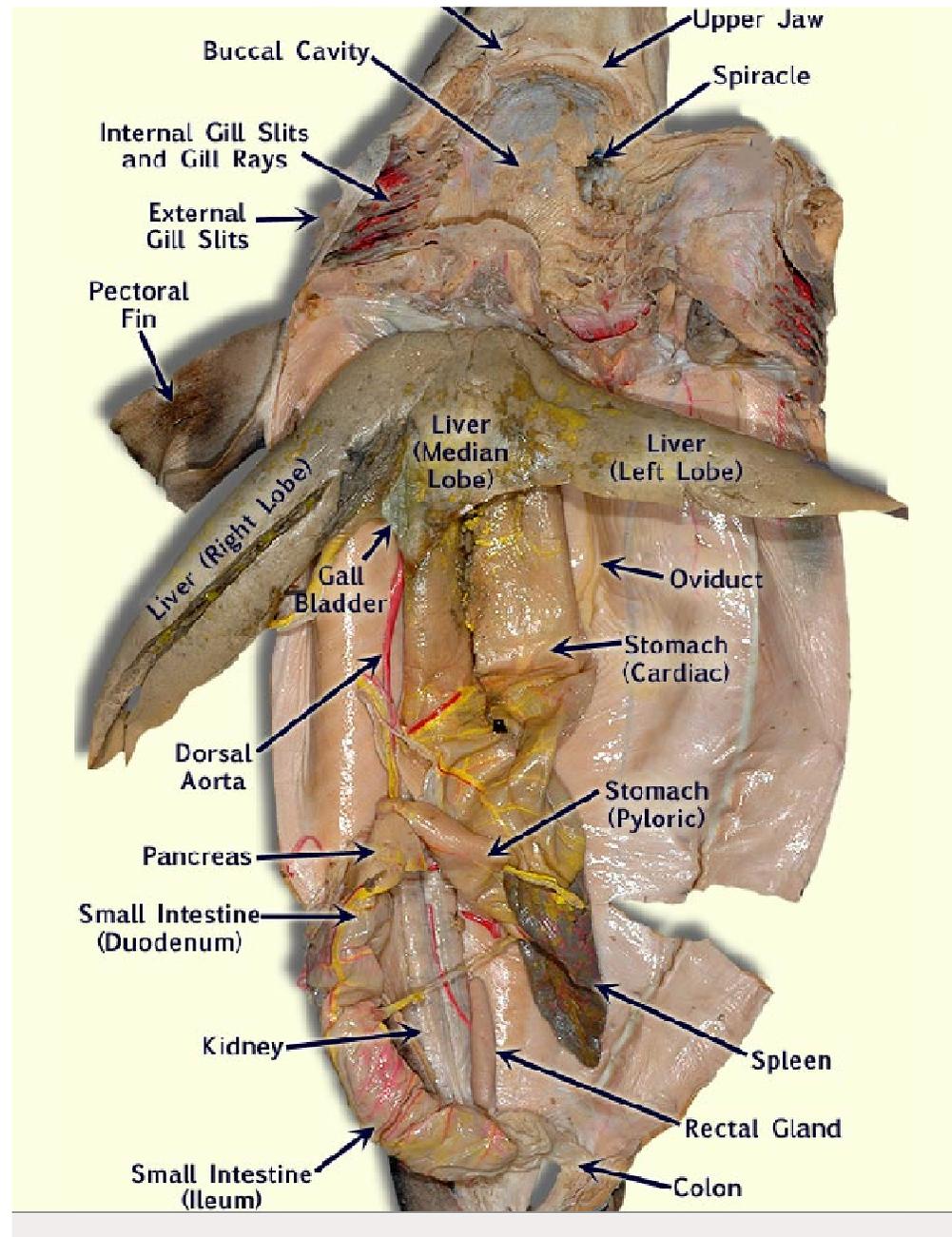
Chondrichthyes



External Shark Anatomy



Internal Shark Anatomy





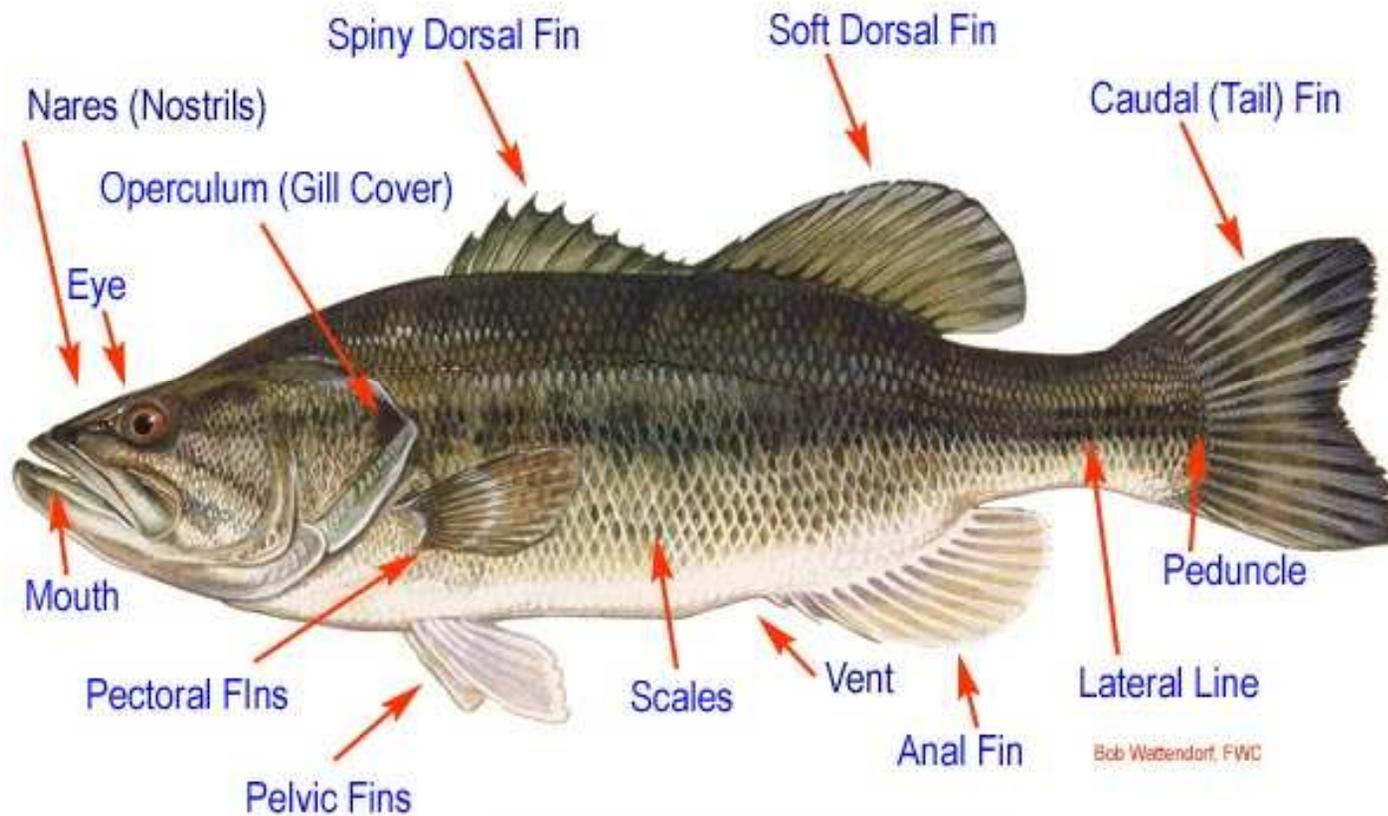
Osteichthyes



- Boney fish – salmon, trout, bass, perch, sardines, etc.
- Largest class of vertebrates
- boney skeletons with a boney gill plate - operculum
- Air Bladder adjusts the density of the fish in the water column
- 2 chambered heart
- Lateral line present in most – sense organ that can detect movement, pressure changes and vibrations in the surrounding water



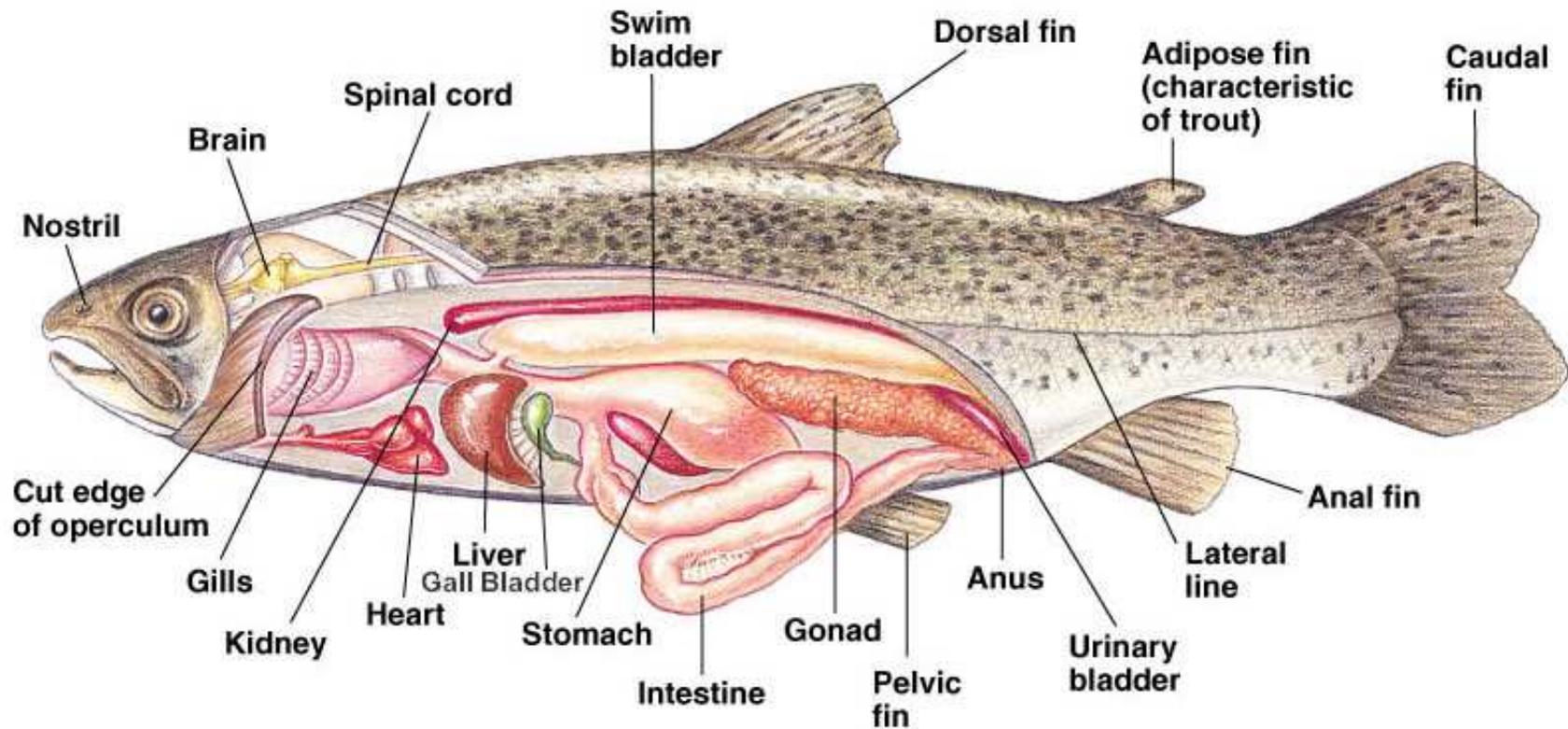
Boney Fish External Anatomy



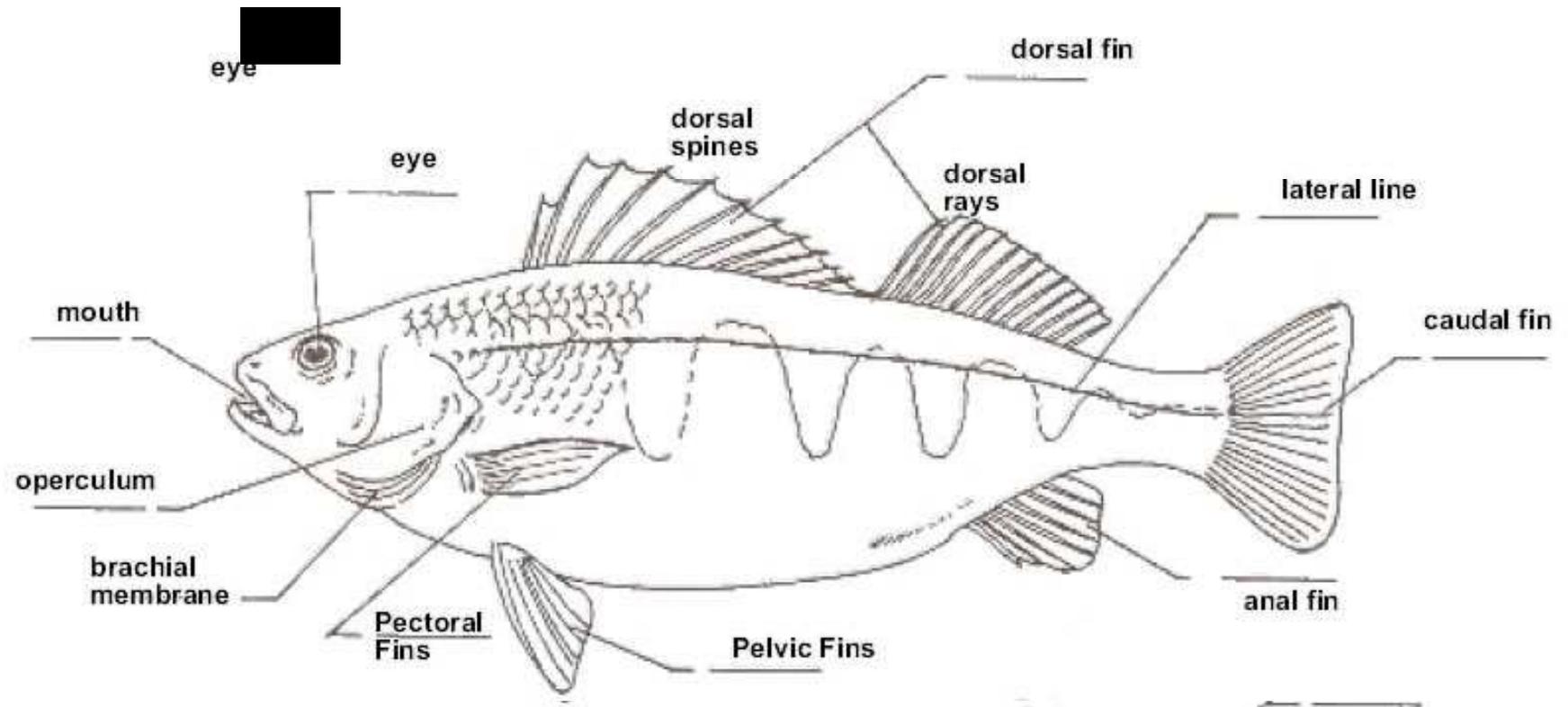
Bob Wetendorf, FWC

EXTERNAL ANATOMY

Boney Fish Internal Anatomy



Can you identify these external structures?



Can you identify these internal structures?

