

PHYLUM: CHORDATA

SUBPHYLUM: VERTEBRATE (CRANIATA)

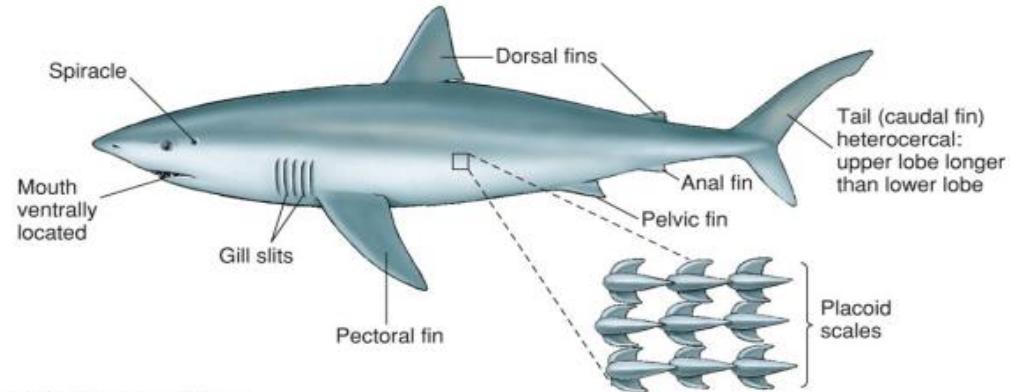
SUPERCLASIS: GNATHASTOMATA (JAWED FISHES)

CLASS: CHONDRICHTYES (CARTILAGINOUS FISHES)

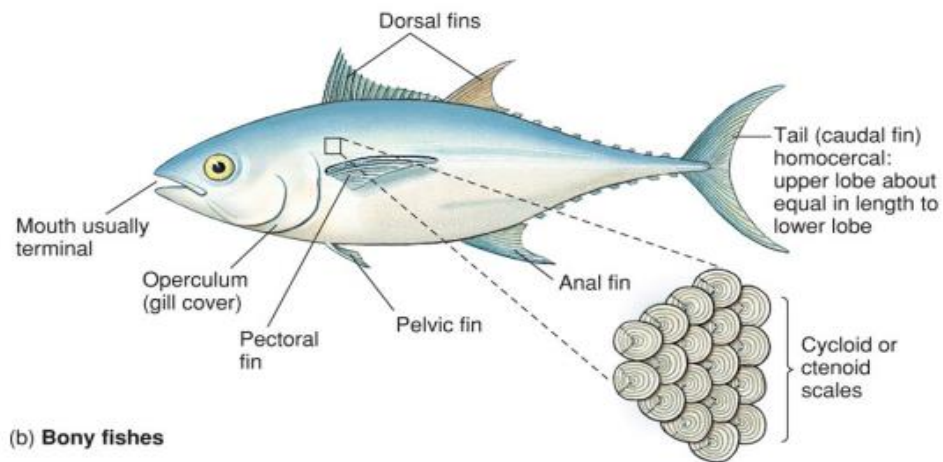
GENERAL FEATURES OF PISCES

BODY PLAN

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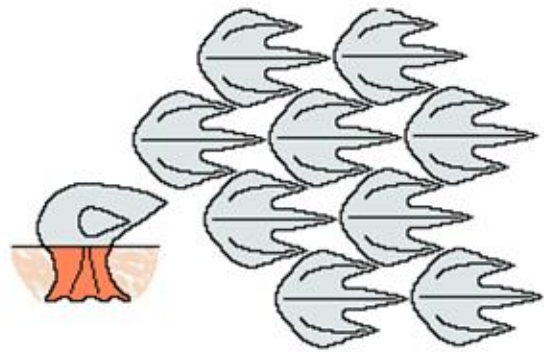


(a) **Cartilaginous fishes**

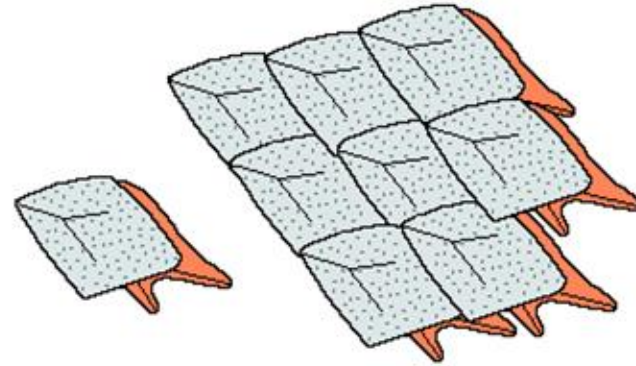


(b) **Bony fishes**

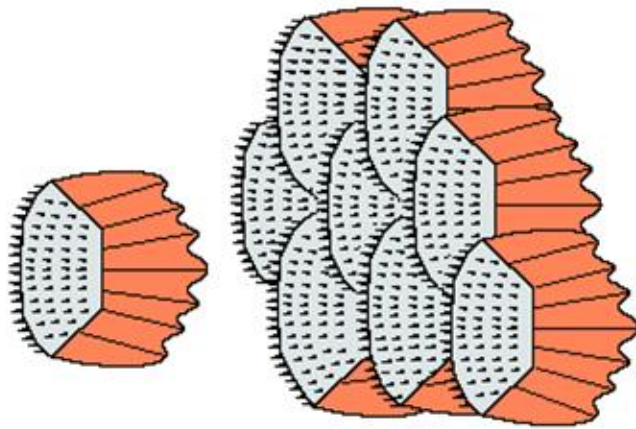
SCALE TYPES



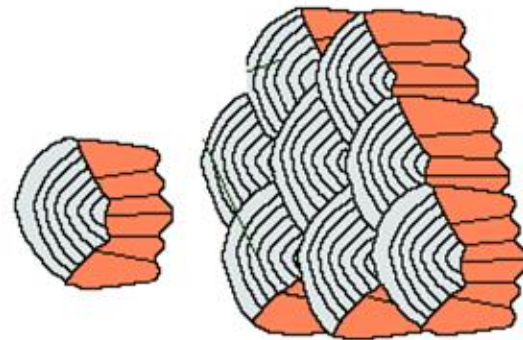
a) Placoid



b) Ganoid

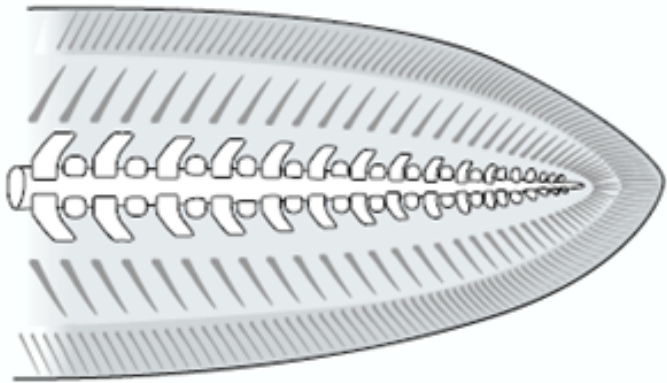


c) Ctenoid

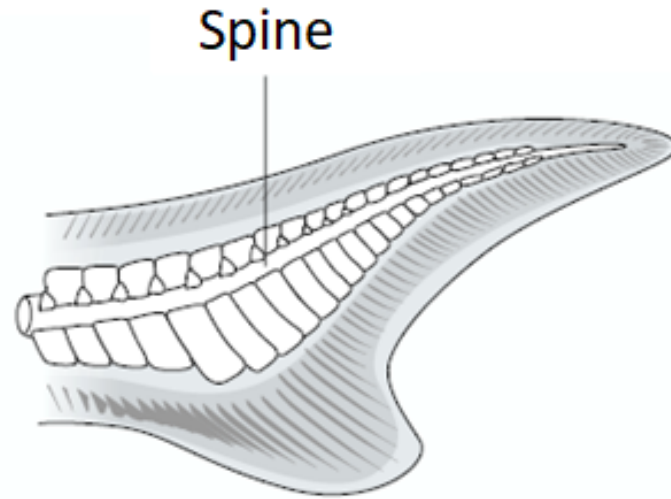


d) Cycloid

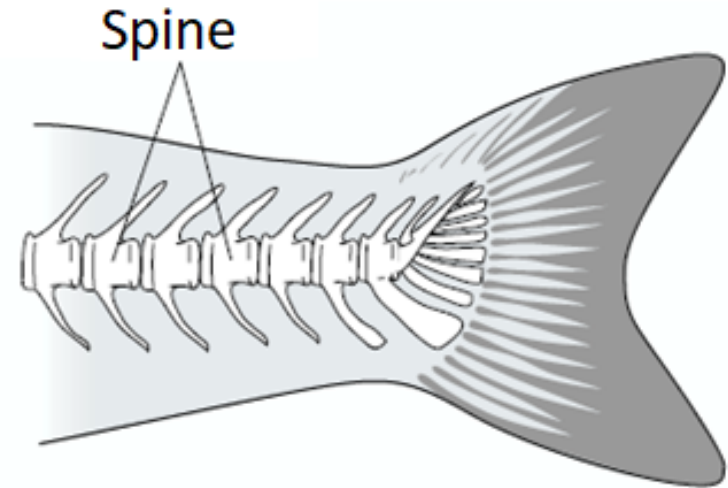
CAUDAL FIN TYPES



a) Diphycercal



b) Heterocercal



c) Homocercal

VARIATIONS OF CAUDAL FIN

TAILS OF FISHES

SOME COMMON NAMES



Pointed



Naked & pointed



Pointed (undifferentiated)



Rounded



Rounded (unevenly)



Truncate, flat, square, or straight



Truncate; slightly emarginate

KOAW.ORG



Emarginate, indented, or concave



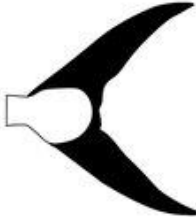
Double emarginate or biconcave.



Forked (lightly)



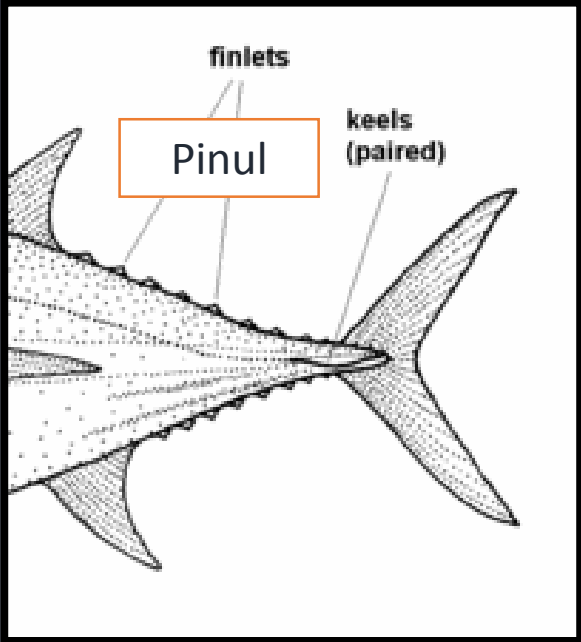
Forked (unevenly)



Forked (deeply); can also be considered lunate

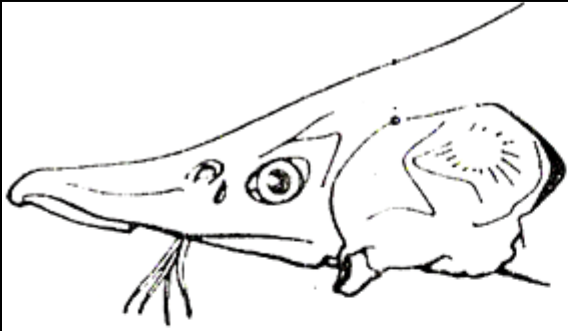


Lunate; (looks like a crescent moon)

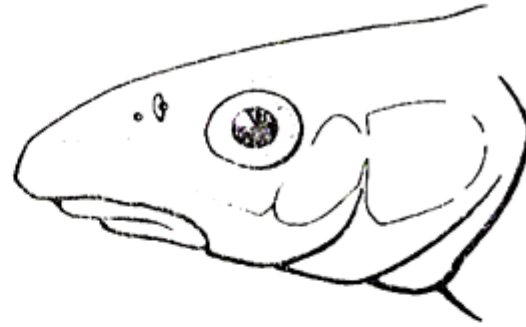


Koaw.org

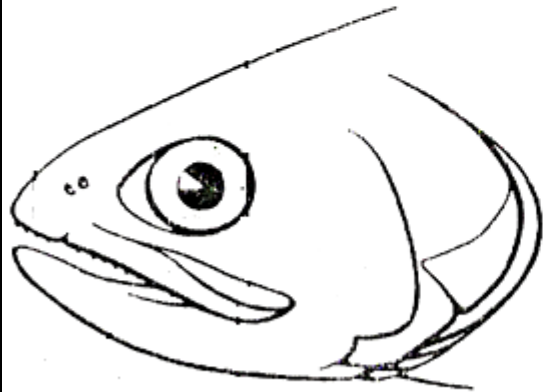
FISH MOUTH TYPES



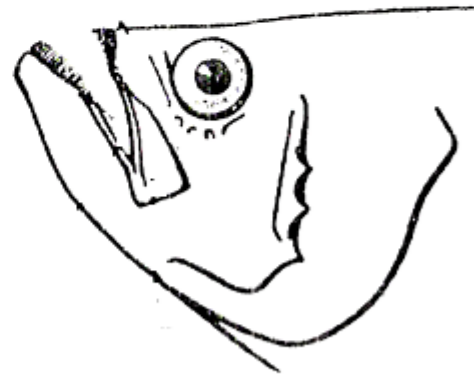
Ventral



Subterminal

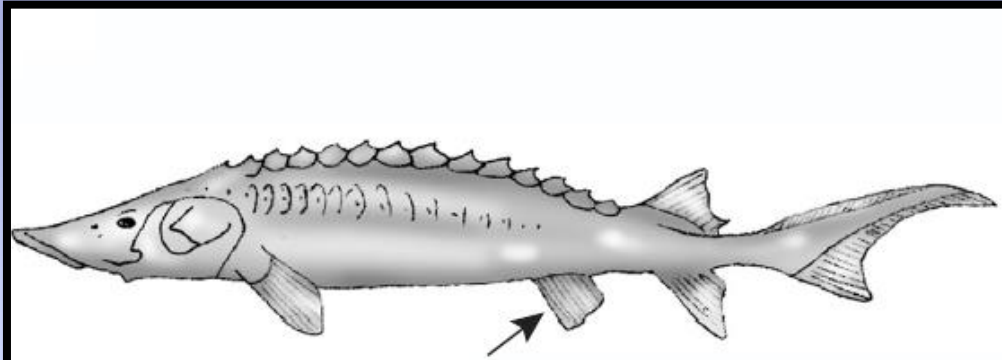


Terminal

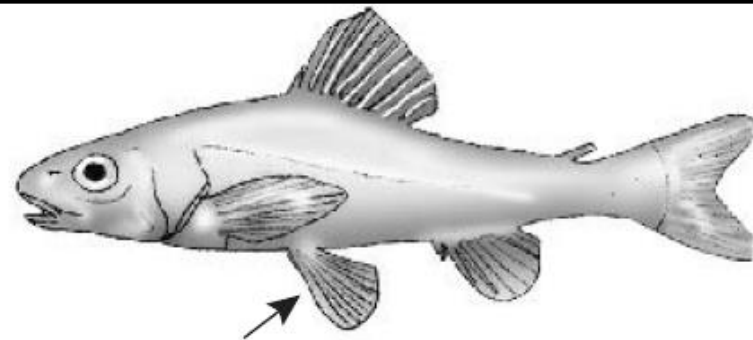


Dorsal

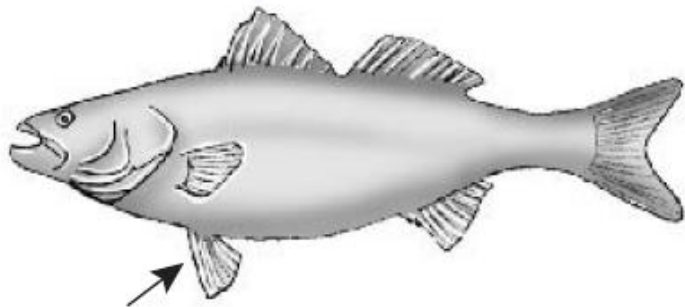
POSITIONS OF PELVIC FINS



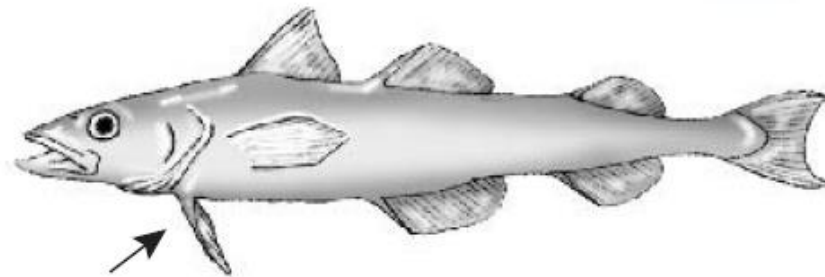
a) Abdominal



b) Subabdominal

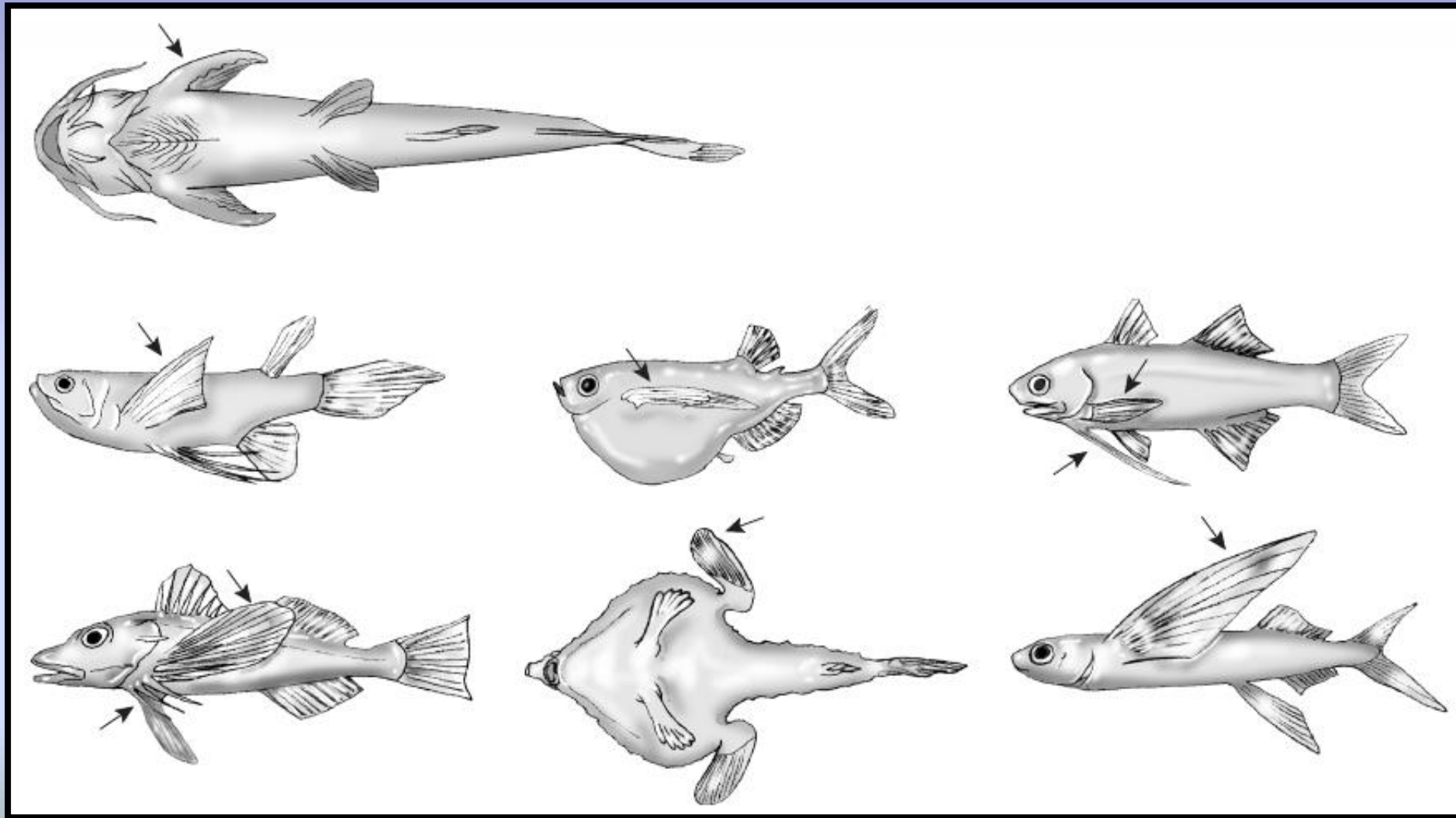


c) Thoracic

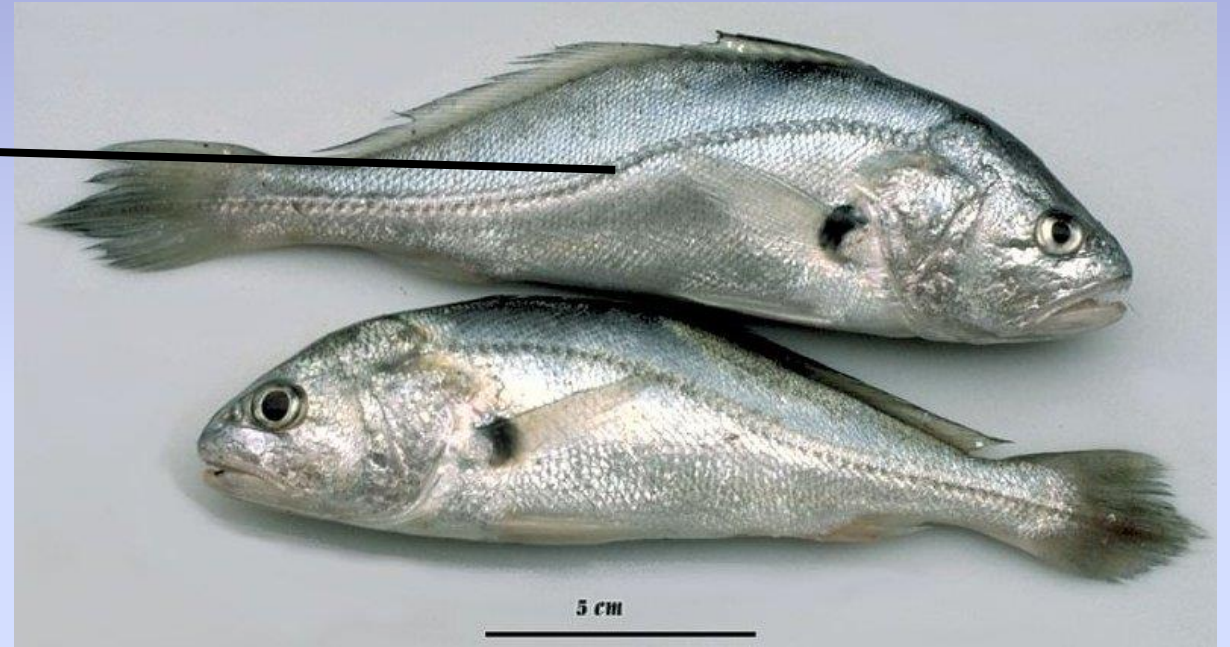
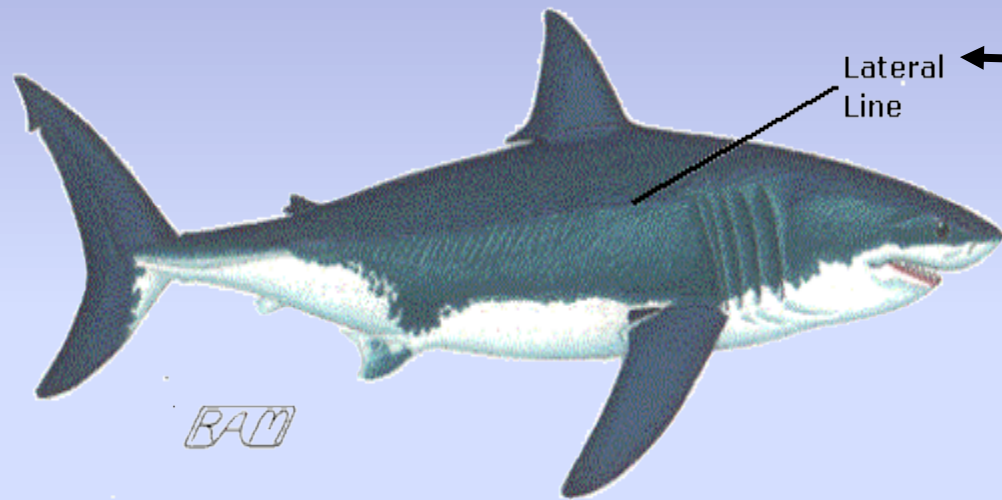


d) Jugular

POSITIONS OF PECTORAL FINS

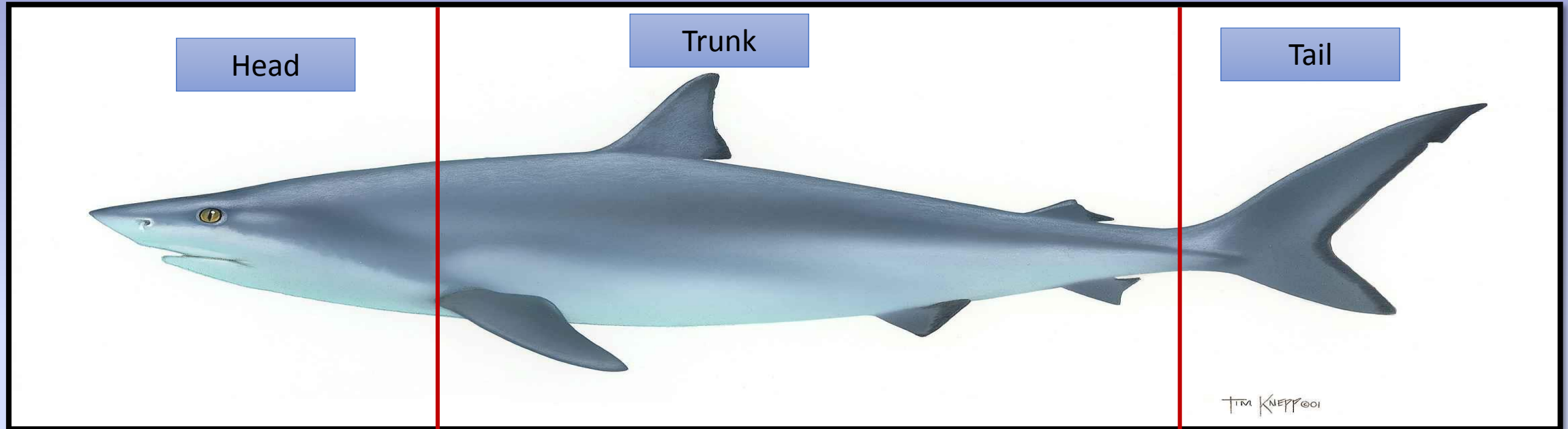


LATERAL LINE



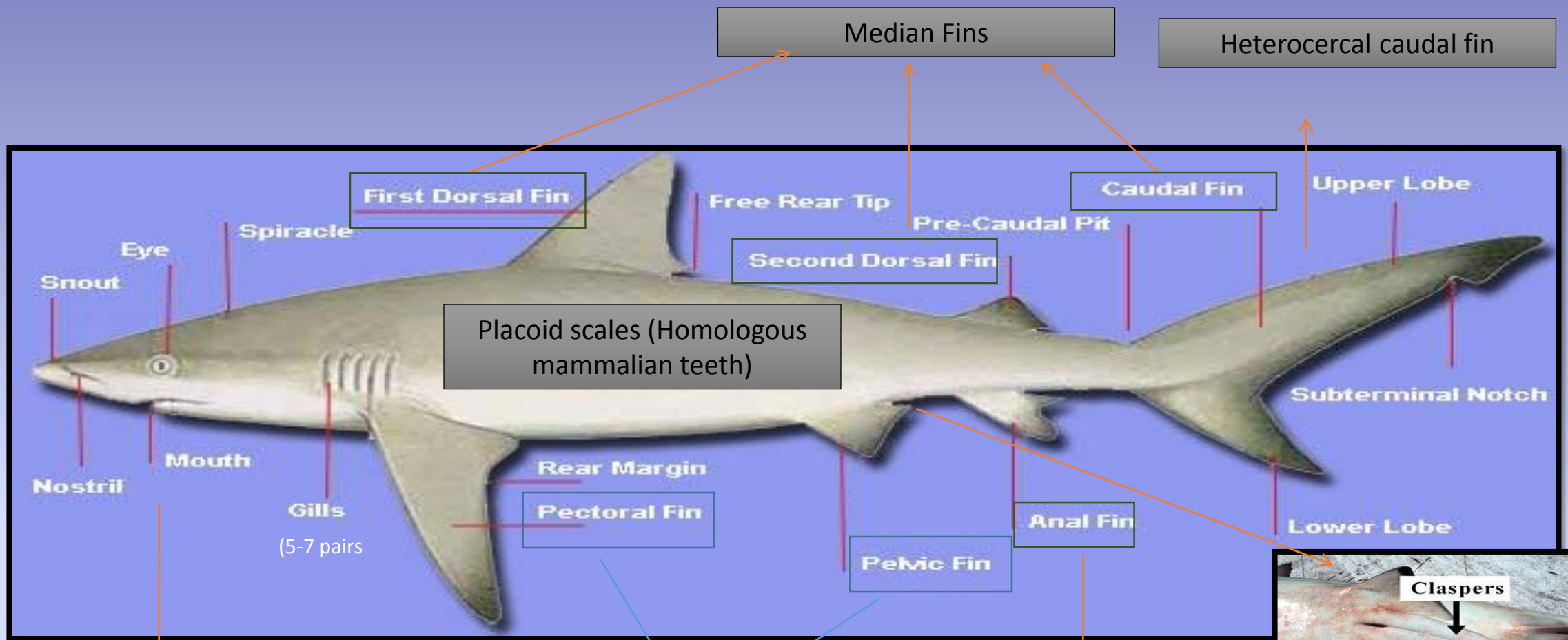
CLASS I: CHONDRICHTHYES

EXTERNAL FEATURES-MORPHOLOGY



Body Fusiform

Body dorsoventrally compressed



Median Fins

Heterocercal caudal fin

First Dorsal Fin

Free Rear Tip

Caudal Fin

Upper Lobe

Second Dorsal Fin

Pre-Caudal Pit

Placoid scales (Homologous mammalian teeth)

Subterminal Notch

Snout

Eye

Spiracle

Nostril

Mouth

Gills

(5-7 pairs)

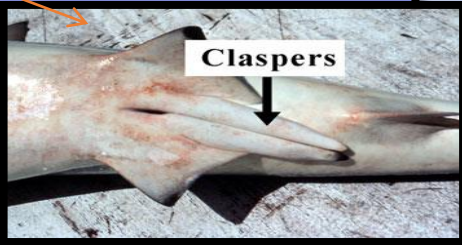
Rear Margin

Pectoral Fin

Pelvic Fin

Anal Fin

Lower Lobe

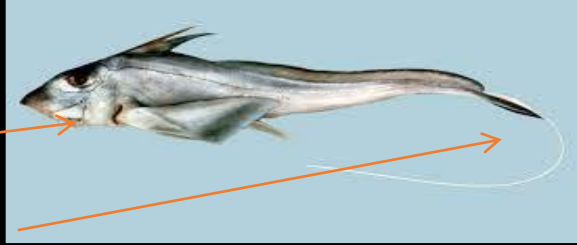


Paired Fins
It is the first time seen in cartilaginous fish

Median fin

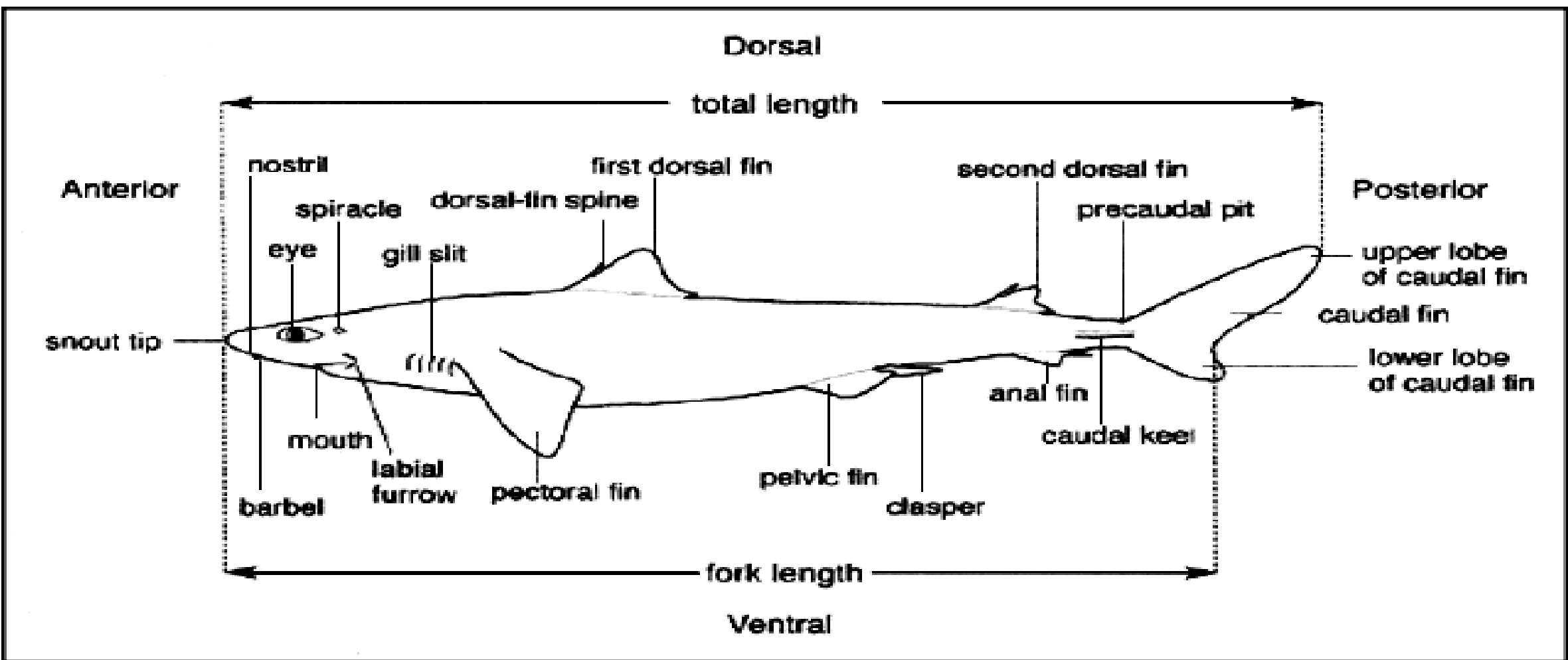
Anal fin is not found in *Squalus*

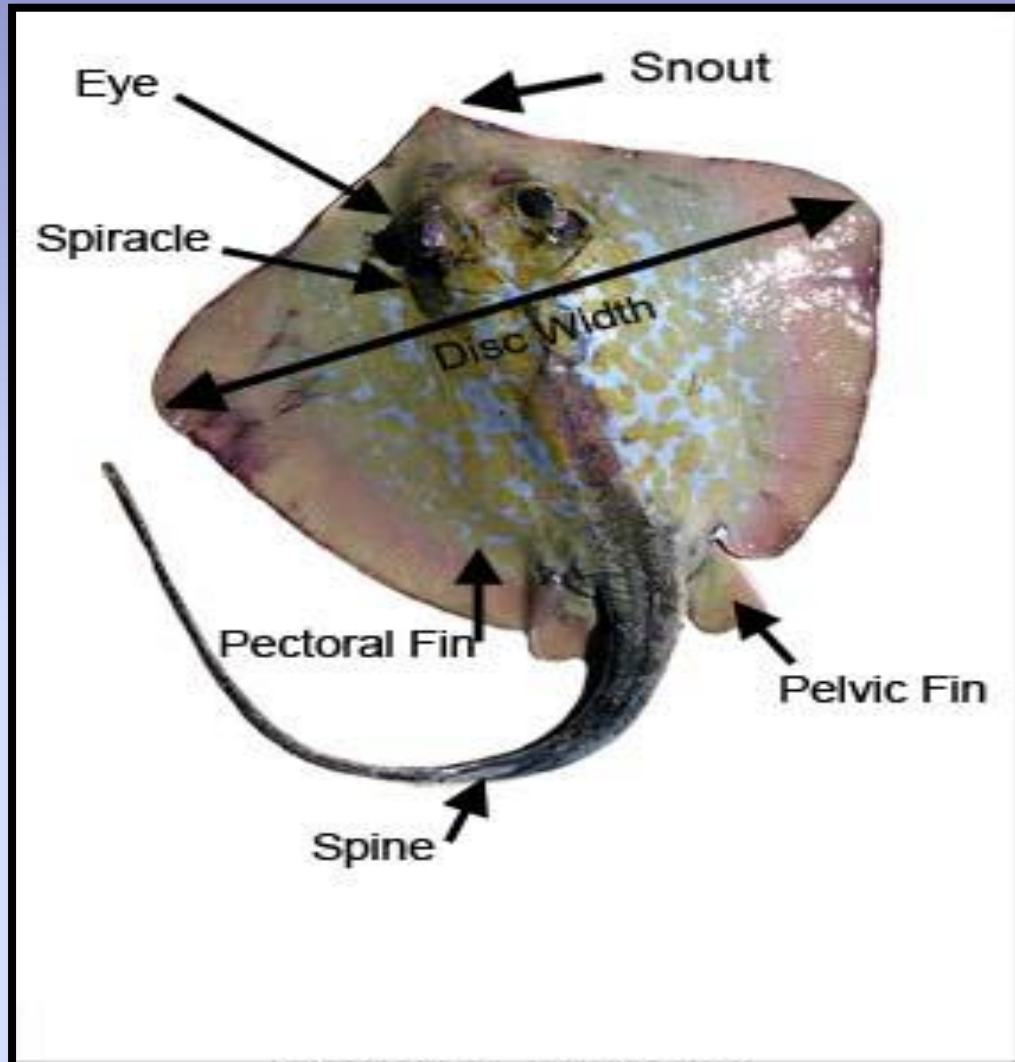
Chimaeras



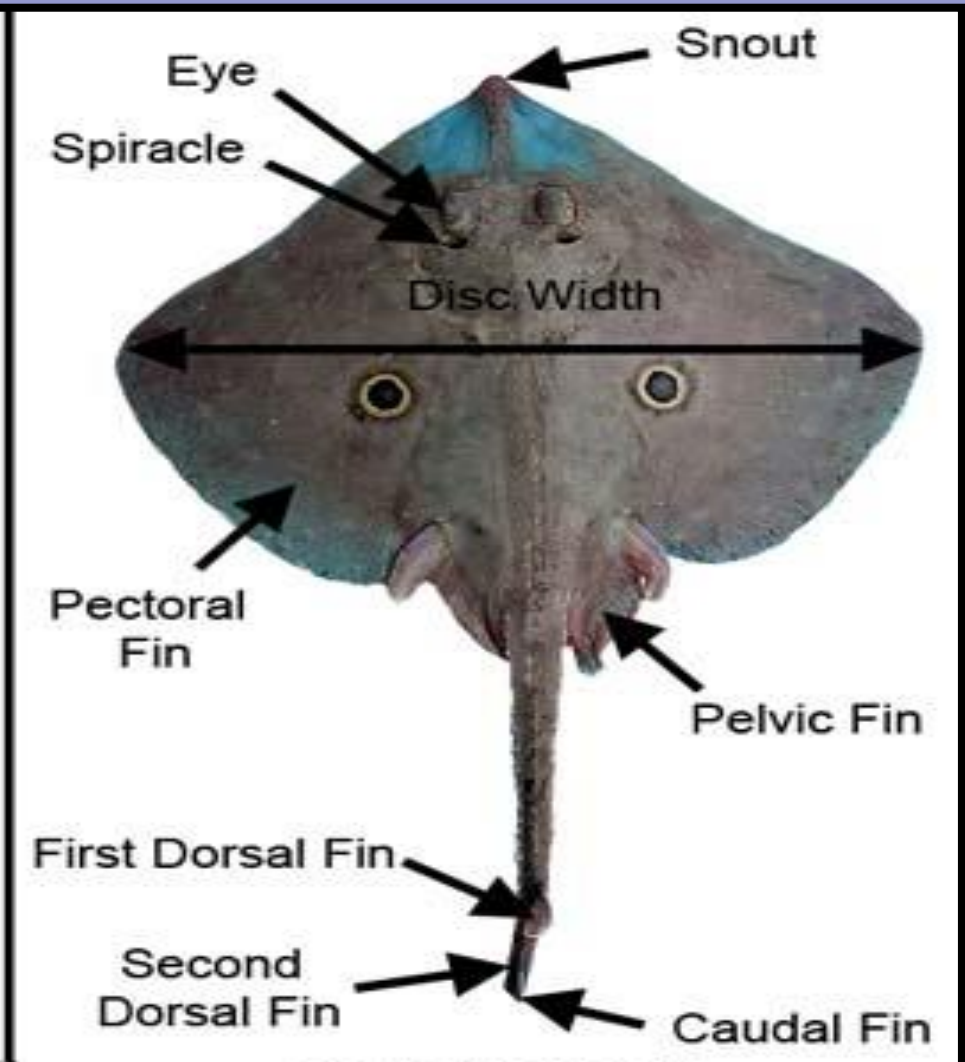
Teeth covered with enamel

Operculum
Diphycercal caudal fin

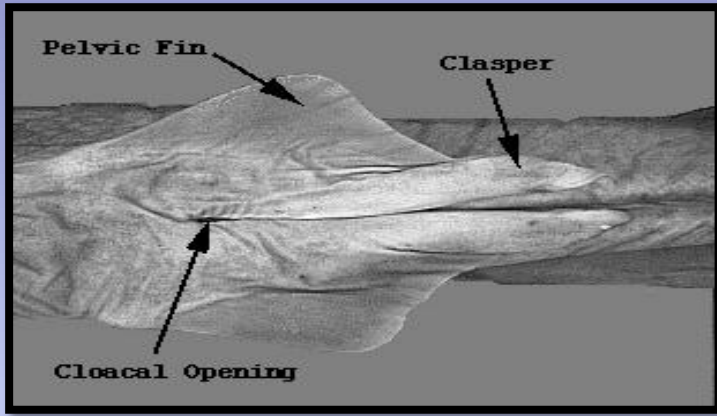




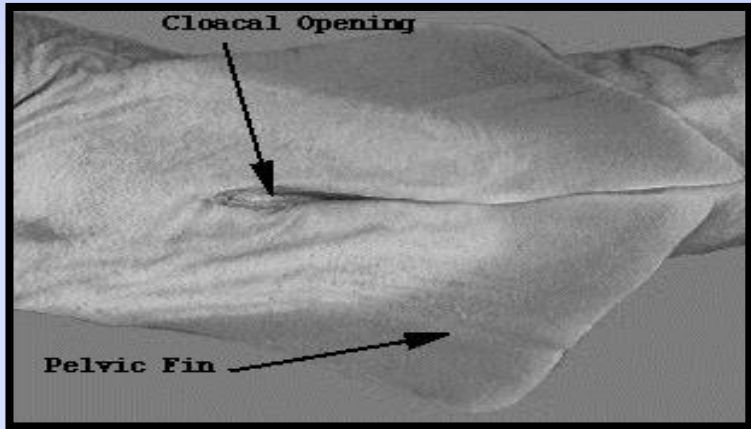
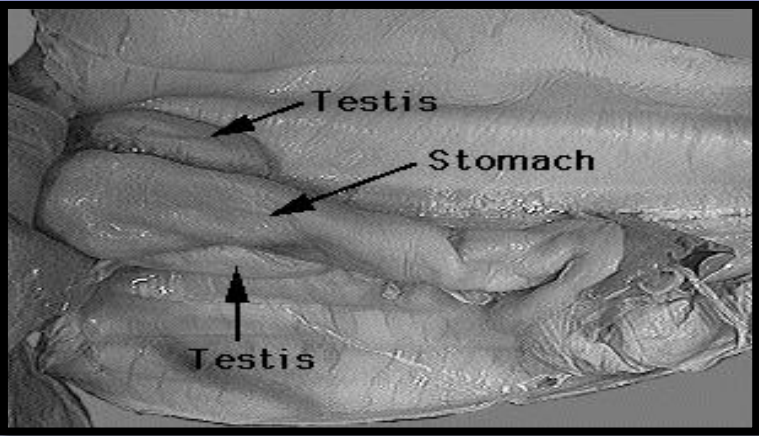
Stingray Anatomy



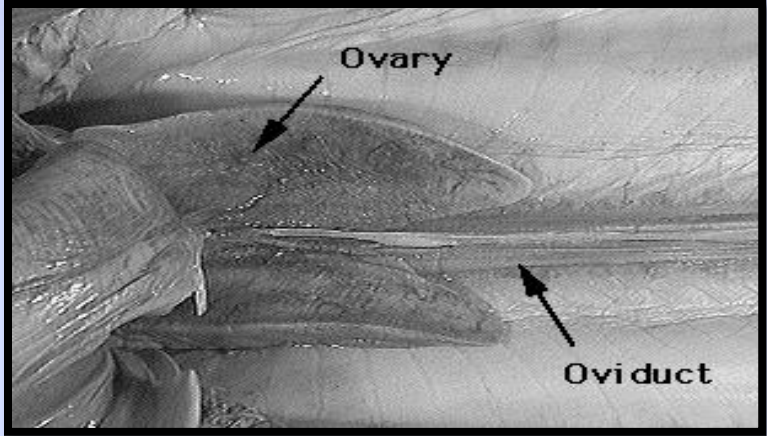
Skate Anatomy



MALE



FEMALE



Mermaid's purse

Many sharks are **ovovoviparous**.

There is no shell in the eggs.

The egg opens in the animal's body cavity
(*Squalus acanthias*)



SYSTEMATICS

PHYLUM: CHORDATA

SUBPHYLUM: VERTEBRATE (CRANIATA)

SUPERCLASIS: GNATHASTOMATA (JAWED FISHES)

CLASS I: CHONDRICHTYES (CARTILAGINOUS FISHES)

SUBCLASS I: PLACODERMI (FOSSIL FORMS)

- Primitive jawed; Simple hyoid arch and has single (unique) gill slit.
- No spiracles.
- Body is covered with bone plate or scales.
- The skeleton is bone-shaped.



Climatius



Acanthodius



Dinichthys



Bothriolepis



SUBCLASS II: XENACANTHIFORMES

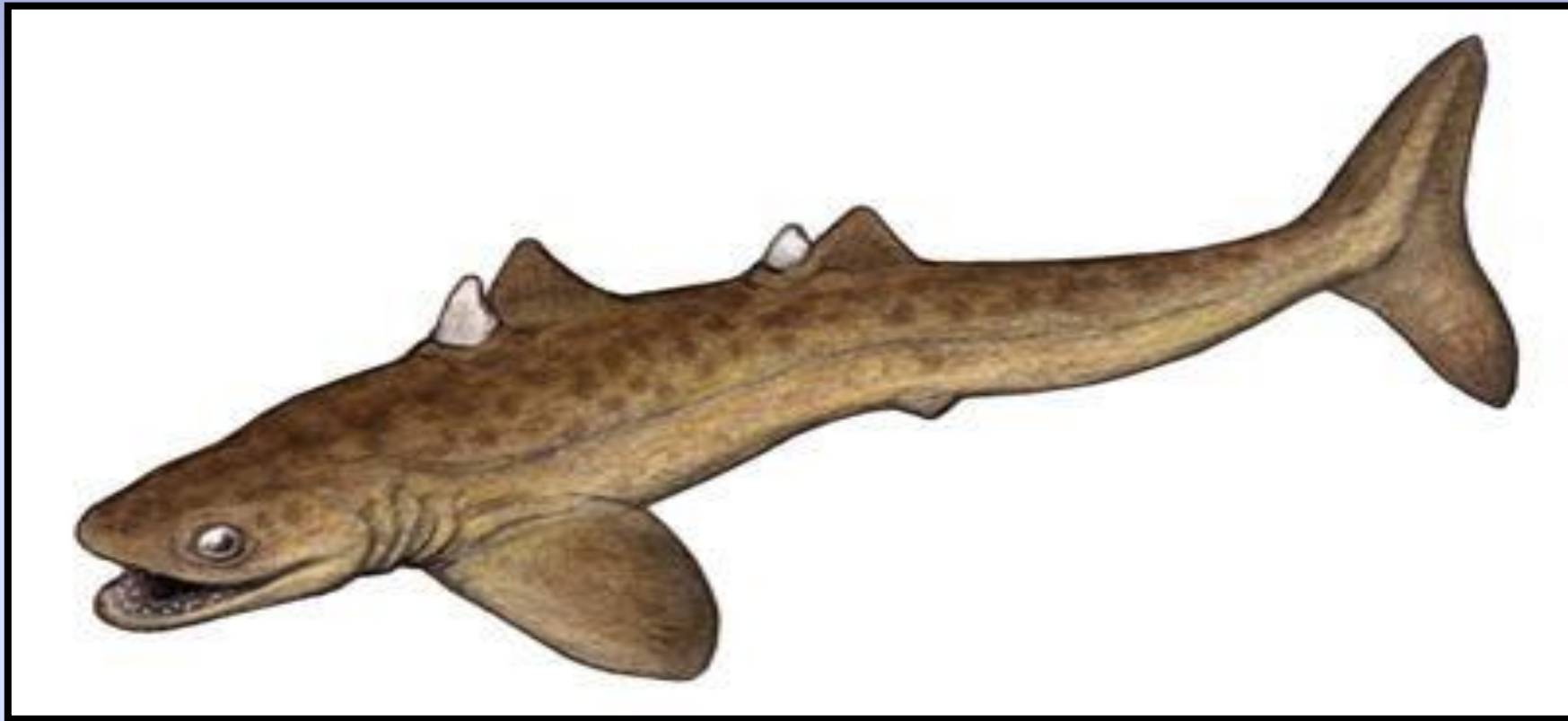
Fossil Freshwater Sharks



Xenacanthus



SUBCLASS III: Cladoselachiformes
Fossil marine sharks



SUBCLASS IV: Elasmobranchii

Sharks, Skates and Rays

I. ORDO: SQUALIFORMES (PLEUROTREMATA)

- Placoid scales or derivatives (scutes and spines) usually present
- 5-7 pairs of gill arches and gill slits in separate clefts along pharynx
- Upper jaw not fused to cranium
- About 937 species
- Mostly marine



Hexanchus griseus

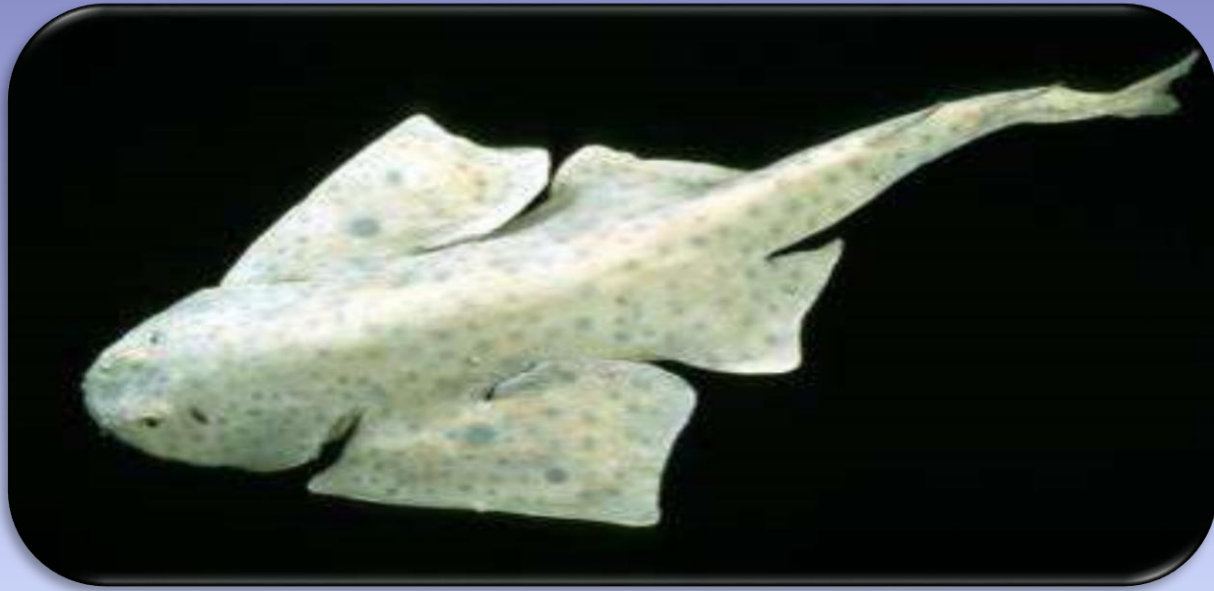


Heptranchias perlo



Scyliorhinus sterllaris





Squatina oculata



Rhinobatos rhinobatos

II. ORDO: RAJIFORMES (SKATES)



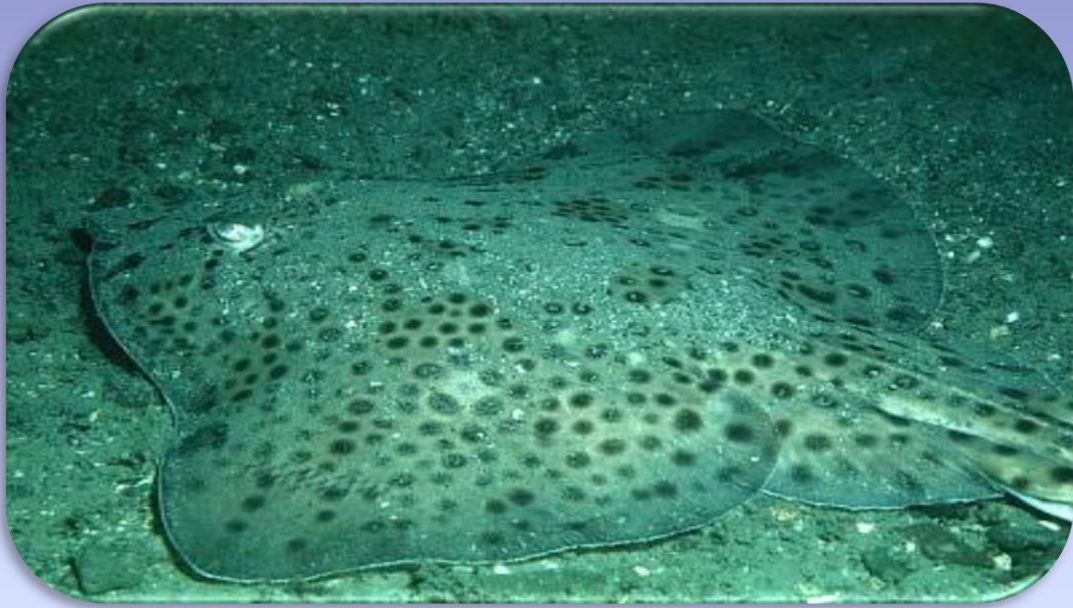
Torpedo nobiliana



Raja alba



Torpedo torpedo



Raja montagui (Vatoz)



Pteromylaeus bovinus

SUBCLASIS V: HOLOCEPHALI -CHIMAERAS

- It has four pairs of gills, but a pair of gill openings.
- No spiracle
- Scales absent
- Upper jaw fused to cranium



Chimaera monstrosa