Practical icthyology

Fish Anatomy

Body divided into: head , trunk , tail.

The body in fish in general is torpedo like or spindle in shape which facilate the swimming through water and reduce the energy consuming in their process.

Head contain:

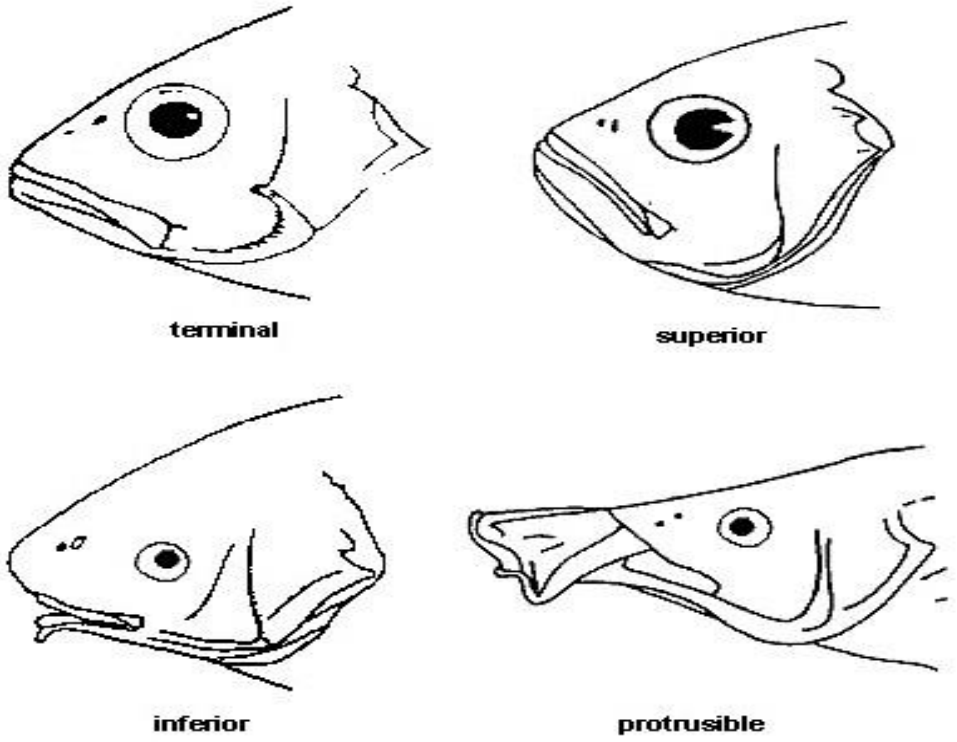
mouth

mouth position

-superior, most of carniovorous

- anterior, most of omniovorous

-inferior, most of herbivorous



Barbules: projection from skin have sensory functions some have and some have not depended on type of feeding habits.

Naris: found on sides and good smell and detect odour in water.

Trunk are cover with scales which are differ through the body.

Scales is bony structure embedded in skin, it differs in number and size and arrangement according to species of fish.

1-Ctenoid scales (border of scales tooth like)

2-Cycloid scales (border of scales smooth)

3- Placoid scales

4- Ganoid scales

Scales act as:

1- gliding in swimming and movement.

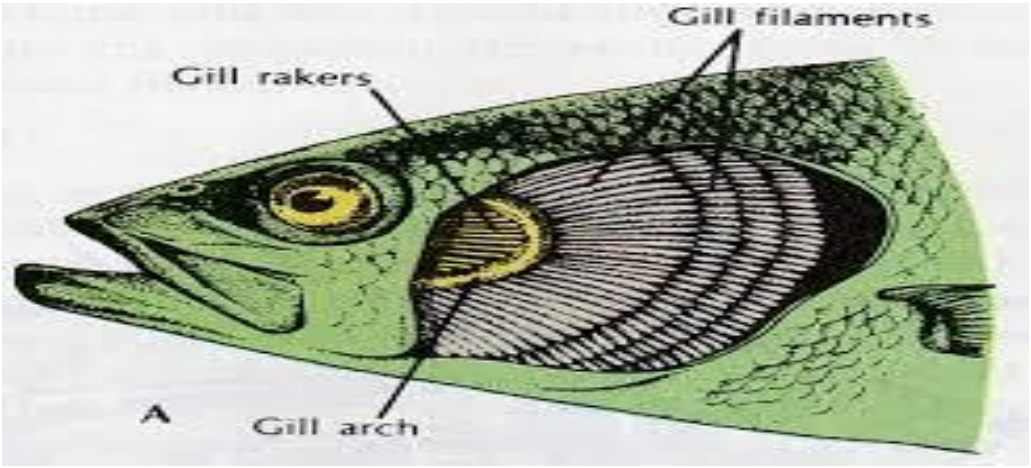
2- determine the age of fish

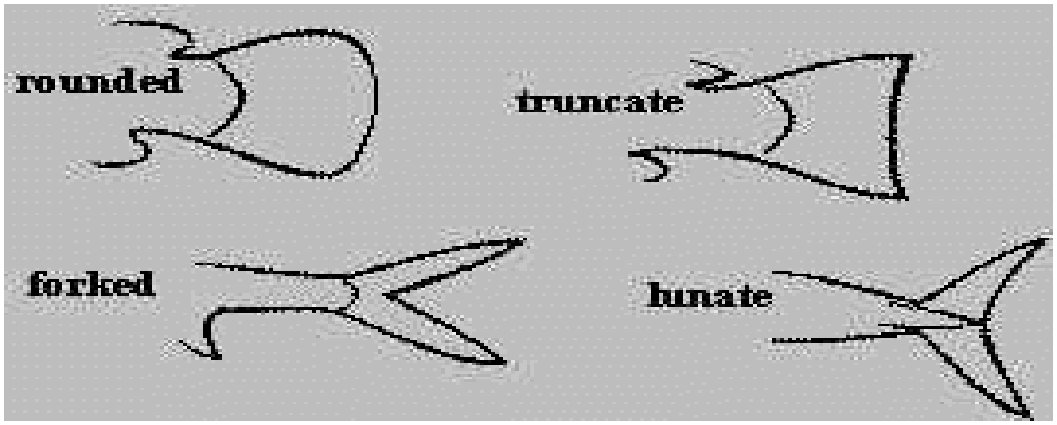
3- protection of fish

Operculum: flexible bony plate protects the sensitive gill arch.

Gills: are breathing apparatus and highly vascularized, it act exchange of gases (inhalation) the O_2 from water and excreted CO_2 (carbon dioxide).

Gills have five arches, four of them called gill arch which contain (gill raker and gill filaments) and fifth arch converted to pharyngeal teeth.





Air bladder (swimming- bladder): a hallow gas filled balance organ, found in upper part of belly, act as stabilizing, help in flotation.

Kidney: filter liquid waste materials from the blood and also regulating water salt concentration in body fish.

Liver: assist digestion by secrete enzyme that break down fats, and storage of fat, carbohydrate.

Heart: located behind gill, it consist of one atrium and one ventrical atrium connect at dorsal site with sac called venosis sac.

Blood cell are formed in kidney and spleen.

Q: How does the Heart differ between humans and fish?

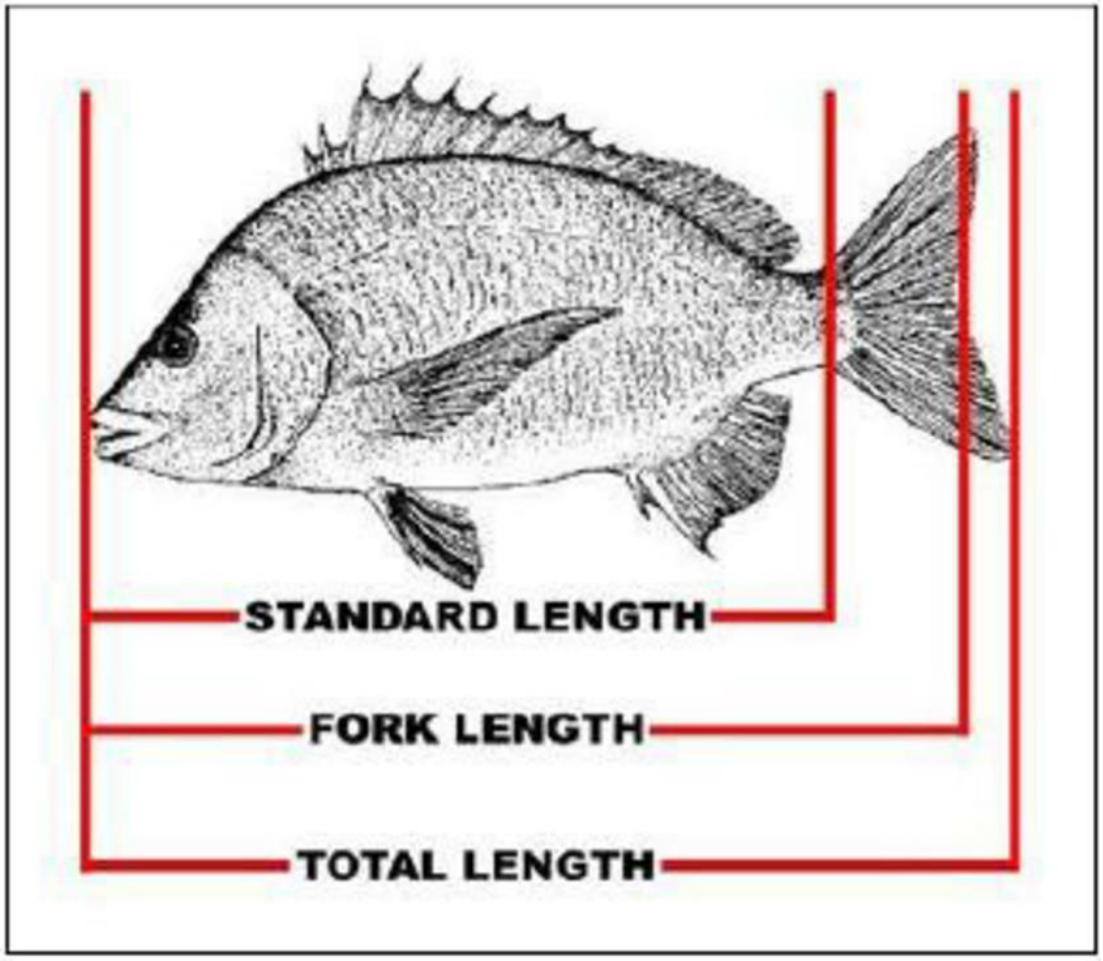
A: Humans have a 4-chambered heart increasing efficiency of oxygen delivery, while fish have just 2 chambers.

Lateral line: sensory organ by which the sense water current and pressure.

Total length: distance from tip of snout to end of caudal fins.

Fork length: distance from tip of snout to diversion of tail

Standard length: distance from tip of snout to posterior of last vertebrate



Intestine

-small such as carnivorous

-large such as herbivorous

-medium such as omnivorous

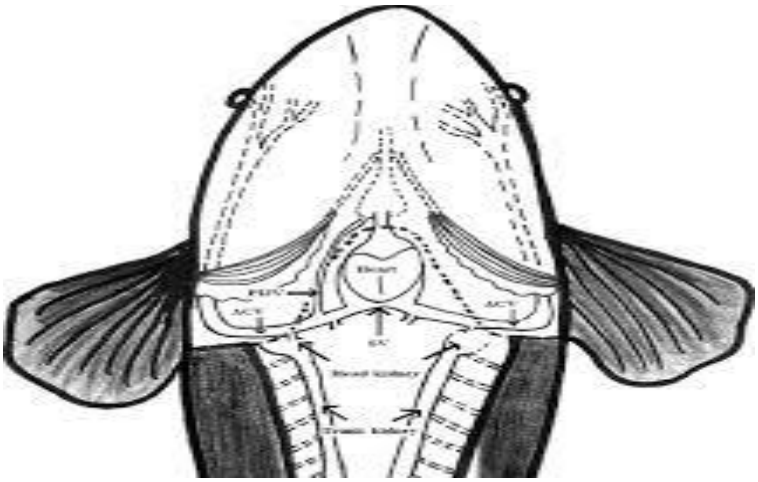
The stomach is often referred to as the gut, and is where food is digested and nutrients absorbed. Carnivores have fairly short intestines because such food is easy to chemically break down and digest. Fish such as tilapia that are herbivores (eat plants) and require longer intestines because plant matter is usually tough and fibrous and more difficult to break down into usable elements.

Collection of blood

1- heart

2- caudal vein

3- tail ablation



Classification of culture according to densitiy:

1- extensive culture:

Food is natural, production is low, low cost, need fertilizer to increase natural food like clay pond.

2- semi intensive

Need additive food and fertilizer to increase natural food like floating cages

3- intensive culture

Need artificial food and fertilizer to increase natural food, population is higher and good production liked closed system.

Fish divided depended on the salinity of water in to:

1- fresh water fish

2- marine fish