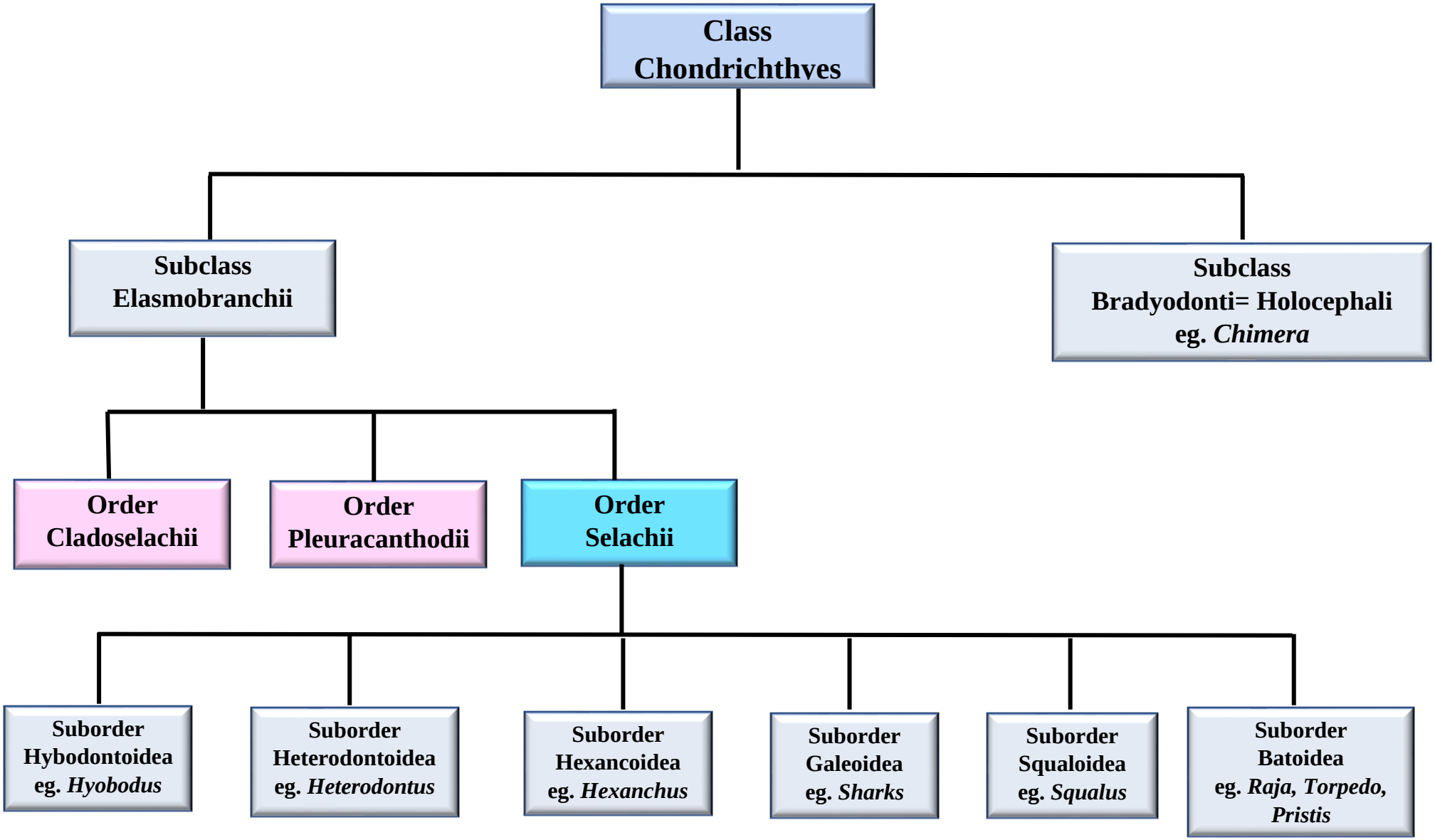
Chondrichthyes

Compilation by *Dr. Namita Nayyar*

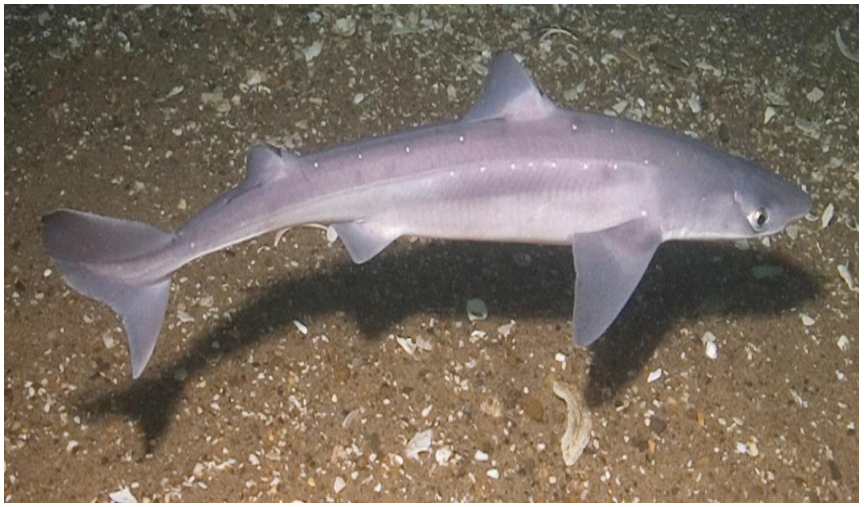

Class
Chondrichthyes
Subclass
Elasmobranchii
Subclass
Bradyodonti= Holocephali
eg. Chimera
Order
Cladoselachii
Order
Pleuracanthodii
Order
Selachii
Suborder
Hybodontoidea
eg. Hyobodus
Suborder
Heterodontoidea
eg. Heterodontus
Suborder
Hexancoidea
eg. Hexanchus
Suborder
Galeoidea
eg. Sharks
Suborder
Squaloidea
eg. Squalus
Suborder
Batoidea
eg. Raja, Torpedo,
Pristis

Scoliodon

Common name: Dog fish

Geographical distribution: It has a very wide geographical distribution : It has been recorded from Zanzibar to Sri Lanka and Sri Lanka to the Malay Archipelago in the Indian Ocean from the Bay of Bengal , the East Indies and the Philippine Islands , from Mexico to Panama in the Eastern Pacific , from Labrador to Brazil in the Atlantic , from Cuba in West Indies and also off the Eastern coast of South America.

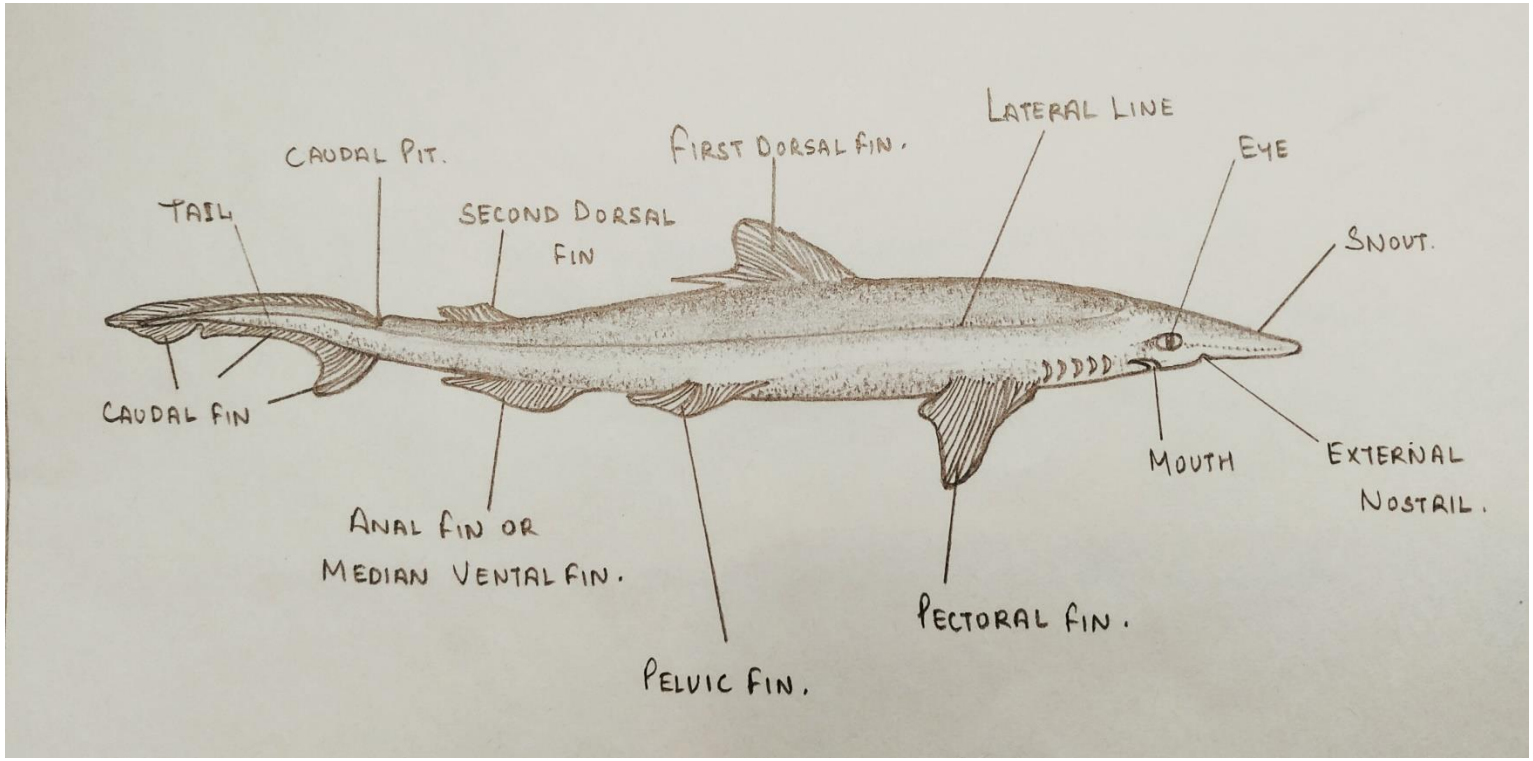
Scientific Classification with Justification :



Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Chondrichthyes: Skeleton: Cartilaginous; Scales: Placoid/Dermal denticles for protection and streamlining, paired fins, heart with its chambers in series
Subclass: Elasmobranchii: Operculum absent, spiral valve in intestine, five to seven pairs of gill clefts opening individually to the exterior, rigid dorsal fins
Order: Selachii: Sharks and rays, gills in separate clefts, cloaca present
Suborder: Galeoidea: Gill slits lateral, pectoral fins small
Genus: *Scoliodon*

Characteristic Features:

- Body is long , laterally compressed ,spindle shaped and covered with placoid scales.
- The colour of the body is dark grey on the dorsal side and lateral surfaces; while it is pale on the ventral surface.
- Head : pair of eyes; five pairs of lateral gill clefts ;strongly compressed dorso-ventrally and produced in front in a wedge shaped snout.
- Lateral line is present.
- Air bladder is absent.
- Trunk bears two dorsals , a caudal and a anal fin.
- Paired fins are pectorals and pelvics. In between pelvic fins lies the cloacal aperture.
- In male, each pelvic fin has a copulatory organ called clasper that is connected with its inner edge.
- Tail is heterocercal i.e, with caudal fin.



Sphyrna

Common name: Hammer headed shark

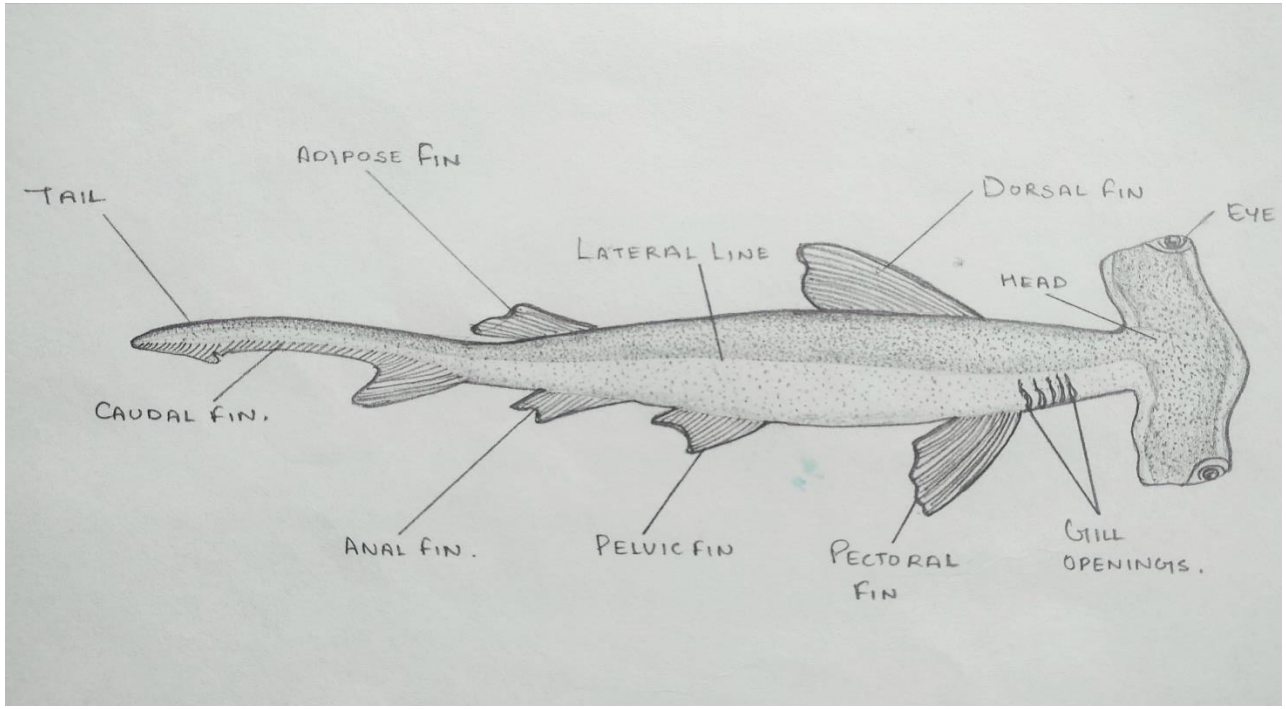
Geographical Distribution: Found worldwide in temperate waters. They are found in ocean surrounding Canada, Brazil to Argentina, the Mediterranean Sea, the western Indian Ocean and the Pacific Ocean. It prefers shallow waters and lives close to shore and in inshore waters including bays and estuaries.

Scientific Classification with Justification:

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Chondrichthyes: Skeleton: Cartilaginous; Scales: Placoid/Dermal denticles for protection and streamlining, paired fins, heart with its chambers in series
Subclass: Elasmobranchii: Operculum absent, spiral valve in intestine, five to seven pairs of gill clefts opening individually to the exterior, rigid dorsal fins
Order: Selachii: Sharks and rays, gills in separate clefts, cloaca present
Suborder: Galeoidea: Gill slits lateral, pectoral fins small
Genus: *Sphyrna*

Characteristic Features:

- From Greek word Sphyrna meaning hammer referring to its hammer-shaped head.
- The body is elongated, measuring 4-5 metres in length and divided into head, trunk and tail.
- It is greyish dorsally and yellow on ventral side
- Head is flattened in front and expanded sideways into 2 conspicuous lateral lobes, resembling a hammer. The compressed hammer shaped head is called cephalophoil.
- Eyes lie at the tip of the lateral lobes with 3 eyelids and nictitating membrane and have a 360 ° view. Mouth is crescentic and ventral, nostrils ventral at the base of lateral lobes and 5 pairs of lateral gill slits. Spiracles are absent.
- Trunk bears median as well as paired fins. Median fins are 2 dorsals, caudal and an anal and paired fins are pectorals and pelvics (straight to concave margins).
- Vertebrae are asterospondylus (vertebral ossifications radiate from the centres of the vertebra)
- Viviparous, produces about 40 young ones.
- During summer sometime forms schools and migrate northward to cooler waters followed by a return to south in the winter.
- Sphyrna is caught for its oil, although yield is low.



Additional Resources:

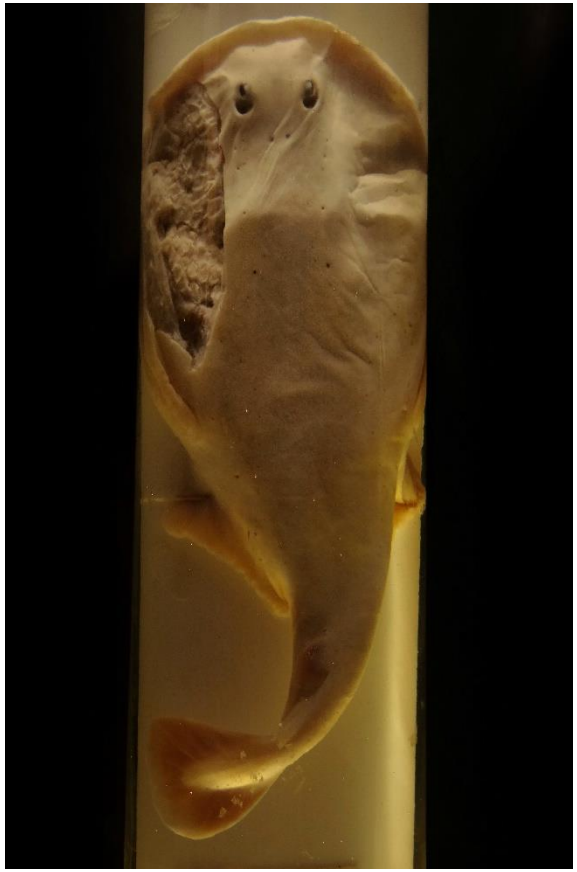
- https://youtu.be/j53ZCt7EWoQ
- https://youtu.be/oO9W-aA8dwU
- https://www.floridamuseum.ufl.edu/discover-fish/species-profiles/sphyrna-zygaena/

Torpedo

Common name: Electric Ray

Geographical Distribution: The common torpedo resides in the eastern Atlantic Ocean in the southern Bay of Biscay and throughout the Mediterranean to Angola. They prefer soft bottoms including sandy flats and seagrass beds but occasionally observed in deeper waters.

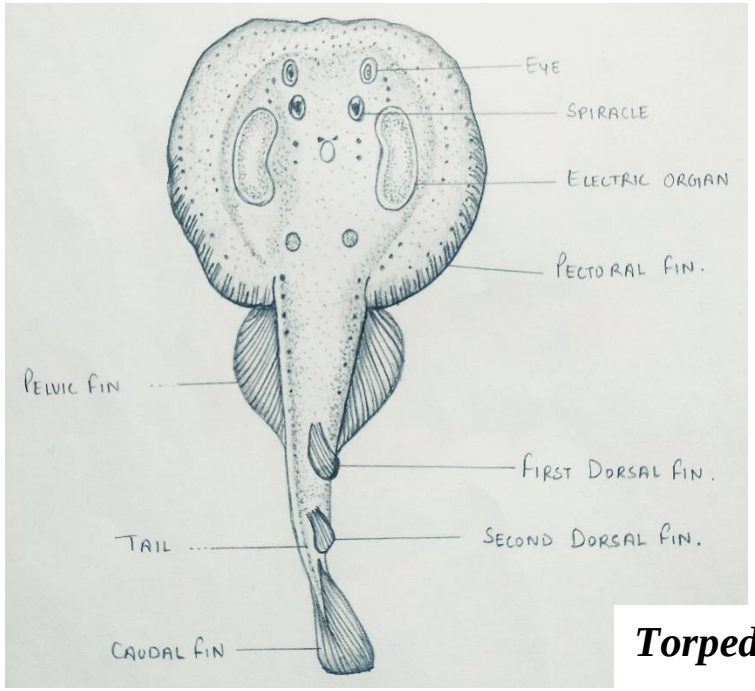
Scientific Classification with Justification:



Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Chondrichthyes: Skeleton: Cartilaginous; Scales: Placoid/Dermal denticles for protection and streamlining, paired fins, heart with its chambers in series
Subclass: Elasmobranchii: Operculum absent, spiral valve in intestine, five to seven pairs of gill clefts opening individually to the exterior, rigid dorsal fins
Order: Selachii: Sharks and rays, gills in separate clefts, cloaca present
Suborder: Batoidea: Gill slits ventral, spiracles present, dorsal fin on tail if present
Genus: *Torpedo*

Characteristic Features:

- The common torpedo has a dorso-ventrally flattened anterior disc-shaped body that is brown dorsally and white ventrally and posterior tail.
- Five pairs of gill slits are located on the ventral side of the disc.
- 5 distinct blue large spots (ocellae) and eyes (spiracles behind eyes) present dorsally on disc.
- Tail is relatively short with two dorsal and a caudal fin.
- Pelvic fins are small and behind pectoral.
- On either side of the head are two large, kidney-shaped electric organs that are visible just beneath the skin.
- The smooth skin lacks dermal denticles.
- Electric organs consist of muscle fibres arranged in blocks and serve as batteries. They are capable of giving a heavy electrical shocks (up to 200V) to stun prey and deter threats.
- Mouth is transverse and ventral with quadrangular naso-frontal lobe.
- Viviparous



Torpedo

Additional Resources:

- https://youtu.be/z0M7_HPSi14
- https://youtu.be/HyDB3e07jrw
- https://www.floridamuseum.ufl.edu/discover-fish/species-profiles/torpedo-torpedo/

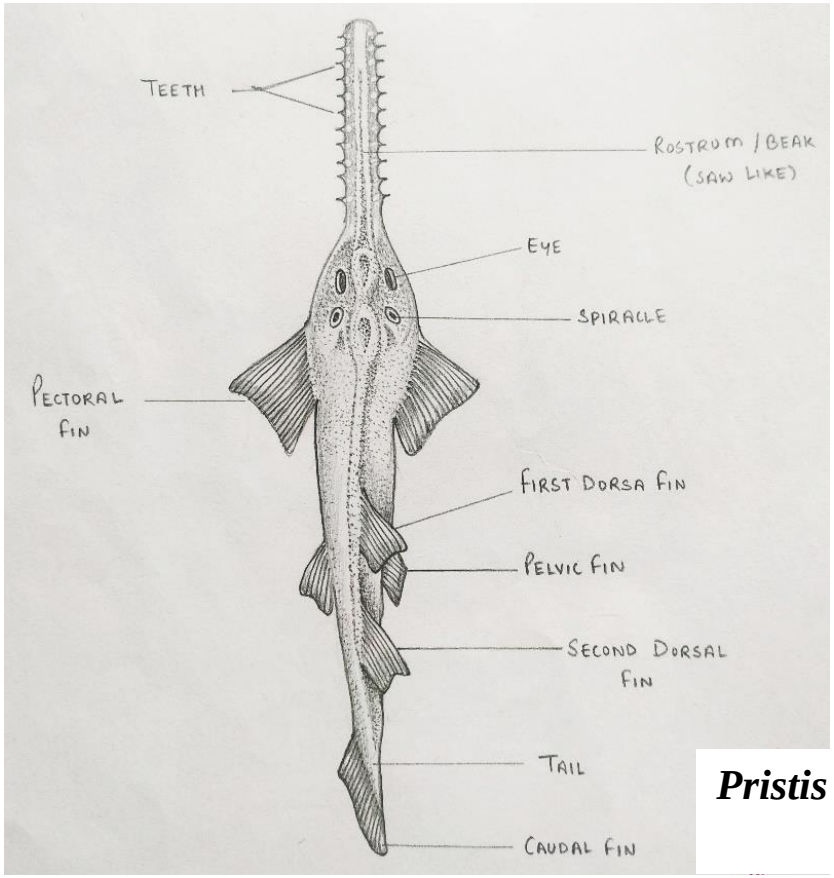
Pristis

Common name - Sawfish

Geographical distribution - Mediterranean and Atlantic oceans particularly in America, West Indies, China , Gulf of Mexico .

Scientific Classification With Justification:

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Chondrichthyes: Skeleton: Cartilaginous; Scales: Placoid/Dermal denticles for protection and streamlining, paired fins, heart with its chambers in series
Subclass: Elasmobranchii: Operculum absent, spiral valve in intestine, five to seven pairs of gill clefts opening individually to the exterior, rigid dorsal fins
Order: Selachii: Sharks and rays, gills in separate clefts, cloaca present
Suborder: Batoidea: Gill slits ventral, spiracles present, dorsal fin on tail if present
Genus: *Pristis*



Pristis

Characteristic Features:

- Body is depressed, elongated and shark-like.
- Skull and head prolonged into a long-flattened rostrum.
- Behind the eye, spiracles are present.
- Minute and obtuse teeth in jaws.
- Teeth are set deeply in hard cartilage and do not grow back if the root becomes damaged.
- Their body can grow to over 20 feet long.
- They can be readily distinguished from other sawfishes by the wider spacing of their rostral 'teeth' relative to other sawfish species.
- All species of sawfishes are highly endangered.
- They are ovoviviparous. Their eggs are retained in the uterus and the embryos develop while being nourished by a yolk sac.

Additional Resources:

- https://www.floridamuseum.ufl.edu/discover-fish/species-profiles/pristis-pristis/

Chimaera

Common name: Rat fish or King of Herrings.

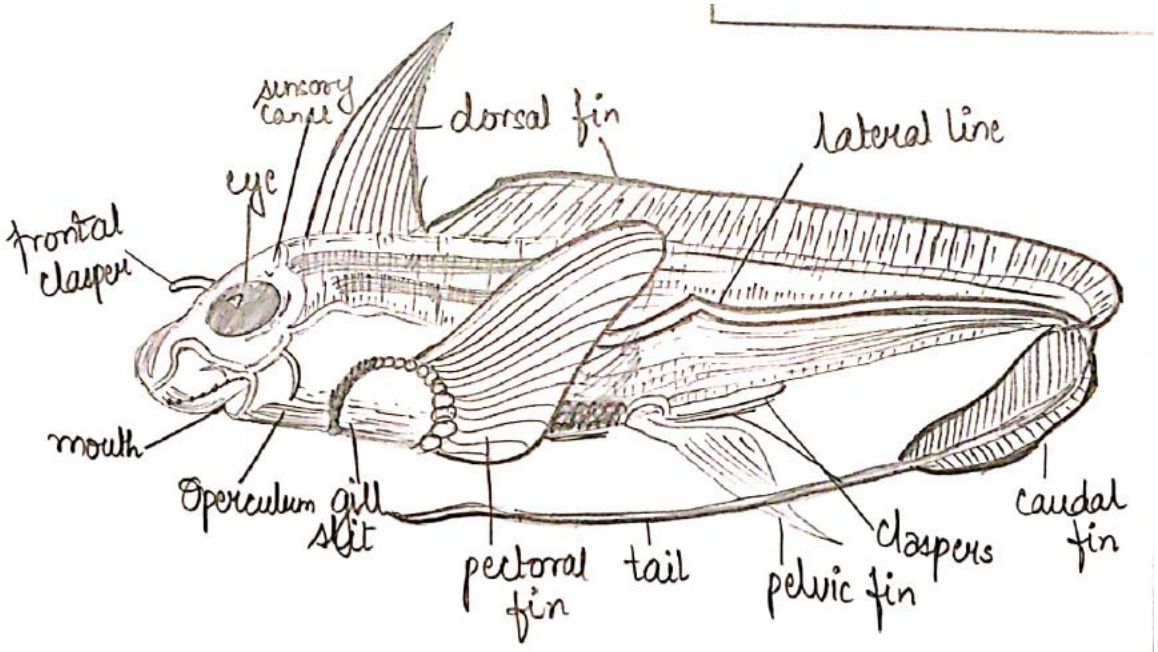
Geographical distribution: It is found off the coasts of Europe from Norway to Portugal including the Mediterranean and also in the neighbourhood of Azores ,Cape of Good Hope and coasts of Japan and north America . Upper Devonian to recent.

Scientific Classification With Justification:

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Chondrichthyes: Skeleton: Cartilaginous; Scales: Placoid/Dermal denticles for protection and streamlining, paired fins, heart with its chambers in series
Subclass: Bradyodonti=Holocephali : Dentition is of crushing type , Spiracle is absent.
Order: Chimaeriformes:
Genus: *Chimaera*

Characteristic Features:

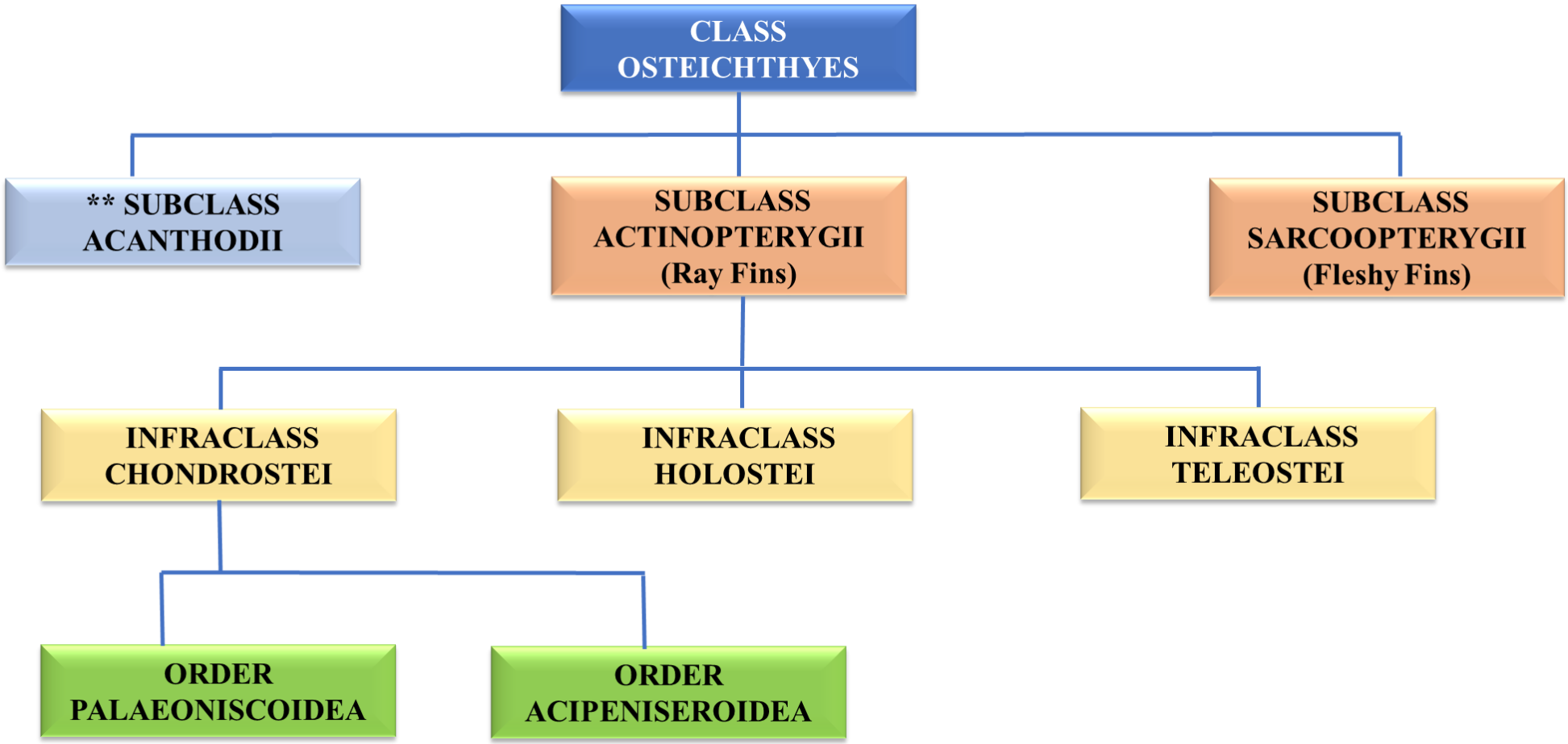
- Body is elongated and shark – like .
- Skin is smooth and rubbery, completely lacking scales.
- Young rat fish has placoid scales.
- Head is large and compressed with a blunt conical snout.
- Dental plates are present for crushing.
- A characteristic open groove lodging the lateral line system lies in the skin.
- Air bladder is absent, cloaca is also absent.
- Gill slits covered with non-bony operculum. Spiracle is absent.
- Pectoral and pelvic fins are large. Ventral fin is small.
- Posterior dorsal fin is continuous and non-erectile.
- Caudal fin consists of nearly equal sized dorsal and ventral lobes.
- Tail is long, tapering whip-like and diphycercal.
- In male, five claspers are present.
- Chimaera is an intermediate fish between sharks and bony fishes.



Osteichthyes

Compilation by ***Dr. Namita Nayyar***

Diagram Credits: ***Ms. Anoushka Puri (SZH 2020-23 batch)***


CLASS
OSTEICHTHYES
** SUBCLASS
ACANTHODII
SUBCLASS
ACTINOPTERYGII
(Ray Fins)
SUBCLASS
SARCOOPTERYGII
(Fleshy Fins)
INFRACLASS
CHONDROSTEI
INFRACLASS
HOLOSTEI
INFRACLASS
TELEOSTEI
ORDER
PALAEONISCOIDEA
ORDER
ACIPENISEROIDEA


INFRACLASS
TELEOSTEI (bony fishes)
SUPERORDER
LEPTOLEPIMORPHA
Eg. Leptolepis
SUPERORDER
ELOPOMORPHA
Eg. Anguilla, eel
SUPERORDER
OSTEOGLOSSOMORPHA
Eg. Pantodon
SUPERORDER
CLUPEOMORPHA
Eg. Clupea, Herring
SUPERORDER
OSTARIOPHYSI
Eg. Cyprinus, carp, Catfish
SUPERORDER
PROTACANTHOPTERYGII
Eg. Salmo, Trout,
SUPERORDER
PARACANTHOPTERYGII
Eg. Lophuis,
SUPERORDER
ATHERINOMORPHA
Eg. Exocoetus, garfish
SUPERORDER
ACANTHOPTERYGII
Eg. Hippocampus, perch, pipefish

Mystus

Common Name: Darial tengar

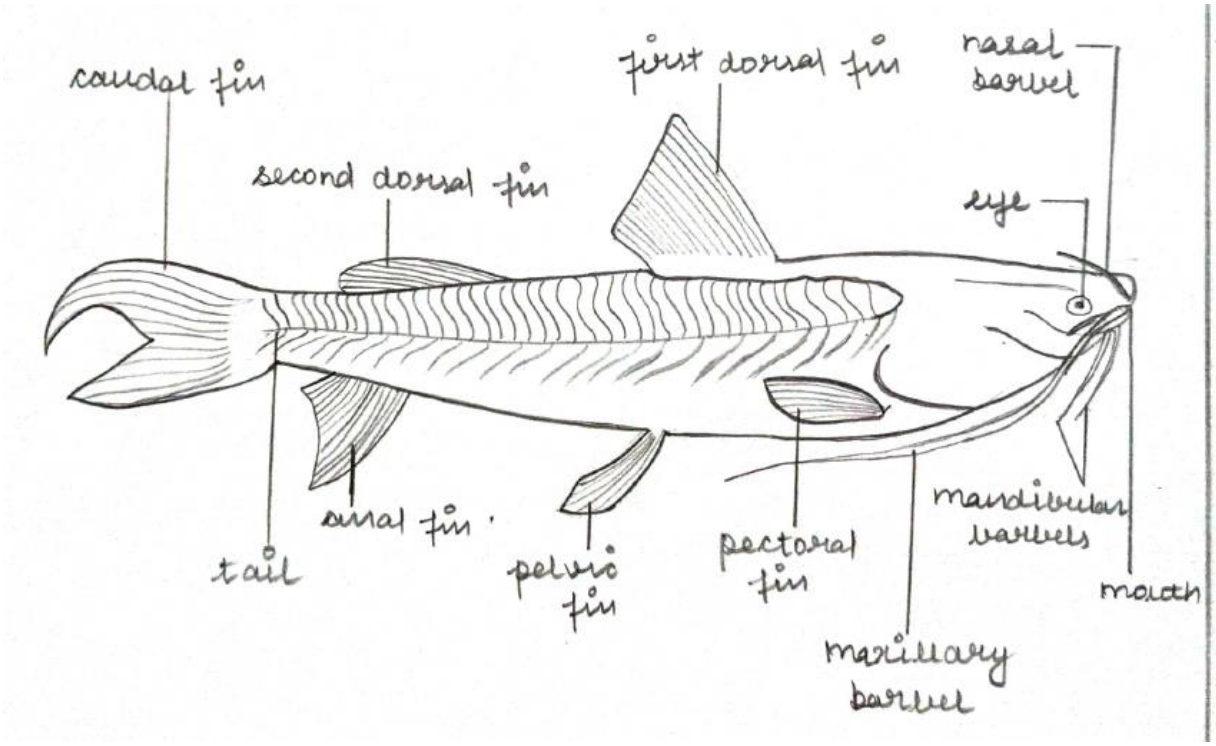
Geographical Distribution: It is widely distributed in India being found in Yamuna, Ganga and the Deccan rivers as well as the Assam rivers.It is also found in Yunnan and Myanmar.

Scientific Classification with Justification

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Ostariophysi: Air bladder communicates to the pharynx.Weberrian ossicles between air bladder and internal ear
Order: Siluriformes: Prominent barbels which resemble a cat's whiskers

Characteristic Features:

- Body is brownish above with silvery white on the sides
- Body is elongated, measuring upto 1m in length.
- Head with distinctly long snout and mouth is transverse and terminal.
- Upper jaw is generally longer **and 8 barbels are present: two maxillary and four mandibular**.
- Adipose dorsal fin is well developed having a circular black spot. Pectoral fin with a stronger spine than that of dorsal.
- Caudal fin is deeply forked with a longer upper lobe.
- It is predaceous and feeds on small carps, prawns etc.



Heteropneustus

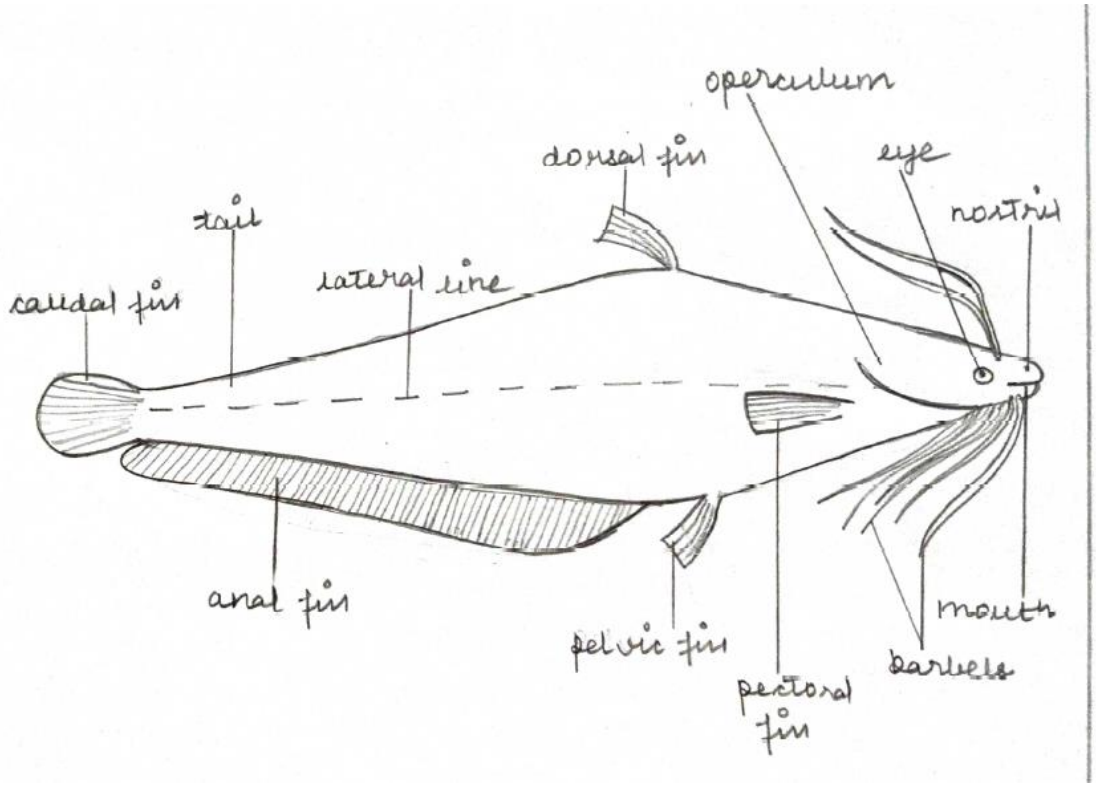
Geographical Distribution: It is widely distributed in India being found in Yamuna, Ganga and the Deccan rivers as well as the Assam rivers.It is also found in Yunnan and Myanmar.

Scientific Classification with Justification

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Ostariophysi: Air bladder communicates to the pharynx.Weberrian ossicles between air bladder and internal ear
Order: Siluriformes: Prominent barbels which resemble a cat's whiskers

Characteristic Features:

- Commonly called singhi in hindi.
- Body elongated and laterally compressed. 30 cm in length.
- Skin without scales.
- Head is flattened.
- Eyes with free circular margins
- Barbles: long: 4 pairs.
- Dorsal fin: short without spine, ventral fin situated at the level of dorsal fin.
- Pectoral fin: strong with poison spine.
- Anal fin: elongated, reaches upto the caudal fin separated from it by a notch.
- Gill opening is wide, the membranes not being confluent with the skin of isthmus and separated by a deep notch.
- Accesorry breathing organs are present.
- Air bladder is also present.



Labeo

Common name: Rohu

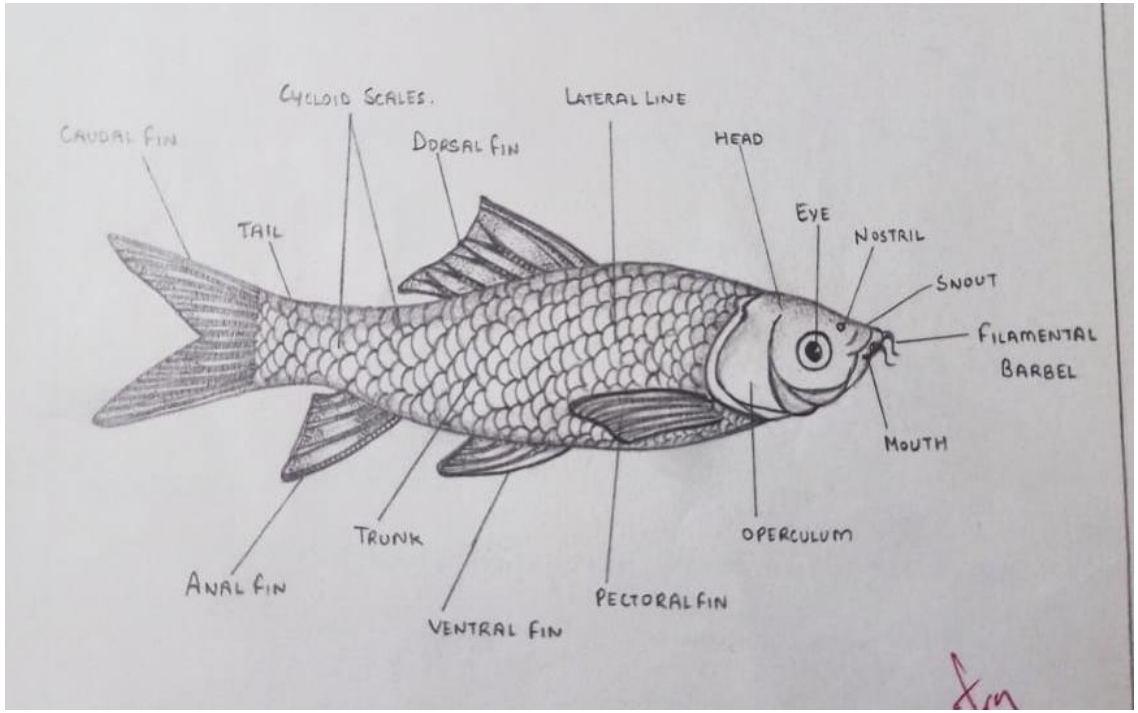
Geographical Distribution: The rohu occurs in rivers throughout much of northern and central and eastern India, Pakistan, Bangladesh, Nepal and Myanmar, and has been introduced into some of the rivers of Peninsular India and Sri Lanka

Scientific Classification with Justification

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Ostariophysi: Air bladder communicates to the pharynx.Weberrian ossicles between air bladder and internal ear
Order: Cypriniformes: Fins are either without any spines or the dorsal, anal or pectoral fins have a spine each.

Characteristic Features:

- Body is elongated with moderately rounded abdomen measuring upto 1m in length and weighs about 4 kg.
- Colour brownish grey to black above and silvery white below
- Scales(cycloid) are large and orange to reddish in colour in the centre
- Head is prominent with blunt snout. Mouth is transverse and semi oval with fringed thick lips.
- A pair of filamentous barbels arise from upper lip that are smaller in size.
- **Lateral line is distinct**.
- Paired fins are present. Dorsal fin single just above the pelvic fins.
- Caudal fin is forked.
- **Air bladder is usually large and divided into an anterior and a posterior part.**
- Economically important and relished in food



Exocoetus

Common name: Flying fish

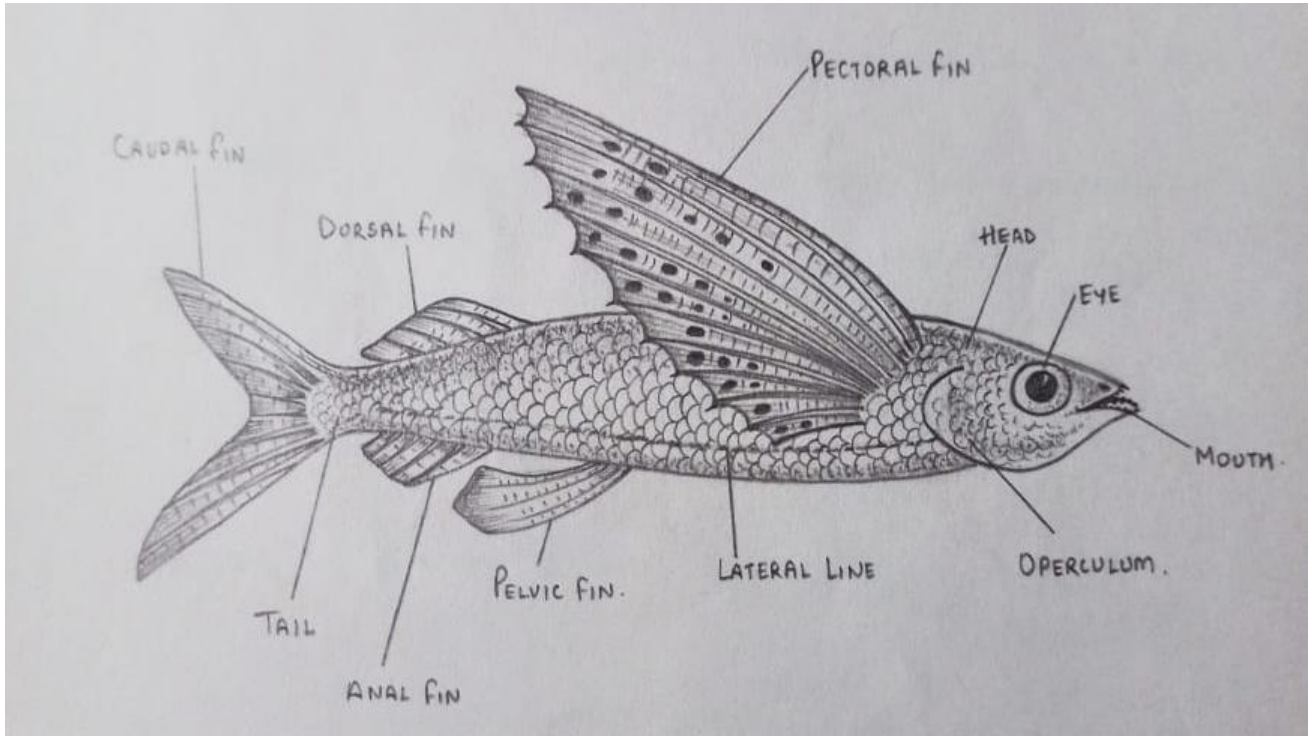
Geographical Distribution: In tropical and warm parts of Atlantic and Indian oceans.

Scientific Classification with Justification:

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basa l lobes and supported by der mal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Atherinomorpha: streamlined, medium-sized fishes that live close to the surface of the water, feeding on algae, plankton, or smaller animals including other fishes. Pelvic fins are abdominal.
Order: Beloniformes: Pectoral fins large and high on body. Some are able to fly/glide due to enlarged pectoral fins. Scales cycloid. Fins without spine, cycloid scales, ventral fins are abdominal. Dorsal fin situated above anal fin.

Characteristic Features:

- Body is silver in colour, moderately elongated, compressed and covered with cycloid scales.
- Mouth is wide, both the jaws bear teeth
- Head: eyes. Upper part of snout is produced into a process and contains nostril.
- Lateral line and operculum are present.
- **Pectoral fin enlarged and has black spots on it. Enormously elongated to from wing like structures. Serve as parachute to sustain the fish in its gliding leaps.**
- Dorsal and anal fins are short. Dorsal fin lies above the anal fin.
- Tail is hypobatic: ventral lobe of the tail fin is large.
- Air bladder is present.
- Oviparous



Echeneis

Common name: Sucker fish

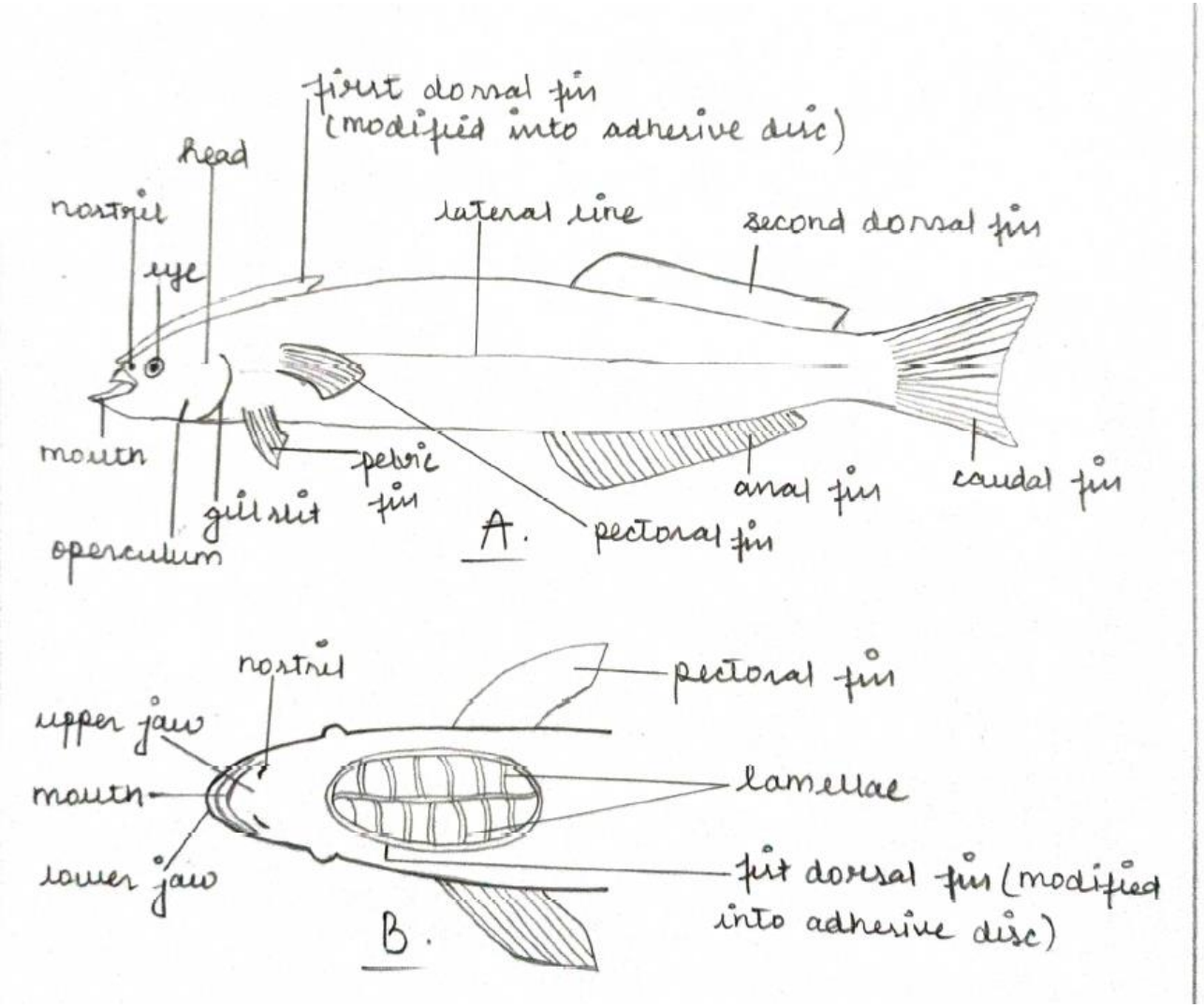
Geographical distribution: In tropical and subtropical seas (Atlantic and Pacific oceans).

Scientific Classification with Justification :

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Atherinomorpha: streamlined, medium-sized fishes that live close to the surface of the water, feeding on algae, plankton, or smaller animals including other fishes. Pelvic fins are abdominal.
Order: Beloniformes: Pectoral fins large and high on body. Some are able to fly/glide due to enlarged pectoral fins. Scales cycloid. Fins without spine, cycloid scales, ventral fins are abdominal. Dorsal fin situated above anal fin.

Characteristic Features:

- *Echeneis* is commonly known as sucker-fish.
- Body is elongated, measuring about 1 metre in length, fusiform and covered with small cycloid scales.
- Head is depressed and furnished above with an adhesive organ that is modified first dorsal fin.
- Head bears lateral eyes and wide and deep mouth.
- Adhesive disc is flat, oval and transversely furrowed and is an effective organ for attachment.
- Second dorsal and snap fins are elongated without spines.
- Tail is homocercal and caudal fun bilobed.
- Air bladder is absent.



Anguilla

Common name: Eel

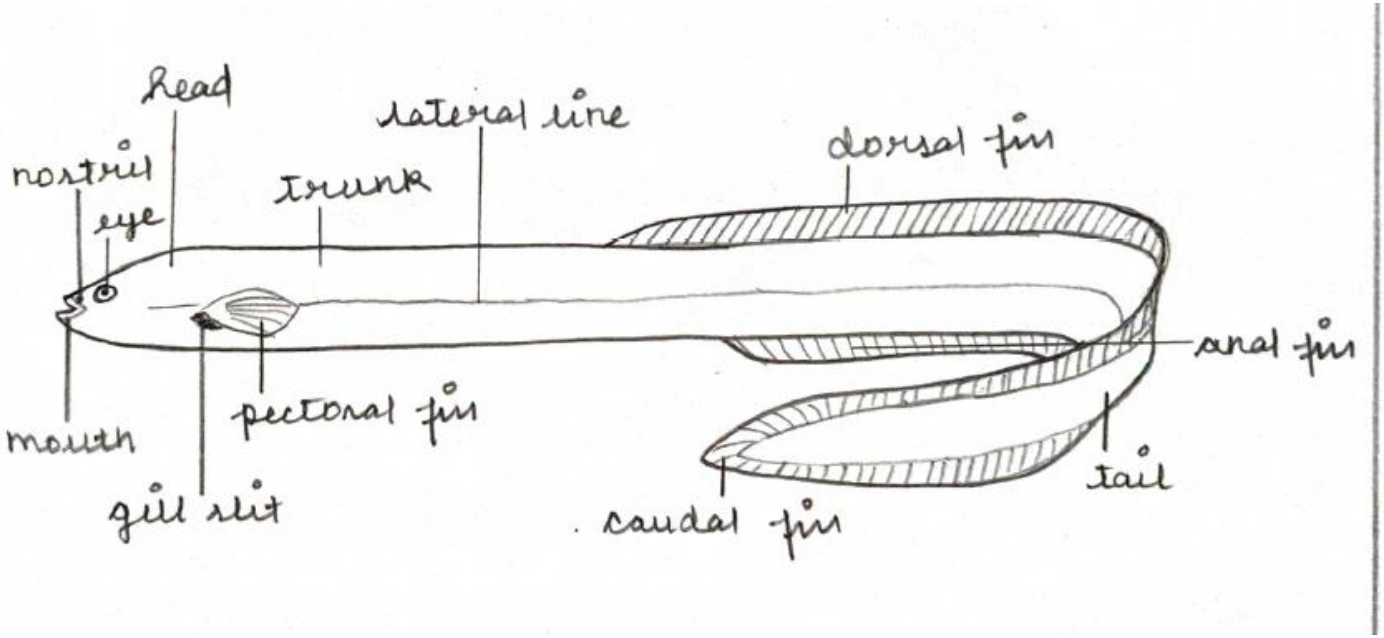
Geographical distribution: In tropical and subtropical seas (Atlantic and Pacific oceans).

Scientific Classification with Justification :

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Elopomorpha: have leptocephalus larvae, which are unique to the Elopomorpha. No other fishes have this type of larvae
Order: Anguilliformes: Body elongated: eel like; skin naked or with minute scales embedded in it; dorsal and anal fins are long and narrow and usually confluent behind ; pelvic fins if present, abdominal fins devoid of spines; air bladder connected with the intestine.

Characteristic Features:

- Commonly known as eel. Measures upto 1m in length.
- Color:Brown on the back, yellowish brown below.
- Body is elongated, cylindrical and snake like.
- Small, linear rudimentary scales are embedded in skin, arranged in small groups which are placed obliquely at right angles to one another forming a curious pattern.
- Dorsal and Anal fins are long and narrow.
- Pectoral fin is small, pelvic fin is absent.
- Tail is long and caudal fin is quite large.
- Fins are supported by rays, spines are absent.



Hippocampus

Common name: Sea horse

Geographical distribution: Found on bottom of Atlantic coasts of North America and Europe.

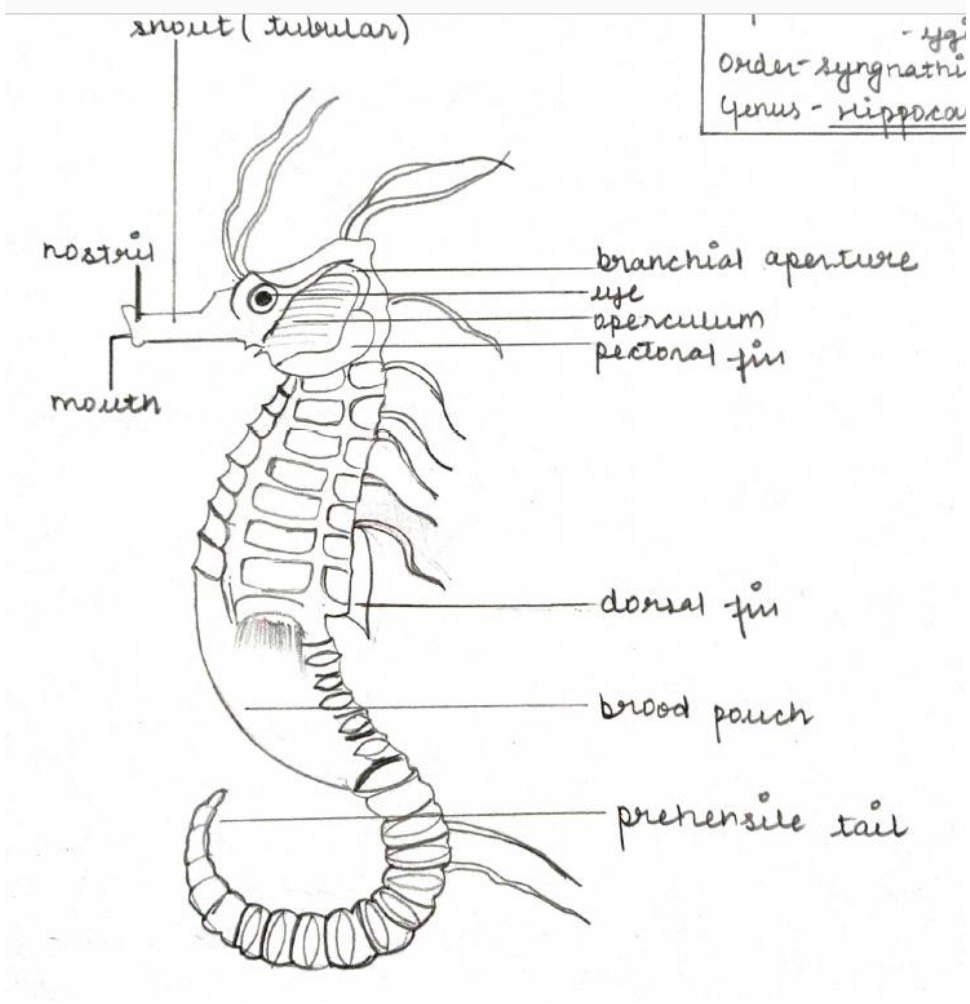

Hippocampus (Female)

Scientific classification with justification:

Phylum: Chordata: presence of noto chord
Subphylum: Vertebrata: notochord replaced by vertebral column
Superclass: Gnathostomata: jawed vertebrates
Class: Osteichthyes: skeleton: bone, skin with many mucous glands. Operculum present.
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Ostariophysi: small to medium sized fishes, swimming bladder is mostly present, characterised by presence of Weberian apparatus, feed on algae, phytoplanktons, some are omnivores, soft rayed fins present.
Order: Syngnathiformes: slender elongate bodies with a small mouth at the end of a long tubular snout, and armoured bodies partially or completely encased in bony rings or dermal plates

Characteristic features:

- Seahorses have elongated bodies encased in bony rings
- No pelvic fins but most have small pectoral fins and a single dorsal fin
- Small gill openings present.
- Seahorses have a prehensile tail.
- Seahorses swim upright with their tails down and their heads up.
- They have a tubelike mouth with no teeth which helps to create a vacuum that draws their prey into their mouth.
- They feed on small crustaceans employing a sit- and - wait strategy, remaining stationary and snapping prey that comes near.
- The males brood the developing eggs in a thinskinned abdominal pouch until they hatch.
- Reproduction is physiologically external but physically internal after closing of brood pouch



Diodon

Common name: Porcupine fish

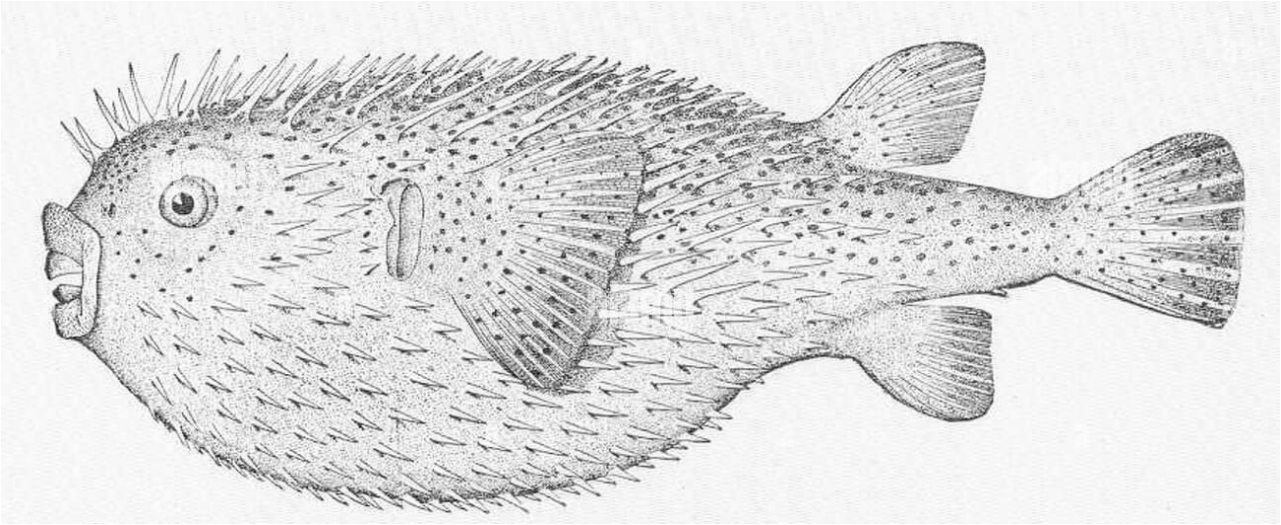
Geographical Distribution: In all tropical and subtropical seas(Atlantic and Indian seas)

Scientific Classification with Justification:

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Acanthopterygii:Members of this superaorder are sometimes called ray-finned fishes for the characteristic sharp, bony rays in their fins;Acanthopterygii comprises three relatively small, sequential, worldwide marine clades, Stephanoberyciformes, Zeiformes, and Beryciformes as well as the largest and most diverse group of fishes, the Percomorpha.have suctorial mouth and pectoral fin relatively higher on side of the body.
Order: Tetrodontiformes: anal-fin spines lacking; dorsal-fin spines six or fewer or absent; pelvic fin either reduced to a spine and no more than two small rays, or forming a bony rudimentary structure at the end of the pelvis, or absent entirely;

Characteristic Features:

- Globular body.
- The skin is covered by stiff and movable dermal spines.
- Mouth opening is small and jaws without a median suture.
- Dorsal and Anal fins placed opposite to each other.
- Pelvic fins are entirely absent.
- Gills are 3 in no. Gill slit situated near the pectoral fin.
- Air bladder is present.
- A thin walled inflatable gastric diverticulum is present which allows the whole body to be puffed up into a globular shape and the spines become defensively erected.
- Carnivorous. Feeds upon molluscs and corals, etc.
- Flesh of fish: poisonous.



Anabas

Common name: Flat Fish

Geographical Distribution: In all tropical and subtropical seas(Atlantic and Indian seas)

Scientific Classification with Justification:

Phylum: Chordata: The presence of a notochord.
Subphylum: Vertebrata: Notochord replaced by Vertebral Column.
Superclass: Gnathostomata: Jawed Vertebrates
Class: Osteichthys: Skeleton: bone; skin with many mucous glands with embedded bony scales. Operculum present
Subclass: Actinopterygii: Ray finned fishes. Paired fins: thin, broad without fleshy basal lobes and supported by dermal fin rays.
Infraclass: Teleostei: Light skeleton density of bones is reduced. Hyostylic skull: A movable premaxilla and corresponding modifications in the jaw musculature which make it possible for them to protrude their jaws outwards from the mouth. Swim bladder.
Supraorder: Acanthopterygii: sharp, bony rays in their fins. Suctorial mouth. pectoral fin relatively higher on side of body
Order: Perciformes: Fins usually with spines; two dorsal fins; ventral fin: thoracis with not more than 6 rays; Weberian apparatus absent, physoclistic. (no connection between swim bladder and digestive tract)

Characteristic Features:

- Climbing perch.
- Body is laterally compressed and covered with Ctenoid scales.
- 20cm long body
- Dorsal and anal fins are long and spinous.
- Pectoral and pelvic fins are small. Caudal fin is well developed.
- Operculum bears backwardly directed spines.
- The accessory respiratory organs are well developed.
- The fish can remain outside water for a long time. When it is outside water it respires by accessory respiratory organs.
- It is a predator, feeds on shrimps, gastropod shells and young fishes.
- Highly esteemed food fish.
- The fish can walk on land with the help of fin spines and opercular spines.