

Field Guide for the identification of major demersal fishes of India

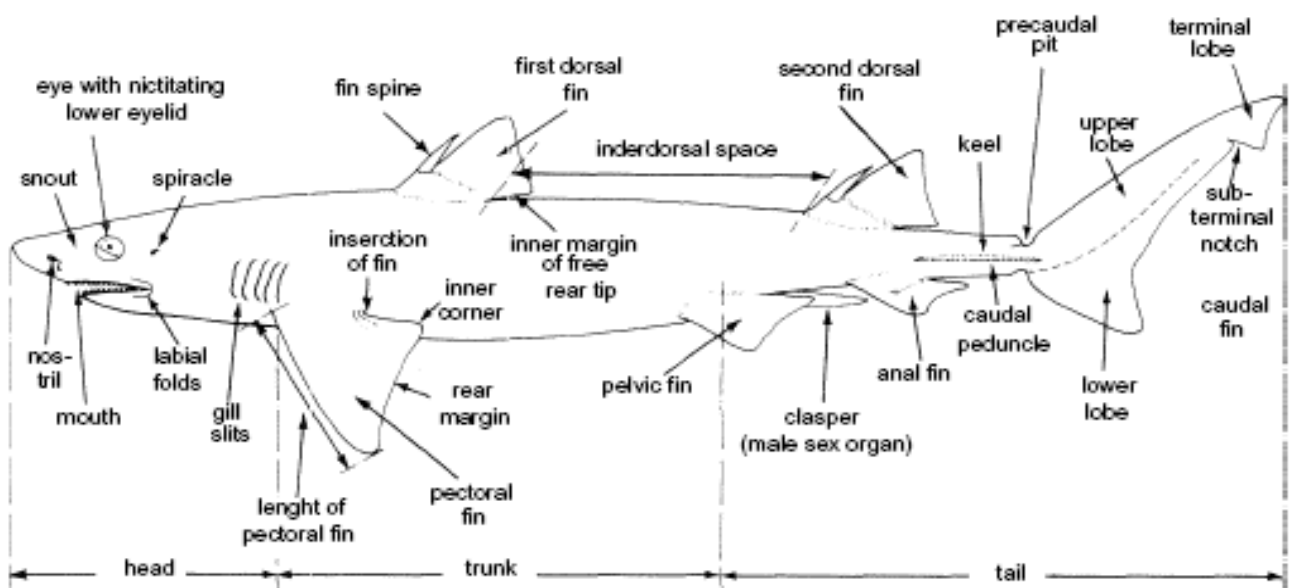
Rekha J. Nair and P.U Zacharia
Demersal Fisheries Division, CMFRI, Kochi -682018
rekhacmfri@gmail.com

Capture fisheries and aquaculture supplied the world with 142 million tonnes of fish in 2008 (SOFIA, 2010) of which 79.9 mt was contributed by marine capture fisheries. In India, demersal fishery resources contributed to about 28 % of the total estimated landings of 3.16 million tonnes. The major demersal fish resources of the country are elasmobranchs, perches, croakers, catfishes, lizard fishes, silverbellies and flatfishes.

Elasmobranchs:

Fishery is constituted by sharks, rays and skates. They belong to Class Chondrichthys.

- ☞ 51 families, 178 genera, 937 species of extant elasmobranchs (ie around 403 sps of sharks & 534 sps of skates and rays)
- ☞ 28 species of sharks and rays are known from freshwater.
- ☞ **In India -**
- ☞ 110 species of elasmobranchs - 66 species of sharks, 4 saw fishes, 8 guitar fishes and 32 rays
- ☞ 34 species are commercially important.



Phylum: Chordata

Class Elasmobranchii

❖ Order Carcharhiniformes

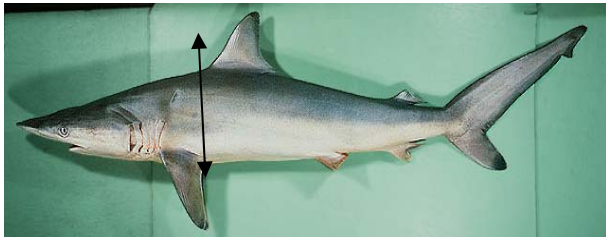
✓ Family Carcharhinidae - (Requiem sharks)

- ☞ one of the largest and most important families of sharks
- ☞ eyes circular
- ☞ nictitating eyelids internal; spiracles usually absent.

* Genus : *Carcharhinus*

Small to large sharks with round eyes, internal nictitating eyelids, usually no spiracles. Teeth usually blade like with one cusp. Development usually viviparous with young born fully developed. Includes several dangerous species.

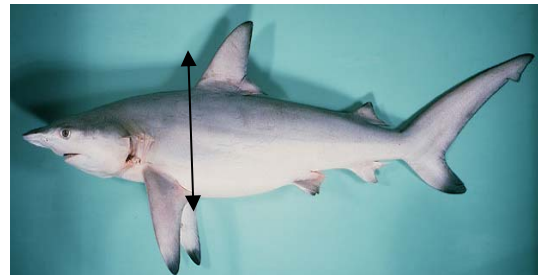
Carcharhinus brevipinna – Spinner shark



Conspicuous white band on sides. Second dorsal, anal, undersides of pectorals and lower caudal fin lobe black or dark grey-tipped; dorsal origin behind pectoral fin

Carcharhinus limbatus – Black tip shark

Black tip persistent on pelvic; dorsal origin at posterior end of pectoral.



This shark is seen in the inshore regions of tropical waters. It is euryhaline in nature. Food consists of sardine, mackerel, croaker, soles, cephalopods and crustaceans. It grows to a maximum size of 2.5m. Males mature at 140-150 cm and females at 150-160 cm. They produce an average of 6 embryos per litter and the size at birth is 55-60 cm. They are usually caught by gill net, hook-and-line or bottom-set net.

Carcharhinus melanopterus – Black tip reef shark

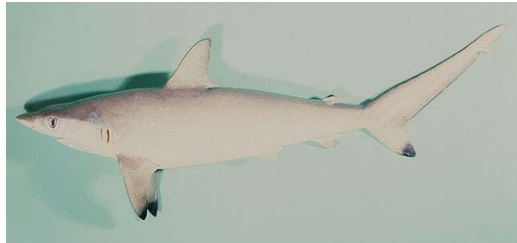
Yellow-brown above; prominent black tip of first dorsal fin set off abruptly by a light band below it;



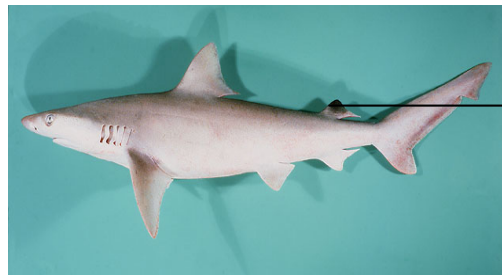
a conspicuous dark band on flanks, extending rearward to pelvic fins.

Carcharhinus sorrah - Spot-tail shark

Pectorals, second dorsal fin, and lower caudal fin lobe with conspicuous black tips.



C. dussumieri – Whitecheek shark



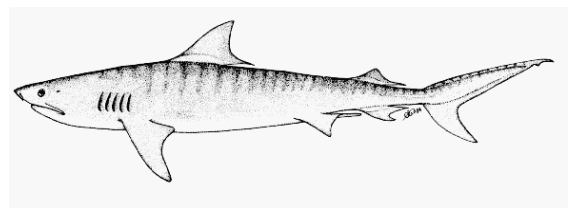
Black spot

Prominent black spot on second dorsal.

* Genus ***Galeocerdo***

Galeocerdo cuvier - Tiger shark

Colour grey with a unique colour pattern of black spots and vertical bars on dorsal surface of body, bold in young but fading out in adults.

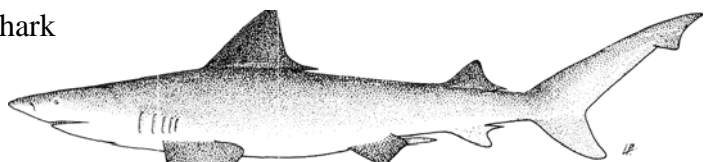


A tropical species of shark, it is capable of cruising in mid ocean and shows nocturnal movement into bays and estuaries. Its food includes eels, catfish, parrot fish, flat fish, flat heads, flying fish, porcupine fish, puffers, skates and rays are taken. This is a **very dangerous** and attacks divers, swimmers and fishing boats. It has the worst reputation as a man-eater. Development is ovoviviparous, the litter size is 10 - 82, size at birth is 50-75 cm.

* Genus ***Glyphis***

1. ***Glyphis gangeticus*** – Gangetic shark

First few anterior teeth in lower jaw with entire smooth cutting edges and low cusplets on the crown foot. Second dorsal fin lower, about half height of first dorsal.



2. ***Glyphis glyphis*** - Spear tooth shark

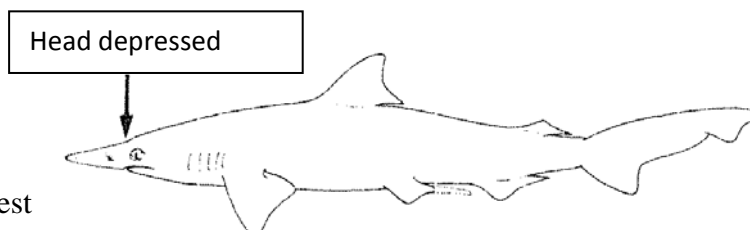


First few anterior teeth in lower jaw with cutting edges confined to tips of cusps, giving the cusps a spearlike shape, and no cusplets. Second dorsal higher, about 3/5 height of first dorsal.

* **Genus : *Scoliodon***

Scoliodon laticaudus

- Spade nose shark



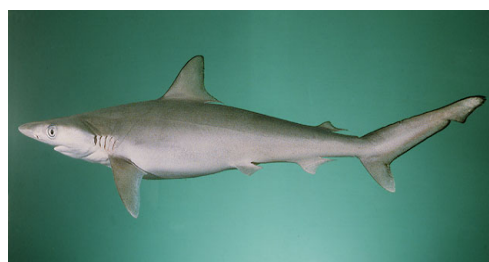
This shark abounds on the west and south coasts of India. Males

grow to 50-55 cm and females to 65 cm. The species is mainly caught in trawls and in drift gill nets. Size at birth is reported to be 14.5 cm. It feeds on small fish, crustaceans and squid.

* **Genus: *Rhizoprionodon***

Rhizoprionodon acutus - Milk shark

Small, slender shark; second dorsal fin smaller than anal fin, its origin far posterior to midlength of anal fin base; anal fin with slightly concave posterior margin and a pair of long preanal ridges.



It is abundant on the west coast of India from September to February and on the east coast during the summer months. It feeds on all small fish, squid, cuttlefish, crab and shrimp. Development is viviparous with yolk-sac placenta. There are 2-6 embryos per litter which are 26-27 cm long (Compagno, 1988).

✓ **Family Hemigaleidae**

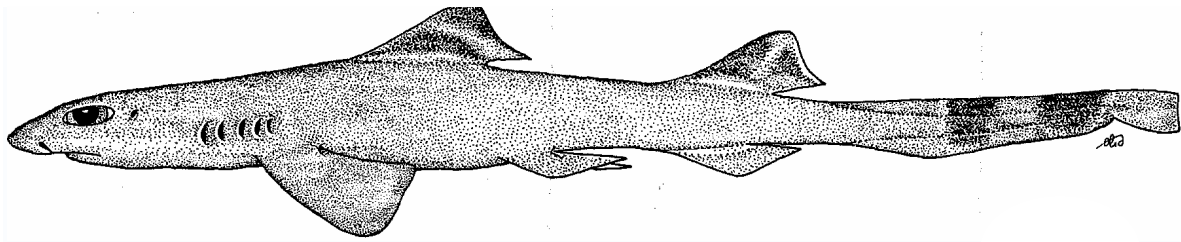
✓ **Family Leptochariidae**

✓ **Family Proscylliidae**

* Genus: *Eridacnis*

Eridacnis radcliffei - Pygmy ribbontail catshark

It occurs around the edges of continental and insular shelves at a depth of 71–766 m. Males mature at 18 - 19 cm TL or less and reach 23 cm TL, and females mature at about 15 - 16 cm TL and reach 24 cm TL. Reproduction is ovoviviparous with one or two young per litter. The species feeds primarily on small bony fishes, crustaceans and squid.



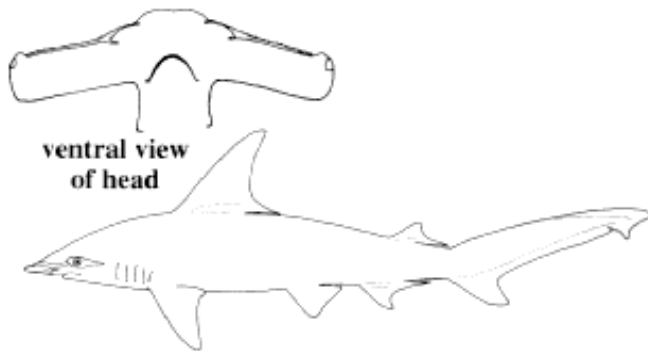
- * two equal-sized, spineless dorsal fins.
- * long, narrow, ribbon like caudal fin with prominent dark banding, and brown coloration.

✓ **Family Sphyrnidae** - Hammerhead and bonnet head sharks

Small to large-sized sharks. Body elongate slender slightly compressed. Anterior portion of head flattened dorso-ventrally and widely expanded laterally in hammer form, with the eyes at its outer edges.

* **Genus Eusphya**

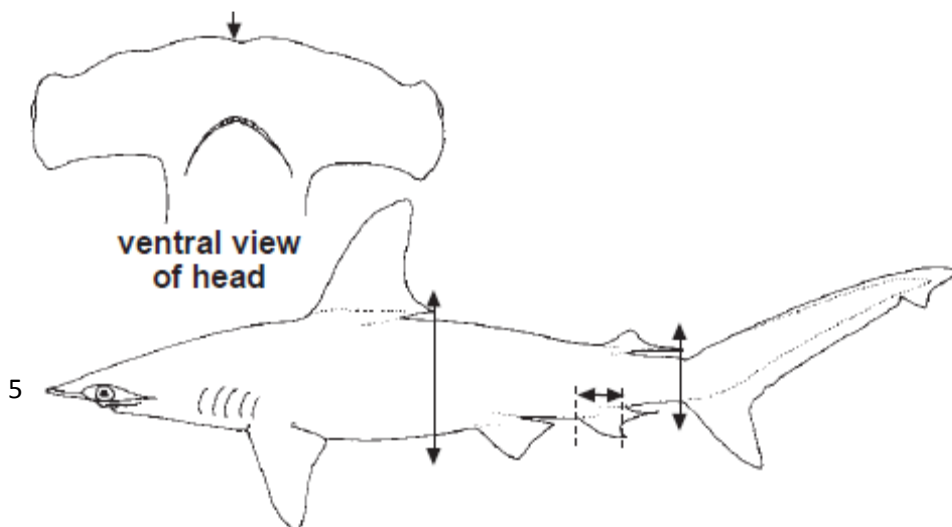
Eusphya blochii



Expanded lateral blades of head very narrow and wing-like, with a series of small bumps along edges in front of nostrils.

* **Genus Sphyrna**

Sphyrna lewini -Scalloped hammerhead

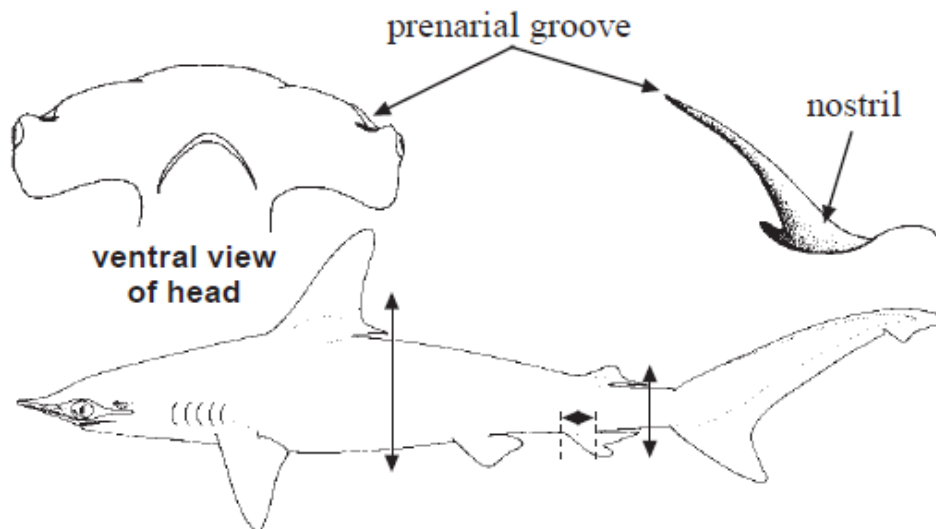


This is the most common hammerhead shark inhabiting the Indian seas.

Second dorsal fin small, less than 1/4 of height of first, with a greatly elongated free rear tip extending backward nearly to upper caudal-fin origin, an inner margin about twice as long as the anterior fin margin.

Colour: Greyish brown shading to white below; pectoral fins tipped grey or black ventrally.

Sphyrna zygaena – Smooth hammer head



No indentation at the anterior tip of the head; free rear tip of second dorsal fin well ahead of upper caudal-fin origin; anal-fin base nearly as large as second dorsal fin base.

❖ **Order Lamniformes**- Mackerel sharks

- ☞ nictitating eyelids absent
- ☞ mouth behind front of eyes
- ☞ five pairs of gill slits
- ☞ both dorsal fins without spines
- ☞ anal fin present

✓ **Family Alopiidae** –thresher sharks

Seen in tropical waters. Upper lobe of caudal fin elongated, last two gill openings above pectoral fin base, mouth small, pectoral fins long and narrow.

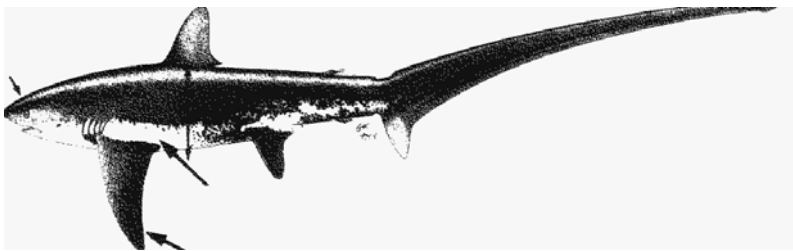
* **Genus *Alopias***

Alopias superciliolus – Big eye thresher

with big eyes

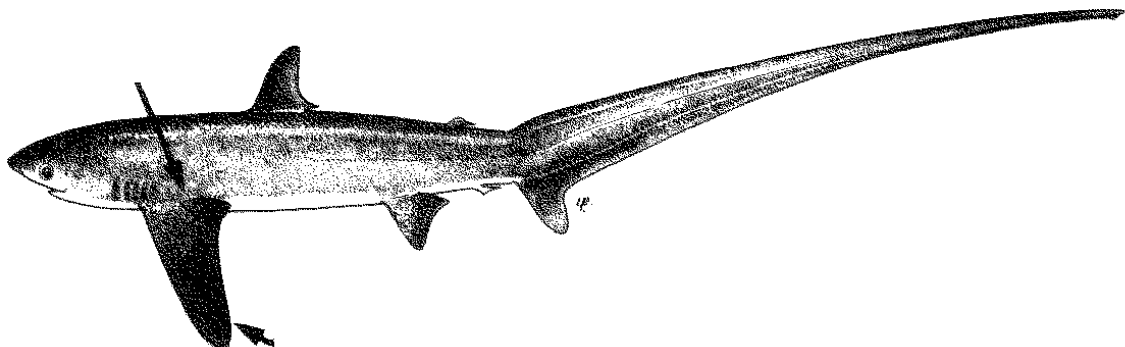


Alopias vulpinus – Thresher shark



Dorsal fin equidistant between pectoral and pelvic, white colour expands from abdominal area to pectoral base (absent in *A. superciliolus*); eyes small.

Alopias pelagicus – Pelagic thresher



Pectoral fins nearly straight, with broad, rounded apices; white colour from belly not expanded over pectoral fin, instead it is black in colour

- ✓ Family Pseudotriakidae
- ✓ Family Scyliorhinidae
- ✓ Family Triakidae

❖ **Order Orectolobiformes** – Carpet sharks

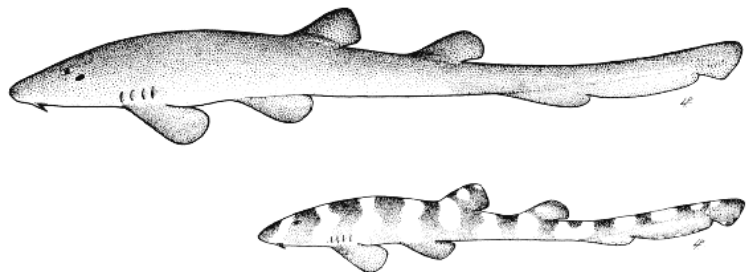
- ☞ Two dorsal fins without spines
- ☞ Anal fin present
- ☞ Eyes without nictitating membrane
- ☞ Five gill slits, last 2 – 4 above or behind pectoral fin origin

✓ **Family Hemiscyllidae** – bamboo sharks

- ☞ Yellow-brown or grey-brown above, cream below, with 12-13 prominent saddle marks in young, fading with growth
- ☞ mouth closer to eyes than snout tip.
- ☞ Two dorsal fins, slightly smaller than pelvic fins and without attenuated, projecting free rear tips
- ☞ origin of first dorsal fin varying from over last 1/3 of pelvic-fin bases to over pelvic-fin insertions.

Chiloscyllium griseum – Grey bamboo shark

- ☞ Dorsal fins large, rounded tip
- ☞ Young with vertical bands
- ☞ Lateral ridges absent on trunk



Chiloscyllium indicum - catshark



✓ **Family Rhincodontidae** –whale sharks

Mouth large, fully terminal, large gill openings



Rhincodon typus

- ☞ Body colour greyish black with prominent white markings, underside whitish
- ☞ Head semi flattened.
- ☞ **Included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) since May 2003 which regulates international trade of this species.**

❖ **Order Echinorhiniformes** –Bramble sharks

✓ **Family Echinorhinidae** –Bramble shark

- ☞ Very large, plate like denticles scattered sparsely over the body and armed with one or more thorn like cusps.
- ☞ Body becomes flabby on landing.

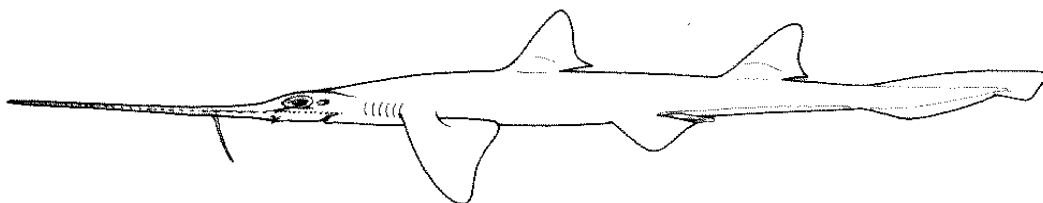
* **Genus *Echinorhinus***

Echinorhinus brucus - bramble shark

- ☞ long cylindrical body covered with large protruding denticles,
- ☞ anal fin absent,
- ☞ two small dorsal fins placed far on the back just before the tail
- ☞ five pairs of gill slits

❖ **Order Pristiformes** -

✓ **Family Pristiophoridae** – saw sharks



Snout elongated, flattened sawlike.

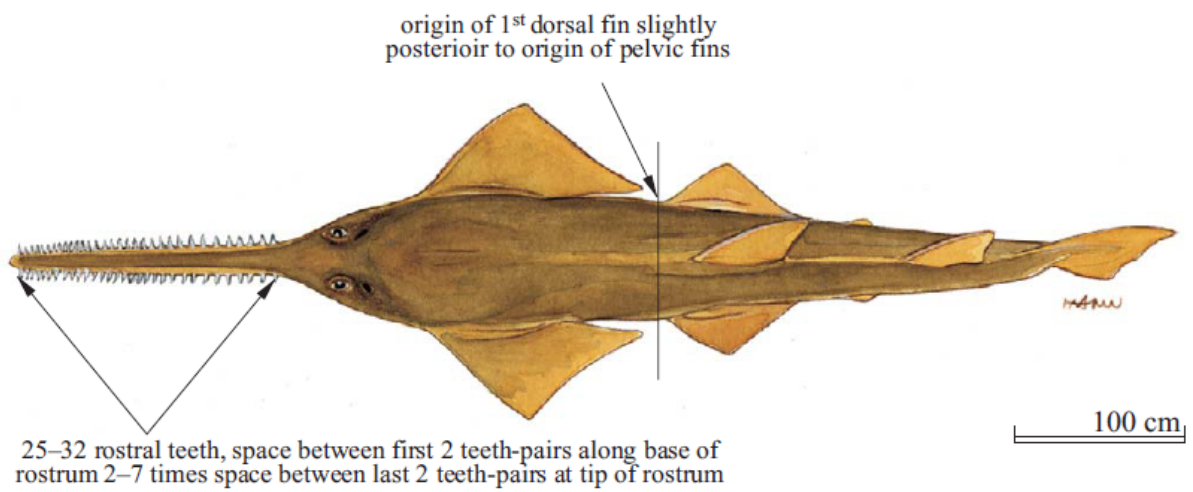
Pristis microdon



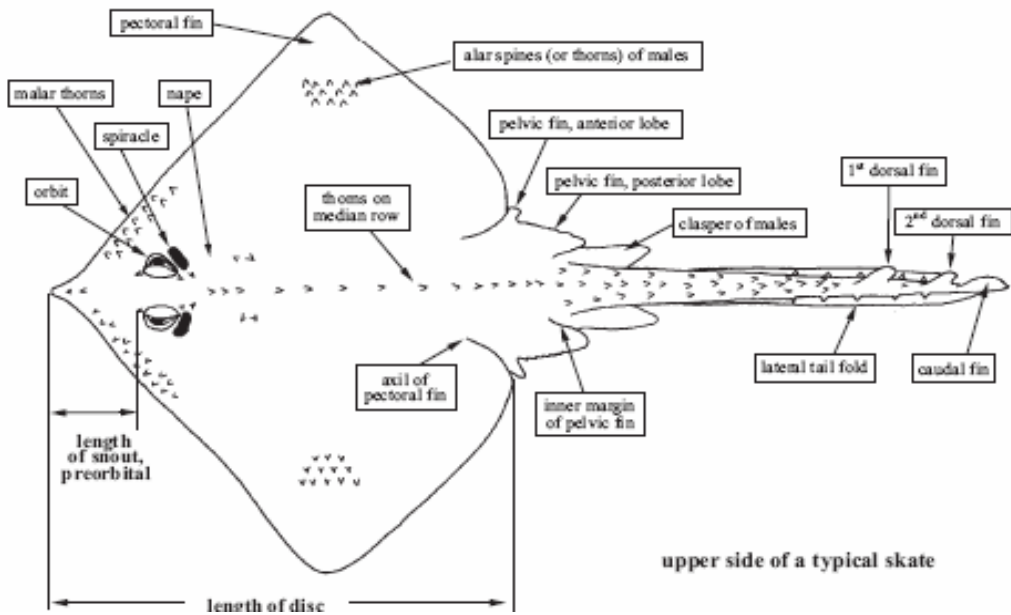
- ☞ First dorsal fin with origin well anterior to pelvic-fin origin

Pristis zysron

- ☞ First dorsal fin origin somewhat posterior to pelvic-fin origins but ahead of pelvic-fin insertion.

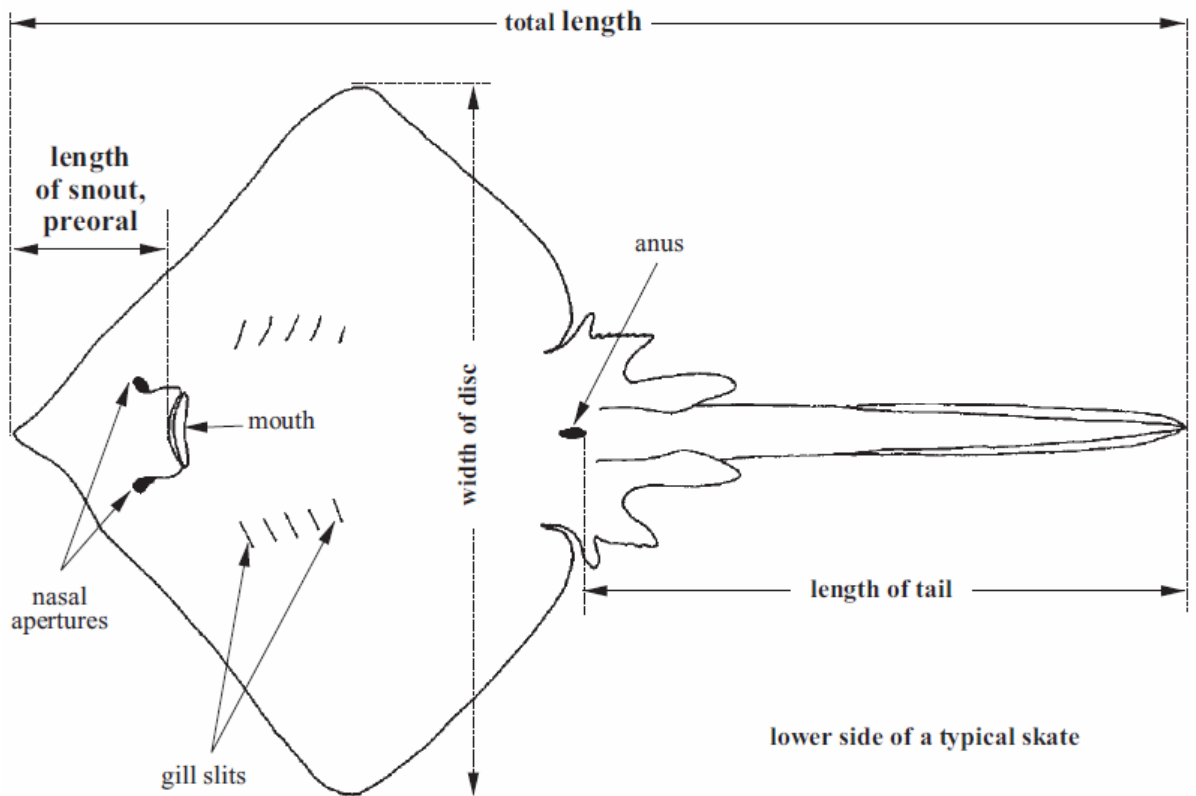


❖ Order Rajiformes - SKATES



upper side of a typical skate

☞ Caudal fin well developed, reduced or even absent



lower side of a typical skate

✓

- ✓ **Family Rhinidae** – bow mouth guitar fish

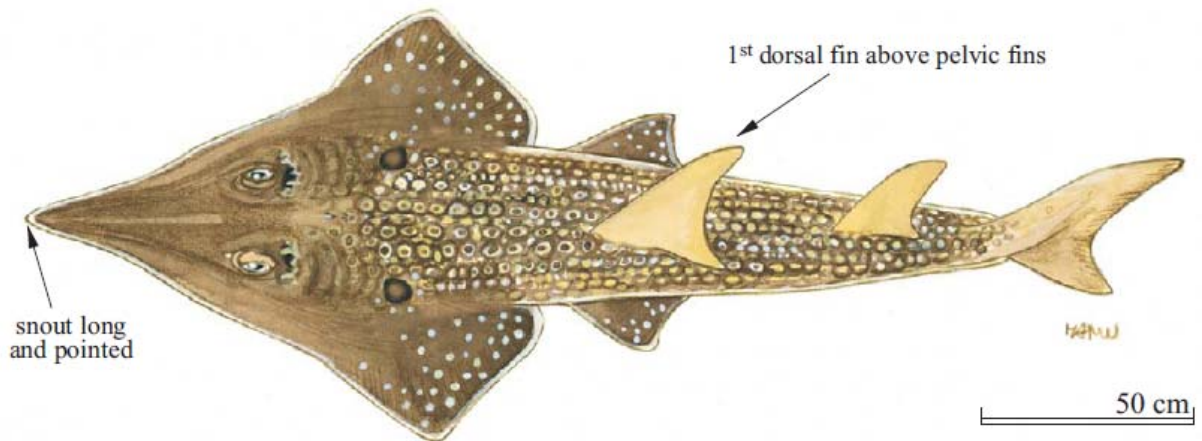
Rhina ancylostoma – Bow mouth guitarfish

- ☞ Snout and body deeply rounded
- ☞ Body blackish grey dorsally with white spots



- ✓ **Family Rhynchobatidae** –wedge fish

Genus *Rhynchobatus*



- ☞ Large guitarfish with large black eyespots on the pectoral bases
- ☞ a distinctive black cross between the eyes
- ☞ rows of small white spots on the upper body
- ☞ snout pointed and lower caudal lobe short

- ✓ **Family Rhinobatidae** –guitar fish

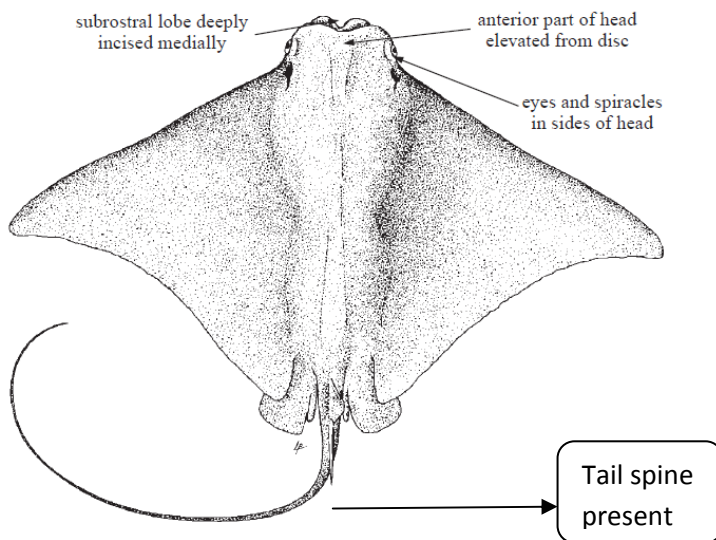
Dorsal fin behind pelvics



RAYS:

✓ **Family Myliobatidae** –Eagle rays

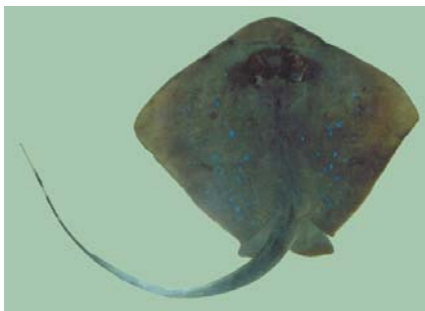
1. Eagle rays - *Aetobatus narinari* - spotted eagle ray
 - ☞ Numerous white spots on black or bluish disc, white below
 - ☞ Long whip like tail, with a long spine near the base, behind small dorsal fin.
 - ☞ No spines on disc



Rhinoptera javanica - Javanese cownose ray

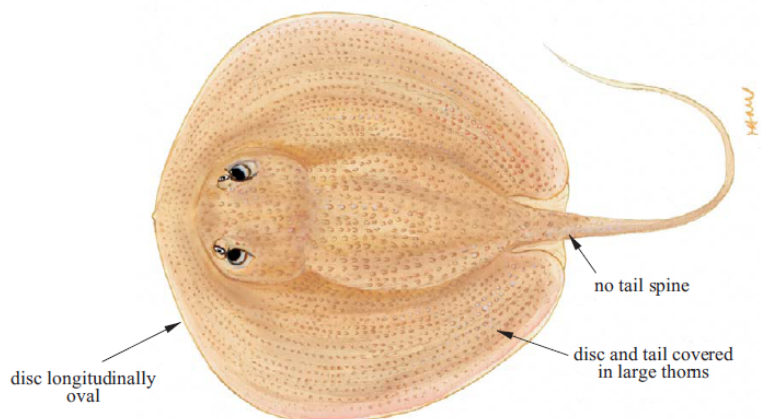
✓ **Family Dasyatidae** - whip tail sting rays

Dorsal fin totally absent or indistinct if when present. Tail long and whip-like. Most species with at least 1 long venomous spine on tail, which can cause excruciating pain to humans.



Neotrygon kuhlii - Blue spotted sting ray

Urogymnus asperrimus –Porcupine ray
- Protected under Wild Life Act, 1972



Himantura uarnak – Honey comb sting ray

Tail with alternating black and white bands, tip mostly pale; skin folds pale at base with dark outer margin, disc with blue dots.



Pastinachus sephen – Cow tail sting ray

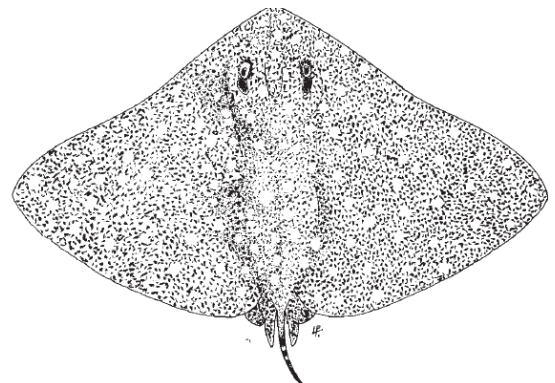
A high lower caudal finfold present which is 2 to 3 times depth of tail but not reaching tail tip; no large thorns; 1 or 2 long stings on tail, further behind tail base.

- ✓ **Family Gymnuridae** – Butterfly rays
- ☞ Disc broad, 1.5 times broader than long
- ☞ dorsal fin and tail spines present
- ☞ Tail very slender and short (shorter than disc).

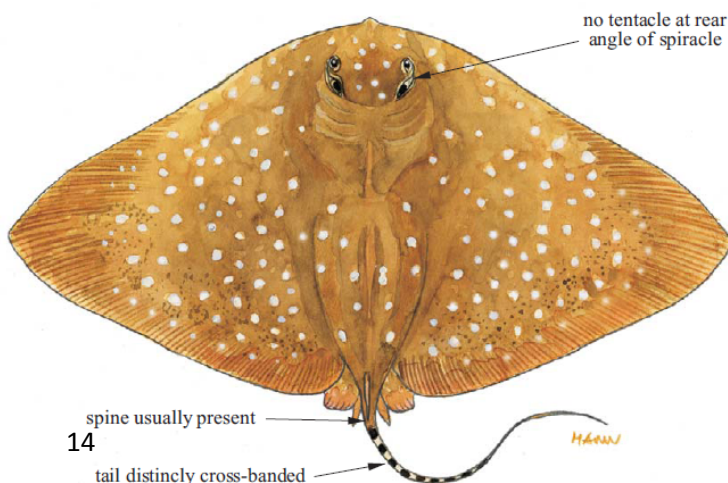
* **Genus *Gymnura***

Gymnura micrura – Smooth butterfly ray

- ☞ Tail without serrated spines
- ☞ no tentacle on posterior margin of spiracle



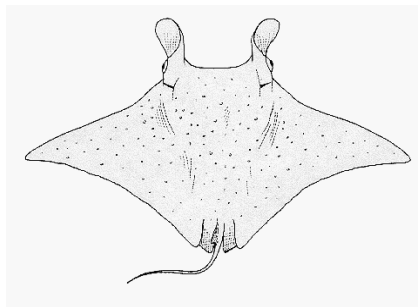
Gymnura poecilura – Long tailed butterfly ray



Family Mobulidae

- ☞ Head elevated above disc;
- ☞ jaws powerful with large platelike crushing teeth in several rows in eagle rays;
- ☞ eye and spiracles lateral on head; gill openings about length of eye to much longer;
- ☞ tail much longer than disc; venomous spine(s) present in some;
- ☞ small dorsal fin; pectoral fins reduced or absent opposite the eyes, but with an anterior subdivision that unites below the tip of the snout forming a subrostral lobe in manta rays

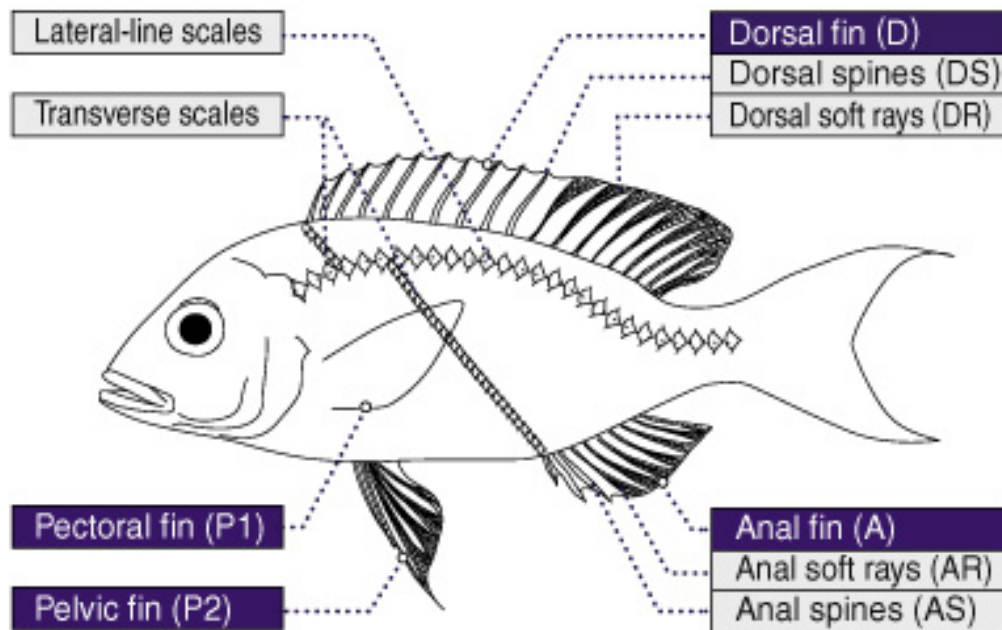
Mobula mobular – Devil fish



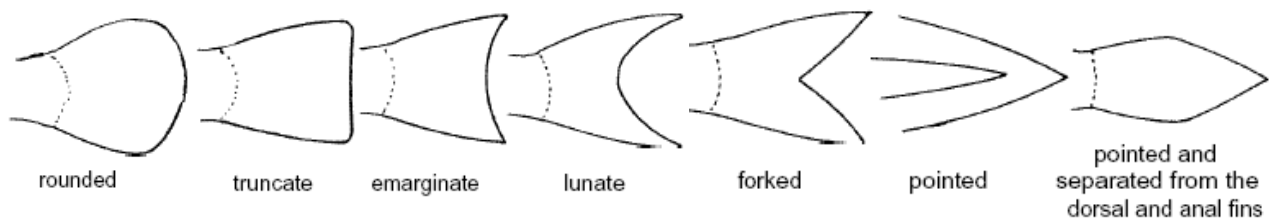
Manta birostris – manta ray

- ☞ Terminal mouth;
- ☞ upper surface of disc covered with denticles
- ☞ tail usually without a spine
- ☞ Blackish above, sometimes with white shoulder patches; white below, with grey edging on disc.

Class Teleostei – Bony fishes



Tail patterns:



Order Perciformes

Over 20 families; 3 families –major perches (due to their body size), the rest smaller –minor perches.

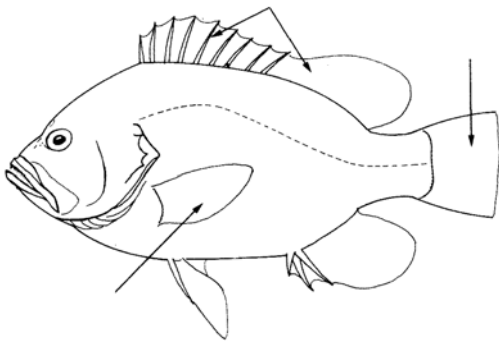
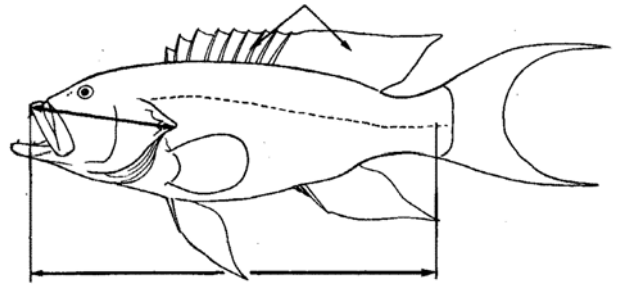
Major perches -

- Serranidae - Groupers
- Lutjanidae - Snappers
- Lethrinidae - Pigface breams
- Expensive fishes - in the local and international markets.
- Ornamental
- Important content of the international Live Reef Food Fish Trade. (LRFFT).

✓ **Family Serranidae – Groupers**

- * **Genus *Variola***
- ☞ Head length 2.5 -2.8 times in standard length
 - ☞ Dorsal with 9 spines and 13 -14 rays

Variola louti, *Variola al*



* **Genus *Aetheloperca***
***Aetheloperca rogae* – Red mouth grouper**

- ☞ Dorsal fin with 9 spines
- ☞ Dorsal with 17 - 18 rays
- ☞ Caudal fin truncate
- ☞ Pectoral fin asymmetric

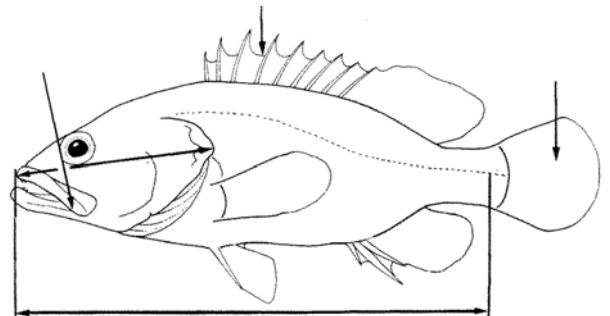
Genus *Cephalopholis*

- ☞ Dorsal fin membranes deeply incised
- ☞ Maxilla with knob
- ☞ Caudal fin rounded

***Cephalopholis argus* - Peacock hind**

***Cephalopholis aurantia* - Golden hind**

- ☞ Pale orange-red with red dots on head, anterodorsally on body, and on base of dorsal fin.
- ☞ Posterior margin of caudal fin with a pale blue edge and black submarginal line
- ☞ Posterior parts of dorsal and anal fins often with a narrow pale blue edge



Genus *Epinephelus*

- ✓ *Epinephelus undulosus* – Wavy lined grouper : colour purplish to brownish grey with yellowish brown dots on head and longitudinal brown lines on dorsal part of body (lines usually lost on large adults)
- ✓ *E flavocaeruleus* - Blue and yellow reef cod:all fins yellow, dorsal fin with 17 rays
- ✓ *E. bleekeri* – Dusky tail grouper: Caudal fin truncate to slightly rounded; body depth 3.0 to 3.5 times in standard length; head, body, dorsal fin, and upper third of caudal fin with small orange-yellow spots, the lower two-thirds of caudal fin dark grey.
- ✓ *E. areolatus* –Areolate grouper : Dark spots on body of adults sub equal to pupil.
- ✓ *E. chlorostigma* - Brown spotted grouper: Dorsal-fin rays 16 to 18; anal fin of adults angular or pointed, lower gill rakers 15 to 18; pyloric caeca 26 to 52; largest dark spots on body of adults distinctly smaller than pupil
- ✓ *Epinephelus fasciatus* – Black tip grouper
 - ☞ Fins reddish orange, pale yellowish green, or greenish brown
 - ☞ the outer triangular part of interspinous membranes of dorsal fin black with pale yellow or white spot behind tip of each spine.
- ✓ *E. malabaricus* - Malabar grouper Head and body with numerous small well-separated black spots (largest spots about twice size of rear nostrils); irregular white or pale spots or blotches usually present on head and body; pectoral-fin rays 19

Family Lutjanidae – SNAPPERS

Body deep, mouth large, protrusible, anterior part of head without scales; some rows of scales on cheek, preopercle and on gill cover.



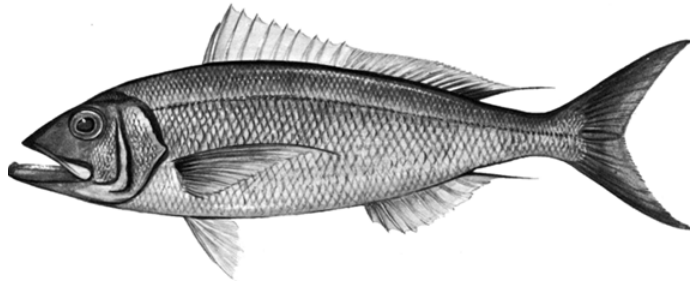
Lutjanus gibbus – Hump back red snapper
Caudal fin emarginated. Upper caudal fin lobe with a rounded tip.

Lipocheilus carnolabrum –Tang’s snapper.



Silvery body with golden yellow upper dorsal part

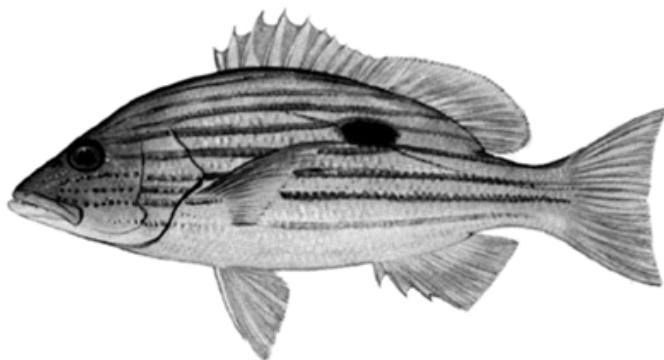
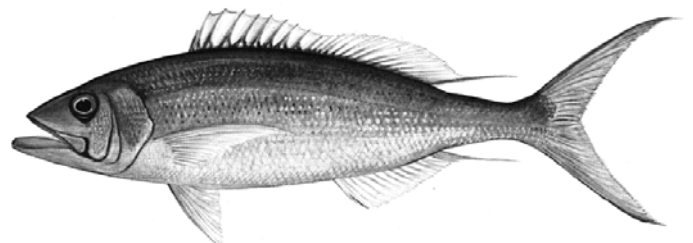
Aphareus furca – Small toothed jobfish



Back and upper sides purplish-brown; blue-grey on sides; a silvery sheen on head and lower sides; edges of preopercle and opercle outlined with black; fins whitish to yellow-brown.

Aphareus rutilans – rusty jobfish

Blue-grey or mauve to overall reddish; fins yellowish to reddish except pelvics and anal fin which is sometimes whitish; margin of maxilla black.



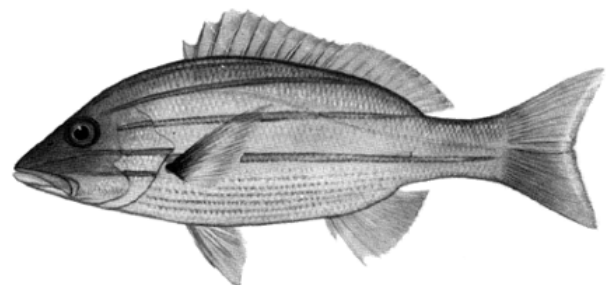
L. coeruleolineatus – Blue lined snapper

Six to eight stripes on side; a large black spot; dorsal spines 10 to 12; soft dorsal rays 12 - 13 or more. Body colour pale (mainly yellow in life) with a series of 4 to 8 longitudinal stripes (blue in life, often brownish in

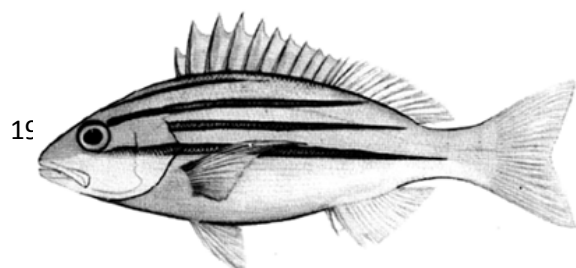
preservative) usually 12 to 13 soft dorsal rays; preopercular notch weak

Lutjanus kasmira – Common blue striped snapper

Four stripes on side, belly more or less abruptly whitish with thin grey lines; scale rows on cheek 5 or 6; upper pectoral rays darkish

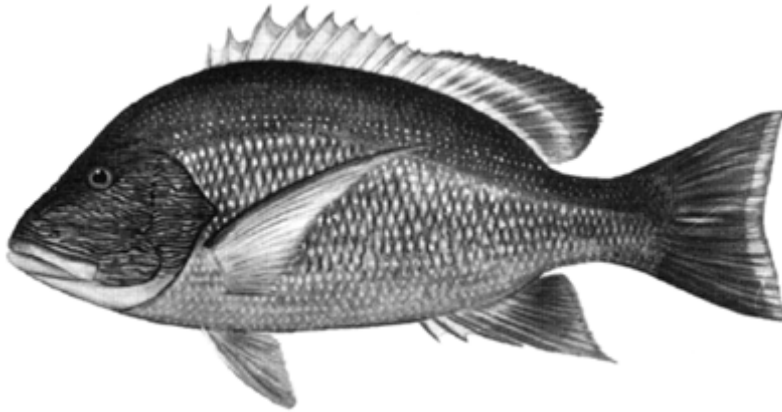


Lutjanus bengalensis - Bengal snapper



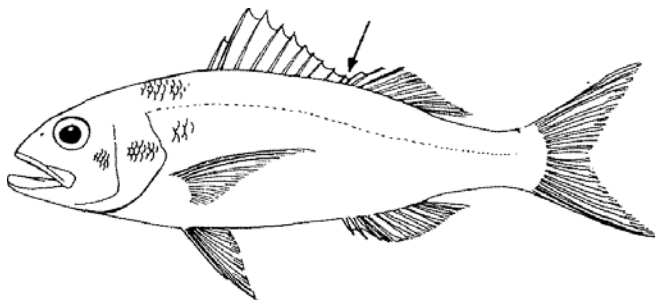
Uppermost stripes more or less parallel to body axis or only slanting gently toward dorsal

profile; gill rakers on lower limb of first gill arch 17 to 19.



Lutjanus rivulatus - Blubber lip snapper

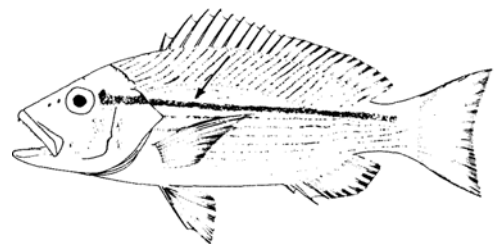
- ☞ Wavy pattern on head below eyes
- ☞ Body appears spotted



Lutjanus vittus -Brown stripe red snapper

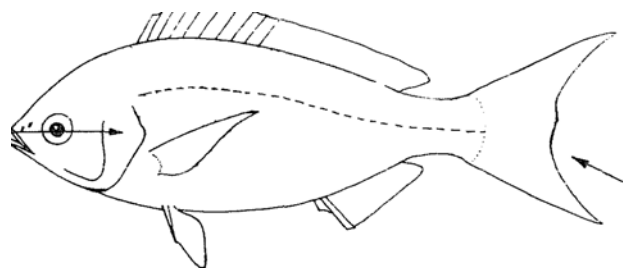
Brown stripe usually present along middle of sides, sometimes expanded to form an enlarged spot posteriorly

***Etelis* sp** -Dorsal fin deeply notched at last spines, which are markedly shortened.

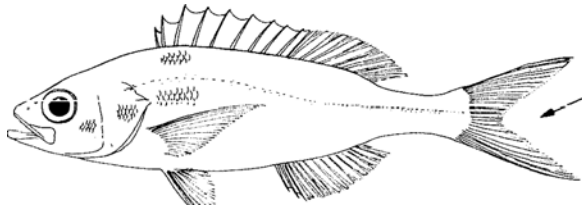


Pinjalo pinjalo - Pinjalo

Caudal fin lunate; eye at mid-level of head behind tip of snout; body deep pinkish, round in cross section



***Symphysanodon* sp.**



Caudal fin strongly forked, the lobes usually slender

✓ **Family Lethrinidae – pigface breams**

- ☞ Moderate-sized perch-like fishes with a large head; suborbital space deep,
- ☞ preoperculum without serrated hind edge and entirely scaleless, as also top of head
- ☞ the snout more or less pointed

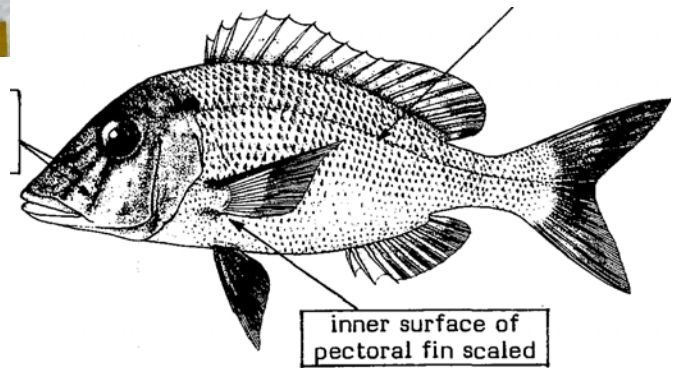
Lethrinus lentjan - Pink ear emperor



Posterior margin of the opercle and sometimes the base of the pectoral fin is red

Lethrinus nebulosus – Spangled emperor

- ✓ Yellow and blue stripes on body
- ✓ Blue streaks radiating from eye

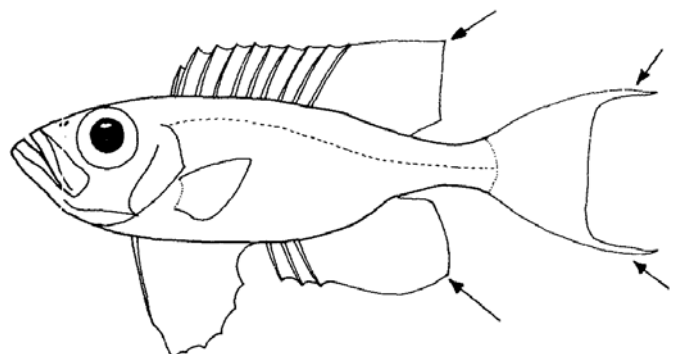


Lutjanus mahsena –Sky emperor

- ✓ 9 – 10 dusky yellow green or brown bars
- ✓ Red blotch on the nape
- ✓ A red bar at base of pectoral fin, sometimes extending upto edge of operculum.



- ✓ **Family Priacanthidae**
- * **Genus Priacanthus**



Priacanthus hamrur

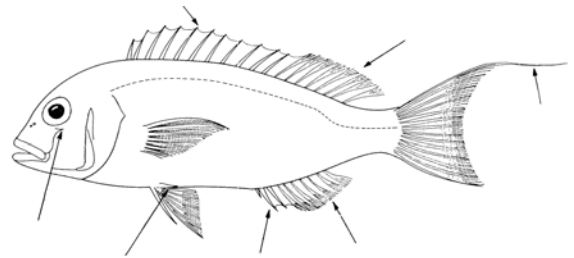
- ☞ Reddish colour body
- ☞ Very big eyes
- ☞ Tail slightly emarginated.

Priacanthus tayenus

Tail deeply emarginate with trailing edges

✓ **Family Nemipteridae**

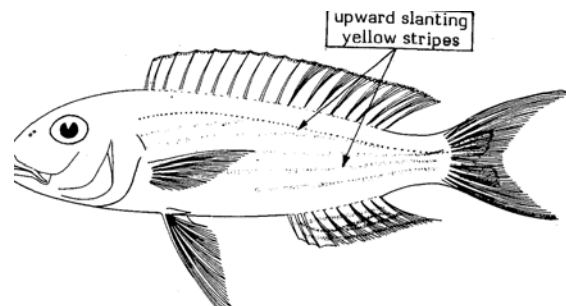
- ☞ moderate-sized fishes,
- ☞ dorsal fin single, with 10 spines and 9 soft rays, originating above pectoral fin bases, its first spine sometimes prolonged into a filament



Nemipterus japonicus- Japanese threadfin

- ☞ no yellow bands on head;
- ☞ distinctive orange-red blotch near origin of lateral line

Nemipterus bipunctatus -Delasa threadfin bream



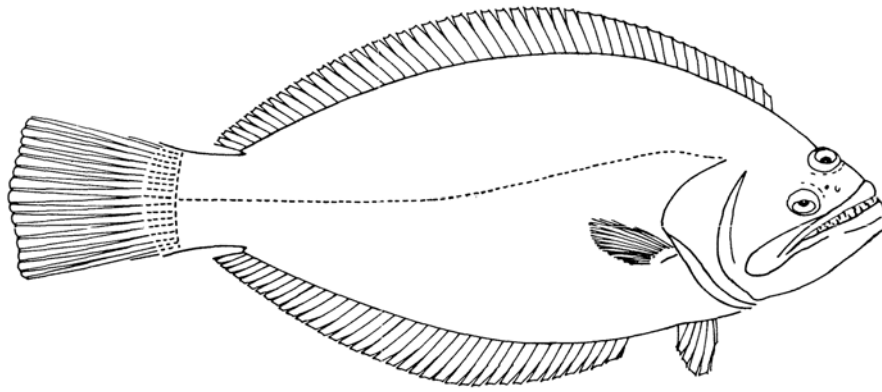
Nemipterus mesoprion – Mauve lip thread finbream

Oblique golden yellow stripe from beneath eye to middle of maxilla. Upper body pinkish, silvery white below

❖ **Order Pleuronectiformes -FLATFISH**

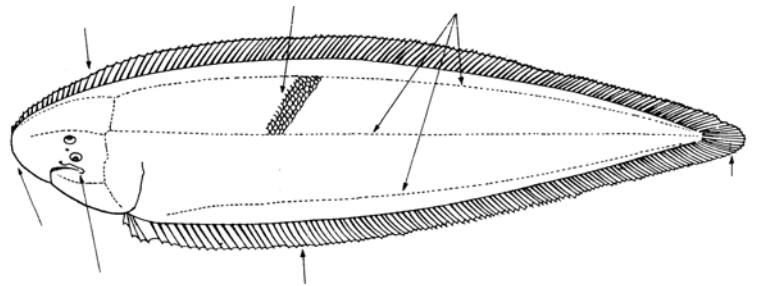
* **Family Psettodidae**

1. ***Psettodes erumei*** – dextral or sinistral. Both eyes on one side, the upper high up on the dorsal profile, with prominent teeth in both jaws.

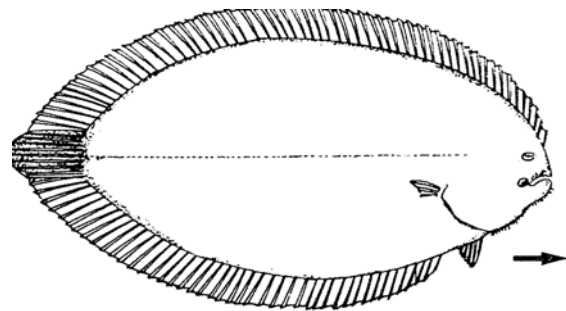


Family Cynoglossidae:

- ☞ Tongue-shaped flatfishes with eyes on left side of body, which is highly compressed and tapers posteriorly.
- ☞ Mouth asymmetrical, lips sometimes fringed, teeth minute and present on blind side only
- ☞ a rostral hook present below mouth.
- ☞ Preoperculum without free margin, hidden beneath skin.
- ☞ Dorsal fin reaching forward onto head both dorsal and anal fins joined to caudal fin
- ☞ pectoral fins absent; only left pelvic fin present; no spiny rays present in dorsal and pelvic fins



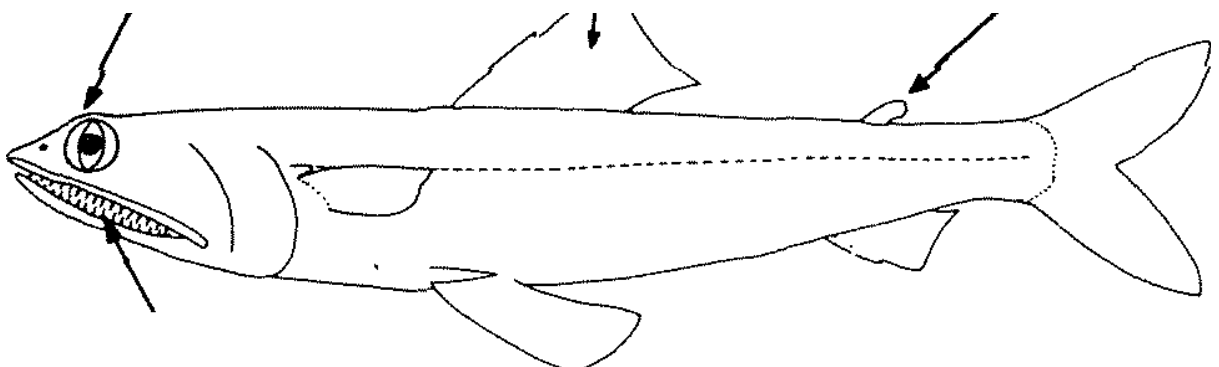
- ✓ **Family Soleidae**
- ✓ dorsal fin far forward on head
- ✓ dorsal and anal fins joined to caudal fin,
- ✓ eyes on right side of body



- ✓ **Family Synodontidae**

Lizard like head

Adipose fin



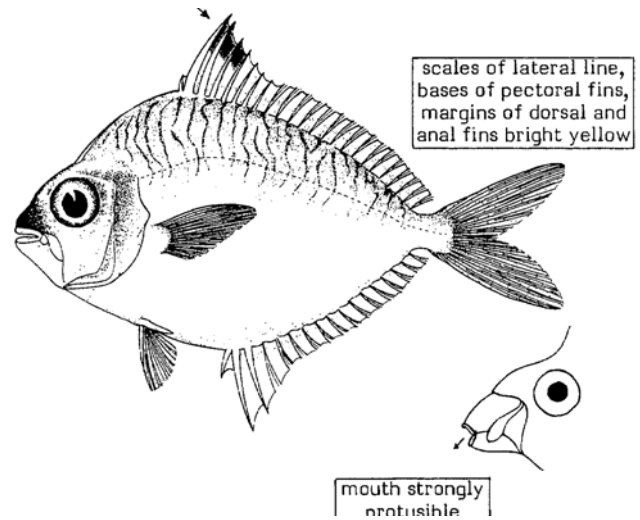
- ☞ Body elongate, usually cylindrical and with adipose fin.
- ☞ Head usually lizard-like.
- ☞ Mouth large and terminal, with rows of numerous small, slender and pointed teeth visible even when mouth is close

✓ **Family Leiognathidae – SILVERBELLIES**

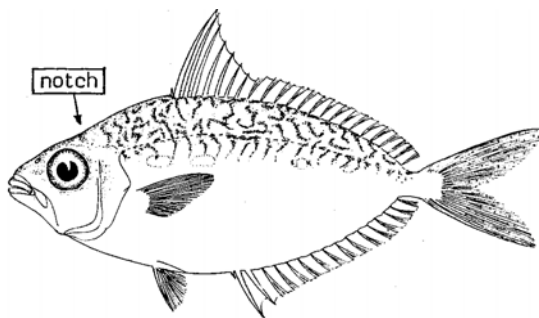
Genus *Leiognathus*

- ☞ Small to medium-sized fishes with oblong or round bodies, moderately to strongly compressed.
- ☞ Top of head with bony ridges and a well developed nuchal crest or spine
- ☞ mouth strongly protrusible.

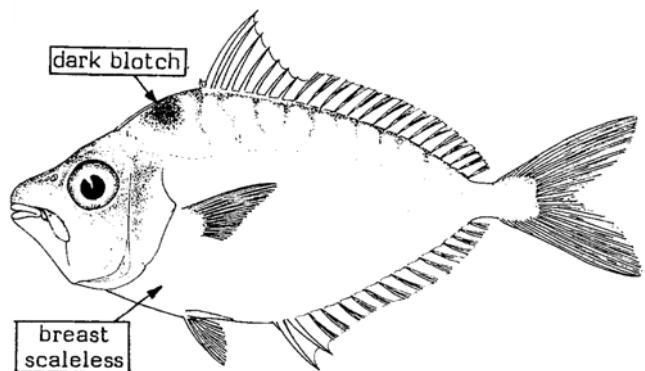
Leiognathus splendens - Splendid ponyfish



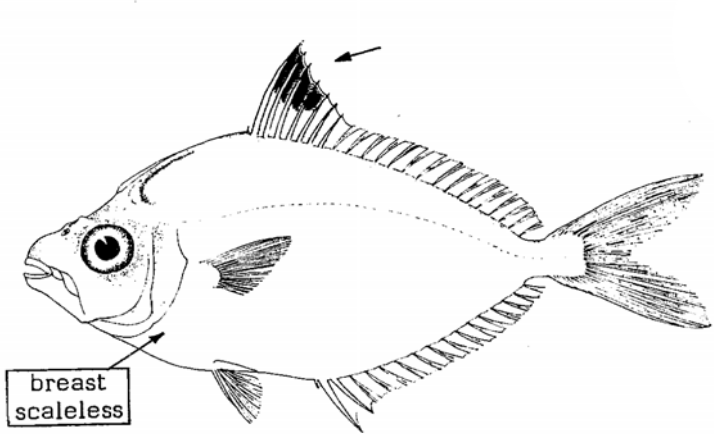
L. berbis – Berber ponyfish



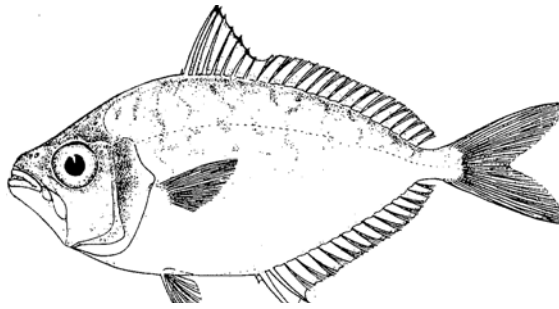
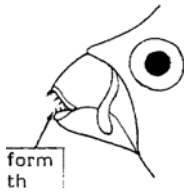
L. brevirostris – Short nose pony fish



L. daura – Gold stripe pony fish



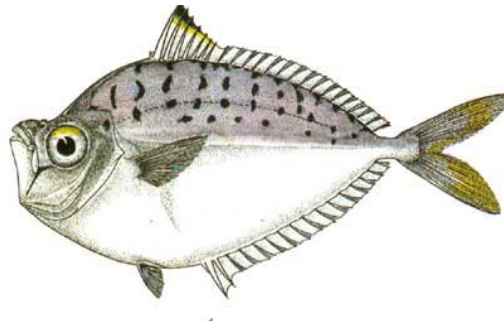
Genus *Gazza*



Genus *Secutor* -

Secutor insidiator

- ☞ Mouth points upward when protracted



✓ **Family Lactaridae**

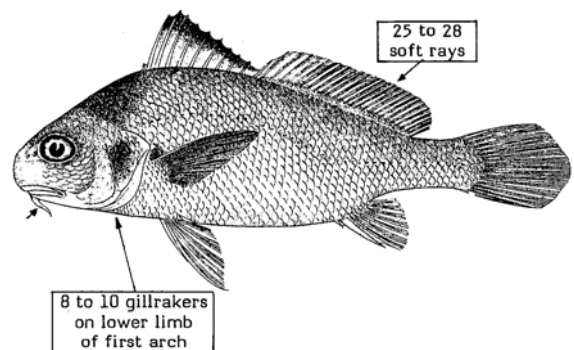
- ☞ Mouth large oblique and with 2 small, sharp canine teeth at front of each jaw.
- ☞ Two dorsal fins, the first spiny, the 2nd with 1 spine and 20 to 22 soft rays;
- ☞ pelvic fins set a little behind pectoral fins;
- ☞ anal fin with 3 spines and 25 to 28 soft rays; caudal fin forked. Scales large, cycloid (smooth), deciduous
- ☞ Single species –*Lactarius lactarius*

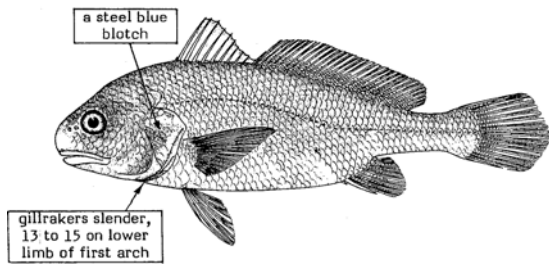
Family Sciaenidae- Croakers

- ☞ Snout rounded or bluntly pointed
- ☞ mouth terminal (mid-water species) or inferior (bottom-dwellers),
- ☞ eye small or moderate, in anterior half of head.
- ☞ Pores often conspicuous on snout and at front of lower jaw (mental pores).

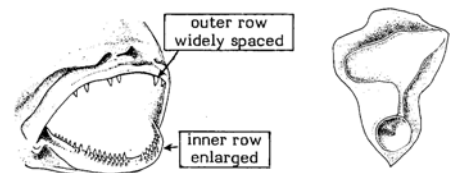
***Dendrophysa russelli* - Goatee croaker**

Nibea maculata

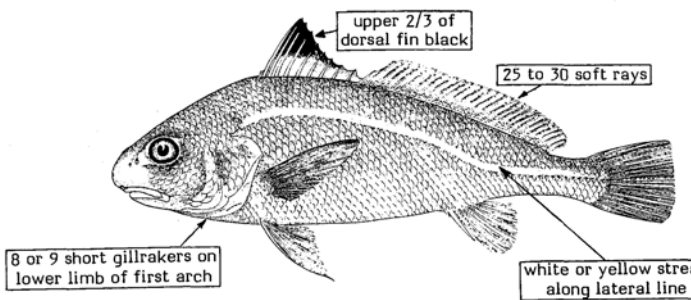




Johnieops sina - Sin croaker



Johnius carutta – Karutt croaker



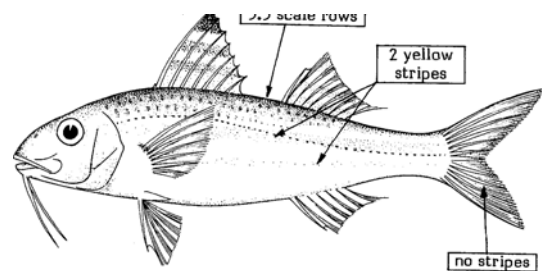
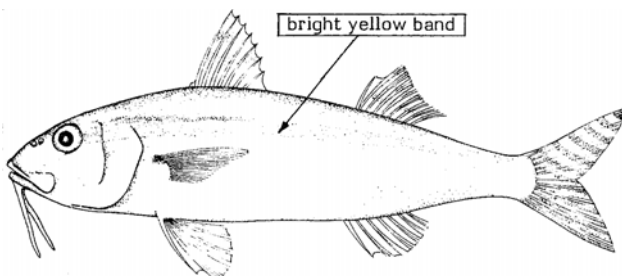
Family Mullidae – GOATFISH

- ☞ body elongate, underside of head, and usually also belly flat
- ☞ 2 barbels on chin.

Parupeneus cyclostomus- goldsaddle goatfish



Upeneus moluccensis - Gold band goatfish



U. sulphureus – Sulphur goatfish