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Field Identification of Rays and Some Common Flatfishes of India

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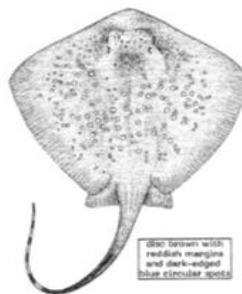
Demersal Fisheries Division

ORDER Myliobatiformes

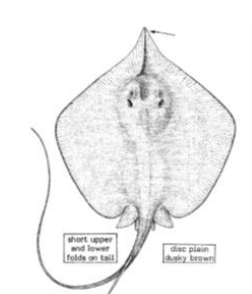
This suborder includes all of the Eagle Rays (Myliobatidae), Cownose Rays (Rhinopteridae) and the Mobulid Rays and includes about 40 species which are characterized by diamond shaped bodies and wing-like pectoral fins which they use to propel themselves through open water. Eagle Rays and Cownose Rays feed on the seabed, using their mouths to dig amongst the substrate in search of buried molluscs and crustaceans, while the mobulid rays lead a complete pelagic life. The order has 8 families under it.

Family Dasyatidae – Whip tail sting rays

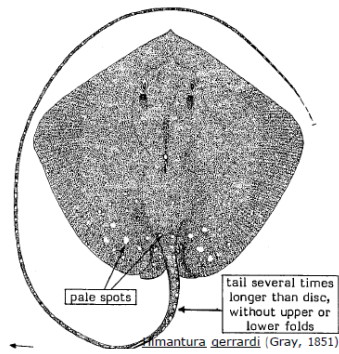
Dorsal fin totally absent or indistinct if when present. Tail long and whip-like. Most species with at least 1 long venomous spine on tail, which can cause excruciating pain to humans.



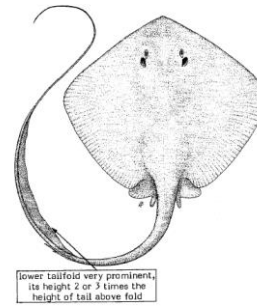
Dasyatis kuhlii



Dasyatis zugei



Himantura gerrardi

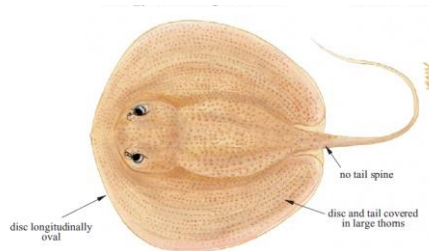


Hypolophus

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.

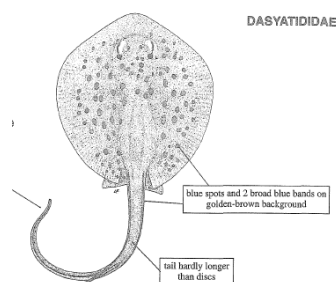
Urogymnus asperrimus – Porcupine ray -
Protected under Wild Life Act, 1972



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.

***Taeniura lymma* (Forsskål, 1775)**



Taeniura meyeri Müller & Henle, 1841

Round ribbon tail ray

Black blotches on a grey background

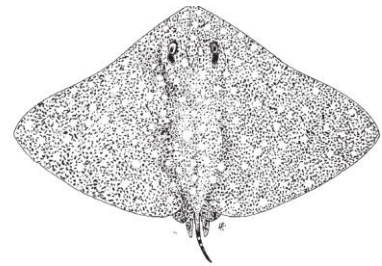
- ✓ **Family Gymnuridae** – Butterfly rays
- ☞ Disc broad, 1.5 times broader than long
- ☞ Dorsal fin and tail spines present
- ☞ Tail very slender and short (shorter than disc).



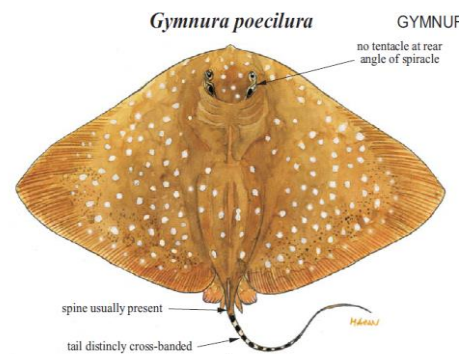
Genus: Gymnura

Gymnura micrura – Smooth butterfly ray

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



Gymnura poecilura – Long tailed butterfly ray



Family Myliobatidae –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



Aetobatus flagellum (Bloch & Schneider, 1801)

Longheaded eagle ray



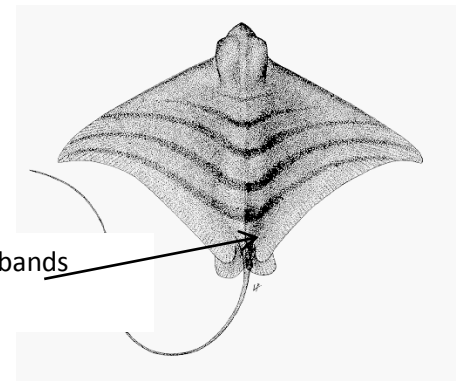
Snout pointed
Dorsal surface plain with no marks



Aetomylaeus nichofii (Bloch & Schneider, 1801)

Banded eagle ray

3 -5 greyish blue cross bands
No spine on tail



Aetomylaeus vesperilio (Bleeker 1852)

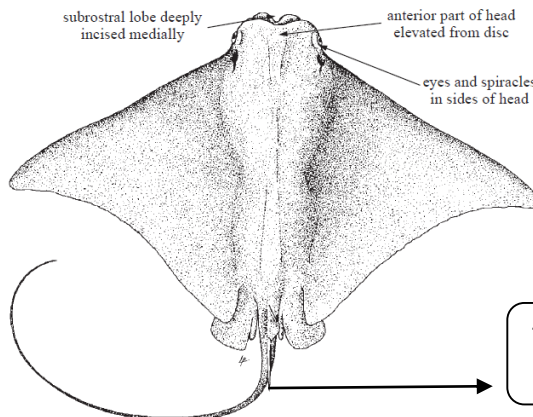
Ornate eagle ray

Ornate pattern on dorsal surface



Rhinoptera javanica - Javanese cownose ray

subrostral lobe deeply incised medially
anterior part of head elevated from disc
eyes and spiracles in sides of head



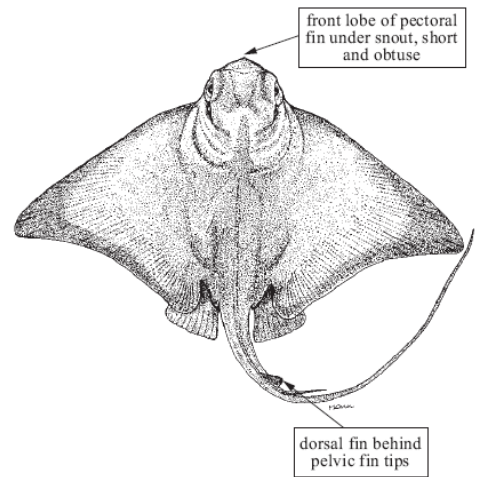
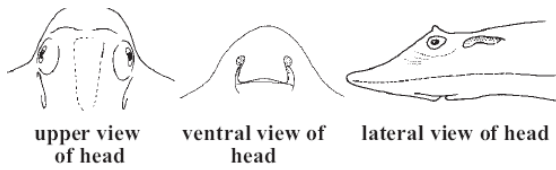
Tail spine present

***Rhinoptera adpersa* Müller & Henle 1841**

Skin rough with small spines



***Myliobatis aquila* (Linnaeus, 1758)**



Family Mobulidae

Genus *Manta*

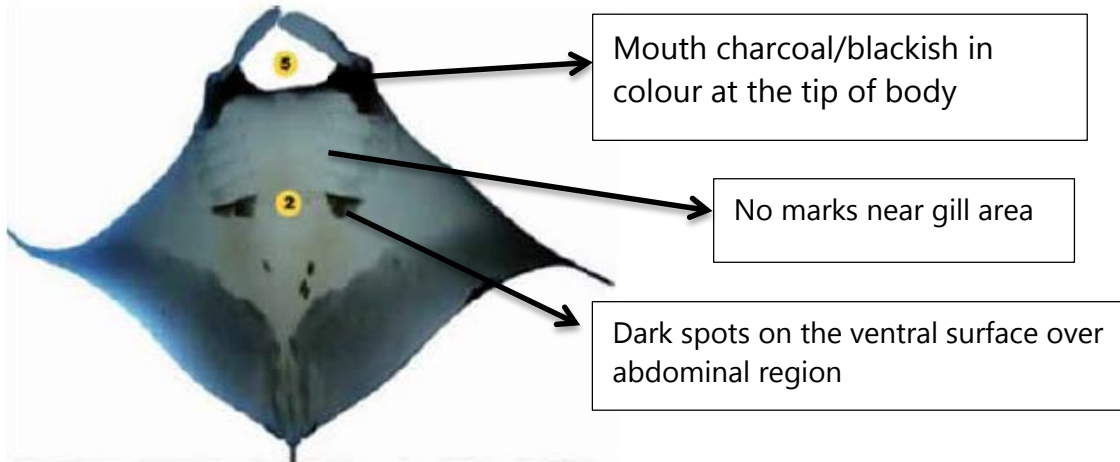


Terminal mouth - ***Manta***

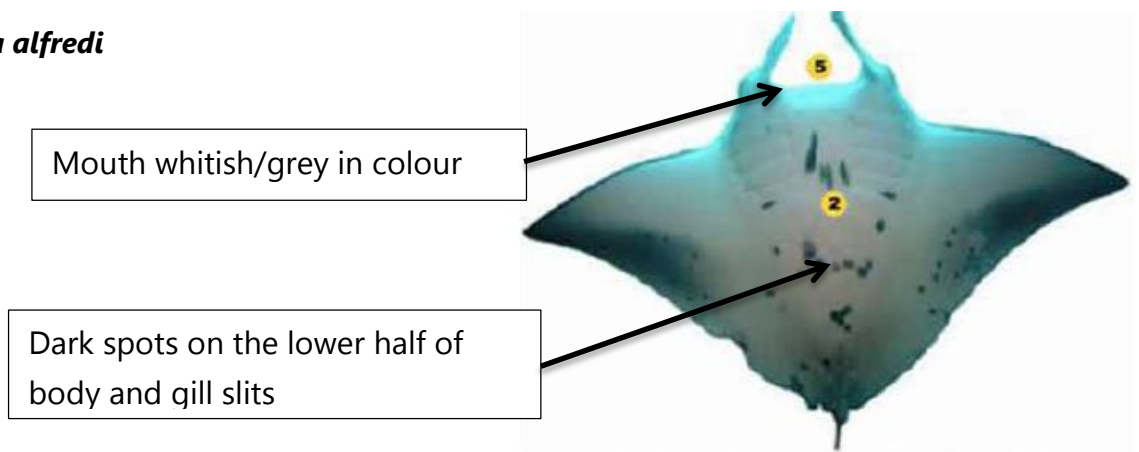


Ventral mouth - ***Mobula***

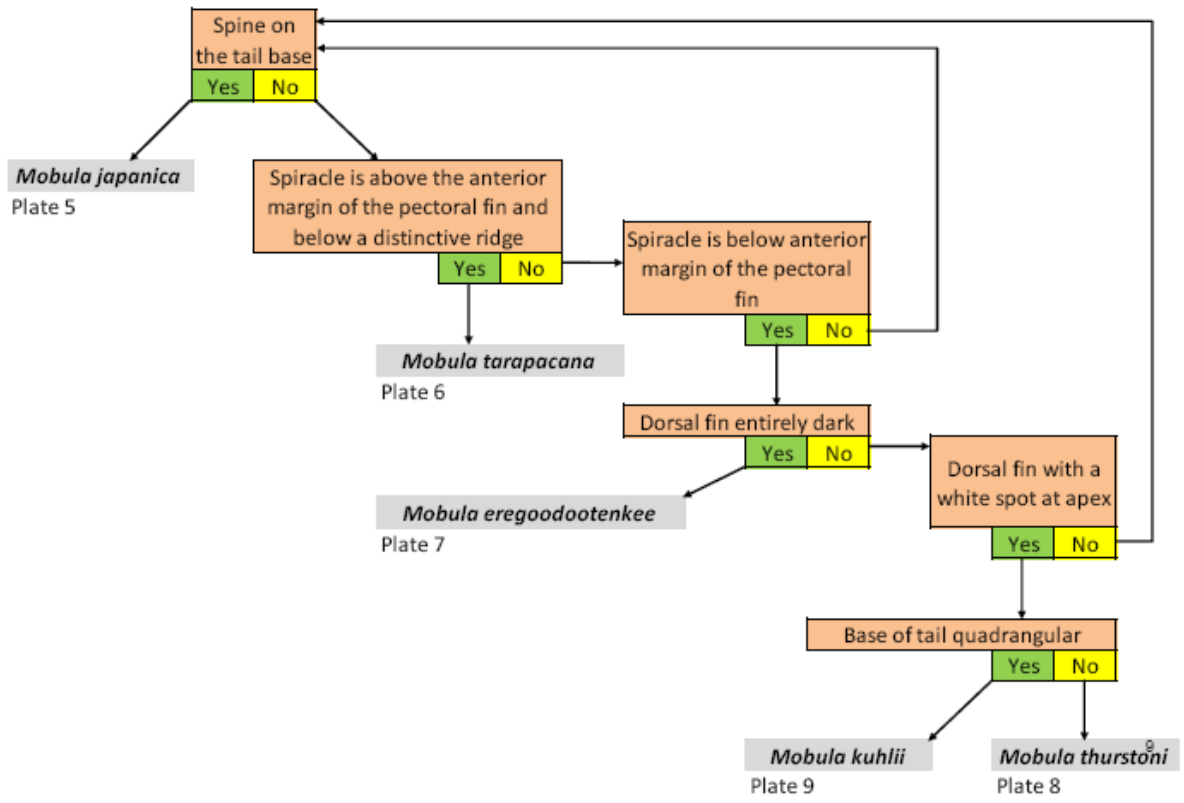
Manta birostris



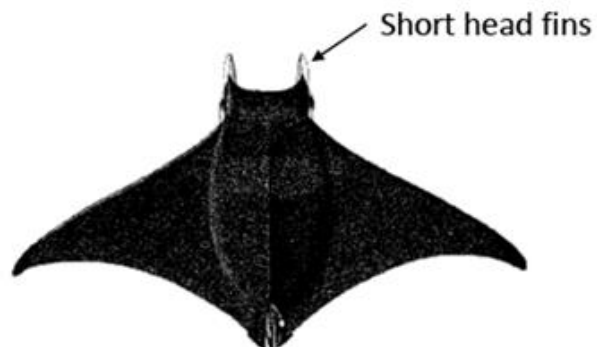
Manta alfredi



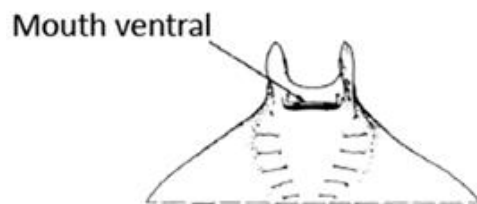
Key to the Indian Ocean species of *Mobula*



Dorsal View

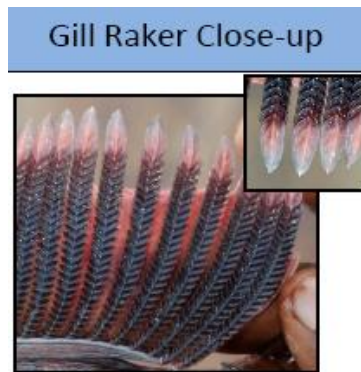


Ventral View



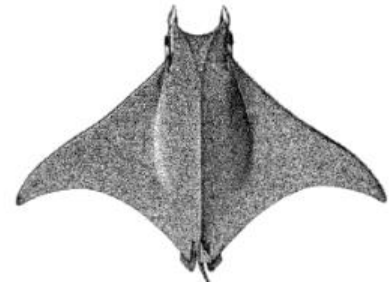
Mobula japonica –Spine tail mobula

- ☞ Spine on base of tail
- ☞ Dorsal fin white tipped
- ☞ Tail very long
- ☞ Spiracles above anterior margin of pectoral fin



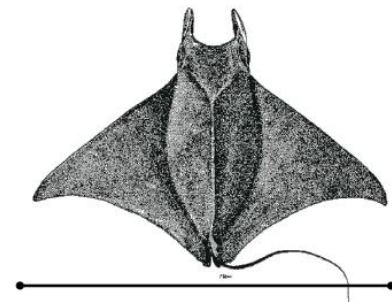
Mobula tarpacana – Chilean devil ray

- ☞ No spine on tail base
- ☞ Spiracles are elongated slit, above pectoral fin.
- ☞ Tail short
- ☞ Dorsal fin plain



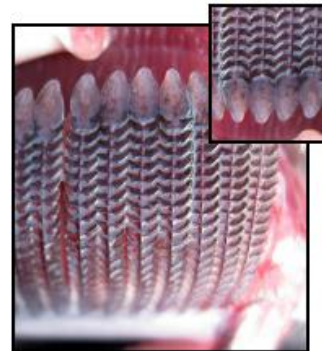
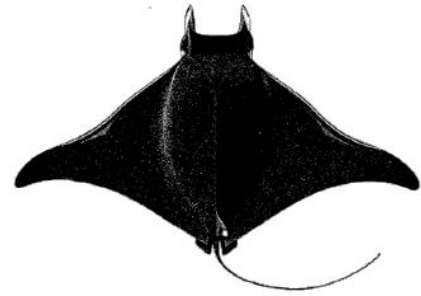
Mobula eregoodootenke

- ☞ Spine absent on tail
- ☞ Spiracle placed below anterior margin of pelvic fin
- ☞ Small subcircular spiracles
- ☞ Fully black dorsal fin



Mobula thurstoni

- ☞ No spine on tail base
- ☞ Spiracle small subcircular, placed below pectoral fin
- ☞ Dorsal fin with a white spot at apex
- ☞ Anterior margin of pectoral fin with an undulated apex
- ☞ Base of tail dorso-ventrally compressed



Field Identification of Some Common Flatfishes of India

Flatfishes represent an interesting order of marine, estuarine, and freshwater euteleostean fishes occurring in all the world's oceans. They are represented by a large number of species and genera and constitute major fisheries in some temperate and tropical areas. They are common species in most marine fish assemblages right from the poles to the tropics.

Table 1 Family wise list of valid species in Order Pleuronectiformes

Family	Subfamily	Valid species	New species in the last 10 years (2004–2013)
Psettodidae		3	0
Citharidae		6	0
Scophthalmidae		9	0
Paralichthyidae		110	2
Bothidae		166	3
Achiropsettidae		4	0
Pleuronectidae		106	4
	Poecilopsettinae	21	3
	Rhombosoleinae	20	0
	Pleuronectinae	64	1
	Paralichthodinae	1	0
Samaridae		27	7
Achiridae		36	2
Soleidae		179	39
Cynoglossidae		145	7
	Symphurinae	78	6
	Cynoglossinae	67	1

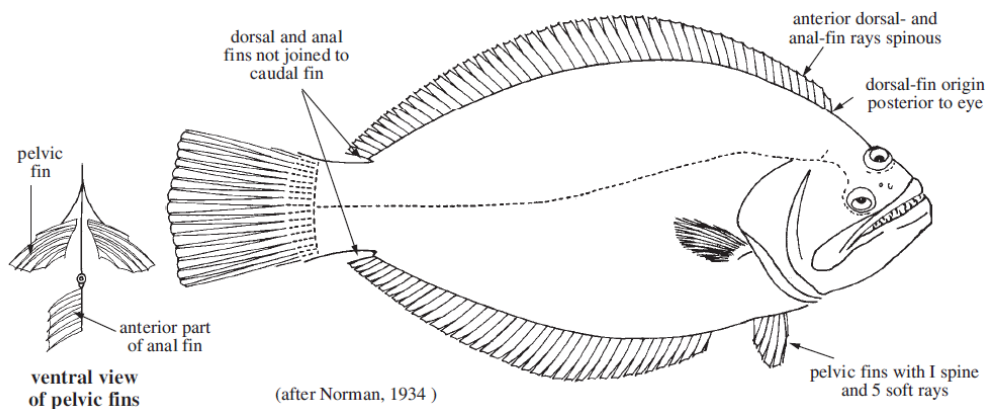
Major families in India and their characteristics:

1. Family Psettodidae:

✓ **Genus *Psettodes***

Psettodes erumei (Bloch and Schneider, 1801) – Indian halibut

- Teeth biserial on upper jaw, outer row of teeth curved inside
- Teeth on lower jaw biserial, more closely placed than that of upper jaw
- Body covered with ctenoid scales on ocular side

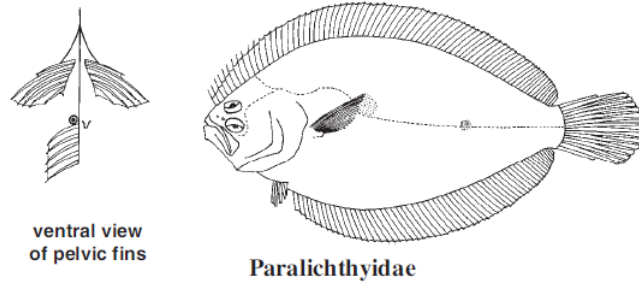


2. Family Paralichthyidae - sand flounders

The principal difference from the Bothidae is in the structure of the pelvic fin.

Genus *Pseudorhombus*

- Eyes sinistral, placed close, separated by a bony inter-orbital ridge which is naked
- Spines absent in the rostral, orbital and mandibular region
- Two nostrils present on either side, one tubular in structure with a flap and the other oval without a flap

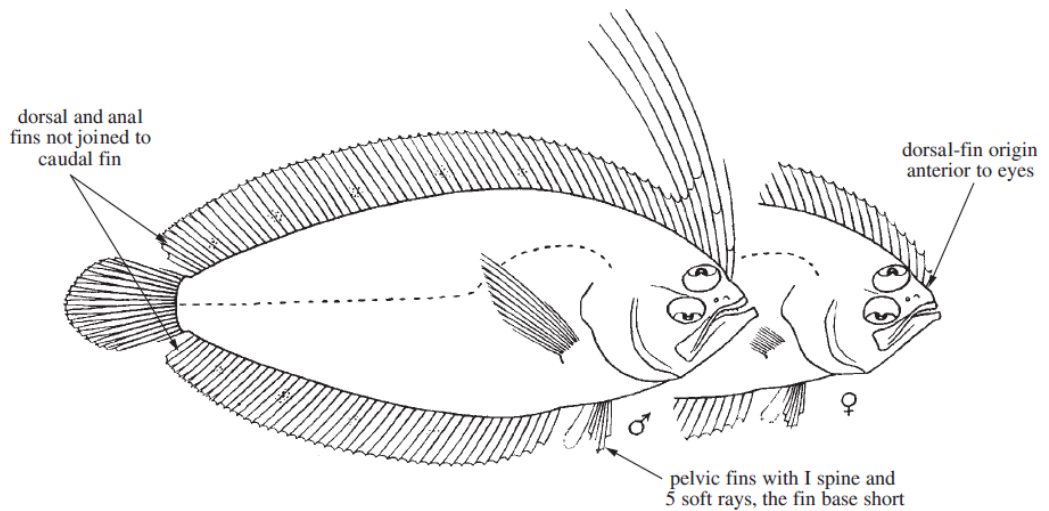


Genus *Chascanopsetta*



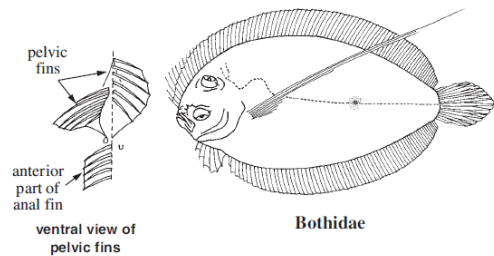
Family Citharidae: Large scale flounders

- Margin of pre opercle distinct, not covered by skin and scales
- Eyes on left side of head in some species, on right side of head in others, reversals rare
- Mouth large, arched; teeth not greatly enlarged
- Gill rakers slender with small spines
- Dorsal-fin origin on blind side above or anterior to anterior margin of upper eye; dorsal and anal fins without spines



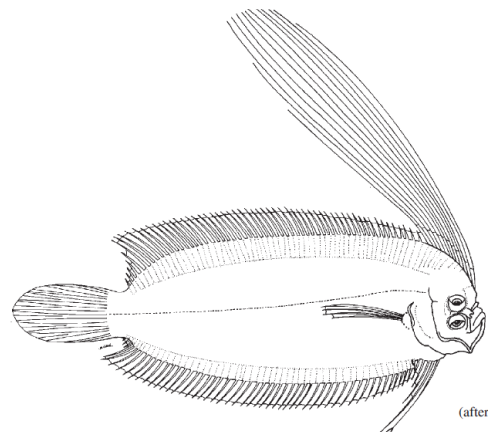
Family Bothidae:

- Bothidae: eyes on left side of head.
- Pelvic fins without spines
- Left pelvic fin with long base on mid-ventralline
- Caudal fin usually with 17 rays



Family Pleuronectidae: Right eye flounders

- Body oval-shaped or elongate
- Margin of preopercle distinct, not covered by skin and scales. Eyes on right side of head
- Mouth, teeth small. Gill rakers elongate
- Dorsal-fin origin anterior to posterior margin of upper eye; no fin spines
- Caudal fin not attached to dorsal and anal fins
- Pectoral fin on blind side smaller than fin on eyed side or missing

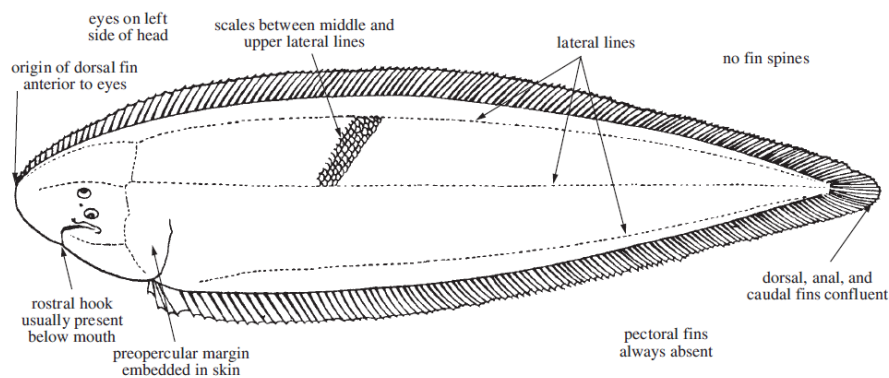


***Samaris cristatus*:** first 10 dorsal-fin rays greatly elongate

Family Cynoglossidae:

- Eyes on left side of body

- Eyes small placed close together
- Mouth small, subterminal, asymmetrical
- Jaws moderately curved on eyed side and well on blind side; teeth minute and usually only on blind-side jaws
- Rostral hook usually present below mouth
- Posterior margin of preopercle strongly attached to opercle, without free margin and covered with skin and scales
- Spiny rays absent in dorsal, anal, and pelvic fins; dorsal fin origin on tip of head; dorsal and anal fins confluent with caudal fin; pectoral fins absent; only right pelvic fin present



Genus *Cynoglossus* and *Paraplagusia*

1. Lips on eyed side of head not fringed with labial papillae ***Cynoglossus***
2. Lips on eyed side of head distinctly fringed with labial papillae. ***Paraplagusia***

Cynoglossus puncticeps

Dorsolateral line slightly undulating; eyed side with dark blotches forming irregular cross bands; eyed-side lower jaw with low, broadly rounded fleshy ridge.



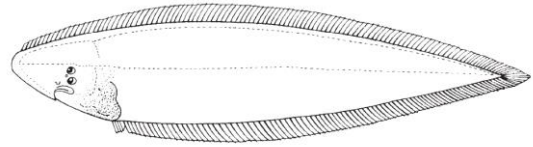
Cynoglossus macrophthalmus

- Midlateral-line scales 100 or greater
- Three lateral lines (dorsal, medial, and ventral) on eyed side of body

- One nostril on eyed side of head
- Large scales on body

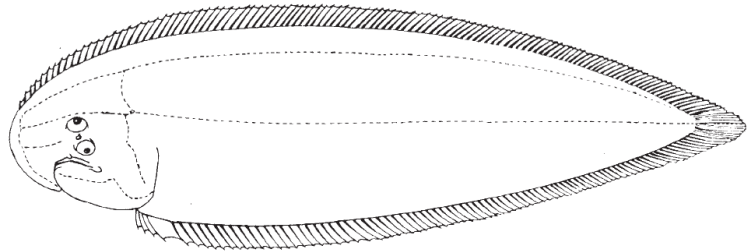
***Cynoglossus arel*:**

- Eyes placed separately
- Midlateral-line scales less (56 - 70)
- 7 to 9 scales between lateral lines
- Scales ctenoid on eyed side of body and cycloid on blind side



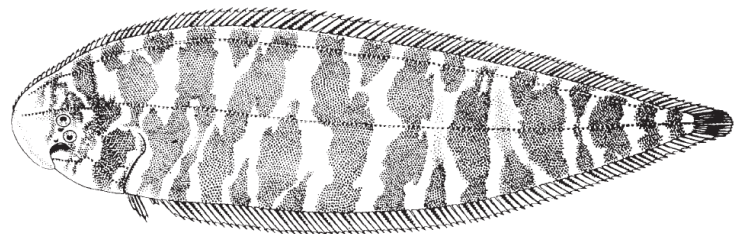
***Cynoglossus bilineatus* – Fourlined tongue sole**

- Two lateral lines on both sides of body
- Midlateral-line scales 88 to 96
- Scales ctenoid on eyed side of body; cycloid on blind side
- 13 to 16 scale rows between lateral lines on eyed side of body



***Cynoglossus puncticeps* - Speckled tongue sole**

- Eyes with a narrow interorbital space
- Rounded snout; rostral
- Hook short; angle of jaws not reaching posteriorly beyond vertical through posterior margin of lower eye, a little nearer to tip of snout than to gill opening. Dorsal-fin rays 90 to 100. Anal-fin rays 72 to 78.
- Two lateral lines on eyed side of body; lines absent on blind side. Midlateral-line scales 78 to 99.
- Scales ctenoid on both sides of body; 15 to 19 scale rows between lateral lines on eyed side.
- Body with very distinct irregular dark brown blotches, often forming irregular cross bands



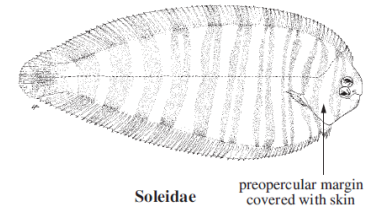
***Paraplagusia bilineata*- Doublelined tongue sole**

- Scaly interorbital space present in between eyes

- Snout rounded
- Rostral hook long and reaching posteriorly well beyond vertical through posterior margin of lower eye
- Corner of mouth not reaching beyond vertical through posterior margin of lower eye, nearer to gill opening than to tip of snout.
- Mouth frienged
- Dorsal-fin rays 105 or more. Anal-fin rays 82 - 85
- 2-3 lateral lines on eyed side, none on blind side

Family Soleidae:

- An oblong or elongated body
- Body coloured on ocular side, head round at anterior region, eyes placed close together, dextral, with or without a bony ridge in between; **snout not prolonged into a rostral hook.**
- Mouth slightly curved to strongly convex, contorted
- Teeth in villiform bands, very small or obsolete
- Pre-opercle adnate, covered by skin and scales; gill openings very narrow
- Dorsal rays not reaching upto snout tip, origin above or in front of eye
- Pectoral fins rudimentary, mostly absent on blind side; if present, fin on ocular side is longer.
- Pelvic fins symmetrical or asymmetrical; fins very small, not attached to the anal fin, sometimes absent
- Dorsal and anal fins not confluent with caudal
- Body covered with either cycloid or ctenoid scales which are sometimes modified into cutaneous flaps fringed with filaments
- Lateral line single and straight but on head may be arched or have short accessory branches

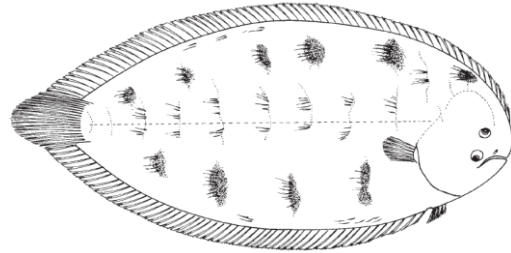


Genus *Aesopia* - Monotypic

Brachirus orientalis- Oriental sole

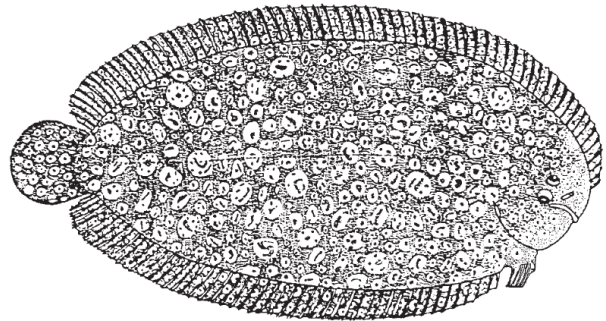
- Body oval, both contours equally arched
- Scales strongly ctenoid on eyed side, weakly ctenoid on blind side with some cycloid
- Eyed side with 3 longitudinal rows of small patches of scales with obvious black sensory filaments on scales

- Head scales of blind side modified into cutaneous sensory processes
- Eyes on right side, separated by small scaly interorbital space
- Mouth small, jaws curved, cleft reaching to vertical through middle of lower eye
- Lateral line with high rounded arch on head not directed posteriorly, ending above upper eye
- Dorsal and anal fins joined to caudal fin; pectoral fins well developed



***Pardachirus pavoninus* - Peacock sole**

- Eyes dextral, separated by scaly interorbital space
- Mouth strongly curved
- Nostrils on eyed side with short tubes
- Dorsal and anal fins separate from caudal fin; pectoral fins absent; pelvic-fin bases unequal in length, the right one with an elongated base and attached posteriorly to genital papilla
- Series of toxin glands with pores along bases of dorsal- and anal-fin rays



***Synaptura commersonii*- Commerson's sole**

- Elongate, broad body anteriorly and tapering posteriorly, with ctenoid scales on eyed side, and cycloid scales on blind side
- Scales on blind side of head modified into cutaneous sensory processes.
- Eyes on right side with scaly interorbital space
- Anterior part of snout with a bony process
- Mouth curved
- Dorsal and anal fins joined to caudal fin

