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Common Pelagic Finfish Families and their Identification

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Bony fishes are distinguished by the presence of bony endoskeleton. Their second noteworthy character is the presence of a swim bladder or lungs, which helps the fish to maintain its body density equivalent to that of its surrounding medium. The skin of bony fish is normally covered with overlapping scale, which are either cycloid or ctenoid. In some it become obsolete and in others it is modified by calcification to an ossified dermal covering in complete bony coating.

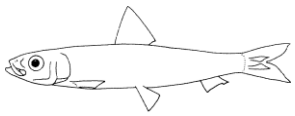
They are also provided with well developed fins which aid in propulsion and or balancing. Fins generally consist of widely spaced mobile rays joined only by externally thin webs of tissue, enabling them to fold or unfold like a fan depending on the situation. Body of most of the teleost fishes taper to a slender caudal peduncle just anterior to caudal fin. Size vary from few millimeter to several meters.

Classification

Fishes are classified mainly based on external characters. The important taxonomic tools employed are morphometric and meristic characters. The former deals with external shape and appearance and the latter relies on the count of structures like scales, scutes, fin rays & spines etc.

They belongs to the Class: Teleostomii, Subclass: Actinopterygii and Super order: Teleostii. They are further categorized as *lower teleost* and *higher teleost*.

Key characters

Key character	*lower teleost*	*higher teleost*
1. Nature of fin especially spines	 lack spines	 well-developed spines
2. Number of dorsal fin	one (+some have an adipose fin)	2 - 1st spinous, second soft (total absence of adipose fin)
3. Nature of scales	cycloid scale	ctenoid rarely cycloid
4. Position of pelvic fin	abdominal	thoracic
5. Pelvic fin rays	6 or more soft rays	1 Spine and 5 or less soft rays
6. Pectoral fin base	Horizontal in orientation	vertical in orientation
7. Nature at upper jaw	by both premaxilla and maxilla	boarded by premaxilla alone
8. Nature of swim bladder	characteristics by a duct	total absence of duct
9. Caudal fin rays	more than 18-20	less than 17 in most, in few-10-15
10. Intra muscular bones	present	absent

Lower teleost	***Higher teleost***
Order	
Clupeiformes	
Bathyclupeiformes	Perciformes
Cypriniformes	
Myctophiformes	
Beloniformes	
Aulopeformes, *etc.*	

Order: Clupeiformes

Lower forms having primitive characteristics; possess single dorsal fin. This is the most populous group among the fishery resource distributed in fresh, brackish and marine environment. The important characters of this group are- dorsal & anal fin without spine; scales cycloid & well developed, pelvic very small or absent in some cases and placed mainly abdominal and horizontal and with 6 or more soft rays; upper jaw bordered by both pre-maxilla and maxilla; lateral line absent in most cases and scales cycloid and in most cases deciduous.

Living representatives are split into 14 suborder and further into super families and families.

Family: Elopidae (Giant herring)

Body elongate, sub-cylindrical covered with thin/small deciduous scales; scaly basal sheath for anal fin; lateral line present; pelvic with 17-18 rays. Represent one genera and single species.

Eg. *Elops* sp.

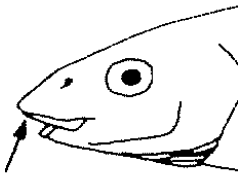
Family: Megalopidae (Tarpon)

Elongate laterally compressed body, large prominent scales, head scale-less; no scaly basal sheath for anal fin; lateral line present; last ray of dorsal elongate and filamentous. Represent by one genera and single species.

Eg. *Megalops* sp.

Family: Albulidae (Lady fish)

Elongate body, bluntly conical (pointed) snout projecting beyond mouth, lateral line present; inferior mouth, head scale less - anal very small. Represent by one genera and single species.



Eg. *Albulus* sp.

Family: Notopteridae (Feather back)

Represent fresh/brackish water fishes; tail tapering, prolonged and confluent with the caudal; dorsal, pectoral and pelvic rudimentary or absent; pre-pelvic portion of abdomen serrate; body with small cycloid scales; lateral line present, sub opercle absent.

Eg. *Notopterus* sp.

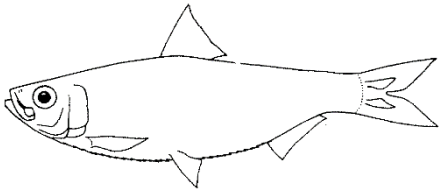
Family: Chanidae (Milkfish)

Accessary respiratory organs present, and are placed in a risses (cavity) behind the region at gill cavity, abdomens rounded, pelvic opposite to the dorsal. Scales are minute and grooved in the centre. Head without scales, Pectorals and pelvics have auxiliary scales above and below, lateral line present; Represent by one genera and single species.

Eg. *Chanos chanos*

Family: Clupeidae (Sardines & Shads)

Represent typical pelagic fishes. Elongate laterally compressed body; belly in most cases with keeled scutes; Lateral line absent, body covered with thin deciduous cycloid scales; dorsal placed mid-way between head and caudal; mouth terminal; supramaxilla broad.



Eg. *Sardinella spp*. *(S*ardine), *Esculosa* sp. (*Kowala)* (White sardine), *Pellona* sp. (Shad), *Euplatygaster* sp. (Indian shad), *Opisthopterus* sp. (Long timed herrings)

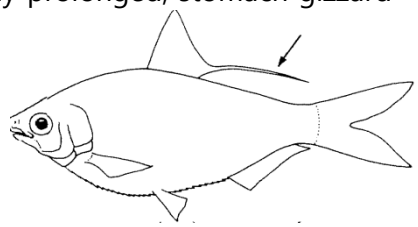
Family: Dussumieridae (Rainbow sardines & Sprats)

Fishes with elongated bodies and rounded bellies; body covered with thin deciduous cycloid scales; no lateral line, dorsal placed nearer to caudal; mouth terminal; supra maxilla narrow; fins small.

Eg. *Dussumieria* sp., *Spratallodes* sp., *Ehirava* sp.

Family: Dorosomidae (Gizzard shad)

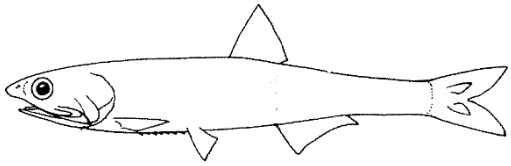
Oval deep laterally compressed body; abdomen sharp ventrally and with scutes; head naked; dorsal placed behind pelvic in some species last ray prolonged, stomach gizzard like, lateral line absent



Eg. *Nematulosa* sp. (Long rayed bream), *Anodontosoma* sp. *(*Short nosed gizzard shad), *Gonialosa* sp. (Ganges gizzard shad)

Family: Engraulidae (White baits and Anchovies)

Elongate compressed body, snout bluntly rounded; mouth inferior, maxilla in most cases very long extended even beyond the operculum; belly with keeled scute; translucent body with silver streaks on sides in most



Eg. *Stolephorus* sp., *Thryssa* sp., *Thrysoscles* sp., *Coilia* sp.

Species under the genus *Stolephorus* are called as whitebaits and those under *Thryssa, Thrysoscles* and *Coilia*– Anchovies

Family: Chirocentridae (Wolf herrings)

Elongate laterally compressed body; ventral edge sharp without scutes; dorsal fin far back on the body opposite to anal; upturned mouth with sharp canine teeth; scales thin and deciduous, no lateral line, air bladder is partly osseous and cellular.

Eg. *Chirocentrus* spp.

Order: Bathyclupeiformes

Represent deepsea forms. Exhibit large similarity with Clupeiformes. Single dorsal fin with a single spine, body covered with very large deciduous cycloid scale. Pelvic fin small, thoracic in position. Anal long, almost reaching middle of the abdomen, in Family Bathyclupeidae.

Eg. *Bathyclupea* sp.

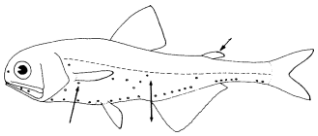
Order: Myctophiformes (Lantern fishes)

Mesopelagic fishes; possesses large mouth with very feeble teeth; dorsal placed at about

middle of the body, dorsal adipose fin present-small and placed opposite to the end of the anal; photophores present on the body.

Two families

Family Myctophidae



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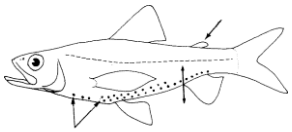
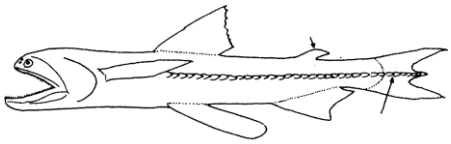
Family Neoscopilidae



Eg. *Diaphus* sp., *Benthosema* sp., *Neoscopelus* sp.

Order: Aulopeformes (Scopeliformes) (Bombay duck and lizard fishes)

Possesses large mouth; dorsal adipose fin present-small and placed opposite to the end of the anal; No photophores.



Family: Harpodontidae (Bombay duck)

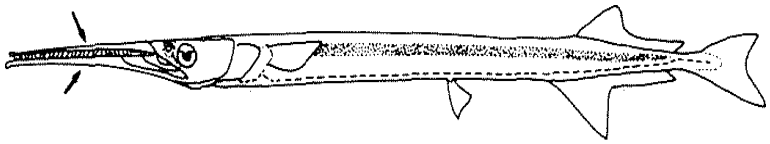
Elongate laterally compressed translucent body; abdomen rounded and not keeled; cleft of the mouth oblique, wide and extending up to operculum; teeth prominent; maxilla narrow extending to gill opening; lower jaw longer than upper; caudal tri-lobed, pectoral long; pelvic origin opposite to dorsal. Eg. *Harpodon* sp.

Order: Beloniformes (Flying fishes/half & fullbeaks)

Fishes with single dorsal fin, placed close to the caudal fin almost opposite to anal; pectoral fin above the middle line, *i.e*. in the upper half of the body; pelvic almost abdominal; lateral line close to lower margin of the body; caudal with lower lobe longer than upper; scale cycloid and deciduous.

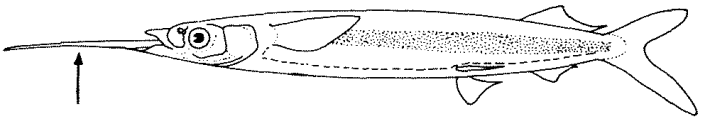
Family: Belonidae (Garfishes/fullbeaks)

Slender elongate body; both jaws produced; teeth enlarged and needle like; no gillrackers. Eg. *Ablennes* sp., *Tylosaurus* sp.



Family: Hemiramphidae (halfbeaks)

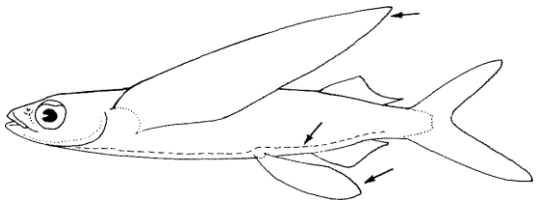
Body cylindrical; lower jaws produced with a sensitive tinge; upper jaw in a small triangular flap; teeth enlarged and cardiform.



Eg. *Zenarchopterus* sp., *Hemiramphus* sp.

Family: Exocoetidae (Flying fishes)

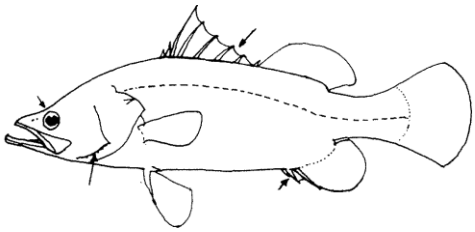
Jaws normal-not produced; teeth very minute; pectoral fin enlarged into wing like structures.



Eg. *Exocoetus* sp., Cypselurus sp.

Order: Perciformes (Perch like fishes)

Perch like or bony in appearance with two dorsal fins, 1st spinous and 2nd soft with fin rays; pelvic fin always thoracic; placed somewhat vertical; total absence of adipose fin; upper jaw bordered by pre-maxilla alone.



Pelagic groups

Family: Carangidae (Jacks, scads, trevallies, horse mackerel, queenfsh, darts, etc.)

Body greatly compressed varying in shape from deep rhomboid to slender and elongate; caudal peduncle slender; dorsal completely separated with a procumbent spine; soft dorsal long based. The family specific characters are either anal fin with two detached spine and or straight part of lateral line with scutes and or caudal peduncle with dorsal and ventral groove and or lateral fleshy keel.

Represented by 20 Genera and more than 60 species in Indian waters.

Eg. *Alectis* sp.; *Alepes* sp.; *Atule* spp.; *Carangoides* spp.; *Caranx* sp.; *Decapterus* sp.; *Gnathanodon* sp.; *Megalaspis* sp.; *Naucrates* sp.; *Selar* spp.; *Selaroides* sp.; *Seriola* sp.; *Seriolina* sp.; *Trachinotus* sp.; *Ulua* sp.; *Uraspis* sp.

Family: Coryphaenidae (Dolphin fish)

Body greatly compressed varying in shape from deep rhomboid to slender and elongate; caudal peduncle slender; dorsal and anal fin very long, continuing almost to caudal fin, fins without sharp spines and finlets, dorsal origin on nape, caudal deeply forked, adult male with bony crust in front of the head.

Eg. *Coryphaena* spp.

Family: Caesionidae (Fusiliers)

Body moderately deep, slender and fusiform, horizontal axis from tip of snout to middle of caudal fin cutting through the middle of the eye, single long based dorsal, first half spinous (10-15 spines) and posterior half with soft rays; mouth small, protractile and terminal; anal with 3 spines.

Eg. *Caesio* sp., *Gymnocaesio* sp., *Pterocaesio* sp.

Family: Mugilidae (Mullets)

Body elongate; head broad and flattened, mouth terminal & small, pectoral high (in the upper half) on body; two dorsal fins, first dorsal with 4 spines, and second dorsal with one spine, anal with 3 spines; sides silvery; no lateral line axillary scales at pectoral and pelvic bases.

Eg. *Mugil* sp., *Liza* sp., *Valamugil* sp.

Family: Sphyraenidae (Barracudas)

Body elongate; sides silvery; head large, snout very long pointed; mouth terminal; lower jaw projecting beyond upper; teeth strong; pectoral in the lower half of the body; two dorsal fins-widely separated; first dorsal, with 5 spines, second dorsal one spine, anal with 2 spines; lateral line present.

Eg. *Sphyraena* sp., *Lates* sp.

Family: Trichiuridae (Ribbonfishes)

Body elongate, compressed and ribbon like; teeth strong and fang like and tapered to a pointed caudal fin absent, body without scales; dorsal & anal fin long; dorsal start shortly

behind head and reaches up to caudal tip; anterior portion with spines; pelvic fin absent or reduced to a scale or scale like spine.

Eg. *Trichiurus* sp., *Lepturocanthus* sp., *Euplerogrammus* sp.

Family: Rachycentridae (Cobias)

Body elongate, subcylindrical; head broad and depressed; snout pointed; mouth terminal with lower jaw projected; first dorsal modified in to 7 to 9 short spines; anal with two spines; caudal lunate in adult with upper lobe longer than lower. Represented by single genera and single species.

Eg. *Rachycentron* sp.

Family: Scomberidae (Mackerel, tuna, seerfishes)

Body elongate, sub-cylindrical to compressed, snout pointed; mouth terminal; 5 or more finlets followed by second dorsal and anal fins; pelvic fin with one spine and 5 rays, placed thoracic or jugular.

i. **Mackerel**

Body fusiform; scales moderately large covering the whole body, size of the scale comparatively large on cheek and below pectoral fin origin; 5-6 detached finlets after second dorsal and anal fin eyes covered with anterior and posterior eyelids; gillrackers elongate and visible when mouth is open.

Eg. *Rastrelliger* sp.

ii. **Tunas**

Body elongate, round to torpedo shaped; mouth large; scales restricted to pectoral region forming corselet (bony armor), scales apparently absent towards posterior part 6-9 detached finlets after second dorsal and anal fin; caudal peduncle slender and possess a median and two lateral keels caudal fin typically forked.

Eg. *Auxis* sp., *Euthynnus* sp., *Thunnus* sp., *Katsuwonus* sp., *Sarda* sp., *Gymnosarda* sp.

iii. **Seerfish/Spanish mackerel & Wahoo**

Body elongate, slightly compressed (cigar shaped) and apparently naked (uniformly covered with very minute scales); jaws with large flattened and sharp teeth, gill rackers poorly developed; caudal peduncle with a prominent median keel and two ridges above and below; 7-10 detached finlets after second dorsal and anal fin.

Eg. *Scomberomorus* sp., *Acanthocybium* sp.

Family: Xiphidae (Swordfishes)

Body elongate and robust, snout (pre-maxilla and nasal bone) produced into a spear; which is dorso-ventrally flat in cross section; body naked without scale, pelvic fin absent; two dorsal fins, first short based and not sail like, second one small and backwardly placed; caudal peduncle with single median keel.

Eg. *Xiphias* sp.

Family: Istiophoridae (Billfishes, Marlin, Sailfishes)

Body elongate and robust, snout produced into a spear; which is round in cross section; body completely covered with lancet like scales; pelvic fin present and spear like; two dorsal fins, first long based and sail like in appearance, second one small and backwardly placed; two anal fins; caudal peduncle with two keels.

Eg. *Istiophorus* sp., *Makaira* sp., *Tetrapturus* sp.

Family: Ambassidae (Glossy perchlets)

Body glass like; oblong, snout pointed; a notch above the eye; mouth oblique; lower jaw prominent; two separate dorsal fins; procumbent spine present, scale sheath present at dorsal and anal fin bases; pre-opercle with double serrated edge.

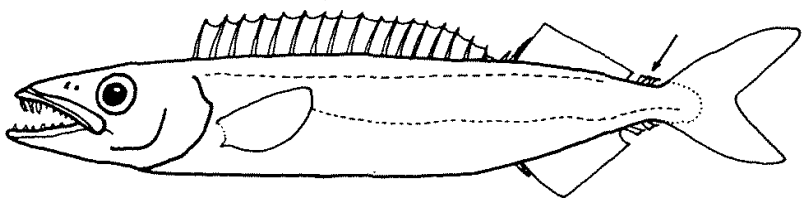
Eg. *Ambassis* sp.

Family: Latidae

Body opaque, 3rd dorsal spine elongated, opercle with a backwardly directed spine, pre-opercle serrated (single), caudal fin rounded.

Family: Gempylidae (Snake mackerel, Barracudas, Oilfishes)

Body elongate, compressed, snout pointed; mouth terminal, not protractile; teeth strong; those at front of upper jaw often fang like, two dorsal, second shorter than the first; 5 or more finlets followed by second dorsal and anal fins; pelvic fin thoracic or jugular; often reduced to a single spine with few or no soft rays.



Eg. *Neoepinnula* sp,. *Thyrsitoides* sp., *Thyrsites* sp., *Gempylus* sp., *Rexea* sp., *Promethychthys* sp.