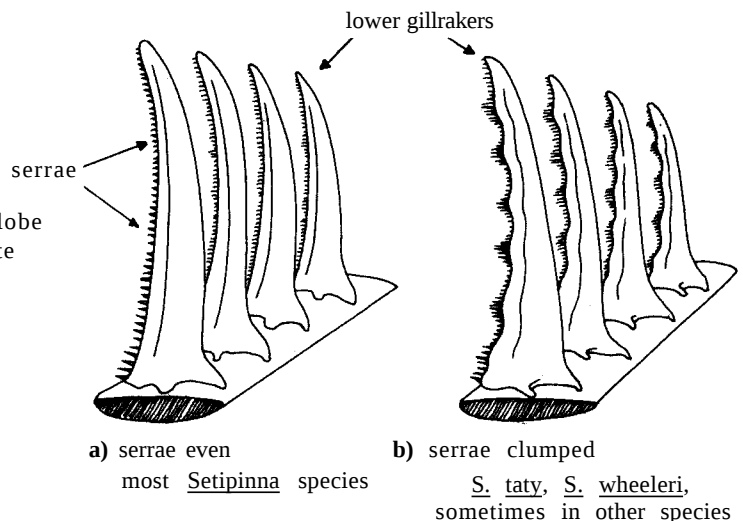
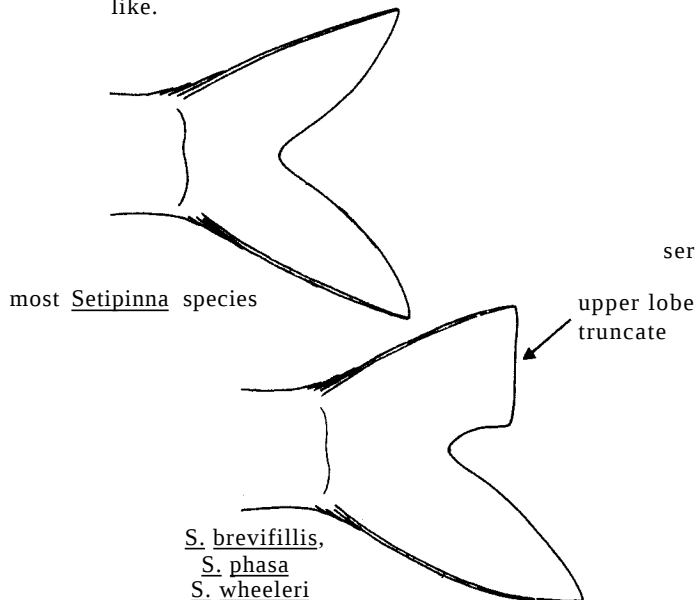
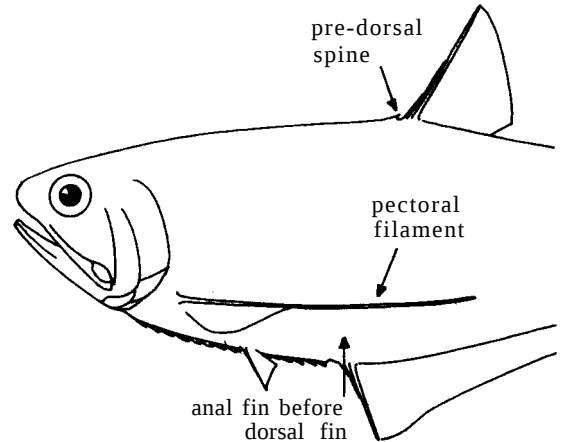


Setipinna Swainson, 1839

ENGR Seti

Setipinna Swainson, 1839, *Nat.hist.anim.*, 2:292 (type: Setipinna megalura Swainson, 1839 = Clupea phasa Hamilton-Buchanan, 1822). Telara Valenciennes, 1848, *Hist.nat.poiss.*, 21:54 (type: Clupea telara Hamilton-Buchanan, 1822 = Clupea phasa). Heterothrissa Günther, 1868, *Cat.fish.Brit.Mus.*, 7:401 (type: Engraulis breviceps Cantor, 1850).

Diagnostic Features : Medium-sized compressed or strongly compressed anchovies (mostly about 15 to 20 cm standard length, one to 28 cm), the belly sharply keeled, with 21 to 40 scutes from isthmus to anus; a small spine-like scute just before dorsal fin origin. Maxilla short, reaching to middle of pre-operculum or almost to edge of gill cover; first supra-maxilla absent; jaw teeth small, even. Lower gillrakers fairly stout, 9 to 22, their serrae sometimes clumped. Pectoral fin with first finray produced as a filament that usually exceeds or well exceeds head length (short in S. melanochir and S. brevifilis); anal fin long, with 45 to 78 branched finrays, its origin before dorsal fin origin. Scales moderate, 40 to 57 in lateral series. Swimbladder very slender, at times almost thread-like.



Biology, Habitat and Distribution : Marine, pelagic and probably schooling, mostly inshore, some entering estuaries; also riverine, probably permanently so. Indo-West Pacific only, from eastern coasts of India to Papua New Guinea; not known from the western Indian Ocean.

Species : Wongratana (1980) recognized seven species, placing breviceps in Heterothrissa (not adopted here—see Remarks) and described one new species (Wongratana, 1987a):

(**Indian Ocean** area only; more than 64 branched anal finrays, less than 25 scutes, upper caudal lobe truncate)

S. brevifilis (Valenciennes, 1848) Lower Ganges system

S. phasa (Hamilton-Buchanan, 1822) Lower Ganges system and Orissa

S. wheeleri Wongratana, 1983 Burma

(**Widespread or western central Pacific** area only; less than 62 branched anal finrays, more than 23 scutes, caudal lobes symmetrical)

S. breviceps (Cantor, 1850) Malaysia, Indonesia

S. melanochir (Bleeker, 1849) Thailand to Java

S. paxtoni Wongratana, 1987 Northern Australia

S. taty (Valenciennes, 1848) Eastern Indian Ocean to Indonesia

S. tenuifilis (Valenciennes, 1848) Bay of Bengal, Australia to Japan

Remarks : Although Thryssa davi has a short pectoral filament, the advanced anal fin origin in Setipinna easily distinguishes the genus from Thryssa. Wongratana placed S. breviceps in the separate genus Heterothrissa, but the characters either overlap (gillrakers, dorsal finrays, epurals) or merely continue trends seen in the remaining species (oblique mouth, lengthening of first and third suborbitals, increase in branchiostegal rays and pyloric caeca).

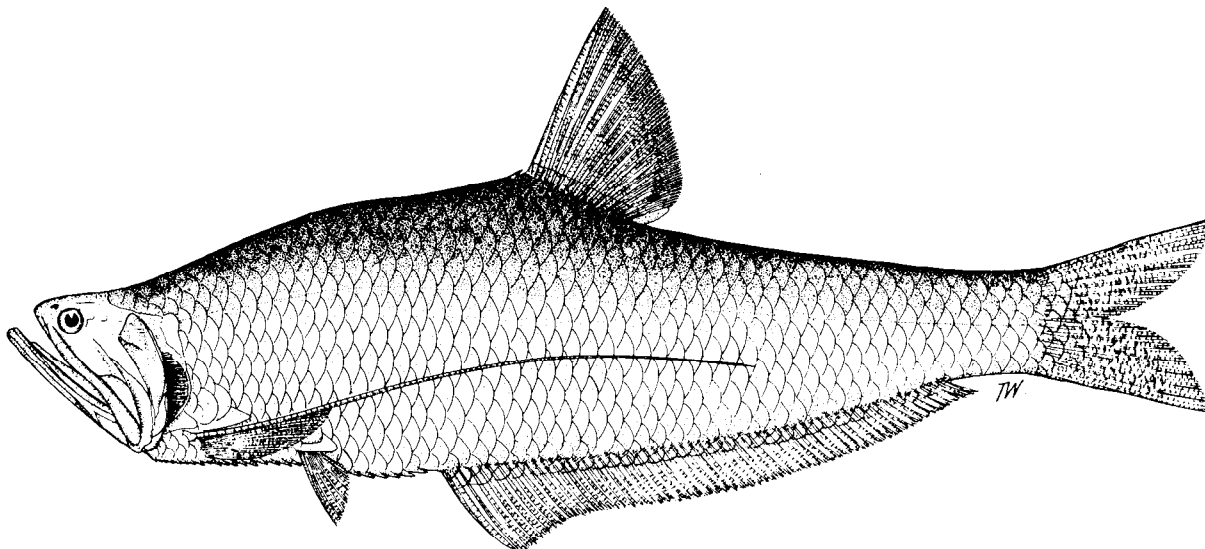
Setipinna breviceps (Cantor, 1850)

ENGR Seti 8

Engraulis breviceps Cantor, 1850, J.Asiatric.Soc.Beng., 18(2):1288 (Penang).

Synonyms : Engraulis pfeifferi Bleeker, 1852a:433 (Kapuas River at Pontianak, Kalimantan); Heterothrissa breviceps:Günther, 1868:401 (type of breviceps; Bleeker figured specimen); Wongratana, 1980:310, pls 280,281 (revision); Setipinna breviceps-Weber & de Beaufort, 1913:29 (Sumatra); Fowler, 1941d:691 ("Cochin China"; in subgenus Stethochaetus Gray, 1854 = Trichogaster, an anabantid fish); Hardenberg, 1931:101 (Bagan Si Api Api); Whitehead, 1969a:270, fig.52 (compiled).

FAO Names : En - Shorthead hairfin anchovy.



Diagnostic Features : Body compressed, head (snout to occiput) very short, belly with 17 to 23 plus 9 to 11 = 27 to 32 keeled scutes from isthmus to anus. Mouth strongly oblique, jaws slender, second supra-maxilla almost half length of maxilla, lower jaw projecting beyond tip of snout. Lower gillrakers 11 or 12, serrae enlarged and spiky at either end of each raker. Pectoral filament long, reaching to base of 35th to 41st anal finray; anal with iii 56 to 61 finrays. The very low gillraker count and characteristic shape of head and jaws distinguish it from all other species of Setipinna, as also the high number of anal finrays in the group of species with more than 23 scutes.

Geographical Distribution : Indian Ocean (Penang, Selangor; Wongratana, 1980:311 saw no Indian specimens, but accepted the records of Day, 1878 and Nair, 1953; also that of Lloyd, 1907 for Burma) and western central Pacific area (river mouths of Sumatra, Kalimantan and Sarawak, presumably also Java).

Habitat and Biology : Marine or estuarine, perhaps also ascending into fresh water. More data needed.

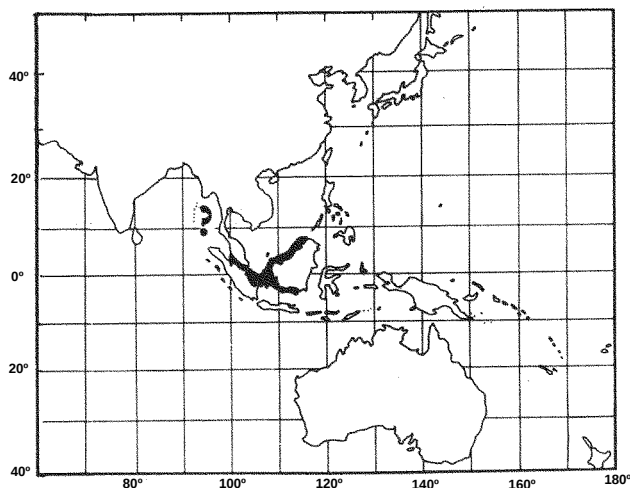
Size : To 24 cm standard length.

Interest to Fisheries : Apparently a highly esteemed foodfish at the Rokan River mouth, Sumatra (Hardenberg, 1931), thus presumably also in similar localities elsewhere in Indonesia, Malaysia and Sarawak.

Local Names :

Literature :

Remarks : In spite of its rather distinctive appearance, there seems to be no strong reason to place this species in a separate genus Heterothrissa (see under genus).



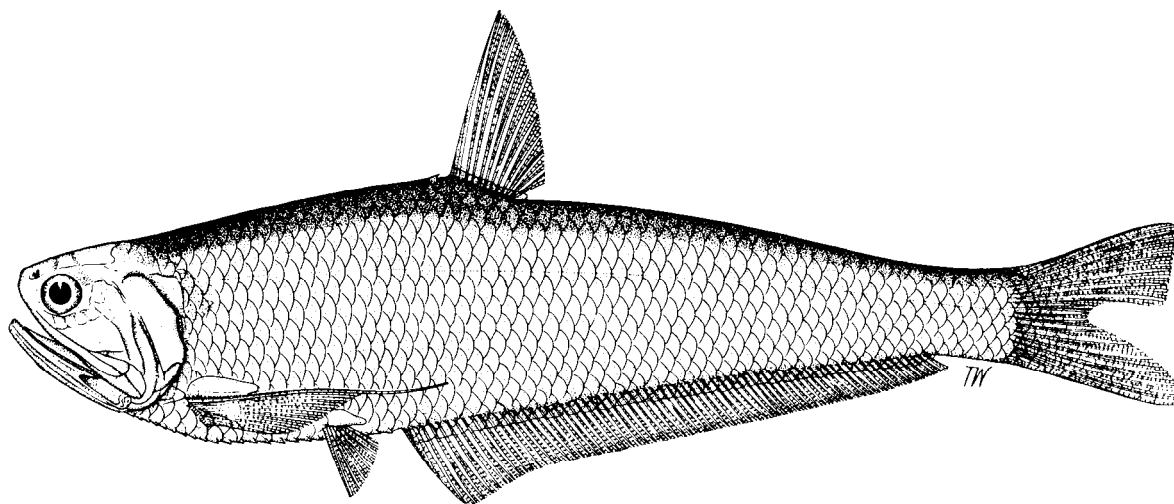
Setipinna brevifilis (Valenciennes, 1848)

ENGR Seti 5

Engraulis brevifilis Valenciennes, 1848, Hist.nat.poiss., 21:54 (Bengal).

Synonyms : Engraulis telara:Day, 1876:308 (Calcutta, Delhi specimens); Setipinna phasa:Fowler, 1941d:688 (the Ganges specimen); Whitehead, 1967a:145 (holotype of brevifilis); Idem, 1973b:238 (in synonymy of phasa misspelt phase); Whitehead & Bauchot, 1986:32 (same). Setipinna brevifilis-Wongratana, 1980:309, pls 278,279 (revision, separation from phasa).

FAO Names : En - Short-hairfin anchovy,



Diagnostic Features : Body compressed, belly with 15 to 17 plus 6 or 7 = 22 or 23 keeled scutes from isthmus to anus. Lower gillrakers 17 (rarely 18), the serrae enlarged near the tip and sometimes show clumping of larger ones along the raker. Pectoral filament short, reaching to base of first to 15th anal finray; anal fin with iii 65 to 72 finrays; upper caudal fin lobe truncated, shorter than lower. Pectoral fins with no dark markings, even in large fishes. Very close to S. phasa, which has a slightly shorter head (15.6 to 18.1% of standard length; cf. 18.0 to 19.7%), a longer pectoral filament (to base of 15th to 39th anal finray), the pectoral fin black in adults over 13.6 cm standard length, and more gillrakers (18 or 19, rarely 17); S. wheeleri has more gillrakers (21 or 22). Other species of Setipinna have fewer anal finrays, but more scutes.

Geographical Distribution : Indian fresh waters (Ganges system, from at least Delhi to Calcutta).

Habitat and Biology : Apparently purely riverine. More data needed, based on separation from S. phasa.

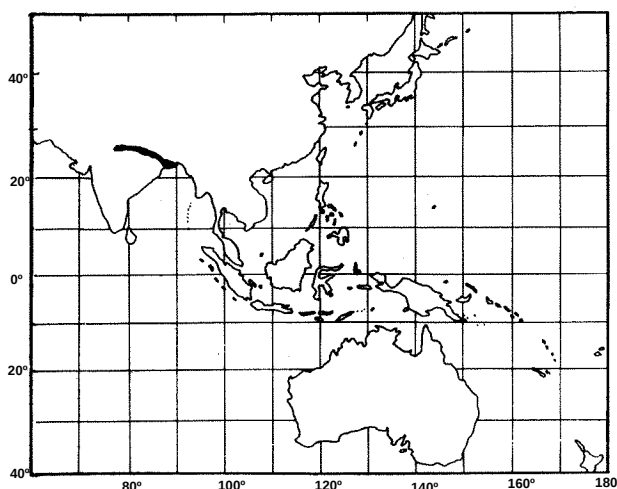
Size : To 26 cm standard length.

Interest to Fisheries : Presumably contributes to local artisanal fisheries in the Ganges.

Local Names : INDIA: Phansa (Calcutta).

Literature : Not distinguished from S. phasa, but some of the biological work on the latter probably refers to S. brevifilis.

Remarks : Until the revision by Wongratana (1980), authors had considered brevifilis a synonym of phasa. The distinctions made by Wongratana (and used here) were based on 8 and 10 specimens, respectively, and more should be examined. If two species, then they appear to occur together in the Ganges from Alahabad to Calcutta, but are not yet known to overlap in the rivers of Orissa.



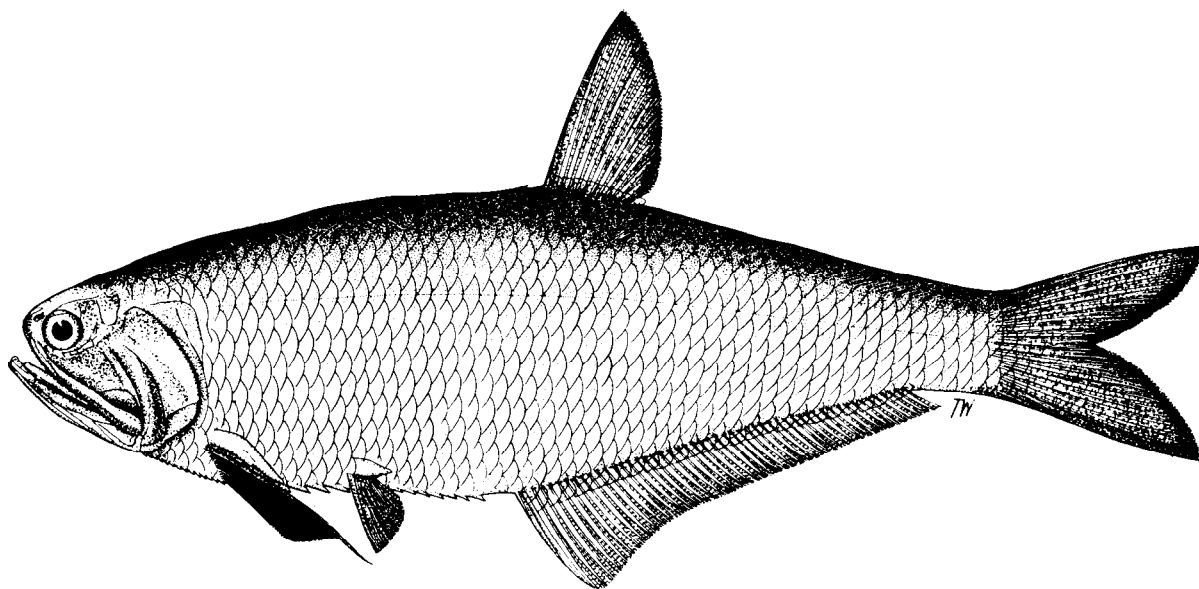
Setipinna melanochir (Bleeker, 1849)

ENGR seti 2

Engraulis melanochir Bleeker, 1849, Verh.batav.Genoot.Kunst.Wet., 22:13 (Kammal, Surabaya).

Synonyms : Setipinna melanochir -Weber & de Beaufort, 1913:28, fig.15 (Sumatra); Fowler, 1941d:687 (Kalimantan, Cochin China); Hardenberg, 1931:101 (Rokan River mouth); Idem, 1936:227 (Kapuas River, Kalimantan); Smith, 1945:55, p1.2 (Chao Praya River at Loburi, Thailand); Whitehead, Boeseman & Wheeler, 1966:130, p1.17, fig.1 (Bleeker's figure) (putative neotype of melanochir); Whitehead, 1969a:269, fig.51 (compiled); Wongratana, 1980:303, pls 271,272 (revision).

FAO Names : En - Dusky-hairfin anchovy.



Diagnostic Features : Body compressed, belly with 21 to 26 plus 8 to 10 = 30 to 35 keeled scutes from isthmus to anus. Lower gillrakers 9 to 12, their serrae rather large, spiky, but not distinctly clumped. Pectoral filament short or even absent, never reaching even to anus, total finrays usually 14 or 15; anal finrays iii 45 to 50. Gill cover and main part of pectoral fin often dusky or jet black; other fins pale to bright yellow. The very low gillraker count and short pectoral filament separates it from all other species of Setipinna. Similar species of Thryssa with a short maxilla (T. scratchleyi, T. aestuaria, T. rastrosa) all have more than 18 gillrakers.

Geographical Distribution : Western central Pacific area (Thailand south to Java, including rivers, e.g., the Chao Praya in Thailand and the Rokan, Kapuas and Barito in Indonesia).

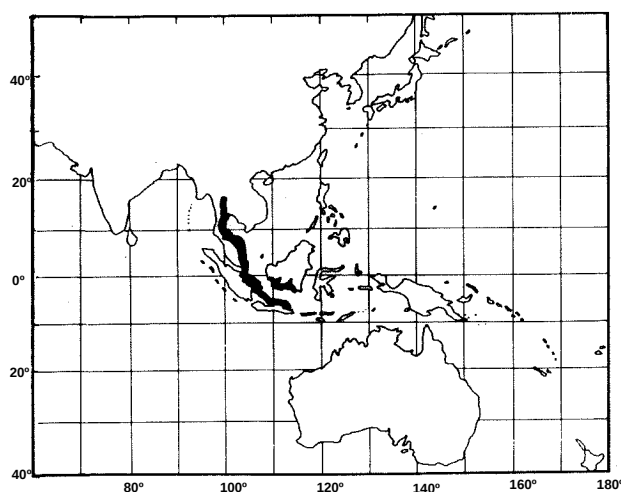
Habitat and Biology : Marine, estuarine and fresh water; Wongratana (1980:304) noted records of this species in rivers 90, 150 and 210 km from the sea, but it is not known if these are permanent freshwater populations or migrants from the estuaries or the sea.

Size : To 11 cm standard length.

Interest to Fisheries : At least small number enter artisanal river and lake fisheries.

Local Names :

Literature :



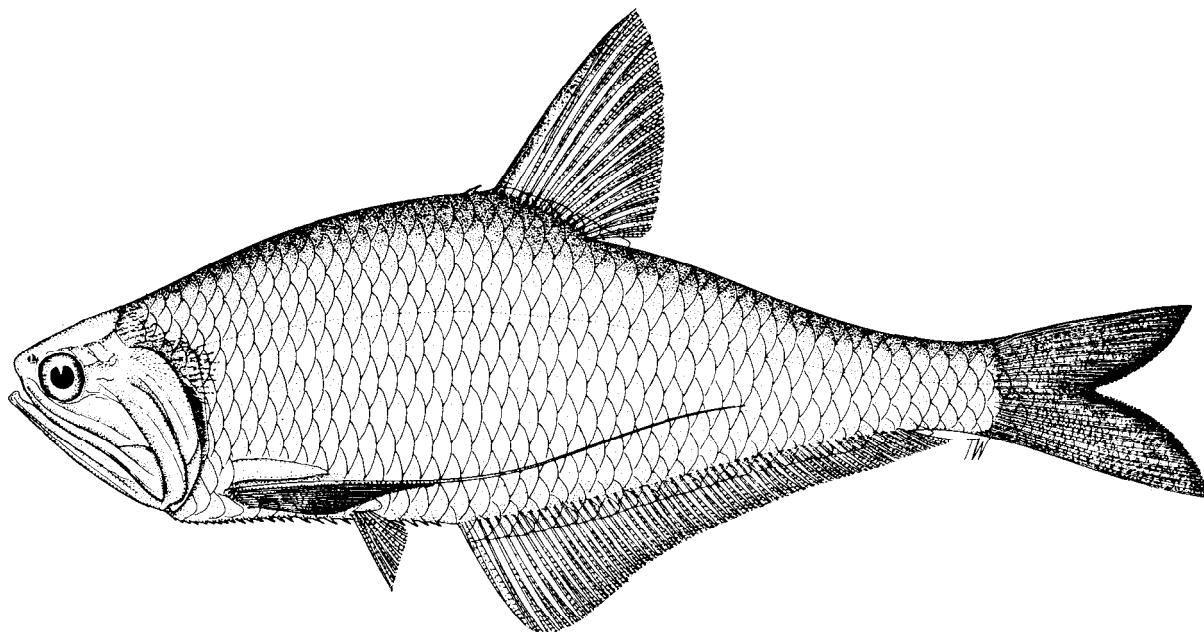
Setipinna paxtoni Wongratana, 1986

ENGR seti 4

Setipinna paxtoni Wongratana, 1986, Proc.biol.Soc.Wash., 100(1):109, fig.5 (Medusa Bank, Cambridge Gulf, Western Australia).

Synonyms : Setipinna papuensis:Wongratana, 1980:302, pl.270 (Western Australia).

FAO Names : En - Humpback hairfin anchovy.



Diagnostic Features : Body compressed, rather hump-backed, belly with 18 or 19 plus 7 or 8 = 25 to 27 keeled scutes from isthmus to anus. Lower gillrakers 14 or 15, their serrae not distinctly clumped. Pectoral filament long, reaching to base of 27th to 41st anal finray; anal fin with 51 to 54 finrays. Closely resembles S. tenuifilis, which has a smoother dorsal profile, a more slender body (depth 27 to 33% of standard length; cf. 33 to 35%), and a shorter pectoral filament (only to base of 9th to 21st anal finray). No other species of Setipinna occurs in the area.

Geographical Distribution : Indian Ocean (northern coast of Western Australia at Medusa Bank, Cambridge Gulf, but presumably elsewhere along that coast).

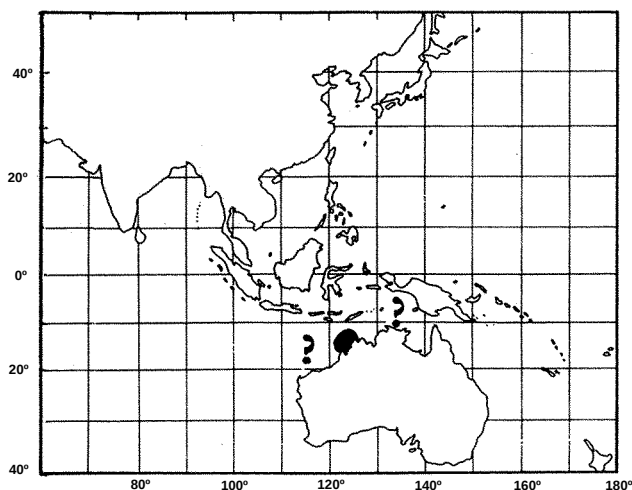
Habitat and Biology : No data, but presumably marine, coastal, perhaps entering estuaries.

Size : To 11 cm standard length, perhaps more.

Interest to Fisheries : Nil.

Local Names :

Literature :



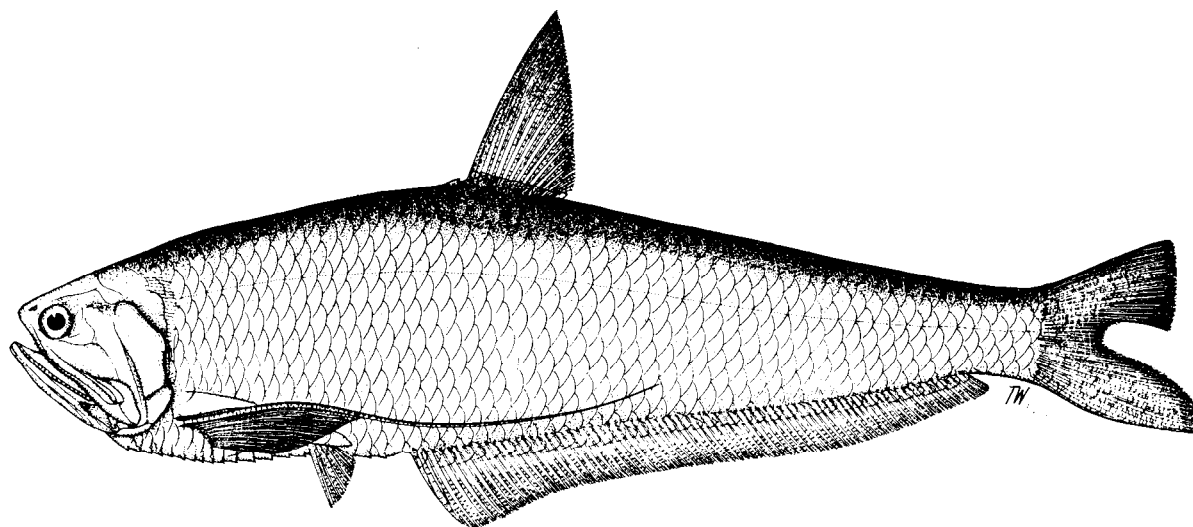
Setipinna phasa (Hamilton-Buchanan, 1822)

ENGR seti 6

Clupea phasa Hamilton-Buchanan, 1822, Fishes of the Ganges:240,382 (brackish rivers of Bengal).

Synonyms : Clupea telara Hamilton-Buchanan, 1822:241,382, p1.2, fig.72 (high up the Ganges); Day, 1878:627, p1.158, fig.2 (Calcutta and Orissa specimens only); Setipinna truncata Swainson, 1839:292 (on telara); Setipinna megalura Swainson, 1839:292 (on phasa); Setipinna phasa-Jones & Menon, 1950:25 (Barrackpore, breeding); Idem, 1951:323 et seq., figs 2-5 (eggs, larvae, juvenile) (Hooghly, breeding, fishery); Jhingran, 1963:291 et seq., fig.1 (gonads)(Allahabad, breeding); Babu Rao & Jogelkar, 1968:39 (Hooghly, description); Whitehead, 1973b:238, fig.2 (misspelt phase; synopsis; brevifilis wrongly included); Wongratana, 1980:308, pls 276,277 (revision).

FAO Names: En - Gangetic hairfin anchovy.

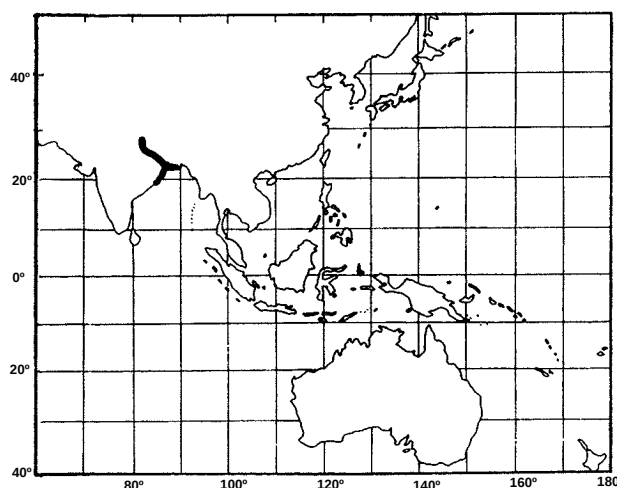


Diagnostic Features : Body compressed, belly with 15 plus 6 or 7 = 21 or 22 keeled scutes from isthmus to anus. Lower gillrakers 18 or 19 (rarely 17), the serrae even or becoming clumped in some specimens. Pectoral filament long, reaching to base of 15th to 39th anal finray; anal fin with iii 66 to 78 finrays; upper caudal lobe truncated, shorter than lower. Pectoral fins hyaline, but dark in fishes over 13.6 cm standard length. The separation of S. brevipilis from S. phasa is given under that species; if distinct, the two occur together in the Ganges sytem. Setipinna wheeleri of Burma is also similar, but has more gillrakers (21 or 22). Other species of Setipinna have fewer anal finrays, but more scutes.

Geographical Distribution : Indian fresh and brackish waters (Ganges system, from Diamond Harbour on the Hooghly to as far up as Allahabad on the Ganges, perhaps further; also rivers and estuaries of Orissa).

Habitat and Biology : Riverine, but found in estuaries and presumably tolerating some salinity. Adults feed mainly on mysids and small prawns (reduced feeding in breeding season), juveniles mainly on copepods. Extended breeding season, possibly throughout year, but peaks in October/November (Hooghly at Barrackpore) or March to May (Ganges at Allahabad).

Size : To 20.9 cm standard length (Wongratana, 1980), but to 32.4 cm total length (about 28 cm standard length) fide Jhingran (1963). Day (1878) gave 16 inches (about 40 cm), presumably total length.



Interest to Fisheries : A major item in artisanal catches in the Hooghly estuary from November to March/April, and dominating the Setipinna fishery there from about January (Jones & Menon, 1951); substantial catches also at Allahabad (Jhingran, 1963). Its large size makes it an attractive foodfish.

Local Names : INDIA: Phasa, but also Phansa (Calcutta) and Patara = leaf-like (Allahabad).

Literature : Nair (1940 - early stages), Mookerjee & Mookerjee (1950 - biology), Jones & Menon (1950, 1951 - breeding, eggs and larvae, fishery), Sathyanesan (1961 - pituitary, as telara), Jhingran (1963 - breeding), Chandra (1964 - early stages), Babu Rao & Jogelkar (1968 - meristics and morphometrics).

Remarks : More work is needed on the separation of S. brevifilis from S. phasa (see under the former species). If the two are distinct, then some of the biological and fishery studies listed above may in part apply to S. brevifilis. Day's telara material was certainly mixed, but Babu Rao & Jogelkar's specimens agree with the diagnosis given here.

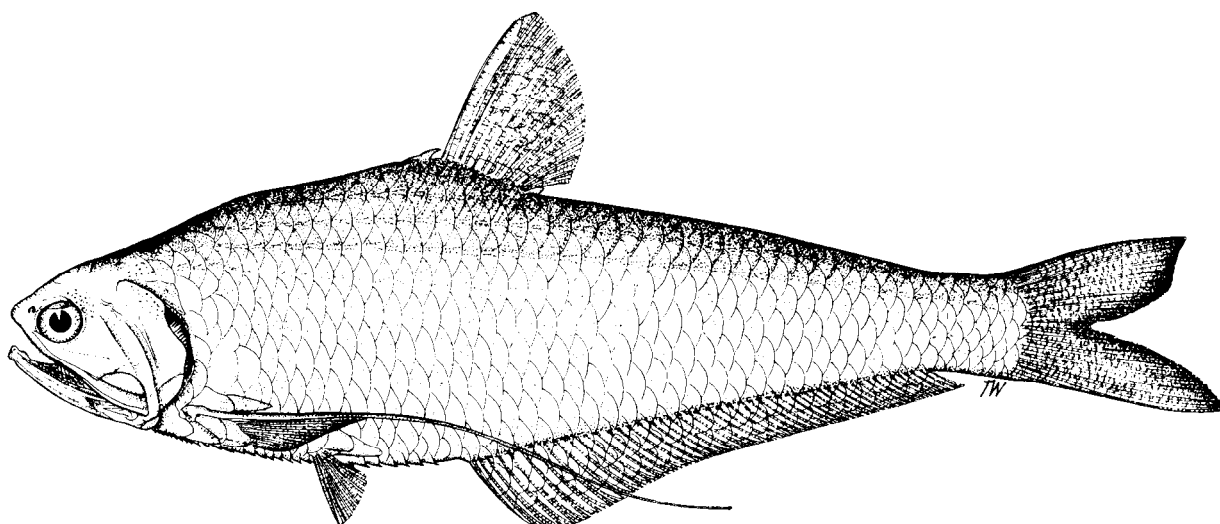
Setipinna taty (Valenciennes, 1848)

ENGR seti 1

Engraulis taty Valenciennes, 1848, Hist.nat.poiss., 21:60 (Pondicherry).

Synonyms : Engraulis telaroides Bleeker, 1849a:13 (Madura near Sampang, Kammal, Surabaya); Setipinna taty-Weber & de Beaufort, 1913:30 (Jakarta, Kalimantan); Whitehead, Boeseman & Wheeler, 1966:128, p1.16, fig.3 (Bleeker's figure)(putative neotype of telaroides); Whitehead, 1967a:146 (types of taty); Idem, 1968:27 (Bay of Bengal); Idem, 1969:268 (Penang, Singapore); Idem, 1973b:237 (synopsis, but tenuifilis wrongly included); De & Datta, 1974:285 (Hooghly estuary); Wongratana, 1980:304, pls 273,274 (revision); Whitehead & Bauchot, 1986:33 (types of taty).

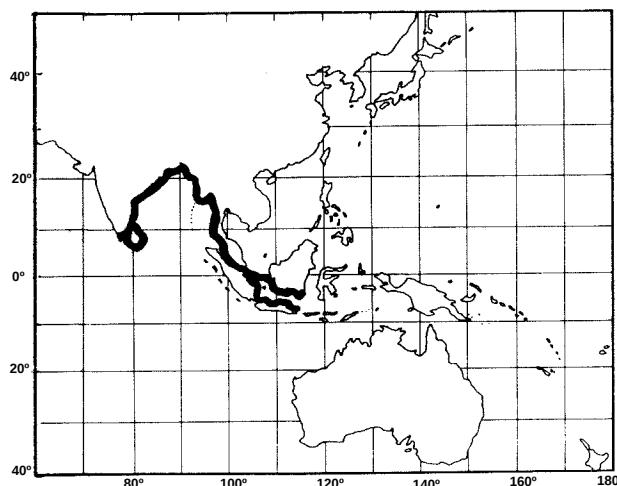
FAO Names : En- Scaly hairfin anchovy.



Diagnostic Features : Body strongly compressed, belly with 20 to 29 (mostly 22 to 27) plus 9 to 14 (mostly 11 or 12) = 32 to 40 (mostly 34 to 37) keeled scutes from isthmus to anus. Lower gillrakers 17 to 21 (mostly 18 to 20), their serrae distinctly clumped. Pectoral fin rays; anal fin rays iii 45 to 55. Scales present on dorsal and anal fins (a unique feature in Indo-Pacific engraulid). Closely resembles S. tenuifilis and S. paxtoni, which have fewer scutes and gillrakers (24 to 28 and 13 to 17); other species of Setipinna either have fewer gillrakers or fewer scutes. Clumped gillraker serrae also occur in S. wheeleri and in some S. phasa, S. tenuifilis and S. melanochir. See ENGR Seti 1, Fishing Areas 57/71.

Geographical Distribution : Indian Ocean (Bay of Bengal south to Penang), western central Pacific (Thailand south to Java and southern Kalimantan, but no certain records from the Philippines, Sulawesi or Papua New Guinea).

Habitat and Biology : Marine, pelagic and schooling, mainly coastal, but also entering estuaries (e.g. the Hooghly). More data needed, based on certain identifications, since at least some records must be based on S. tenuifilis.



Size : To 13.6 cm standard length, perhaps more.

Interest to Fisheries : One of the commonest species of Setipinna and thus making a significant contribution to artisanal Setipinna catches (e.g. in the Hooghly estuary - see Babu Rao & Jogelkar, 1968).

Local Names: INDIA: Phansa (Calcutta).

Literature : De & Datta (1974 - size groups), De & Mitra (1981 - fecundity).

Remarks : Records of this species from about Hong Kong northward refer to S. tenuifilis, while at least some of the records from further south or in the Bay of Bengal will also be misidentifications. The rather wide range in scute and anal finray counts has not yet been correlated with geographical distribution or ecological differences on which subspecies might be based.

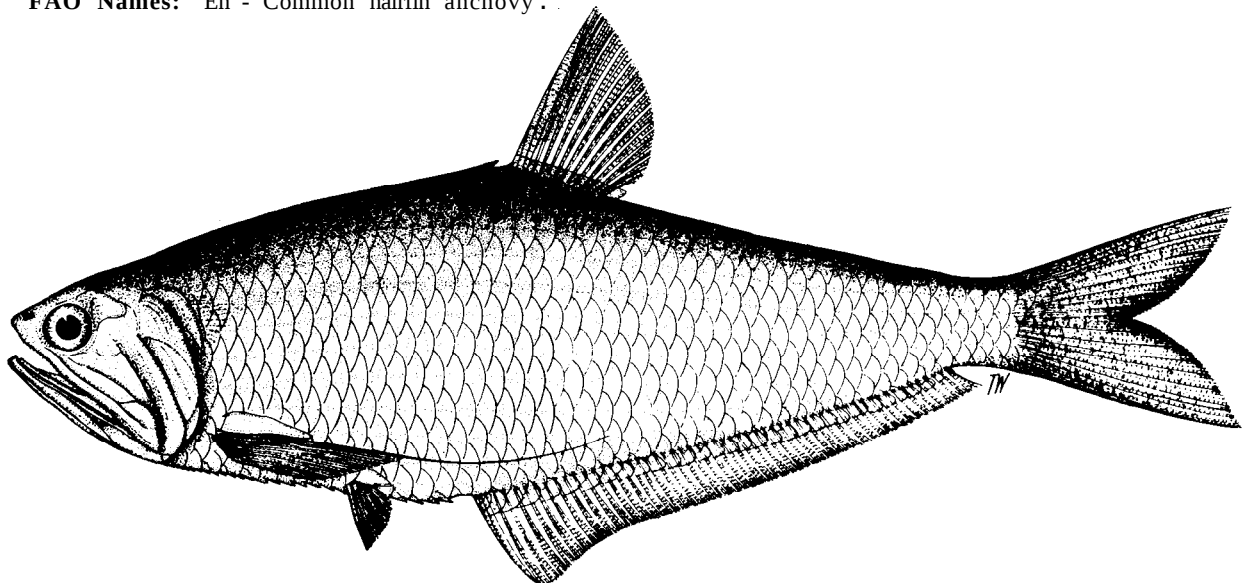
Setipinna tenuifilis (Valenciennes, 1848)

ENGR Seti 3

Engraulis tenuifilis Valenciennes, 1848, Hist.nat.poiss., 21:62 (Rangoon).

Synonyms : Setipinna gilberti Jordan & Starks, 1905:194, fig.1 (Chemulpo, Korea); Lindberg & Legeza, 1965:76, figs 93,94 (Sea of Japan, Yellow Sea); Idem, 1969:72, figs 93,94 (English translation of 1965 edition); ? Setipinna lighti Wu (on Herre), 1929:26, fig.20 (Amoy = Xiamen); Setipinna taty (part):Fowler, 1941d:689 (type of gilberti and Hong Kong specimen); Shen, 1959:25 (Taiwan Island); Chu, Tchang & Chen, 1963:114, fig.88 (East China Sea); Whitehead, 1967a:147 (types of tenuifilis); Setipinna godavari Babu Rao, 1962:367 (Godavari estuary, India); Whitehead, 1968a:28, fig.3b (gillraker)(Bay of Bengal); Idem, 1973b:239, fig.63 (synopsis); Setipinna godavariensis Babu Rao & Jogelkar, 1968:38 (unjustified emendation of godavari; biology); Setipinna papuensis Munro, 1964:150, fig.1 (Port Romilly, Gulf of Papua); Idem, 1967:45, p1.3, fig.34 (same); Setipinna tenuifilis-Wongratana, 1980:229 and 301, pls 267,268 and 269 (revision; subspecies tenuifilis and gilberti); Sainsbury, Kailola & Leyland, 1985:66, 67 (colour photo), 332 (Timor and Arafura Seas off northern coasts of Australia); Whitehead & Bauchot, 1986:34 (types of tenuifilis).

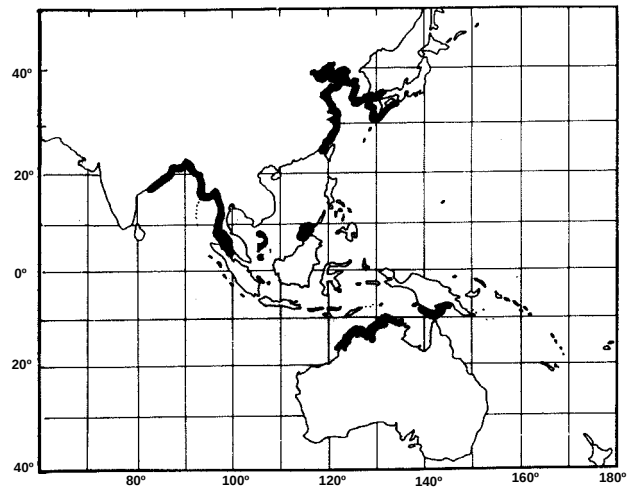
FAO Names: En - Common hairfin anchovy . .



Diagnostic Features : Body strongly compressed, belly with 18 to 20 (rarely 17 or 21) plus 7 (sometimes 8) = 25 to 27 keeled scutes from isthmus to anus. Lower gillrakers 13 to 17, their serrae uneven, with slight or sometimes distinct clumps of larger serrae. Pectoral filament moderate, reaching back to base of 9th to 21st anal finray, total pectoral finrays 11 to 13 (mostly 12); anal finrays iii 46 to 56. Of species with less than 62 branched anal finrays and more than 23 scutes, it resembles S. taty, which has more scutes and gillrakers (32 to 40 and usually 18 to 20); it is also close to Setipinna paxtoni, which is rather hump-backed, deeper (depth 33 to 35% of standard length; cf. 27 to 33%), with a longer pectoral filament (to base of 27th to 41st anal finray) and a longer pelvic fin (reaching to anus); S. melanochir and S. breviceps have less than 13 gillrakers.

Geographical Distribution : Indian Ocean (northern and eastern coasts of Bay of Bengal, including Burma and the Andaman Islands; perhaps southward from the Godavari river, but no certain records) and western Pacific (northern coast of Australia, Gulf of Papua, Sarawak, presumably the Philippines and Hong Kong, certainly China coast from around Taiwan Island north to Yellow Sea and to southern part of Sea of Japan). Since only a single species of *Setipinna* occurs off China and Japan, the references to it and its distribution given by Lindberg & Legeza (1965, 1969) must refer to it.

Habitat and Biology : Marine, pelagic, presumably schooling and mostly coastal, but also entering estuaries (e.g. the Hooghly and Godavari) and penetrating at least 20 km up (Godavari), tolerating salinities as low as 8.7‰ (Babu Rao, 1962). Feeds on prawns, copepods, crustacean larvae, molluscs and fishes.



Size : To about 14 cm standard length, perhaps more (Chu, Tchang & Chen, 1963:114 give 16.3 cm, while Lindberg & Legeza, 1965, 1969:73 give 22 cm, but possibly mean total length).

Interest to Fisheries : Fairly common (at least in Museum collections) and certainly makes a significant contribution to artisanal *Setipinna* catches in the Hooghly and Godavari estuaries (Babu Rao & Jogelkar, 1968 - as *godavariensis*).

Local Names :

Literature : Lindberg & Legeza (1965, 1969 - China and Japan: references, as *gilberti* and *lighti*); Babu Rao & Jogelkar (1968 - as *godavariensis*, fecundity, food, length/weight in Godavari and Hooghly estuaries).

Remarks : Long confused with *S. taty* and perhaps impossible to disentangle from the Indian Ocean and southeast Asian literature; however, all references to *S. taty* north of about Hong Kong must surely refer to *S. tenuifilis*.

Subspecies: Wongratana (1980:301) recognized two subspecies, based on gillraker numbers, pectoral filament length and body depth:

- (a) *S. tenuifilis tenuifilis*: lower gillrakers 13 or 14; pectoral finrays usually 12, the filament reaching to base of 11th to 21st anal finray; body depth 28 to 33% of standard length; Bay of Bengal, South China Sea.
- (b) *S. tenuifilis gilberti*: lower gillrakers 16 or 17; pectoral finrays 13, the filament reaching to base of 9th anal finray; body depth 27 to 30% of standard length; East China Sea to Japan.

Wongratana (1980:302) gave the name *papuensis* to four specimens from Medusa Bank, Cambridge Gulf, Western Australia, but subsequent examination of the type of *papuensis* showed that it is clearly *tenuifilis*. These Australian specimens represent a new species (see *Setipinna paxtoni*).

Setipinna wheeleri Wongratana, 1983

ENGR Seti 7

Setipinna wheeleri Wongratana, 1983, *Japan J. Ichthyol.*, 29(4):405, fig.25 (Sittang River and Rangoon, Burma).

Synonyms : *Engraulis telara*: Day, 1878:627 (Rangoon specimens, now paratypes of *wheeleri*); *Setipinna telara*: Jordan & Seale, 1926:365 (Rangoon); *Setipinna wheeleri*-Wongratana, 1980:307, pl.275 (revision; name not validly published).