

Diagnostic Features : Body tapering, belly rounded before pelvic fins, with 13 to 15 plus 20 to 25 = 34 to 40 keeled scutes from isthmus to anus. Maxilla long, reaching to or beyond base of first pectoral finray. Lower gillrakers 30 to 34 (rarely 29). Pectoral fin with 6 long filaments and 9 to 11 (usually 10) branched finrays, longer than those of pelvic fin. Of species in the area with a long maxilla and more than 30 scutes, both *C. mystus* and *C. macrognathos* have more scutes (41 to 50 and 47 to 54; also only 21 to 24 gillrakers in *C. macrognathos*), while *C. grayi* has seven pectoral filaments.

Geographical Distribution : Western central Pacific area (rivers of Viet Nam, Thailand and southeastern Sumatra, perhaps also eastern Malaysia and western Kalimantan).

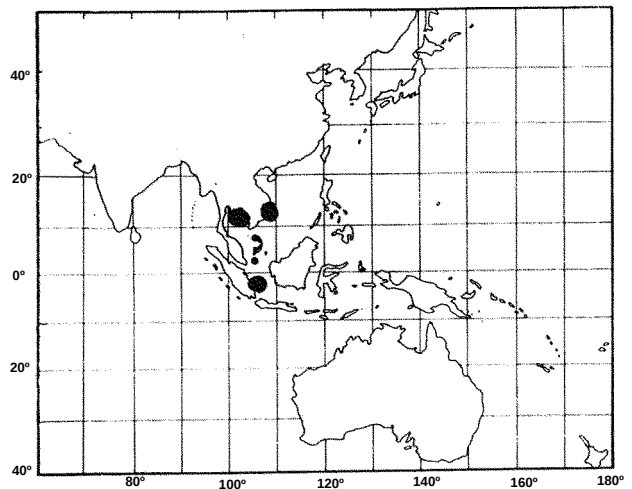
Habitat and Biology : Riverine, but insufficient data to show if this species also occurs along coasts or whether it is estuarine and not freshwater.

Size : To 20 cm standard length.

Interest to Fisheries : Unknown, but presumably enters artisanal catches.

Local Names :

Literature :



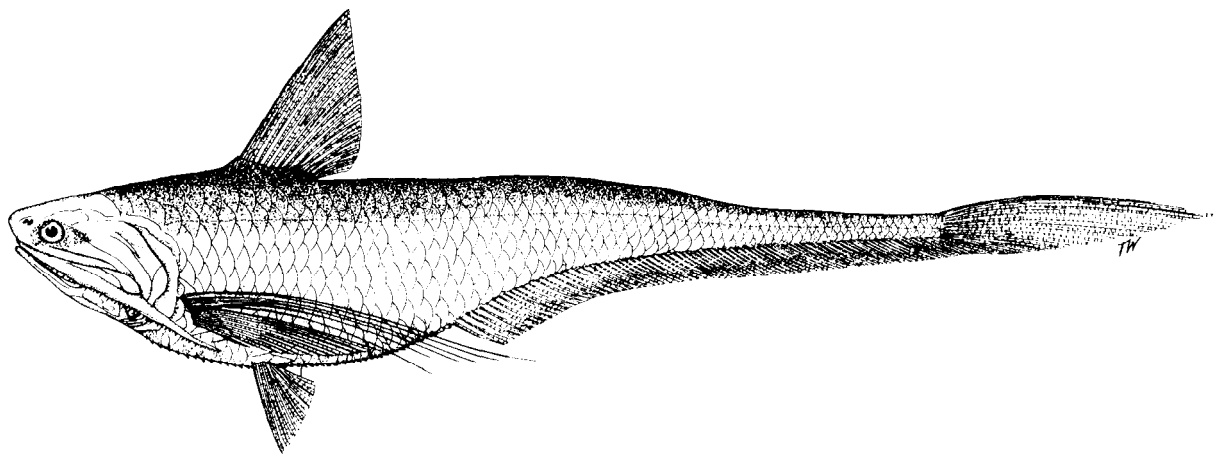
Coilia macrognathos Bleeker, 1852

ENGR Coil 1

Coilia macrognathos Bleeker, 1852, *Natuurk Tijdschr.Ned.-Indië*, 3:436 (Pamangkat, western Kalimantan).

Synonyms : *Coilia macrognathos*- Weber & de Beaufort, 1913:49 (Bleeker's type); Hardenberg, 1933b:217 (Kumai River); *Idem*, 1936:228 (Pontianak, Padang Tikarbay, Kalimantan); Fowler, 1941d:721 (same); Whitehead, Boeseman & Wheeler, 1966:141, p1.18, fig.3 (Bleeker's figure)(lectotype of *macrognathos*); Whitehead, 1969a:274, fig.57 (Sarawak); Wongratana, 1980:327, pls 298,299 (revision; *aequidentatus* not a synonym, but *C. lindmani*).

FAO Names: En - Longjaw grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded before pelvic fins, with 14 to 16 plus 31 to 39 = 47 to 54 keeled scutes from isthmus to anus. Maxilla long, reaching to beyond pectoral fin base. Lower gillrakers 21 to 24. Pectoral fin with 6 filaments and 10 to 12 branched finrays, longer than those of pelvic fin. Of species in the area with a long maxilla and more than 30 scutes, *C. lindmani* and *C. mystus* have more gillrakers (29 to 34 and 25 to 31; also, 34 to 40 scutes in *C. lindmani*), while *C. grayi* has 7 pectoral filaments. See ENGK Coil 1, Fishing Areas 57/71.

Geographical Distribution : Western central Pacific area (Sarawak and western coast of Kalimantan), also two specimens from Phuket Island, Thailand, i.e. Andaman Sea (Wongratana, 1980:327).

Habitat and Biology : Presumably estuarine, like other *Coilia* species, but more data needed.

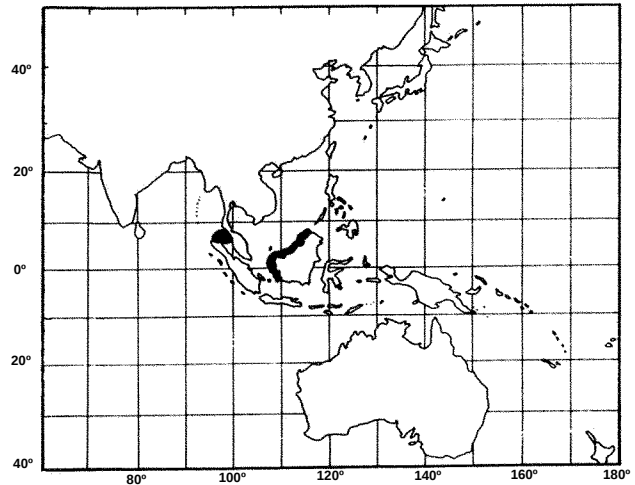
Size : To 18.5, cm standard length.

Interest to Fisheries :

Local Names :

Literature :

Remarks : The true provenance of the Phuket specimens is open to doubt.



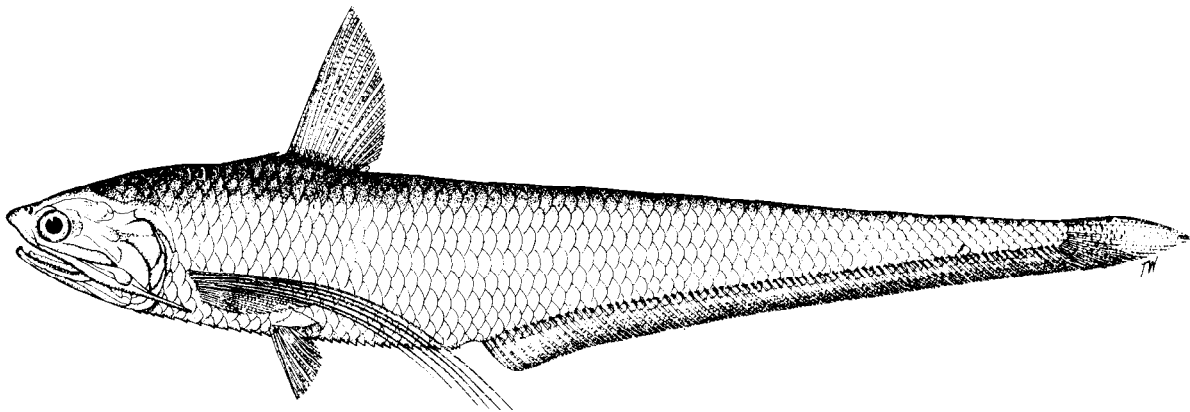
Coilia mystus (Linnaeus, 1758)

ENGR Coil 12

Clupea mystus Linnaeus, 1758, *Syst.nat.*, 10th ed.:319 (name from Osbeck, 1757:256, description on Layerström and perhaps Osbeck specimens, China); *Idem*, 1759, *Amoen.Acad.*, 4(61):252, fig.12 (repeat of his *Mystus ensiformis* description and figure of 1754 - see below).

Synonyms : [*Mystus ensiformis* Linnaeus, 1754:26, fig.12 (China, on Lagerström material); *Clupea mystus* Osbeck, 1757:256 (Canton area)]; Linnaeus, 1764:106 (China specimen(s) in the King's collection; meristic data repeated from Linnaeus, 1758:319); *Mystus clupeoides* Lacepède, 1803:466 (mainly, perhaps wholly, on Osbeck); *Choetorrus playfairii* McClelland, 1844:405, p1.24, fig.3 (China); *Osteoglossum prionostoma* Basilewsky, 1855:244 (Gulf of Tschiliensis, China); *Coilia mystus*-Jordan & Seale, 1926:359 (Hong Kong); Fowler, 1931a:81 (compiled); *Idem*, 1941d:719 (Japan; Port Arthur China; large synonymy, but *nasus*, *ecten*, *brachygnathus* wrongly included); Chu, Tchang & Chen, 1963:115 (East China Sea; *nasus* wrongly included); Lindberg & Legeza, 1965:67, fig.86 (Foochow, Nampo Bunge, China); Whitehead, 1967a:149 (status of *clupeoides*; no type); Lindberg & Legeza, 1969:64, fig.86 (English translation of 1965 edition); Whitehead, 1973b:243, fig.67 (China, Japan specimens only; *gravi*, *brachygnathus* wrongly included); Wongratana, 1980:327, pls 300,301 (revision); Fernholm & Wheeler, 1983:210 (Linnaean types of *mystus* in Stockholm and Uppsala); Yuen, Qin, Liu & Lin, 1980:72 (coasts of China, ecotypes); Whitehead & Bauchot, 1986:49 (status of *clupeoides*); Chen & Wei, 1986:105, fig.2 (Pearl River, larvae, juveniles).

FAO Names : En - Osbeck's grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded before pelvic fins, with 16 to 19 plus 24 to 32 = 41 to 50 keeled scutes from isthmus to anus. Maxilla long, reaching to or almost to base of first pectoral finray. Lower gillrakers 25 to 31 (usually 27 or 28). Pectoral fin with 6 filaments and 11 or 12 (rarely 13 or 14) branched finrays, longer than those of pelvic fin. Of species in the area with a long maxilla and more than 30 scutes, the very similar *C. gravi* has 7 pectoral filaments, *C. lindmani* has fewer scutes (34 to 40), *C. macrognathus* has fewer gillrakers and usually more scutes (21 to 24 and 47 to 54), while *C. nasus* has only 10 to 14 pre-dorsal scales, about 9 to 12 pyloric caeca and usually 11 or 12 branchiostegal rays (cf. 17 to 24, 15 to 18 and 10 in *C. mystus*).

Geographical Distribution : Western Pacific (East China Sea from about Hainan north to Port Arthur (Lu-shun) and perhaps to Korea, although the more northerly records could apply to C. nasus); also a single specimen from Phuket Island, Thailand, i.e. the Andaman Sea (Wongratana, 1980:328), but the provenance seems doubtful. The records of four specimens from Kerala, southern India (Talwar, 1973) refer to C. grayii.

Habitat and Biology : Coastal and estuarine, but very few data based on reliable identifications.

Size : To 20 cm standard length. Lindberg & Legeza (1965,1969) give 27.5 cm and more, but perhaps this refers to C. nasus (which they included in their synonymy).

Interest to Fisheries : Presumably contributes to artisanal catches in estuaries.

Local Names :

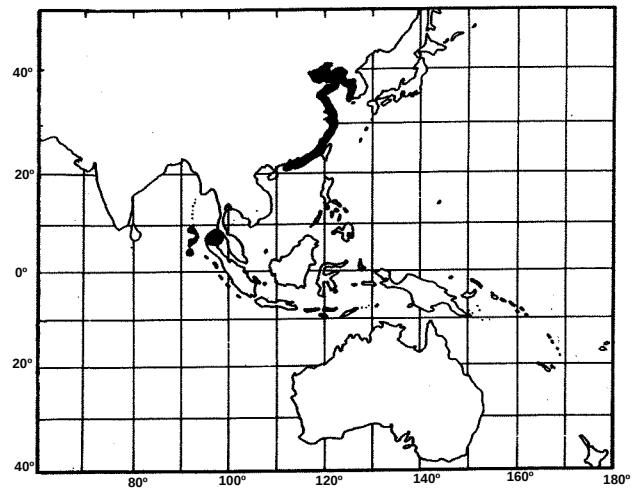
Literature :

Remarks : Two specimens have been recognized as types of Clupea mystus Linnaeus (Fernholm & Wheeler, 1983 :210):

1. Uppsala Linnaeus Collection No. 108 (151.6 mm standard length), labelled Clupea encrasicolus, almost certainly collected by Lagerström, thus basis for Mystus ensiformis of Linnaeus (1754). It has 6 pectoral filaments, thus C. mystus.
2. Naturhistoriska Riksmuseet, Stockholm No. LP74 (123.5 mm standard length), labelled Clupea mystus, formerly in the collection of Adolf Frederik at Ulriksdal. It has 7 pectoral filaments, thus C. grayii.

To avoid nomenclatural confusion it would be best to designate the Uppsala specimen (with 6 pectoral filaments) as lectotype of Clupea mystus Linnaeus, 1758. This would prevent substitution of the name mystus for grayii, and the name clupeoides for mystus.

On Wongratana's data, specimens with more than 26 gillrakers are C. mystus, and ones with less than 26 gillrakers are C. nasus; those with 25 or 26 gillrakers must be separated on other characters, which are not easy to see in the field (pre-dorsal scales, branchiostegal rays, pyloric caeca) and the two species will certainly continue to be confused in fishery and other literature. Their ranges overlap from perhaps Shanghai northward (if indeed the northern records are C. mystus - see also under C. nasus).



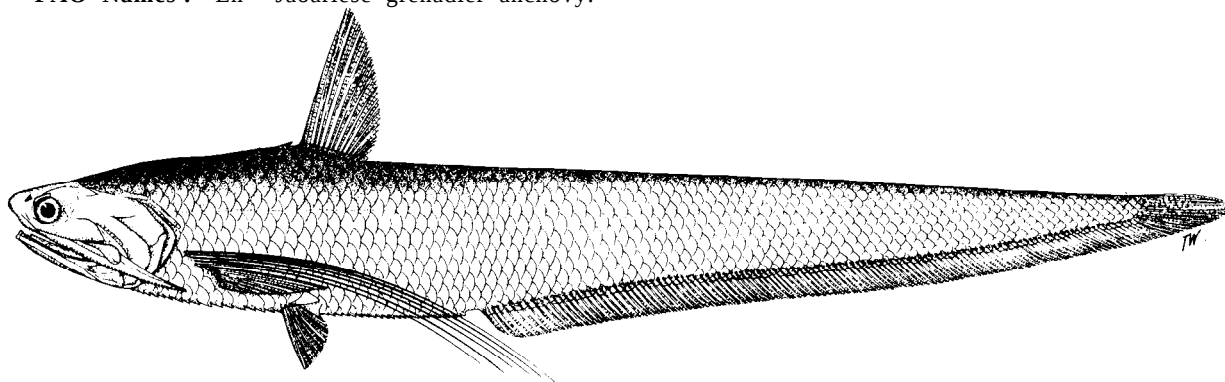
Coilia nasus Schlegel, 1846

ENGR Coil 11

Coilia nasus Schlegel, 1846, Fauna Japonica, pt.13:243, p1.109, fig.4 (Japan; dated 22 November 1846 by Bauchot-Whitehead and Monod, 1982:67; presumed Nagasaki, but claimed as Ariake Sound by Takita, 1967a:450).

Synonyms : Coilia ectenes Jordan & Seale, 1905:517, fig.1 (Shanghai); Fowler, 1931:83 (Shanghai; Hong Kong record presumably C. mystus); Yoshida, 1935:788 (Ariake Sound, Japan); Chu, Tchang & Chen, 1963:116 (East China Sea); Lindberg & Legeza, 1965:69, fig.87 (Pusan, Sea of Japan, also Yellow Sea, Yangtze river and Shanghai); Idem, 1969:65, fig.87 (English translation of 1965 edition); Yuen, Lin, Liu & Qin, 1978:285 (Yangtze River, age and growth); Coilia ectenes taihuensis: Idem, 1977:135 (Taihu, Kiangsu Province); Coilia species: Takita, 1967a:45 et seq., fig.1 (Ariake Sound, Japan); Idem, 1967b:107 et seq., figs 3,4 (embryo, larvae, juveniles)(Ariake sound, breeding, development); Coilia mystus: numerous authors who included nasus in the synonymy; Coilia nasus-Wongratana, 1980:330, pls 302,303 (revision); Masuda et al., 1984:20, p.1.23 D (colour)(southern Japan, compiled).

FAO Names : En - Jaoarlese grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded before pelvic fins, with 16 to 26 (mostly 18 to 22) plus 25 to 36 (mostly 27 to 34) = 43 to 61 (mostly 46 to 52) keeled scutes from isthmus to anus. Maxilla long, reaching to or almost to base of first pectoral finray. Lower gillrakers 23 to 26 (usually 24 or 25). Pectoral fin with 6 filaments and 10 to 14 (mostly 10 or 11) branched finrays, longer than those of pelvic fin. Of species in the area with a long maxilla and more than 30 scutes, *C. grayii* has 7 pectoral filaments, while *C. mystus* has 17 to 24 predorsal scales, about 15 to 18 pyloric caeca and 10 branchiostegal rays (cf. 10 to 14, 9 to 12 and usually 11 or 12).

Geographical Distribution : Western Pacific (Canton north to Ariake Sound, southwestern Japan, including throughout Yellow Sea and off western coasts of Korea; penetrates over 1000 km up the Yangtse River). Takita (1967b) claimed that this species is known only from Ariake Sound in Japan, the more southerly forms being *C. ectenes* (see Remarks).

Habitat and Biology : Coastal waters, estuaries and to middle parts of rivers, apparently able to tolerate freshwater. In Ariake Sound it breeds from May to August, the fishes running about 15 km up the Chikugo River and spawning in fresh water, the spherical eggs floating down and hatching near the river mouth (Takita, 1967b).

Size : To 35 cm standard length (Wongratana, 1980), to 41 cm (Yuen *et al.*, 1980), but only 7.6 cm in Taihu Lake (Liu, Yuen & Gu, 1981).

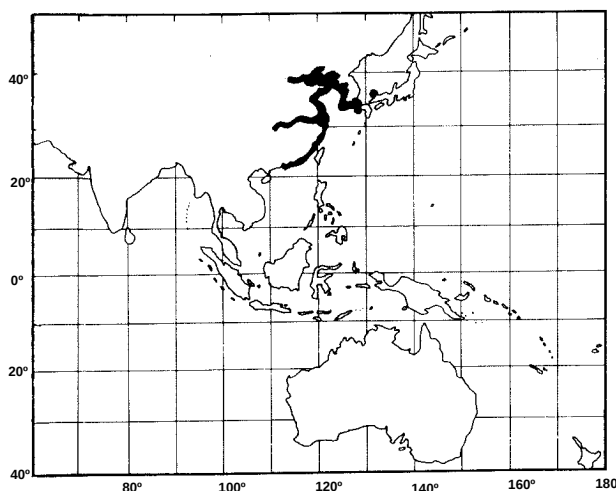
Interest to Fisheries : Caught in abundance with gillnets in the lower reaches of the Chikugo River and near its mouth in Ariake Sound during the spawning season. Of great importance in the Yangtse River and its associated lakes (catches of 2000 to 5 000 t, but *C. brachygnathus* perhaps included). Its relatively large size makes it more esteemed as a foodfish than most *Coilia*.

Local Names : JAPAN: Etsu.

Literature : Dr Yuen Chuan-fu of Nanjing University and his colleagues have made a particular study of *Coilia*, especially in the Yangtse River. As *C. ectenes*, see Yuen, Lin, Qin & Liu (1976), Anon. (1977 - distribution, biology), Yuen, Lin, Qin & Liu (1977a), Yuen, Lin, Liu & Qin (1977 - subspecies *taihuensis*), Yuen, Lin, Qin & Liu (1977b - larvae), Yuen, Lin, Liu & Qin (1978 - age and growth), Yuen, Qin, Liu & Lin (1980), Qin, Yuen & Gu (1981 - biology), Liu, Yuen & Gu (1981 - breeding), Yuen & Qin (1984 - China coasts), Yuen & Qin (1985 - Japanese *Coilia*), Zhou & Lin (1985 - proteins, comparison with *C. brachynathus*), Qin, Yuen & Gu (1986 - growth in Taihu Lake), Liu, Yuen & Gu (1986 - Taihu Lake), Chen & Yuen (1986 - same) and Zhou, Lin, Wang & Hou (1986 - enzymes, myogen, comparison with *C. brachygnathus*). For Japanese literature, see Takita (1967a, b - systematics, early development).

Remarks : The great similarity of *C. nasus* to *C. mystus* is discussed under that species; as noted, most *C. nasus* have less than 25 gillrakers, while most *C. mystus* have more than 26 (Wongratana's data; for Ariake Sound specimens, Takita (1967a) gave 21 to 25 - as *Coilia* sp.). Geographical overlap between the two species may occur as far south as Shanghai and certainly the vertebral, scute and scale counts given by Yoshida (1935) for Korean fishes suggest that two species are present there; Takita (1967a) showed that his Ariake Sound fishes were intermediate and believed them to be true *nasus*, the Korean fishes being *mystus* and *ectenes*. See also Yuen & Win (1985).

Yuen *et al.* (1977) distinguished a smaller and lacustrine subspecies, *C. ectenes taihuensis*, from the lakes of the lower and middle Yangtze River, with 75 to 78 vertebrae (cf. 78 to 82), a slightly larger eye, a smaller liver, and the back paler. Their vertebral counts seem to confirm the presence of *C. nasus* in this area (75 to 82 but only 65 to 69 in *C. mystus* *vide* Yoshida (1935), based on Korean specimens).



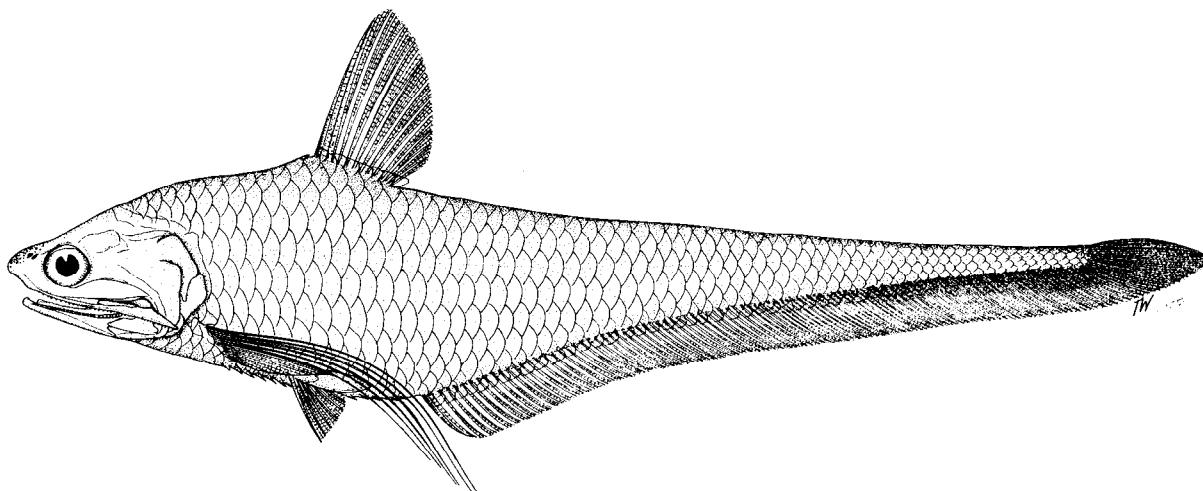
Coilia neglecta Whitehead, 1968

ENGR Coil 3

Coilia neglecta Whitehead, 1968, J.mar.biol.Ass.India, 9(1):33, fig.4 (Arabian Sea, northwest of Bombay; also off deltas of Indus, Ganges and Irrawady).

Synonyms : ? Coilia mystus of Indian authors (misidentified); Coilia neglecta-Whitehead, 1969a:272, fig.54 (Singapore); Idem, 1973b:241, fig.65 (synopsis); Dutt & Seshagiri Rao, 1975:316 resemblance to C. dussumieri; Seshagiri Rao, 1975:737 (same); Wongratana, 1980:318, pls 289,290 (revision).

FAO Names : En - Neglected grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded in front of pelvic fins, with 5 to 7 plus 7 to 9 = 12 to 15 keeled scutes from just behind pectoral fin base to anus. Maxilla almost or just reaching to edge of gill cover. Lower gillrakers 23 to 27. Pectoral fin with 6 long filaments and 9 to 11 branched finrays, longer than those of pelvic fin, which has 6 finrays. Of Indian Ocean species with 6 pectoral filaments, C. dussumieri has golden or pearly spots on the lower part of the flank (light organs; not always easy to see in preserved material, and no other distinctions yet found), while C. ramcarati has more pelvic finrays (i 8 or 9); if C. grayii truly occurs off the Kerala coast, then it differs in having 7 pectoral filaments and many more pre-pelvic scutes (12 to 15). See ENGR Coil 3, Fishing Area 51.

Geographical Distribution : Indian Ocean (from Karachi eastward to the Andaman Sea and Penang) and western central Pacific area (Singapore south to Barito River, Kalimantan).

Habitat and Biology : Coastal and estuarine, certainly in fully saline water but able to tolerate at least some degree of freshening (e.g. at Aluhuluh on Barito River, Kalimantan).

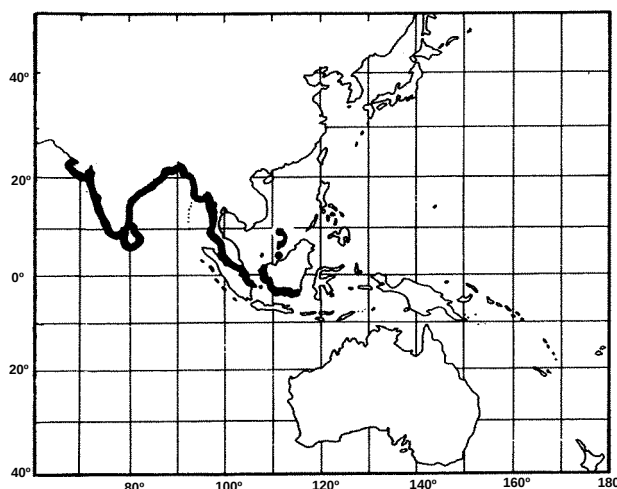
Size : To 17 cm standard length, perhaps more.

Interest to Fisheries : Museum collections suggest that the species is common and perhaps contributes to artisanal clupeoid catches, presumably mainly in estuaries.

Local Names :

Literature : This species may well feature in biological and fishery studies, but one cannot be certain that references to C. mystus by Indian authors truly apply to C. neglecta.

Remarks : The very close similarity of C. neglecta to C. dussumieri led Dutt & Seshagiri Rao (1975) to suppose that neglecta specimens were merely those in which the light organs characteristic of C. dussumieri had become hidden during formalin fixation and preservation. Wongratana (1980:319) showed that the two species could still be separated on this character in identically fixed and preserved formalin specimens from the Java Sea.



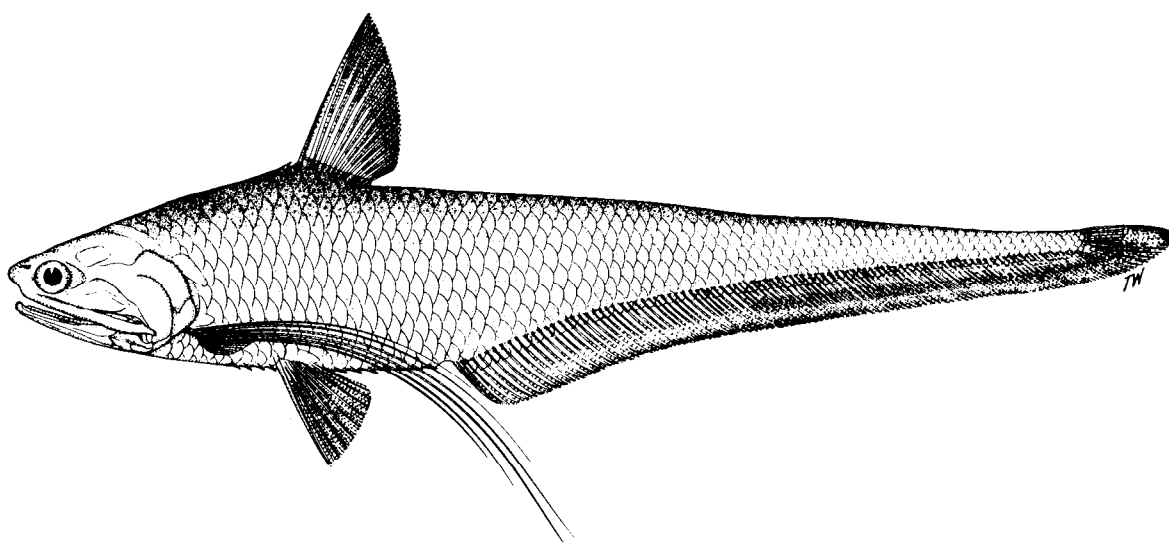
Coilia ramcarati (Hamilton-Buchanan, 1822)

ENGR Coil 4

Mystus ramcarati Hamilton-Buchanan, 1822, *Fishes of the Ganges*:233,382 (Ganges estuaries).

Synonyms : *Engraulis* (*Coilia*) *hamiltonii* Gray, 1830:p1.85, fig.3 (Bengal rivers); *Coilia quadragesimalis* Valenciennes, 1848:83 (Ganges delta); Fowler, 1941d:713 (compiled); *Coilia cantoris* Bleeker, 1853a:148, p1.6, fig.2 (Calcutta); Day, 1878:631 (Calcutta specimen); Fowler, 1941d:715 (compiled); *Coilia ramcarati*-Jones & Menon, 1952:26, fig.69 (regenerated tail); Whitehead, Boeseman & Wheeler, 1966:136 (type of *cantis*); Whitehead, 1967a:152 (type of *quadragesimalis*); *Idem*, 1968a:31 (Andaman Sea off Burma; neotype of *ramcarati* described); *Idem*, 1973b:241, fig.64 (synopsis); Wongratana, 1980:311, pls 282,283 (revision); Whitehead & Bauchot, 1986:32 (type of *quadragesimalis*).

FAO Names: En - Ramcarat grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded before pelvic fins, with 6 plus 10 or 11 = 15 or 16 keeled scutes from just behind pectoral fin base to anus. Maxilla short, not reaching to edge of gill cover. Lower gillrakers 29 or 30. Pectoral fin with 6 long filaments and 5 or 6 branched finrays, much shorter than those of pelvic fin, the latter with 8 or 9 finrays. All other species of *Coilia* have only 6 pelvic finrays (as do all other anchovies); of sympatric species with 6 pectoral filaments and less than 17 scutes, *C. neglecta* and *C. dussumieri* also have less than 28 gillrakers.

Geographical Distribution : Indian Ocean (Ganges delta and Andaman Sea south of Rangoon - Whitehead, 1968a).

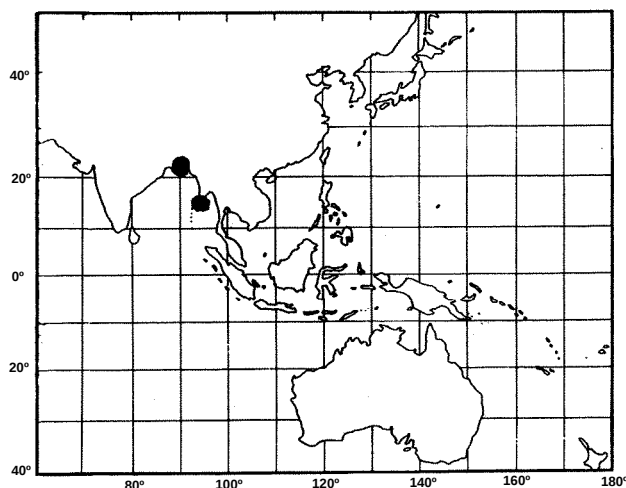
Habitat. and Biology : Marine, pelagic, schooling, but also entering estuaries (although its tolerance to lowered salinities seems not to have been recorded).

Size : To at least 16 cm standard length, probably more (Seshagiri Rao (1975) gives 25 cm).

Interest to Fisheries : Forms an element in artisanal fisheries, but probably not important.

Local Names :

Literature :



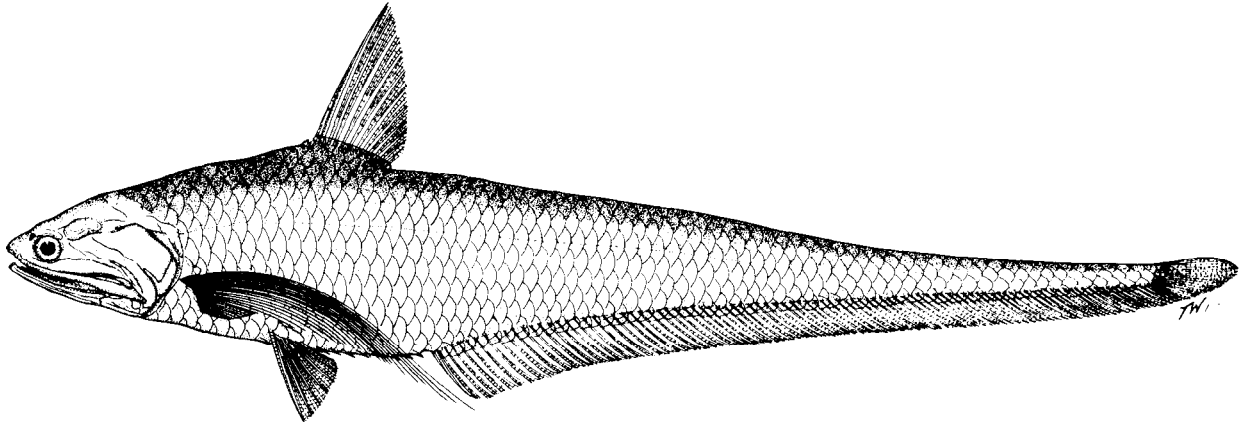
Coilia reventischi Bleeker, 1849

ENGR Coil 8

Coilia reventischi Bleeker, 1859, Act.Soc.scient.Indo-Néerl., 5(7):5 (Sinkawang, Kalimantan; misspelt beventischi).

Synonyms : Coilia rutherfordi Fowler, 1939, Notul.Nat., (8):1, fig.1 (Saigon); Coilia reventischi-Weber & de Beaufort, 1913:51 (compiled); Fowler, 1941d:719 (compiled); Whitehead, Boeseman & Wheeler, 1966:138, p1.18, fig.1 (Bleeker's figure)(holotype of reventischi); Wongratana, 1980:317, pls 287,288 (revision).

FAO Names : En - Many-fingered grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded in front of pelvic fins, with at most a single pre-pelvic scute plus 10 to 12 = 11 to 13 keeled scutes from just before pelvic fin base to anus. Maxilla short, not reaching beyond edge of gill cover. Lower gillrakers 25 to 27. Pectoral fin with 16 to 19 long filaments and 7 to 10 branched finrays, much shorter than those of pelvic fin. Of species with more than 7 pectoral filaments, C. rendahli occurs only in the Indian Ocean; C. borneensis and C. coomansi have fewer pectoral filaments (13 or 14, and 10 or 11), more gillrakers (31 to 33) and more pre-pelvic scutes (4 or 5, and 11 or 12).

Geographical Distribution : Indonesia (western coast of Kalimantan) and Viet Nam (Saigon).

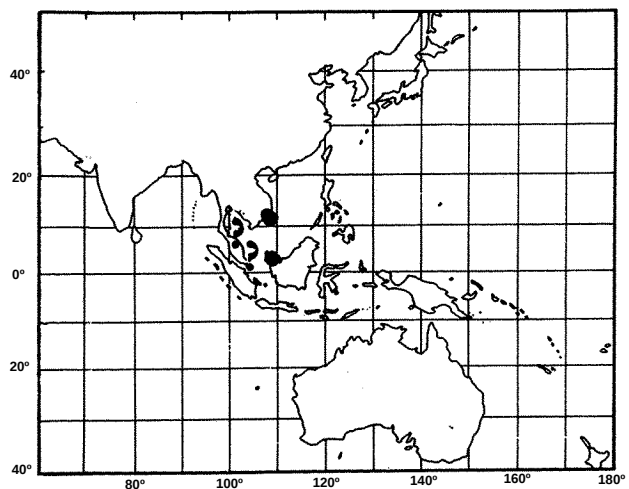
Habitat and Biology : Coastal and estuarine, but the extent of its movements into the sea or up rivers is unknown.

Size : To 15.2 cm standard length.

Interest to Fisheries : Unknown, but its scarcity in museum collections may not reflect its actual abundance.

Local Names :

Literature :



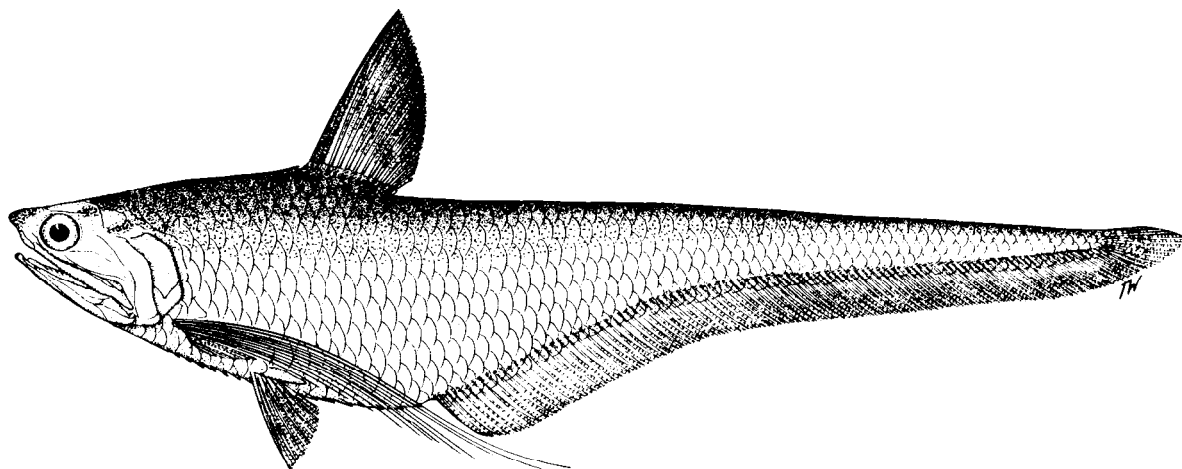
Coilia reynaldi Valenciennes, 1848

ENGR Coil 6

Coilia reynaldi Valenciennes, 1848, Hist.nat.pois., 21:81 (Irrawady River at Rangoon).

Synonyms : Coilia borneensis:Day, 1878:632, p1.159, fig.1 (Madras, Irrawady); Varghese, 1963:312 *et seq.* (biology); Coilia coomansi:Babu Rao & Jayaswal, 1968:2 (Hooghly estuary); Coilia korua Dutt & Seshagiri Rao, 1972:136 (Gollapalem, Andhra coast); Whitehead, 1973b:242 (synopsis); Seshagiri Rao, 1975:735 (Kakinada); Coilia reynaldi-Fowler, 1941d:718 (compiled); Jones & Menon, 1952:18, figs 1-4 (larval development, Hooghly River); Whitehead, 1967a:150, fig.15a (upper jaw)(lectotype of reynaldi); Talwar & Whitehead, 1971:83 (Day specimens in Calcutta, Sydney and Leiden); Wongratana, 1980:314, pls 284,285 (revision); Whitehead & Bauchot, 1986:31 (lectotype of reynaldi).

FAO Names : En - Reynald's grenadier anchovy.



Diagnostic Features : Body tapering, belly rounded before pelvic fins, with 6 to 9 plus 7 to 11 = 13 to 19 keeled scutes from just behind pectoral fin base to anus. Maxilla short, not reaching to edge of gill cover. Lower gillrakers 28 to 36. Pectoral fin with 10 to 13 long filaments and 6 or 7 branched finrays, much shorter than those of pelvic fin, the latter with 6 finrays. Of species with more than 7 pectoral filaments, *C. borneensis* occurs only in Indonesia; other Indian Ocean species all have 6 or 7 pectoral filaments.

Geographical Distribution : Indian Ocean (eastern coasts and estuaries of India, also Irrawady Kiver at Rangoon).

Habitat and Biology : Coastal and in tidal stretches of rivers, but apparently no data on salinity tolerances, although the presence of the fish above Barrackpore on the Hoogly suggests that it can live in freshwater, while Jones & Menon (1952) record it from "coastal waters". The larvae feed on copepods, thereafter mainly on copepods, but also on prawns, larval decapods and other crustaceans. Breeds in the lower parts of estuaries, from end of March to a peak in July in the Malta and Rupnarayan estuaries (Varghese, 1961), from November or December to June (even August) in the Hooghly (Varghese, also Jones & Menon, who illustrate the larval and juvenile stages).

Size : To 11.6 cm standard length (Wongratana, 1980) or 15 cm total length (Jones & Menon, 1952).

Interest to Fisheries : Although the commonest species of *Coilia* in Bengal rivers, the generally small size (mostly below 6.5 cm standard length) and numerous bones detract from its value. Mostly caught with bagnet (*beenjal*, *behundijal*, *thorjal*), but also in barrier nets (*chorpatajal*) and shore-seines (*berjal*), chiefly from about November to May in Bengal estuaries.

Local Names : INDIA: Amadi.

Literature : Menon (1951 - regeneration of tail), Jones & Menon (1952 - larval development), Varghese (1963 - length frequency, food, spawning).

Remarks : The very close resemblance of *C. reynaldi* to *C. borneensis* and distinctions from it are noted under that species. All Indian references to a species with over 7 pectoral filaments must apply to *C. reynaldi*.

