

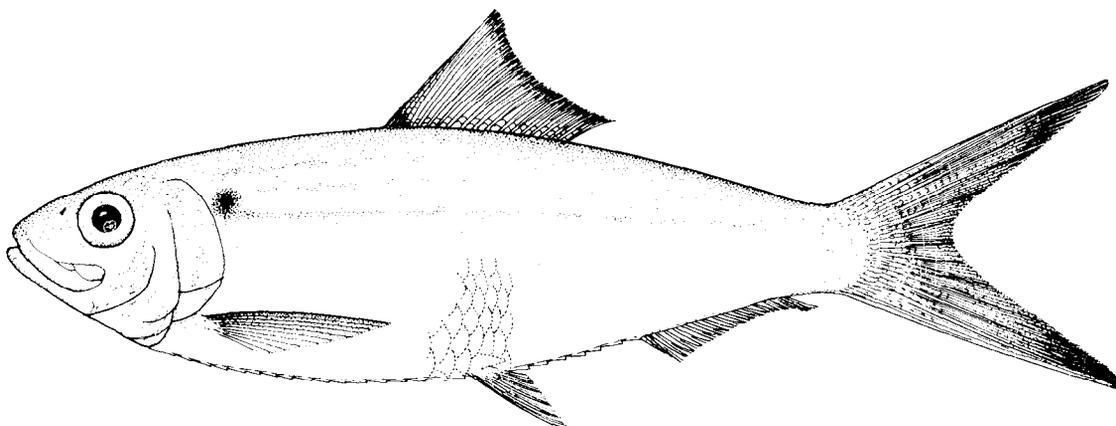
Sardinella maderensis (Lowe, 1839)

CLUP Sardl 2

Clupea maderensis Lowe, 1839 (June), Trans.zool.Soc.Lond., 2(3):189 (Madeira) (wrongly dated 1841 in some publications, e.g. CLOFNAM).

Synonyms : *Sardinella granigera* Valenciennes, 1847:267 (Egypt); *Alausa eba* Valenciennes, 1847:417 (Gorée, Senegal); *Pellonula modesta* Fischer, 1885 (Elobey, Equatorial Guinea); *Sardinella cameronensis* Regan, 1917:380 (Cameroon); *Sardinella maderensis*:Ben-Tuvia, 1960:499 (synopsis); Whitehead, 1967:47, 49 (types of *granigera*, *eba*); CLOFNAM, 1973:103 (synonymy); FNAM, 1984:223 (synopsis); CLOFETA, in press (complete bibliography); SFSA, in press (southern Africa); Whitehead & Bauchot, in press (types of *granigera*, *eba*).

FAO Names : En - Madeiran sardinella.



Diagnostic Features : Body elongate, but variable in depth, belly fairly sharply keeled; total scutes 31 to 34. Lower gillrakers 70 to 166 (in fishes 6 cm standard length or more). Upper pectoral finrays white on outer side, the membrane between black. Resembles *S. aurita*, but pelvic finrays i 7 (i 8 in *S. aurita*) and no black spot on hind part of gill cover (but faint gold or black area just behind gill opening). Distinguished from *S. rouxi* by having more lower gillrakers (only 30 to 40 in *S. rouxi*) and the caudal fin grey, its tips almost black (yellow in *S. rouxi*). See CLUP Sardl 2, Fishing Area 34.

Geographical Distribution : Mediterranean (southern and eastern parts, also penetrating Suez Canal); eastern Atlantic (Gibraltar southward to Angola and a single recorded specimen from Walvis Bay, Namibia).

Habitat and Biology : Coastal, pelagic, but tolerant of low salinities in estuaries, schooling, preferring waters of 24°C, at surface or at bottom down to 50 m, strongly migratory. Feeds on a variety of small planktonic invertebrates, also fish larvae and phytoplankton. Breeds only once in the year, during the warm season (July-September), in coastal waters. Juveniles and adults show clear north-south migrations in the Gabon-Congo-Angola sector of their range and also in the Sierra Leone-Mauritania sector, each area having nurseries; the movements are correlated with the seasonal upwelling. Migrations in the central part (Ivory Coast-Ghana) are not so marked.

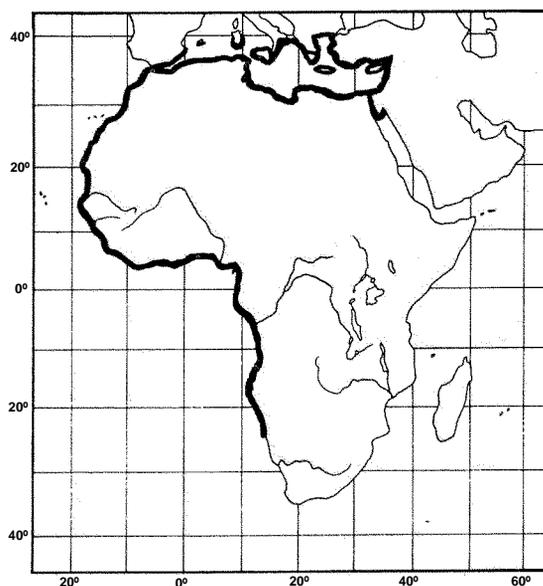
Size : To 30 cm standard length, usually to 25 cm.

Interest to Fisheries : Of considerable importance off West African coasts, but combined with *S. aurita* in most statistics, partly because the two are often caught together.

Local Names :-

Literature : See under synonyms.

Remarks : Many more West African references in the literature (right up to the present time) give this fish as *S. eba*; a substantial number use the name *S. cameronensis* for fishes caught in the Cameroon area. Attempts to distinguish three species, however, remain unconvincing in view of the considerable variation in body depth and, most likely, gillraker numbers.



Sardinella marquesensis

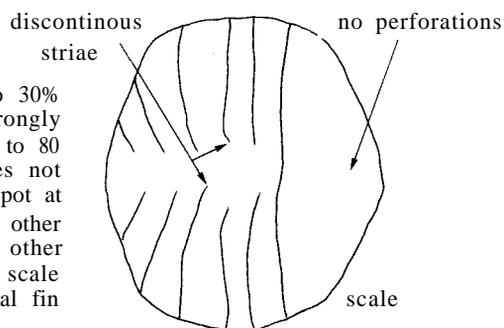
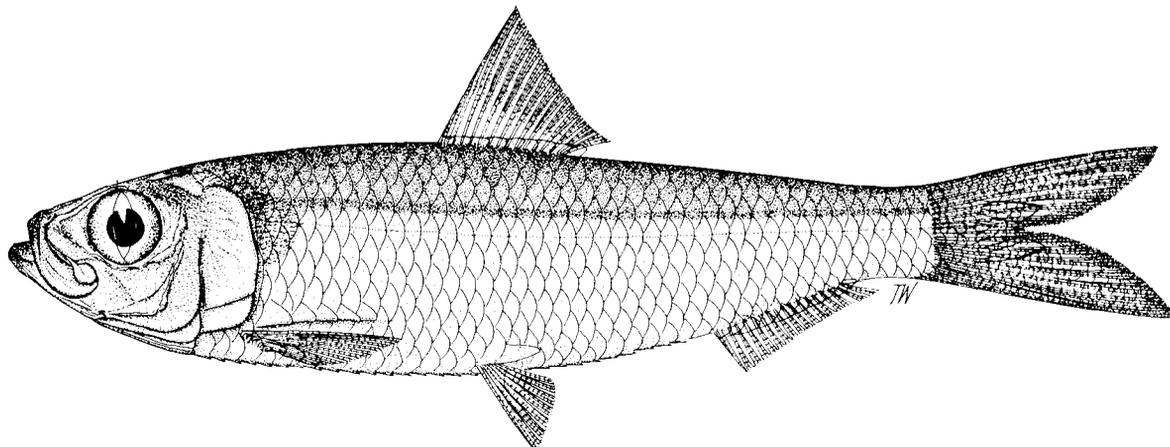
Berry & Whitehead, 1968

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Sardinella marquesensis Berry & Whitehead, 1968, *Proc.biol.Soc.Wash.*, 81:209-222, figs 1-6 (Marquesas Islands).

Synonyms : *Sardinella marquesensis*:Wongratana, 1980:131, pls 73, 74 (revision).

FAO Names : En - Marquesan sardinella.



Diagnostic Features : Body moderately slender, its depth 25 to 30% of standard length; total scutes 28 to 30. Lower gillrakers strongly increasing with size of fish, about 45 at 5 or 6 cm standard length, 50 to 80 at 6 to 10 cm and a maximum of about 80. Vertical striae on scales not meeting at centre, no perforations on hind part of scale. No dark spot at dorsal fin origin, no dark tips to caudal fin. There appear to be no other *Sardinella* species in the Marquesas area; it can be separated from other species by a combination of characters (slender body, few scutes, scale striae interrupted, many gillrakers, no dark dorsal spot and plain caudal fin tips).

Geographical Distribution : Western Pacific (Marquesas Islands only; more recently (1955) introduced into Hawaiian waters - Murphy, 1960).

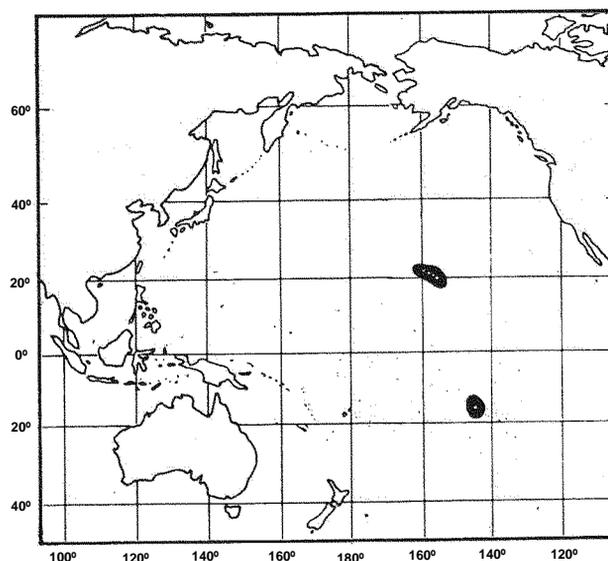
Habitat and Biology : Coastal, pelagic, schooling.

Size : To 12.5 cm standard length, usually about 10 cm.

Interest to Fisheries : Used as a baitfish in the Marquesas, but when transported to Hawaii never became sufficiently abundant nor made any significant contribution.

Local Names : -

Literature : Brock (1960 - Hawaii); Murphy (1960 - Hawaii); Hida & Morris (1963 - Hawaii); Nakamura & Wilson (1970 - biology).



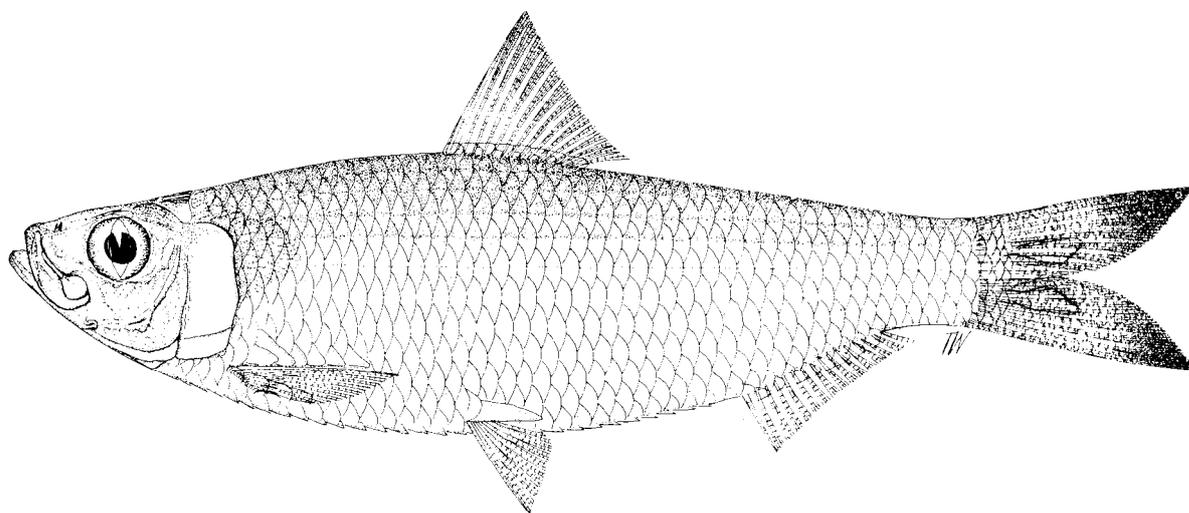
Sardinella melanura (Cuvier, 1829)

CLUP Sardl 4

Clupea melanura Cuvier, 1829, *Règne anim.*, 1st ed., 2:318 (footnote, on Lacepède: "*Cl. melanura*, N., Lacép. V, xi, 3, sous le nom de *Clupanodon* Jussieu, mais la description se rapporte à la fig. xi, 3, nommé variété du *Clupanodon* chinois") (See discussion in Whitehead, 1967:62).

Synonyms : *Clupeonia commersoni* Valenciennes, 1847:350 (near Bombay); *Clupea otaitensis* Valenciennes, 1847:351 (on Solander MS name, in synonymy of *C. commersoni*, thus a *nomen nudum*); *Clupeonia vittata* Valenciennes, 1847:352 (Vanikoro); *Harengula vanicoris* Jordan & Seale, 1906:187 (on *Alausa melanura* of Valenciennes); *Sardinella nigricaudata* Chan, 1965:7, fig. 19 (Malakula Island); *Herklotsichthys vittatus*: Whitehead, 1965:247 (Gulf of Aden); *Sardinella melanura*: Fowler, 1941:614 (Mauritius, the Philippines, Samoa, Tahiti; Delagoa Bay record needs to be checked); Chan, 1965:5, fig. 18 (Fiji, New Hebrides); Whitehead, 1967:62, 64, 65, 66 (types of *melanura*, *commersoni*, *otaitensis*, *vittata*); *Idem*, 1973b:180, fig. 9; Wongratana, 1980:132, pls 75, 76 (revision); Whitehead & Bauchot, in press (types of *melanura*, *commersonii*, *otaitensis*, *vittata*).

FAO Names : En - Blacktip sardinella.



Diagnostic Features : Body somewhat compressed, its depth usually not much more than 30% of standard length. The jet black caudal tips distinguish *S. melanura* from all other species of *Sardinella* except *S. atricauda* (scutes 32 to 35; cf. 27 to 31, usually 28 to 30 in *S. melanura*), *S. hualiensis* (dark spot present at dorsal fin origin, scales fimbriated and with small perforations, recorded so far only from Taiwan Island) and *S. fijiense* (gillrakers 87 to 134; cf. only 38 to 74 in *S. melanura*). See CLUP Sardl 4, Fishing Area 51, also 57, 71.

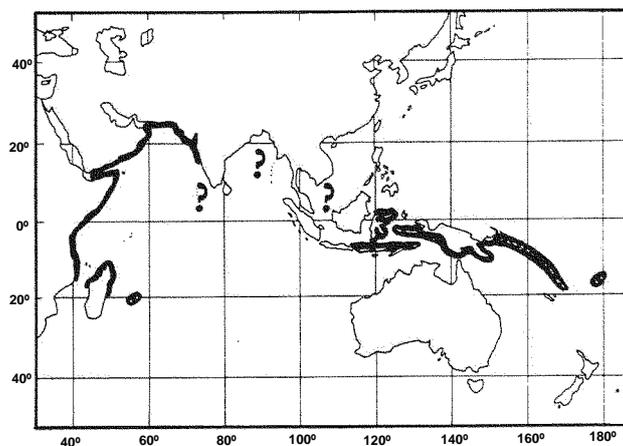
Geographical Distribution : Indo-West Pacific (western Indian Ocean from Gulf of Aden south to Madagascar and Mauritius, apparently not south of Bombay nor in northern Bay of Bengal; Indonesia, not South China Sea; eastward to Samoa).

Habitat and Biology : Coastal, pelagic, schooling. More data needed.

Size : To 12.2 cm standard length, usually about 10 cm.

Interest to Fisheries : Included in the general statistics for *Sardinella*; perhaps of local importance, but appears not to be very abundant.

Local Names: INDIA: Sapta tarni (Andaman Islands).



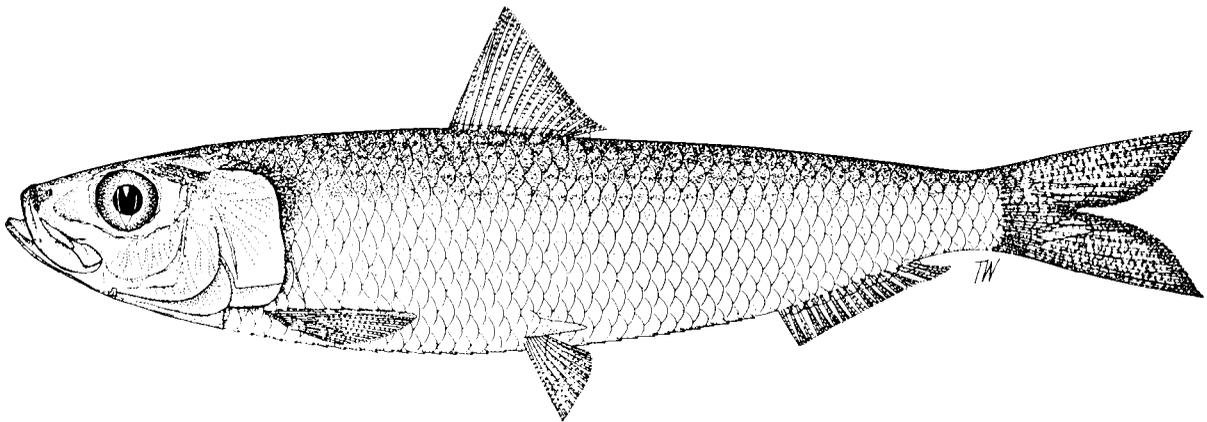
Sardinella neglecta Wongratana, 1983

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Sardinella neglecta Wongratana, 1983, Jap.J.Ichthyol., 29(4):390, fig. 4 (Kenya, Tanzania).

Synonyms : Sardinella longiceps (western Indian Ocean only) of authors.

FAO Names : En - East African sardinella.



Diagnostic Features : Body elongate, subcylindrical, its depth less than 30% of standard length, belly rounded. The pelvic finray count of i 8 distinguishes S. neglecta from all other clupeids along the East African coast. Very closely resembles S. longiceps (whose range it may overlap), but head shorter (26 to 29% of standard length; cf. 29 to 35% in S. longiceps and fewer lower gillrakers (143 to 188 in fishes of 9.5 to 13 cm standard length, usually less than 185; cf. 150 to 253 in S. longiceps of 8 to 15.5 cm standard length, usually more than 180). A faint golden spot behind gill opening, followed by a faint golden midlateral line; a distinct black spot at hind border of-gill cover (absence of silver pigment).

Geographical Distribution : Western Indian Ocean (coasts of Kenya and Tanzania).

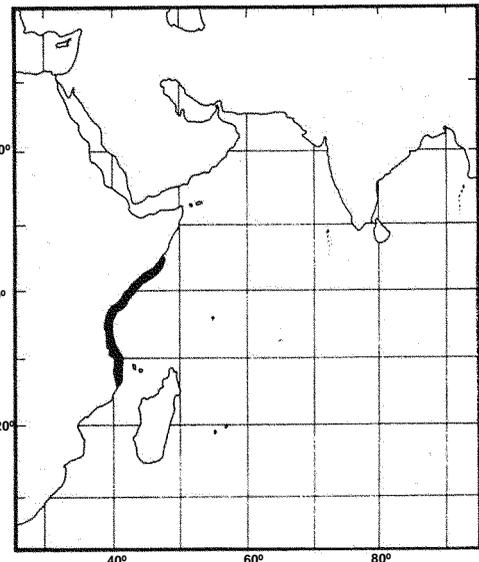
Habitat and Biology : Coastal, pelagic, schooling, in waters of 1 to 60 m, in bays and over shallow banks. Feeds presumably mainly on phytoplankton like S. longiceps and its breeding biology is perhaps similar to that species too.

Size : To 13 cm standard length, but probably grows larger.

Interest to Fisheries : Apparently not abundant, occurring mostly during the northeast monsoon period (November-January).

Local Names : -

Literature : Losse (1968 - taxonomy, biological notes).



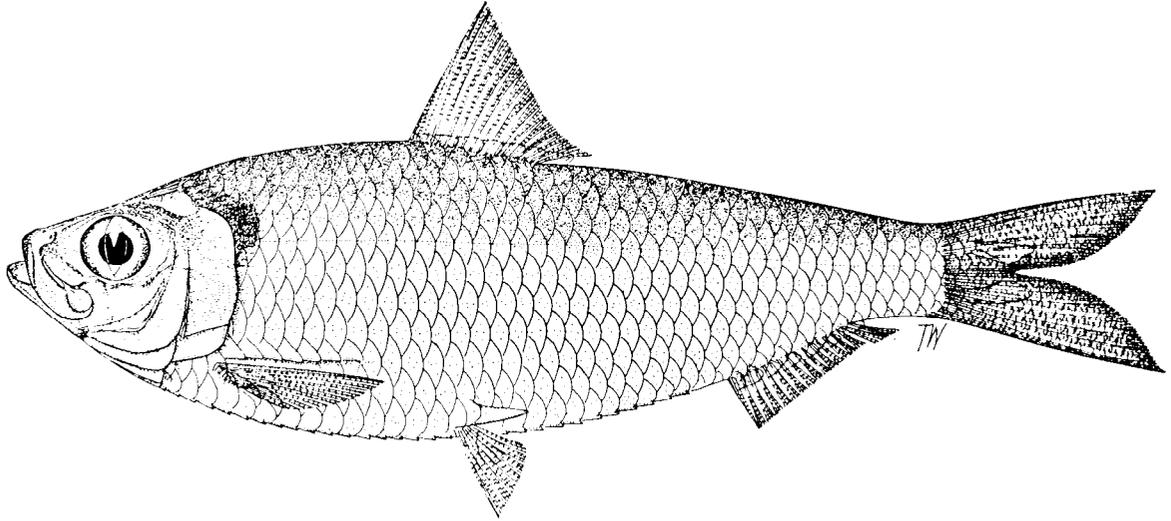
Sardinella richardsoni Wongratana, 1983

CLUP Sardl 22

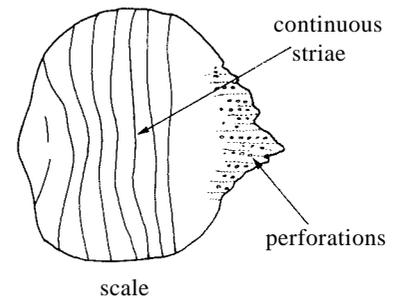
Sardinella (*Clupeonia*) *richardsoni* Wongratana, 1983, *Jap.J.Ichthyol.*, 29(4):390, fig. 5 (replacement name for *Clupea isingleena* Richardson).

Synonyms : *Clupea isingleena* Richardson, 1846, *Ichthyol.Seas China Japan*:304 (China seas) (name suppressed by *Int.Comm.Zool.Nomencl.* in 1970, Opinion 901, *Bull.zool.Nomencl.*, 26(5-6):217); *Sardinella fimbriata*:Whitehead, 1966:24 pl. 1, fig. 2) (type); *Sardinella richardsoni*:Wongratana, 1980:129, pls 69,70 (revision).

FAO Names : En - Richardson's sardinella.



Diagnostic Features : Body fairly compressed and deep, its depth 32 to 36% of standard length; total scutes 30 to 32. Lower gillrakers 63 to 74, probably not increasing greatly after about 7 cm standard length. Vertical striae on scales continuous or overlapping, numerous small perforations on hind part of scale. No dark spot at dorsal fin origin. Most closely resembles *S. zunasi*, which has only 42 to 58 lower gillrakers (usually less than 55 in fishes up to 12 cm standard length) and is more slender (depth 24 to 33% of standard length, usually 31% or less). Of other species in the area, *S. hualiensis* also has overlapping or continuous scale striae, but black tips to dorsal and caudal fins; while *S. fimbriata* and *S. albella* have the scale striae interrupted at the centre of the scale.



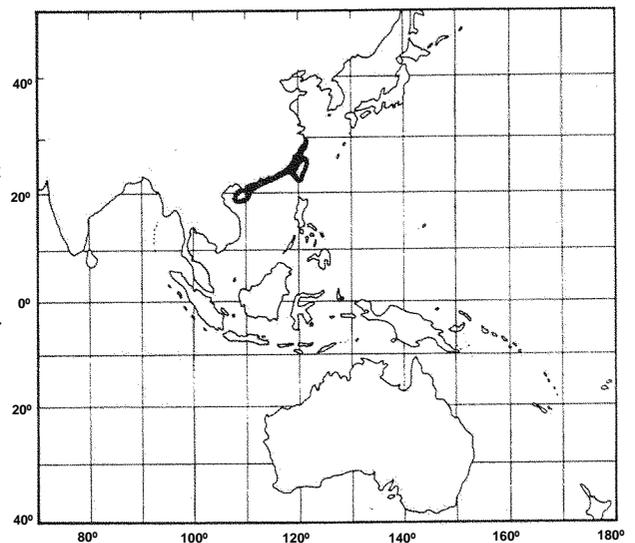
Geographical Distribution : Western Pacific (Hainan Island, Hong Kong, China).

Habitat and Biology : Coastal, pelagic, schooling. More data needed.

Size : To 12 cm standard length, usually to about 10 cm.

Interest to Fisheries : Probably makes a small local contribution to *Sardinella* catches.

Local Names : HONG KONG: Tsing lein (lin or lun) (*fide* Richardson, 1846:304).



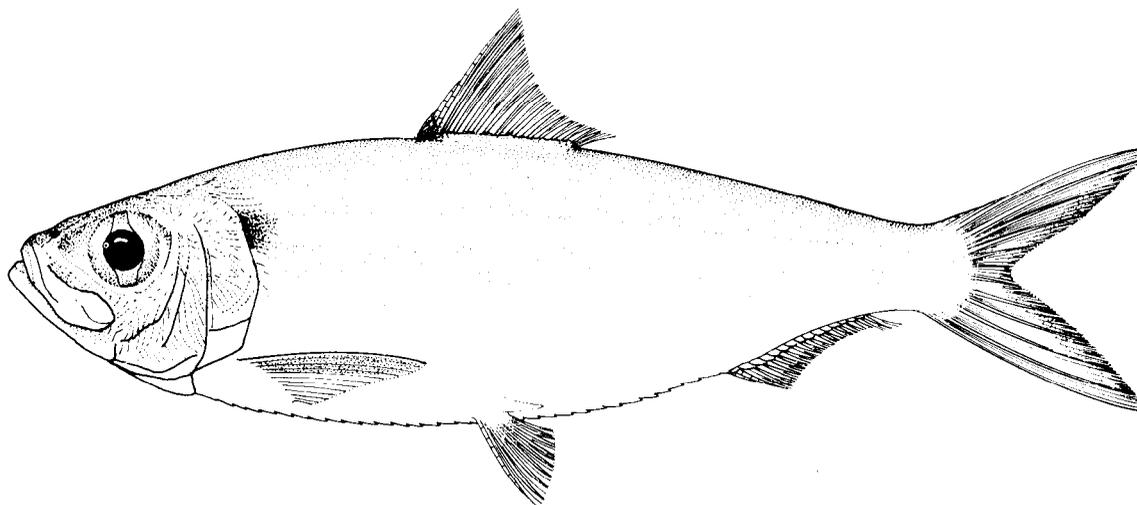
Sardinella rouxi (Poll, 1953)

CLUP Sardl 12

Harengula rouxi Poll, 1953, *Res.Exped.belge Ati.Sud.*, 4(2):46, fig. 16 (Cape Lopez Say, 0°42'S, 8°49'E).

Synonyms : *Harengula macrophthalma*:Roux & Collignon, 1950:27 (key); *Harengula rouxi*:Fagetti & Marak, 1972:5 (eggs, larvae); *Sardinella rouxi*:Whitehead, 1964:273 (not *Harengula* but *Sardinella*); CLOFETA, in press (complete bibliography).

FAO Names : En - Yellowtail sardinella.



Diagnostic Features : Body moderately deep, belly fairly sharply keeled. Lower gillrakers 30 to 40. A black or golden spot behind gill opening; upper part of pectoral fins dusky; caudal fin pale yellow with dusky hind margin. Resembles small *S. maderensis*, which has more gillrakers (70 to 166) and the caudal fin grey, its tips almost black. Distinguished from small *S. aurita* by having 7 pelvic finrays (8 in *S. aurita*) and no black spot on hind part of gill cover. See CLUP Sardl 12, Fishing Area 34.

Geographical Distribution : Eastern Atlantic (Senegal southward to Congo, possibly to northern Angola).

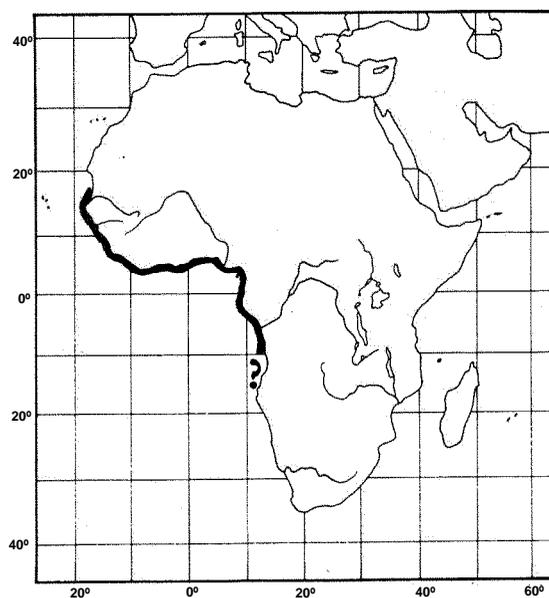
Habitat and Biology : Coastal, pelagic, in inshore waters and along beaches, schooling. More data needed.

Size : To 16 cm standard length, usually around 13 cm.

Interest to Fisheries: Contributes to *Sardinella* catches, but not abundant; no separate statistics.

Local Names : -

Literature : This species is mentioned in less than twenty works (CLOFETA, in press) and more studies are needed. Eggs and larvae are described by Marchal (1965); Krzelj (1971); Fagetti & Marak (1972) and Conand (1979).



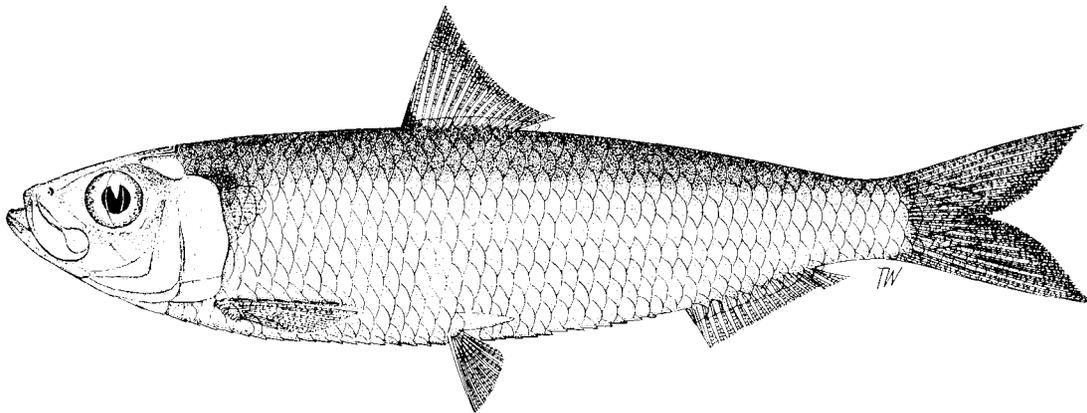
Sardinella sindensis (Day, 1878)

CLUP Sardl 13

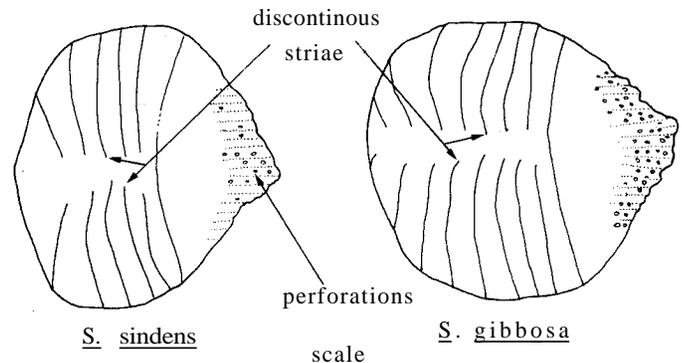
Clupea sindensis Day, 1878, Fishes of India, pt. 4:638, pl. 163, fig. 2 (Karachi).

Synonyms : *Sardinella jussieu*:Whitehead, 1965:252 (Gulfs of Aden and Oman); *Sardinella sindensis*:Fowler, 1941:611 (compiled, misleading Blegvad & Løppenthin, 1944:65 (Gulf of Oman); Whitehead & Talwar, 1971:61 (type); Whitehead, 1973b:186, fig. 16 (Karachi and Bombay records only); Wongratana, 1980:115, pls 52, 53 (revision). **Note:** the references to *S. sindensis* by Chan (1965:11, fig. 21) and others probably referred to *S. gibbosa*, but the two are very close.

FAO Names : En - Sind sardinella.



Diagnostic Features : Body moderately slender, its depth rather variable (21 to 35% of standard length); total numbers of scutes 31 to 34, usually 32 or 33. Lower gillrakers 38 to 77 (more than 50 in fishes over 5 cm standard length, increasing with size of fish). Vertical striae on scales not meeting at centre, only a few small perforations on hind part of scale. Closely resembles the widespread *S. gibbosa*, which has more perforations on the scales. Of species overlapping the range of *S. sindensis*, the black caudal tips of *S. melanura* are distinctive, while *S. albella* has fewer scutes 29 to 33, but usually 30 to 32. See CLUP Sard 13, Fishing Area 51.



Geographical Distribution : Indo-West Pacific (Arabian Sea, from Gulf of Aden to the "Gulf" and Bombay).

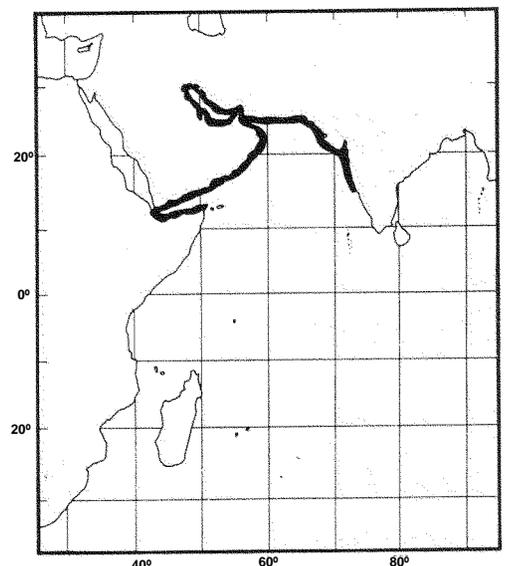
Habitat and Biology : Coastal, pelagic, schooling. More data needed.

Size : To 17 cm standard length, common to 14 cm.

Interest to Fisheries : Included in the general statistics for *Sardinella*; perhaps of some importance in the Gulf of Oman and the "Gulf".

Local Names : THE "GULF": Mashineh, Moomagh (Arab Gulf - Blegvad & loppenthin, 1944:65).

Literature : Randall, Allen & Smith-Vaniz (1978- the "Gulf").



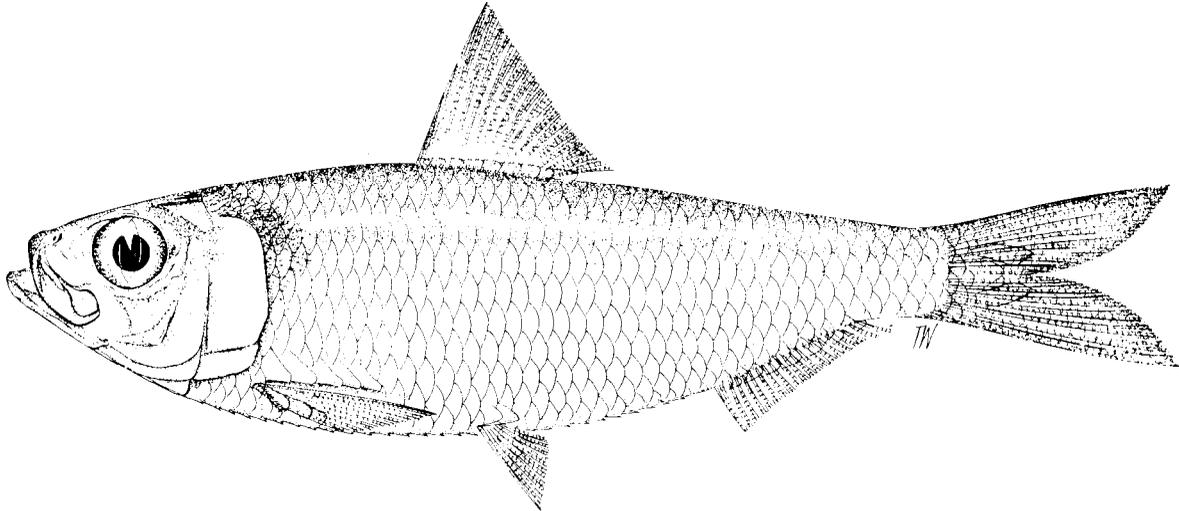
Sardinella tawilis (Herre, 1927)

CLUP Sardl 23

Harengula tawilis Herre, 1927, Philipp.J.Sci., 34:273, 296, pl. 3, figs 1-6 (Lake Bombon, Luzon).

Synonyms : Sardinella tawilis: Wongratana, 1980:126, pls 64 (revision),

FAO Names : En - Freshwater sardinella.



Diagnostic Features : Body fairly slender, its depth 29 to 31% of standard length; total scutes 28 to 30. Lower gillrakers 61 to 74 (at 7 to 10 cm standard length). No dark markings on dorsal or caudal fins. Immediately separated from all other species of Sardinella by its only known locality (Lake Bombon, Luzon, the Philippines).

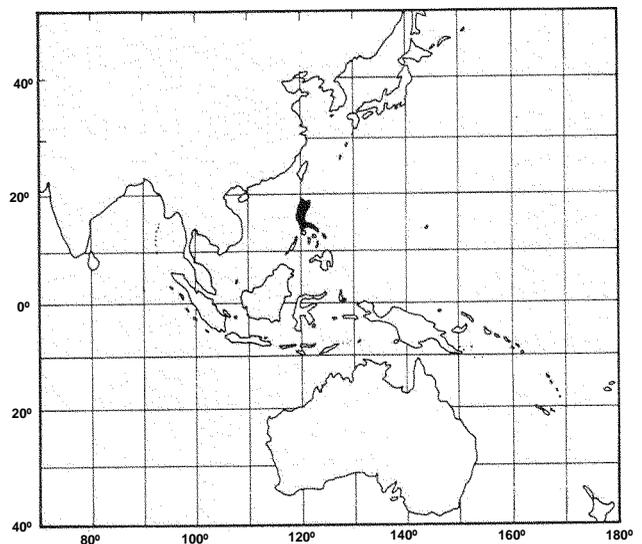
Geographical Distribution : The Philippines (Lake Bombon, Luzon).

Habitat and Biology : Freshwater, presumably schooling. This is the only species of Sardinella that is apparently found only, or even mainly, in freshwater. More data needed.

Size : To 10 cm standard length.

Interest to Fisheries : Of minor local interest.

Local Names :-



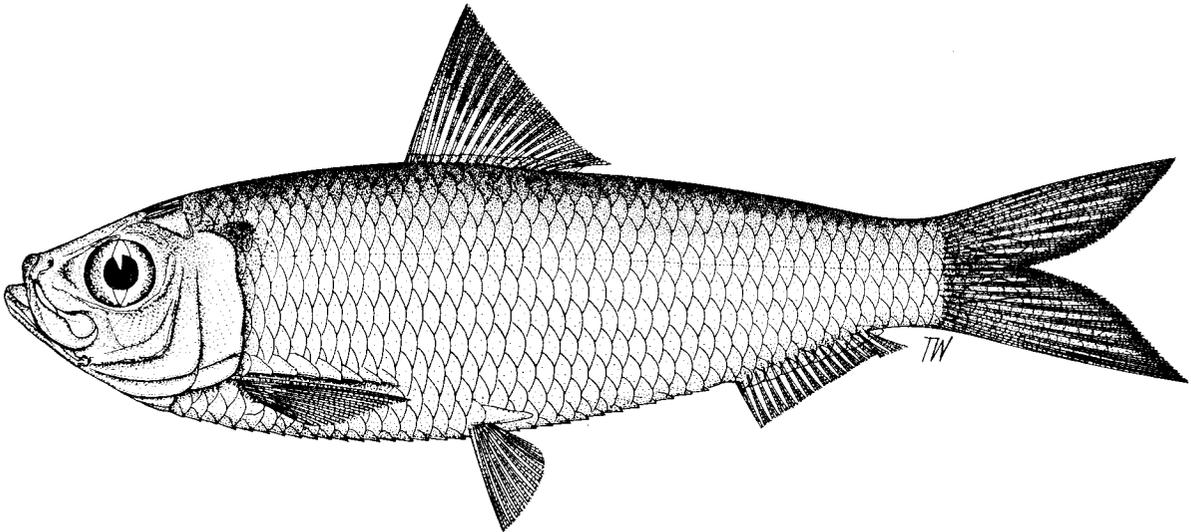
Sardinella zunasi (Bleeker, 1854)

CLUP Sardl 24

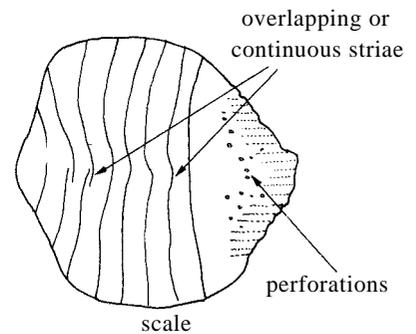
Harengula zunasi (Bleeker, 1854, Natuurk.Tijdschr.Ned.-Indië, 6:417 (Nagasaki).

Synonyms : Harengula zunasi:Fowler, 1941:597 (Japan, the Koreas); Sardinella zunasi:Chan, 1965:21, fig. 10 (Japan); Whitehead, 1973b:179 (in key only); Wongratana, 1980:130, pls 71,72(revision).

FAO Names : En - Japanese sardinella.



Diagnostic Features : Body moderately slender, but variable, its depth 24 to 33% of standard length; total scutes 29 to 32 (usually 30 or 31). Lower gillrakers 42 to 58 (usually less than 55 in fishes up to 12 cm standard length). Vertical striae on scales overlapping or continuous, only a few small perforations on hind part of scale. No dark spot at dorsal fin origin. Most closely resembles *S. richardsoni*, which has more gillrakers (63 to 74) and has a slightly deeper body (32 to 36% of standard length, at least at 10 to 12 cm standard length). Of other species in the area, *S. hualiensis* also has overlapping or continuous scale striae, but black tips to dorsal and caudal fins; while *S. fimbriata* and *S. albella* have the scale striae interrupted at the centre of the scale.



Geographical Distribution : Western Pacific (southern coasts of Japan south to about Taiwan Island; Chan (1965:22) included Hong Kong, but it is suspicious that he had no specimens from there).

Habitat and Biology : Coastal, pelagic, schooling. More data needed.

Size : To 13 cm standard length, usually to about 10 cm.

Interest to Fisheries : Contributes to local catches of *Sardinella*. Reported as *Harengula zunasi* (10 606 tons from the Korea in 1983, but probably mixed with other species).

Local Names : JAPAN: Zunasi, Zunashi.

