

2a. Upper jaw rounded when seen from front (Fig. 2a)

3a. Anterior as well as posterior supra-maxilla present (Fig. 3a); worldwide . . . **Clupeinae**

3b. No anterior supra-maxilla (Fig. 3b); not in New World . . . . . **Pellonulinae**

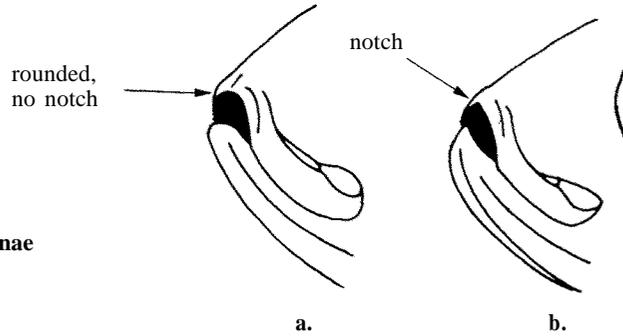


Fig.2

2b. Upper jaw with a distinct median jaw notch or cleft when seen from front (Fig. 2b)

4a. Lower jaw normal, mouth terminal (Fig. 4a); last dorsal finray normal . . . . . **Alosinae**

4b. Lower jaw flared outward, mouth usually inferior (Fig. 4b); last dorsal finray filamentous in many species . . . . . **Dorosomatinae**

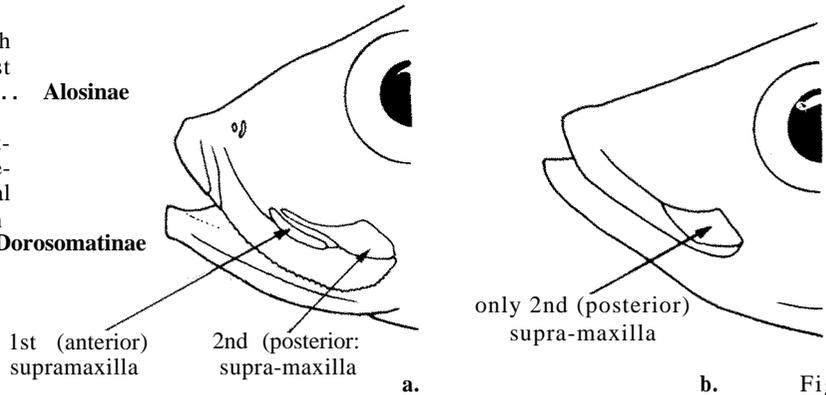
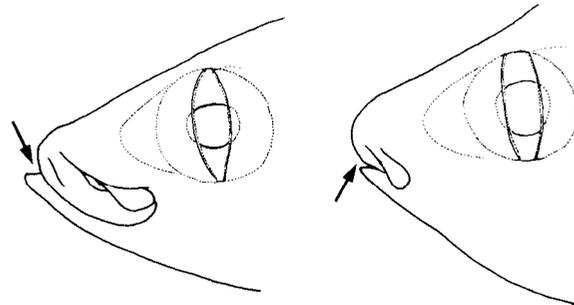


Fig. 3



a. Alosinae

b. Dorosomatinae

Fig.4

**2.2.1 SUBFAMILY DUSSUMIERIINAE**

**FAO Names :** En - Round herrings.

**Diagnostic Features :** Small or moderate-sized herring-like fishes immediately distinguished from all other clupeids by their W-shaped pelvic scute and absence of any other scutes (some pellonulines have only a few or no ventral scutes, but the pelvic scute always has lateral arms - see p.)

**Biology, Habitat and Distribution :** Round herrings are marine coastal and schooling fishes widely distributed in the Indo-Pacific region, from the western Indian Ocean (the “Gulf” to Cape Town) to the western Pacific (Japan to northern Australia, also Samoa); in the southern part of the eastern Atlantic (Cape Town north to Cunene River); in the western Atlantic (New York to Guyana); and in the eastern Pacific. They are pelagic inshore fishes, feeding mainly on zooplankton. Like other clupeoids, they scatter pelagic eggs from which planktonic larvae hatch. The largest round herrings (*Etrumeus*) reach 25 cm standard length; the smallest are mature at about 5 or 6 cm.

**Interest to Fisheries :** All are schooling fishes and thus exploited by fisheries, especially in Japan, South Africa and Indonesia. Recorded catches in 1983 were 150 578 tons.

**Remarks :** In earlier works, the round herrings have been placed in a separate family, Dussumieriidae (e.g. by Whitehead, 1963; given as Stolephoridae by Fowler, 1941:561). There are two pairs of genera, which can be placed in separate tribes, and 12 species.

**Key to the Genera :**

- 1a. Branchiostegal rays numerous (11 to 18) (Fig. 1); pre-maxillae rectangular (Fig. 2a) ..... **Tribe Dussumieriini**
- 2a. Pelvic fins under dorsal fin base; anal finrays 14 to 18; isthmus pointed anteriorly (Fig. 3a); Indo-Pacific only ..... **Dussumieria**
- 2b. Pelvic fins behind dorsal fin base; anal fin-rays 10 to 13; isthmus with 'shoulders' anteriorly (Fig. 3b); world-wide..... **Etrumeus**
- 1b. Branchiostegal rays few (6 or 7); pre-maxillae triangular (Fig. 2b) ..... **Tribe Spratelloidini**
- 3a. Indo-Pacific only; 2 supra-maxillae (Fig. 4a) .... **Spratelloides**
- 3b. Western Atlantic only; 1 supra-maxilla (Fig. 4b) ..... **Jenkinsia**

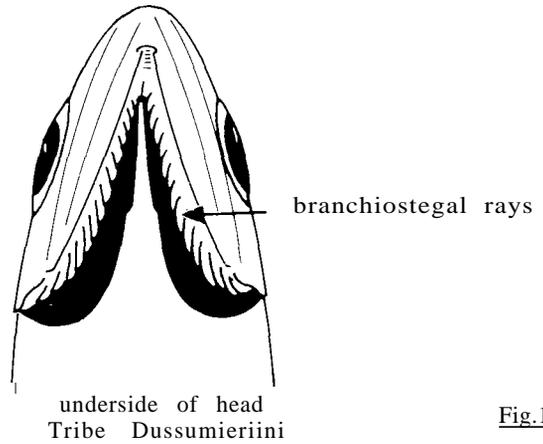


Fig.1

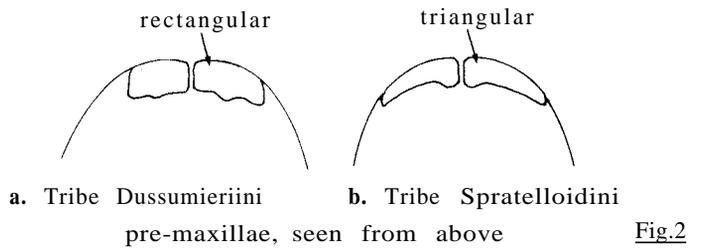
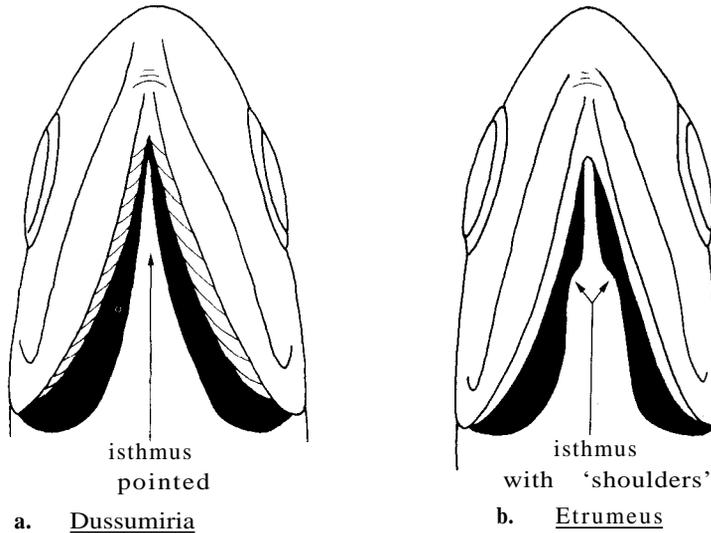


Fig.2



underside of head

Fig. 3

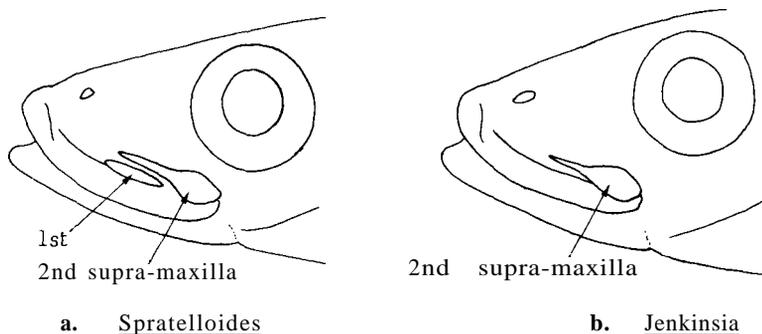


Fig. 4

**Dussumieria** Valenciennes, 1847

CLUP Duss

Dussumieria Valenciennes, 1847, Hist.nat.poiss., 20:647 (type: Dussumieria acuta Valenciennes, 1847).  
Montalbania Fowler, 1934, Proc.Acad.nat.Sci.Philad., 85:224 (type: Etrumeus (Montalbania) albulina Fowler, 1934)  
(misspelt as Montalbiana by Bertin, 1943).

**Synonyms** : None.

**Diagnostic Features** : Body slender, belly rounded, without pre- and post-pelvic scutes; the W-shaped pelvic scute, numerous branchiostegal rays (12 to 17) and rectangular pre-maxillae distinguish Dussumieria from all other clupeids except Etrumeus, which has fewer anal finrays, the pelvic fins less advanced and the isthmus (sternohyoideus muscle) with lateral flanges or 'shoulders' (see key).

**Biology, Habitat and Distribution** : Marine pelagic and schooling fishes of the Indo-Pacific region, from the western Indian Ocean (the "Gulf" to perhaps Madagascar) to the western Pacific (China to Papua New Guinea and Solomon Islands).

**Interest to Fisheries** : Contribute to general clupeoid catches, significantly so in Indonesia and the Philippines. The total catch in 1983 was 35 239 tons.

**Species** : Hitherto usually considered monotypic (Whitehead, 1963, 1973), but now known to include at least two species (Wongratana, 1980), whose ranges overlap in the "Gulf", around Indian coasts and Malaysia and Indonesia:

D. acuta Valenciennes, 1847, Indo-West Pacific  
D. elopsoides Bleeker, 1849, Indo-West Pacific .

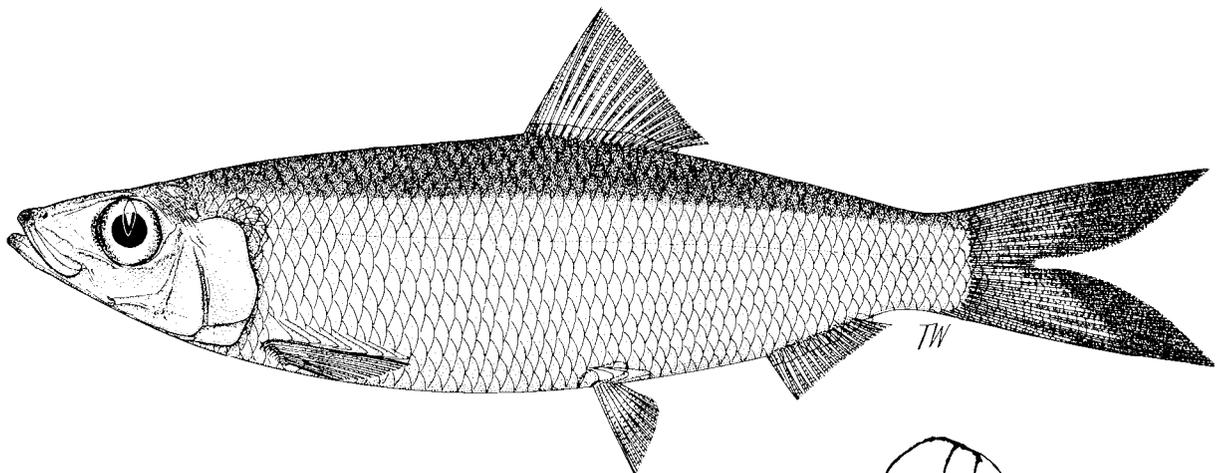
**Dussumieria acuta** Valenciennes, 1847

CLUP Duss

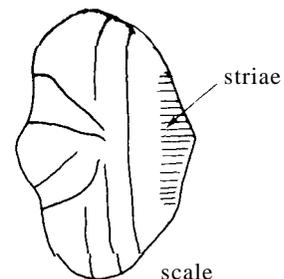
Dussumieria acuta Valenciennes, 1847, Hist.nat.poiss., 20:467 (Bombay, Coromandel).

**Synonyms** : Clupea flosmaris Richardson, 1846:305 (suppressed); Elops javanicus Valenciennes, 1847:271;  
Etrumeus (Montalbania) albulina Fowler, 1934:244 (the Philippines); Dussumieria acuta - Whitehead, 1963:312,  
fig. 5; Whitehead 1973b:170, fig. 4; Wongratana, 1980:88, pls 11, 12 (revision).

**FAO Names** : En - Rainbow sardine.



**Diagnostic Features** : Closely resembles D. elopsoides, but body deeper (usually 22 to 29% of standard length) lower gillrakers fewer (19 to 26), branchiostegal rays fewer (12 to 15) and posterior part of scales marked with numerous tiny radiating striae. Black iridescent blue with a shiny gold/brass line below (quickly fading after death); hind margin of tail broadly dark. See CLUP Duss 1, Fishing Areas 57, 71 and also 51.



**Geographical Distribution** : Warmer waters of Indo-Pacific, from the "Gulf" (perhaps south to Somalia), along coasts of Pakistan, India and Malaysia to Indonesia (Kalimantan) and the Philippines. Earlier records included D. elopsoides.

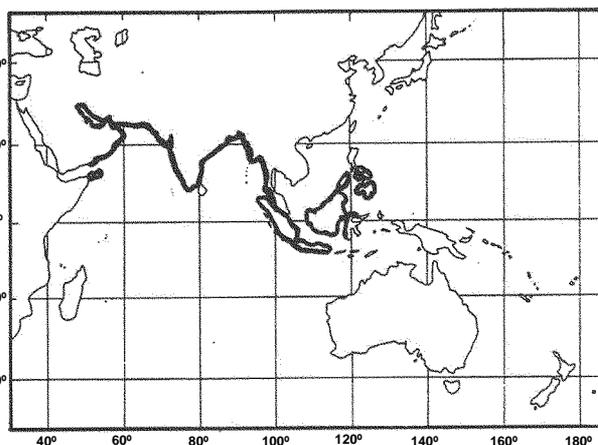
**Habitat and Biology** : Marine, pelagic, mainly inshore fishes; studies on bionomics, general biology, food, breeding, eggs and larvae, juveniles, temperature tolerance of larvae, the gut and seasonal variations in fat content are listed by Whitehead (1973:171), but may equally have referred to D. elopsoides.

**Size** : To about 20 cm standard length.

**Interest to Fisheries** : Separate statistics only recorded from Hong Kong, Indonesia and the Philippines (the last two most likely with D. elopsoides also included). Good catches are made in Palk Bay and Gulf of Mannar (southern India) (Samuel, 1968). Caught in gillnets (rolavalai of southern India), also seines.

**Local Names** : INDIA: Rainbow sardine.

**Literature** : Whitehead (1963 - combined with D. elopsoides, however; 1973b - same); Wongratana (1980 - key, diagnosis).



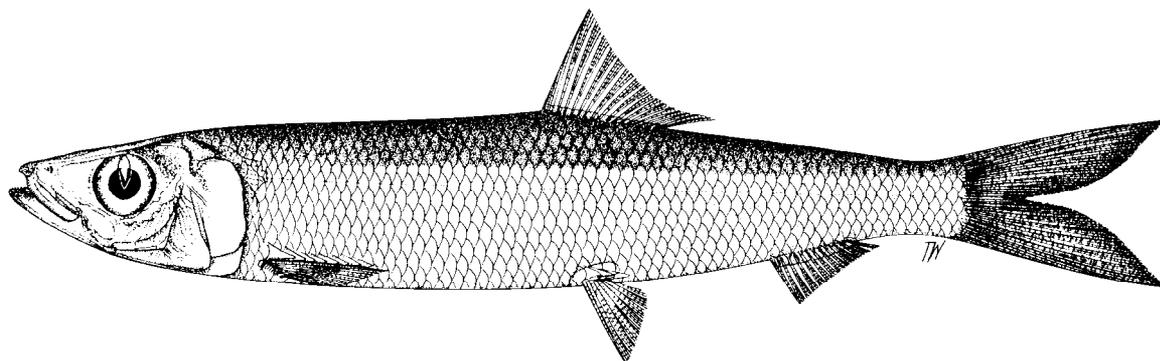
**Dussumieria elopsoides** Bleeker, 1849

CLUP Duss 2

Dussumieria elopsoides Bleeker, 1849, Verh.batav.Genoot.Kunst.Wet., 22:12 (Madura Strait, Java Sea, etc.).

**Synonyms** : Dussumieria hasseltii Bleeker, 1850:422; Dussumieria productissima Chabanaud, 1933:4, figs 3-6 (Suez); Dussumieria acuta:CLOFNAM, 1973:110 (eastern Mediterranean); FNAM, 1984:275, fig. (same); Dussumieria elopsoides:Wongratana, 1980:85, pls 9, 10 (revision).

**FAO Names** : En - Slender rainbow sardine.



**Diagnostic Features** : More slender than D. acuta (depth usually 16 to 22% of standard length), lower gillrakers more (21 to 32), branchiostegal rays more (13 to 17) and no striae on posterior part of scales; colour apparently similar.

**Geographical Distribution :** From Suez and western Indian Ocean (the "Gulf" to Mombasa; possibly to Madagascar) along coasts of Pakistan, and India and Malaysia to western Pacific (China to about Solomon Islands). Immigrants in eastern Mediterranean (reported as D. acuta).

**Habitat and Biology :** Presumably similar to those of D. acuta, but the species not distinguished in earlier studies.

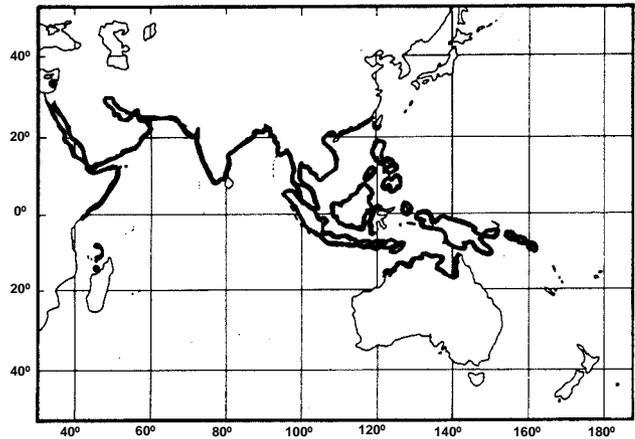
**Size :** To about 20 cm standard length.

**Interest to Fisheries :** Combined with data for D. acuta.

**Local Names :** As for D. acuta.

**Literature :** First properly separated from D. acuta by Wongratana (1980).

**Remarks :** Even more slender specimens (depth 16.7 to 17.2% of standard length) have been examined from Fiji which have a lower gillraker count of only 20 to 21 (cf. 21 to 23 in D. elopsoides). Possibly a third species is present.



**Etrumeus** Bleeker, 1853

CLUP Etru

Etrumeus Bleeker, 1853, Verh.batav.Genoot.Kunst.Wet., 25:48 (type: Clupea micropus Schlegel, 1846). Perkinsia Eigenmann, 1891, Amer.Nat.Philad., 25:153 (type: Perkinsia othonops Eigenmann, 1891). Halecula Jordan, 1925, Stanford Univ.Publ.Biol.Sci., 4:41 (type: Halecula acuminata Jordan, 1925) (pre-occupied). Parahalecula Fowler, 1958, Notul.Naturae Philad., (310):5 (replacement for Halecula).

**Diagnostic Features :** Body slender, belly rounded, without pre- and post-pelvic scutes; the W-shaped pelvic scute, numerous branchiostegal rays (11 to 15) and rectangular pre-maxillae distinguish Etrumeus from all other clupeids except Dussumieria, which has more anal finrays, the pelvic fins more advanced and the isthmus (sternohyoideus muscle) tapering evenly forward (see key).

**Biology, Habitat and Distribution :** Marine pelagic and schooling fishes of both the New World (Atlantic and Pacific coasts) and the Indo-Pacific (absent between 25°N and 25°S, however); also, southern part of eastern Atlantic.

**Interest to Fisheries :** Of importance mainly off Japan and southern Africa, but a significant fishery also in the Red Sea. The total catch in 1983 was 110 084 tons.

**Species :** A single species recognized by Whitehead (1963), but a second species found. by Wongratana (1983):

E. teres (De Kay, 1842), Indo-West Pacific, western Atlantic, eastern Pacific

E. whiteheadi Wongratana, 1983, southern Africa.

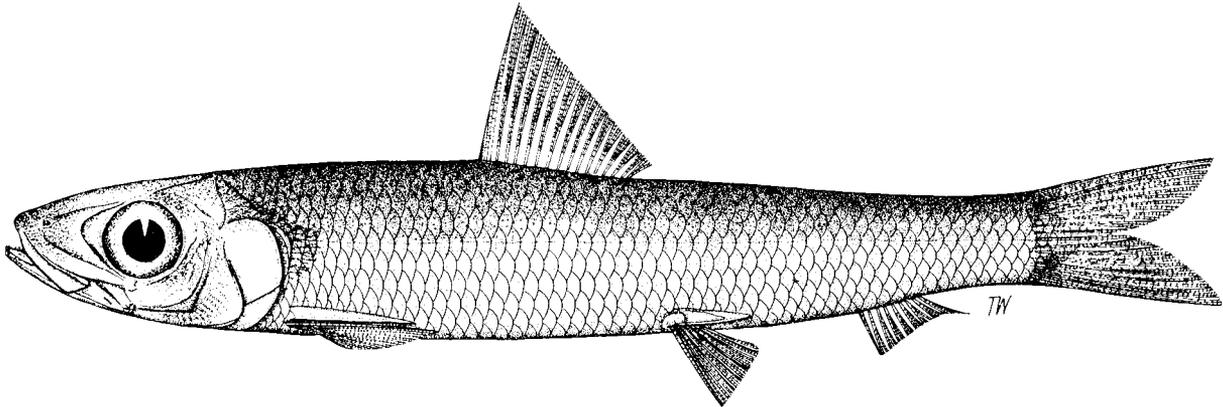
**Etrumeus teres** (De Kay, 1842)

CLUP Etru 1

Alosa teres De Kay, 1842, Nat.Hist.New York, pt. 4, Fishes:262 (New York region).

**Synonyms :** Clupea micropus Schlegel, 1846:236 (Japan); Etrumeus jacksoniensis Macleay, 1879:36 (Australia); Etrumeus acuminatus Gilbert, 1891:56 (eastern Pacific); Perkinsia othonops Eigenmann, 1891:153 (eastern Pacific); Etrumeus sadina:FWNA, 1964:263 (not Clupea sadina Mitchell, 1814, which was probably Sardinella aurita); Etrumeus teres - Whitehead, 1963:321, fig. 11; Chirichigno, 1968:399, fig. 7 (Lobos de Afuera Islands, Peru, about 6°30'S); Wongratana, 1980:83, pls 5, 6 (revision); SFSA, in press (southern Africa).

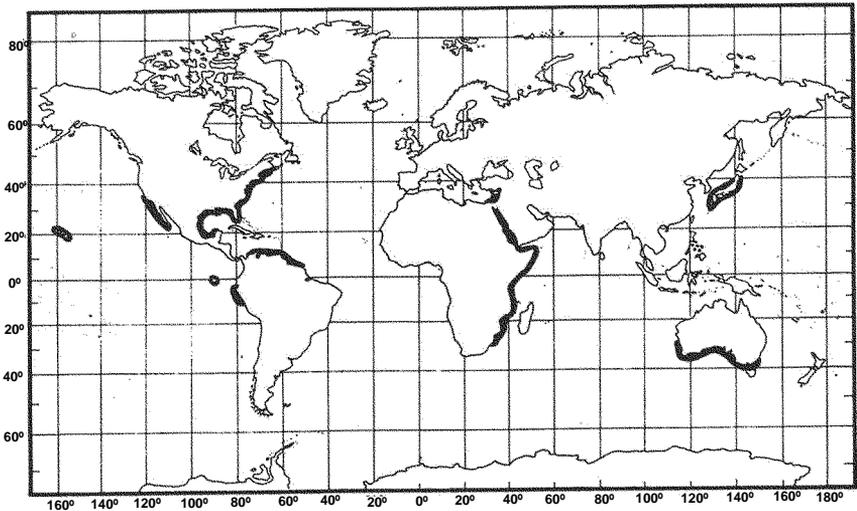
FAO Names : En - Red-eye round herring.



**Diagnostic Features :** See genus for main features. Some variation occurs in body depth and certain meristic characters (especially gillrakers), but ranges overlap between populations from widely separated regions (Whitehead, 1963). Distinguished from E. whiteheadi of southern African waters by having fewer lower gillrakers (30 to 35) and the pelvic fin base about 1/3 eye diameter behind base of last dorsal finray. See CLUP Etru 1, Fishing Area 51.

**Geographical Distribution :**

Off southern African coasts (Mozambique to Durban, perhaps further south, but probably replaced by E. whiteheadi on western coast), western Indian Ocean (off Cape Gardafui, in Red Sea, with immigrants into the eastern Mediterranean), Japan and southern coasts of Australia; in western Atlantic (Bay of Fundy south to Florida, Gulf of Mexico, Venezuela and the Guianas); in eastern Pacific (California, Galapagos Islands, Hawaii, Peru at 6°30'S). The single eastern Mediterranean specimen reported by Ben-Tuvia (1963 - see also CLOFNAM, 1973:110) was probably Spratelloides delicatulus.



**Habitat and Biology :** Marine, pelagic, mainly inshore fishes; general biology in western Atlantic given by Hildebrand (1963:264-7) and in Australia by Blackburn (1941); data from southern Africa included E. whiteheadi also.

**Size :** To 25 cm standard length.

**Interest to Fisheries :** Separate statistics mainly reported from southern Africa and Japan (105 638 tons in 1983), but E. whiteheadi included in former. Caught mainly with purse seines.

**Local Names :** AUSTRALIA: Maray; JAPAN: Iwashi; PERU: Sardina redonda; SOUTH AFRICA: Rondeharing, Rooioog; USA: Atlantic round herring (eastern coast), Makiawa, Mikiawa, Omaka (Hawaii), Round herring (AFS list).

**Literature :** Whitehead (1963 - revision); Hildebrand (1964 - eastern coast of USA); Wongratana (1980 - Indo-Pacific).

**Remarks :** Electrophoretic studies on proteins may well point to differences between the various populations that will justify separation of subspecies or even species. If it is assumed that geographically isolated populations of Sardinops probably represent different species or subspecies, then the same is surely true of Etrumeus.

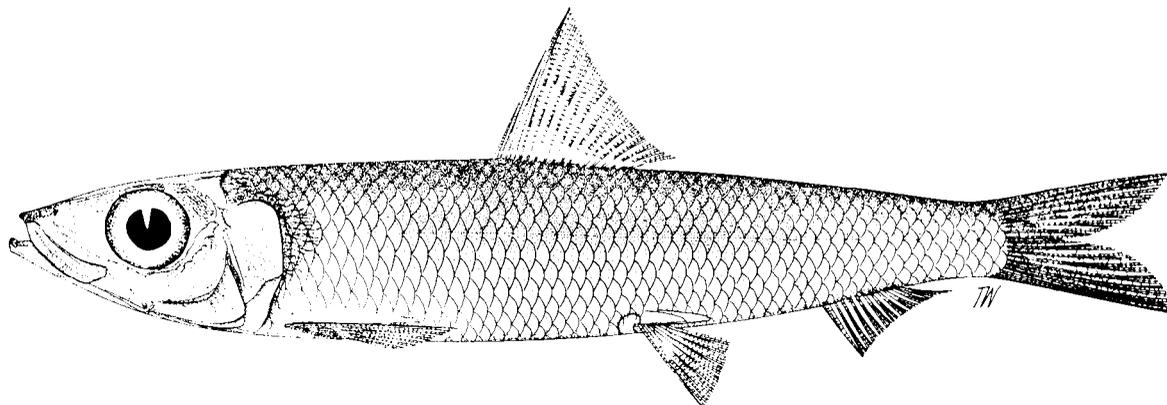
**Etrumeus whiteheadi** Wongratana, 1983

CLUP Etru 2

Etrumeus whiteheadi Wongratana, 1983, Jap.J.Ichthyol., 29 (4):387 (South Africa).

**Synonyms** : Etrumeus teres of authors on southern African specimens, especially on western coasts; Wongratana, 1980:84, pls 7, 8 (revision); SFSA, in press (southern Africa).

**FAO Names** : En - Whitehead's round herring.



**Diagnostic Features** : See genus for main features. Distinguished from E. teres in southern African waters by having more lower gillrakers (36 to 39) and the pelvic fin base below or just before base of last dorsal finray.

**Geographical Distribution** : Walvis Bay to Durban, possibly overlapping with E. teres from about Cape Town eastward.

**Habitat and Biology** : Marine pelagic, mainly inshore fishes; probably included in the data given for E. teres by workers in southern Africa.

**Size** : To 20 cm standard length.

**Interest to Fisheries** : Separate statistics for South Africa (63 009 tons in 1983) must refer largely to this species, although given as E. teres. Much smaller catches, also presumed to be this species, are reported by Namibia, and in earlier years by Poland and the German Democratic Republic working off this coast (6 653 tons in 1983).

**Local Names** : SOUTH AFRICA: Suidafrikaanse rondharig.

**Literature** : Wongratana (1983 - key, diagnosis).

**Remarks** : Much more work is needed to determine the overlap of this species with E. teres in southern African waters and to explore possible differences in their biology.

