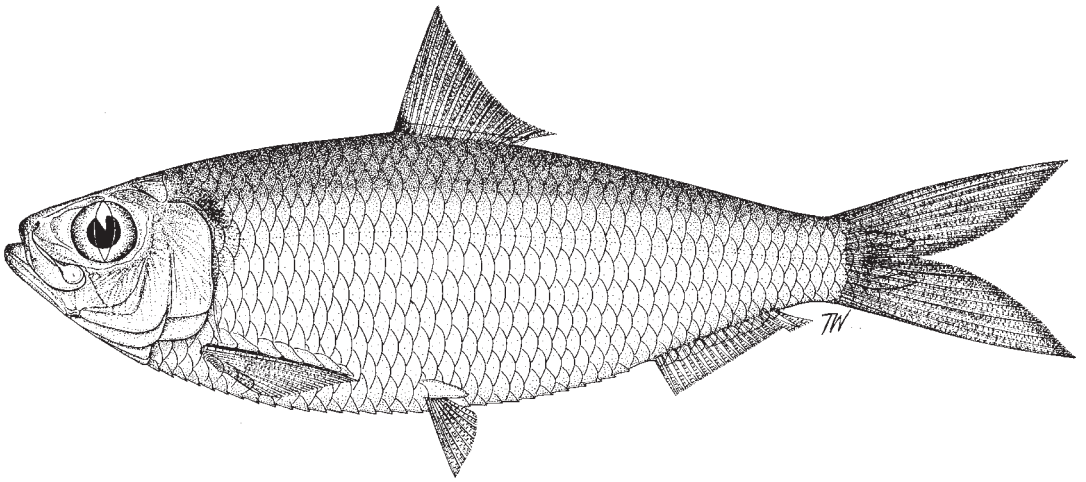
Sardinella albella (Valenciennes, 1847)

Frequent synonyms / misidentifications: *Clupalosa bulan* Bleeker, 1849; *Clupeonia perforata* Cantor, 1849; *Harengula dollfusi* Chabanaud, 1933 / *Sardinella perforata* (Cantor, 1850); *S. bulan* (Bleeker, 1849).

FAO names: En - White sardinella; **Fr** - Sardinella blanche; **Sp** - Sardinela blanca.

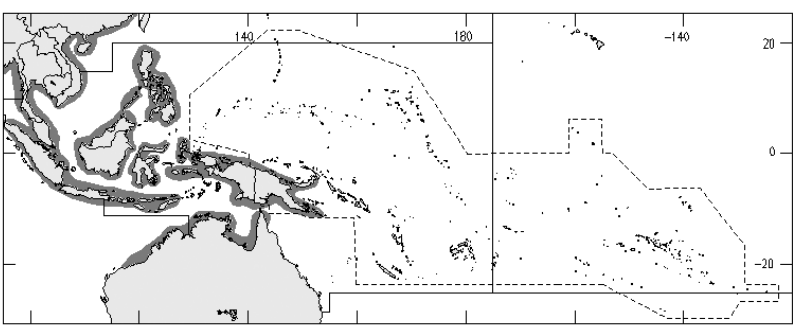


Diagnostic characters: Body somewhat compressed but variable, discontinuous from slender to moderately deep, depth 25 to 40% of standard length; **abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 29 to 33 (usually 30 to 32); pelvic scute with ascending arms. Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped.** Maxilla reaching vertical through anterior margin of eye. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 7 to 11 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth without bony striae. Lower gill rakers 41 to 68 (at 4 to 15 cm standard length, increasing a little with size of fish)**. Branchiostegal rays usually 6. Dorsal-fin origin moderately anterior to midpoint of body. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays distinctly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays**. **Vertical striae on scales discontinuous not meeting at centre; posterior part of scale with a few perforations and somewhat produced posteriorly**. Lateral-line scales usually 41 to 43. **Predorsal scales paired**. **Colour:** dorsum and head blue-green above shading to silvery white below; flanks silvery; no spots on body; **a dark spot at dorsal-fin origin**, otherwise fins pale yellow.

Size: Maximum standard length 14 cm, commonly to 10 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling. Misidentifications make published biological data potentially unreliable. Included in general statistics for *Sardinella*, but of some importance along western coasts of India (although fishery statistics probably include *S. fimbriata* and *S. gibbosa*). Caught mainly with purse seines, lift nets, and set nets. Marketed fresh, dried, dried-salted, and made into fish balls.

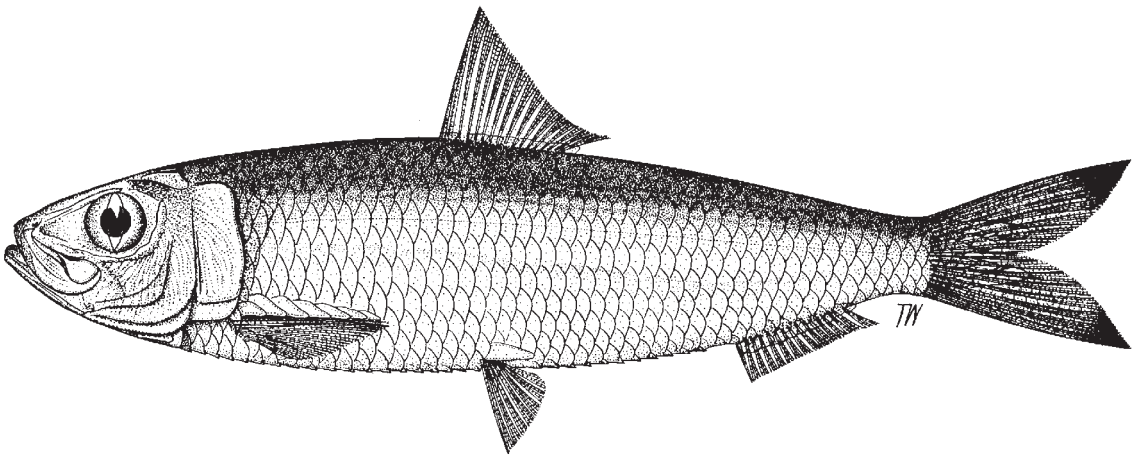
Distribution: Indo-West Pacific from Red Sea, the Persian Gulf, East African coasts, Madagascar eastward to Indonesia, Gulf of Thailand, the Philippines, north to Taiwan Province of China, and south to Papua New Guinea and northern Australia.



Sardinella atricauda (Günther, 1868)

Frequent synonyms / misidentifications: *Harengula melanurus* Bleeker, 1853 / *Sardinella melanura* (Cuvier, 1829).

FAO names: En - Bleeker's blacktip sardinella.

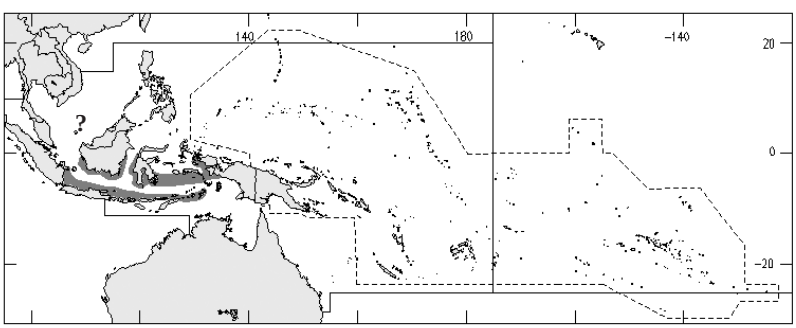


Diagnostic characters: Body slender, depth 23 to 27% of standard length; **abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 32 to 35 (prepelvic scutes usually 19); pelvic scute with ascending arms. Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Maxilla almost reaching vertical through anterior margin of pupil. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 8 or 9 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae. Lower gill rakers 39 to 43**, with many asperities on them (probably not increasing in number in larger fishes). Branchiostegal rays 6. Dorsal-fin origin moderately anterior to midpoint of body. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays slightly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays. Vertical striae on scales discontinuous, not meeting at centre, with numerous small perforations on posterior part of scale**. **Predorsal scales paired and overlapping**. Lateral-line scales 43 to 46. **Colour: no dark spot at dorsal-fin origin; tips of caudal fin black**.

Size: Maximum standard length about 12.6 cm, commonly to about 10 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling. More data needed. Presumably contributes to local *Sardinella* catches. Occurs with *S. melanura* in the Java Sea and must have been confused with it frequently.

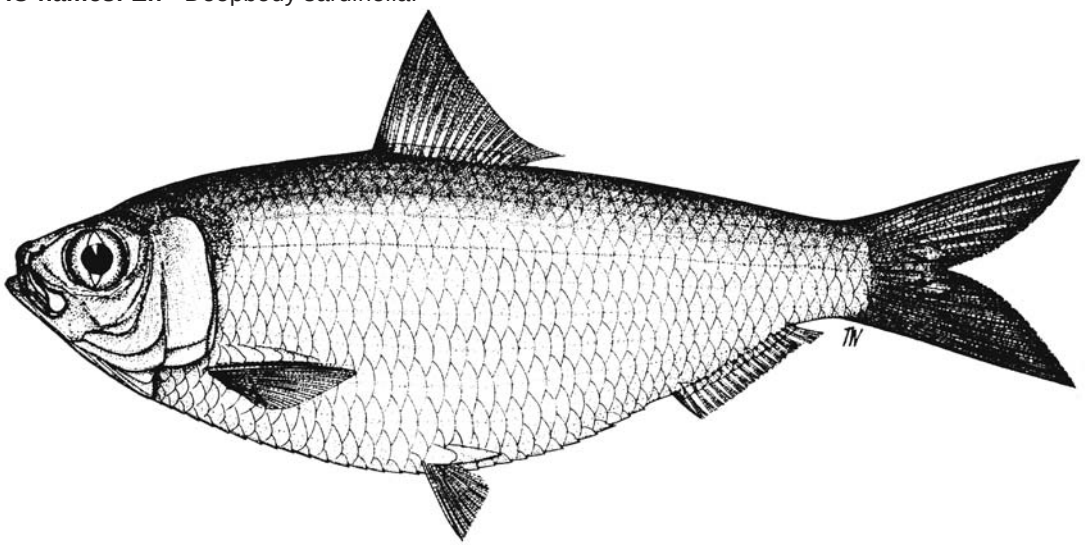
Distribution: Western Pacific (Java Sea from Jakarta to Amboina, but perhaps more widespread in Indonesia).



Sardinella brachysoma Bleeker, 1852

Frequent synonyms / misidentifications: *Harengula hypselosoma* Bleeker, 1855; *Meletta schlegelii* Castelnau, 1873 / *Sardinella albella* (Valenciennes, 1847).

FAO names: En - Deepbody sardinella.

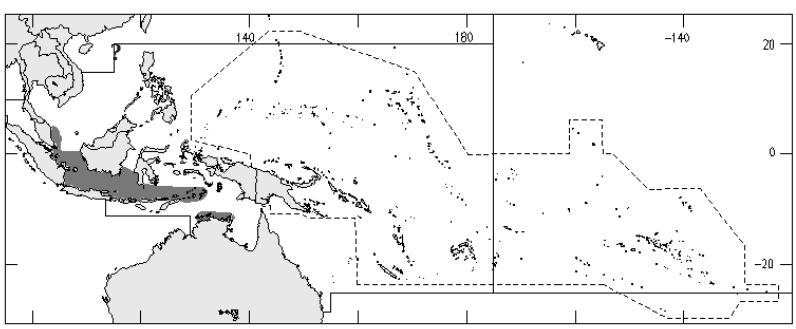


Diagnostic characters: Body deep and compressed, depth 30 to 39% of standard length; **abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 29 to 32; pelvic scute with ascending arms. Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Maxilla reaching vertical through anterior margin of eye. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 8 to 11 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae. Lower gill rakers 48 to 67, hardly increasing with size of fish**. Branchiostegal rays usually 6. Dorsal-fin origin distinctly anterior to midpoint of body. Anal-fin base short and lying well posterior of vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays distinctly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays. Vertical striae on scales overlapping or sometimes continuous at centre of scale, numerous small perforations on posterior part of scale. Predorsal scales paired**. Lateral-line scales 40 to 44. **Colour:** back blue-green, flanks silvery; **a dark spot at dorsal-fin origin; no dark markings on dorsal and caudal fins**.

Size: Maximum standard length 13 cm, commonly to 12 cm.

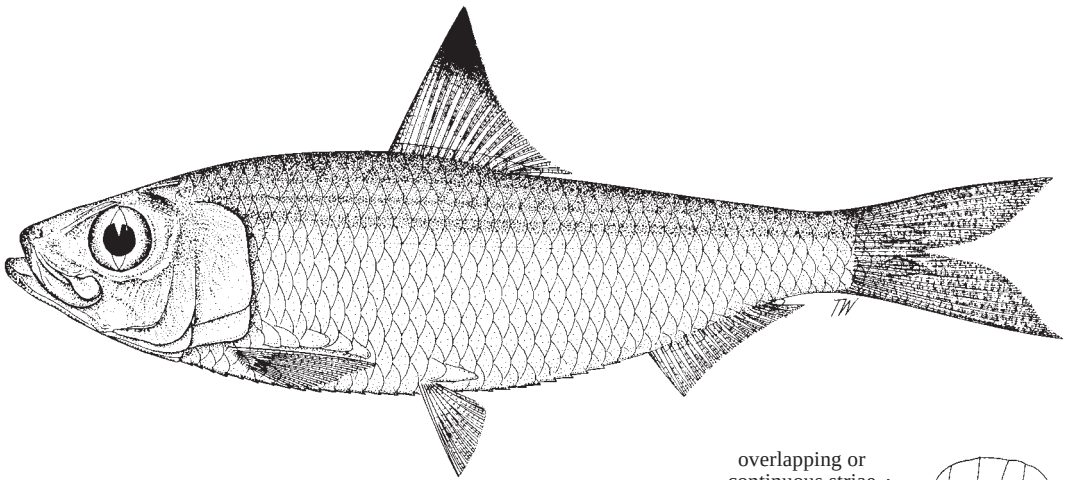
Habitat, biology, and fisheries: Coastal, pelagic, schooling. Separate statistics not reported for this species, included in the general statistics for *Sardinella*; probably of some local importance in parts of Indonesia. More data needed. Caught mainly with purse seines, lift nets, and set nets. Marketed fresh, dried, dried-salted, boiled, or made into fish balls.

Distribution: Indo-West Pacific (Madagascar, but apparently not elsewhere in western Indian Ocean) to Madras, Indonesia, to northern Australia. Hong Kong and Taiping records most likely *S. hualiensis*.



Sardinella fijiense (Fowler and Bean, 1923)

Frequent synonyms/misidentifications: *Harengula fijiense* Fowler and Bean, 1923 / None.
FAO names: En - Fiji sardinella.

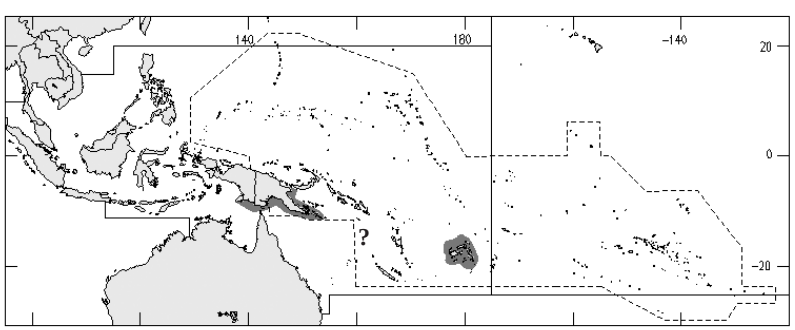


Diagnostic characters: Body fairly slender, depth usually less than 30% of standard length; abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 29 or 30; pelvic scute with ascending arms. **Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Maxilla reaching vertical through anterior margin of pupil. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 5 to 9 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae. Lower gill rakers slender, smooth; 87 to 134 in fishes at 6 to 11 cm standard length** (but more data needed). Branchiostegal rays 6. Dorsal-fin origin distinctly anterior to midpoint of body. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays distinctly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays. Vertical striae on scales continuous or overlapping, without perforations on posterior part of scale. Predorsal scales paired**. Lateral-line scales 40. **Colour: no dark spot at dorsal-fin origin**; several faint, dark streaks usually present on upper flanks; **tips of dorsal and caudal fins dusky or black**.

Size: Maximum standard length 11.5 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling. More data needed. Presumably contributes to *Sardinella* catches, but appears not to be abundant.

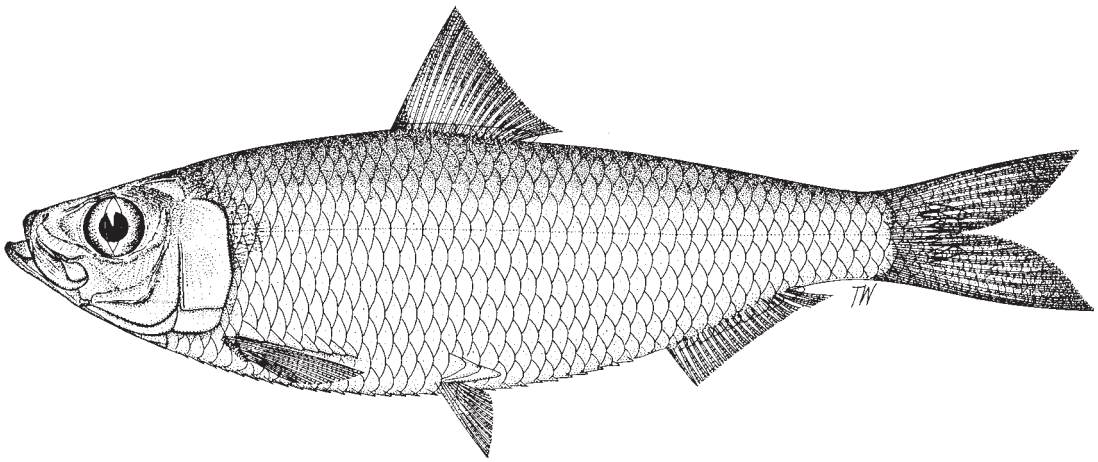
Distribution: Western Pacific (Papua New Guinea, Fiji).

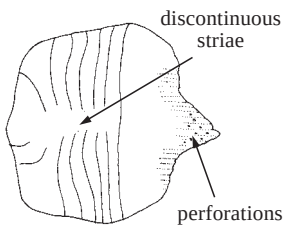


Sardinella fimbriata (Valenciennes, 1847) FRS

Frequent synonyms / misidentifications: None / *Sardinella albella* (Valenciennes, 1847); *S. gibbosa* (Bleeker, 1849).

FAO names: En - Fringescale sardinella.





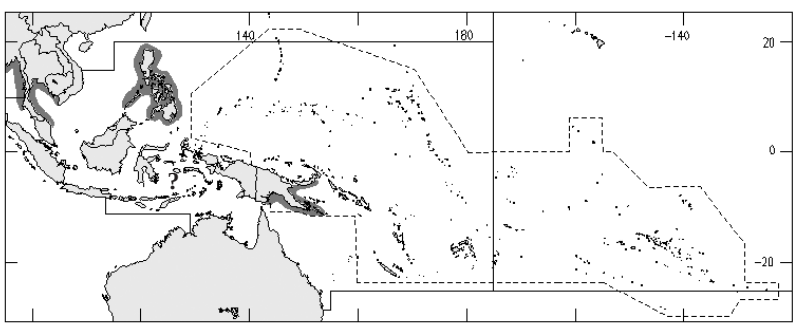
scale

Diagnostic characters: Body somewhat compressed but variable, from slender to moderately deep, depth 25 to 34% of standard length; **abdomen keeled with pre- and postpelvic scutes; total number of scutes 29 to 33 (usually 30 to 32); pelvic scute with ascending arms**. **Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Posterior extent of maxilla about reaching vertical through anterior margin of eye. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 8 to 11 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae. Lower gill rakers 54 to 82 (at 5 to 12 cm standard length, increasing with size of fish)**. Branchiostegal rays 6. Dorsal-fin origin distinctly anterior to body midpoint. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays distinctly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays. Vertical striae on scales not meeting at centre, posterior part of scale with a few perforations**; **without well-developed posterior median extension of scales (in specimens from South China Sea and off New Guinea; fish from Indian Ocean have very well developed posterior median extension of scales). Predorsal scales paired**. Lateral-line scales 42 to 44. **Colour:** back blue-green, flanks silvery; **a dark spot at dorsal-fin origin; tips of caudal and dorsal fins blackish.**

Size: Maximum standard length 13 cm, commonly around 11 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling. Misidentifications make published biological data potentially unreliable. Included in general statistics for *Sardinella*, but of some importance in southern parts of India (although fishery statistics probably include data for *S. gibbosa* and/or *S. albella*). Caught mainly with purse seines, lift nets, and set nets. Marketed fresh, dried, dried-salted, boiled, or made into fish balls.

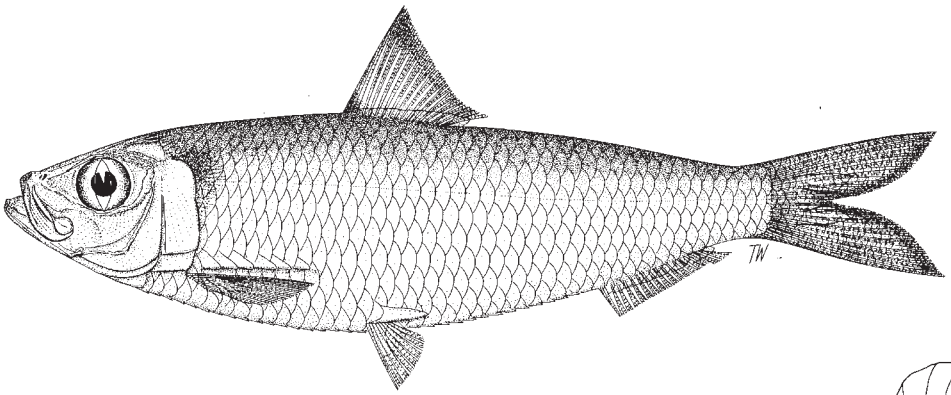
Distribution: Indo-West Pacific (not in western Indian Ocean), from southern India and Bay of Bengal to the Philippines, Indonesia, and eastern tip of Papua New Guinea.

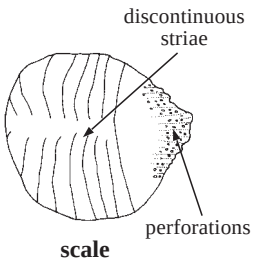


Sardinella gibbosa (Bleeker, 1849) SAG

Frequent synonyms / misidentifications: *Clupanodon jussieu* Lacepède, 1803; *Spratella tembang* Bleeker, 1851; *Clupea immaculata* Kishinouye, 1908; *Sardinella dactylolepis* (Whitley, 1940); *S. taiwanensis* Raja and Hiyama, 1969 / *Sardinella fimbriata* (Valenciennes, 1847).

FAO names: En - Goldstripe sardinella; **Fr** - Sardinelle dorée; **Sp** - Sardinela dorada.



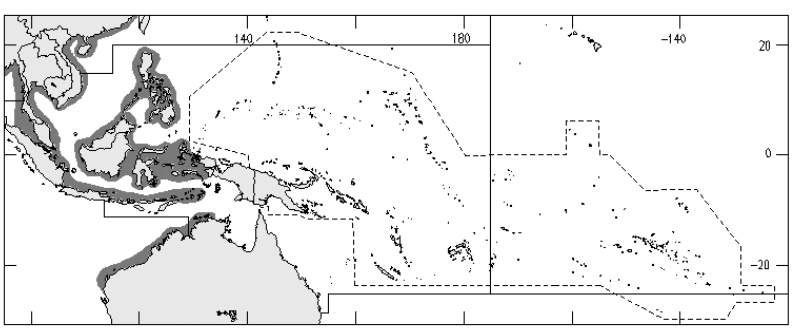


scale

Diagnostic characters: Body moderately slender, depth usually 24 to 30% of standard length; **abdomen keeled with prepelvic and postpelvic scutes; total number of scutes 32 to 34; pelvic scute with ascending arms**. **Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Posterior extent of maxilla about reaching vertical through anterior margin of eye. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 9 to 12 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae. Lower gill rakers 45 to 59 (at 6 to 17 cm standard length, not increasing with size of fish after 6 cm)**. Branchiostegal rays 6. Dorsal-fin origin distinctly before midpoint of body. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays distinctly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays. Vertical striae on scales not meeting at centre, numerous small perforations on posterior part of scale. Predorsal scales paired**. Lateral-line scales 43 to 47. **Colour:** back blue-green above and silvery on flanks, separated by **a thin golden midlateral line down flank;** head golden; **margins of dorsal and caudal fin dusky**; **a dark spot at dorsal-fin origin**.

Size: Maximum standard length 17 cm, commonly to 15 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling. One of the most common and abundant *Sardinella* species in the Indo-West Pacific region. Possible or even probable confusion with other species (especially *Sardinella fimbriata* in Indian waters) makes published biological data potentially unreliable. Lives approximately 3 years and reaches adult sizes of 16 to 18.5 cm total length. Reaches a size of about 14 to 15 cm total length at end of first year. Fishes vulnerable to fishing gear when about six months old and at modal sizes of about 8.5 to 9 cm total length. From 1990 to 1995, FAO's Yearbook of Fishery Statistics reports a range of yearly production of around 123 000 to 159 000 t of this species from the Western Central Pacific (Indonesia). Of some importance in southern parts of India (Andhra Pradesh, Tamil Nadu, Kerala) and entering markets throughout southeast Asia. It is usually caught in association with other species of *Sardinella*. Caught with purse seines, lift nets, and set nets. Marketed fresh, dried, dried-salted, boiled, or made into fish balls.

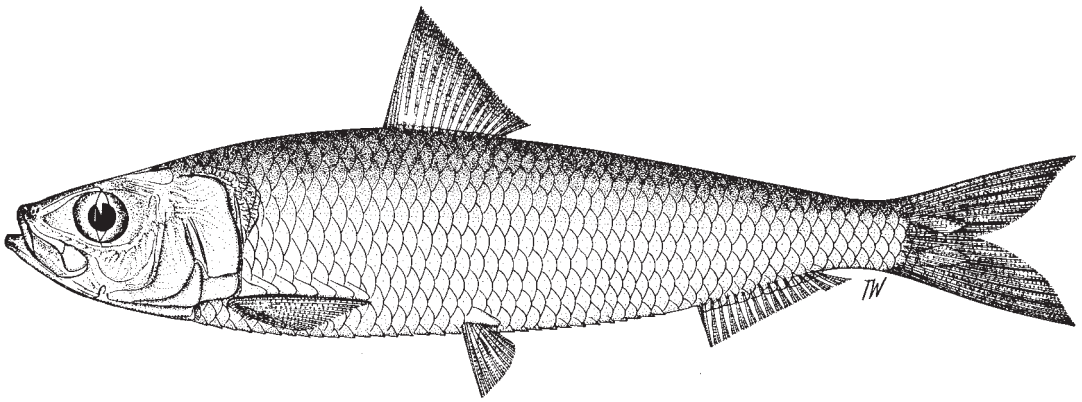


Distribution: Indo-West Pacific from the Persian Gulf, but apparently not Red Sea; East African coasts, Madagascar eastward to Indonesia, north to Taiwan Province of China and Korea, south to northern and western coasts of Australia.

Sardinella lemuru Bleeker, 1853 SAM

Frequent synonyms / misidentifications: *Clupea nymphaea* Richardson, 1846 (name suppressed); *Amblygaster posterus* Whitley, 1931; *Sardinella samarensis* Roxas, 1934; *S. longiceps* non Valenciennes, 1847 / *Sardinella aurita* Valenciennes, 1847.

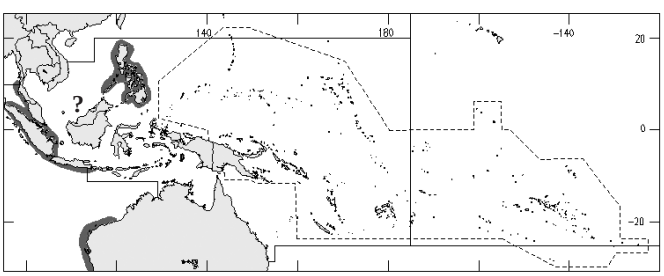
FAO names: En - Bali sardinella.



Diagnostic characters: Body elongate, subcylindrical, depth less than 30% of standard length, abdomen rounded; **abdomen keeled with prepelvic and postpelvic scutes (total number of scutes 32 to 35, usually 33 or 34); pelvic scute with ascending arms**. Head length 26 to 29% of standard length. **Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Posterior extent of maxilla about reaching vertical through anterior margin of pupil. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 8 to 12 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae.** Lower gill rakers 77 to 188 in fishes of 6.5 to 22 cm standard length. Branchiostegal rays 6. Dorsal-fin origin distinctly before midpoint of body. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays distinctly enlarged**. Pelvic-fin insertion at vertical through posterior of dorsal-fin rays; **pelvic fins with i unbranched and 8 branched soft rays. Vertical striae on scales discontinuous not meeting at centre, without small perforations on posterior part of scale. Predorsal scales paired**. Lateral-line scales 44 to 47. **Colour: no dark spot at dorsal-fin origin; a faint golden spot behind gill opening, followed by a faint golden midlateral line; also with a distinct black spot at posterior border of gill cover**.

Size: Maximum standard length 23 cm, commonly to 20 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling, strongly migratory. Feeds on phytoplankton and zooplankton (chiefly copepods). In Bali region, spawning probably occurs at end of annual rainy season migration into Bali Strait (usually September to February, but a peak mainly in December to January, at least judging by numbers caught). Spawning grounds are not known. Spawning and major migrations appear closely linked with hydrological conditions (especially temperature), but sudden appearances or disappearances of shoals have no ready explanation. Spawning in East China Sea peaks in late March to May, but continues through August. Of major interest for fisheries in East China Sea mainly off southern Fujian and eastern Guandong provinces; and in Indonesia, the bulk of the catch is taken in the Bali Strait. From 1990 to 1995, FAO's Yearbook of Fishery Statistics reports a range of yearly catch of around 106 700 to 13 800 t of *Sardinella lemuru* from the Western Central Pacific (Indonesia). Much more work is needed before it can be definitely stated that *Sardinella lemuru* is not merely an eastern form of *S. aurita* from which, given the variation in body shape and gill raker numbers in Atlantic *S. aurita*, it cannot be distinguished as yet on morphological grounds.

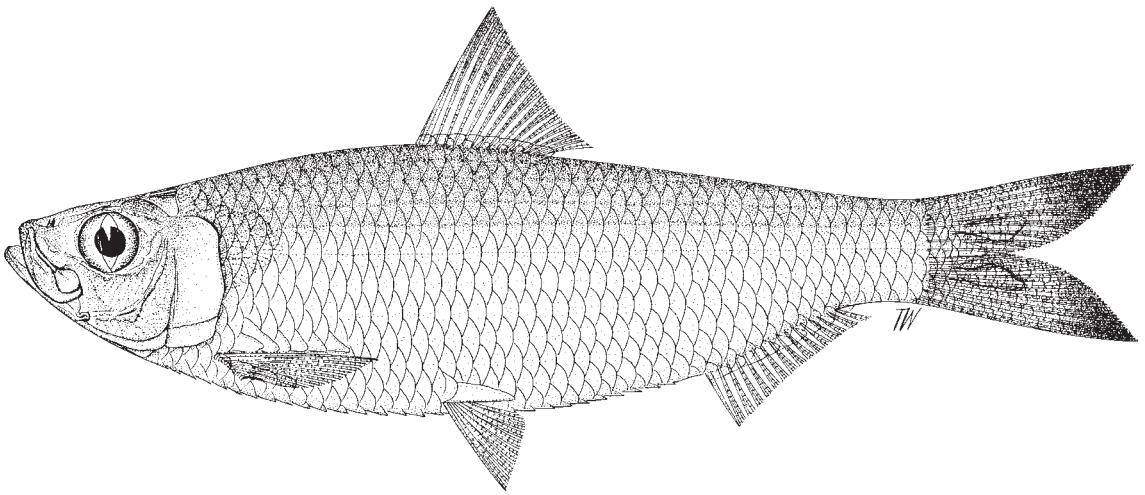


Distribution: Indo-West Pacific from Phuket, Thailand, southern coasts of Java and Bali to Western Australia, north to the Philippines, Hong Kong, Taiwan Province of China, and possibly southern Japan.

Sardinella melanura (Cuvier, 1829)

Frequent synonyms / misidentifications: *Clupea melanura* Cuvier, 1829; *Clupeonia vittata* Valenciennes, 1847; *Sardinella nigricaudata* Chan, 1965 / *Sardinella atricauda* (Günther, 1868).

FAO names: En - Blacktip sardinella; **Fr** - Sardinelle queue noire; **Sp** - Sardinela rabo negro.

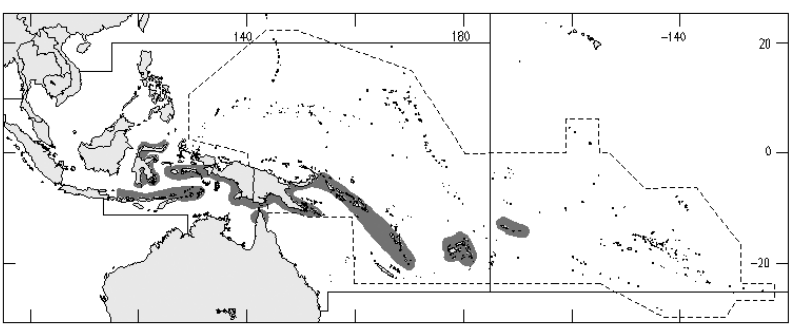


Diagnostic characters: Body fusiform, somewhat compressed, depth usually not much more than 30% of standard length; **abdomen with sharply-keeled prepelvic and postpelvic scutes**; **total number of scutes 27 to 31 (usually 28 to 30)**; **pelvic scute with ascending arms**. **Upper jaw rounded without distinct median notch or cleft. Two supramaxillae present; second symmetrical, paddle-shaped**. Posterior extent of maxilla about reaching vertical through anterior margin of eye. **Teeth on palatines and pterygoids weakly developed or apparently absent. With 7 to 9 frontoparietal striae on top of head. Two fleshy outgrowths on posterior margin of gill opening. Opercle smooth, without bony striae. Lower gill rakers 38 to 74.** Branchiostegal rays usually 6. Dorsal-fin origin well before midpoint of body. Anal-fin base short and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays slightly enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; **pelvic fins with i unbranched and 7 branched soft rays. Vertical striae on scales discontinuous, with a wide gap at centre, without any perforations on posterior part of scale. Predorsal scales paired**. Lateral-line scales 38 to 42. **Colour:** dorsum blue-green, flanks silvery; **no dark spot at dorsal-fin origin; tips of caudal fin jet black**.

Size: Maximum standard length 12.2 cm, commonly about 10 cm.

Habitat, biology, and fisheries: Coastal, pelagic, schooling. Feeds on small planktonic organisms. More data needed. Separate statistics not reported for this species, but included in general statistics for *Sardinella*; perhaps of local importance, but appears not to be very abundant. Caught with purse seines, lift nets, and set nets. Marketed fresh, dried, dried-salted, boiled, or made into fish meal or fish balls.

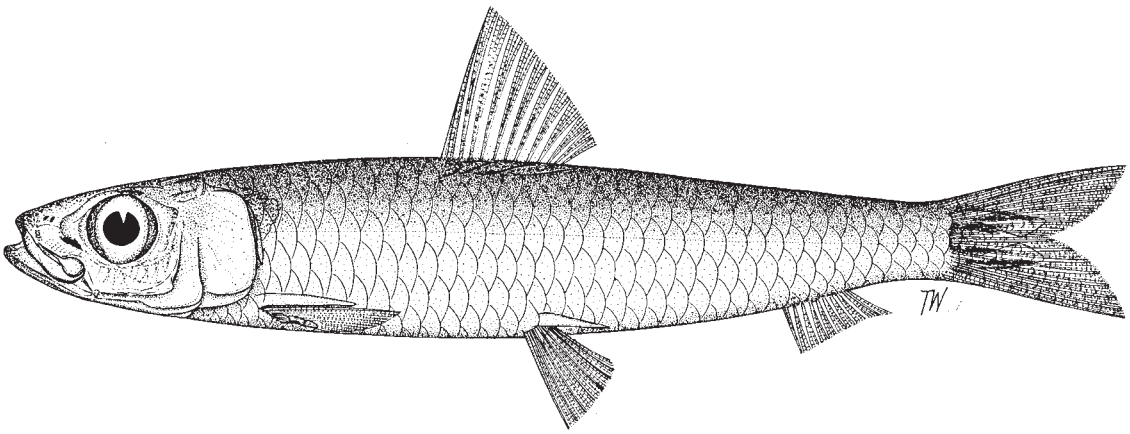
Distribution: Indo-West Pacific from Gulf of Aden south to Madagascar and Mauritius, apparently not south of Bombay nor in northern Bay of Bengal, Indonesia, northward to Taiwan Province of China (not South China Sea), northern tip of Australia, and eastward to Samoa.



Spratelloides delicatulus (Bennett, 1832)

Frequent synonyms / misidentifications: *Alosa alburnus* Kner and Steindachner, 1867; *Clupea macassariensis* Bleeker, 1849 / *Spratelloides robustus* Ogilby, 1897.

FAO names: En - Delicate round herring; **Fr** - Hareng rond; **Sp** - Arenquillo fino.

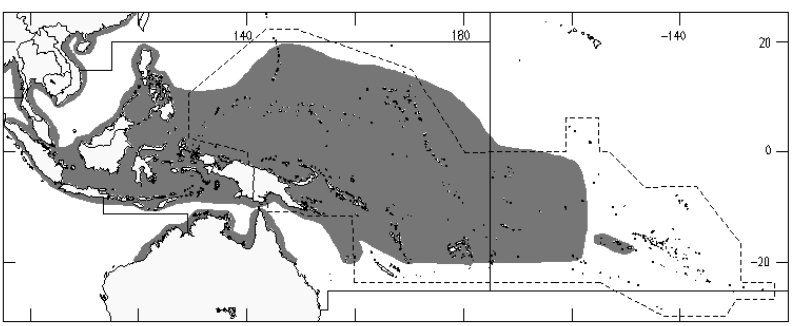


Diagnostic characters: Body elongate, cylindrical; **abdomen rounded, without prepelvic or postpelvic scutes, but a W-shaped pelvic scute present. Premaxillae triangular**. **Maxilla toothless**, **2 supramaxillae; second supramaxilla paddle-shaped and symmetrical; lower gill rakers 26 to 32. Branchiostegal rays 6 or 7.** Dorsal fin anterior to midpoint of body. Anal fin well posterior to vertical through bases of posteriormost dorsal-fin rays; anal-fin rays usually 10. Pelvic-fin insertion about equal with vertical through middle of dorsal fin. Predorsal scales 8 to 13; **35 to 41 scales in lateral series; vertical striae on scales meeting at centre, posterior margin of scales smooth**. **Colour: no bright silver band along flanks**; **2 prominent dark streaks on caudal-fin base**.

Size: Maximum standard length 9 cm, commonly between 6 and 7 cm.

Habitat, biology, and fisheries: Marine, pelagic, and usually inshore schooling fishes around coral-reef lagoons, adjacent waters, and seagrass beds during the day; dispersing into mid and upper waters of lagoons during night time to feed. A fast-growing, short-lived species, attaining sizes of 6.6 cm and 2.5 g, and living for 4 or 5 months in Kiribati. In the Kiribati population, fish are sexually mature at 3.7 cm standard length, at about 2 months of age. This species is capable of continuous spawning, but sometimes spawning occurs in a single, protracted, period around the full moon. Spawning frequency varies unpredictably with local environmental conditions. Batch fecundity 450 to 1 200 eggs/spawning. Relative fecundity 650 to 920 eggs/g. Spawning occurs during early part of night, probably prior to midnight. Reproductive life span is estimated at 52 to 62 days. Separate statistics are not recorded, but probably makes a significant contribution to clupeoid fisheries. Used as a tuna baitfish in the Pacific.

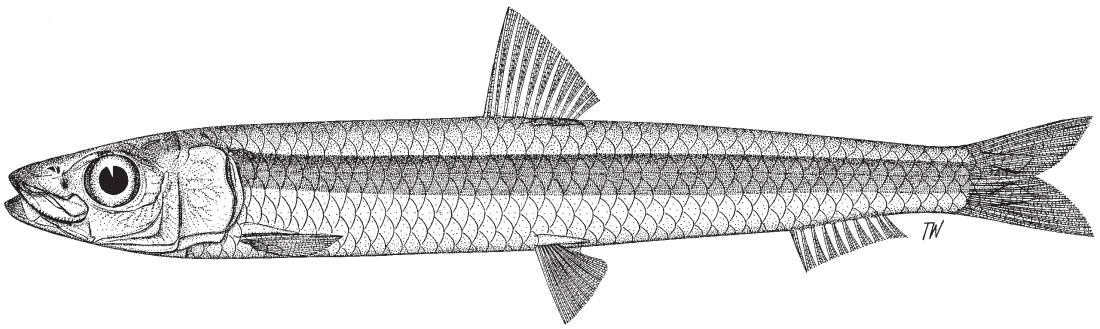
Distribution: Widespread tropical Indo-Pacific from Red Sea south to Durban, also Madagascar and Mauritius, to Japan south through the Philippines to northern Australia and south to New Caledonia, also eastward to Society Islands and southward to Chesterfield Islands, but not Tuamotu and Marquesas Islands. A single specimen from eastern Mediterranean (Tel-Aviv, Israel).

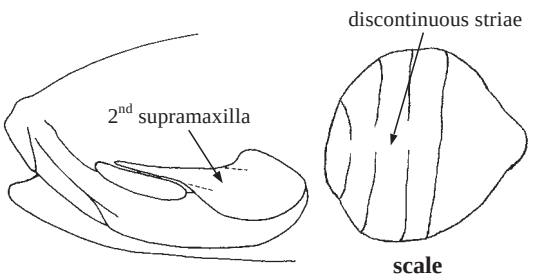


Spratelloides gracilis (Temminck and Schlegel, 1846) SRH

Frequent synonyms / misidentifications: *Clupea argyrotaeniata* Bleeker, 1849; *Spratelloides atrofasciatus* Schultz, 1943 / None.

FAO names: En - Silver stripe round herring; **Fr** - Hareng gracile; **Sp** - Arenquillo de banda.



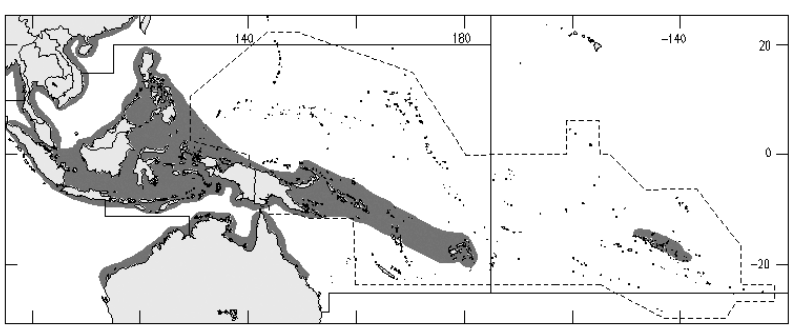


Diagnostic characters: Body elongate, cylindrical; abdomen rounded, without prepelvic or postpelvic scutes, but a W-shaped pelvic scute present. Premaxillae triangular. **Maxilla toothed, second supramaxilla asymmetrical (lower part larger than upper); lower gill rakers very variable (27 to 37). Branchiostegal rays 6 or mostly 7**. Dorsal-fin origin very slightly anterior to midpoint of body. Anal fin distinctly posterior to vertical through bases of posteriormost dorsal-fin rays; **total anal-fin rays 11 to 14 (mostly 12 or 13)**. Pelvic-fin insertion about equal with vertical through middle of dorsal fin. **With 42 to 48 scales in lateral series; vertical striae on scales not meeting at centre**. **Colour: a bright silver band along the entire flanks, clearly seen in small fish of about 2 cm standard length**.

Size: Maximum standard length 9.5 cm.

Habitat, biology, and fisheries: Marine, pelagic, and usually inshore schooling species. Females mature at about 3.5 to 4.4 cm of fork length. Data are limited, but spawning peaks occur in October, around the full moon, in Kiribati. Spawning frequency varies unpredictably with local environmental conditions. Separate statistics only recorded for Fishing Areas 61 and 71, but probably contributes more to clupeoid catches than the records show. In 1995, FAO's Yearbook of Fishery Statistics reports a catch of 150 t of this species from Fiji. Used as a tuna baitfish in the Pacific, including the Solomon Islands.

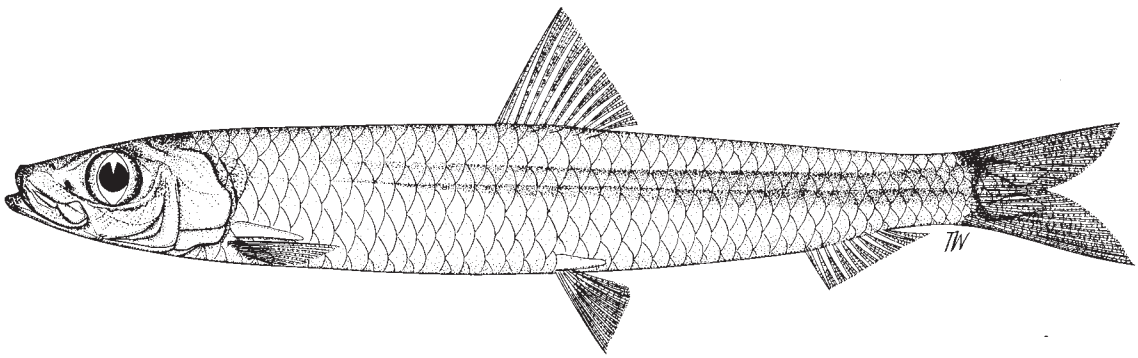
Distribution: Widespread Indo-Pacific from Red Sea south to Zanzibar, to Japan, south through the Philippines to western Australia, also off southeastern Australia south to Lord Howe Island, and eastward to Samoa and Kiribati islands, not Cook, Society or Marquesas islands, but reappears in Tuamotu Islands.

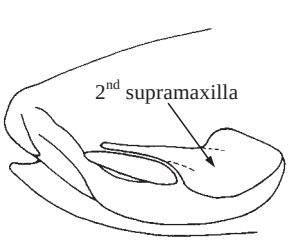


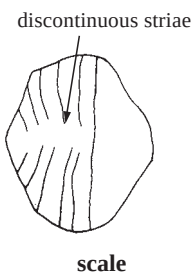
Spratelloides lewisi Wongratana, 1983

Frequent synonyms/misidentifications: None / *Spratelloides gracilis* (Temminck and Schlegel, 1846); *S. delicatulus* (Bennett, 1832).

FAO names: En - Lewis' round herring.







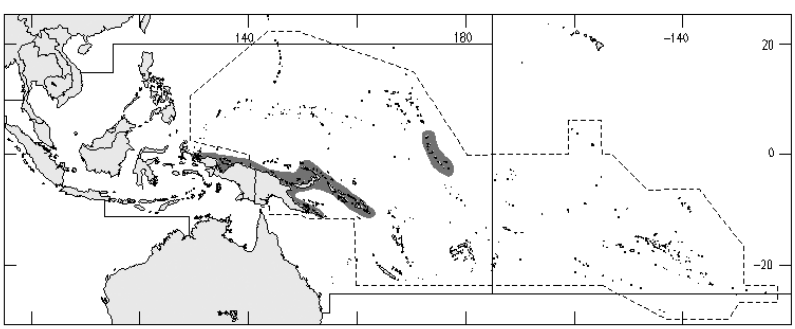
scale

Diagnostic characters: Body elongate, cylindrical; abdomen rounded, without prepelvic or postpelvic scutes, but a W-shaped pelvic scute present. Premaxillae triangular. **Maxilla toothed, second supramaxilla asymmetrical (lower part larger than upper); lower gill rakers 28 to 32. Branchiostegal rays 6 or 7**. Dorsal-fin origin about at midpoint of body. Anal fin distinctly posterior to vertical through bases of posteriormost dorsal-fin rays; **total anal-fin rays usually 10 to 14 (mostly 10 or 11)**. Pelvic-fin insertion about equal with vertical through middle of dorsal fin. **With 39 to 43 scales in lateral series; vertical striae on scales not meeting at centre**. **Colour: with silver band on flanks, gradually fading anteriorly just above tips of pectoral fins.**

Size: Maximum standard length 6 cm, fork length commonly between 3.5 and 5.5 cm.

Habitat, biology, and fisheries: Marine, pelagic and usually inshore schooling species. A short-lived species (less than 120 days) with females maturing at 3.4 to 4.3 cm of fork length. Ovarian maturation data suggest there is not a distinct spawning seasonality for this species: spawning is either protracted or markedly reduced over several months. In Kiribati, seasonal spawning activity recorded from October to May, with spawning usually occurring around the new moon. Spawning frequency varies unpredictably with local environmental conditions. Comprises a minor portion of tuna bait fishery catch. No separate statistics reported for this species.

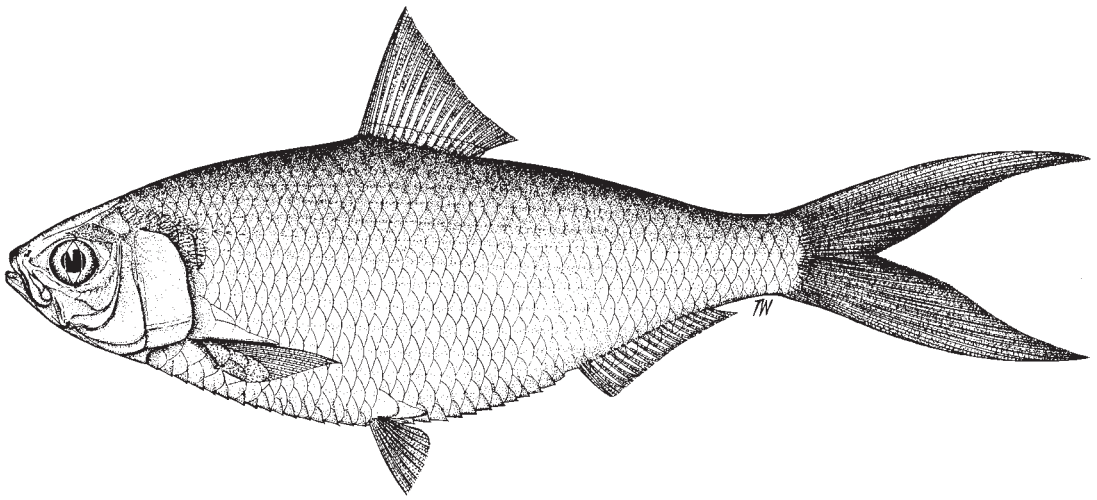
Distribution: Western Pacific (coasts of Papua New Guinea, off Irian Jaya, eastward to Solomon and Kiribati islands).



Tenualosa macrura (Bleeker, 1852)

Frequent synonyms / misidentifications: *Alausa macrurus* Bleeker, 1852; *Macrura macrura* (Bleeker, 1852); *Hilsa macrura* (Bleeker, 1852) / None.

FAO names: En - Longtail shad.

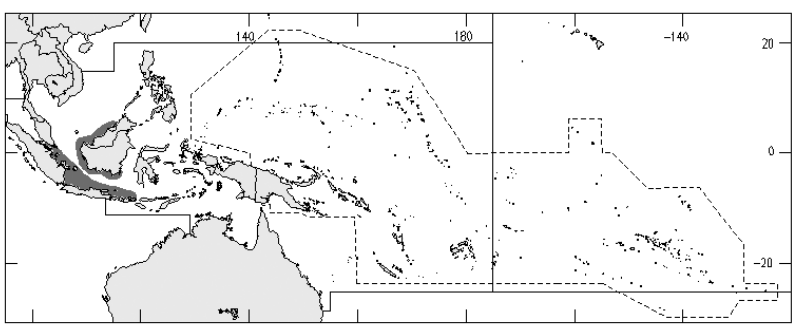


Diagnostic characters: A moderately large herring-like fish. Body moderately deep, compressed; **abdomen with 30 or 31 (17 prepelvic and 13 or 14 postpelvic) fairly sharply-keeled scutes; pelvic scute with ascending arms**. **Head length 22 to 25% of standard length; top of head without frontoparietal striae. Mouth terminal; upper jaw with a distinct median notch. Two supramaxillae present and well developed**. Maxilla not reaching to vertical through centre of eye. **No fleshy outgrowths on posterior margin of gill opening. Opercle smooth without bony striae. Gill rakers fine but not numerous, 60 to 75 on lower part of arch (barely increasing after 10 cm standard length), those on the inner arches more or less straight, not curled outward**. Branchiostegal rays 6. Dorsal-fin origin slightly anterior to midpoint of body; **last dorsal-fin ray not elongated**. Anal fin fairly short (about 20 fin rays) and lying well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays not enlarged**. Pelvic-fin insertion at vertical through bases of anterior dorsal-fin rays; pelvic fins with i unbranched and 7 branched soft rays. **Caudal fin deeply-forked and long, 40 to 42% of standard length; lobes attenuated**. **Scales moderate, 43 or 44 in lateral series, not fimbriated and without perforations posteriorly**. An elongated pectoral axillary scale. **Colour:** blue-green on back, silvery below; **no series of dark spots along flanks.**

Size: Maximum standard length 52 cm.

Habitat, biology, and fisheries: Marine, pelagic, and schooling in coastal waters; euryhaline, anadromous, ascending rivers to breed. Presumably its biology is similar to that of *Tenualosa ilisha*, but the fewer gill rakers suggest that it takes larger food organisms. Perhaps more important locally than records imply. Mainly caught with traps, fishing weirs, and drifted or fixed gill nets in estuaries and rivers during upstream spawning migration; fishermen also use seine nets, bag nets, clasp nets, and cast nets. Highly esteemed food fish. Marketed fresh, dried, and dried-salted.

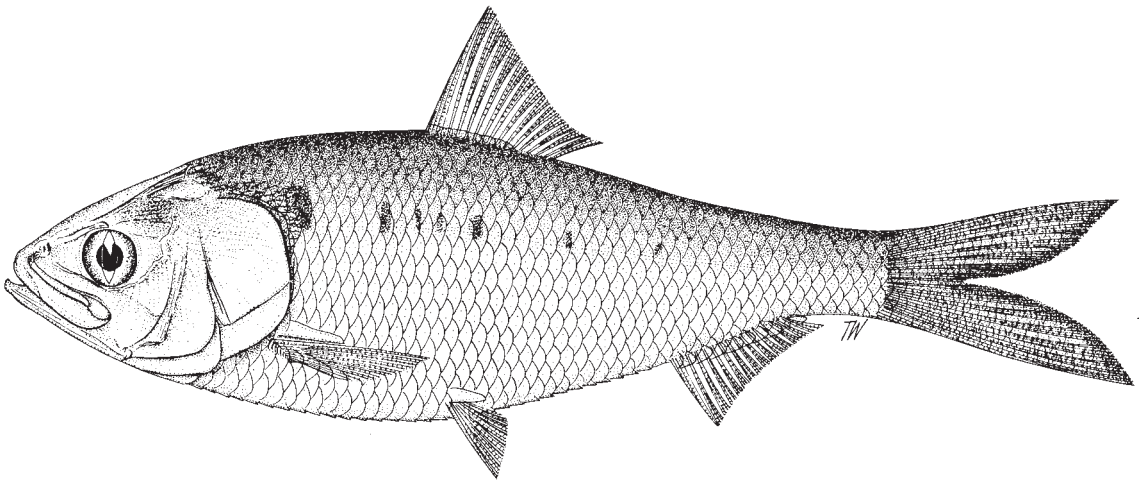
Distribution: Western Pacific from Malaysia and Indonesia (Java Sea and Sarawak, also affluent rivers).



Tenualosa reevesii (Richardson, 1846) REE

Frequent synonyms / misidentifications: ? *Clupea sinensis* Linnaeus, 1758; *Macrura reevesii* (Richardson, 1846); *Hilsa reevesii* (Richardson, 1846) / None.

FAO names: En - Reeve's shad.

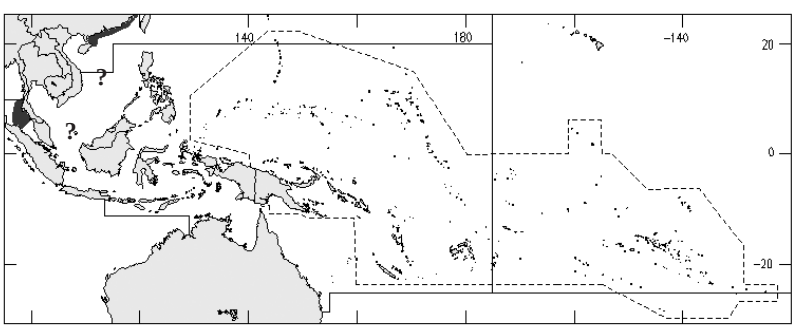


Diagnostic characters: A moderately large herring-like fish; body moderately deep, compressed, **abdomen with 31 or 32 (17 prepelvic and 14 or 15 postpelvic) fairly sharply-keeled scutes; pelvic scute with ascending arms. Head large, length 27 to 33% of standard length; top of head without frontoparietal striae. Mouth terminal; upper jaw with a distinct median notch or cleft. Two supramaxillae present and well developed**. Maxilla reaching posteriorly to a vertical about through mideye region. **No fleshy outgrowths on posterior margin of gill opening. Opercle smooth without bony striae. Gill rakers fine and numerous, 80 to 250 on lower part of arch (increasing with size of fish), each raker with scattered asperities; those on inner arches more or less straight, not curled outward**. Branchiostegal rays 6. Dorsal-fin origin slightly anterior to midpoint of body; **last dorsal-fin ray not elongated**. Anal-fin base fairly short (17 to 20 fin rays), well posterior to vertical through base of posteriormost dorsal-fin ray; **2 posteriormost anal-fin rays not enlarged**. Pelvic-fin insertion at vertical through middle of dorsal fin; pelvic fins with i unbranched and 7 branched soft rays. **Caudal fin moderate, 25 to 31% of standard length**. **Scales moderate, 42 to 45 in lateral series, without perforations posteriorly**. **Colour: a dark blotch behind gill opening and a series of spots along flanks**.

Size: Maximum standard length at least 50 cm.

Habitat, biology, and fisheries: Marine, pelagic, and schooling in coastal waters; euryhaline, anadromous, ascending rivers to breed. More data needed. Catches not reported, but probably of some importance in China.

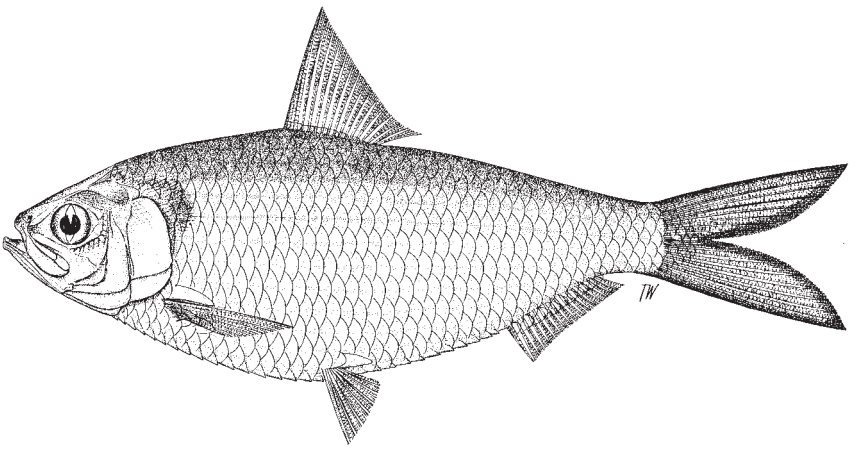
Distribution: Indo-Pacific from Phuket Island, Andaman Sea (2 specimens), to China (to about 30°N) and possibly southward into South China Sea, but records uncertain.



Tenualosa toli (Valenciennes, 1847) TOL

Frequent synonyms / misidentifications: *Alausa ctenolepis* Bleeker, 1852; *Hilsa toli* (Valenciennes, 1847) / *Tenualosa thibaudeaui* (Durand, 1940).

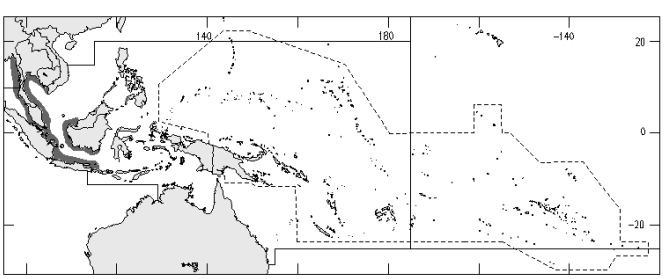
FAO names: En - Toli shad; **Fr** - Alose toli; **Sp** - Sábalo toli.



Diagnostic characters: A moderatey large herring-like fish; body moderately deep, compressed, **abdomen with 28 to 30 (17 or 18 prepelvic and 11 to 13 postpelvic) fairly sharply-keeled scutes; pelvic scute with ascending arms. Head length 25 to 27% of standard length; top of head without frontoparietal striae. Mouth terminal; upper jaw with distinct median notch. Two supramaxillae present and well developed**. Maxilla reaching to a point between verticals through centre and posterior margin of eye. **No fleshy outgrowths on posterior margin of gill opening. Opercle smooth without bony striae. Gill rakers fine but not numerous, 60 to 100 on lower part of arch (barely increasing after 10 cm standard length), those on inner arches more or less straight, not curled outward**. Branchiostegal rays 6. Dorsal-fin origin distinctly anterior to midpoint of body; **last dorsal-fin ray not elongated**. Anal-fin base short (18 to 20 fin rays), situated well posterior to vertical through dorsal-fin base; **2 posteriormost anal-fin rays not enlarged**. Pelvic-fin insertion at vertical through bases of middle dorsal-fin rays; pelvic fins with i unbranched and 7 branched soft rays. **Caudal fin relatively short, 31 to 34% of standard length; deeply-forked but upper and lower lobes not attenuated. Scales moderate, 37 to 42 in lateral series, without perforations posteriorly**. **Colour:** blue-green on back, silvery on flanks; at most, a diffuse dark mark behind gill opening, but **no other spots on flank**.

Size: Maximum standard length 50 cm, commonly between 30 and 40 cm.

Habitat, biology, and fisheries: Marine, pelagic, and schooling in coastal waters, euryhaline and perhaps anadromous, ascending rivers to breed (but in some areas fishery workers claim that it does not). Feeds on plankton, mainly by filter-feeding, but apparently also by grubbing on muddy bottoms; diatoms, protozoans, crustaceans, molluscs, and tunicates are recorded food items, as well as young *Tenualosa*. Breeds mainly in rivers, in some cases far up into the system (over 1 000 km), but elsewhere only to about 50 km or less (younger fishes may breed in tidal zone of rivers). Main breeding season is during southwest monsoon, with a shorter season from January to February or March. Biology presumably similar to that of *T. ilisha*, but the fewer gill rakers suggest that it takes larger food organisms. However, this species is often confused with *T. ilisha*, especially at juvenile stages and therefore is not always distinguished from *T. ilisha* in catches. From 1990 to 1995, FAO's Yearbook of Fishery Statistics reports a range of yearly production of around 2 400 to 4 500 t of *T. toli* from the Western Central Pacific (Indonesia). Mainly caught with traps, fishing weirs, and drifted or fixed gill nets in estuaries and rivers during the upstream spawning migration; fishermen also use seine nets, bag nets, clasp nets, and cast nets. Highly esteemed food fishes. Marketed fresh, dried, dried-salted, boiled, or made into fish balls.



Distribution: Indo-West Pacific from eastern and western coasts (also rivers) of India, Andaman Sea, Indonesia, to Java Sea, Gulf of Thailand, and South China Sea.

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