

Fig. 14. *Ilisha obfuscata* sp. nov., holotype, 74.0 mm SL, Bombay, India, MNHN B. 2879 (the smaller fish of 2 syntypes of *Pellona filigera* Valenciennes, 1847).

SL, northeastern Arabian Sea, Porto Novo, Waltair, Madras and Vizhingam, southeastern India; all BMNH.

Diagnosis. Swimbladder with symmetrical paired post-coelomic prolongations on either side of anal pterygiophores; vertical striae on scales discontinuous, leaving a wide gap at centre. Resembling the sympatric *Ilisha kampeni* in these characters, but body deeper (depth $32 \sim 39\%$ SL; cf. $24 \sim 32\%$), eyes larger $(9.2 \sim 11.1\%$ SL; cf. $7.9 \sim 9.3\%$), pectoral fins longer $(18.0 \sim 20.4\%$ SL; cf. $15.0 \sim 16.9\%$), fewer predorsal scales $(13 \sim 15$; cf. $15 \sim 18$) and more but quite short pyloric caeca (about 38; cf. $15 \sim 19$).

Specimens were first noticed mixed with specimens of *I. melastoma* (Schneider, 1801), being distinguished initially by a faint dark band along the flanks; in *I. melastoma*, however, the vertical striae are overlapping or continuous across the scale and there are more pyloric caeca (about 51).

Known from the northern part of Arabian Sea and eastern coasts of India, but perhaps more widespread and mistaken for *I. kampeni* or the widespread *I. melastoma* (Malabar coast to Java Sea and Taiwan).

14. *Ilisha obfuscata* sp. nov. (Fig. 14)

Holotype. 74.0 mm SL, Bombay, coll. Dussumier, MNHN B. 2879 (smaller of 2 syntypes of *Pellona filigera* Valenciennes, 1847, the larger being designated lectotype by White-

head, 1967: 117).

Paratype. 1 fish, 68.0 mm SL, Pondicherry, coll. Bélanger (paralectotype of *Pellona micropus* Valenciennes, 1847, the slightly larger of the two syntypes being designated lectotype by Whitehead, 1967: 115), MNHN 3712.

Diagnosis. Swimbladder with symmetrical paired post-coelomic prolongations on either side of anal pterygiophores; vertical striae on scales overlapping at centre. Resembling *I. melastoma* more or less in these features, but with more gillrakers ($12 \sim 13 + 27 \sim 28$; cf. usually $10 \sim 12 + 22 \sim 25$) and the swimbladder prolongations apparently shorter (to above anal finrays $8 \sim 9$ in the types; cf. to above finrays $15 \sim 23$ in fish of $60 \sim 80$ mm SL, or further in larger specimens), and no dark band along the flanks.

Known from the eastern and western coasts of India, but surely misidentified in the past as *I. melastoma* and thus more abundant than the present material suggests.

Engraulidae

Stolephorus oligobranchus sp. nov. (Fig. 15)

Holotype. 57.0 mm SL, Rosario, Cavite, Manila Bay, Philippines, coll. I. A. Ronquillo, BMNH 1979.12.5.3.

Paratypes. 2 fish, $53.1 \sim 62.0 \text{ mm}$ SL, as above, BMNH 1979.12.5.4 ~ 5 .

Diagnosis. Maxilla short and blunt at tip, reaching only to anterior border of preoper-

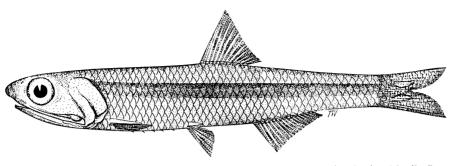


Fig. 15. Stolephorus oligobranchus sp. nov., holotype, 57.0 mm SL, Rosario, Cavite, Manila Bay, Philippines, BMNH 1979.12.5.3.

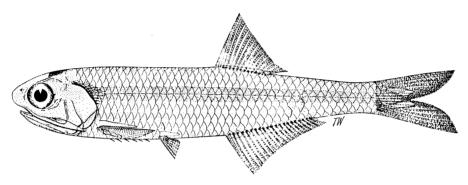


Fig. 16. Stolephorus tysoni sp. nov., holotype, 46.8 mm SL, east side of Daru Wharf, Gulf of Papua, BMNH 1979.3.21.453.

culum, the part posterior to the 2nd supramaxilla distinctly deeper than long; isthmus not wholly covering urohyal, the latter exposed in front and expanded as a small bony plate; 2 branchiostegal rays attached to posterior ceratohyal; gillrakers $13 \sim 14 + 17 \sim 18$; prepelvic scutes 5; unbranched dorsal and anal finrays iii; snout and tip of lower jaw with dense speckling of dark dots.

Most closely resembles the widespread S. devisi Whitley, 1940, but without enlarged teeth on maxilla, pelvics reaching to below 7th dorsal ray (cf. to 2nd ~ 5th dorsal ray) and fewer gill-rakers (cf. $19 \sim 21 + 21 \sim 26$); in fact, no other species of Stolephorus has so few gillrakers ($14 \sim 27 + 18 \sim 35$ in all others).

This is *Stolephorus* Species B of Ronquillo (1970). Apparently it is extremely rare and "was obtained only in Manila Bay after 20 months (341st sample)" according to Tiews et al. (1971). Ronquillo (1970) added Taiwan to its range, possibly based on *S. zollingeri* of Fowler (1941), but for the moment it seems

safer to give its occurrence as Philippines only; S. zollingeri of authors may refer to Engraulis japonicus.

16. *Stolephorus tysoni* sp. nov. (Fig. 16)

Holotype. 46.8 mm SL, east side of Daru Wharf, Gulf of Papua, coll. T. Roberts, BMNH 1979.3.21.453.

Paratypes. 8 fish, $43.8 \sim 48.0$ mm SL, west side of Daru Wharf, Gulf of Papua, coll. T. Roberts, BMNH 1979.3.21.454 ~ 501 ; 4 fish, $39.0 \sim 47.4$ mm SL, same as holotype, BMNH 1979.3.21.502 ~ 505 ; 1 fish, 45.2 mm SL, as holotype, USNM (uncatalogued); 9 fish, $26.1 \sim 46.2$ mm SL, west side of Daru Wharf, etc., USNM (uncatalogued).

Diagnosis. Maxilla pointed, reaching to posterior border of suboperculum; isthmus entirely covered by sternohyoideus muscle, urohyal not exposed; hind border of preoperculum with an indentation beneath maxilla; 3 branchiostegal rays attached to posterior cerato-

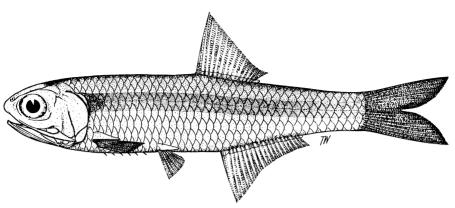


Fig. 17. Stolephorus ronquilloi sp. nov., holotype, 48.7 mm SL, Manila Bay, Philippines, BMNH 1969.5. 30.88.

hyal; minute teeth present on dorsal hypohyal and upper edge of anterior ceratohyal; and $4 \sim 5$ gillrakers on posterior face of 3rd epibranchial.

Resembles the partially sympatric *S. and-hraensis* Babu Rao, 1966 of the Gulf of Papua, Singapore and east coast of India in most of these features, but the latter has only 2 branchiostegal rays attached to the posterior ceratohyal, no teeth on hyoid arch anal rays $19 \sim 23$, usually $20 \sim 21$ (cf. $21 \sim 24$ in *S. tysoni*), gillrakers $14 \sim 15 + +20 \sim 21$ (cf. $15 \sim 18 + 21 \sim 25$), and 1st and 3rd infraorbitals with short posterior extensions (longer in *S. tysoni*).

Resembles the widespread *S. insularis* Hardenberg, 1933 in having $6 \sim 7$ prepelvic scutes, teeth on the hyoid arch, but that species has 2 branchiostegal rays on the ceratohyal, the anal fin origin further back (usually below $8 \text{th} \sim 9 \text{th}$ dorsal finrays; cf. usually below $4 \text{th} \sim 6 \text{th}$ in *S. tysoni*) and also a double pigment line along back behind dorsal fin.

Known from the Gulf of Papua; specimens from Moreton Bay, west of Mudlark I., Australia (MNHN 1981-91) have been examined by Dr. P. J. P. Whitehead (in litt.).

Named for Dr. Tyson Roberts, who not only collected the types, but kindly made available many other of his New Guinea clupeoid specimens and generously shared his collection data. Because of the homonym *Stolephorus robertsi* Jordan et Rutter, 1897 (=*Cetengraulus edentulus* of the western Atlantic), I have latinized Dr. Roberts' first name.

17. **Stolephorus ronquilloi** sp. nov. (Fig. 17)

Holotype. 48.7 mm SL, Manila Bay, Philippines, coll. I. A. Ronquillo, BMNH 1969.5.30.88.

Paratypes. 14 fish, 43.0 ~ 54.0 mm SL, Manila Bay, coll. L. Mañalac, BMNH 1960.4.7. 103 ~ 115; 8 fish, 33.0 ~ 47.5 mm SL, Cavite, Luzon, Philippines, coll. T. Abe, BMNH 1966.1. 17.126 ~ 133; 9 fish, 47.0 ~ 50.0 mm SL, Mindanao, Philippines, coll. I. A. Ronquillo, BMNH 1969.4.22.1620 ~ 1624; 21 fish, 45.0 ~ 48.5 mm SL, Manila Bay, coll. I. A. Ronquillo, BMNH 1969.5.30.79 ~ 87.

Other specimens: 59 fish, $35.0 \sim 53.0$ mm SL, all Philippines; all BMNH.

Diagnosis. Maxilla pointed, reaching to posterior border of suboperculum; isthmus entirely covered by sternohyoideus muscle, urohyal not exposed; hind border of preoperculum with an indentation beneath maxilla; 2 branchiostegal rays on the ceratohyal; usually $5 \sim 7$ prepelvic scutes; and a double pigment line along back behind dorsal fin.

Resembles the widespread *S. insularis* Hardenberg, 1933 in these features, but lacks teeth on upper edge of ceratohyal, has more gillrakers (usually $20 \sim 21 + 28 \sim 30$; cf. $16 \sim 20 + 22 \sim 28$), no predorsal spine, pelvic tips about half an eye diameter from vertical from dorsal fin origin (cf. about one quarter in *S. insularis*), posterior margin of 1st infraorbital falling well short of that of 3rd infraorbital (cf. in same vertical) and the isthmus spotted with a few or many dark dots.

Recorded only from the Philippines.

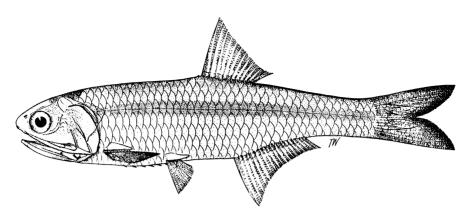


Fig. 18. Stolephorus dubiosus sp. nov., holotype, 69.0 mm SL, Songkhla Lake, Thailand, BMNH 1969.4. 22.1826.

Named for Mr. I. A. Ronquillo, whose extensive collections of *Stolephorus* (including the holotype and most of the paratypes of *S. ronquilloi*) were donated to the British Museum (Natural History) and whose own studies of this genus broke the ground for me. This is *Stolephorus* Species C of Ronquillo (1970).

18. *Stolephorus dubiosus* sp. nov. (Fig. 18)

Holotype. 69.0 mm SL, Songkhla Lake, Thailand, coll. I. A. Ronquillo, BMNH 1969.4. 22.1826.

Paratypes. 2 fish. 50.0 ~ 59.0 mm SL. Paknam, Thailand, coll. R. M. De Schauensee, ANSP $61760 \sim 61761$; 12 fish, $44.0 \sim 65.0$ mm SL, Bangkok, Thailand, coll. R. M. De Schauensee, ANSP $60565 \sim 60577$; 1 fish, 69.0 mm SL, Orissa, India, coll. F. Day, BMNH 1889.2.1.1840; 5 fish, 42.0 ~ 52.5 mm SL, Chilka Lake, Orissa, India, coll. M. Babu Rao, BMNH 1969.4.22. $1805 \sim 1809$: 3 fish. $60.0 \sim$ 70.0 mm SL, Songkhla Lake, Thailand, coll. I. A. Ronquillo, BMNH 1969.4.22.1823 ~ 1825; 58.0 ~ 66.0 mm SL, Samutsakorn, 6 fish, Thailand, coll. T. Tweesit, BMNH 1977.11.30. $71 \sim 76$.

Other specimens: 77 fish, 42.0~75.0 mm SL, east coast of India, including Godavari estuary; Songkhla Lake, Nakornsrithammaraj and Surajthani, Gulf of Thailand; Aluhaluh on Barito River, Kalimantan; all BMNH.

Diagnosis. Maxilla pointed, reaching to posterior border of suboperculum; isthmus

entirely covered by sternohyoideus muscle, urohyal not exposed; gillrakers $19 \sim 24 + 25 \sim 31$, with about $5 \sim 7$ short gillrakers on posterior face of 3rd epibranchial; pyloric caeca $7 \sim 12$; spine present at dorsal origin and on pelvic scute; scale striae reticulated; a double pigment line along back behind dorsal fin.

Resembles both the sympatric *S. baganensis* Hardenberg, 1931 and *S. tri* (Bleeker, 1852) in having a predorsal spine and also a spine on the pelvic scute, reticulated scale striae, 2 branchiostegal rays on ceratohyal, which has minute teeth on upper edge, and the hind end of the 1st infraorbital produced and about opposite that of the 3rd infraorbital. However, both species have fewer grillrakers ($16 \sim 19 + 20 \sim 24$ and $15 \sim 17 + 19 \sim 22$, respectively), but more pyloric caeca ($11 \sim 13$ in *S. baganensis* and $15 \sim 16$ in *S. tri*).

Hardenberg (1933) gave counts of $19 \sim 20$ lower gillrakers for his *S. baganensis macrops* and $22 \sim 23$ for his *S. baganensis baganensis*, but $20 \sim 29$ for the species as a whole. Dutt and Babu Rao (1959) supplied the higher counts ($22 \sim 28$, mean 26) for their *S. baganensis*, but added a third subspecies, *S. baganensis bengalensis* with a low count (mean 23). Having examined more than fifty specimens of *S. baganensis*, I restrict it to fish with only $20 \sim 24$ lower gillrakers (cf. $25 \sim 31$ in *S. dubiosus*) and $11 \sim 13$ pyloric caeca (cf. $7 \sim 12$).

Known from the Bay of Bengal, southern Kalimantan (Barito River) and Gulf of Thailand, in brackish water or estuaries.

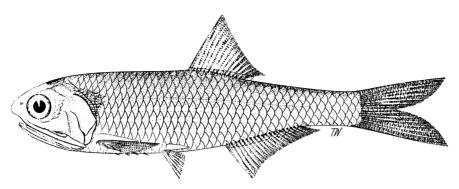


Fig. 19. Stolephorus brachycephalus sp. nov., holotype, 42.0 mm SL, east side of Daru Wharf, Gulf of Pupua, BMNH 1979,3,21,447.

19. **Stolephorus brachycephalus** sp. nov. (Fig. 19)

Holotype. 42.0 mm SL, east side of Daru Wharf, Gulf of Papua, coll. T. Roberts, BMNH 1979.3.21.447.

Paratypes. 5 fish, $27.0 \sim 37.0 \text{ mm}$ SL, as above, BMNH. 1979.3.21.448 ~ 452 ; 8 fish, $27.2 \sim 29.4 \text{ mm}$ SL, as above, USNM (uncatalogued).

Other specimens: 1 fish, 37.0 mm SL, as above, BMNH. 1979.8.16.828.

Diagnosis. Maxilla pointed; reaching beyond posterior border of suboperculum; isthmus entirely covered by sternohyoideus muscle, urohyal not exposed; small patch of teeth on palatines and pterygoids, 3 branchiostegal rays on ceratohyal, hind border of preoperculum evenly rounded, without an indentation beneath maxilla; anterior part of swimbladder a thread-like tube; pelvic fin tip reaching level of 1st ~ 3rd dorsal finrays.

Resembling the widespread *S. commersonii* Lacepède, 1803 in these features, but branchiostegal rays $10 \sim 11$ (cf. $12 \sim 13$ in *S. commersonii*), minute teeth absent from dorsal hypohyal and upper edge of anterior ceratohayl, 1st and 3rd infraorbitals with longer posterior extensions, pectoral finrays usually $12 \sim 13$ (cf. $13 \sim 15$), anal finrays usually $23 \sim 24$ (cf. $21 \sim 23$), prepelvic scutes $4 \sim 5$ (cf. $0 \sim 5$, but usually $2 \sim 3$) and no dusky band on midline of back before dorsal fin.

Having examined more than two hundred specimens of *S. commersonii*, of all sizes and ranging from East Africa across to Fiji and the Caroline Islands. I believe that the differences

found here are significant in spite of the small size of the specimens.

Known only from Gulf of Papua.

20. Thryssa (Scutengraulis) kammalensoides sp. nov. (Fig. 20)

Holotype. 112.0 mm SL, Godavari estuary, eastern coast of India, coll. S. Dutt, BMNH 1965.7.12.248.

Paratype. 1 fish, 108.0 mm SL, as above, BMNH 1965.7.12.247.

Diagnosis. Maxilla just reaching to posterior border of suboperculum, 1st supramaxilla absent; mouth inferior, symphysis of lower jaw scarcely above lower border of eye when mouth closed, the tip of the snout level with or just above eye centre; jaw teeth small; gill-rakers $18+24\sim25$, their serrae not clumped; pelvic tips falling short of vertical from dorsal fin origin by $1/2\sim3/4$ eye diameter; anal finrays $34\sim35$; $36\sim37$ lateral scales, scale striae vertically continouus at centre; a dark saddle-like blotch on nape.

Resembles Thryssa (Scutengraulis) aestuaria (Ogilby, 1911) of Queensland and Gulf of Papua, T. (S.) kammalensis (Bleeker, 1849) of Southeast Asia and the widespread T. (S.) dussumieri (Valenciennes, 1848) in the dark nuchal blotch, but these have either more gillrakers $(22 \sim 25 + 27 \sim 29; 22 \sim 27 + 26 \sim 32, \text{respectively})$ or fewer (usually $13 \sim 16 + 17 \sim 19$ in T. (S.) dussumieri; cf. $18 + 24 \sim 25$ in T. (S.) kammalensoides); it should be noted that the blotch in T. (S.) dussumieri is more in the nature of an oblique humeral spot. The first two species have a

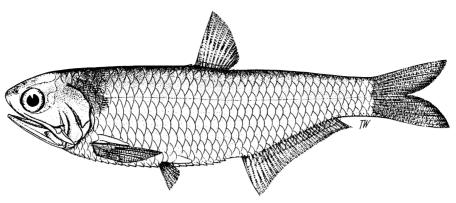


Fig. 20. Thryssa (Scutengraulis) kammalensoides sp. nov., holotype, 112.0 mm SL, Godavari esturay, eastern coast of India, BMNH 1965.7.12.248.

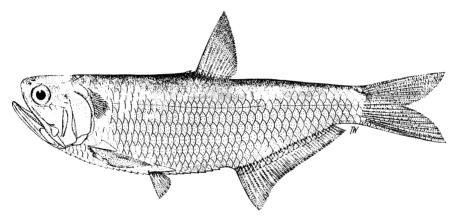


Fig. 21. Thryssa (Scutengraulis) polybranchialis sp. nov., a paratype, 121.0 mm SL, India, BMNH 1967.3. 4.57.

relatively large 1st supramaxilla, however (at least half length of 2nd supramaxilla).

From T. (S.) polybranchialis sp. nov. (see below), which has a gillraker count of $18 \sim 21 + 25 \sim 27$, it differs in a lower anal finray count $(34 \sim 35$; cf. $38 \sim 42$), fewer lateral scale rows $(36 \sim 37)$; cf. $41 \sim 44$, pattern of scale striae (just interrupted at centre of scale in T. (S.) polybranchialis) and shape of snout, mouth and head (see description below).

Known only from the Godavari estuary, eastern coast of India.

21. Thryssa (Scutengraulis) polybranchialis sp. nov. (Fig. 21)

Holotype. 170.0 mm SL, Bombay, coll. F. Day, BMNH 1889.2.1.1757.

Paratypes. 1 fish, 113.0 mm SL, as above, BMNH 1889.2.1.1758; 2 fish, 136.0 ~ 140.0 mm SL, Canara, India, coll. F. Day, BMNH 1889.2.1. 1760; 1 fish, 121.0 mm SL, India, coll. M. Babu Rao BMNH 1967.3.4.57; 1 fish, 149.0 mm SL, Porto Novo, South India, coll. A. Sivakumar, BMNH 1979.8.15.25.

Other specimens: 4 fish, 47.0~78.0 mm SL, Porto Novo and Waltair, eastern coast of India, and Cochin, western coast of India; all BMNH.

Diagnosis. Maxilla $21.1 \sim 23.1\%$ SL, its tip reaching to or scarcely behind posterior border of interoperculum, 1st supramaxilla very small or absent; mouth oblique and subterminal, symphysis of lower jaw slightly produced beyond tip of snout and more or less above lower border of eye when mouth closed, snout tip well

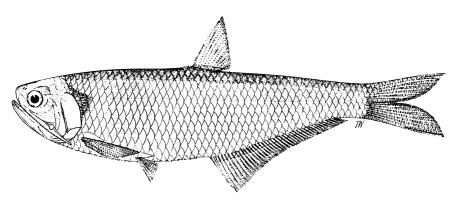


Fig. 22. Thryssa (Scutengraulis) whiteheadi sp. nov., holotype, 111.5 mm SL, Basra, Arabian Gulf, BMNH 1920.3.3.192.

above eye centre; a distinct hump at nape; jaw teeth small; gillrakers $18 \sim 21 + 25 \sim 27$, their serrae not clumped; pelvic tips falling short of vertical from dorsal fin origin by about 3/4 eye diameter; anal finrays $38 \sim 42$; scale striae with a slight gap at centre; no saddle-like blotch on nape.

Resembles T. (S.) kammalensoides in gillraker count (18+24~25 in the latter species), but more anal finrays (cf. 34~35), more lateral scale rows (see above), and mouth, snout and head shape different; also, no nuchal blotch. Its high gillraker count clearly separates it from the superficially similar T. (S.) malabarica (Bloch, 1795) and T. (S.) hamiltonii Gray, 1835 (14~16+17~19 and T10+11~15, respectively), while T. (S.) kammalensis (Bleeker, 1849) has a somewhat similar count (22~27+26~32), but the pelvic tips in that species reach to beyond a vertical from the dorsal fin origin, the 1st supramaxilla is relatively large and there is a nuchal blotch.

Recorded from the eastern and western coasts of India.

22. Thryssa (Scutengraulis) whiteheadi sp. nov. (Fig. 22)

Holotype. 111.5 mm SL, Basra, Arabian Gulf, coll. C. Christy, BMNH 1920.3.3.192.

Paratypes. 19 fish, $59.0 \sim 143.0$ mm SL, as above, BMNH 1920.3.3.183 ~ 191 ; 2 fish, $99.0 \sim 160.0$ mm SL, Bushire, Persiske, Haubugt, Arabian Gulf, coll. H. Blegvad. UZMK CN. $3 \sim 4$.

Diagnosis. Maxilla fairly short $(19.2 \sim 21.3 \%)$

SL), only slightly projecting beyond gill cover, 1st supramaxilla absent; mouth oblique and subterminal, symphysis of lower jaw slightly produced beyond tip of snout and more or less above lower border of eye when mouth closed, snout tip well above eye centre; jaw teeth distinctly enlarged; gillrakers usually $13 \sim 15 + 18 \sim 20$, their serrae not clumped; branchiostegal rays $11 \sim 12$; pelvic fin tips ending well before vertical from dorsal fin origin; anal finrays $42 \sim 46$; vertical scale striae interrupted but overlapping at centre of scale; humeral spot indistinct and no prominent dark markings along midline of back.

Resembles T. (S.) spinidens (Jordan et Seale, 1925) of the Bay of Bengal and T. (S.) dayi sp. nov. of west coast of India and Pakistan (see below) in its enlarged teeth, but has a higher gillraker count (cf. $9 \sim 11 + 13 \sim 15$ and $11 \sim 13 +$ $14 \sim 18$, respectively, against $12 \sim 15 + 18 \sim 21$ in T. (S.) whiteheadi), also no 1st supramaxilla. The widespread Thryssa (S.) vitrirostris (Gilchrist et Thompson, 1908), which also occurs in the Arabian Gulf, has a minute 1st supramaxilla and differs also in having the gillraker serrae distinctly clumped in larger fishes, the maxilla reaching or almost reaching the pectoral fin base and usually more gillrakers (14~17+20~ 23 in most specimens) and fewer anal finrays (usually $35 \sim 41$).

Known so far only from the Arabian Gulf.

Named for Dr. P. J. P. Whitehead, whose review of the clupeoids of the Red Sea and adjacent regions (Whitehead, 1965) was a major step in understanding the species of this region.

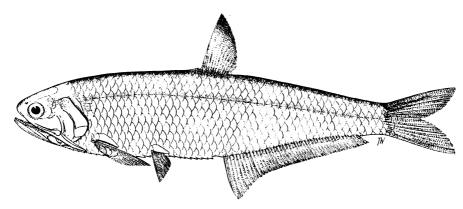


Fig. 23. Thryssa (Scutengraulis) stenosoma sp. nov., holotype, 128.0 mm SL, Godavari estuary, eastern coast of India, BMNH 1965.7.12.231.

23. Thryssa (Scutengraulis) stenosoma sp. nov. (Fig. 23)

Holotype. 128.0 mm SL, Godavari estuary, eastern coast of India, coll. S. Dutt, BMNH 1965.7.12.231.

Paratypes. 5 fish, $121.0 \sim 148.0 \text{ mm}$ SL, as above, BMNH 1965.7.12.226 ~ 230 ; 1 fish, 148.0 mm SL, India, coll. M. Babu Rao, BMNH 1967.3.4.56; 2 fish, $71.0 \sim 74.0 \text{ mm}$ SL, Bangladesh, coll. M. A. Quddus, BMNH 1978.8.18.162 ~ 163 .

Diagnosis. Maxilla long $(20.4 \sim 24.5\% \text{ SL})$, reaching to just behind pectoral fin base, or nearly so in small fishes, 1st supramaxilla minute; symphysis of lower jaw slightly produced beyond tip of snout, the latter above level of eye centre; gillrakers usually $13 \sim 15 + 17 \sim 19$, their serrae not clumped; branchiostegal rays $12 \sim 15$; anal finrays $43 \sim 48$; vertical striae on scales interrupted at centre; no humeral spot, but a pair of pigmented lines on back from head to caudal.

Resembles the sympatric T. (S.) purava (Hamilton-Buchanan, 1822), but is more slender (depth $23.4 \sim 26.3\%$ SL; cf. $24.6 \sim 29.5\%$), has a shorter head ($19.5 \sim 21.0\%$ SL; cf. $21.2 \sim 24.7\%$), and a longer maxilla (cf. reaching to only $1/3 \sim 1/2$ distance between gill cover and pectoral fin base in T. (S.) purava). Belonging to this group is T. (S.) dayi sp. nov. (see below), which has a longer maxilla ($23 \sim 27\%$ SL), reaching to or beyond pectoral fin base, fewer gillrakers ($10 \sim 13 + 14 \sim 18$) and sometimes a short pectoral filament.

Recorded from the Godavari and Ganges estuaries. Specimens have surely been misidentified as T. (S.) purava in the past.

24. *Thryssa* (*Scutengraulis*) *dayi* sp. nov. (Fig. 24)

Holotype. 208.0 mm SL, Bombay, coll. F. Day, BMNH 1889.2.1.1803.

Paratypes. 1 fish, 145.0 mm SL, near Karachi, Pakistan, coll. unknown, BMNH 1860.3.19.820; 1 fish, 215.0 mm SL, Sind, Pakistan, coll. F. Day, BMNH 1889.2.1.1802; 2 fish, $128.0 \sim 145.0$ mm SL, Bombay, coll. S. Dutt, BMNH 1965.7. $12.249 \sim 250$; 5 fish, $138.0 \sim 152.0$ mm SL, Ernakulam, South India, coll. S. Dutt, BMNH 1965.7.12. $251 \sim 255$.

Other specimens: I fish, 66.0 mm SL, Bombay, coll. F. Day, BMNH 1889.2.1.1794; I fish, 80.5 mm SL, Bombay, coll. I. A. Ronquillo, BMNH 1969.8.19.9.

Diagnosis. Maxilla long $(23.0 \sim 27.0\% \text{ SL})$, reaching to pectoral fin base, 1st supramaxilla minute; symphysis of lower jaw slightly produced beyond tip of snout, the latter above level of eye centre; jaw teeth enlarged, especially in lower jaw; gillrakers $10 \sim 13 + 14 \sim 18$, their serrae enlarged, but not clumped; branchiostegal rays $12 \sim 14$; pectoral fins reaching to pelvic fin base, upper ray sometimes a short filament; anal finrays $44 \sim 49$; vertical scale striae interrupted at centre; humeral spot indistinct, a pair of dark lines down back, from occiput to caudal fin base.

Distinguished from all other species of *Thryssa* by the presence of a pectoral filament, at least

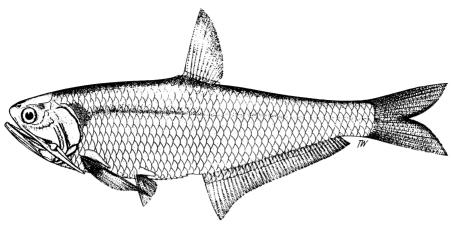


Fig. 24. *Thryssa* (*Scutengraulis*) *dayi* sp. nov., a paratype, 128.0 mm SL, Bombay, India, BMNH 1965.7. 12.249 ~ 250.

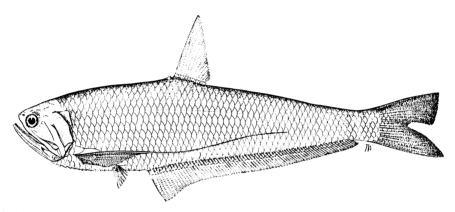


Fig. 25. Setipinna wheeleri sp. nov., a paratype, 185.0 mm SL, Rangoon, Burma, BMNH 1889.2.1.1788 ~ 1789.

in some specimens. Closely resembles T. (S.) purava (Hamilton-Buchanan, 1822) and replaces it in the Arabian Sea, but the latter has a shorter maxilla (reaching to only $1/3 \sim 1/2$ distance between gill cover and pectoral fin base) and more gillrakers $(14 \sim 16 + 18 \sim 19$; cf. $10 \sim 13 + 14 \sim 18$) with smaller serrae. The distinction from T. (S.) stenosoma is given under that species.

Known from Karachi southward to Ernakulam on the southwest coast of India.

Named for Francis Day, the greatest of all ichthyologists to study Indian fishes, among whose collection were two of the types described here, as well as a young specimen.

25. **Setipinna wheeleri** sp. nov. (Fig. 25)

Holotype. 116.5 mm SL, Sittang River, Burma,

coll. E. W. Oates, BMNH 1891.11.30,390.

Paratypes. 2 fish, 119.5 ~ 185.0 mm SL, Rangoon, Burma, coll. F. Day, BMNH 1889.2.1. 1788 ~ 1789.

Diagnosis. Maxilla tip pointed, 2nd supramaxilla narrow and tapering anteriorly; gill-rakers $16 \sim 18 + 21 \sim 22$, upper edges wavy, the serrae distinctly clumped, even in small fish; pectoral filament very long, reaching to base of $45 \text{th} \sim 51 \text{st}$ anal finrays, 2nd pectoral finray reaching to anal fin origin; anal finrays 69 and $73 \sim 74$; upper lobe of caudal fin truncate; scales with very few anterior striae.

Resembles both *S. phasa* (Hamilton-Buchanan, 1822) of Calcutta, Orissa and Chacar of Bay of Bengal and *S. brevifilis* (Valenciennes, 1848) of Calcutta, Allahabad and Delhi, but has more gillrakers $(16 \sim 18 + 21 \sim 22$; cf. usually $15 \sim 16$

 $+18 \sim 19$ and $14 \sim 15 + 17$, respectively), a longer pectoral filament (at most to anal finrays 39 or 15 in *S. phasa* and *S. brevifilis*) and rather few anterior striae on the scales. Although these differences are fairly small, separation of this riverine form at species level reflects recognition of other Burmese riverine endemics, e.g. *Gudusia variegata*, *Gonialosa whiteheadi* sp. nov. and *Gonialosa modesta*.

Recorded from the Sittang River and Rangoon, Burma. Previous records of *S. phasa* (or its synonym *S. telara*) and *S. brevifilis* from Burmese freshwaters most likely refer to *S. wheeleri*.

Named for Mr. A. C. Wheeler of the Fish Section (Marine), British Museum (Natural History), whose kind help during my time there was much appreciated.

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Literature cited

Anon. 1980. Nam Pong environmental management research project: water weeds and studies on fish production and productivity. Document 12, Interim Committee for Coordination of Investi-

- gations of Lower Mekong Basin, Bangkok, pp. $1 \sim 68$, figs. $1 \sim 6$.
- Banasopit, T. and T. Wongratana. 1967. A check list of fishes in the reference collection maintained at the marine fisheries laboratory. Contr. Mar. Fish. Lab., Bangkok, (7): 1~73.
- Blegvad, H. and B. Løppenthin. 1944. Fishes of the Iranian Gulf. Danish Scientific Investigations in Iran, pt. 3. 247 pp., 135 figs., 2 pls.
- Chan, W. L. 1965. A systematic revision of the Indo-Pacific clupeid fishes of the genus *Sardinella* (family Clupeidae). Japan. J. Ichthyol., 12 (3 ~ 6): 104~118 and 13 (1~3): 1~39, figs. 1~26.
- Dutt, S. and M. Babu Rao. 1959. Occurrence of *Anchoviella baganensis* Hardenberg off east coast of India. Curr. Sci., 28: 160~161.
- Fischer, W. and P. J. P. Whitehead (eds.). 1974. FAO species identification sheets for fishery purposes, eastern Indian Ocean (Fishing area 57) and western central Pacific (Fishing area 71), 1, FAO, Rome. unpaged, unnumbered figs.
- Fowler, H. W. 1941. Contributions to the biology of the Philippine Archipelago and adjacent regions. Bull. U.S. Nat. Mus., 13 (100): 1~879, figs. 1~30.
- Fowler, H. W. 1956. Fishes of the Red Sea and southern Arabia, 1. Weizmann Scientific Press, Jerusalem, 240 pp.
- Hardenberg, J. D. F. 1933. New *Stolephorus* species of the Indo-Australian seas. Natuurk. Tijdschr. Ned.-Indië, 93 (2): 230~256.
- Losse, G. F. 1968. The elopoid and clupeoid fishes of East African coastal waters. Jl. E. Afr. Nat. Hist. Soc. Nat. Mus., 27 (2): 77~115, pls. 1~4.
- Matsubara, K. and T. Iwai. 1959. Biological results of the Japanese Antarctic Research Expedition, 9, fishes. Spec. Publ. Seto Mar. Biol. Lab.: 1~8.
- Nelson, G. S. and M. N. Rothman. 1973. The species of gizzard shads (Dorosomatinae) with particular reference to the Indo-Pacific region. Bull. Am. Mus. Nat. Hist., 150 (2): 131 ~ 206, figs. 1~13.
- Regan, C. T. 1914. Report on the freshwater fishes collected by the British Ornithologists' Union Expedition in Dutch New Guinea. Trans. Zool. Soc. Lond., 20 (6): 275~286.
- Roberts, T. 1978. An ichthyological survey of the Fly River in Papua New Guinea with descriptions of new species. Smithson. Contr. Zool., (281): 1 ~ 72, figs. 1 ~ 39.
- Ronquillo, I. A. 1970. A review of the genus *Stolephorus*, with a key to species. FAO, Rome (duplicated typescript), pp. $1 \sim 31$.
- Smith, J. L. B. 1961. The sea fishes of southern Africa. Central News Agency, South Africa, 580 pp., 107 pls., 1219 figs.

- Taki, Y. 1974. Fishes of the Lao Mekong basin.
 U.S. Agency for International Development,
 Mission to Laos, Agriculture Division, 232 pp.,
 191 figs.
- Tiews, K., I. A. Ronquillo and L. M. Santos. 1971. On the biology of anchovies (*Stolephorus* Lacepède) in Philippine waters. Philipp. J. Fish., $9 (1 \sim 2)$: $92 \sim 123$, figs. $1 \sim 5$.
- Whitehead, P. J. P. 1963. A revision of the recent round herrings (Pisces: Dussumieriidae). Bull. Br. Mus. Nat. Hist. (Zool.), 10 (6): 305 ~ 380, figs. 1 ~ 33.
- Whitehead, P. J. P. 1965. A review of the elopoid and clupeoid fishes of the Red Sea and adjacent regions. Bull. Br. Mus. Nat. Hist. (Zool.), 12 (7): 225~281, figs. 1~4.
- Whitehead, P. J. P. 1966. The elopoid and clupeoid fishes in Richardson's "Ichthyology of the seas of China and Japan" 1846. Bull. Br. Mus. Nat. Hist. (Zool.), 14 (2): 15 ~ 54, pls. 1 ~ 7.
- Whitehead, P. J. P. 1967. The clupeoid fishes described by Lacepède, Cuvier & Valenciennes. Bull. Br. Mus. Nat. Hist. (Zool.), Suppl. 2: 1~180, pls. 1~11.
- Whitehead, P. J. P. 1973. A synopsis of the clupeoid fishes of India. J. Mar. Biol. Assn. India, 14 (1):

- $160 \sim 256$, figs. $1 \sim 68$.
- Whitehead, P. J. P., M. Boeseman and A. C. Wheeler. 1966. The types of Bleeker's Indo-Pacific elopoid and clupeoid fishes. Zool. Verhandl. Leiden, 84: 1 ~ 159, pls. 1 ~ 19.

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インド-太平洋産ニシン亜目 24 新種と 1 新学名

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インド-太平洋海域 のニシン亜目魚類 24 新種 (ニシン科 13 種, カタクチイワシ科 11 種) と 1 新学名 種 (ニシン科) を記載するとともに, これまで同種異名 (ジュニアーシノニム) とされたり, 見過ごされてきた 38 種 (ニシン科 20 種, カタクチイワシ科 18 種) をあらためて有効と認めた.

本研究は大英博物館において調査した 15,000 個体, 諸研究機関より借用した 1,000 個体におよぶ標本にも とづき、 1980 年にロンドン大学へ提出した 学位論文 "インド-太平洋産ニシン亜目魚類に 関する 再検 討" の一部である。本研究においてはニシン亜目のほとん ど全ての既設の種名に関し、調査可能な模式標本のう ち少なくとも 1 個体の検査を行った。