

Interest to Fisheries : Principally used as a baitfish, caught in small-mesh (5 mm bar width) surrounding nets (day) or liftnets with a light (night). Nakamura (1970) cited an estimate of 18 620 buckets as an annual sustained yield from Pearl Harbour. The fish are subject to significant mortality through handling (over 20% within a day of capture).

Local Names : HAWAII: Nehu.

Literature : Gosline & Brock (1960) claimed that the life history of the nehu was better known than for any other Hawaiian fish. All previous data were reviewed and expanded by Nakamura (1970). See Leary, Murphy & Miller (1975 - fecundity and maturity), Struhsaker & Uchiyama (1976 - age and growth) and Miller, Watson & Leis (1979 - larvae illustrated, distinguished from those of E. punctifer).

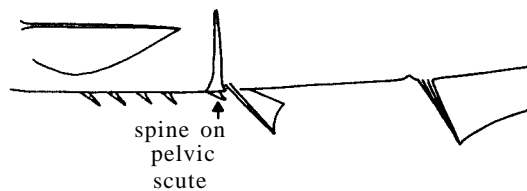
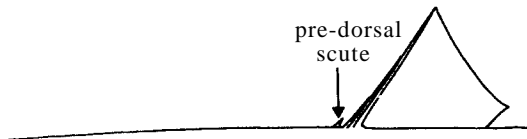
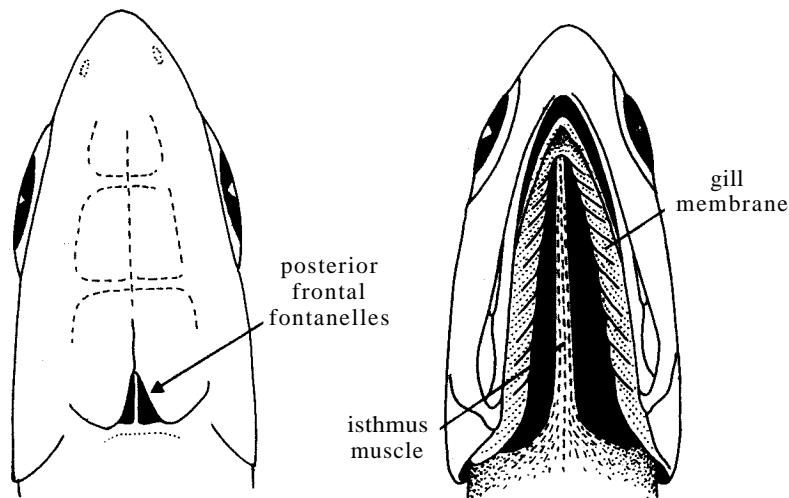
Remarks : Possible hybrids with E. punctifer were suspected by Matsui (1963).

Stolephorus Lacepède, 1803

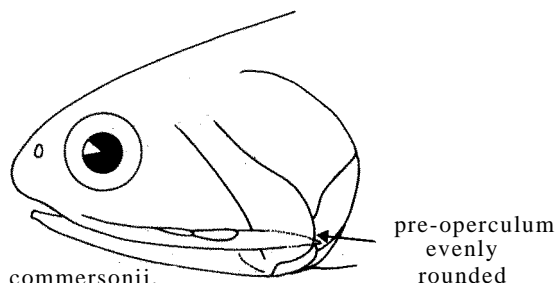
ENGR Stol

Stolephorus Lacepède, 1803, Hist.nat.pois 5:381 (type: Stolephorus commersonii Lacepède, 1803). Amentum Whitley, 1940, Aust.Zool., 9 4):402 (type: Stolephorus commersonii Lacepède). Anchoviella:Fowler, 1941d, Bull.U.S.natn.Mus., 13(100):696 (not Anchoviella Fowler, 1911, which is a New World genus). Jordan & Gilbert (18832.72) designated Atherina japonica Houttuyn, 1782 as type of Stolephorus, but this was overruled in favour of S. commersonii by Opinion 93 of the International Commission in 1926. However, this was sometimes ignored and/or Houttuyn's japonicus identified as a species of Engraulis (correct) or Spratelloides (incorrect), hence Whitley's proposal of Amentum and Fowler's use of Anchoviella. The problem was resolved by Whitehead (1963b) and Opinion 749 of 1965 by making Atherina japonica a nomen dubium and suppressing it.

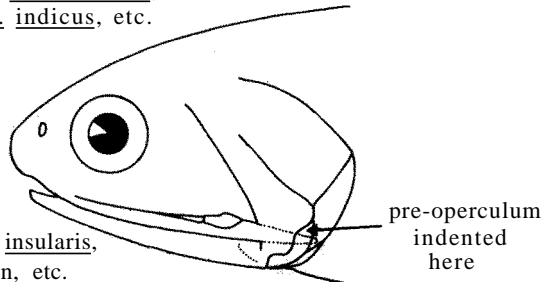
Diagnostic Features : Small and moderately compressed anchovies (to 15 cm standard length, usually 8 to 10 cm), the belly more or less rounded, with 1 to 8 sharp needle-like pre-pelvic scutes, but no post-pelvic scutes; a small spine-like scute just before the dorsal fin in some species. Posterior frontal fontanelles (on top of head near occiput) remain open in adults. Maxilla tip pointed and projecting beyond second supra-maxilla, reaching to gill opening in some species (rarely beyond). Isthmus muscle reaching forward to hind border of branchial membrane. Gillrakers slender, about 18 to 35 on lower part of arch. Anal fin short, usually with 18 to 20 branched finrays, its origin below dorsal fin base. Scales moderate, about 34 to 42 in lateral series. 4 silver stripe along flank in some species. Eggs oval, with or without a knob at one end.



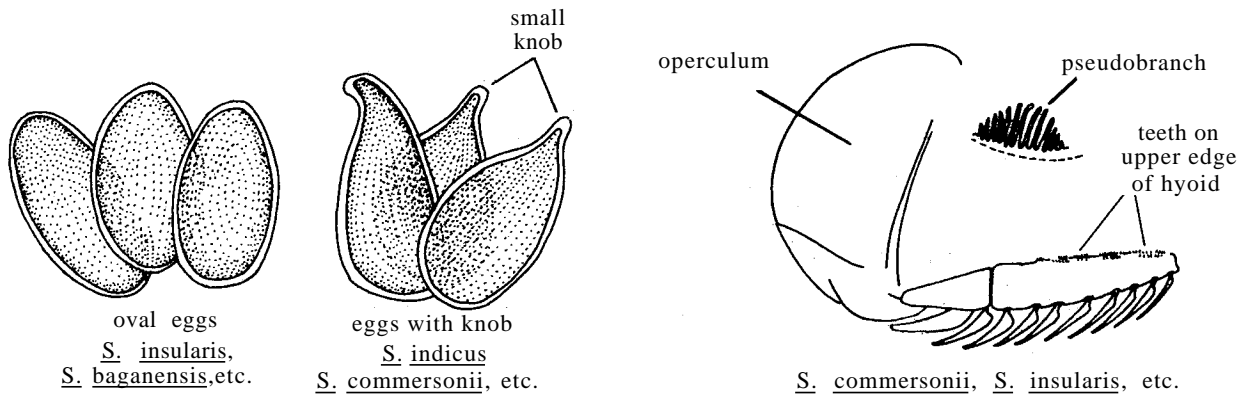
Stoiephorus dubiosus, S. tri.,
S. baganensis



Stolephorus commersonii,
S. indicus, etc.



Stolephorus insularis,
S. holodon, etc.



Biology, Habitat and Distribution : Marine, pelagic and schooling, mostly inshore, some perhaps entering river mouths. Indo-West Pacific only, from western shores of Indian Ocean eastward to the Society Islands (Tahiti).

Species : In the most recent revision, Wongratana (1980) recognized 13 species (excluding five species here placed in *Encrasicholina* following resurrection of this generic name by Nelson, 1983). He has since recognized two others and described three more (Wongratana, 1987a, b); a further species will be described by Dr Gareth Nelson. To aid identification, the 19 species are listed here geographically.

Widespread

S. indicus (van Hasselt, 1823) Western Indian Ocean to Society Islands

S. commersonii Lacepède, 1803 Western Indian Ocean to Fiji

S. insularis Hardenberg, 1933 Western Indian Ocean to Taiwan

S. andhraensis Babu Rao, 1966 Eastern Indian Ocean to northern Australia

S. waitei Jordan & Seale, 1926 Eastern Indian Ocean to northern Australia

S. dubiosus Wongratana, 1983 Eastern Indian Ocean to Indonesia

Western Indian Ocean

S. holodon (Boulenger, 1900) southern Africa

Western Pacific

S. chinensis (Gunther, 1880) Taiwan to Java Sea

S. ronquilloi Wongratana, 1983 the Philippines

S. baganensis Hardenberg, 1933 Indonesia

S. tri (Bleeker, 1852) Indonesia to Thailand

S. multibranchus Wongratana, 1987 Caroline Islands

S. brachycephalus Wongratana, 1983 Papua New Guinea

S. carpenteriae (de Vis, 1883) Papua New Guinea to northern Australia

S. advenus Wongratana, 1987 Northern Australia

S. nelsoni Wongratana, 1987 Northwestern Australia

S. apiensis Jordan & Seale, 1906 Fiji, Samoa

S. pacificus Baldwin, 1983 Guam, Kosrae

Stolephorus Species A Eastern Australia

Remarks : Identification of *Stolephorus* is not easy and it should be remembered that the species *punctifer* (formerly *buccaneeri*), *heteroloba*, *devisi*, *purpurea* and *oligobranchus* are now placed in the genus *Encrasicholina*. Among true species of *Stolephorus* the following characters will help to identify certain species (or groups of species), although it is advisable to check the diagnoses also; they should be combined with geographical distribution. See also keys by Wongratana (1985 - species illustrated and 1987b).

Body round, maxilla short (to front margin of pre-operculum): *S. indicus* (scutes 2 to 6); *S. advenus* (scutes 7)

Pre-dorsal spine, also spine on pelvic scute: *S. dubiosus*, *S. baganensis*, *S. tri* (a pre-dorsal spine only in some *S. insularis*)

Hind border of pre-operculum rounded (not indented): S. indicus, S. commersonii, S. apiensis, S. brachycephalus, S. chinensis, S. waitei, S. advenus, S. nelsoni, S. multibranchus, Stolephorus Species A

Hyoid bones with tooth patches on upper edge: S. commersonii, S. insularis, S. carpenteriae, S. baganensis (a few in some specimens), S. nelsoni

Pelvic fin tips beyond dorsal fin origin: S. commersonii, S. apiensis, S. brachycephalus (also in some S. holodon, S. andhraensis)

Black spots on lower part of "face": S. waitei

Double pigment lines before dorsal fin: S. commersonii, S. brachycephalus, S. tri

Egg with small knob: S. indicus, S. commersonii, ? S. waitei (= S. insularis of Babu Rao, 1966b), S. pacificus and possibly in all other species with a rounded pre-opercular border (see above).

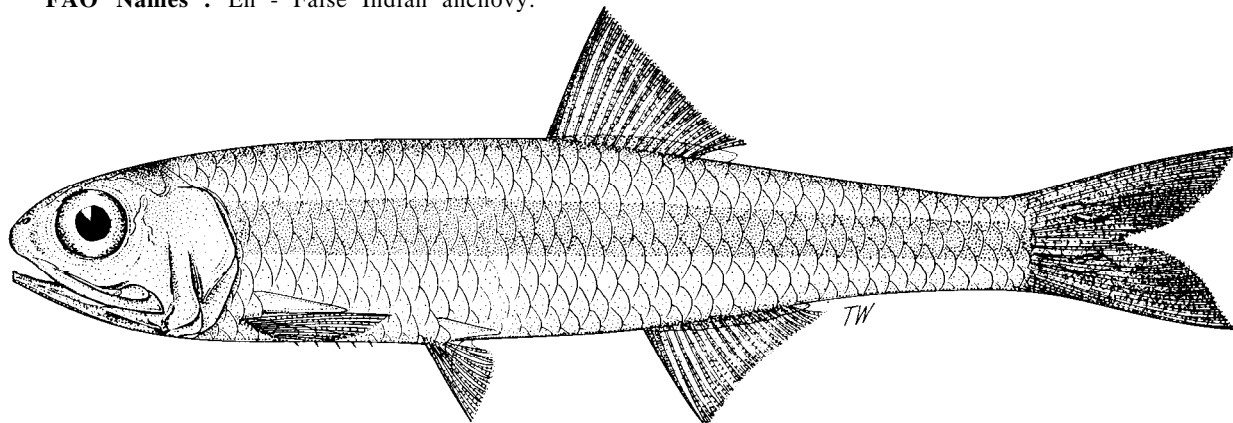
Stolephorus advenus Wongratana, 1987

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Stolephorus advenus Wongratana, 1987, Proc.biol.Soc.Wash., 100(1):106, fig.2 (Coburg Peninsula, Northern Territory, Australia).

Synonyms : None (unless misidentified as S. indicus).

FAO Names : En - False Indian anchovy.



Diagnostic Features : Body slender, elongate, rather round in cross-section, belly rounded, with 7 small needle-like pre-pelvic scutes. Maxilla tip pointed, reaching only just to front border of pre-operculum; hind border of pre-operculum convex, rounded. Lower gillrakers 24. Isthmus muscle tapering evenly forward to hind border of branchial membrane. Pelvic fin tips presumably not reaching to below dorsal fin origin (fins missing in type); anal fin short, with iii 16 finrays, its origin below about midpoint of dorsal fin base. A silver stripe down flank; no dark pigment lines on back between head and dorsal fin. Only S. indicus has such a short maxilla (but 2 to 6, usually 3 to 5 scutes).

Geographical Distribution : Northern Australia (a single specimen from Saulte Point, Coburg Peninsula, Northern Territory, Australia).

Habitat and Biology : Presumed coastal, pelagic and schooling, but more material and data needed. Egg presumed to be oval with a knob (as in S. indicus).

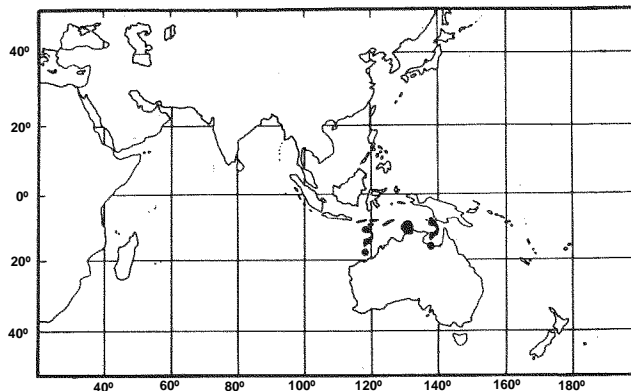
Size : 7.2 cm standard length (the type).

Interest to Fisheries : Nil.

Local Names :

Literature :

Remarks : Although described from a single specimen, Wongratana (1986) felt justified in separating it from S. indicus, of which he had examined more than a hundred individuals.



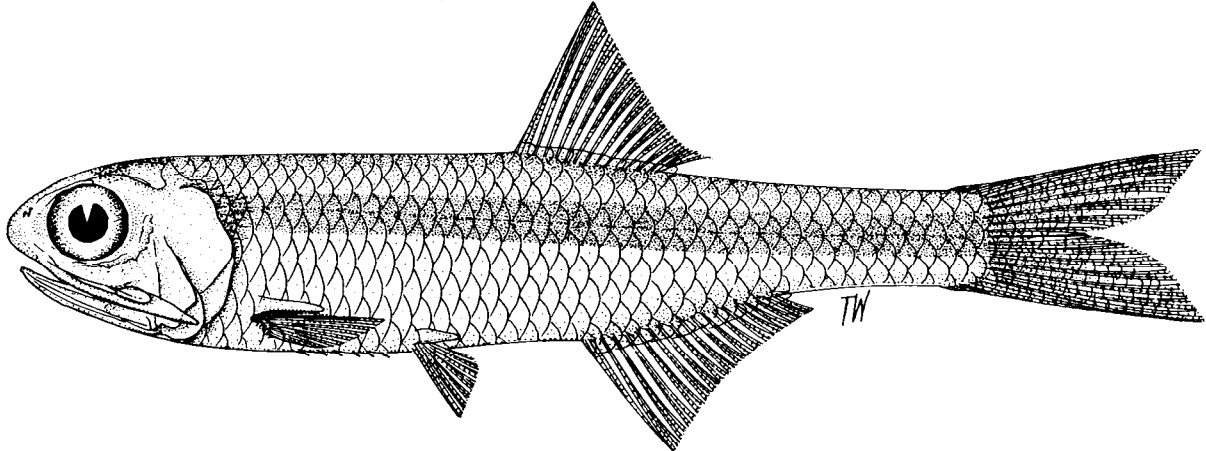
Stolephorus andhraensis Babu Rao, 1966

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Stolephorus andhraensis Babu Rao, 1966, Ann.Mag.nat.Hist., 9(13):103, pl.3, 4 (egg) (Waltair, Kakinada).

Synonyms : Stolephorus andhraensis-Whitehead, 1969a:261 (synonymy, distribution); Whitehead, 1973b:224, fig.47 (key, synopsis); Wongratana, 1980:246, pls 206,207 (revision); Idem, 1985:29, fig.17 (key).

FAO Names: En - Andhra anchovy.



Diagnostic Features : Body somewhat compressed, belly with 6 or 7 (usually 6) small needle-like pre-pelvic scutes. Maxilla tip pointed, reaching to or beyond hind border of pre-operculum, the latter concave, indented near maxilla tip. Lower gillrakers 20 or 21. Anal fin short, usually with iii 17 or 18 finrays, its origin below about middle of dorsal fin base. Of species with an indented pre-operculum, there is a pre-dorsal spine in S. dubiosus, S. baganensis and S. tri, while S. ronquilloi and S. insularis usually have 23 or more gillrakers; S. carpenteriae has tooth patches on the upper edge of the hyoid bones

Geographical Distribution : Eastern Indian Ocean (eastern coasts of India around Waltair, but perhaps along most of coast), western Pacific (Singapore and Gulf of Papua, but presumably between).

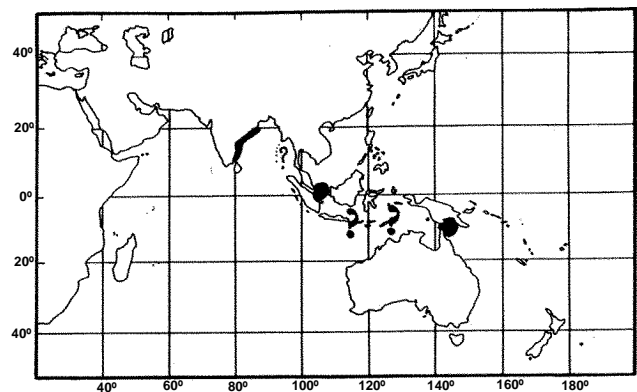
Habitat and Biology : Coastal, pelagic and schooling; egg oval, without knob; more material and data needed.

Size : To about 5 cm standard length.

Interest to Fisheries : Judging by museum collections, this species appears not to be very abundant.

Local Names :

Literature :



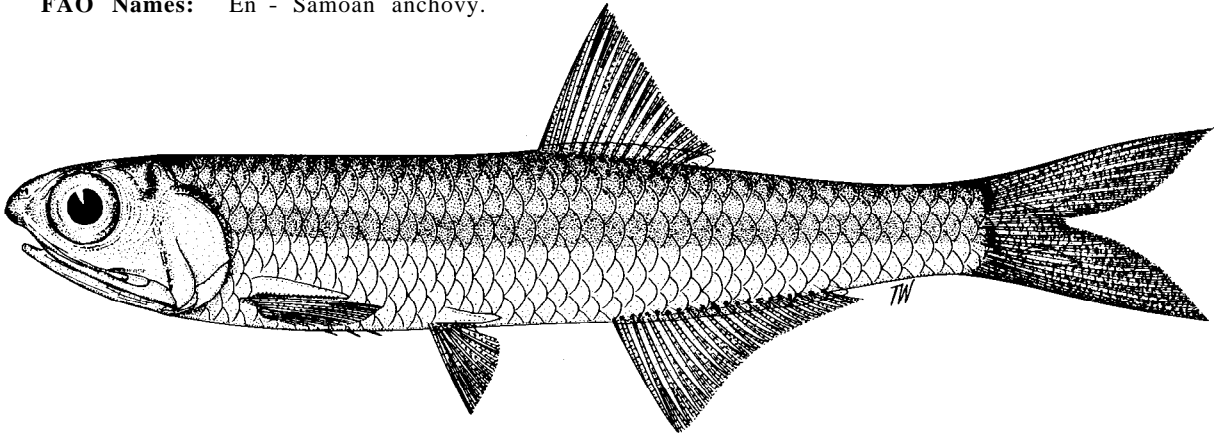
Stolephorus apiensis (Jordan & Seale, 1906)

ENGR Stol 18

Anchovia apiensis Jordan & Seale, 1906, Bull.Bur.Fish.Wash., 25:187 (Apia, Samoa).

Synonyms : Stolephorus commersonii (part):Wongratana, 1980:236 (two Fiji specimens, possibly also his nine Caroline Island specimens; apiensis placed in synonymy); Stolephorus apiensis-Lewis, Smith & Ellway, 1983:17,19 (Fiji, western Samoa; distinct from commersonii).

FAO Names: En - Samoan anchovy.



Diagnostic Features : Very closely resembling S. commersonii, but lacking paired dark patches behind occiput and paired dark lines before dorsal fin. Lower gillrakers 30 or 31 (Wongratana), or 27 to 30 (Lewis *et al.*), thus higher than in S. commersonii (usually 23 to 28). For distinctions from other species, see S. commersonii.

Geographical Distribution : Western Pacific (Fiji and Samoa; possibly also Caroline Islands and the Philippines - see Remarks).

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

Size : To at least 6 cm standard length.

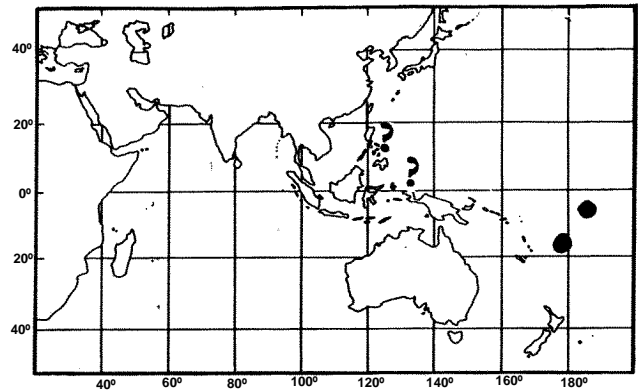
Interest to Fisheries : Recorded as a tuna baitfish but rare in bait catches in Fiji and Samoa (Lewis, Smith & Ellway, 1983).

Local Names :

Literature : Baldwin (1984 - Fijian baitfish).

Remarks : Perhaps distinct from S. commersonii, replacing it to the east of Papua New Guinea.

If it is characterized by a slightly higher gillraker count, then it may also extend to the Caroline Islands and the Philippines, unless this is merely a clinal phenomenon as suggested by Wongratana (1980:239). See also under S. commersonii.



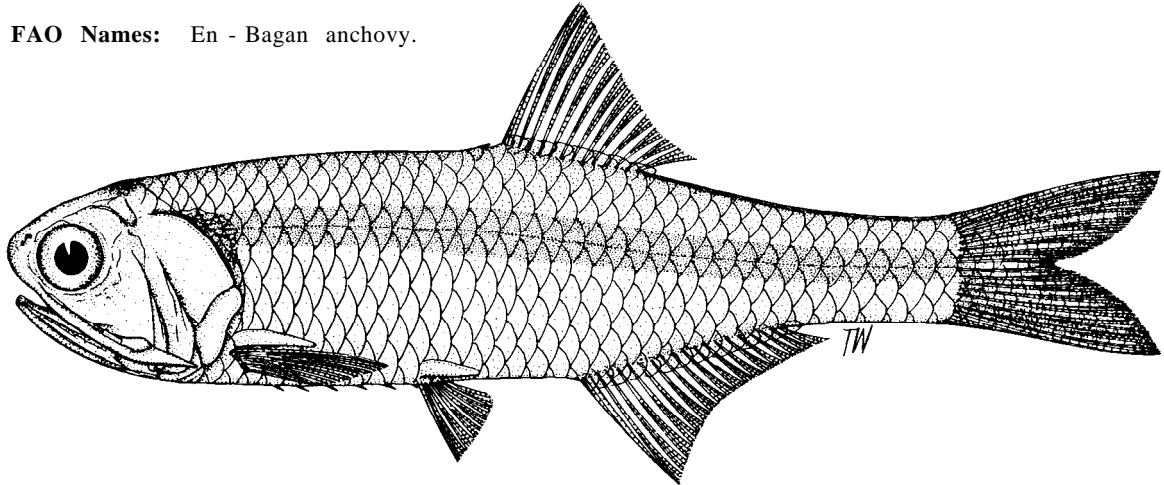
Stolephorus baganensis Hardenberg, 1933

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Stolephorus baganensis Hardenberg, 1931, Treubia, 13(1):107 (Rokan River mouth, name only); Hardenberg, 1933, Natuurk.Tijdschr.Ned.-Indie, 93(2):260 (Indragiri River mouth, Sumatra). The name must date from 1933, its use in 1931 being a nomen nudum (Article 13(a)(i) of the International Code).

Synonyms : Stolephorus baganensis macrops Hardenberg, 1933a:260 (Indragiri River mouth, Sumatra); Anchoviella baganensis:Fowler, 1941d:711 (compiled); Stolephorus baganensis bengalensis Dutt & Babu Rao, 1959:160 (Waltair, Kakinada, east coast of India); Stolephorus tri:Whitehead, 1969a:258 (most of the Singapore specimens); Stolephorus macrops: Idem, 1973b:223, fig.45 (compiled); Stolephorus baganensis-Wongratana, 1980:256, pls 216,217 (revision); Idem, 1985:29, fig.22 (key).

FAO Names: En - Bagan anchovy.



Diagnostic Features : Body somewhat compressed, belly with 6 or 7 (rarely 8) small needle-like pre-pelvic scutes; a small pre-dorsal spine and another spine on the pelvic scute. Maxilla pointed, reaching to or beyond hind border of pre-operculum, the latter concave, indented near maxilla tip. Lower gillrakers usually 20 to 23 (rarely 18, 19 or 24). A few small teeth on upper edge of hyoid bones in some specimens. Anal fin short, usually with iii 18 or 19 finrays, its origin below about middle of dorsal fin base. A double pigment line on back behind dorsal fin. Of species with a spine on the pelvic scute, *S. dubiosus* has more gillrakers (25 to 31) and *S. tri* has the double pigment line also in front of the dorsal fin.

Geographical Distribution : Eastern Indian Ocean (Waltair and Kakinada, if the sub-species *bengalensis* is truly this species) and western Pacific (Gulf of Thailand, Singapore, Sumatra, Sarawak).

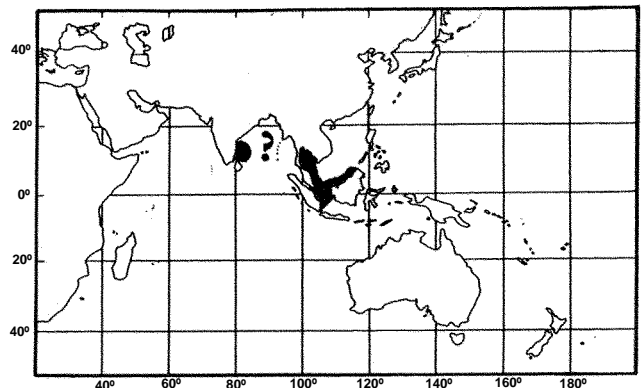
Habitat and Biology : Coastal, pelagic and schooling, but perhaps able to tolerate lowered salinities (e.g. in mouth of Indragiri River). More data needed.

Size : To 6.8 cm standard length.

Interest to Fisheries : Presumably contributes to artisanal fisheries, but perhaps not to any great extent.

Local Names :

Literature : Because of past confusions in the identification and naming of this species, previous studies cannot be relied upon.



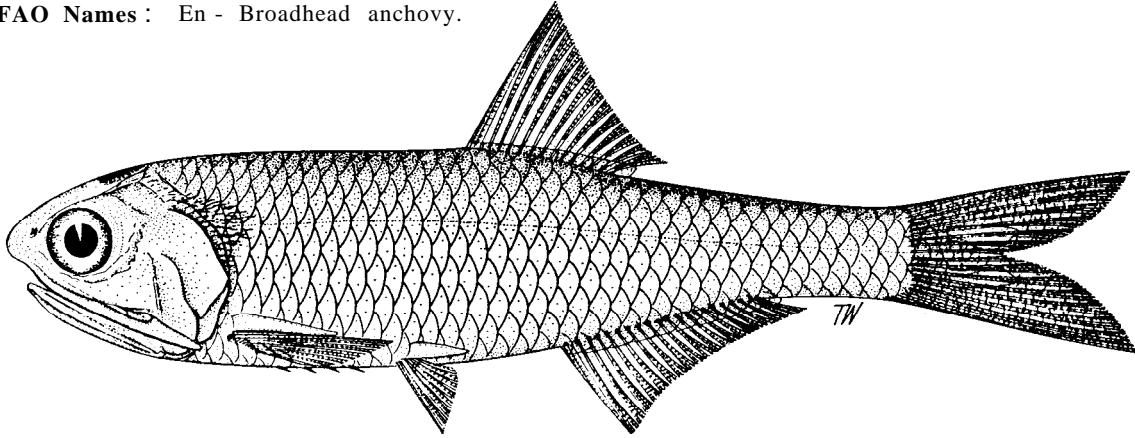
***Stolephorus brachycephalus* Wongratana, 1983**

CLUP Stol 9

Stolephorus brachycephalus Wongratana, 1983, *Japan J. Ichthyol.*, 29(4):401, fig.19 (Gulf of Papua).

Synonyms : *Stolephorus brachycephalus*: Wongratana, 1980:239, pls 198, 199 (revision; name not validly published); *Idem*, 1985:28, fig.13 (key).

FAO Names : En - Broadhead anchovy.



Diagnostic Features : Body somewhat compressed, belly a little rounded, with 4 or 5 small needle-like pre-pelvic scutes. Maxilla tip pointed, reaching to or beyond hind edge of sub-operculum; hind border of pre-operculum convex, rounded. Lower gillrakers 20 to 22. No tooth patches on upper edge of hyoid bones. Anal finrays iii 19 to 22 (usually 20 or 21). Closely resembles *S. commersonii*, which has a shorter maxilla (to or just beyond hind border of pre-operculum), fewer scutes (mostly 2 or 3), fewer anal finrays (usually 18 or 19) and a dark line (or paired lines) before dorsal fin.

Geographical Distribution : Gulf of Papua.

Habitat and Biology : Presumably coastal, pelagic and schooling. More specimens and data needed.

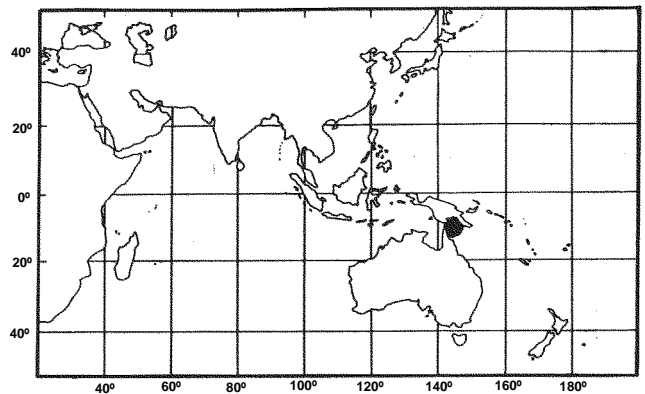
Size : To 4.2 cm standard length (juveniles; adults not yet known).

Interest to Fisheries : Probably little or none.

Local Names :

Literature :

Remarks : Although the types are juveniles, Wongratana (1983) believed that the characters distinguishing them from *S. commersonii* must persist in adults.



Stolephorus carpenteriae (de Vis, 1883)

ENGR Stol 13

Engraulis carpenteriae de Vis, 1883, *Proc.Linn.Soc.N.S.W.*, 7:320 (Norman River, Gulf of Carpentaria).

Synonyms : *Stolephorus tysoni* Wongratana, 1983:398, fig.16 (Gulf of Papua); see also Wongratana, 1980:247, pls 208, 209 (revision; name not validly published); *Stolephorus carpenteriae* - Munro, 1956:26, fig. 184 (Australia, compiled); Wongratana, 1985:29, fig.18 (key).