

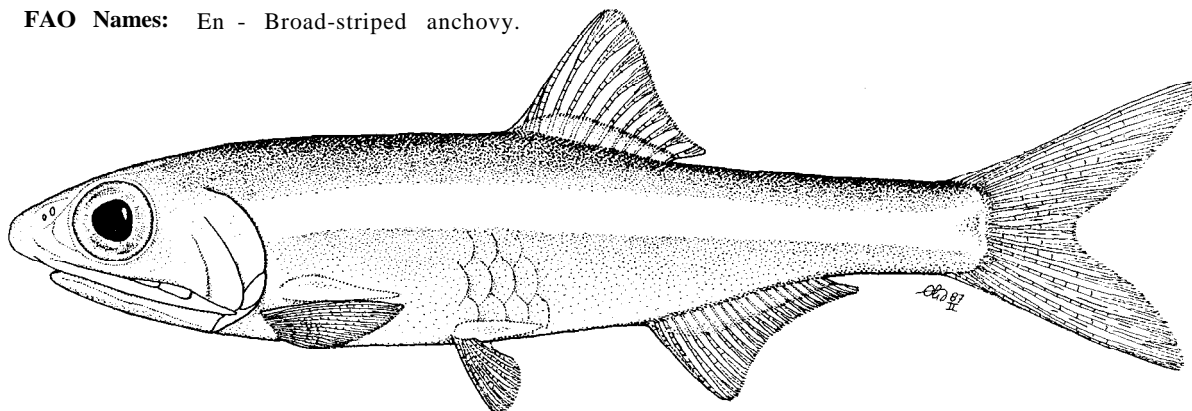
Anchoa hepsetus (Linnaeus, 1758)

ENGR Ancho 1

Esox hepsetus Linnaeus, 1758, *Syst.nat.*, 10th ed, 1:314 (on *Menidia* of Browne, 1756:441, pl.45, fig.3, Jamaica; other elements doubtful).

Synonyms : *Atherina menidia* Linnaeus, 1766:519 (on *Menidia* of Browne, 1756 - see above, and on *Argentea linea lata argentea* of Gronovius, 1763:112; the remainder an atherinid); *Atherina brownii* Gmelin, 1789:1387 (on Linnaeus, 1766); *Stolephorus perthecata* Good & Bean, 1883:434 (Pensacola, Florida); *Anchoa brownii*:Fowler, 1906:109 (New Jersey); *Anchoviella epsetus*:Jordan & Seale, 1926:396 (New Jersey, South Carolina, Cuba specimens; others were *A. lamprotaenia* and *A. tricolor* fide FWNA, 1964:199); *Anchoa ginsburgi* Hildebrand, 1943:55, fig.20 (Gulf of Venezuela); Cervigón, 1966:139 (compiled); *Anchoa hepsetus*-Hildebrand, 1943:57, fig. 21 (synopsis; comparison with *A. hepsetus colonensis* = *A. colonensis*); FWNA, 1964:194, fig.40 (synopsis); Cervigón, 1969:234, fig.13 (Venezuela:Puerto Rico, Mexico, Mississippi, Florida, Georgia; banda ancha form only); Daly, 1970:75, figs 2, 6 (photos) (Florida); Dahl, 1971:163 (Colombia, compiled); Whitehead, 1973a:132, fig.51b, 52b (maxilla) (Trinidad batch b only, the described fishes being *A. colonensis*); González, Padrón & Subero, 1974:49 *et seq.*, figs 1 to 6 (electrophoretograms) (separation from *A. lamprotaenia* on proteins, Venezuela); Cequea & Pérez, 1974:4 *et seq.*, figs 1 to 6 (electrophoretograms) (separation from *A. colonensis* on proteins, Venezuela); Pérez *et al.*, 1975:228 *et seq.*, figs 1 to 4 (electrophoretograms), tab.1 (analysis of proteins, relationships, Venezuela); Fineran & Nicol, 1976:296 *et seq.*, figs 1 to 6 (retinal cones, Texas); *Idem*, 1977:325 *et seq.*, figs 1 to 37 (eye pigment epithelium, Texas); Cervigón, 1980:226, fig. 2.76A (photo, *biol.*).

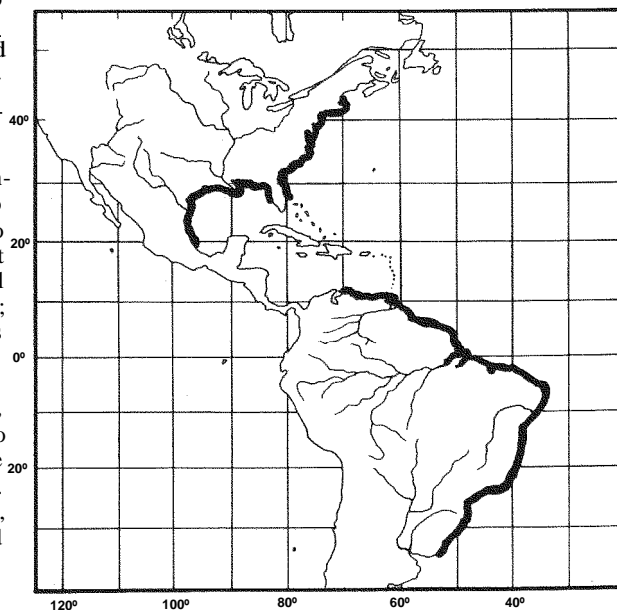
FAO Names: En - Broad-striped anchovy.



Diagnostic Features : Body somewhat compressed, elongate, its depth about 5 times in standard length. Snout pointed, about 3/4 eye diameter; maxilla long, tip pointed, reaching beyond hind border of pre-operculum, almost to gill opening; lower gillrakers 19 to 25; gill cover canals of *panamensis*-type. Anal fin short, with iii 16 to 20 finrays, its origin below about midpoint of dorsal fin base. Anus nearer to anal fin origin than to pelvic fin tips. A broad silver stripe along flank (a dark line above) of uniform width except narrowed immediately behind gill opening, about 3/4 eye diameter. Very closely resembles *A. colonensis*, which has a narrower silver lateral band, about width of pupil. Other Atlantic *Anchoa* species that overlap in both gillraker and anal finray counts are: *A. tricolor* and *A. marinii* (Brazil; gillrakers not less than 24 in the first, branched anal finrays not less than 20 in the second), *A. mitchilli* (branched anal finrays not less than 20, also anus nearer to pectoral fin tips than to anal fin origin), *A. lamprotaenia* (anus also advanced; also the walkeri-type gill cover canals, as also in *A. choerostoma* of Bermuda and *A. cubana*, *A. januarua* and *A. parva*, all of which usually have more than 23 or 24 gillrakers). See ENGR Ancho 1, Fishing Area 31 (but *A. colonensis* illustrated).

Geographical Distribution : Western North Atlantic (Massachusetts, perhaps occasionally straying north to Maine or even Nova Scotia (FWNA, 1964:198), south to Fort Pierce, Florida - but not Florida Keys - and at least the northern part of Gulf of Mexico), and western central and South Atlantic (Gulf of Venezuela south to Uruguay); replaced by *A. colonensis* in the West Indies and perhaps on the western Caribbean coasts.

Habitat and Biology : Marine, pelagic, coastal, forming dense schools, often in shallow waters close to shore (but recorded down to 70 m); able to tolerate a wide range of salinities, from hypersaline to almost fresh. Feeds on copepods when young, then also on gastropods, foraminifera and an occasional ostracod and annelid



(FWNA,1964:197). Eggs elliptical (about 1.4 to 1.6 mm by 0.7 to 0.85 mm), transparent, without oil globule, yolk appearing 'cellular'; at Beaufort, North Carolina, breeding recorded in April through to July; breeds in harbours, estuaries and sounds.

Size : To about 12.5 cm standard length, usually 9 to 11 cm.

Interest to Fisheries : Although occurring in often large schools, it does not appear to be widely exploited. Caught in shore seines, also in fine-mesh trawls.

Local Names : USA: Striped anchovy (AFS list).

Literature : No comprehensive study of its biology has been made; earlier references to A. hepsetus may not always have been dealing with this species. Analyses of proteins have been carried out by Venezuelan workers and the histology of the eye has also been studied (see references at end of synonymy).

Remarks : Although Hildebrand (1943 and FWNA, 1964), Cervigón (1969) and Whitehead (1973a) acknowledged two forms or subspecies of A. hepsetus (hepsetus or banda ancha and colonensis or banda estrecha), it was the electrophoretic studies of Cequea & Perez (1974) that finally confirmed the presence of two species. It appears that A. colonensis replaces A. hepsetus in the Caribbean area, but overlaps it in eastern Venezuela (occurring in the same schools according to Cervigón, 1969). Whitehead (1973a:fig.52) illustrated a slightly longer maxilla in A. hepsetus, but this needs confirmation.

For further separation from A. mitchilli, see Remarks under that species.

The name hiulcus, long placed in the synonymy of hepsetus, is a senior synonym of lamprotaenia (see Remarks under that species). The complex history of other names used for the present species is fully discussed by Whitehead (1973b: 132-40).

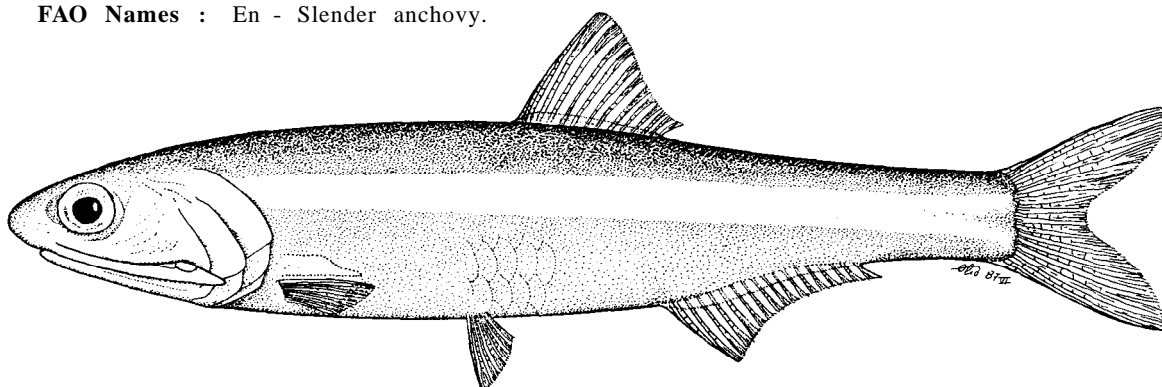
Anchoa ischana (Jordan & Gilbert, 1882)

ENGR Ancho 22

Stolephorus ischana Jordan & Gilbert, 1882, Proc.U.S.natn.Mus., 4:340 (Mazatlan, Mexico).

Synonyms : Anchoviella ischana: Jordan & Seale, 1926:397 (Mexico, perhaps also their Panama specimens); Anchoa ischana-Hildebrand, 1943:67, fig.26 (Magdalena Bay, Mazatlan and also Acapulco, Mexico); Peterson, 1956:i63 (Costa Rica); Anon., 1976:69 (key), 70 (Mexico, listed); Nelson,1983:49 (distinguished from A. argentivittata = arenicola of authors).

FAO Names : En - Slender anchovy.



Diagnostic Features : Body rather elongate, but somewhat compressed, its depth about 5 to 6.25 times in standard length. Snout moderate, about 3/4 eye diameter; maxilla moderate, tip narrowly pointed, reaching onto sub-operculum, but not to edge of gill cover; lower gillrakers 17 to 22; gill cover canals of panamensis-type. Anal fin short, with iii 15 to 19 finrays, its origin below posterior third of dorsal fin base. A narrow silver stripe along flank, deeper above anal fin (about 3/4 to 2/3 eye diameter). Pacific Anchoa species that overlap in both gillraker and anal finray counts are: A. helleri (very similar, but confined to northern end of Gulf of California, also anal fin longer, with 17 to 21 branched finrays and 40 to 42, rarely 43 vertebrae, cf. usually 42 to 44), A. argentivittata (silver stripe almost as wide as eye diameter, maxilla tip bluntly rounded, at most only just reaching onto sub-operculum, vertebrae 44 to 46) and A. curta (not less than 21 gillrakers, also walkeri-type canals).

Geographical Distribution : Eastern central Pacific (entire Gulf of California south to Panama, but not further south vide Nelson, 1983; also, Galapagos Islands).

Habitat and Biology : Marine, pelagic, coastal and schooling, frequently caught over sand or gravel in the Gulf of Nicoya, but also over mud (Peterson, 1956). May spawn throughout year in Gulf of Nicoya; eggs oval (Peterson, loc.cit.).

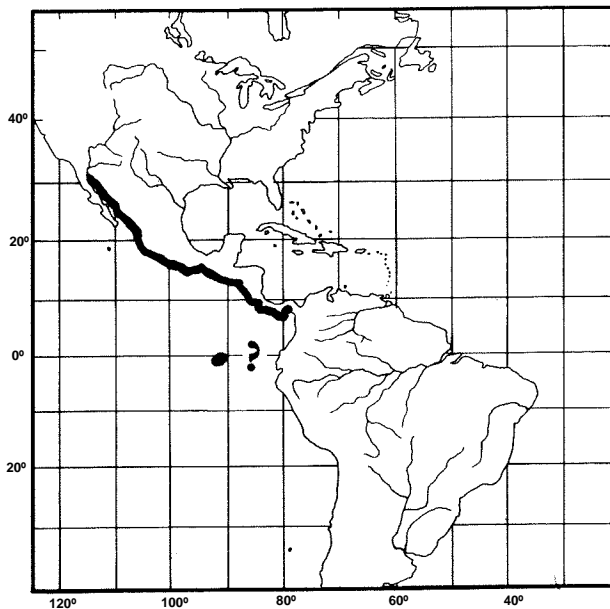
Size : To 12 cm standard length.

Interest to Fisheries : No data.

Local Names :

Literature : Peterson (1956 - some brief notes on ecology and maturity).

Remarks : The separation of *A. ischana* from the very similar *A. argentivittata* is discussed under that species. The separation of *A. ischana* from *A. helleri* of the northern Gulf of California is not clear-cut (overlap in anal finray and vertebral counts).



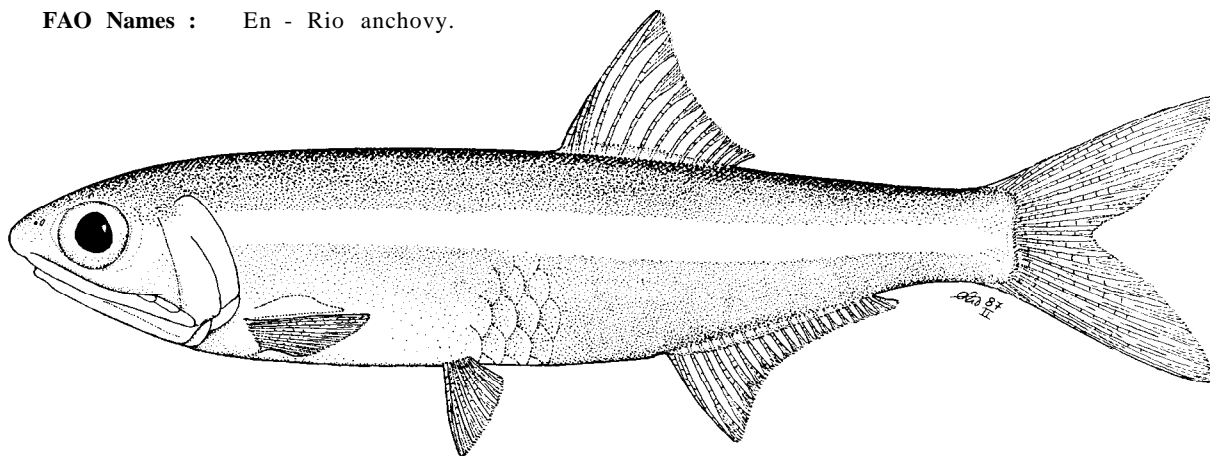
Anchoa januaria (Steindachner, 1880)

ENGR Ancho 14

Engraulis januarius Steindachner, 1880, Sber.Akad.Wiss.Wien, 80:176 (Rio de Janeiro harbour); Idem, 1880, Ichthyol.Beitr., (8):58 (repeat).

Synonyms : *Anchovia januaria*:Starks, 1913:9 (Natal, Brazil); *Anchoviella januaria*:Jordan & Seale, 1926:406 (Rio de Janeiro); *Anchoa januaria*-Hildebrand, 1943:81, fig.34 (Gulf of Venezuela, Natal, Rio de Janeiro); Hildebrand & Carvalho, 1948:287 (São Paulo market and Rio Casqueiro, São Vicente Island, Brazil); Fowler, 1948:17 (compiled); Carvalho, 1950a:59, pl.2, fig.6 (compiled); FWNA, 1964:183, fig.34 (synopsis); Cervigón, 1969:224, fig.9 (Lake Maracaibo, also Recife, São Paulo, Ubatuba); Whitehead, 1970:33 (lectotype of *januaria*); Eskinazi, 1972; 290, tab.1 (Santa Cruz canal, Pernambuco, Brazil); Figueiredo & Menezes, 1978:31, fig.41 (Venezuela to Rio Grande do Sul, Brazil - compiled).

FAO Names : En - Rio anchovy.



Diagnostic Features : Body somewhat compressed, moderately elongate, its depth about 5 times in standard length. Snout moderate, about 1/2 eye or a little more; maxilla moderate, tip not sharply pointed, not or only just reaching hind border of pre-operculum; lower gillrakers 24 to 29; gill cover canals of walkeri-type. Anal fin fairly short, with iii 19 to 22 finrays, its origin under about midpoint of dorsal fin base. Anus nearer to pelvic fin tips than to anal fin origin. A narrow silver stripe along flank, about 1/2 eye diameter or a little more. Most closely resembles *A. parva*, which seems not to occur south of Trinidad and has the anal fin origin before the midpoint of the dorsal fin base; also *A. cubana* (maxilla long, sharply pointed and reaching behind hind border of pre-operculum), the tip projecting more than 1/2 eye diameter beyond second supra-maxilla. Other Atlantic *Anchoa* species that overlap in both gillraker and anal finray counts are: *A. hepsetus* and *A. tricolor* (anus nearer to anal fin origin, branched anal finrays 20 and 19 or less), *A. marinii*, *A. lyolepis* and *A. filifera* (pseudobranch equal to eye or longer) and *A. mitchilli* and *A. choerostoma* (to north of area).

Geographical Distribution : Western South Atlantic (Brazil, from Ceará to Santa Catarina). Cervigón (1969:224) identified as this species specimens from Lake Maracaibo, Venezuela, but his extensive collecting along the Caribbean coast of Venezuela failed to produce any and none was found in the Guianas region by Whitehead (1973a).

Habitat and Biology : Marine, pelagic and coastal, schooling; in the Santa Cruz canal, Pernambuco, the species was recorded in salinities of 7.94 to 31.31 ‰ (Askinazi, 1972:291). More data needed, based on correct identifications.

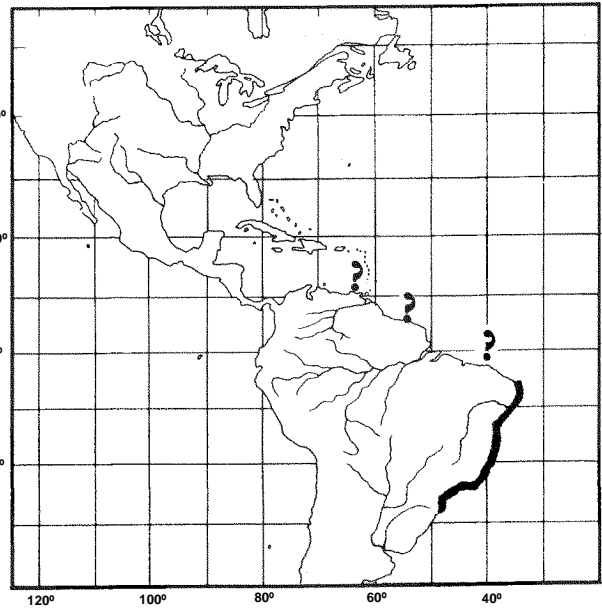
Size : To 7.4 cm standard length, usually about 5 to 6 cm.

Interest to Fisheries : Probably little.

Local Names : BRAZIL: Rabo de fogo (Pernambuco).

Literature :

Remarks : The occurrence of this fish to the north of Brazil needs clarification; its place seems to be taken by A. parva (see Remarks under that species).



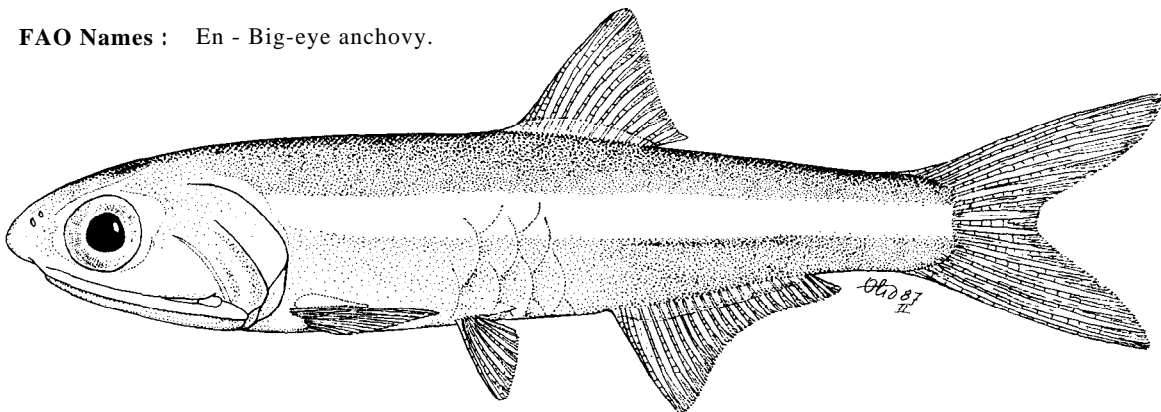
Anchoa lamprotaenia Hildebrand, 1943

ENGR Ancho 8

Anchoa lamprotaenia Hildebrand, 1943, Bull.Bingham oceanogr.Coll., 8(2):62, fig.23 (Key West, Florida).

Synonyms : Engraulis hiulcus Goode, in Goode & Bean, 1880:343 (Clear Weather Harbor, Florida); Stolephorus brownii:Jordan, 1885:106 (Key West, Florida); Anchovia brownii:?Meek & Hildebrand, 1923:204, p1.14, fig.1 (some specimens from Colón and Porto Bello, Panama; synonymy incorrect); Anchoviella epsetus: Jordan & Seale, 1926:396 (probably Florida specimens only); Anchoa lamprotaenia-FWNA,1964:192, fig.39 (Florida, Yucatan, Cuba, Puerto Rico, Belize, Panama; synopsis); Cervigón, 1969:232, fig.12 (Florida, Granada, Tobago, Los Roques Archipelago and Gulf of Cariaco, Venezuela, also Recife, Brazil); Daly, 1970:73, figs 1, 6 (photos Atlantic coast of Florida south from the Indian River, also Puerto Rico and Venezuela); Gilbert & Kelso, 1971:23 (Langunas del Tortuguero, Costa Rica); Whitehead, 1973a:128, fig.50 (Tobago, Trinidad, Surinam; comparison with A. hepsetus); Gonzalez, Padrón & Subero, 1974:49, figs 1 to 6 (electrophoretograms) (separation from A. hepsetus on proteins, Venezuela); Pérez et al., 1975:228 et seq., figs 1 to 4 (electrophoretograms), tab.1 (analysis of proteins, relationships, Venezuela).

FAO Names : En - Big-eye anchovy.



Diagnostic Features : Body somewhat compressed, elongate, its depth about 5 times in standard length. Snout pointed, about 3/4 eye diameter; maxilla long, tip pointed, reaching to hind border of pre-operculum; lower gillrakers 17 to 21 (rarely 22); gill cover canals of walkeri-type. Anal fin moderate, with iii 18 to 23 (rarely 24) finrays, its origin below about midpoint of dorsal fin base. Anus advanced, nearer to pelvic fin tips than to anal fin origin. A broad silver stripe along flank, a dark line above, expanded over anal fin, about 3/4 eye diameter. Atlantic Anchoa species that overlap in both gillraker and anal finray counts are: A. hepsetus, A. colonensis and A. cavorum (all have the panamensis-type gill cover canals; also, the anus midway between pelvic fin tips and anal

fin origin, or nearer to the latter, as also A. pectoralis of Brazil, A. trinitatis of Trinidad and the southern Caribbean, and A. belizensis of Belize fresh waters); A. mitchilli has the anus nearer to the pelvic fin tips, but has the panamensis-type canals.

Geographical Distribution : Caribbean area (southern Florida, Cuba, Bahamas, Greater and Lesser Antilles, and Yucatan to Venezuela; not in Gulf of Mexico), also Trinidad south to Guianas; possibly Brazil.

Habitat and Biology : Marine, pelagic, coastal, forming dense schools; not entering the mangrove-lined lagoons of the Venezuelan mainland, but the dominant species of the Los Roques Archipelago and there found as much in the lagoons as outside them (Cervigón, 1969:233); frequently caught in mixed schools (with A. mitchilli) in the Miami area (Daly, 1970:92). Feeds on zooplankton. Ripe females recorded off Florida in June and July (FWNA, 1964:193). More data needed.

Size : To 9.2 cm standard length, usually about 6 or 7 cm.

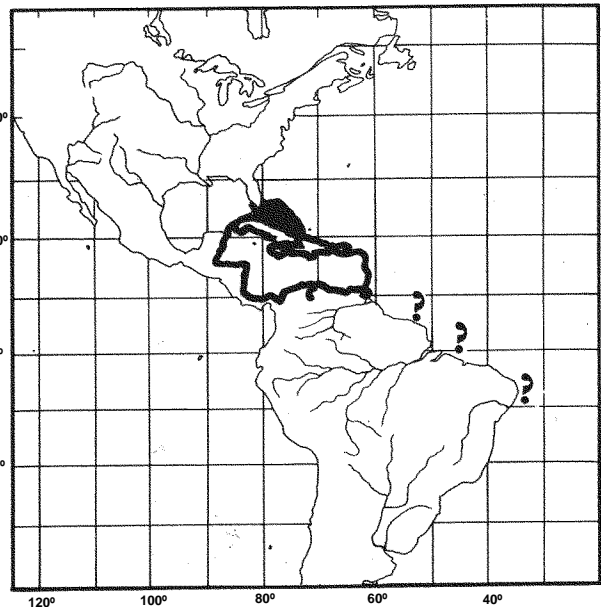
Interest to Fisheries : Evidently forming large schools so perhaps of some local interest.

Local Names : CUBA: Manjúa; USA: Bigeye anchovy (AFS list), Longnose anchovy (FWNA).

Literature : See synonymy.

Remarks : Anchoa lamprotaenia closely resembles A. hepsetus. Daly (1970) tabulated differences (summarized in Whitehead, 1973a:131), of which the most striking is the advanced position of the anus in A. lamprotaenia (only just behind the pelvic fin tips).

The holotype of Engraulis hiulcus is clearly the present species (fide Dr G. Nelson); although hiulcus well predates lamprotaenia, it seems not to have been used subsequently as a senior synonym and mostly lay in the synonymy of Anchoa hepsetus (e.g., Whitehead, 1973b:132). Since Hildebrand's two major clupeoid studies (1943, 1964) have guided all recent works, it is recommended that his use of the name lamprotaenia be continued and hiulcus considered a nomen oblitum.



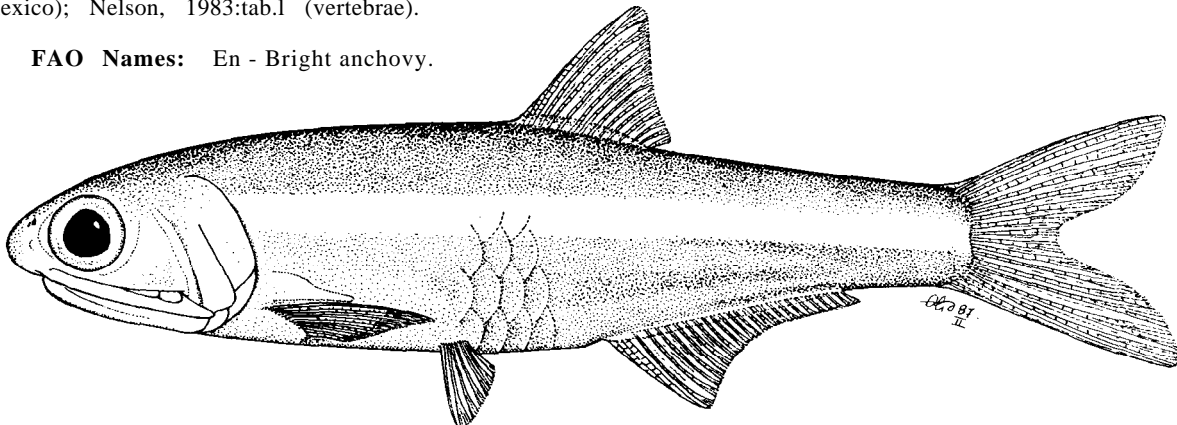
Anchoa lucida (Jordan & Gilbert, 1882)

ENGR Ancho 31

Stolephorus lucida Jordan & Gilbert, 1882, Proc.U.S.natn.Mus., 4:341 (Mazatlan, Mexico).

Synonyms : Anchoa lucida: Jordan & Everman, 1896:446; Gilbert & Starks., 1904:42 (Panama; on lucida type); Anchoviella lucida: Jordan & Seale, 1926:400 (Mazatlan, Mexico); Anchoa lucida-Hildebrand, 1943:95, fig.39 (Gulf of California, Mazatlan, El Salvador, Panama, Colombia, Ecuador); Peterson, 1956:169 (Costa Rica); Chirichigno, 1963:18, fig.10 (photo) (Estero Lagarto, Puerto Pizarro, Peru); Cobo & Massay, 1969:8 (Ecuador, listed); Baldwin & Chang, 1970:142 (Rio Santiago, Nayarit, Mexico - with A. walkeri); Anon., 1976:69 (key), 70 (Mexico); Nelson, 1983:tab.1 (vertebrae).

FAO Names: En - Bright anchovy.



Diagnostic Features : Body moderately elongate, but somewhat compressed. Snout fairly short, about 3/4 eye diameter; maxilla moderate, tip somewhat bluntly pointed, reaching to inter-operculum; lower gillrakers 18 to 23; gill cover canals of panamensis-(Mexico) or walkeri-type. Anal fin fairly long, with iii 22 to 28 finrays, its origin below or a little behind midpoint of dorsal fin base. A narrow silver stripe along flank, about 1/2 eye diameter. Pacific Anchoa species that overlap in both gillraker and anal finray counts are: A. mundeoloides, A. mundeola, A. panamensis and A. spinifer (all occur within the range of A. lucida, but have panamensis-type canals; also, most specimens of A. lucida lie outside the range of anal finrays of the other species) A. curta (branched anal finrays usually 23 or more; and maxilla long and sharply pointed, as also in A. walkeri).

Geographical Distribution : Eastern central Pacific (San Felipe Bay, Gulf of California southward to Puerto Pizarro, northern Peru).

Habitat and Biology : Marine, pelagic and coastal, but most often recorded from bays, lagoons and estuaries, thus able to tolerate lowered salinities. A ripe female of 11 cm with oval eggs recorded in July by Peterson (1956).

Size : To 11.2 cm standard length.

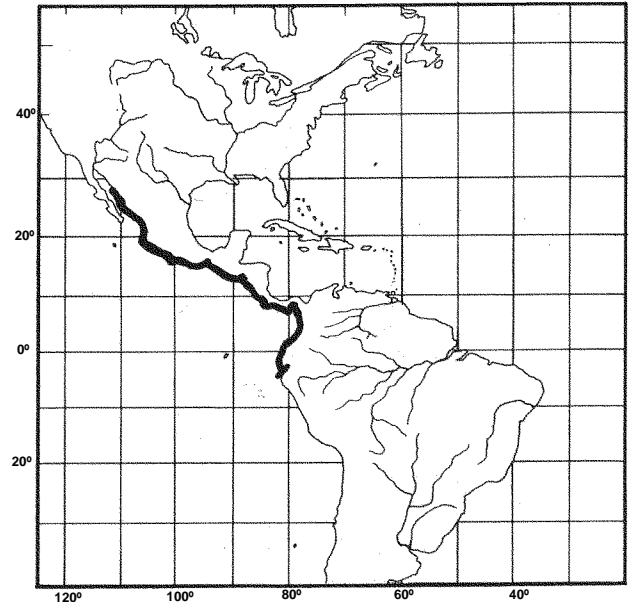
Interest to Fisheries : No data.

Local Names : COLOMBIA: Anchoa, Anchoveta, Mejua; COSTA RICA: Anchoa, Bocona; ECUADOR: Ojitos, Pelada; MEXICO, PERU: Anchoa.

Literature :

Remarks : Although the form of the gill cover canals separates A. lucida from several species with a long anal fin (A. mundeoloides, etc.), there is need to find trenchant fieldcharacters.

Dr Gareth Nelson (pers.comm.) suspects that 'lucida' may include two distinct species.



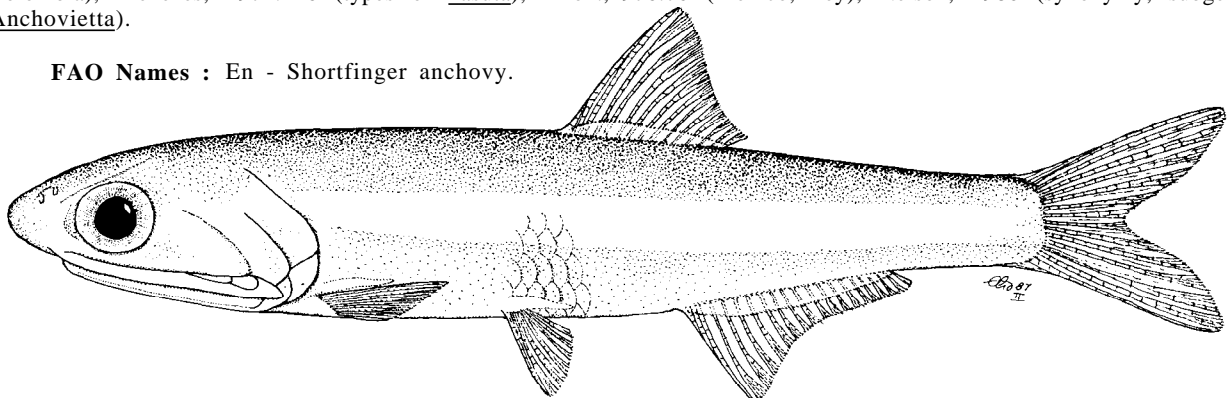
Anchoa lyolepis (Evermann & Marsh, 1902)

ENGR Ancho 2

Stolephorus lyolepis Evermann & Marsh, 1902, Bull.U.S.Fish.Comm., 20(1):89, fig.13 (Culebra, Puerto Rico, juveniles).

Synonyms : Anchovia platyargyrea Fowler, 1911:216, fig.4 (St. Martin, West Indies); Engraulis platyargyreus: Fowler, 1928:468 (St. Lucia); Anchoviella platyargyrea: Jordan, Evermann & Clark, 1930:49 (types); Beebe Hollister, 1935:211 (Union Island, Grenadines, West Indies); Anchoviella choerostoma: Jordan & Seale, 1926:404 (Panama and Puerto Rico specimens *fide* FWNA, 1964:202); Beebe & Tee Van, 1928:47, fig. (Haiti specimens *fide* FWNA, 1964:202); Anchovia choerostoma: Nichols, 1929:205, fig.39 (Puerto Rico specimens *fide* FWNA, 1964:202); Anchoa nasuta Hildebrand & Carvalho, 1948:288, fig.1 (São Sebastien Island, Brazil); Carvalho, 1950a:64, p.1.2, fig.9 (compiled); Daly, 1970:78, tabs 2-7, fig.5 (Miami, also Cape Hatteras to Venezuela seen); Anchoviella lyolepis: Beebe & Tee Van, 1928:47, fig. (Haiti, juvenile); Anchoa lyolepis-Hildebrand, 1943:65, fig.25 (Gulf of Mexico, Antilles, Venezuela); Schultz, 1949:43 (Punta Macolla, Venezuela); FWNA, 1964:200, fig.42 (synopsis); Cervigón, 1966:140 (Punta de Piedras, Venezuela); *Idem.*, 1969:238, fig.15, tabs 12,26 (Puerto Rico, Virgin Islands, Venezuela, Colombia, Mexico, Florida; subspecies continentalis proposed); Dahl, 1971:164, fig. (Colombia, key); Whitehead, 1973b:144, figs 54,55 (Tobago, Trinidad, Surinam, northern Brazil); Palacio, 1974:22 (Punta Caribana, Colombia); Menezes, 1974:216 (types of nasuta); Anon., 1976:70 (Mexico, key); Nelson, 1986 (synonymy, subgenus Anchovietta).

FAO Names : En - Shortfinger anchovy.



Diagnostic Features : Body rather round, elongate, its depth about 5 to 5.5 times in standard length. Snout long and pointed, only slightly less than eye diameter; maxilla long, tip pointed, reaching almost to gill opening; lower gillrakers 19 to 27 (see **Remarks**); gill cover canals of *panamensis*-type; pseudobranch longer than eye diameter, with 30 or more filaments, extending onto inner face of operculum. Pectoral fin with first ray not extended as a filament; anal fin short, with iii 15 to 22 finrays, its origin under or behind base of last dorsal finray. A broad silver stripe along flank about equal to eye diameter (broader in smaller fishes), with a dark line above it. Closely resembles *A. filifera* (first pectoral finray a short filament, also vertebrae mostly 39; cf. mostly 41 or 42 in *A. lyolepis*); *A. marinii* also has a long pseudobranch, but like all other Atlantic *Anchoa* species has the anal fin origin well under the dorsal fin base. *Engraulis* species have a long pseudobranch, but maxilla not beyond pre-operculum. See ENGR Ancho 2, Fishing Area 31.

Geographical Distribution : Western Atlantic (New York south to Miami (rare on Gulf coast of Florida *fide* Daly, 1970 - as *A. nasuta*), Bermuda, Antilles, Trinidad and south to Brazil, apparently as far south as 25°30'S; also, Venezuela to Panama, Yucatan and to northern Gulf of Mexico).

Habitat and Biology : Marine, pelagic, coastal and schooling; trawled down 23 m off Brazil (down to about 50 m *fide* FWNA, 1964:202), but equally taken in shore seines. More data needed, based on secure identifications.

Size : To 7 cm standard length, mostly 5 or 6 cm.

Interest to Fisheries : Contributes to clupeoid catches, but no special fishery.

Local Names : COLOMBIA: Mejúa; USA: Dusky anchovy (AFS list).

Literature : See synonymy (but very little biological information in the rather numerous references).

Remarks : At present the separation of *A. lyolepis* from *A. filigera* depends chiefly on the presence of a small pectoral filament in *A. filifera*, although there appears to be a difference in vertebral counts (*lyolepis* 39 to 43, mostly, 41 or 42; *filifera* 38 to 40, mostly 39). Field identifications are made more difficult because the pectoral filament of *A. filifera* is often broken and only detectable as such under high magnification.

The extensive geographical distribution of *A. lyolepis* is matched by wide ranges in gillrakers and anal finray counts, suggestive of distinct sub-species. Cervigón (1969) proposed two subspecies:

A. lyolepis lyolepis: Bermuda, Antilles and 'oceanic' islands off Venezuela (La Blanquilla, Los Roques).

A. lyolepis continentalis: coasts and offshore islands of Caribbean, Gulf of Mexico (but not Trinidad or Surinam); two groups recognised:

Group 1. Gulf of Mexico, Florida (*nasuta* of Daly, 1970).

Group 2. Colombia, Venezuela.

Additional meristic data (Nelson, 1986) modifies Cervigón's conclusions and, on the basis of gillraker counts, suggests three areas of distribution (in which material from the first and last is as yet morphologically indistinguishable):

- A. **North American**: gillrakers mostly 25 to 27 (New York south to Florida, Gulf of Mexico south to Yucatan) (no name).
- B. **Antillean**: gillrakers mostly 21 to 23 (Bermuda; Cuba to Lesser Antilles, including La Blanquilla and Los Roques off Venezuela; also, Yucatan south to Colombia) (*lyolepis*, *platygyrea*).
- C. **South America**: gillrakers mostly 23 to 26 (western Venezuela to Brazil) (*nasuta*).

Unfortunately, neither anal finray nor vertebral counts correlate with these geographical divisions and for the moment the recognition of subspecies seems unjustified.

