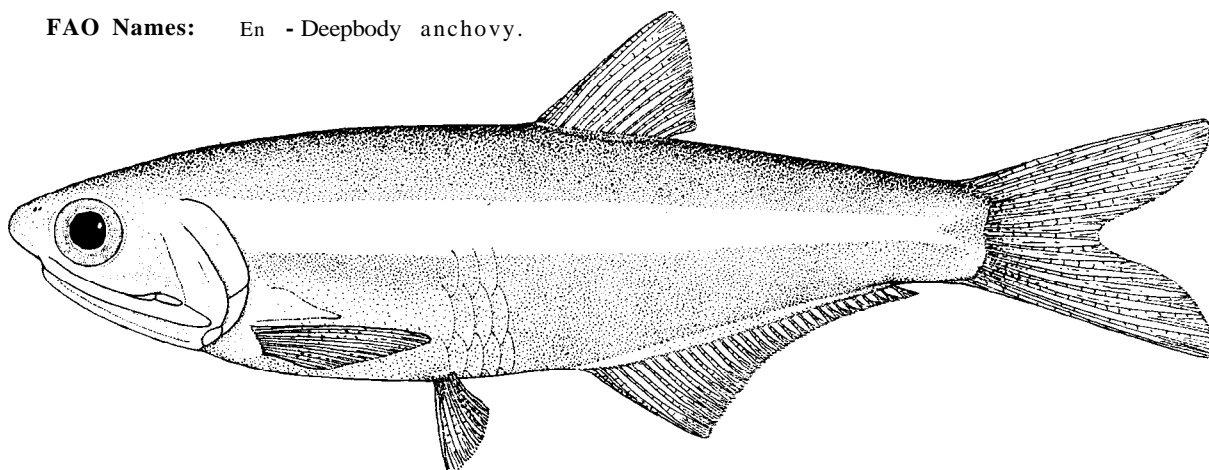


FAO Names: En - Deepbody anchovy.



Diagnostic Features : Body compressed, moderately deep (more so in larger fishes). Snout pointed, about 1/2 to 3/4 eye diameter; maxilla moderate, tip rather blunt, not reaching to hind border of pre-operculum; lower gillrakers 24 to 27; pseudobranch short, covered by skin; gill cover canals of panamensis-type. Anal fin long, with iii 27 to 31 finrays, its origin a little before midpoint of dorsal fin base. A bright silver stripe along flank, often as wide as eye, not fading on preservation. Pacific Anchoa species that overlap in both gillraker and anal finray counts are: A. mundeola (not California or Pacific coast of Baja California) and A. panamensis (Panama Bay only; also, gillrakers 24 or fewer); in both these species the silver stripe is narrow, much less than eye diameter; overlaps the range of A. delicatissima, which has only 20 to 25 branched anal finrays. Engraulis mordax has the anal fin origin under or behind the last dorsal finray base.

Geographical Distribution : Eastern central Pacific (Point Conception, California to Magdalena Bay, on Pacific coast of Baja California; not in Gulf of California).

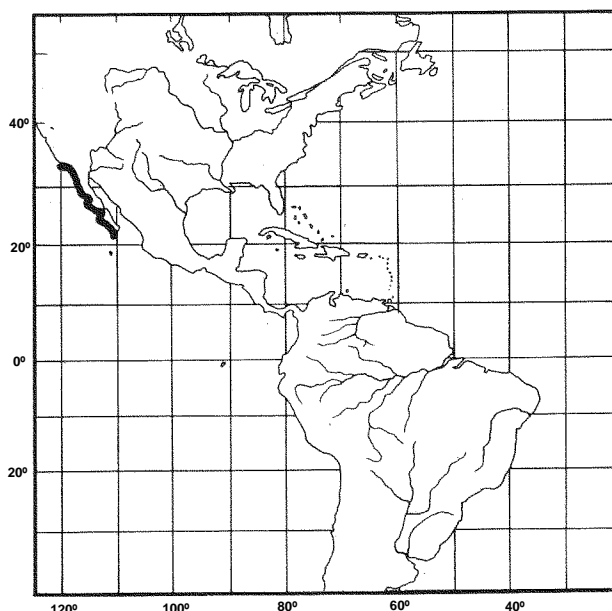
Habitat and Biology : Marine, pelagic, coastal and schooling, most commonly in bays and inlets (the fourth most abundant fish taken by various gear in Newport Bay, California; eggs the most abundant of 7 species sampled, especially in May - see Horn & Allen, 1981). Ovarian eggs spherical (Baldwin & Chang, 1970).

Size : **To** 13.3 cm standard length.

Interest to Fisheries : Caught by seines, otter trawls and especially in gillnets (top species) in Newport Bay [Horn & Allen, 1981]. Used as a baitfish.

Local Names : MEXICO: Anchoa; USA: Deepbody anchovy (AFS list).

Literature : Chapman (1944 - osteology), Heath (1980 - life history), Horn & Allen (1981 - abundance in Newport Bay, ecology).



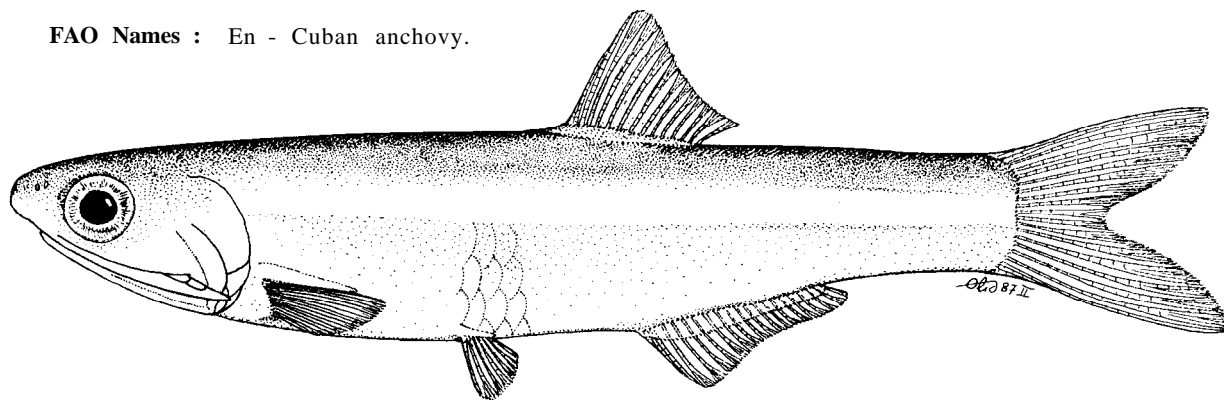
Anchoa cubana (Poey, 1868)

ENGR Ancho 7

Engraulis cubanus Poey, 1868, Repert.fisico-nat.Cuba, 2:420 (Cuba); Idem., 1881, in Grundlach, An.Soc.esp. Hist.nat., 10(4):(Puerto Rico).

Synonyms : Stolephorus astilbe Jordan & Rutter, 1897:95 (Kingston, Jamaica); Anchoviella astilbe: Jordan & Seale, 1926:402 (syntypes); Anchoviella cubana: Jordan & Seale, 1926:399 (Poey specimens, Cuba); Hildebrand, 1943:76, fig.31 (Florida- on both coasts, Alabama, Louisiana, Yucatan, Guatemala; also, Cuba, Jamaica and St. Thomas); FWNA, 1964:188, fig.37 (synopsis); Gines Cervigón, & 1968:40 (Guianas coasts); Cervigón, 1969:229, figs 11, 23 (maxilla)(Florida, Jamaica, Venezuela, Surinam); Daly, 1970:72 (key only); Whitehead, 1973a:122, figs 47, 48 (maxilla)(Trinidad); Roux, 1973:52, fig.8 (between Rio de Janeiro and Santos).

FAO Names : En - Cuban anchovy.



Diagnostic Features : Body somewhat compressed, elongate, its depth 5 to nearly 6 times in standard length. Snout pointed, about 3/4 eye diameter; maxilla long, tip pointed and projecting at least 1/2 eye diameter beyond second supra-maxilla, reaching beyond hind border of pre-operculum; lower gillrakers 24 to 30; gill cover canals of walkeri-type. Anal fin short, with iii 16 to 21 finrays, its origin below about midpoint of dorsal fin base. Anus nearer to pelvic fin tips than to anal fin origin. A narrow silver stripe along flank, about pupil diameter, disappearing on preservation. Atlantic *Anchoa* species that overlap in both gillraker and anal finray counts are: *A. januaria* and *A. parva* (maxilla shorter, not to hind edge of pre-operculum, the tip projecting not more than 1/2 eye diameter beyond second supra-maxilla); *A. hepsetus* and *A. tricolor* (anus nearer to anal fin origin; also Panamensis-type canals, as also in *A. mitchilli* and *A. marinii*, which have 20 or more branched anal finrays); *A. lyolepis* and *A. filifera* have a long pseudobranch.

Geographical Distribution : Western central Atlantic (North Carolina, both coasts of Florida, northern part of Gulf of Mexico (but perhaps throughout), Cuba and probably throughout the Greater and Lesser Antilles, Yucatan south and east to Venezuela and Surinam) and western South Atlantic (entire coast of Brazil south to at least Santos).

Habitat and Biology : Marine, pelagic, coastal, forming dense schools along beaches in water of 1 m or less (Cervigón, 1969:231); occurs down to about 60 m (FWNA, 1964:190).

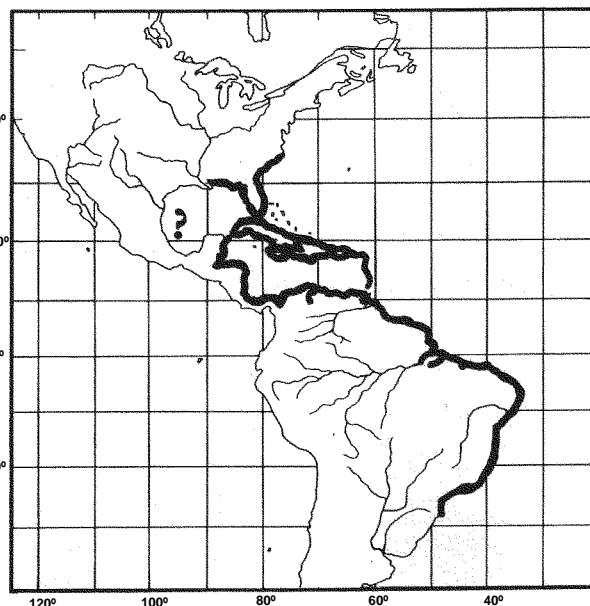
Size : To about 7 cm standard length, usually 5 to 6 cm.

Interest to Fisheries : Perhaps of local interest since it forms dense schools.

Local Names : CUBA: Bocón, Manjúa; USA: Cuban anchovy (FWNA, AFS list).

Literature : Cervigón (1969 - populations, habitat).

Remarks : Virtually overlaps the combined ranges of *A. mitchilli*, *A. parva* and *A. januaria*, all of which share an advanced anus and fairly similar gillraker and anal finray counts.



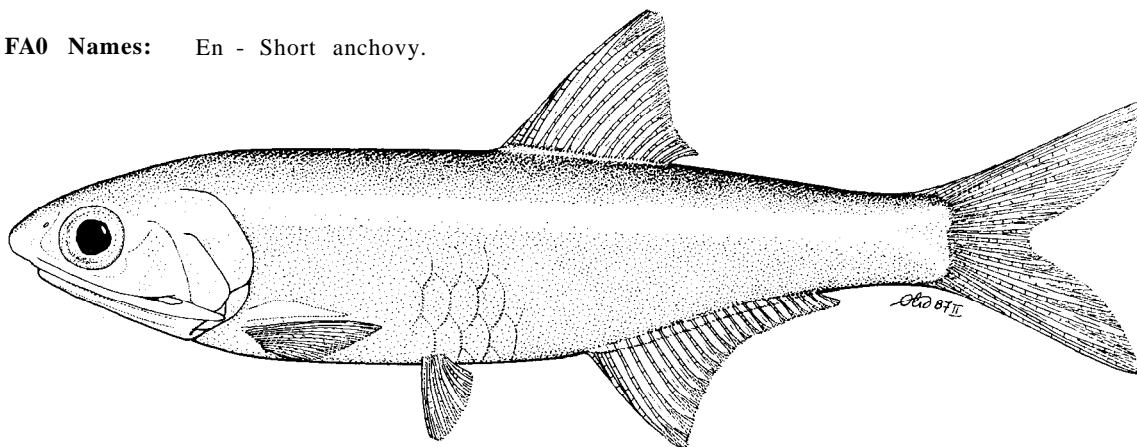
Anchoa curta (Jordan & Gilbert, 1882)

ENGR Ancho 32

Stolephorus curtus Jordan & Gilbert, 1882, *Proc.U.S.nat.Mus.*, 4:343 (Mazatlan, Mexico).

Synonyms : *Stolephorus curtus*: Jordan & Evermann, 1896:445; *Anchovia curta*: Gilbert & Starks, 1904:42 (Panama Bay); Meek & Hildebrand, 1923:206 (Panama Bay, in fresh or slightly brackish water); *Anchoviella curta*: Jordan & Scale, 1926:407 (Mazatlan, Mexico); *Anchoa curta*-Hildebrand, 1943:85, fig.36 (Mexico, El Salvador, Panama, Peru); *Idem*, 1946:100 (Puerto Pizarro, Peru); Peterson, 1956:168 (Costa Rica); Chirichigno, 1963:17 (Puerto Pizarro, Peru); Cobo & Massay, 1969:8 (Mexico, listed); Baldwin & Chan, 1970:142 (Rio Santiago, Nayarit, Mexico - with *A. walkeri*); Nelson, 1983:tab.1 (vertebrae).

FA0 Names: En - Short anchovy.



Diagnostic Feature : Body moderately elongate, but somewhat compressed, its depth 4.5 to about 5 times in standard length. Snout fairly short, about 3/4 eye diameter; maxilla long, tip sharply pointed, reaching almost to edge of gill cover; lower gillrakers 21 to 26 (usually 23 to 26); gill cover canals of *walkeri*-type. Anal fin moderate, with iii 19 to 23 finrays, its origin under or a little before midpoint of dorsal fin base. A narrow silver stripe along flank. Pacific *Anchoa* species that overlap in both gillraker and anal finray counts are: *A. ischana* and *A. helleri* (gillrakers not more than 22, and *panamensis*-type canals, as also in *A. starksi*, which has a long pseudobranch); *A. walkeri* and *A. lucida* have not less than 23 branched anal finrays, while *A. delicatissima* has not less than 26 gillrakers.

Geographical Distribution : Eastern central Pacific (central part of Gulf of California, i.e., southward from Rio Yaqui, Mexico, to Panama and south to the Gulf of Guayaquil, Peru).

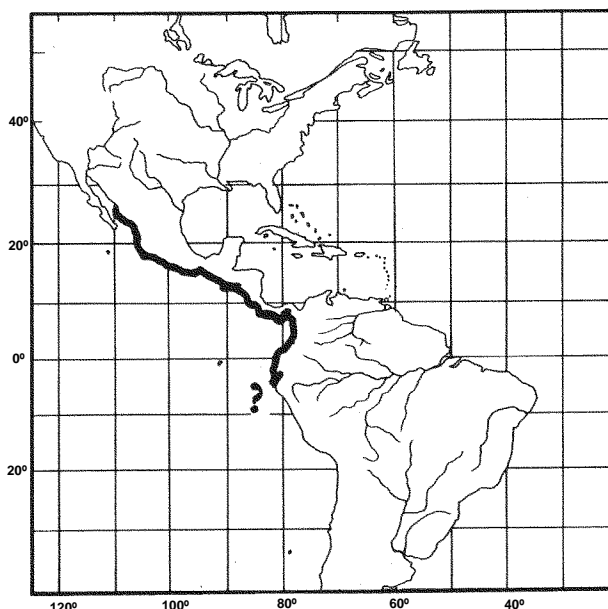
Habitat and Biology : Marine, pelagic, coastal and schooling, most often in muddy estuaries in fully salt, brackish or apparently freshwater, penetrating only a few kilometres up rivers. Maturing females caught in January, August and October in the Gulf of Nicoya, Costa Rica, suggesting a protracted spawning season; eggs oval (Peterson, 1956).

Size : To at least 6.4 cm standard length, or 7.8 cm total length (Hildebrand, 1943:87).

Interest to Fisheries : No data.

Local Names : COSTA RICA: Anchoa; ECUADOR: Pelada; MEXICO, PERU: Anchoa.

Literature : Peterson (1956 - brief note on breeding).



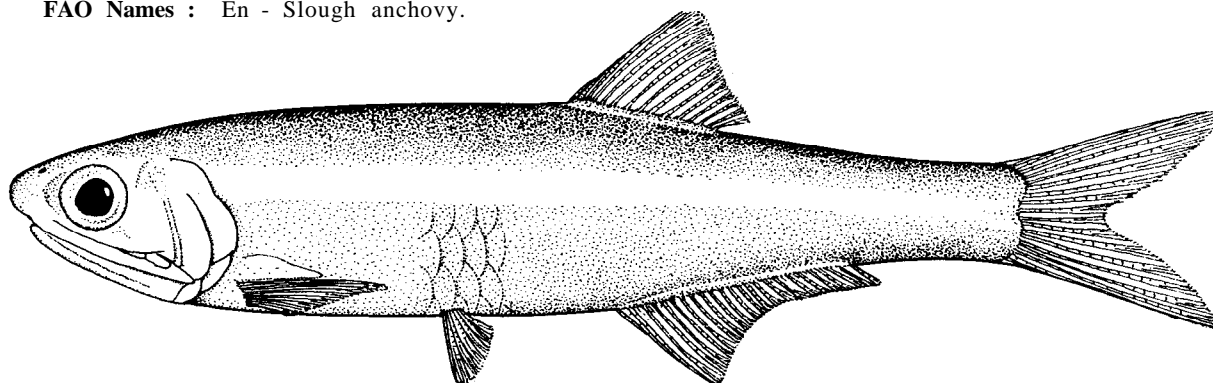
Anchoa delicatissima (Girard, 1856)

ENGR Ancho 28

Engraulis delicatissimus Girard, 1856, *Proc.Acad.nat.Sci.Philad.*, 7:154 (San Diego, California); *Idem*, 1858, *Fishes, U.S.Senate Misc.Doc.*, (78)(4):335 (repeat).

Synonyms : *Stolephorus delicatissimus*:Eigenmann, 1893:138, pl.12 (San Diego, California); Jordan & Evermann, 1896:444; *Anchoviella delicatissima*:Jordan & Seale, 1926:398 (San Diego); *Anchoa delicatissima*-Hildebrand, 1943:98, fig.41 (San Diego only); Miller & Lea, 1972:56, 57 (fig., key; synopsis); Hubbs, Follett & Dempster, 1979:7 (California, listed); Horn & Allen, 1981:48, tab.1 (Newport Bay, California); Nelson, 1983:tab.1 (vertebrae); Eschmeyer, Herald & Hamman, 1983:74, p.17 (California).

FAO Names : En - Slough anchovy.



Diagnostic Features : Body fairly elongate and compressed, its depth around 5 times in standard length. Snout moderate, about 3/4 eye diameter; maxilla moderate, tip pointed, reaching onto inter-operculum, but not to edge of gill cover; lower gillrakers numerous, 26 to 32; gill cover canals of *walkeri*-type. Anal fin moderate, with iii 20 to 25 finrays, its origin usually somewhat before midpoint of dorsal fin base. A silver stripe along flank, about 3/4 eye diameter. Pacific *Anchoa* species that overlap in both gillraker and anal finray counts are: *A. starksi* (gillrakers not more than 27, branched anal finrays not more than 20, also *panamensis*-type canals), and *A. curta* (gillrakers not more than 26); also, neither of these species occurs off California or the Pacific coast of Baja California. Overlaps the range of *A. compressa*, which has 27 to 31 branched anal finrays. *Engraulis mordax* has the anal fin origin under or behind the last dorsal finray base.

Geographical Distribution : Eastern central Pacific (Belmont Shores, Long Beach Harbor, California at 33°47'N, south to Magdalena Bay, on Pacific coast of Baja California; not in Gulf of California).

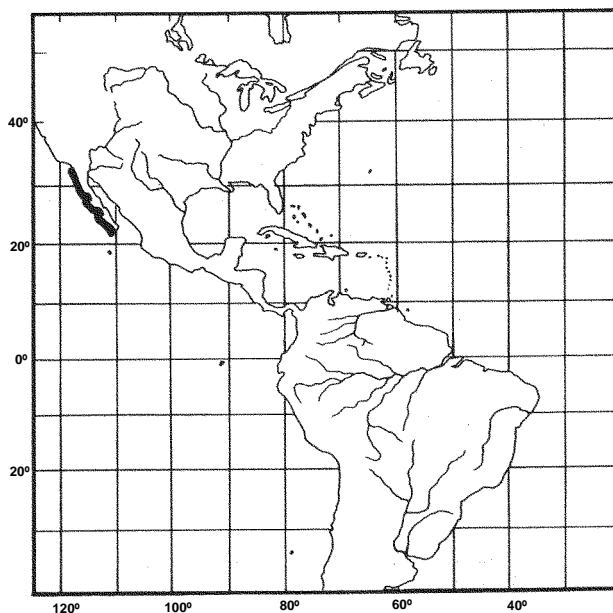
Habitat and Biology : Marine, pelagic, coastal, "common in estuaries and backwaters of bays, occasionally near shore outside of bays" (Miller & Lea, 1972: 56). The fifth most abundant fish taken by various gear in Newport Bay, California; a midwater schooling species caught in bag seine hauls mainly in July and September (Horn & Allen, 1981).

Size : To 6.5 cm standard length.

Interest to Fisheries :

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

Literature : Heath (1980 - life history), Horn & Allen (1981 - abundance in Newport Bay, ecology).



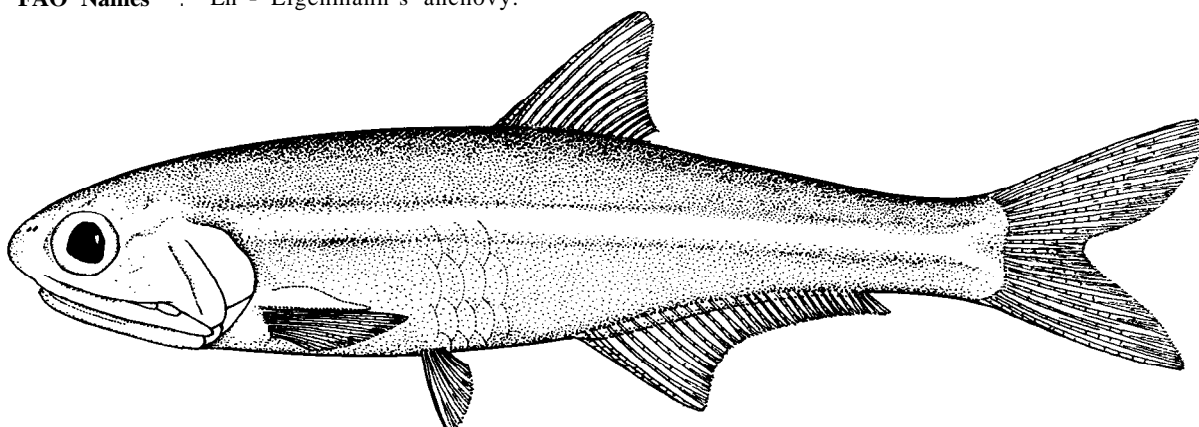
Anchoa eigenmannia (Meek & Hildebrand, 1923)

ENGR Ancho 27

Anchoa eigenmannia Meek & Hildebrand, 1923, *Field Mus.Publ.Zool.*, 15(1):205, Pl.14. fig.2 (Taboga Island, Panama).

Synonyms : *Anchoa eigenmannia*-Hildebrand, 1943:47, fig.15 (Taboga and Pearl Islands, Panama); Peterson, 1956:162 (Costa Rica); Nelson, 1983:tab.1 (vertebrae).

FAO Names : En - Eigenmann's anchovy.



Diagnostic Features : Body moderately elongate, strongly compressed, its depth about 4.5 to 5 times in standard length. Snout moderate, about 3/4 eye diameter; maxilla moderate, tip pointed, reaching onto interoperculum, but not to edge of gill cover; lower gillrakers 12 to 14; gill cover canals of *panamensis*-type. Anal fin fairly long, with iii 24 to 29 finrays (usually 25 to 27), its origin before 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. ginifer* (branched anal finrays 28 to 34) and *A. scofieldi* (branched anal finrays usually to 23 or 24, also anal fin origin usually under midpoint of dorsal fin base and vertebrae 42 to 44, cf. 41 to 43).

Geographical Distribution : Eastern central Pacific (Nicaragua, Costa Rica, Panama).

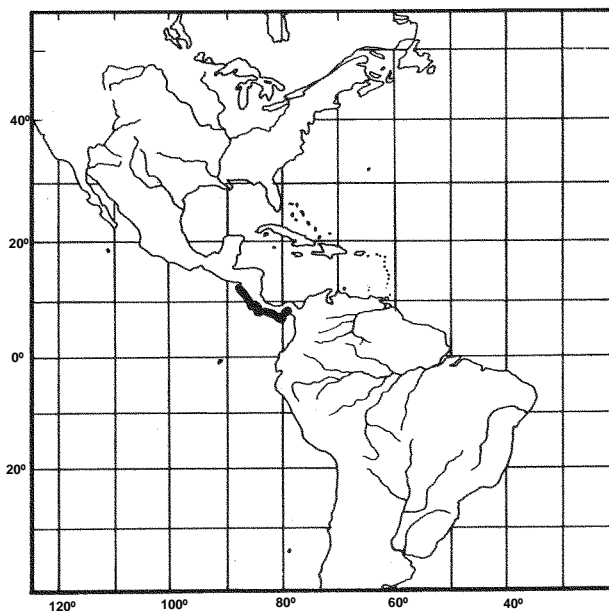
Habitat and Biology : Marine, pelagic, coastal; in the Gulf of Nicoya, Costa Rica, recorded only in the more oceanic outer part of the Gulf, along sandy beaches (Peterson, 1956).

Size : To 6.7 cm standard length.

Interest to Fisheries : No data.

Local Names :

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



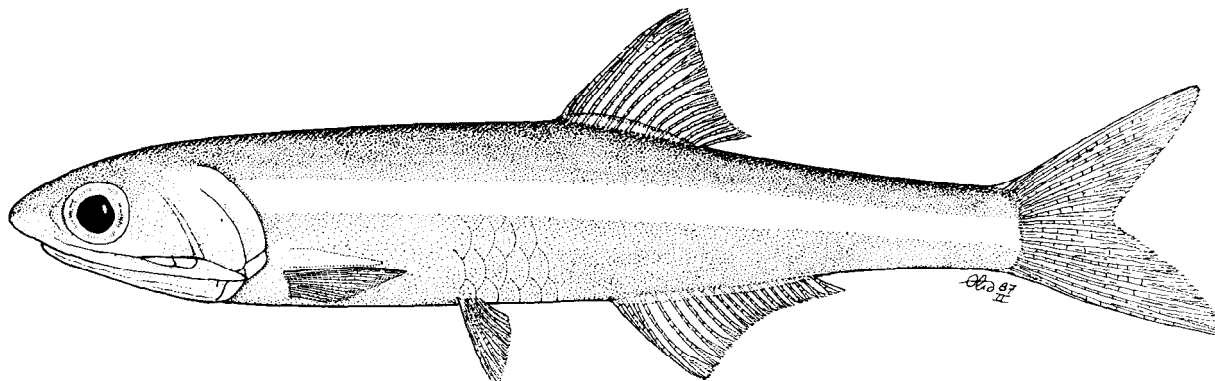
Anchoa exiguus (Jordan & Gilbert, 1882)

ENGR Ancho 29

Stolephorus exiguus Jordan & Gilbert, 1882, *Proc.U.S.natn.Mus.* 4:342 (Mazatlan, Mexico).

Synonyms : *Anchoa tropica* Hildebrand, 1943:80, fig.33 (Panama Bay and Cupica Island, Colombia); *Anchoa exiguus*:Meek & Hildebrand, 1923:200 (Chame Point and Balboa, Panama); *Anchoiella exiguus*:Jordan & Seale, 1926:395 (Mazatlan, Mexico); *Anchoa exiguus*-Hildebrand, 1943:78, fig.32 (Mazatlan, Mexico and San Josef Island, Baja California); Peterson, 1956:167 (Costa Rica, *tropica* a synonym); ?Cobo & Massay, 1969:8 (Ecuador, listed; needs confirmation); Nelson, 1983:tab.1 (vertebrae).

FAO Names : En - Slender anchovy.



Diagnostic Features : Body slender, its depth about 5 to 6 times in standard length. Snout moderate, about 3/4 eye diameter; maxilla rather long, tip pointed, reaching to or almost to edge of gill cover; lower gillrakers 22 to 27; gill cover canals of *walkeri*-type. Anal fin short, with iii 16 to 19 finrays, its origin below or a little before midpoint of dorsal fin base. A silver stripe along flank, less than eye diameter. Pacific *Anchoa* species that overlap in both gillraker and anal finray counts are: *A. ischana* (gillrakers not more than 22, and *panamensis*-type canals, as also in *A. starksi*, which has a long pseudobranch), *A. curta* (branched anal finrays not less than 19, as also in *A. delicatissima*, which has not less than 26 gillrakers).

Geographical Distribution : Eastern central Pacific (southern part of Gulf of California south to Panama, perhaps to Colombia).

Habitat and Biology : Marine, pelagic, coastal; found only in outer part of Gulf of Nicoya, Costa Rica, thus perhaps not entering estuaries (Peterson, 1956). Nearly mature females with oval and rather few eggs were recorded in the Gulf of Nicoya in August to September (Peterson, *loc.cit.*).

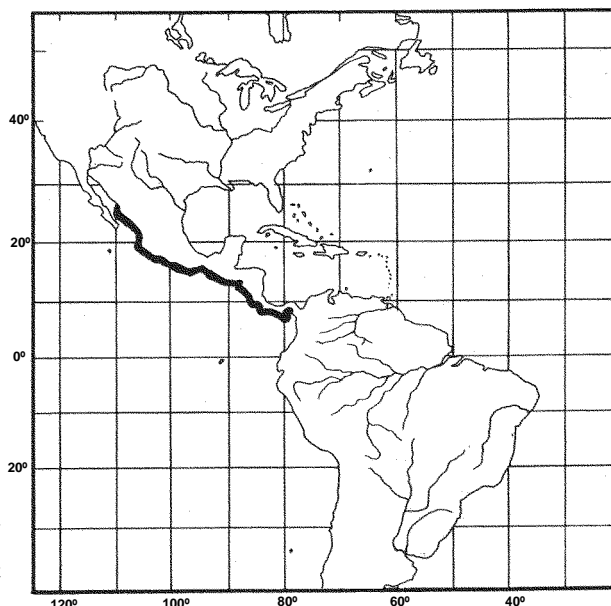
Size : To about 6 cm standard length.

Interest to Fisheries : No data.

Local Names :

Literature : Peterson (1956 - brief notes on ecology, breeding).

Remarks : Morrow & Posner (1957:14) recorded a single larva (19.6 mm standard length) from Talara Harbour, northern Peru; however, the low anal finray count also suggests *A. ischana*, *A. starksi* or *A. argentivittata*.



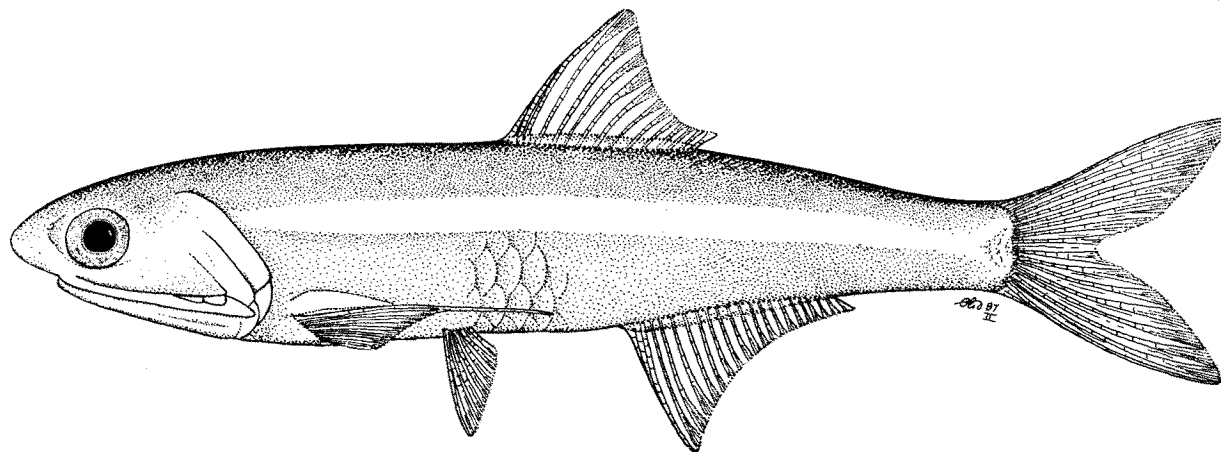
Anchoa filifera (Fowler, 1915)

ENGR Ancho 34

Anchovia filifera Fowler, 1915, *Proc.Acad.nat.Sci.Philad.*:524, fig.2 (Port-of-Spain, Trinidad).

Synonyms : *Anchoviella longipinna* Beebe & Tee Van, 1928:48, fig. (Bizoton, Haiti); *Anchoa howelli* Hildebrand, 1943:106, fig.46 (Santos and Rio de Janeiro, Brazil); Carvalho, 1950a:65, pl.2, fig.10 (compiled); Gines & Cervigón, 1968:30, 40 (Guianas); *Anchoviella filifera*:Fowler, 1930:146 (Jamaica); *Anchoa filifera*-Hildebrand, 1943:105, fig.45 (Jamaica, Puerto Rico, Trinidad); FWNA, 1964:202, fig. 43 (synopsis); Cervigón, 1969:218, fig.7, tabs 7, 20 (Puerto Rico, Venezuela, Guyana, Recife in Brazil; subspecies *howelli* accepted); Salaya & Salazar, 1969:253 (Venezuela); Whitehead, 1973a:140, fig.53 (Trinidad, French Guiana); Eskinazi, 1974:290 (Canal de Santa Cruz, Pernambuco, Brazil; tab.1 as *A. howelli*); Palacio, 1974:21 (Peninsula de la Guajira, Colombia); Figueiredo & Menezes, 1978:31, fig.40 (Brazil, south to Cananéia, compiled); Nelson, 1986:895, tabs 1-4 (synonymy, subgenus *Anchovieta*).

FAO Names : En - Longfinger 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, teeth near tip somewhat enlarged; lower gillrakers 21 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 extended as a filament reaching as far as dorsal fin origin in larger fishes (but often broken); anal fin short, with iii 17 to 21 finrays, its origin under or behind base of last dorsal finray. A broad silver stripe along flank, about as wide as eye, apparently without a dark line above it. Closely resembles A. lyolepis (no pectoral fin filament, also vertebrae mostly 41 or 42; cf. mostly 39 in A. filifera); A. marini (which may overlap A. filifera at around 25° S off Brazil) 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.

Geographical Distribution : Western Atlantic (Antilles, Trinidad and south to Brazil, apparently as far south as 24°58' S; also Venezuela to Panama and Honduras, but not in Gulf of Mexico).

Habitat and Biology : Marine, pelagic, coastal and schooling; trawled down to 25 m off Brazil, but equally taken in shore seines and recorded in brackish water (7.94 to 8.21‰) in the Canal de Santa Cruz, Pernambuco (Eskinazi, 1974:291). More data needed.

Size : To 10 cm standard length.

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

Local Names :

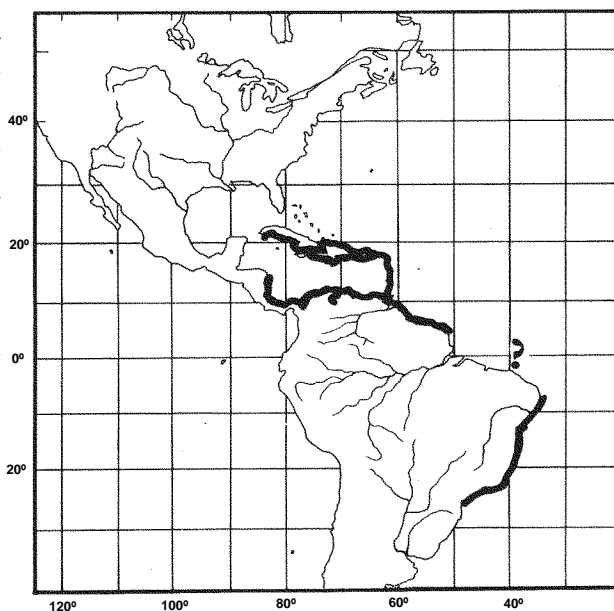
Literature : See synonymy (but very little biological information).

Remarks : Damage to the pectoral filament produces a fish very similar to A. lyolepis (but vertebrae 38 to 40, mostly 39; cf. 39 to 43, mostly 41 to 42 in A. lyolepis). Under strong magnification - it can usually be decided whether a pectoral filament was originally present or not. Nevertheless, the filament is consistently absent in specimens from Honduras whose low vertebral count of 39 allies them more with A. filifera than with A. lyolepis (but gillrakers 21 to 23, thus consistent with either species). The best character separating filifera-like fishes from A. lyolepis is their distinctly larger teeth toward the end of the maxilla.

As with A. lyolepis, the extensive geographical distribution of A. filifera has suggested the presence of subspecies. Cervigón (1969) proposed.

A. filifera filifera : mainland- Venezuela south to Brazil

A. filifera longipinna : insular - Antilles



Additional meristic data (Nelson, 1986) tends to support this, with a third geographical unit in the western Caribbean:

- A. South America: gillrakers 23 to 27, mostly 25 or 26 (eastern Colombia, Venezuela south to Brazil) (filifera)
- B. Antillean: gillrakers 21 to 26, mostly 23 or 24 (Cuba to Lesser Antilles, including La Blanquilla and Los Roques off Venezuela) (longipinna)
- C. Western Caribbean: gillrakers 21 to 23, no pectoral filament (Gulf of Honduras) (no name)

Vertebral counts do not correlate with these geographical divisions, but branched anal finrays are marginally higher in the South American than in the Antillean group (18 to 21, mostly 18 to 20; cf. 17 to 20, mostly 17 to 19). For the moment, however the recognition of subspecies seems unjustified.

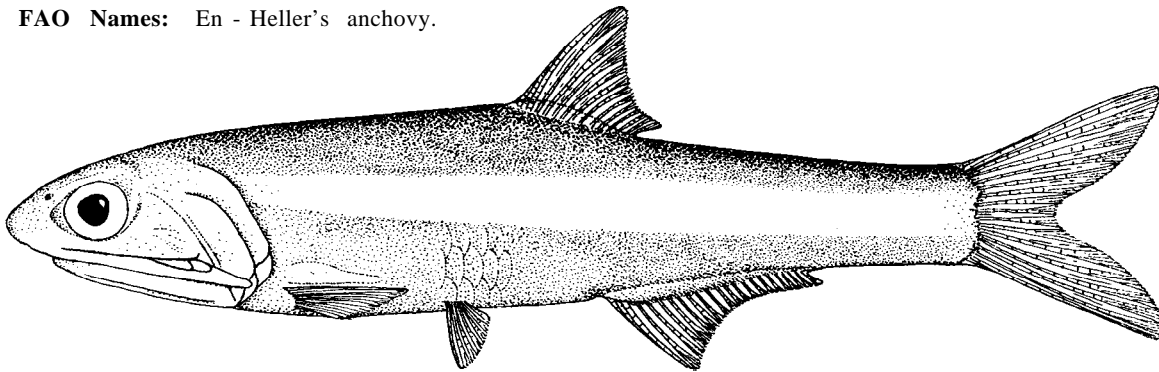
Anchoa helleri (Hubbs, 1921)

ENGR Ancho 21

Anchoiella helleri Hubbs, 1921, *Proc.biol.Soc.Wash.*, 34:47 (San Felipe Bay, Gulf of California).

Synonyms : *Anchoa helleri*-Hildebrand, 1943:64, fig.24 (Cape San Lucas, Baja California and St. George's Island, Gulf of California); Nelson, 1983:tab.1 (vertebrae).

FAO Names: En - Heller's anchovy.



Diagnostic Features : Body rather elongate, but somewhat compressed, its depth about 4.5 to 5 times in standard length. Snout fairly long, almost equal to eye diameter; maxilla moderate, tip bluntly pointed, reaching onto inter-operculum, but not to edge of gill cover; lower gillrakers 16 to 21; gill cover canals of *panamensis*-type. Anal fin fairly short, with iii 17 to 21 (rarely to 23) finrays, its origin a little behind midpoint of dorsal fin base. A broad silver stripe along flank, deeper above anal fin (more than eye diameter). Pacific Anchoa species that overlap in both gillraker and anal finray counts are: *A. ischana* (very similar, but anal fin a little shorter, with 15 to 19 branched finrays and usually 42 to 44 vertebrae, cf. 40 to 42, rarely 43), *A. chamensis* (Panama only), *A. walkeri* and *A. lucida* (branched anal finrays not less than 23 or 22, and walkeri-type canals, as also in *A. curta*, which has not less than 21 gillrakers) and *A. argentivittata* (not more than 19 gillrakers or 17 branched anal finrays, also vertebrae 44 to 46, cf. 40 to 42, rarely 43).

Geographical Distribution : Eastern central Pacific (northern part of Gulf of California south to Sonora).

Habitat and Biology : Marine, pelagic, coastal. More data needed.

Size : To about 8.5 cm standard length, or 10 cm total length (Hildebrand, 1943:65).

Interest to Fisheries : No data.

Local Names :

Literature :

