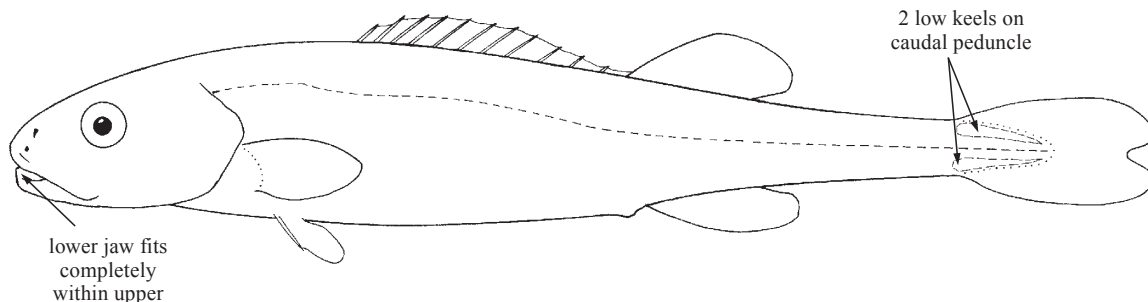


TETRAGONURIDAE

Squaretails

by R.L. Haedrich, Memorial University, Newfoundland, Canada

Diagnostic characters: Medium-sized fishes (to 70 cm) with **elongate body, rounded in cross-section; caudal peduncle long and thick, square in cross-section, with modified scales forming 2 low keels on each side.** Snout blunt and broad, operculum fleshy; eyes generally lack adipose tissue, and usually with a series of small grooves in the posterior rim; **mouth box-like, with lower jaw fitting completely within upper jaw when closed; teeth in upper jaw small and recurved, those in lower jaw large, laterally flattened, knife-like, and close-set;** strong recurved teeth present on vomer and palatines. Two dorsal fins, the first with 14 to 17 short spines that fold into a groove; second dorsal and anal fins similar in shape and size, the bases shorter than base of first dorsal fin; dorsal-fin rays almost twice length of dorsal-fin spines; 1 anal-fin spine; pectoral fins moderately short and rounded. **Scales moderate in size, with heavy longitudinal keels, firmly attached, rows forming a pronounced geodesic pattern around body;** small scales extending onto bases of median fins; lateral line present but tubed scales absent. Skin thick, with tiny pores; top of head and snout naked. **Colour:** brown or blackish.



Habitat, biology, and fisheries: Oceanic fishes of warm and temperate waters, the young epipelagic and the adults presumably mesopelagic; most adults are taken singly far out at sea or occasionally stranded on shores near deep water; juveniles commonly live within the body cavity of pelagic tunicates, especially *Salpa* and *Pyrosoma*. The teeth are adapted for browsing on soft-bodied coelenterates (medusae), ctenophores, and especially salps; also feeds on macrozooplankton; spawning occurs in spring and summer in the eastern Atlantic. Of no interest to fisheries; the flesh of *Tetragonurus cuvieri* is reported to be poisonous.

Similar families occurring in the area

The elongate, rounded shape, the heavy keeled scales in their characteristic geodesic pattern, and the box-like mouth with the lower jaw fitting completely within the upper to form a unique combination such that no other fish can be confused with this family.

List of species occurring in the area

Two of the 3 species in the family are reported as strays from the western North Atlantic and are to be expected in the area

Tetragonurus atlanticus Lowe, 1839. Size to 50 cm. Warm waters, Atlantic, Pacific, and Indian.

Tetragonurus cuvieri Risso, 1810. Size to 70 cm. Temperate, W Mediterranean, Atlantic, and Pacific.

References

Grey, M. 1955. Fishes of the genus *Tetragonurus* Risso 1810. *Dana-Report* 41:1-75.

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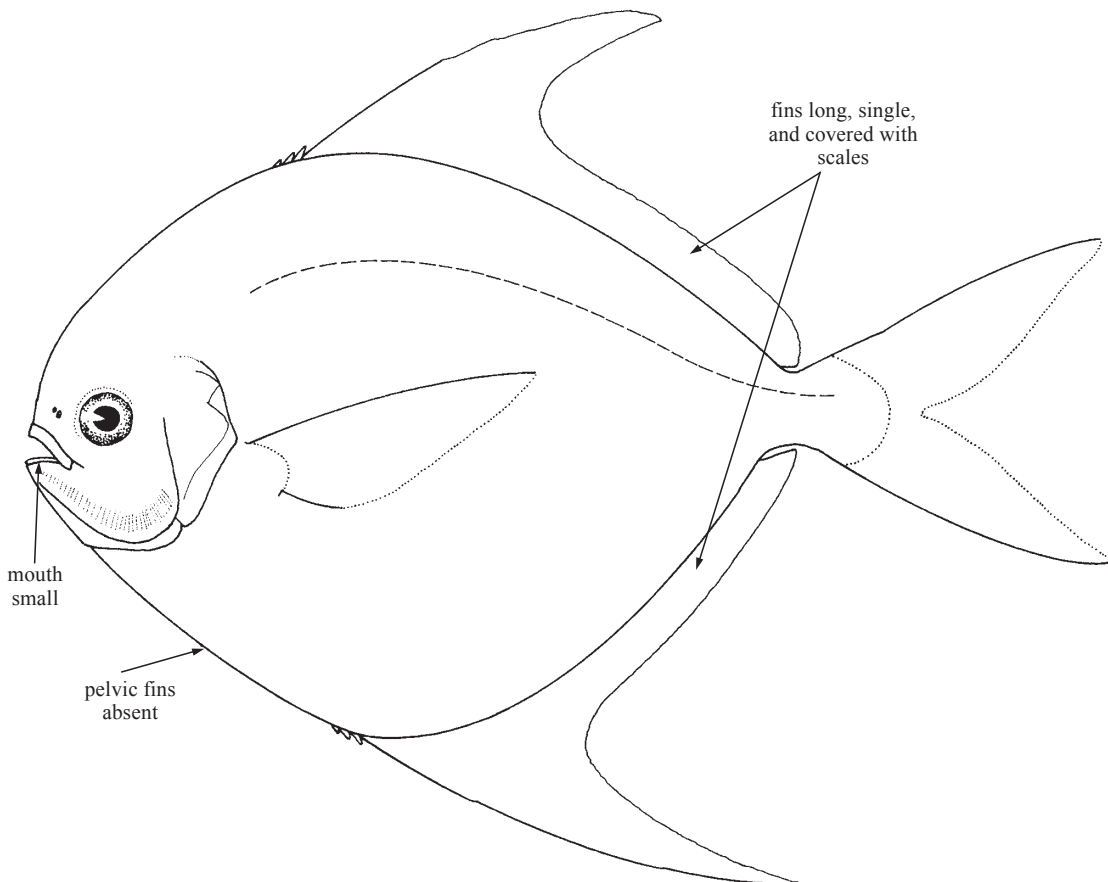
Whitehead, P.J.P., M.-L. Bauchot, J.-C. Hureau, J. Nielsen and E. Tortonese. 1986. *Fishes of the North-eastern Atlantic and the Mediterranean*. Tetragonuridae. UNESCO, Paris, Vol. III:1189-1191.

STROMATEIDAE

Butterfishes (harvestfishes)

by R.L. Haedrich, Memorial University, Newfoundland, Canada

Diagnostic characters: Small (to 30 cm but mostly less than 20 cm) silvery fishes with **body deep and compressed**. Eye medium-sized or large, surrounded by adipose tissue; snout short and blunt; **mouth small; tip of maxillary reaching at most to below anterior eye margin**; teeth in jaws small, in a single row; no teeth on floor or roof of mouth, but toothed pharyngeal sac present. **Dorsal and anal fins single, long, their bases about equal in length and covered with scales**, fin spines few (generally 3 in each fin) and weak, often obsolete; pectoral fins long and pointed (longer than head in all species from the area); **pelvic fins absent**. Caudal peduncle short, without lateral keels; lateral line high, following dorsal profile; scales small, cycloid, and easily detached. **Colour:** grey to blue or green above with **intense silvery reflections, especially on lower sides and belly**, sometimes overlain with a pattern of darker green or bluish mottling and spots.



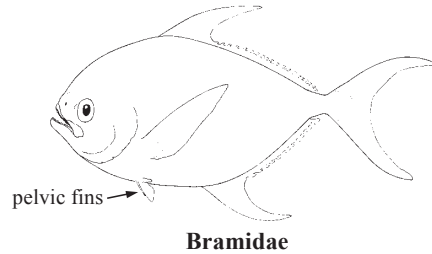
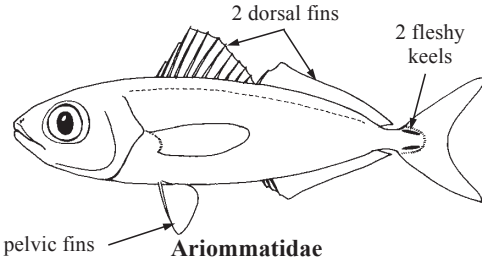
Habitat, biology, and fisheries: Pelagic species, often forming large schools over continental and island shelves, mostly close to the coast; sometimes entering brackish estuaries. The juveniles are often found under floating weeds or associated with medusae and ctenophores. The flesh is excellent eating, but fisheries modest; mortality as bycatch in the shrimp fishery is apparently significant.

Similar families occurring in the area

Adults of all similar families can easily be distinguished by the presence of pelvic fins. Additional distinguishing characters follow.

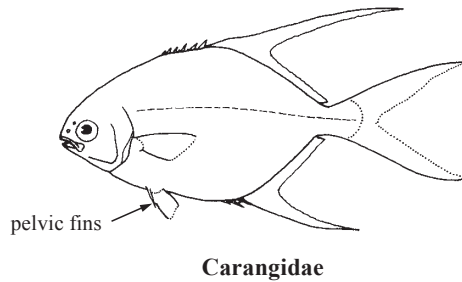
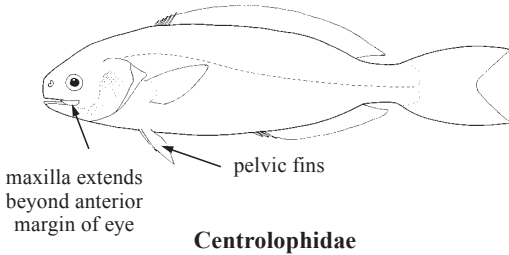
Ariommatidae (particularly *Ariomma regulus*): 2 distinct, contiguous dorsal fins, the second with no more than about 15 rays; anal-fin base about equal in length to that of second dorsal fin; caudal peduncle square with 2 fleshy keels on each side.

Bramidae: similarly-shaped but much heavier bodies and fins with pelvic fins present; maxillary exposed and extending to below middle of eye; scales large and often keeled.



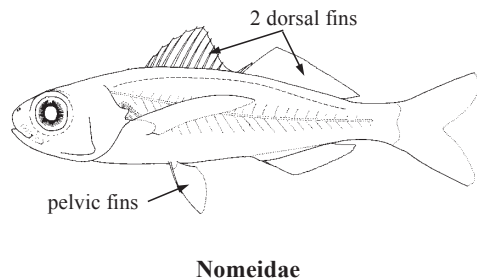
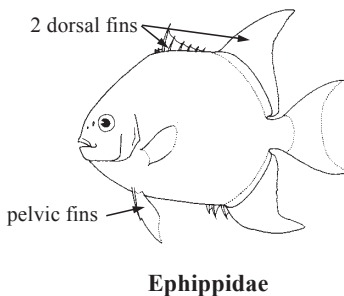
Centrolophidae (particularly the genus *Hyperoglyphe*): mouth larger (tip of maxillary extending beyond anterior eye margin); anal-fin base clearly shorter than base of dorsal fin; pectoral fins shorter than head.

Carangidae (particularly the genus *Trachinotus*): 2 detached spines in front of anal fin; in *Trachinotus*, dorsal fin with 6 low spines and lateral line along middle of flanks, not following upper profile.



Ephippidae: spinous and soft portions of dorsal fin separated by a deep notch; pectoral fins small (shorter than head) and rounded; caudal fin emarginate.

Nomeidae (particularly the genus *Psenes*): dorsal fin with 6 to 11 long well-developed spines; spinous and soft portions of fin separated by a notch; anal-fin base clearly shorter than base of dorsal fin.



Key to the species of Stromateidae occurring in the area

- 1a. Dorsal and anal fins moderately to extremely falcate, dorsal fin slightly less so; no large pores below anterior half of dorsal fin; upper jaw teeth pointed and simple (Fig. 1)
 *Peprilus paru*
- 1b. Dorsal and anal fins only slightly falcate; a row of up to 25 large pores on body immediately below anterior half of dorsal fin; upper jaw teeth with 3 small cusps → 2

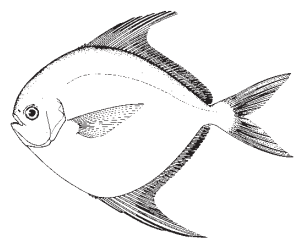


Fig. 1 *Peprilus paru*

- 2a. Body depth more than 2 times in length; dorsal and upper ventral surface in adults often with a mottled colour pattern; caudal vertebrae 17 to 20, usually 19 (Fig. 2) . . . *Peprilus triacanthus*
- 2b. Body depth less than 2 times in length; dorsal or upper ventral surface rarely if ever mottled; caudal vertebrae 16 to 18, usually 17 (Fig. 3) *Peprilus burti*

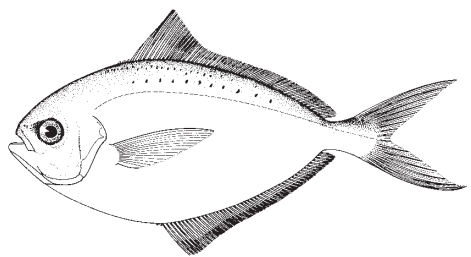


Fig. 2 *Peprilus triacanthus*

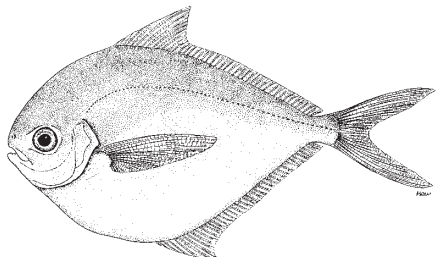


Fig. 3 *Peprilus burti*

List of species occurring in the area

The symbol is given when species accounts are included.

- Peprilus burti* Fowler 1944.
- Peprilus paru* (Linnaeus 1758).
- Peprilus triacanthus* (Peck 1804).

References

Able, K.W. and M.P. Fahay. 1998. *The First Year of Life of Estuarine Fishes in the Middle Atlantic Bight*. Chapter 70 *Peprilus triacanthus* (Peck) Butterflyfish. New Brunswick, New Jersey, Rutgers University Press, pp. 228-231.

Caldwell, D.K. 1961. Populations of the butterflyfish, *Poronotus triacanthus* (Peck), with systematic comments. *Bull. S. Calif. Acad. Sci.*, 60(1):19-31.

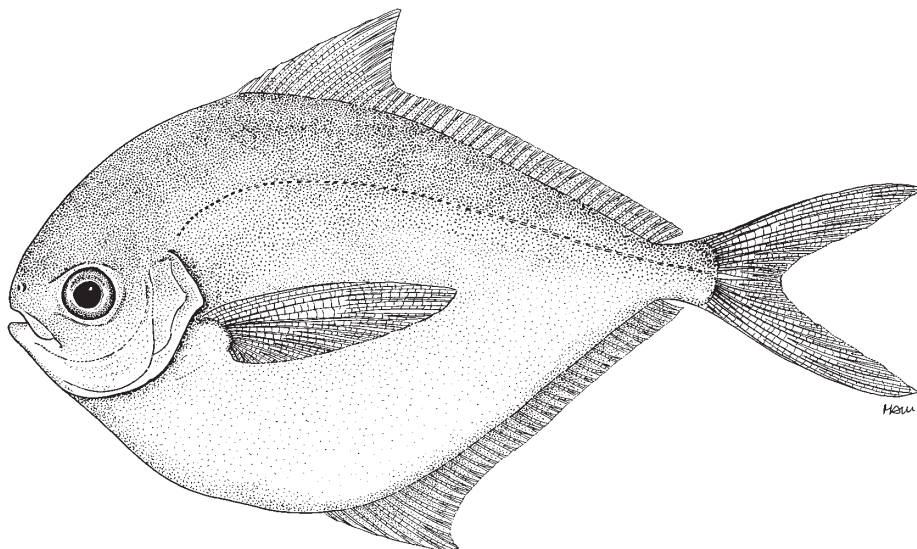
Collette, B.B. 1963. The systematic status of the Gulf of Mexico butterflyfish, *Peprilus burti*. *Copeia*, 1963(3):582-583.

Horn, M.H. 1970. Systematics and biology of the stromateid fishes of the genus *Peprilus*. *Bull. Mus. Comp. Zool.*, 140:164-271.

Peprilus burti (Fowler, 1944)

Frequent synonyms / misidentifications: None / *Poronotus triacanthus* (Peck, 1804); *Peprilus triacanthus* (Peck, 1804).

FAO names: **En** - Gulf butterfish; **Fr** - Stromate simple; **Sp** - Palometa clara.



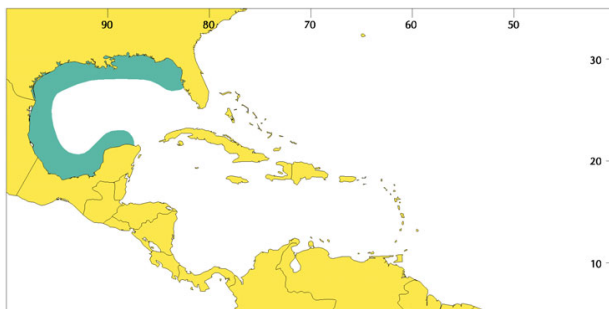
Diagnostic characters: Body oval, deep (its depth less than 2.5 times in total length) and strongly compressed. Eye surrounded by a small area of adipose tissue. Snout short and blunt, lower jaw projecting somewhat beyond upper. Mouth small, tip of maxillary not reaching below eye margin; teeth in jaws very small, in one row; those in the upper jaw flattened and with 3 tiny cusps. **Dorsal and anal fin bases very long (about equal in length), the anterior fin rays elevated, but fins not falcate;** both fins preceded by 3 short, weak, spines; caudal fin deeply forked; pectoral fins long (longer than head) and pointed; **pelvic fins absent. A conspicuous series of 17 to 25 pores along anterior half of body under the dorsal fin;** lateral line high, following dorsal profile; scales small, present also on cheeks. Caudal vertebrae 16 to 18. **Colour:** pale blue above, silvery below (fading after death), with no spots.

Size: Maximum to 20 cm.

Habitat, biology, and fisheries: A pelagic fish forming large loose schools across the continental shelf over sand/mud bottoms; depth range from 2 to 275 m at least, but most abundant at 155 to 225 m; near bottom during the day and migrating into the water column at night; juveniles often found under floating weeds and with jellyfish. Adults feed on jellyfish, small fish, crustaceans, and worms; the juveniles are plankton and jellyfish feeders. Mature within 1 year and rarely lives past 2; spawning takes place at discrete intervals twice a year slightly offshore. Highly esteemed for food, marketed fresh and frozen; caught mainly with otter trawls. Attempts to develop a fishery in the northeast Gulf have met with mixed success, despite good catches and a successful marketing campaign in Japan. Separate statistics are not kept for this species; catches from the area are lumped together with those of *P. paru* as *Peprilus* spp. FAO statistics report landings ranging from 568 to 1889 t from 1995 to 1999.

Distribution: Gulf of Mexico from southern Florida to Yucatán, most abundant in the northeast Gulf. Said to stray rarely to the Atlantic coast of Florida and perhaps even north to Virginia in shallow water, but these records could represent atypical *P. triacanthus*; systematic work is needed.

Remarks: This species is very closely related to *P. triacanthus*, and the 2 have often been synonymized.

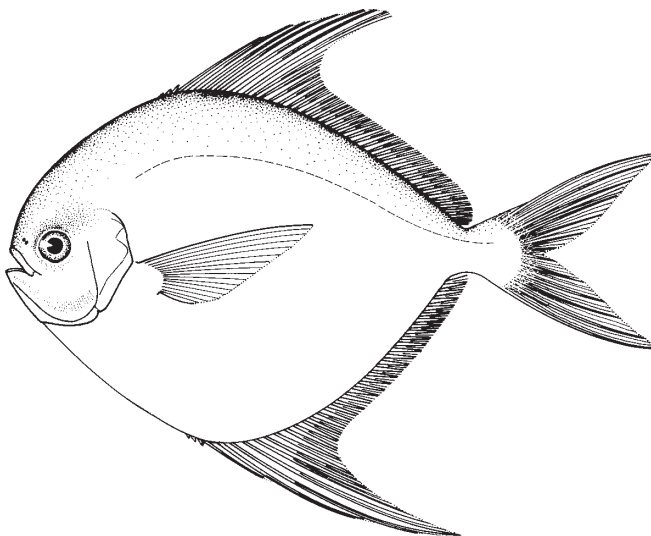


Peprilus paru (Linnaeus, 1758)

ERP

Frequent synonyms / misidentifications: *Peprilus alepidotus* (Linnaeus, 1766) / None.

FAO names: **En** - American harvestfish; **Fr** - Stromate lune; **Sp** - Palometa pampano.



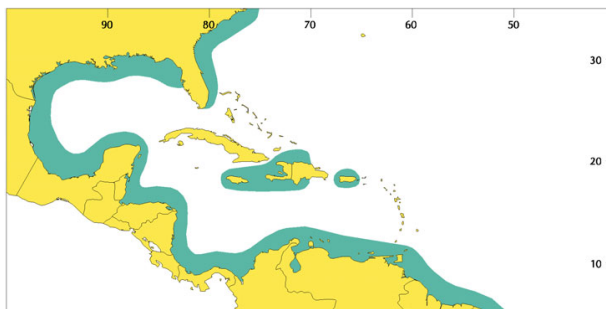
Diagnostic characters: **Body very deep (its depth 1.6 to 1.8 in total length)**, bounded by even curves and strongly compressed. Snout short and blunt, about equal to eye diameter. Mouth small, tip of maxillary just reaching to below eye margin; teeth in jaws weak, in 1 row, those in the upper jaw slightly recurved, simple and pointed. **Dorsal and anal fin bases very long (about equal in length)**, both fins falcate, the length of their longest rays greater than head and preceded by 3 weak spines; caudal fin stiff and deeply forked, both its lobes longer than head; pectoral fins narrow and much longer than head; **pelvic fins absent. No conspicuous series of pores below dorsal fin**; lateral line high, following dorsal profile; scales small and easily detached, extending to cheeks and bases of vertical fins. **Colour:** pale blue to green above, silvery with a golden/yellow tinge below.

Size: Maximum to 30 cm, commonly to 18 cm.

Habitat, biology, and fisheries: A pelagic fish forming large schools in coastal bays, inshore waters over the continental shelf and around islands at moderate depths (50 to 70 m) where it occurs throughout the year; juveniles found in shallow coastal waters under floating weeds or in association with medusae. Adults feed mainly on jellyfish and small fish, crustaceans and worms; the juveniles are plankton feeders. Caught mainly with otter trawls, also seines; marketed fresh and frozen, exported to Japan where it has been well received. Fishing in the area occurs mainly in inshore waters off eastern Florida, the northeastern part of the Gulf, western Venezuela and the Guianas; also may be fished occasionally on the Campeche Bank. Prior to about 1990, except for a short period in the early 1960s, only negligible amounts of harvestfish were landed. Venezuela has developed its fishery since then, and currently (1996) is landing about 2 000 t annually.

Distribution: Florida, Gulf of Mexico, coasts of Venezuela, Trinidad and the Antilles: infrequent in the western Caribbean, and absent from Bermuda and Bahamas. Along the Atlantic coasts of America it extends from about Chesapeake Bay (straying rarely to the Gulf of Maine) south to warm continental shelf waters of Argentina.

Remarks: This very wide-ranging species shows considerable local variation in finray counts, but overlap is extensive and appears to be clinal. Some authors distinguish between USA Atlantic coast populations as *P. alepidotus* and Caribbean and South American populations as *P. paru*. Both names are applied to Gulf of Mexico populations.

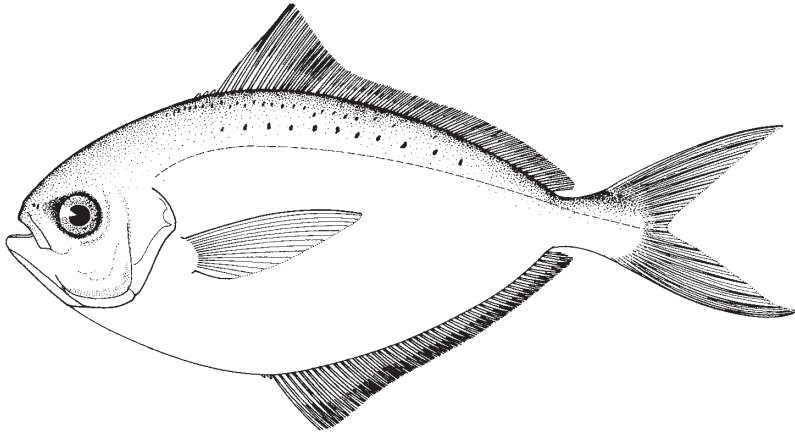


Peprilus triacanthus (Peck, 1804)

BUT

Frequent synonyms / misidentifications: *Poronotus triacanthus* (Peck, 1804) / None.

FAO names: En - Atlantic butterfish; Fr - Stromate fossette; Sp - Palometa pintada.



Diagnostic characters: Body oval to somewhat elongate, moderately deep (its depth 2.7 to 3 times in total length) and strongly compressed. Eye medium-sized (its diameter 3.4 to 3.7 times in head length), surrounded by a small area of adipose tissue. Snout short and blunt, lower jaw projecting somewhat beyond upper. Mouth small, tip of maxillary not reaching to anterior eye margin; teeth in jaws very small, in a single row; those in the upper jaw flattened and with 3 tiny cusps. **Dorsal and anal-fin bases very long (about equal in length), the anterior fin rays elevated, but fins not falcate;** both fins preceded by 3 short, weak, spines; caudal fin deeply forked; pectoral fins long (longer than head) and pointed; **pelvic fins absent. A conspicuous series of 17 to 25 pores along anterior half of body under dorsal fin;** lateral line high, following dorsal profile; scales small, present also on cheeks. Caudal vertebrae 17 to 20. **Colour:** pale blue above, silvery below; **numerous irregular dark spots on sides** in live fish (fading after death).

Size: Maximum to 30 cm, commonly to 20 cm.

Habitat, biology, and fisheries: A pelagic fish forming large loose schools across the continental shelf and into large brackish estuaries; over sand/mud bottoms and at depths generally less than 55 m, except during the winter months when it may descend to almost 200 m in deeper waters offshore; juveniles are often found under floating weeds and with jellyfish. Adults feed on jellyfish, small fish, crustaceans, and worms; the juveniles are plankton and jellyfish feeders; butterfish are themselves important forage species. Mature at 1 year and live to about 3 or more; spawning takes place a few miles offshore; different populations spawn at very different times of the year. Highly esteemed as a foodfish, marketed fresh and frozen; caught mainly with otter trawls, but also with seines, pound nets, and handlines. The fishery, which dates to 1800, is concentrated north of the area in the Middle Atlantic Bight where landings in 1996 were 3 600 t. FAO statistics report landings ranging from 568 to 1889 t from 1995 to 1999.

Distribution: Atlantic coast of Florida in shallow and deep water, may stray very rarely around the coast into the Gulf of Mexico; absent from Bermuda, the Bahamas and the Caribbean. Northward the species is found along the USA Atlantic coast to the Gulf of St. Lawrence (greatest abundance is between Cape Hatteras and Maine) and there are tiny populations in southeastern Newfoundland.

Remarks: The status of the apparently distinct deep (> 250 m) and shallow (< 50 m) populations that occur off eastern Florida is problematic and warrants critical examination. The shallow form, on sand bottoms, is deeper-bodied and lacks spots; the deep form, on mud bottoms, is more elongate and has spots; its vertebral number is similar to that of *P. burti*.

