

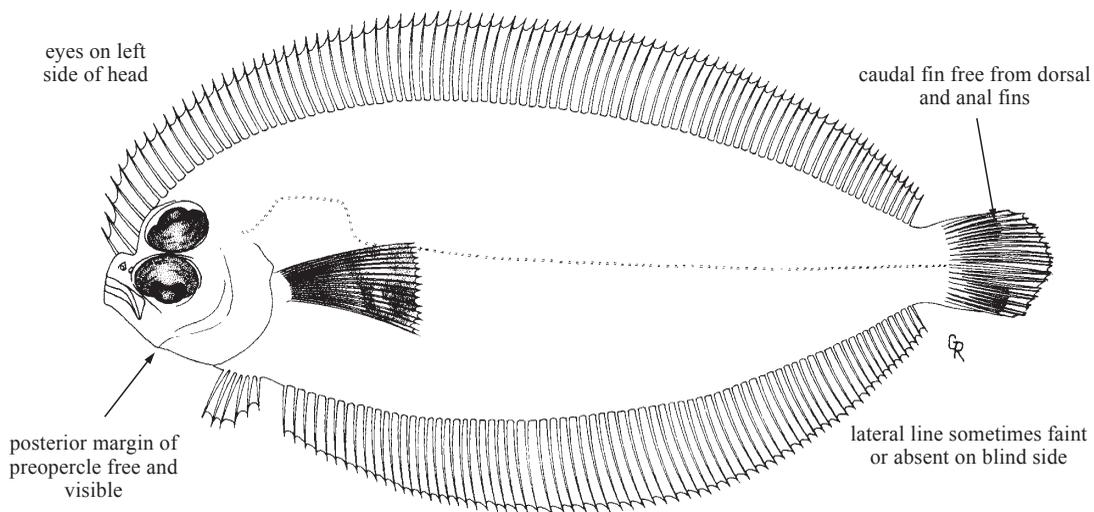
Order PLEURONECTIFORMES

BOTHIDAE

Lefteye flounders

by T.A. Munroe, National Marine Fisheries Service, National Museum of Natural History, Washington D.C., USA

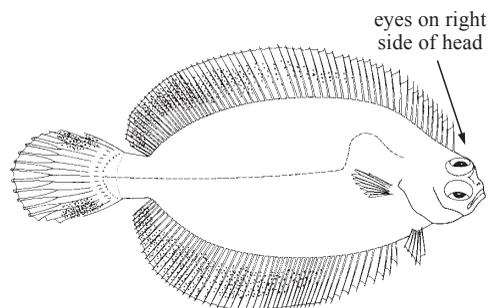
Diagnostic characters: Flatfishes with eyes on left side of head (except for rare reversed individuals); spines sometimes present anterior to eyes in males. Mouth protractile, asymmetrical, lower jaw moderately prominent; teeth in jaws sometimes canine-like. **Preopercle exposed, its posterior margin free and visible.** Dorsal fin long, originating above or in front of upper eye; **pectoral and pelvic fins present (except right pectoral fin lost in adults of *Monolene*); pelvic fin on ocular side larger than blind-side counterpart in some genera; caudal fin free from dorsal and anal fins.** Many species with pronounced sexual dimorphism, especially in the position of the eyes, which in males have a greater separation than in females. Also, **males of some species have prolonged anterior dorsal- and/or upper pectoral-fin rays.** **A single lateral line, sometimes forked behind upper eye, sometimes faint or absent on blind side.** **Colour:** ocular side light to dark brown to whitish, often with spots, blotches, or ring-like markings; blind side usually pale (dark bars on blind side of adult males of *Engyophrys senta*); although ambicoloration (eyed-side coloration replicated on blind side) may occasionally occur.



Habitat, biology, and fisheries: Bottom-living predators, usually burrowing partially or almost entirely in sand or mud. Capable of rapid changes in coloration which allows them to match their background almost perfectly. They usually inhabit shallow, soft sediments on the continental shelf to a depth of about 200 m, both in neritic waters off mainland coasts and in clear waters around oceanic islands. Some species are found in greater depths to about 500 m or more. Most lefteye flounders are edible, but many species occurring in Area 31 are too small to be considered of significant economic importance. Separate statistics for lefteye flounders are not reported from Area 31. The reported flatfish catch from the area in 1995, which undoubtedly included bothid flatfishes, was 717 t (USA and Mexico).

Similar families occurring in the area

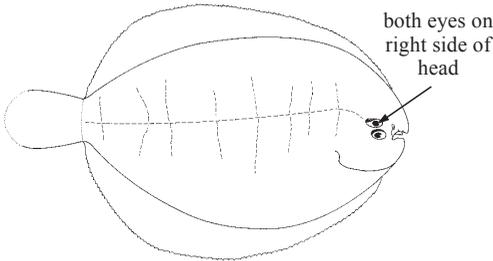
Poecilopsettidae: both eyes usually on right side of head; lateral line present below lower eye; pelvic fins with short bases and symmetrically placed on either side of midventral line; urinary papilla on ocular side.



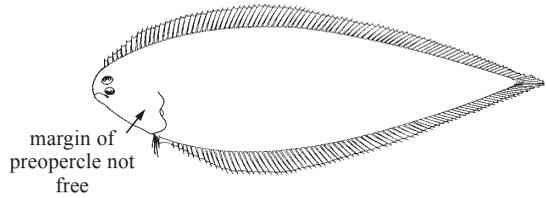
Poecilopsettidae

Achiridae: both eyes on right side of head; margin of preopercle hidden beneath skin and scales; lateral line without high arch over pectoral fin; 5 pelvic-fin rays; urinary papilla on ocular side.

Cynoglossidae: margin of preopercle not free (hidden beneath skin and scales); pectoral fins absent in adults; lateral line absent on both sides of body; dorsal and anal fins joined to caudal fin; no branched caudal-fin rays; urinary papilla on midventral line attached to first anal-fin ray.



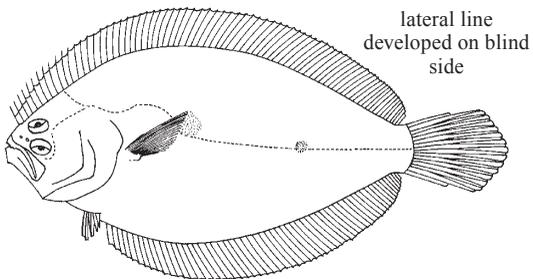
Achiridae



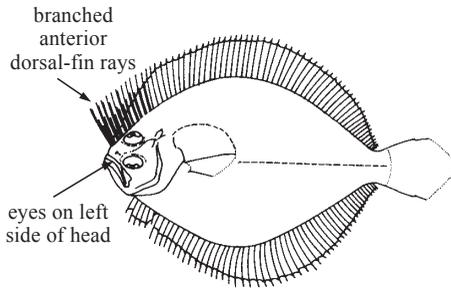
Cynoglossidae

Paralichthyidae: lateral line developed on blind side; lateral line present below lower eye in *Paralichthys* group, absent in *Cyclopsetta* group; lateral line of ocular side with high arch over pectoral fin in *Paralichthys* group, absent in *Cyclopsetta* group; pelvic fin of ocular side on midventral line in *Cyclopsetta* group, not on midventral line in *Paralichthys* group; urinary papilla on ocular side in *Paralichthys* group, on blind side in *Cyclopsetta* group.

Scophthalmidae: eyes usually on left side of head; both pelvic fins elongate, placed close to midline and extending forward to urohyal; pelvic fins free from anal fin, with first ray of blind-side fin opposite second or third ray of ocular-side fin; lateral line equally developed on both sides of body, with strong arch above pectoral fin, and with distinct supratemporal branch; urinary papilla on ocular side; small patch of teeth on vomer; with branched anterior dorsal-fin rays.



Paralichthyidae



Scophthalmidae

Key to the species of Bothidae occurring in the area

- 1a. Ocular-side pelvic-fin base much longer than base of blind-side pelvic fin, with first rays inserted notably anterior to those of blind-side fin → 2
- 1b. Ocular-side pelvic-fin base about equal in length with that of blind-side fin, with first rays not inserted anterior to those of blind-side fin → 8

- 2a. Body deep, depth 50% standard length or more; mouth not very large (Fig. 1), maxilla not reaching posteriorly to vertical through middle of lower eye; eyes separated by space larger than eye diameter (interorbital space much broader in adult males than in females) . (*Bothus*) → 3
- 2b. Body slender, depth less than 40% standard length; mouth very large (Fig. 2), maxilla reaching posteriorly to or beyond vertical through posterior margin of lower eye; eyes not broadly separated, interorbital space less than eye diameter. (*Chascanopsetta*) → 7

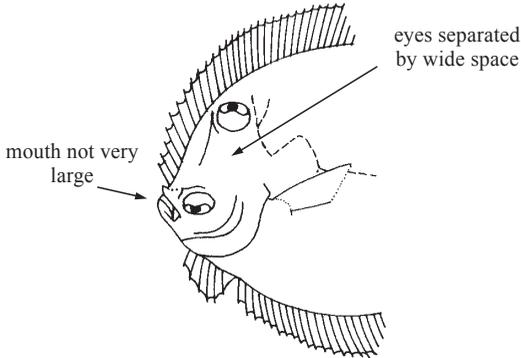


Fig. 1 *Bothus*

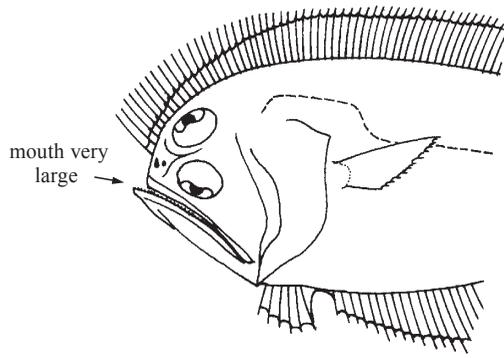


Fig. 2 *Chascanopsetta*

- 3a. Body depth greater than 60% standard length; eye diameter more than 23% head length; eye diameter longer than snout length; 76 to 91 dorsal-fin rays; 58 to 68 anal-fin rays → 4
- 3b. Body depth 60% or less of standard length; eye diameter less than 23% head length; eye diameter shorter than snout length (on specimens less than about 50 mm standard length, eye diameter is greater than 23% head length and is longer than snout); 90 to 105 dorsal-fin rays; 70 to 80 anal-fin rays → 5
- 4a. Caudal fin with 2 large spots, one anterior to the other (in longitudinal series) (Fig. 3); posteriormost spot on distal portion of caudal-fin rays; body coloration generally dark, spotting and mottling not as pronounced as in *Bothus ocellatus* *Bothus robinsi*
- 4b. Caudal fin lacking large spots on distal portion of median fin rays, if spots present on caudal fin they are arranged one above the other (in vertical series) (Fig. 4); body spotting and mottling pronounced *Bothus ocellatus*

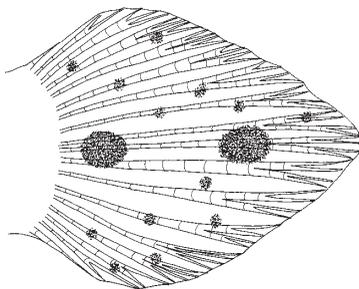


Fig. 3 anal fin (*Bothus robinsi*)

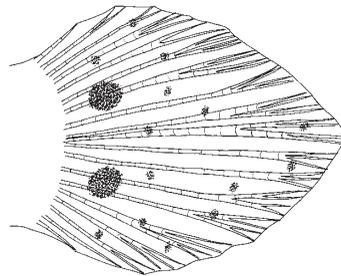


Fig. 4 anal fin (*Bothus ocellatus*)

- 5a. Dorsal-fin rays 105; anal-fin rays 80; anterior profile convex *Bothus ellipticus*
- 5b. Dorsal-fin rays 90 to 99; anal-fin rays 70 to 76 → 6

- 6a. Anterior profile with distinct notch in front of lower eye; body depth 54 to 59% standard length; tentacles on eyes not well developed in adults; anterior margin of upper eye over posterior margin of lower eye; 8-10 (usually 9) gill rakers on lower limb of first gill arch; upper pectoral-fin rays not greatly prolonged and not reaching beyond body midpoint . . . *Bothus lunatus*
- 6b. Anterior profile convex, without notch; body depth 50 to 55% standard length; tentacles on eyes well developed in adults; anterior margin of upper eye over about middle of lower eye; 6 to 8 (usually 7) gill rakers on lower limb of first gill arch; upper pectoral-fin rays greatly prolonged in males, extending well beyond body midpoint . . . *Bothus maculiferus*
- 7a. Upper jaw extending well beyond posterior margin of lower eye; upper jaw length 70% head length or greater; gill rakers absent or represented by only 1 or 2 rudiments . . . *Chascanopsetta lugubris*
- 7b. Upper jaw extending only to, or slightly beyond, the vertical through the posterior margin of lower eye; upper jaw length about 60% head length; 4 to 8 movable gill rakers on lower limb of first gill arch . . . *Chascanopsetta danae*

8a. Pectoral fin absent on blind side (of adults); body very elongate, depth 33 to 37% standard length (Fig. 5)
 (*Monolene*) → 9

8b. Pectoral fin present on both sides; body not very elongate, depth greater than or equal to 37% standard length → 11

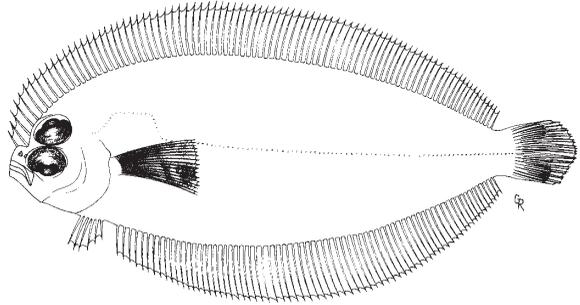


Fig. 5 *Monolene*

- 9a. Two large, black, oval spots midway along outer caudal-fin rays; ventralmost pectoral-fin rays about equal in length, or slightly longer than, dorsalmost pectoral-fin rays; dorsal-fin rays 88 to 94; pectoral-fin rays 17 to 19. *Monolene megalepis*
- 9b. No large oval spots on outer rays of caudal fin, but a single large, dark blotch or 2 inconspicuous bands on middle caudal-fin rays; ventralmost pectoral-fin rays shorter than dorsalmost pectoral-fin rays; dorsal-fin rays 92 to 125; pectoral-fin rays 11 to 15 → 10

- 10a. Pectoral fin black; gill rakers short and stout; 119 to 125 dorsal-fin rays; 98 to 108 anal-fin rays *Monolene atrimana*
- 10b. Pectoral-fin rays with variable cross-banded pattern; gill rakers moderately elongate and slender; 92 to 109 dorsal-fin rays; 76 to 89 anal-fin rays *Monolene sessilicauda*

- 11a. Mouth small, maxilla not extending posteriorly beyond vertical through anterior margin of eye; upper jaw length 19 to 28% head length; spines present on interorbital ridge; tentacles posteriorly on eyes of males and females (Fig. 6)(may decrease in length or be lost in large males); 4 to 7 very short gill rakers on lower limb of first arch; dorsal-fin rays 74 to 83; anal-fin rays 60 to 67. *Engyophrys senta*
- 11b. Mouth larger, maxilla extending posteriorly beyond vertical through anterior margin of eye (to about midpoint of eye); upper jaw length 32 to 45% head length; no interorbital spines; no tentacles on eyes; 7 to 11 short and stout or moderately long and slender gill rakers on lower limb of first arch; dorsal-fin rays 89 to 104; anal-fin rays 69 to 85. (*Trichopsetta*) → 12

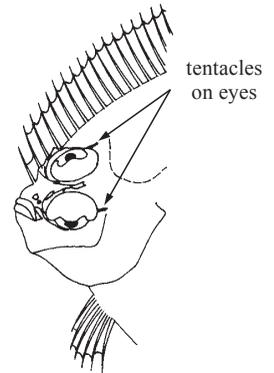


Fig. 6 view of head (*Engyophrys*)

- 12a. Gill rakers on lower limb short and stout, 7 or 8 (including a rudiment); 2 furrows on head, one from anterior nostril on blind side to anterodorsal margin of upper orbit, the second just above anterior third of upper orbit; blind-side pectoral fin length about 50% that on ocular side *Trichopsetta orbisulcus*
- 12b. Gill rakers on lower limb moderately long and slender, 9 to 11 (including rudiments); no furrows on head; blind-side pectoral fin either longer than or exceeding 70% of length of ocular-side pectoral fin → 13

- 13a. Total scales in lateral line 84 to 94; ocular-side pectoral fin longer than that on blind side; blind side dusky *Trichopsetta melasma*
- 13b. Total scales in lateral line 63 to 79; ocular-side pectoral fin shorter than that on blind side; blind side immaculate → 14

- 14a. Total scales in lateral line 63 to 68; dorsal-fin rays 89 to 95; anal-fin rays 69 to 75
. *Trichopsetta ventralis*
- 14b. Total scales in lateral line 69 to 79; dorsal-fin rays 95 to 103; anal-fin rays 75 to 82
. *Trichopsetta caribbaea*

List of species occurring in the area

The symbol  is given when species accounts are included.

- Bothus ellipticus* (Poey, 1860). To 25 cm TL. Off Cuba; Bonaire; regarded as valid by some authors; others consider it a synonym of *B. maculiferus*.
-  *Bothus lunatus* (Linneaus, 1758).
-  *Bothus maculiferus* (Poey, in Jordan and Goss, 1860).
-  *Bothus ocellatus* (Agassiz, in Spix and Agassiz, 1831).
-  *Bothus robinsi* Topp and Hoff, 1972.
-  *Chascanopsetta danae* Bruun, 1937
-  *Chascanopsetta lugubris* Alcock, 1894.
-  *Engyophrys senta* Ginsburg, 1933.
-  *Monolene atrimana* Goode and Bean, 1886.
-  *Monolene megalepis* Woods, 1961.
-  *Monolene sessilicauda* Goode, 1880.
-  *Trichopsetta caribbaea* Anderson and Gutherz, 1967.
-  *Trichopsetta melasma* Anderson and Gutherz, 1967.
-  *Trichopsetta orbisulcus* Anderson and Gutherz, 1967.
-  *Trichopsetta ventralis* (Goode and Bean, 1885).

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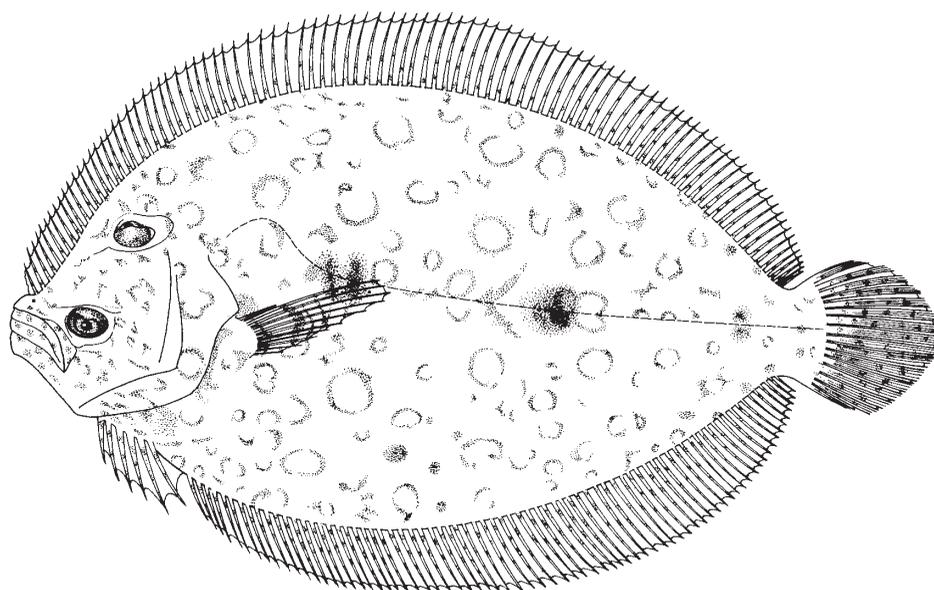
Topp, R.W., and F.H. Hoff, Jr. 1972. Flatfishes (Pleuronectiformes). *Mem. Hourglass Cruises*, Fla. Dep. Nat. Resour., St. Petersburg, Florida, 4(2):1-135.

Bothus lunatus (Linnaeus, 1758)

OTL

Frequent synonyms / misidentifications: None / None.

FAO names: En - Peacock flounder; Fr - Rombou lune; Sp - Lenguado ocelado.

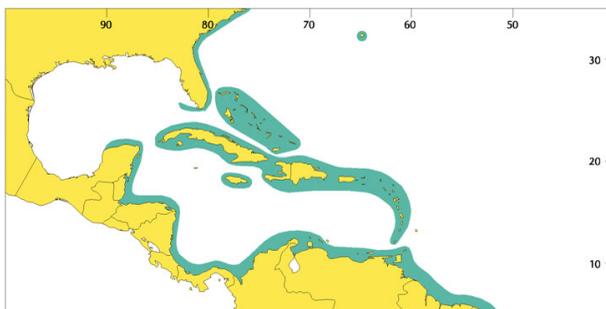


Diagnostic characters: Body oval, moderately deep (body depth 1.7 to 2.1 in standard length). Dorsal profile of snout with distinct notch above nostril; a stout spine on snout of male (bony knob in female). Eye diameter 5.0 to 6.0 in head length; lower eye distinctly anterior to upper; interorbital space broad, eye diameter 1.2 to 1.3 in interorbital width (notably broader in males than in females). Mouth moderately large and oblique; maxilla extending slightly beyond vertical through anterior margin of lower eye. Jaws with an irregular double row of small teeth. Lower limb of first gill arch with 8 to 10 gill rakers. Dorsal-fin rays 91 to 99. Dorsal-fin origin at vertical anterior to nostrils. Ocular-side pectoral-fin rays 11 or 12; upper rays very elongate in males. Anal-fin rays 70 to 76. Caudal fin rounded to bluntly pointed. Scales ctenoid on ocular side and cycloid on blind side; 83 to 95 scales on lateral line. Lateral line with steep arch above pectoral fin. **Colour:** grey-brown with numerous blue rings and curved spots covering entire ocular side; 2 or 3 large diffuse blackish spots on straight portion of lateral line. Large individuals with dark transverse bands on ocular-side pectoral fin.

Size: Maximum to 45 cm; common to 35 cm.

Habitat, biology and fisheries: A shallow-water species, found from the shore to 65 m, chiefly on sandy bottoms, often within or near coral reefs; sometimes coming to rest on coral rocks. Also found in seagrass and mangrove habitats. Feeds mainly on small fishes, but also on crustaceans and octopuses. Off Bonaire in December, elaborate spawning behaviour observed with mating pairs rising approximately 2 m off the substrate, with snouts touching and releasing gametes. Caught incidentally in artisanal fisheries throughout its range. Separate statistics not reported for this species. Caught mainly on hook-and-line, and with harpoons and beach nets, occasionally in traps. Marketed fresh. A good-eating fish but not taken in sufficient quantities to be commercially important.

Distribution: Widespread throughout the area including Bermuda, the Bahamas and Florida, Tobago, south to Fernando de Noronha off the Brazilian coast, and southern Mexico. Common throughout the Caribbean Sea. Appears to be absent from northern Gulf of Mexico.

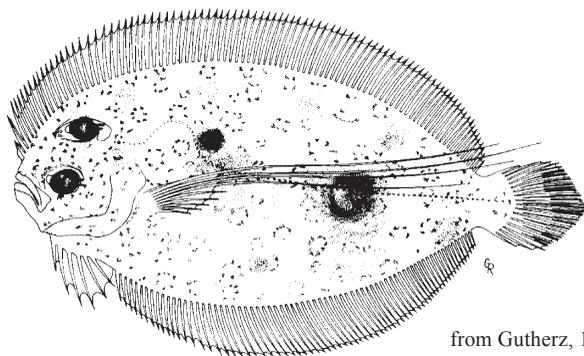


***Bothus maculiferus* (Poey, 1860)**

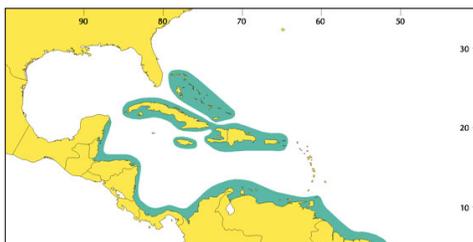
OTF

En - Mottled flounder; **Fr** - Rombou tachetée; **Sp** - Lenguado manchado.

Maximum size 25 cm, commonly to 18 cm. Soft bottom habitats, common to depths of approximately 45 m. Active predator on grass flats; feeds on fishes, portunid crabs, penaeid shrimps, and stomatopods. Taken as bycatch in shrimp trawl fisheries. Bahamas; Cuba south to Curaçao; West Indies; Caribbean Sea; Tobago; Atlantic coast of South America to Brazil.



from Guthertz, 1966

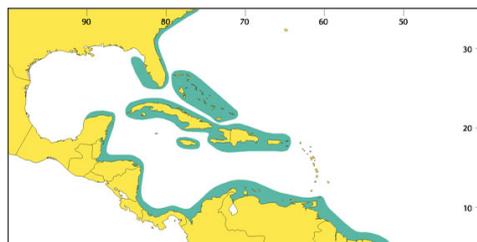
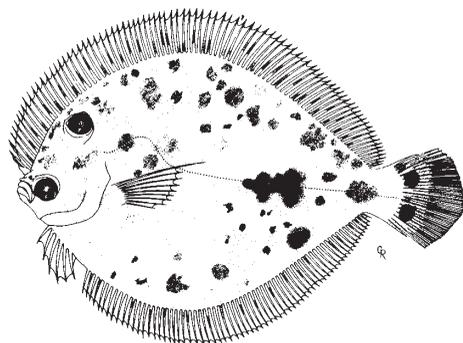


***Bothus ocellatus* (Agassiz, 1839)**

OOU

En - Eyed flounder; **Fr** - Rombou ocellée; **Sp** - Lenguado de charo.

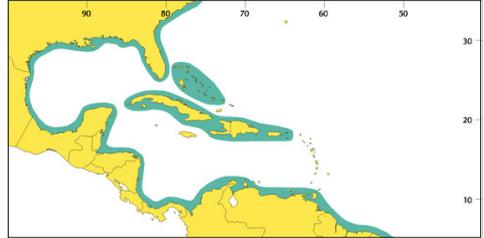
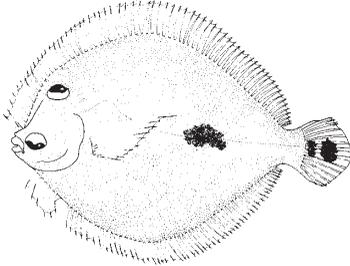
Maximum size 16 cm standard length, commonly to 12 cm. Soft bottom habitats mainly in neritic waters between 10 and 95 m, common to approximately 50 m. Laboratory experiments revealed that individuals are capable of adaptive camouflage; surface markings changed within 2 to 8 seconds to closely resemble new backgrounds. Off Bonaire, harem social groups (one male with 1 to 6 females) were observed. Females occupied distinct areas within male's territory. Field observations, made in December and January, revealed that courtship behaviour begins approximately 1 hr before sunset; spawning began at sunset. The male moved under the female; the pair slowly rose, his ocular side to her blind side, approximately 15 to 75 cm off the sand substrate; pair released cloud of gametes. Male attempted to mate daily with each individual female in its territory. Taken mainly as bycatch in shrimp trawl fisheries. Of minor commercial importance because of its small average size. Atlantic coast of the USA from Long Island to west Florida shelf; Bahamas, West Indies; eastern and southern Gulf of Mexico; Caribbean Sea; Tobago; Atlantic coast of South America to São Paulo, Brazil.



***Bothus robinsi* Topp and Hoff, 1972**

En - Twospot flounder; **Fr** - Rombou noire; **Sp** - Lenguado negro.

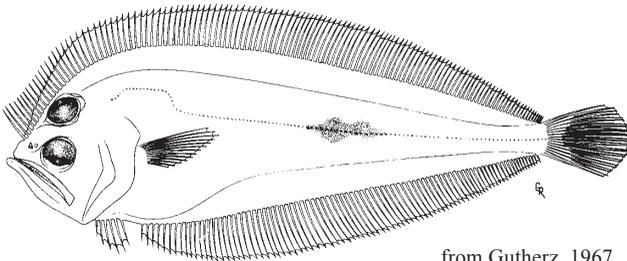
Maximum size 25 cm, commonly to 18 cm. Soft bottom habitats of the continental shelf to a depth of approximately 90 m, more common between 10 and 50 m. Larvae were widely distributed over the continental shelf off the west coast of Florida at 30 to 100 m in spring to summer when surface temperatures were 26 to 30°C. Taken mainly as bycatch in shrimp trawl fisheries. Of minor commercial importance because of its small average size. Atlantic coast of USA from North Carolina to Florida; Gulf of Mexico; Bahamas; West Indies; Caribbean Sea; Atlantic coast of South America to Rio Grande do Sul, Brazil.



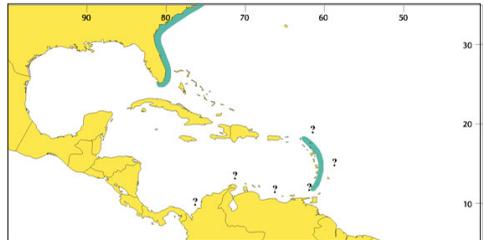
***Chascanopsetta danae* Bruun, 1937**

En - Angry pelican flounder.

Maximum size to at least 28 cm standard length. Soft bottom habitats of the outer continental shelf and upper continental slope, at depths of 160 to 460 m. Continental shelf off the Atlantic coast of the USA from North Carolina to the Straits of Florida, possibly the Antilles and Southern Caribbean.



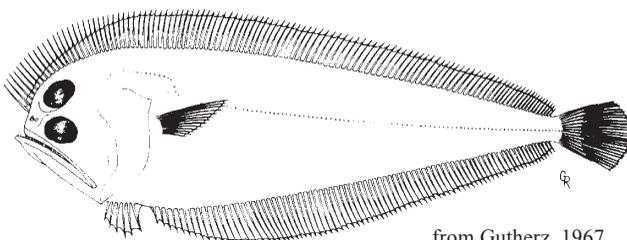
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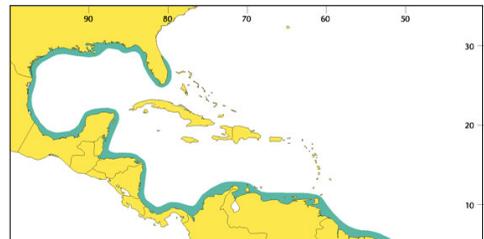
***Chascanopsetta lugubris* Alcock, 1894**

En - Pelican flounder; **Fr** - Perpiere pélican; **Sp** - Lenguado pelicano.

Maximum size 30 cm, commonly to 20 cm. Soft bottom habitats of the outer continental shelf and upper continental slope, at depths of 120 to 910 m. Taken as bycatch in bottom trawl fisheries, but apparently not abundant. Continental shelves off the Atlantic coast of Florida; Gulf of Mexico; Caribbean Sea; Trinidad; Atlantic coast of South America to Brazil. Also, eastern Atlantic, western Pacific and Indian Oceans.



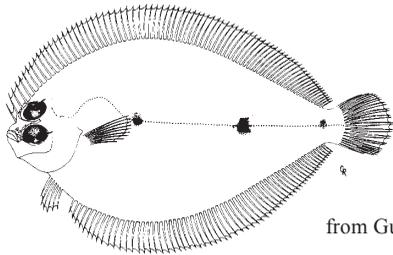
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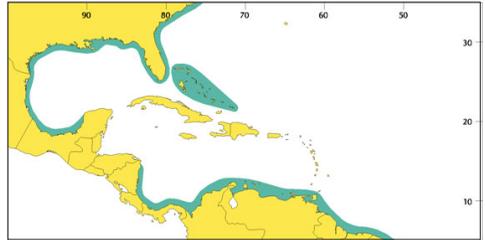
***Engyophrys senta* Ginsburg, 1933**

En - Spiny flounder.

Maximum size to 10 cm , commonly to 8 cm standard length. Occurs at depths of 30 to 185 m. Of no interest to fisheries because of small average size. Continental shelf off North Carolina to Florida Keys; Bahamas; Gulf of Mexico; Caribbean Sea (Nicaragua to Trinidad), south to Brazil.



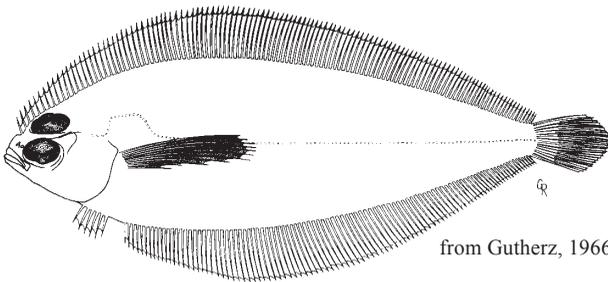
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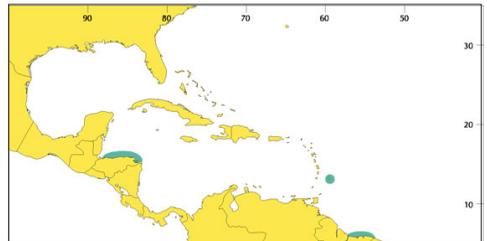
***Monolene atrimana* Goode and Bean, 1886**

En - Longfinned deepwater flounder, blackfinned deepwater flounder.

Maximum size 11 cm. Occurs at depths of 90 to 550 m, generally found at depths exceeding 275 m. Of no interest to fisheries because of small average size. Caribbean Sea off Honduras; Atlantic Ocean off Barbados, Suriname, and Brazil.



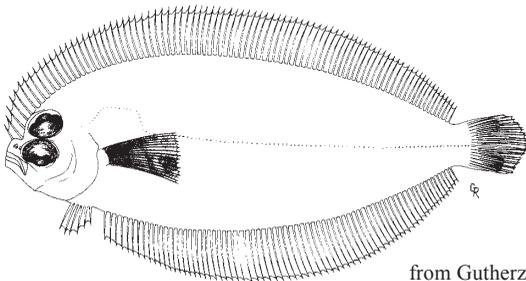
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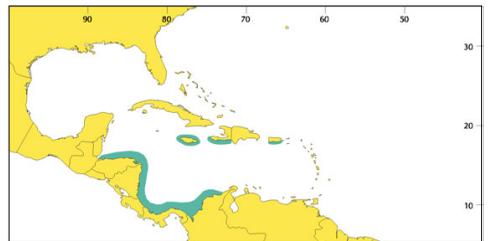
***Monolene megalepis* Woods, 1961**

En - Spottedfin deepwater flounder.

Maximum size 10 cm. Occurs at depths of 73 to 550 m. Of no interest to fisheries because of small average size. Off Puerto Rico, Haiti, and Jamaica; Honduras to Venezuela.



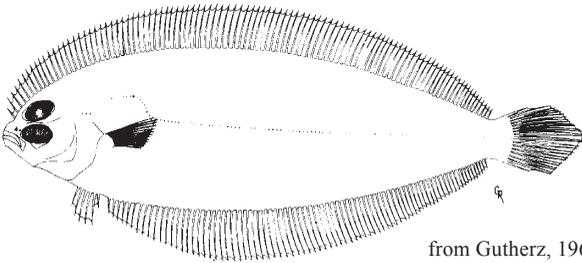
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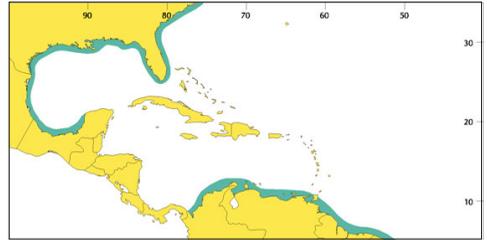
***Monolene sessilicauda* Goode, 1880**

En - Deepwater flounder; **Fr** - Monolène du large; **Sp** - Lenguado de fondo.

Maximum size 18 cm, commonly to 14 cm. Soft bottom habitats on the continental shelf and upper continental slope between 110 and 550 m. Taken as bycatch in industrial trawl fisheries. Of minor commercial importance because of small average size. Continental shelf off Atlantic coast of the USA from New England to Florida; Gulf of Mexico; Colombia to Brazil. *Monolene antillarum* Norman, 1933 may be a synonym of *Monolene sessilicauda* Goode, 1880.



from Guthertz, 1967

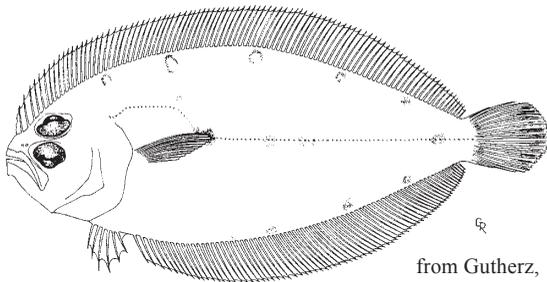


***Trichopsetta caribbaea* Anderson and Guthertz, 1967**

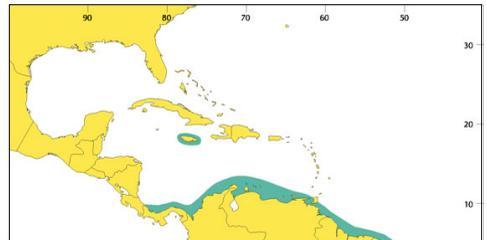
TSJ

En - Caribbean flounder; **Fr** - Perpeire des Caraïbes; **Sp** - Lenguado del Caribe.

Maximum size 18 cm standard length, commonly to 14 cm. Soft bottom habitats of the continental shelf between approximately 70 to 300 m. Taken as bycatch in the industrial trawl fisheries for shrimps and finfishes. Of minor importance due to its small average size. Caribbean Sea (off Jamaica, Panama, and Colombia); Suriname.



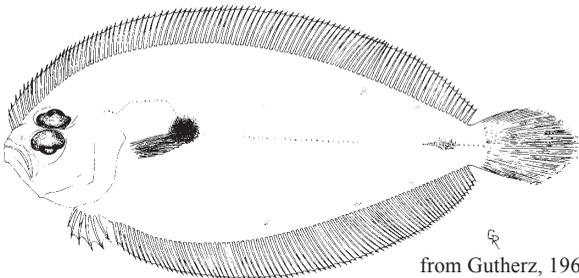
from Guthertz, 1967



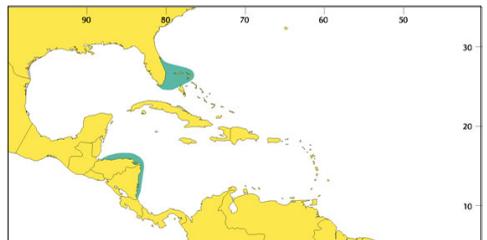
***Trichopsetta melasma* Anderson and Guthertz, 1967**

En - Spotfin sash flounder.

Maximum size 25 cm standard length. Occurs at depths of 135 to 300 m, generally deeper than 185 m. Outer continental shelf off south Florida and north of Bahamas; Florida Straits between Andros Island, Bahamas and tip of Florida; and Honduras to Nicaragua.



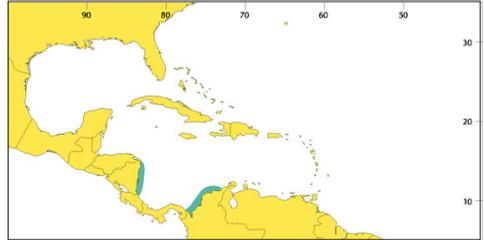
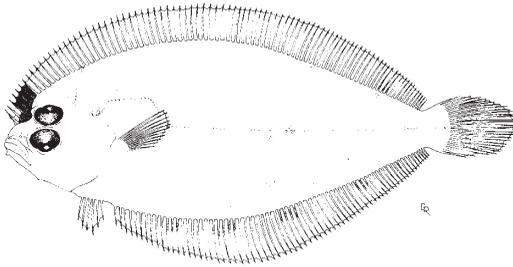
from Guthertz, 1967



***Trichopsetta orbisulcus* Anderson and Guntherz, 1967**

En - Furrowed sash flounder.

Maximum size to about 20 cm. Rare species, occurring at 115 to 160 m depth. Of no interest to fisheries. Nicaragua and Venezuela.



***Trichopsetta ventralis* (Goode and Bean, 1885)**

En - Sash flounder.

Maximum size to 20 cm. Occurs at depths of 30 to 115 m. Of no interest to fisheries. Northern and southern Gulf of Mexico.

