

## Suborder ZOARCOIDEI

## ZOARCIDAE

## Eelpouts

by M.E. Anderson, South African Institute for Aquatic Biodiversity, South Africa

**Diagnostic characters:** Small to medium-sized fishes recognized by their shortened, eel-like shape; adults reach from 12 to about 40 cm in the area. Head ovoid to rounded, small to moderate in size; spines and cirri absent. Eye small to moderate, rounded, near top of head. Snout short, blunt; **nostrils single**, tubular. Mouth small to moderate, upper jaw reaching eye or extending slightly beyond. Teeth small, conical, usually in 2 or 3 rows anteriorly, single row posteriorly; vomerine and palatine teeth usually present. Branchiostegal rays 6. Gill rakers blunt, triangular, 9 to 17. Dorsal and anal fins confluent with caudal, without true spines; dorsal-fin soft rays 82 to 116; anal-fin soft rays 74 to 104; caudal-fin soft rays 9 to 12; pectoral-fin soft rays 13 to 23; pelvic fins rudimentary, with 2 or 3 soft rays, or absent. Scales cycloid, minute, embedded, or absent. **Swimbladder absent**. **Colour:** variable; uniformly light grey, brown or black; *Exechodontes* mottled, with reddish cream and bluish tinges. Fins transparent or covered with dark skin and scales.

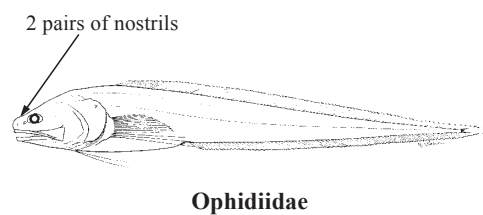
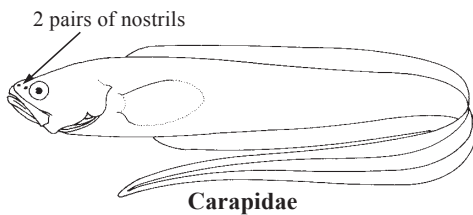


**Habitat, biology, and fisheries:** All eelpouts in the area are benthic, feed primarily on small crustaceans, and are found from upper slope to abyssal depths. The pelagic *Melanostigma atlanticum* may occur infrequently off the American Carolinas. No interest to fisheries.

#### Similar families occurring in the area

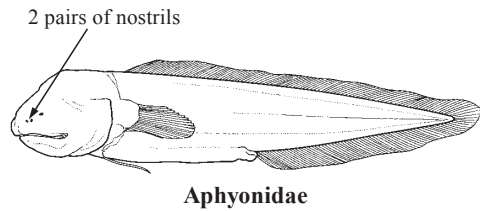
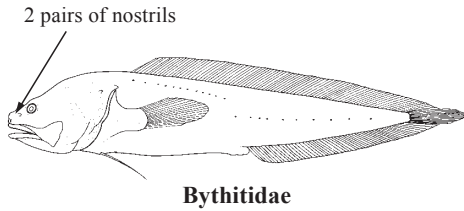
Carapidae: anal-fin origin in advance of dorsal-fin origin except *Snyderidia* (which has only 3 developed gill rakers and pectoral-fin soft rays 24 to 27); 2 pairs of nostrils; gas bladder present.

Ophidiidae: 2 pairs of nostrils; gas bladder present; pelvic fins, when present, under preopercle or chin.



Bythitidae: 2 pairs of nostrils; gas bladder present; viviparous, males with an intromittent organ; opercular spine usually well developed; branchiostegal rays 7 to 9.

Aphyonidae: 2 pairs of nostrils; viviparous, males with intromittent organ; eyes degenerate; flesh gelatinous.



#### List of species occurring in the area

*Exechodontes daidaleus* DeWitt, 1977. To 113 mm. Gulf of Mexico to NE Florida; 219 to 1 004 m.

*Lycenchelys bullisi* Cohen, 1964. To 176 mm. Gulf of Mexico to NE Florida; 625 to 1 247 m.

*Lycodes terraenovae* Collett, 1896. To 475 mm. Both sides of North Atlantic, also off South Africa; 280 to 2 064 m.

*Pachycara sulaki* Anderson, 1989. To 189 mm. Gulf of Mexico and Caribbean Sea; 2 000 to 3 510 m.

#### References

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- DeWitt, H.H. 1977. A new genus and species of eelpout (Pisces, Zoarcidae) from the Gulf of Mexico. *Fish. Bull., NOAA*, 75(4):789-793.
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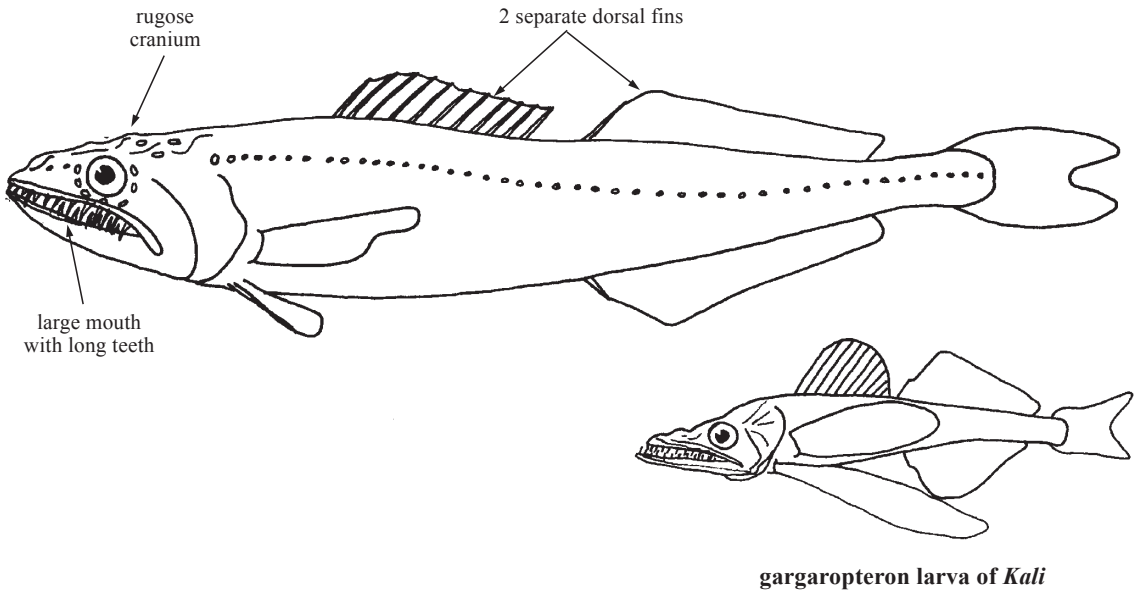
## Suborder TRACHINOIDEI

## CHIASMODONTIDAE

## Swallowers

by J.D. McEachran, Texas A & M University, USA and T. Sutton, University of South Florida, USA

**Diagnostic characters:** Small to moderate-sized (to about 26 cm total length). Body elongate and moderately compressed. Snout acute or rounded, longer than eye diameter; **dorsal surface of head rugose and pitted by sensory pores**; nostrils paired, anterior and posterior openings close set and pore-like; mouth terminal, large, and nearly horizontal; **premaxilla and maxilla slender, non-protractile, firmly joined distally**, and maxilla extending posterior to eye. Jaw teeth long and slender, arranged in 1 or 2 rows or in 3 to 5 bands. Teeth present in palatine and present or absent in vomer. **Gill rakers absent or replaced by gill teeth fused to bony plates**. Branchiostegal rays 6 or 7. Gill membranes separate and free of isthmus. **Separate dorsal fins**, first short with 7 or 8 flexible spines, second 0 or 1 flexible spine(s) and 18 to 29 segmented rays. Anal fin with 0 or 1 flexible spine and 17 to 29 soft rays; pectoral fins with 9 to 15 soft rays. Body naked (most adults), covered with small projecting spinules (most larvae or juveniles), or with 2 or more rows of stout, projecting prickles. Lateral line a series of distinct pores along side of body. Photophores present (*Pseudoscopelus*) or absent. **Right and left sections of pelvic girdle separate from each other and free of pectoral girdles; total vertebrae 33 to 48. Gut very distensible and capable of holding large prey. Colour:** uniformly dark brown to black.



**Habitat, biology, and fisheries:** Oceanic worldwide at mesopelagic and bathypelagic depths; juveniles at shallower depths; many species distributed in more than 1 ocean. Species of *Kali* have distinctive juvenile stage (gargaropteron) with relatively long snout, pectoral, and pelvic fins compared to adults. Adult food consists of ray-finned fishes that approach or exceed the size of the predator. Rarely taken in deep midwater trawls. Of no commercial importance.

**Remarks:** There are about 17 nominal species and a number of undescribed ones in 4 genera. No recent synopsis of the family is available, and the genera *Pseudoscopelus* and *Chiasmodon* require revision; some of the listed species of the former may be synonyms. Two of the genera were revised by Johnson and Cohen (1974).

### Similar families occurring in the area

None, no other mesopelagic or bathypelagic fishes have separate dorsal fins containing true spines and rugose head.

### List of species occurring in the area

Note: all sizes in standard length.

*Chiasmodon niger* Johnson, 1884. To 25 cm. Tropical and subtropical Atlantic, Pacific, and Indian Oceans.

*Chiasmodon subniger* Garman, 1899. To 49 cm. E and W Atlantic.

*Dysalotus alcocki* MacGilchrist, 1905. To 22.5 cm. Tropical and subtropical Atlantic, Pacific, and Indian Oceans.

*Dysalotus oligoscolus* Johnson and Cohen, 1974. To 22.7 cm. Tropical and subtropical Atlantic, Pacific, and Indian Oceans.

*Kali indica* Lloyd, 1909. To 26.2 cm. Tropical and subtropical Atlantic, Pacific, and Indian Oceans.

*Kali macrodon* (Norman, 1929). To 26 cm. Tropical and subtropical Atlantic, Pacific, and Indian Oceans.

*Kali macrura* (Parr, 1933). To 12.3 cm. Tropical and subtropical Atlantic, Pacific, and Indian Oceans.

*Kali normani* (Parr, 1931). To 20.1 cm. Worldwide tropical.

*Kali parri* Johnson and Cohen, 1974. To 22.2 cm. Tropical and subtropical Atlantic Ocean, questionable from area.

*Pseudoscopelus altipinnis* Parr, 1933. To 10.1 cm. Temperate to tropical, W Atlantic and W Pacific.

*Pseudoscopelus obtusifrons* (Fowler, 1934). To 11.5 cm. Tropical W Atlantic and W Pacific.

*Pseudoscopelus scriptus* Lütken, 1892. To 13.4 cm. Tropical Atlantic and W central Pacific Oceans.

*Pseudoscopelus scutatus* Krefft, 1971. Maximum size unknown. Central Atlantic, questionable from area.

### References

- Johnson, R.K. 1969. A review of the fish genus *Kali* (Perciformes:Chiasmodontidae). *Copeia*, (1969):386-391.
- Johnson, R.K. and M.J. Keene. 1986. Family No. 228:Chiasmodontidae In *Smith's sea fishes*, edited by M.M. Smith and P.C. Heemstra. Johannesburg, Macmillan South Africa, pp. 731-334.
- Mooi, R. and J.R. Paxton. 2001. Chiasmodontidae In *FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Volume 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes, and marine mammals*, edited by K.E. Carpenter and V.H. Niem. Rome, FAO, pp. 3495-3496.
- Norman, J.R. 1929. The teleostean fishes of the family Chiasmodontidae. *Ann. Mag. Nat. Hist.*, Ser 10,3:529-544.

## PERCOPHIDAE

### Duckbills

by B.A. Thompson, Louisiana State University, USA

**D** **Diagnostic characters** (Atlantic forms only): Small to medium-sized (10 to 25 cm) trachinoid fishes; body elongate. **Head and anterior body flattened; eyes large, located dorsally on head and with interorbit very narrow; mouth large with lower jaw extending beyond upper, often with lower jaw teeth exposed; maxillary tentacle present**

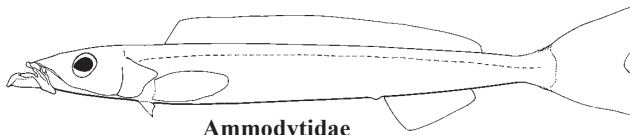
(*Bembrops*) or absent (*Chrionema*). Two dorsal fins, the first with 6 spines, the second with 14 to 18 rays; anal fin without spines, with 16 to 19 segmented rays; pectoral fin long and wide, with 22 to 30 rays; pelvic fin jugular with 1 spine and 5 segmented rays; **single post-temporal spine located at beginning of lateral line; lateral line arched anteriorly then descending to lower side of body; anterior lateral-line scales keeled**, overall with 44 to 70 pored scales; body and head with ctenoid scales. **Colour:** body often blotched; fresh specimens with yellow; iridescent silver on head and prepectoral; black fleckings and blotches on fins of some species.

**Habitat, biology, and fisheries:** Benthic, found on continental shelf from 80 to 900 m. Predatory, feeding on small fishes and shrimp. All species with separate sexes; with sexual dimorphism in body and fin pigment patterns and genital papilla size (males large, females small). Little is known about reproduction. No fishery.

**Remarks:** Three subfamilies: Percophinae (1 genus and 1 species), Bembropinae (2 genera and approximately 26 species), and Hemerocoetinae (8 genera and approximately 22 species).

#### Similar families occurring in the area

Ammodytidae: single dorsal fin; pelvic fins absent; jaws toothless; pectoral fins low on body.



Ammodytidae

#### List of species occurring in the area

*Bembrops anatrostris* Ginsburg, 1955. To 25 cm. W Atlantic Ocean off USA, Gulf of Mexico, and Caribbean Sea.

*Bembrops gobioides* (Goode, 1880). To 22 cm. W Atlantic Ocean off USA and Gulf of Mexico.

*Bembrops macromma* Ginsburg, 1955. To 20 cm. Bahamas and N and W Caribbean Sea.

*Bembrops magnisquamis* Ginsburg, 1955. To 10 cm. N and W Caribbean Sea.

*Bembrops ocellatus* Thompson and Suttkus, 1998. To 20 cm. Caribbean Sea and W Atlantic Ocean off NE South America.

*Bembrops quadrisella* Thompson and Suttkus, 1998. To 24 cm. Caribbean Sea and W Atlantic Ocean off NE South America.

*Bembrops raneyi* Thompson and Suttkus, 1998. To 22 cm. Bahamas and Straits of Florida.

*Chrionema squamentum* (Ginsburg, 1955). To 11 cm. Straits of Florida and Caribbean Sea.

#### References

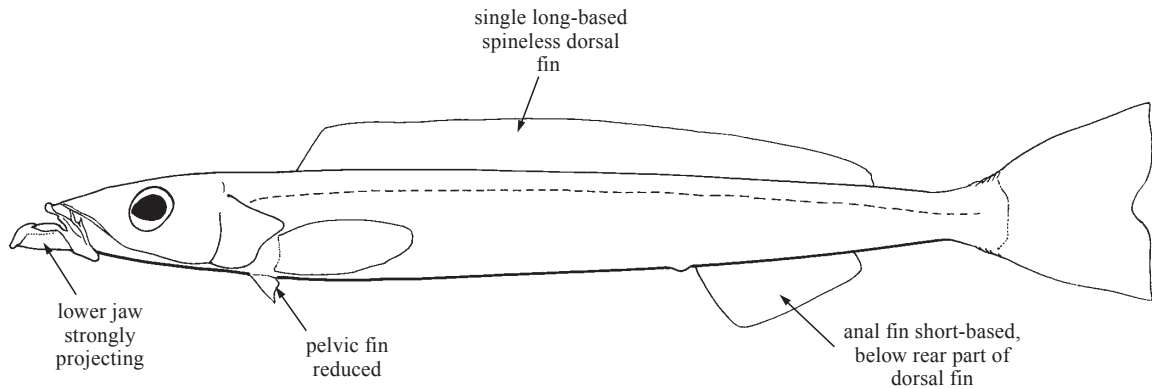
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- Ginsburg, I. 1955. Fishes of the family Percophididae from the coasts of eastern United States and the West Indies with descriptions of four new species. *Proc. U.S. Nat. Mus.*, 104:623-639.
- Grey, M. 1959. Deep sea fishes from the Gulf of Mexico with the description of a new species. *Fieldiana: Zoology*, 39:323-346.
- Iwamoto, T. and J.C. Steiger. 1976. Percophidid fishes of the genus *Chrionema* Gilbert. *Bull. Mar. Sci.*, 26:488-498.
- Thompson, B.A. and R.D. Suttkus. 1998. A review of western north Atlantic species of *Bembrops*, with descriptions of three new species, and additional comments on two eastern Atlantic species (Pisces: Percophidae). *Proc. Biol. Soc. Wash.*, 111:954-985.

**AMMODYTIDAE**

**Sandlances**

by C.R. Robins, Lawrence, Kansas, USA

**Diagnostic characters:** Size small. Body very elongate. Snout long, **lower jaw strongly projecting**. **Single long-based dorsal fin without spines**. **Anal fin much shorter, below rear part of dorsal fin**. **Pelvic fin reduced** with 1 very small spine and 5 soft rays. **Colour:** silvery fishes with bluish to greenish dorsum.



**Habitat, biology, and fisheries:** Benthic in shelf or (tropical) deep shelf waters.

**Similar families occurring in the area**

Sandlances are unlikely to be confused with other families in the area. Some wormfishes (Microdesmidae) and tubeblennies (Chaenopsidae) may look superficially similar but have spines in their dorsal fins and long anal fins.

**List of species occurring in the area**

*Protammodytes sarisa* (Robins and Böhlke, 1970). To 12 cm. Presently known only from off the E coast of St. Vincent in 187 m.

**Reference**

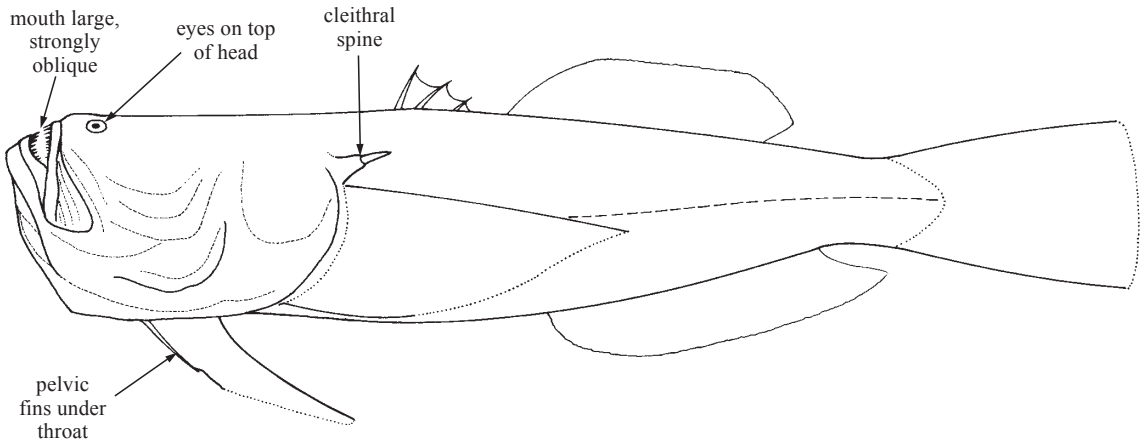
Robins, C.R. and J.E. Böhlke 1970. The first Atlantic Species of the Ammodytid fish Genus *Embolichthys*. *Notulae Naturae, Acad. Nat. Sci. Philad.*, 450:1-11.

## URANOSCOPIDAE

### Stargazers

by K.E. Carpenter, Old Dominion University, Virginia, USA (after Berry, 1978)

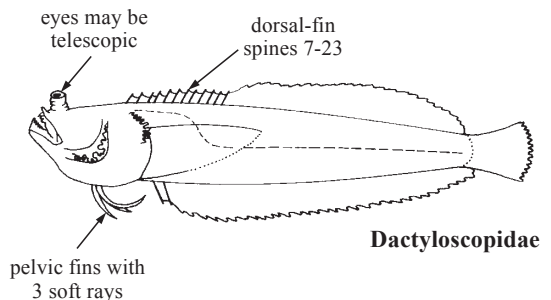
**Diagnostic characters:** Medium-sized fishes to 44 cm. Body heavy-rounded and tapering behind. Head broad and deep, flattened dorsally, hard and bony, and partly covered with skin. **Eyes on flattened upper side of head**, not protruding. **Mouth large, oblique to vertical**; lips with fleshy ridges (fimbriae); jaw teeth small. Gill openings large, gill membranes nearly separate and free from isthmus; **cleithral spine (behind gill cover and above pectoral fin) either short, blunt, and skin-covered, or long, sharp, and bare**. Spinous dorsal fin present or absent, with 3 to 5 spines when present; dorsal-fin soft rays 12 to 17; no anal-fin spines, anal-fin soft rays 12 to 17; pectoral fins broad-based, with 13 to 24 rays; **pelvic fins jugular, with 1 spine (possibly obscured by skin) and 5 soft rays**; caudal fin truncate to rounded. Body covered with moderately small scales (embedded in 1 species) or naked except for pored lateral-line scales. **Colour:** usually dark above and light below with the back blackish or brown; some forms with white spots on head and dorsoanteriorly, others with dark spots or short lines.



**Habitat, biology, and fisheries:** Typically solitary, bottom-living, some burrow into sand leaving only the eyes exposed. Carnivorous ambush predators. Various species occur from the littoral zone to depths of 550 m. At least one species (*Astroscopus y-graecum*) in our area armed with an electric organ capable of stunning prey and discouraging predators, located behind the eye, and derived from modified eye muscles. Stargazers incidentally caught in seines and bottom trawls over sand and sometimes mud bottoms, but nowhere abundant and hence of no commercial importance. Edible but not typically marketed, although in other areas they are appreciated as foodfishes.

#### Similar families occurring in the area

Dactyloscopidae: dorsal-fin spines 7 to 23 (0 to 5 in Uranoscopidae); pelvic fins with 1 spine and 3 soft rays (1 spine and 5 soft rays in Uranoscopidae); eyes telescopic in some species (not in Uranoscopidae).



**Key to the species of Uranoscopidae occurring in the area**

- 1a. Spinous dorsal fin present (3 to 5 spines); upper head and body with large, irregular, widely spaced white spots with narrow dark margins (Fig. 1) . . . . . *Astroscopus y-graecum*
- 1b. No spinous dorsal fin. . . . . → 2

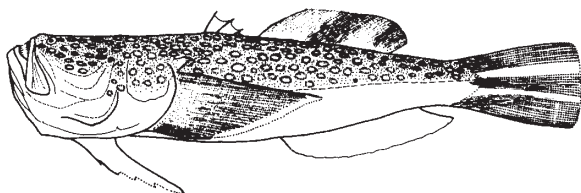


Fig. 1 *Astroscopus y-graecum*

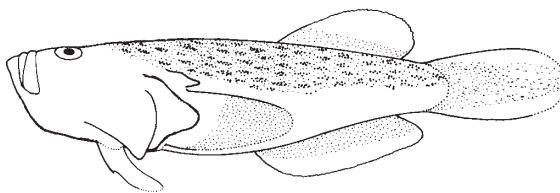


Fig. 2 *Gnathagnus egregius*

- 2a. Cleithral spines flattened and blunt; a pair of converging bony ridges at symphysis of lower jaw, upper body brownish with numerous small dark spots, some forming short lines (Fig. 2) . . . . . *Gnathagnus egregius*
- 2b. Cleithral spines conical and pointed; no pair of bony ridges on lower jaw. . . . . → 3
- 3a. Pectoral-fin rays 13 to 16; dorsal fin with 2 or 3 oblique black bars; caudal fin with 2 to 5 elongated black spots; white spots with dark margins on upper body (Fig. 3) . *Kathetostoma albigutta*
- 3b. Pectoral-fin rays 17 or 18; dorsal fin with an indistinct blotch; caudal fin with a median dark broad stripe; upper body irregularly marbled (Fig. 4) . . . . . *Kathetostoma cubana*

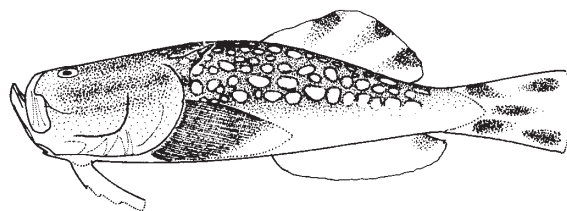


Fig. 3 *Kathetostoma albigutta*

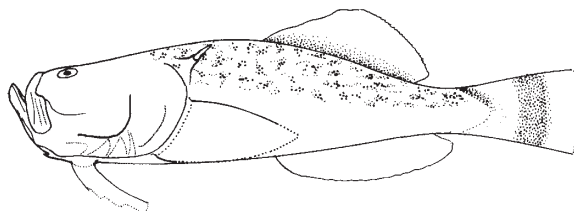


Fig. 4 *Kathetostoma cubana*

**List of species occurring in the area**

- Astroscopus y-graecum* (Cuvier, 1829). To 44 cm. North Carolina to Yucatán, N coast of South America; absent West Indies.
- Gnathagnus egregius* (Jordan and Thompson, 1905). To 33 cm. Along U.S. coast, Georgia to S Texas.
- Kathetostoma albigutta* Bean, 1892. To 28 cm. North Carolina to Yucatán.
- Kathetostoma cubana* Barbour, 1941. To 33 cm. Bahamas, Cuba, and Venezuela.

**References**

Berry, F.H. 1978. Uranoscopidae. In *FAO Species Identification Sheets for Fishery Purposes. Western Central Atlantic (Fishing Area 31) Vol. 3*, edited by W. Fischer. Rome, FAO, (unpaginated).

Berry, F.H. and W.W. Anderson. 1961. Stargazer fishes from the western North Atlantic (Family Uranoscopidae). *Proc. U.S. Natl. Mus.*, 112:563-586.