

STUDIES ON THE FAUNA OF SURINAME
AND OTHER GUYANAS: No. 5.

THE WESTERN ATLANTIC JAWFISHES OF THE
OPISTHOGNATHID GENUS *LONCHOPISTHUS*

by

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During 1957 two important collections of fishes were obtained from off the coast of Suriname and adjacent regions. The first of these was made by the motor vessel "Coquette", a commercial shrimp trawler which engaged in exploratory work for the Government of Suriname. Mr. JAMES B. HIGMAN of the United States Fish and Wildlife Service was invited to accompany the "Coquette" during part of this work, and the collection of fishes which resulted was due largely to his efforts. The second collection was obtained by the motor vessel "Oregon", exploratory vessel of the United States Fish and Wildlife Service. During November, 1957, the "Oregon" occupied over a hundred trawl stations along the northern coast of South America between Venezuela and the Equator. Most of these collections are now in the U. S. National Museum and the Chicago Natural History Museum.

Both the "Oregon" and the "Coquette" collections contain representatives of a distinctive new species of *Lonchopisthus*. The definition of this species has required a review of the western Atlantic species of the genus. I take pleasure in naming this new species of *Lonchopisthus* from Suriname in honour of its collector:

***Lonchopisthus higmani*, new species**

(Figure 41)

HOLOTYPE: 103.9 mm. in standard length. *Coquette* Station no. 216: SURINAME; 6°41'30" N. lat., 54°16' W. long.; June 14, 1957; 1713 to 1733 hours; 24 fathoms;

try-net (shrimp trawl); mud bottom. United States National Museum no. 158983.

PARATYPES: 82.0 mm.; *Coquette* St. 220: SURINAME; 6°42'30" N. lat., 54°11' W. long.; June 14, 1957; 1910 to 1930 hours; 23 fms.; try-net; mud bottom; Rijksmuseum van Natuurlijke Historie. — 86.5 mm.; *Coquette* St. 218: SURINAME; 6°42' N. lat., 54°13'30" W. long.; June 14, 1957; 1810 to 1830 hours; 24 fms.; try-net; mud bottom; Stanford University Natural History Museum no. 50186. — 89.0 mm.; *Coquette* St. 221: SURINAME; 6°42'30" N. lat.; 54°10' W. long.; June 14, 1957; 1940 to 2000 hours; 23 fms.; try-net; mud bottom; USNM 158984. — 104.0 mm.; *Oregon* St. 2017; SURINAME; 7°12' N. lat., 54°08' W. long.; Nov. 8, 1957; 40 fms.; 40-foot flat shrimp trawl; Chicago Natural History Museum no. 64343. — 108.5 mm.; *Coquette* St. 220: SURINAME; 6°42'30" N. lat., 54°11' W. long.; June 14, 1957; 1910 to 1930 hours; 23 fms.; try-net; mud bottom; Academy of Natural Sciences of Philadelphia no. 80988.

Diagnosis: A deep-bodied *Lonchopisthus* with a blunt and rounded head, a large black spot on the operculum, three or four branched caudal fin rays, fewer than 57 gill rakers on the first gill arch, and more than 40 pores in the lateral line.

Description ¹⁾: The counts and proportional measurements of the six known specimens are recorded in Table 2.

D.: XI-17½ to XI-18½. A.: III-17½. P.: 19 or 20. V.: I-5. Vertebrae: 10+17+1. Gill rakers (first arch): 18 to 19 + 32 to 34 = 51 to 53. Pores in lateral line: 42 to 51. Scales in horizontal series below lateral line: 59 to 70.

Body compressed, its width, immediately behind insertion of pectoral fin, 7.9 to 8.2 in standard length; its greatest depth under anterior dorsal spines, 2.9 to 3.2 in length; least depth of caudal peduncle 2.9 to 3.2 in length of head. Greatest width of head 1.6 to 2.0 in length of head. Viewed from above, the body tapers from its maximum width (at preoperculum) to the highly compressed caudal peduncle.

Top of head, snout, jaws and lower half of opercles naked.

¹⁾ All measurements were made with dial calipers and recorded in tenths of millimetres. Total counts of the vertical fins were confirmed by use of X-ray photographs. Vertical fin counts which terminate in "½" indicate that the last ray is split to its base. These counts are considered reliable, with the exception of the count of total caudal rays. Some buried procurrent caudal rays may have been overlooked, especially those of the small comparative specimens of *L. micrognathus* and *L. lindneri* (Table 2). "Length" refers to standard length unless otherwise qualified. "Head length" refers to the distance from the tip of the snout to the most posterior limit of the opercular flap, not to the tip of the opercular spine, unless so specified.

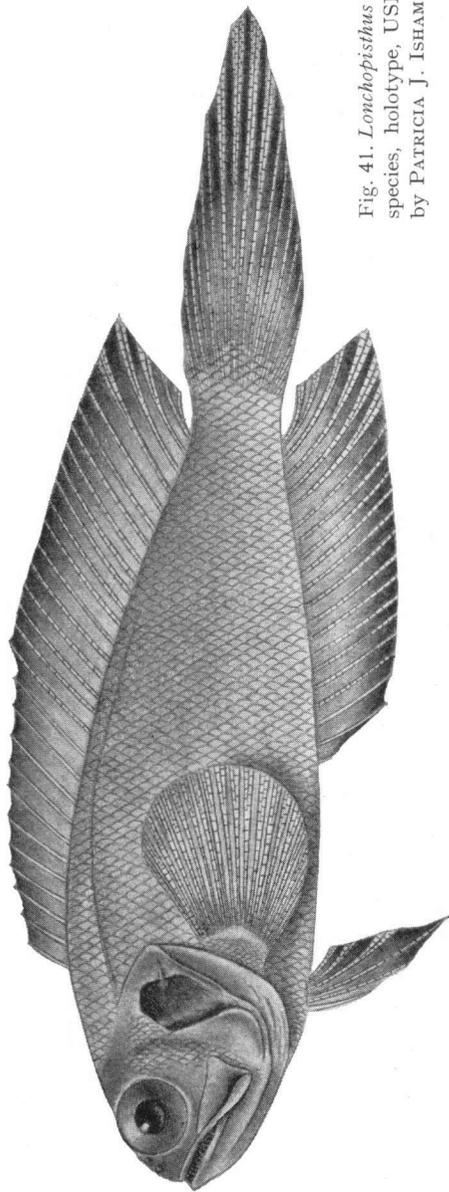


Fig. 41. *Lonchopisthus higmani* Mead, new species, holotype, USNM 158983. Drawn by PATRICIA J. ISHAM.

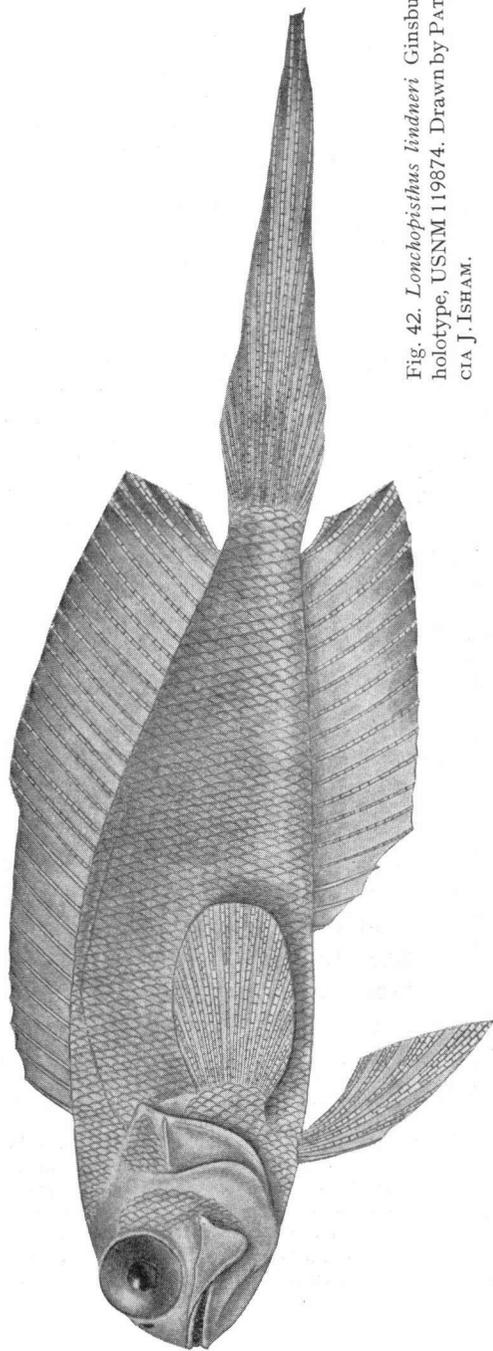


Fig. 42. *Lonchopisthus lindneri* Ginsburg, holotype, USNM 119874. Drawn by PATRICIA J. ISHAM.

Cheeks, body and base of caudal fin scaled. No modified axillary scales. Scales on head completely covered by skin; those on body largely covered by skin. All scales imbricate, cycloid. Lateral line begins above upper end of gill cleft, courses upward and rearward to below the fifth to seventh dorsal spine, and extends posteriorly along the back (separated from the back by one full row of scales) to its terminus below the seventh to ninth soft dorsal ray. Lateral line pores difficult to count anteriorly, 42 to 51. Scales in horizontal series 59 to 70, irregular, difficult to count anteriorly and bilaterally variable. 22 to 24 horizontal rows of scales between origin of anal fin and base of dorsal fin, counting upward and backward. 9 or 10 rows of scales between base of last anal ray and upper procurrent caudal rays. 16 to 18 rows of scales along venter between base of ventral fins and anus.

Head rounded anteriorly, gape terminal, eye large, circular, and entering into dorsal profile. Eye 2.8 to 3.2 in head; interorbital 2.2 to 2.8 in eye. Nostrils double; the anterior smaller than the posterior, below it, and with a short tube; posterior nostril situated immediately before anterior edge of orbit. Upper jaw extends beyond orbit, its length 1.6 to 1.9 in head length. Maxillary expanded posteriorly, the expanded width 1.3 to 1.7 in diameter of eye. Maxillary with a notch on its rear edge and surmounted by a broad supramaxillary. Premaxillary slender, tapering posteriorly, and slightly protractile, the anterior premaxillary process reaching level of posterior nostril.

Teeth on premaxillaries and mandible. Vomer, palatines and tongue without teeth. 14 to 25 widely spaced pectinate teeth on each premaxillary; 13 to 20 on each side of the mandible. The posterior mandibular teeth of some specimens are closely spaced.

Gill cover ending in a broadly-rounded opercular flap which is preceded by a strong but short opercular spine. This spine originates on the operculum near the top of the large black opercular spot. Six branchiostegal rays, the branchiostegal membranes separate and free from the isthmus. Gills four, each bearing flattened rakers of moderate length. Length of longest raker on first arch, near angle of arch, 1.6 to 1.9 in diameter of eye; longer than the opposing gill filament.

TABLE 2

Counts and measurements taken from specimens of *Lonchopisthus higmani* and other western North Atlantic species.

	<i>L. higmani</i> , holotype, Suriname	<i>L. higmani</i> , paratypes, 5 specimens, Suriname	<i>L. vandervlieti</i> , holotype, Cuba	<i>L. hindneri</i> , holotype, USNM 119874, Texas	<i>L. hindneri</i> , paratype, USNM 119878, Texas	<i>L. hindneri</i> , UML 563, Tortugas	<i>L. sp.</i> , CNHM 61701, Campeche	<i>L. sp.</i> , CNHM 61319, western Gulf of Mexico	<i>L. micrognathus</i> , USNM 4785, MCZ 12515 & 12517, 5 specimens, Cuba
Standard length (mm.)	103.9	82.0-108.5	68.9	60.0	62.8	60.7	50.0	88.5	59.0-80.0
Counts:									
Dorsal fin	xi-18½	xi-17½-xi-18½	xi-19	xi-19	xi-18½	xi-18½	xi-17½	xi-17½	xi-17½-xi-18½
Anal fin	iii-17½	iii-17½	iii-18½	iii-16½	iii-16½	iii-16½	iii-15½	iii-15½	iii-16½-iii-17½
Pectoral fin	20	19-20	19	18	18/19	18	19	18	18-19
Caudal fin - total	24	23-24	-	23	-	-	-	25	-
" - segmented	16	16	16	16	-	16	16	15	15-16
" - branched	4	3-4	0	0	-	0	0	0	0
Vertebrae	10+17+1	10+17+1	10+17+1	10+17+1	10+17+1	10+17+1	10+17+1	10+17+1	10+17+1
Gill rakers	19+34	18-19+32-34	21+39	17+33	20+35	20+33	19+33	19+36	21-23+39-40
Measurements (% of standard length)									
Greatest depth of body	30.9	30.0-34.2	25.5	27.8	27.9	28.2	26.4	27.2	21.7-26.3
Least depth of caudal peduncle	10.4	9.6-10.6	6.8	9.0	8.4	8.6	8.8	8.1	7.7-9.2
Greatest width of body behind pectoral fin	12.2	12.1-12.6	12.5	11.7	11.9	11.9	13.0	12.9	7.6-10.5
Greatest width of head	16.4	15.2-16.5	13.6	15.3	14.0	14.5	14.8	14.8	11.0-13.6
Greatest length of head	30.6	30.6-31.7	-	29.3	29.8	26.7	30.0	28.5	25.0-27.8
Length of head (to tip of opercular spine)	28.0	27.7-30.1	24.8	27.3	28.0	27.0	27.0	25.4	24.0-25.6
Length of premaxillary	17.1	17.6-18.9	15.4	17.5	17.2	17.1	15.6	17.1	15.6-16.9
Width of posterior end of premaxillary	5.3	5.2-7.1	5.7	6.3	5.9	5.3	4.8	5.8	4.0-6.1
Horizontal diameter of orbit	9.3	9.1-9.6	8.9	10.2	10.8	9.1	9.4	7.9	8.1-9.0
Width of bony interorbital	3.7	3.3-4.1	2.8	2.6	2.7	2.6	2.4	2.3	2.3-2.8
Length of longest gill raker	-	4.9-5.5	4.5	4.2	5.6	5.1	4.0	4.9	3.8-5.2
Height of opercular spot	10.1	8.2-10.1	-	-	-	-	-	-	-
Width of opercular spot	5.8	5.3-6.3	-	-	-	-	-	-	-
Snout to origin of dorsal fin	30.4	31.2-34.6	26.9	30.0	31.0	30.2	29.2	27.7	26.6-27.9
Snout to origin of anal fin	56.4	50.8-56.4	49.2	50.9	54.2	50.0	58.0	48.6	46.5-51.5
Snout to insertion of pectoral fin	29.4	29.4-32.4	27.9	28.3	32.0	29.6	31.6	29.4	26.4-29.1
Snout to insertion of ventral fin	26.1	26.1-29.2	25.2	25.9	27.9	26.7	28.3	28.3	24.3-26.2
Length of pectoral fin	23.5	20.0-24.6	19.6	22.5	24.8	21.1	22.8	20.0	19.6-21.0
Length of ventral fin	22.5	20.0-27.3	29.0	25.0	31.2	27.3	32.0	26.1	25.0-33.6
Length of midcaudal ray	46.8	44.4-52.8	69.0	51.7	-	55.2	49.2	67.3	53.4-58.1
Length of base of anal fin	41.0	39.9-42.0	43.4	42.5	40.8	41.8	42.8	42.6	44.9-47.2

Spinous and soft dorsal fins continuous; the longest elements are the posterior soft rays which, when depressed, extend beyond the bases of the caudal fin. Last 4 to 8 dorsal and anal rays divided. Dorsal originates above posterior edge of opercular spot; predorsal distance 3.1 to 3.3 in body length. Anal origin below about the second dorsal ray; preanal distance 1.7 to 2.0 in body length. Length of anal base 2.3 to 2.4 in body length. Anal fin rays increasing in length posteriorly.

Caudal fin lanceolate, the median three or four rays branched (the fourth central caudal ray of one of the specimens with but three branched rays shows evidence of damage and subsequent repair). 16 segmented caudal rays. 23 or 24 caudal rays including the procurrent rays (from X-ray photographs). Length of caudal fin 1.9 to 2.1 in body length.

Pectoral fin inserted under posterior edge of gill flap, rounded, and extending posteriorly to a vertical with anus or beyond; its length 4.3 to 6.9 in body length, becoming relatively longer with increase in body size. Uppermost and lowermost two rays simple, the rest branched. Ventral fin inserted in advance of pectoral and composed of a spine and five variably branched rays. Preventral distance 3.4 to 3.8 in body length. Length of ventral fin 3.7 to 5.0 in body length, the third and fourth rays longest.

Colour in alcohol: background colour light brown with a little evidence of vertical cross-banding. Head, particularly the snout, darker. The membrane beneath lower part of posterior expansion of the maxillary which connects the inner surface of the maxillary to the fleshy lip lateral to the dentary is black (the "opisthognathid spot"). A large, black spot on the operculum, the vertical measure of which is greater than that of the eye. Mouth, pharynx, and peritoneum pigmentless.

Spinous dorsal fin dusky and distally black. Soft dorsal and anal fins black, the pigment becoming more intense distally and posteriorly. Caudal black. Intensity of pigmentation on pectoral fin similar to that on body. Ventral fins black.

THE WESTERN ATLANTIC SPECIES OF LONCHOPISTHUS

There are four nominal species of this western Atlantic genus: *L. micrognathus* (Poey, 1860), Cuba; *L. vanderbilti* Mowbray, 1928 (in Borodin, 1928), Cuba; *L. lindneri* Ginsburg, 1942, Gulf of Mexico off Texas; and *L. higmani* from Suriname. I have had the type specimens of these and some limited additional material available for study, but the paucity of specimens and their size distribution prevents me from providing a satisfactory revision of the species. The synopsis and the remarks which follow are provisional. The named species can be separated as follows:

- a. No branched caudal fin rays
 - b. Fewer than 56 gill rakers on the first arch.
No opercular spot *L. lindneri*
 - bb. More than 56 gill rakers on first arch
 - c. Dorsal fin XI-19; a large black spot
on the operculum *L. vanderbilti*
 - cc. Dorsal fin XI-17½ or XI-18½; no black
spot on the operculum *L. micrognathus*
- aa. 3 or 4 branched caudal fin rays *L. higmani*

***Lonchopisthus micrognathus* (Poey, 1860)**

POEY (1860, p. 287) based his description of *Opisthognathus micrognathus* on a single specimen 110 mm long. GILL (1862, p. 241) proposed the genus *Lonchopisthus* for POEY's species, listing as generic characters the "normal maxillaries, moderately small scales, and lanceolate caudal fin." Unfortunately several specimens labeled *Opisthognathus micrognathus* were sent to the United States by POEY and have been considered syntypes or cotypes by the institutions which received them (USNM 7485; MCZ [Harvard] 12515 and 12517; see HOWELL Y RIVERO, 1938, p. 217). Since POEY's description included a vertebral count and since all the specimens hitherto thought to be syntypes are intact, it is doubtful whether any one of them is the type specimen. These specimens differ somewhat from POEY's description; the range of counts and

measurements is given in Table 2. With the exception of a small (24 mm.) Cuban specimen, no other specimens can be referred to *L. micrognathus*. The fishes reported by LONGLEY (*in* LONGLEY & HILDEBRAND, 1941, p. 243) cannot be located.

***Lonchopisthus vanderbilti* Mowbray, 1928**

This species, described by MOWBRAY (*in* BORODIN, 1928, p. 30, pl. 5 fig. 1)¹⁾ can be distinguished by its gill raker count (21 + 39) = 60) in combination with its coloration (opercular spot present; presumably absent in *L. micrognathus*), its shallow caudal peduncle (6.8 percent of standard length *cf.* greater than 8 percent), its somewhat smaller head and shorter pectoral fin (Table 2) and its lack of branched caudal fin rays. Considerably more study material will be needed to adequately characterize this species. I believe that *L. vanderbilti* is a valid species.

Two specimens are included in Table 2 which were loaned to me by the Chicago Natural History Museum (CNHM 61701 and 61319). The larger of these was collected on the Campeche Bank, Gulf of Mexico; the smaller is from the western Gulf of Mexico, off northern Mexico. Both are in good condition. For reasons which are largely subjective (*e.g.* the shape of the head and some proportional differences), I believe that these specimens represent an undescribed species of *Lonchopisthus* related to *L. vanderbilti*. Since adequate material of neither species is available, I leave the further study of this western Gulf population to the future ichthyologist who can collect and study such series.

***Lonchopisthus lindneri* Ginsburg, 1942**

This species was described by GINSBURG (1942, p. 360) from three small specimens taken off Texas and Louisiana in the Gulf of

¹⁾ The holotype (and only known) specimen was made available for study by the Curator of the Vanderbilt Museum, Centerport, Long Island, New York. Long exposure to the bright lights of a display case and the copper wire by which it was affixed to a glass display plate have not increased its usefulness as a scientific specimen. The measurement of least depth of the caudal peduncle cannot be accurately determined, nor can caudal fin ray counts be completed, because the peduncle had been bound with fine copper wire for display mounting. This fish is also hard and brittle, especially when compared to the rather gelatinous POEV specimens of *L. micrognathus*.

Mexico. GINSBURG did not compare his species with *L. vanderbilti*, the description of which he apparently overlooked. He did compare his material with the two U. S. National Museum specimens labeled "syntypes" of *L. micrognathus* (USNM 4785), as did MYERS (1935) in his review of the opisthognathid genera, but I have pointed out above that neither is the "individu décrit" by POEY.

However, the gill raker count (less than 56 on the first arch), lack of opercular spot and vertical cross-banding, and the general configuration of the head distinguish *L. lindneri* from its congeners. The type specimen is shown in Figure 42, and the counts and proportional measurements are given in Table 2.

I wish to record my appreciation as regards the individuals who have generously contributed specimens and information to this study: Dr. C. R. ROBINS, Marine Laboratory, University of Miami; Mr. LOREN P. WOODS, Curator of Fishes, Chicago Natural History Museum; Mrs. MYVANWY DICK, Department of Fishes, Museum of Comparative Zoology, Harvard University; and Mr. WOODHULL B. YOUNG, Vanderbilt Museum, Centerport, New York.

REFERENCES

- BORODIN, N. A., 1928. Scientific results of the yacht "Ara" expedition during the years 1926 to 1928, while in command of William K. Vanderbilt. Fishes. *Bull. Vanderbilt Oceanog. Mus.* 1, art. 1, p. 1-37, 2 maps, pl. 1-5 excl.
- GILL, THEODORE N., 1862. Remarks on the relations of the genera and other groups of Cuban fishes. *Proc. Acad. Nat. Sci. Philadelphia* 14, p. 235-242.
- GINSBURG, ISAAC, 1942. Seven new American fishes. *Journ. Washington Acad. Sci.* 32, p. 364-370.
- HOWELL Y RIVERO, LUIS, 1938. List of the fishes, types of Poey, in the Museum of Comparative Zoology. *Bull. Mus. Comp. Zool.* 82, p. 169-227.
- LONGLEY, WILLIAM H., & HILDEBRAND, SAMUEL F., 1941. Systematic catalogue of the fishes of Tortugas, Florida. *Carnegie Inst. Washington Publ.* 535 (Papers from Tortugas Lab., vol. 34), 331 pp., 34 pl. excl.
- MYERS, GEORGE S., 1935. A new genus of opisthognathid fishes. *Smithsonian Misc. Coll.* 91, no. 23, 5 pp.
- POEY, FELIPE, 1858-61. *Memorias sobre la historia natural de la isla de Cuba, acompañadas de sumarios Latinos y extractos en Francés* 2, 442 pp., 19 plates excl.