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Results of the research cruises of FRV "Walther Herwig" to South America. LVI.

A new species of skate from the southwestern Atlantic, *Gurgesiella dorsalifera* sp. nov. (Chondrichthyes, Rajoidei)

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With 8 figures and 3 tables

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Kurzfassung

Ergebnisse der Forschungsreisen des FFS „Walther Herwig“ nach Südamerika. LVI. Eine neue Rochenart aus dem südwestlichen Atlantik, *Gurgesiella dorsalifera* sp. nov. (Chondrichthyes, Rajoidei).

Mit FFS „Walther Herwig“ wurden 1968 am Kontinentalabhang vor Südbrasilien bei Tiefenholts sieben Exemplare (TL 319—543 mm) einer unbekanntnen Rochenart gefangen, die hier als *Gurgesiella dorsalifera* sp. n. beschrieben wird. Die neue Spezies ist die dritte ihrer Gattung.

Die neue Art unterscheidet sich von den beiden anderen Gattungsvertretern in der Bestachelung, in Körperform und Färbung, durch Anzahl der Wirbel und Brustflossenstrahlen, ferner in der Morphologie der Klasper, des Neurocraniums und des Schulter- sowie Beckengürtels. Unter den Arten von *Gurgesiella* zeigt die neue Spezies als einzige konstant eine Dorsalflosse, die Klasperkomponente promontory und mehr als 100 praecaudale Schwanzwirbel.

G. dorsalifera und *G. atlantica* sind Schwesterarten in der apomorphen Schwestergruppe von *G. furvescens*. Alle drei Arten zeigen eine allopatrische Verbreitung, besiedeln aber denselben Tiefenbereich.

Abstract

During deepsea trawling off southern Brazil in 1968 by the FRV "Walther Herwig" seven specimens, 319 to 534 mm TL, of a new species, *Gurgesiella dorsalifera*, were captured. The new species represents the third species of the genus.

The new species is distinguished from its congeners in squamation, body shape and color, number of vertebrae and pectoral radials, morphology of claspers, neurocranium, scapulocoracoid and pelvic girdle. It is the only species of *Gurgesiella* which consistently possesses a dorsal fin, clasper component promontory and more than 100 precaudal tail vertebrae.

G. dorsalifera and *G. atlantica* are sister species which constitute the apomorphic sister group of *G. furvescens*. All three species are allopatrically distributed but occur over the same depth range.

A. Introduction

The rajoid genus *Gurgesiella* de Buen, 1959, consists of two nominal species, *G. furvescens* de Buen, 1959, from the southeastern Pacific and *G. atlantica* (Bigelow and Schroeder,

1962) from the tropical western Atlantic. A third species, herein described, was captured off southern Brazil during the 1968 cruise of the FRV "Walther Herwig."

Gurgesiella is distinguished from other rajoid genera by a combination of characters: dorsal surface sparsely covered with minute denticles but without large thorns; lateral corners of disc angular; pelvics with tips bluntly pointed and narrow, and with posterior margins more or less straight; tail about twice body length; dorsal surface spotted or plainly colored; tail banded; generally without dorsal fins, although one dorsal occasionally present; caudal fin large, ventral caudal lobe present but not joined to dorsal caudal lobe; nostrils greatly enlarged, distance from incurrent apertures to mouth corner about equal to distance between nostrils, without oronasal pits; clasper very long and slender, without dermal denticles or pseudosiphon, with pseudorhipidion, rhipidion and shield, dorsal marginal with distal extension, without dorsal terminal 1, dorsal terminal 2 comma-shaped, dorsal terminal 3 with crenate distal margin not directly connected to axial, ventral terminal twisted laterally along its longitudinal axis, accessory terminal 1 and 2 rod-shaped and distally sharp-edged; rostral node elongated and narrow, with cylindrical rostral appendices that extend far posterior along midline and flank rostral shaft, rostral shaft with stout base and tapering tip that terminates behind fork of rostral appendices; nasal capsules relatively large and diagonally situated; scapulocoracoid relatively long and low, with low scapular process, without anterior bridge, and relatively large postdorsal fenestra (modified from MCEACHRAN and COMPAGNO, 1979).

Specimens of the new species of *Gurgesiella* were obtained from the Aussenstelle Ichthyologie des Institutes für Seefischerei Hamburg (ISH). Methods of describing the new species follow those outlined by MCEACHRAN and COMPAGNO (1979),

B. *Gurgesiella dorsalis* sp. nov. (Figs. 1–3)

a) Material

Holotype: ISH 1948/68; male 424 mm TL, "Walther Herwig", Station 97/78; 23° 50' S, 42° 00' W, 3 III 1968, 800 m, 140' bottom trawl. T_b : 4.99 °C, S_b : 34.247 ‰.

6 Paratypes:

ISH 1797/68; female 392 mm TL, female 409 mm TL, "Walther Herwig", Station 64/68; 30° 03' S, 47° 44' W, 27 II 1968, 800 m, 140' bottom trawl. T_b : 5.00 °C, S_b : 34.540 ‰.

ISH 1931/68; female 435 mm TL, female 534 mm TL, "Walther Herwig", Station 91/68; 24° 28' S, 43° 43' W, 2. III 1968, 800 m, 140' bottom trawl. T_b : 5.47 °C, S_b : 34.262 ‰.

ISH 1943/68; subadult male 319 mm TL, subadult male 384 mm TL, "Walther Herwig", Station 96/68; 23° 44' S, 42° 08' W, 3 III 1968, 500 m, 140' bottom trawl. T_b : 8.10 °C, S_b : 34.519 ‰.

b) Diagnosis

A species of the genus *Gurgesiella* which agrees with its congeners in squamation; body shape and proportions; clasper morphology and structure; and morphology of neurocranium, scapulocoracoid and pelvic girdle. However, the new species can be distinguished from both *G. atlantica* and *G. furvescens* by its possession of a single dorsal fin, spotted coloration of dorsum, mean of 111 precaudal tail vertebrae, development of the clasper component promotory, relative lengths of rostral cartilage and rostral appendices, and relative height of scapulocoracoid. *G. dorsalis* possesses a well developed promotory and a sentinel that extends beyond the tip of the axial. In the new species the rostral cartilage equals 85 % and the rostral appendices 69 % of the nasobasal length and the scapulocoracoid height equals 50 % of its length.

The name *dorsalis* (from the Latin *dorsalis* and *ferre*, to bear) is selected in reference to the single dorsal fin of the species.

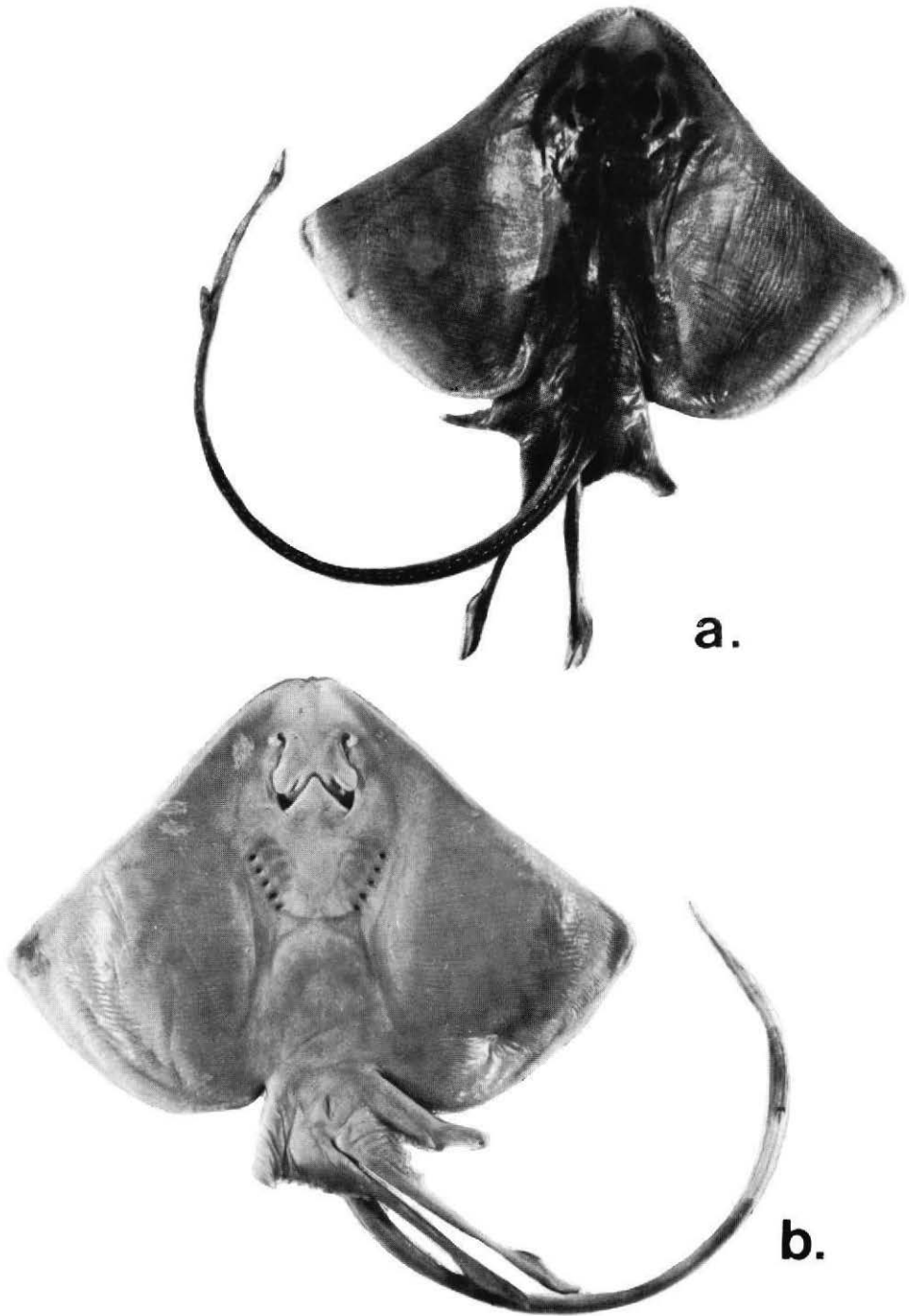


Fig. 1: *Gurgesiella dorsalifera* sp. nov., holotype. dorsal (a) and ventral (b) views.

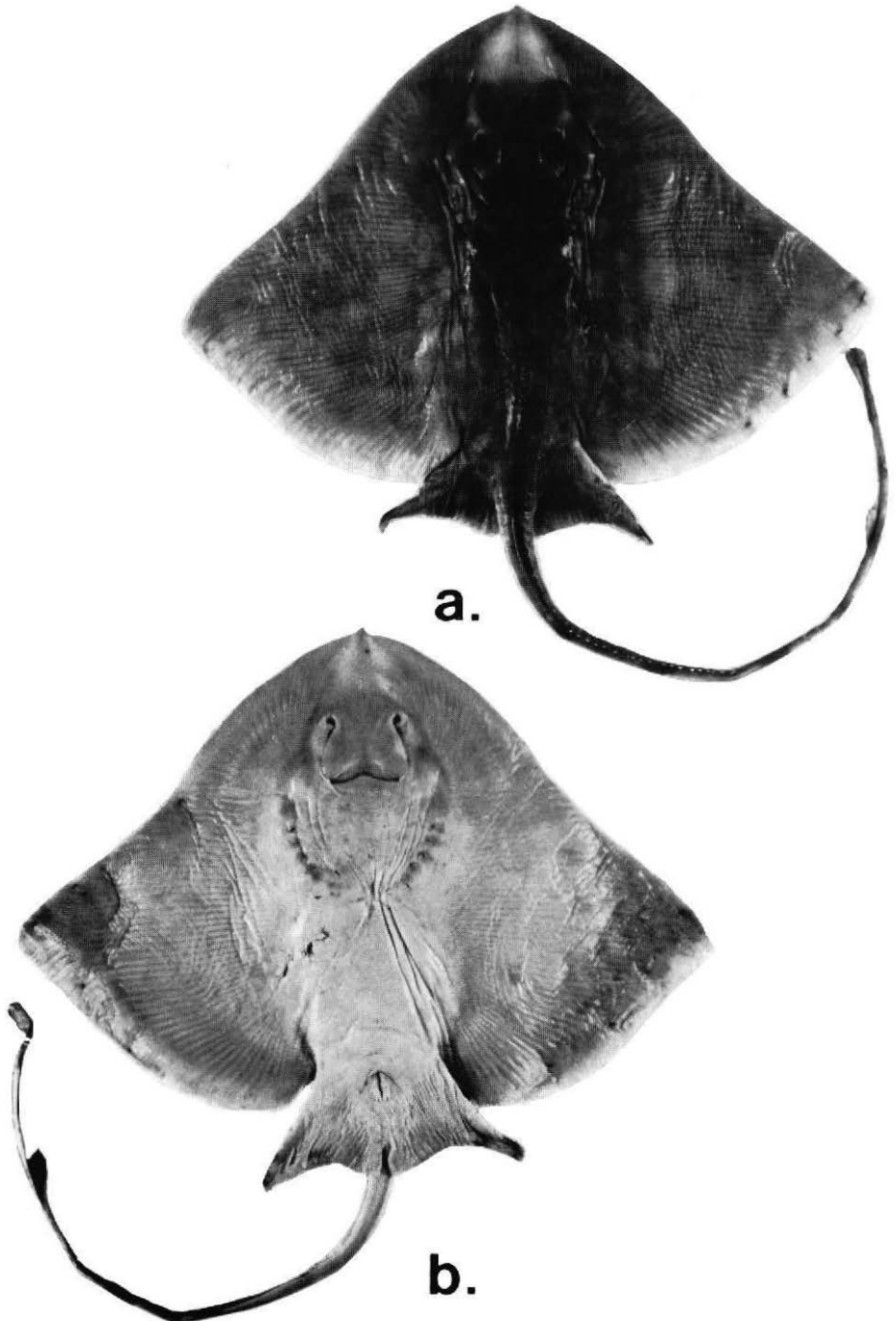


Fig. 2: *Gurgesiella dorsalifera* sp. nov., mature female paratype, ISH 1931/68, 534 mm TL, dorsal (a) and ventral (b) views.

c) *Description* (Figs. 1–3)

Proportional measurements expressed as % TL are given in Table 1 along with those of the two congeners. Disc rhomboidal in shape, 1.5 times (1.4 to 1.6 paratypes) as broad as long; maximum angle in front of spiracles 122° (123° to 131°); tip of snout with a low broad process; margin of disc convex from tip of snout to level of orbits then changing to weakly concave from level of orbits to near outer corners which are abruptly rounded; posterior margins more or less straight along lateral aspect but slightly convex along medial aspect. Axis of greatest width 71.8 % (65.3 to 72.8 %) of distance from tip of snout to axil of pectorals. Pelvic fins with lateral half of distal margin weakly concave and medial half of distal margin more or less straight when fin is spread; anterior margins 1.0 (1.1 to 1.3) times as long as distance from origin of anterior lobe to posterior margin of fin. Tail slender, ovoid in cross-section, its width at mid-length slightly less than one-half diameter of eye. Tail with lateral fold along ventrolateral surface originating as a ridge near base of tail, distally widening to fold equalling about one-half height of dorsal lobe of caudal fin at level of dorsal fin, terminating near level of origin of dorsal lobe of caudal fin. Length of tail from center of cloaca to distal tip 2.1 (1.6 to 2.0) times distance from tip of snout to center of cloaca.

Preocular length 2.2 (2.0 to 2.8) times as long as orbit; preoral length 1.9 (1.8 to 2.4) times internarial distance. Interorbital distance 0.8 (0.6 to 1.0) times length of orbit; orbit length 2.7 (2.2 to 3.5) times as long as spiracle. Nasal curtain lobe-like and without fringes along margin; outer nasal flap with fine fringes; nostrils without oronasal pit. Distance from center of nostril to corner of mouth 1.2 (1.0 to 1.2) times internarial distance. Upper and lower jaws strongly arched (Fig. 1 b) (moderately arched in paratypes) (Fig. 2 b); upper jaw strongly indented at symphysis (moderately indented in paratypes). Teeth in both jaws with sharp-pointed cusps in mature male holotype, increasing in height toward symphyses, arranged in more or less vertical rows (teeth with blunt, low cusps, in quincunx arrangement in paratypes).

Distance between first gill slits 2.3 (2.0 to 2.4) times as great as between nares; distance between fifth gill slits 1.4 (1.2 to 1.5) times as great as between nares; length of first gill slit 1.2 (1.5 to 1.9) times length of fifth gill slit and 0.1 (0.1 to 0.2) times mouth width. Single dorsal fin, widely separated from caudal fin, base 1.0 (0.7 to 1.3) times distance between orbits. Base of dorsal lobe of caudal fin 0.7 (0.4 to 0.7) times preocular length, its maximum height 0.2 (0.1 to 0.3) times diameter of eye; ventral lobe of caudal originating slightly posterior to origin of dorsal lobe, its base 0.9 (0.6 to 1.0) times as long and its height 0.4 (0.4 to 0.8) times as great as dorsal lobe; lobes not confluent at tip of caudal.

Upper disc with small recurved denticles on stellate bases, sparsely distributed over lateral aspect of disc posterior to level of nuchal region, more densely distributed anterior to nuchal region and along midbelt of disc. Denticles along the midbelt are also thicker. Pelvic fins and ventral surface without denticles. Tail with two irregular rows of thorns on either side of mid-line and one ventrolateral row all running from near distal margin of pelvic fins to near tip of tail. Holotype with malar thorns along anterior margin of disc, extending from tip of snout to level of orbits and alar thorns along anterior half of lateral extreme of disc. Malar thorns are rather stout with enlarged bulbous tips. Alar thorns are arranged in three irregular columns, with one to three thorns per row and a total of 19 thorns on the left and 16 thorns on the right pectoral. Subadult male specimens (319 and 384 mm TL) with malar thorns along anterior margin and larger of these specimens with one column of about six alar thorns.

After preservation in formaldehyde and storage in ethanol upper surface tan brown with large, indistinct, light tan blotches scattered over lateral aspects of disc. Blotches of irregu-

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Fig. 3: *Gurgesiella dorsalifera* sp. nov., immature male paratype, ISH 1943/68, 384 mm TL.

lar shape, size varied from diameter of spiracle to diameter of orbit and arranged more or less symmetrically (Fig. 1 a). Central band of disc, from nasal capsules to tip of tail slightly darker brown. Area in front of nasal capsules between rostral cartilage and propterygium of pectoral fin whitish. Tail with six to eight indistinct dark brown blotches. Margins of dorsal fin and dorsal and ventral lobes of caudal fin dark brown. Sensory pores on dorsal surface dark pigmented. Ventral surface light tan, with central part of disc and pelvic fins whitish and lateral aspects of disc light brown (Fig. 1 b). Ventral surface of tail whitish with three irregular brown blotches. Dorsal surfaces of paratypes ranged from tan-brown with irregular tan blotches, as in the holotype, to tan with large, brown blotches scattered over the entire disc (Figs. 2, 3).

The clasper of the holotype is very long and slender with ventral lobe more splayed out at origin of glans than dorsal lobe (Fig. 4 a); distal tip bluntly pointed; without dermal denticles or pseudosiphon; inner dorsal lobe with proximal cleft, formed by dorsal terminal 3 cartilage and pseudorhipidion (Fig. 4 b); cleft partially obscured by promontory, projecting into glans lateral to pseudorhipidion; a flap of integument extending distally from pseudorhipidion to surface of axial cartilage forming flag; inner ventral lobe with a well developed shield, extending from level of hypopyle to level of tip of promontory, with lateral margin naked and sharp-edged, slightly twisted laterally along its longitudinal axis; sentinel located medial and distal to shield, rod-shaped, laterally flattened, greatly tapering distally and terminating as a sharp point distal to glans; rhipidion very small, located

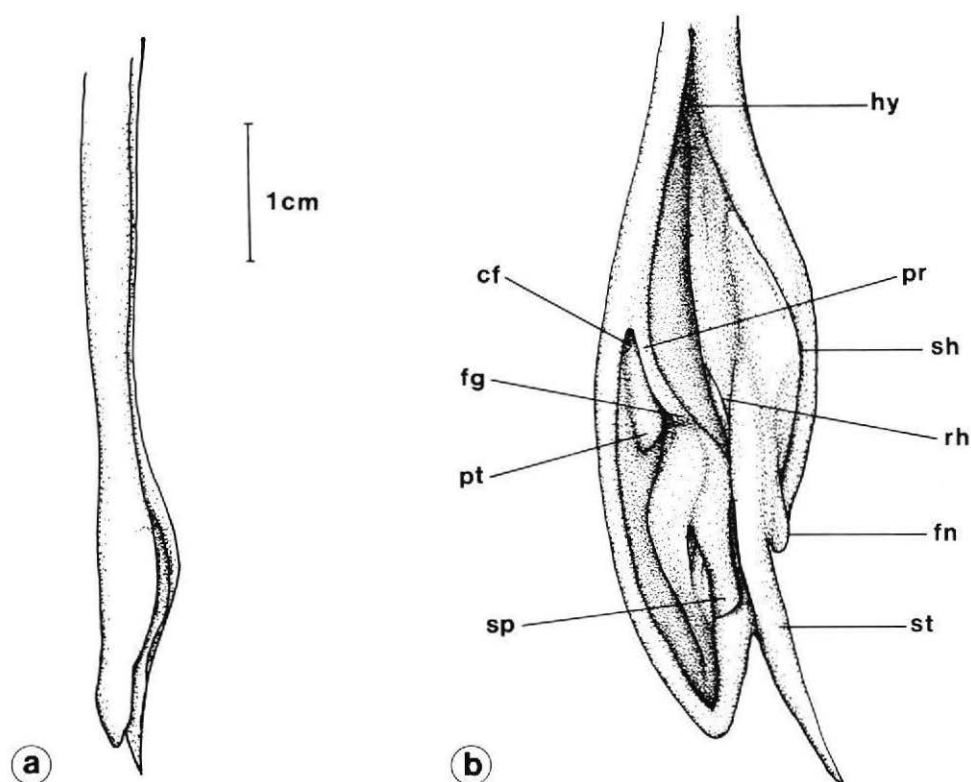


Fig. 4: *Gurgesiella dorsalifera* sp. nov., right clasper of holotype; dorsal view (a); lateral view opened to show components (b). cf—cleft, fg—flag, fn—funnel, hy—hypopyle, pr—pseudorhipidion, pt—promontory, rh—rhipidion, sh—shield, sp—spike, st—sentinel.

medial to proximal section of sentinel along inner margin of ventral lobe, with a finely pitted surface; spike rather short, dorsoventrally flattened, with a chisel-like distal tip; and funnel located ventrolateral to mid-section of sentinel, acutely pointed, dorsally covered with thick integument. Clasper cartilages consisting of axial, dorsal marginal, ventral marginal and five terminal cartillages; axial very slender distally, forming very slender tip (Fig. 5 a), dorsal marginal with concave distal margin, with long and slender distomedial extension entering glans and forming pseudorhipidion; ventral marginal with truncate distal margin; dorsal terminal 1 lacking; dorsal terminal 2, united with distal margin of dorsal marginal, comma-shaped with distal extension forming promontory (Fig. 5 b); dorsal terminal 3 attached to distal margin of dorsal terminal 2, narrow, with crenate distal margin free of tip of axial; ventral terminal lying on dorsal surface of accessory terminal 1, twisted laterally along its longitudinal axis, with sharp edged lateral margin forming shield, spike-like distal extension forming funnel and strap-like distal medial extension wrapping around axial; accessory terminal 1 attached to distal margin of ventral marginal,

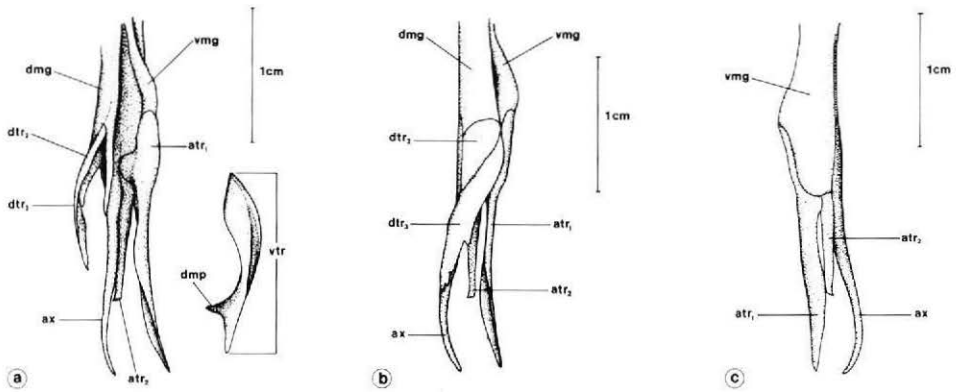


Fig. 5: *Gurgesiella dorsalis* sp. nov., cartilages of right clasper of holotype; lateral view, partially expanded (a); dorsal view (b); ventral view (c). atr₁—accessory terminal 1 cartilage, atr₂—accessory terminal 2 cartilage, ax—axial cartilage, dm—dorsal marginal cartilage, dmp—distal medial process, dtr₂—dorsal terminal 2 cartilage, dtr₃—dorsal terminal 3 cartilage, vm—ventral marginal cartilage, vtr—ventral terminal cartilage.

Y-shaped with long and short proximal arms, and long distal extension forming sentinel (Fig. 5 c); accessory terminal 2 attached to distal margin of ventral marginal between axial and accessory terminal 1, rod-shaped with chisel-shaped distal section forming spike.

Neurocranium of paratype has a relatively short, tapering rostral shaft reaching only about one-half distance from rostral base to rostral node (Fig. 6 a); rostral appendices greatly elongated, flattened anteriorly at junction with rostral node, but cylindrical posteriorly straddling rostral shaft and extending almost to leading edge of nasal capsules; propterygium of pectoral fin reaching rostral node; nasal capsules anterolaterally expanded, set at about a 40° angle to transverse axis of neurocranium, elliptical in shape; foramina for profundus nerve on dorsolateral aspect of nasal capsule; anterior foramen for preorbital canal on anterior margin of basal fenestra; precerebral space partially occluded by nasal capsules which bulge over and meet along midline; preorbital process moderately well developed, separated from incised supraorbital crest by shallow groove; postorbital process relatively well developed and bifurcated distally; anterior fontanelle tear-shaped; posterior fontanelle narrow and constricted at about mid-length; cranial foramen for otic branch of facial nerve anteromedial to postorbital process; posterior foramen for preorbital canal located on anterodorsal wall of orbit, on a diagonal with orbitonasal canal which is located on anteroventral wall of orbit (Fig. 6 b); foramen for anterior cerebral vein anterior and on a vertical with dorsal margin of optic nerve foramen; trochlear nerve foramen anterodorsal to oculomotor nerve foramen; orbital fissure on posterior wall of orbit anterodorsal to foramen for hyomandibular branch of facial nerve; foramen for interorbital vein between optic stalk and orbital fissure; foramen for efferent spiracular artery ventral to optic stalk; without jugal arches; vagus nerve foramen located lateral to occipital condyle and medial to glossopharyngeal nerve foramen (Fig. 6 c); foramen for lateral branch of vagus nerve dorsolateral to vagus nerve foramen; basal plate very narrow (Fig. 6 d).

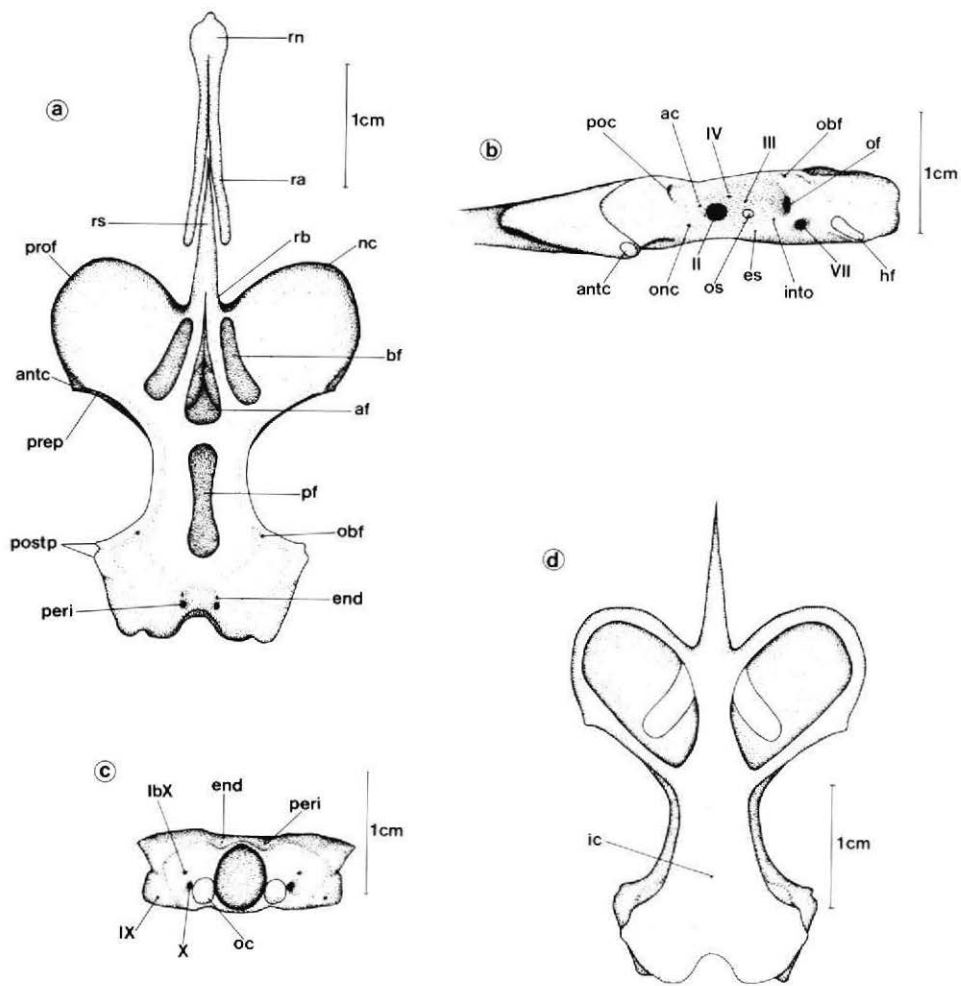


Fig. 6: *Gurgesiella dorsalifera* sp. nov., neurocranium of immature male paratype, ISH 1943/68, 319 mm TL; dorsal view (a); lateral view (b); posterior view (c); ventral view (d). ac—anterior cerebral vein foramen, af—anterior fontanelle, antc—antorbital condyle, bf—basal fenestra, end—endolymphatic foramen, es—efferent spiracular artery foramen, hf—hyomandibular facet, ic—internal carotid artery foramen, into—interorbital vein foramen, lbX—lateralis branch of vagus nerve foramen, nc—nasal capsule, obc—otic branch of facial nerve foramen, oc—occipital condyle, of—orbital fissure, onc—orbital nasal canal, os—optic stock, peri—perilymphatic foramen, pf—posterior fontanelle, poc—preorbital canal, postp—postorbital process, prep—preorbital process, prof—profundus nerve foramen, ra—rostral appendix, rb—rostral base, rn—rostral node, rs—rostral shaft, II—optic nerve foramen, III—oculomotor nerve foramen, IV—trochlear nerve foramen, VII—hyomandibular branch of facial nerve foramen, IX—glossopharyngeal nerve foramen, X—vagus nerve foramen.

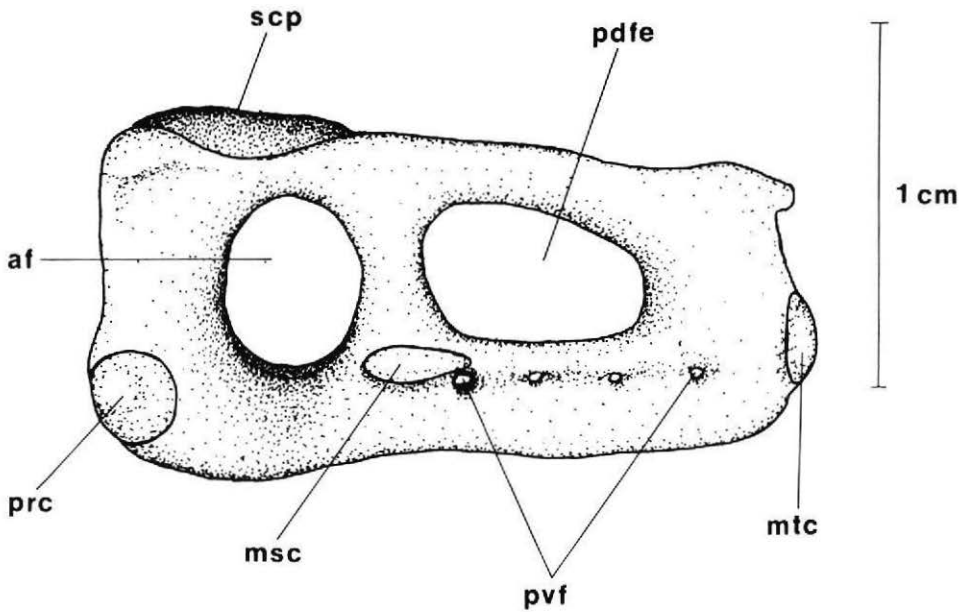


Fig. 7: *Gurgesiella dorsalis* sp. nov., lateral view of scapulocoracoid of immature male paratype, ISH 1943/68, 319 mm TL. af—anterior fenestra, msc—mesocondyle, mtc—metacondyle, pdfe—postdorsal fenestra, prc—procondyle, pvf—postventral foramina, scp—scapular process.

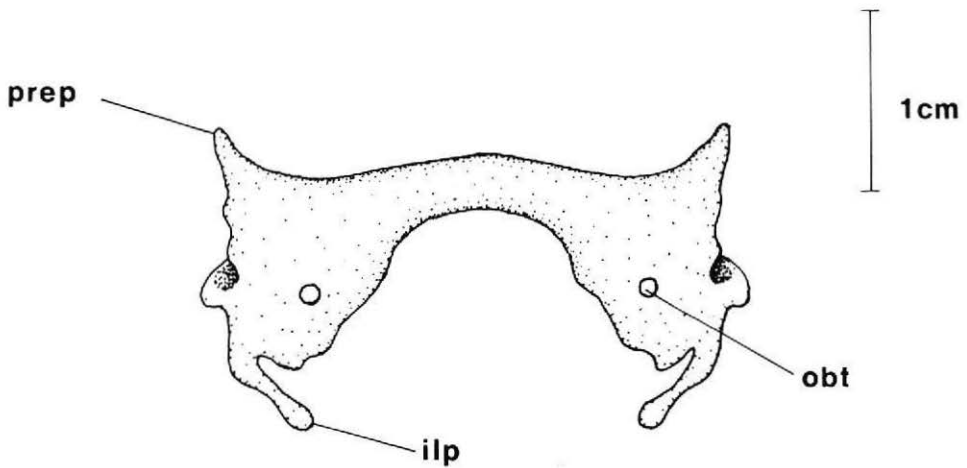


Fig. 8: *Gurgesiella dorsalis* sp. nov., dorsal view of pelvic girdle of mature male holotype. ilp—iliac process, obt—obturator foramen, prep—prepelvic process.

Scapulocoracoid of paratype low and anteroposteriorly elongated (Fig. 7); without anterior bridge; anterior fenestra narrow; postdorsal fenestra moderately expanded anteroposteriorly; mesocondyle elongated; four postventral foramina; low scapular process; and rear corner extended posteriorly to near level of metacondyle.

Pelvic girdle of holotype with moderately arched puboischiadic bar, distinct prepelvic processes, iliac processes only weakly recurved and directed posteromedially, and iliac region with one obturator foramen (Fig. 8). Pelvic girdles of females paratypes are relatively broader and more arched than those of males.

Male specimens are mature at 424 mm TL and females at 534 mm TL.

d) Comparisons

G. dorsalisifera more closely resembles *G. atlantica* than *G. furvescens* in squamation, body shape and color, number of vertebrae and pectoral radials, and morphology of the claspers, neurocranium, scapulocoracoid and pelvic girdle (Tables 1, 2, 3). *G. dorsalisifera* and *G. atlantica* possess small thorns on dorsal and lateral surfaces of tail, while *G. furvescens* lacks thorns. Malar thorns of mature male *G. atlantica* usually have rounded tips, similar but less bulbous than those of *G. dorsalisifera*. Malar thorns of *G. furvescens* are sharp pointed. *G. dorsalisifera* is distinct from *G. atlantica* in lacking denticles on the ventral surface and in possessing relatively few denticles on the dorsal surface. *G. dorsalisifera* is more similar to *G. atlantica* than *G. furvescens* in relative length of the snout, distance between first gill slits, angle of snout, and ratios of preocular length to orbit length and preoral length to internarial distance (Table 1). However, *G. dorsalisifera* can be distinguished from both congeners by its narrower spiracles and narrower gill slits. Both *G. dorsalisifera* and *G. atlantica* exhibit extreme sexual dimorphism in shape of the upper and lower jaws. Mature males of both species have strongly arched jaws with the upper jaw markedly indented at the symphysis, while females and subadult males have only moderately arched jaws with the upper jaw only moderately indented at the symphysis. Jaws of mature *G. furvescens* are only slightly more arched and indented than those of females and immature males. *G. atlantica* occasionally possesses a dorsal fin (2 of the 105 specimens examined by BIGELOW and SCHROEDER, 1962 in their description of this species possessed dorsal fins), while none of the 15 available specimens of *G. furvescens* have a dorsal fin. Dorsal surface of disc of *G. dorsalisifera* possesses either dark or light symmetrically arranged blotches, while the two congeners are plain colored.

The clasper of *G. dorsalisifera* is more similar to that of *G. atlantica* than to that of *G. furvescens* in that the accessory terminal 1 cartilage is relatively long, and accessory terminal 2 has a truncate margin and the rhipidion is proximally located (McEACHIRAN and COMPAGNO, 1979). However, *G. dorsalisifera*, unlike *G. atlantica*, possesses a promontory and the accessory terminal 1 extends distal to the tip of the clasper. The neurocrania of the three congeners are similar, especially those of *G. dorsalisifera* and *G. atlantica*, in the relative lengths of the rostral cartilage and rostral appendices. However, *G. dorsalisifera* has a considerably longer rostral cartilage and rostral appendix than *G. atlantica*. The scapulocoracoids of *G. dorsalisifera* and *G. atlantica* are relatively lower and more anteroposteriorly expanded than in *G. furvescens*. The scapulocoracoid of *G. dorsalisifera* differs from those of the other two species in that the rear corner is extended posteriorly. The pelvic girdles of both *G. dorsalisifera* and *G. atlantica* possess iliac processes which are only slightly recurved and directed posteromedially, while those of *G. furvescens* are moderately recurved and directed medially. Unlike *G. atlantica* and *G. furvescens*, the prepelvic processes in *G. dorsalisifera* are distinctly developed.

Table 1

Gurgesiella dorsalisifera sp. nov. Proportional measurements in percent of total length, meristic characters, tooth formulas and vertebral numbers compared with those of congeners. Data for holotype in column one; means (column two) and ranges (column three) of six paratypes. All data for *G. atlantica* and *G. furvescens* are from MCEACHRAN and COMPAGNO (1979) except that marked with *.

	<i>G. dorsalisifera</i>			<i>G. atlantica</i>		<i>G. furvescens</i>	
		\bar{x}	range	\bar{x}	range	\bar{x}	range
N	1	6		19		13	
Total length (mm)	424	100	319 — 534	100	188 — 454	100	303 — 568
Disc width	49.3	54.7	49.3 — 57.2	52.4	46 — 60	55.4	52 — 59
Disc length	33.0	36.6	33.0 — 39.1	34.4	31 — 37	35.5	31 — 38
Snout length (preorbital)	7.1	9.0	7.1 — 11.0	8.6	7 — 10	6.8	6 — 9
Snout length (preoral)	7.5	9.4	7.5 — 11.3	9.4	8 — 10	7.7	6 — 10
Snout to maximum disc width	22.2	23.2	21.9 — 26.6	22.0	20 — 25	22.5	20 — 25
Prenasal length	4.6	6.0	4.6 — 7.4	5.6	4.3 — 7.0	4.8	3.8 — 5.2
Distance — nare to nasal curtain	3.9	4.3	3.8 — 5.0	4.3*	3.1 — 4.7*	4.3*	3.9 — 5.0*
Orbit diameter	3.2	3.9	3.9 — 4.2	4.1	3.4 — 4.5	3.8	3.3 — 4.5
Interorbital width	2.6	2.9	2.5 — 4.0	2.6	2.3 — 3.0	2.7	2.3 — 3.3
Orbit and spiracle length	4.7	4.5	4.1 — 4.7	5.0	4.6 — 5.7	5.3	4.8 — 5.8
Spiracle length	1.2	1.4	1.2 — 1.7	2.2	1.6 — 3.8	2.1	1.8 — 2.5
Distance between spiracles	5.5	5.6	5.4 — 5.8	5.5	4.9 — 7.6	5.3	4.7 — 6.1
Mouth width	4.4	5.2	4.4 — 5.6	5.8	5.2 — 7.0	5.9	5.1 — 7.1
Distance between nostrils	3.9	4.4	3.9 — 4.8	4.5	4.0 — 4.9	5.2	4.9 — 6.1
Width of first gill slit	0.6	0.8	0.6 — 0.9	1.2	1.0 — 1.5	1.6	1.2 — 2.1
Width of third gill slit	0.6	0.7	0.6 — 0.8	1.2	1.0 — 1.4	1.6	1.0 — 1.9
Width of fifth gill slit	0.5	0.5	0.4 — 0.6	0.9	1.0 — 1.1	1.1	0.8 — 1.6
Distance between first gill slits	9.1	9.8	9.4 — 10.5	10	9 — 11	12.5	12 — 14
Distance between fifth gill slits	5.4	6.0	5.4 — 6.7	6.1	6 — 7	7.8	7 — 9
Length of anterior pelvic lobe	10.0	10.8	9.5 — 11.4	11.4	9 — 13	12.3	11 — 14
Height of dorsal fin	1.2	1.3	1.2 — 1.6	—	—	—	—
Length of dorsal fin base	2.6	3.0	2.6 — 3.3	—	—	—	—
Length of dorsal caudal lobe	5.1	5.5	3.6 — 7.3	7.1*	4.7 — 8.3*	6.2*	5.0 — 7.2*
Length of ventral caudal lobe	4.6	4.3	3.0 — 5.6	5.7*	4.3 — 7.0*	4.5*	3.6 — 5.5*
Distance — snout to cloaca	31.8	34.6	31.8 — 37.8	32.6	31 — 34	33.2	30 — 37
— cloaca to dorsal origin	50.9	49.1	45.5 — 51.3	—	—	—	—
— cloaca to caudal origin	61.6	59.2	55.4 — 61.6	60.4	58 — 64	60.5	57 — 64
— cloaca to caudal tip	68.2	65.4	62.2 — 68.2	67.4	65 — 70	66.3	63 — 68
Snout angle	122°	126°	122° — 131°	129.2°*	118° — 142°	144°*	136° — 154°*
Number of trunk vertebrae	25	24.3	23 — 25	23.0	23	22.5	21 — 23
Number of precaudal tail vertebrae	108	110.9	108 — 114	97.3	97 — 99	94.1	92 — 97
Number of pectoral radials	72	72.6	70 — 73	73*	71 — 75*	67.6	66 — 69*
Tooth formula	25/28	35.9/33.4	25/26 — 45/38	36.8/32.6*	26/23 — 44/40*	35.2/31.5*	27/26 — 43/36*

Table 2 *Gurgesiella dorsalis* sp. nov. Cranial measurements and proportions compared with those of congeners. Measurements in millimeters, proportions in percent of nasobasal length.

	<i>G. dorsalis</i> ISH 1943/68		<i>G. atlantica</i> ***)		<i>G. furvescens</i> ***)	
	319 mm TL male mm*)	% NB**)	462 mm TL female mm*)	% NB**)	576 mm TL female mm*)	% NB**)
Nasobasal length	28.4	100	39	100	51	100
Cranial length	52.6	185	68	174	78	153
Rostral cartilage length	24.2	85	29	74	27	53
Prefontanelle length	23.8	84	30	77	28	55
Cranial width	24.9	88	36	92	46	90
Interorbital width	7.4	26	10	26	13	25
Rostral base width	2.0	7	2	5	3	6
Anterior fontanelle length	11.0	39	16	41	17	33
Anterior fontanelle width	3.1	11	4	10	4	8
Posterior fontanelle length	9.0	32	12	31	18	35
Posterior fontanelle width	3.1	11	3	8	4	8
Rostral appendix length	19.7	69	22	56	24	47
Rostral appendix width	4.0	14	5	13	4	8
Rostral cleft length	17.6	62	14	35	14	27
Cranial height	5.8	20	9	23	10	20
Height of rostral cartilage	4.0	14	5	13	5	10
Width across otic capsules	14.9	52	19	49	23	45
Least width of basal plate	5.8	20	7	18	10	20
Greatest width of nasal aperture	13.5	48	21	54	22	43
Internasal width	2.6	9	3	8	4	8

*) mm = linear measurement in millimeters

**) NB = nasobasal length

***) Data from MCEACHRAN and COMPAGNO (1979)

Table 3 *Gurgesiella dorsalis* sp. nov. Scapulocoracoid measurements and proportions compared with those of congeners. Measurements in millimeters, proportions in percent of greatest length.

	<i>G. dorsalis</i> ISH 1943/68		<i>G. atlantica</i> ***)		<i>G. furvescens</i> ***)	
	319 mm TL male mm*)	% GL**)	462 mm TL female mm*)	% GL**)	576 mm TL female mm*)	% GL**)
Greatest length	19.9	100	28	100	31	100
Greatest height	10.0	50	15	54	21	68
Premesocondyle length	8.7	44	12	43	13	42
Postmesocondyle length	11.2	56	16	57	18	58
Postdorsal fenestra length	5.8	29	10	36	9	29
Postdorsal fenestra height	4.1	21	5	18	9	29
Anterior fenestra length	3.8	19	8	29	7	23
Anterior fenestra height	5.1	26	9	32	13	42
Height of rear corner	7.6	38	11	39	16	52

*) mm = linear measurement in millimeters

**) GL = greatest length

***) Data from MCEACHRAN and COMPAGNO (1979)

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e) *Remarks*

G. dorsalifera and *G. atlantica* share several characters which are considered to be apomorphic within *Gurgesiella*, i. e. malar thorns with flattened or enlarged tips, extreme sexual dimorphism in jaw shape, elongation of the accessory terminal 1 cartilage and anteroposterior expansion of the scapulocoracoid, suggesting that they are sister species which in turn form the apomorphic sister group with *G. furvescens*.

The three species of *Gurgesiella* are allopatrically distributed with *G. dorsalifera* limited to the southwestern Atlantic, from 23° 44' S to 30° 03' S; *G. atlantica* located in the northwestern Atlantic and Caribbean, from 01° 45' N to 14° 24' N (BIGELOW and SCHROEDER, 1965; McEACHRAN and COMPAGNO, 1979); and *G. furvescens* occurring in the southeastern Pacific from 01° 33' S to 32° 17' S (DE BUEN, 1959; McEACHRAN and COMPAGNO, 1979). All three species are found over the upper continental slope, 247 to 960 m (BIGELOW and SCHROEDER, 1965; McEACHRAN and COMPAGNO, 1979).

C. Key to species of *Gurgesiella*

- 1 With small thorns on dorsal and lateral surfaces of tail; internarial distance goes 1.8 to 2.4 ($\bar{x} \geq 2.1$) times into preoral snout length; more than 96 ($\bar{x} \geq 97$) precaudal tail vertebrae 2
- 1' Without small thorns on dorsal and lateral surfaces of tail; internarial distance 1.3 to 1.6 ($\bar{x} = 1.5$) times into preoral snout length; less than 98 ($\bar{x} = 94.1$) precaudal tail vertebrae *G. furvescens* de Buen, 1959
- 2 Ventral surface of disc roughened with denticles; dorsal surface of disc plain colored, without light or dark blotches; sensory pores on dorsal surface not darkly pigmented; dorsal fin only rarely present; less than 100 ($\bar{x} = 97$) precaudal tail vertebrae
G. atlantica (Bigelow and Schroeder, 1962)
- 2' Ventral surface of disc smooth; without denticles; dorsal surface of disc with either light or dark blotches; sensory pores on dorsal surface darkly pigmented; dorsal fin always present; more than 107 ($\bar{x} = 111$) precaudal tail vertebrae
G. dorsalifera sp. nov.

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E. Literature

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