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NEW RECORDS OF FLABELLINIDAE  
(OPISTHOBRANCHIA: AEOLIDACEA) FROM THE  
TROPICAL AMERICAS, WITH DESCRIPTIONS OF TWO  
NEW SPECIES

By

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**ABSTRACT:** Two new species of *Flabellina* are described from the tropical Americas. *Flabellina vansyoci* sp. nov. is widely distributed from Bahia Magdalena on the Pacific coast of Baja California to the Gulf of Chiriqui, Panama. It is compared to its close relative, *F. pedata* (Montagu, 1815), which is first recorded here from the Azores Islands. *Flabellina hamanni* sp. nov. has been found from the Bahamas to Venezuela in the Caribbean and is most closely related to *F. marcusorum* Gosliner and Kuzirian, 1990. *Flabellina bertschi* Gosliner and Kuzirian, 1990, previously recorded only from the Gulf of California, is also found along the Pacific coast of Panama. *Flabellina marcusorum*, was known previously from the Gulf of California and the Caribbean and is here reported for the first time from Panama. *Flabellina stohleri* Bertsch and Ferreira, 1974, is considered a junior synonym of *F. telja* Marcus and Marcus, 1967. The range of *F. telja* is extended southward to the Islas Revillagigedos, Panama, and the Galapagos.

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INTRODUCTION

Recently, Gosliner and Kuzirian (1990) reviewed the Flabellinidae from the tropical coasts of the Americas. Both this work and that of Gosliner and Willan (1991) examined the phylogenetic relationships within *Flabellina*. Since then, additional collections of material from both the eastern Pacific and Caribbean have yielded specimens of two undescribed species, as well as new records for some previously named taxa. This paper describes the morphology of these taxa and adds new biogeographical data regarding tropical American Flabellinidae.

DESCRIPTIONS

*Flabellina bertschi* Gosliner and Kuzirian, 1990

**MATERIAL.**—CASIZ 088179, on *Eudendrium* sp., 22 m depth, Hill Rocks (7°17'20" N, 81°40'65" W), SW of Punta Anegada, Isla Coiba, Gulf of Chiriqui, Pacific coast of Panama, 18 April, 1993.

**DISTRIBUTION.**—*Flabellina bertschi* is known within the Gulf of California from Puerto Peñasco south to Isla San Diego (Gosliner and Kuzirian, 1990) and from the Pacific coast of Panama.

**EXTERNAL MORPHOLOGY.**—Living animal thin, elongate and 4 mm in length. Body color translucent white with overlying opaque white pigment on distal two thirds of the rhinophores and oral tentacles. Each translucent cerata with central red digestive diverticulum, terminating in a large, opaque white cnidosac. Rhinophores smooth. Oral tentacles approximately as long as rhino-

phores. Cerata of uniform diameter throughout most of their length. Many cerata damaged and partially regenerating. Cerata arranged in discrete clusters. Antermost cluster on either side containing four rows of cerata with 1-3 cerata per row. Posterior digestive branch with four clusters of cerata, each with 1-3 rows of cerata. Each row with 1-3 cerata. Genital apertures located on right side of body, ventral to second and third ceratal rows. Pleuroproctic anus situated within interhepatic space, below notum, immediately anterior to antermost cerata of right posterior digestive branch. Anterior border of foot with elongate corners.

DISCUSSION.—There is no doubt that the present specimen is *Flabellina bertschi*. It agrees with the original description of this species, but is slightly smaller than any of the type specimens. Nevertheless, it is sexually mature with well-developed gonads and reproductive organs visible through the transparent body wall.

**Flabellina marcorum** Gosliner and Kuzirian, 1990

MATERIAL.—CASIZ 088212, two specimens, 15 m depth, Islas Secas, Gulf of Chiriquí, Pacific coast of Panama, 21 April 1993, T. M. Gosliner. CASIZ 088180, one specimen, 22 m depth, Spanish Waters, Curaçao, April 1990, Jeff Hamann.

DISTRIBUTION.—*Flabellina marcorum* has been collected from the Atlantic coast of Curaçao (present study), Venezuela (Jeff Hamann, pers. comm.), and Brazil (Marcus and Marcus 1961). *Flabellina marcorum* is known from the Pacific coast of Mexico, from Isla Cedros south to Sayulita, Nayarit, and from San Agustín, Sonora, south to Los Islotes, north of La Paz, within the Gulf of California (Gosliner and Kuzirian 1990). The present specimens extend the range south to Panama in the Pacific and north to Venezuela and Curaçao in the Caribbean.

EXTERNAL MORPHOLOGY.—Living animals 4 and 10 mm in length. General body color translucent rose pink. Oral tentacles, foot corners, rhinophores rose basally with purple pigment in their middle and opaque white present on apical portions. Oral tentacles with wide band of purple. Cerata with only narrow purple ring. Rhinophores elongate, bearing numerous elongate papillae on their posterior face. Oral tentacles thin and elongate, longer than rhinophores. Cerata arranged in distinct groups. Anterior, precardiac cluster with 2-4 rows of cerata on either side of animal with 2-4 cerata per row. Postcardiac cer-

ata arranged in five paired clusters. Anterior 2-4 postcardiac groups containing complete arch of cerata while posterior 1-3 groups with only single row of cerata. Gonopore situated on right side of body, ventral to third and fourth ceratal rows. Pleuroproctic anus situated at posterior end of interhepatic space. Foot with elongate, tentacular corners.

DISCUSSION.—The external morphology of the present material agrees entirely with the original description.

**Flabellina telja** Marcus and Marcus, 1967

(Figs. 1, 2)

*Flabellina telja* Marcus and Marcus, 1967:223 (in part), Figs. 76-82.

*Flabellina stohleri* Bertsch and Ferreira, 1974:347, Figs. 3, 16-21. syn. nov.

MATERIAL EXAMINED.—CASIZ 019047, five paratypes of *Flabellina stohleri*, 2-3 m depth, lower end of bay, Bahía de San Francisquito, S of Punta San Francisquito, Baja California, Mexico, 24 August 1971, H. Bertsch, E. Coan, R. Holiday. CASIZ 088160, one specimen, 16 m depth, N side Isla Montuosa, Gulf of Chiriquí, Pacific coast of Panama, 15 April 1993, T. Gosliner. CASIZ 088154, one specimen, 13 m depth, N side of Isla Montuosa, Gulf of Chiriquí, Pacific coast of Panama, 15 April 1993, T. Gosliner. CASIZ 079164, 3 m depth, W end Gardner Bay, Isla Española, Islas Galápagos, 7 September 1991, T. Gosliner. CASIZ 071303, one specimen, 5 m depth, S point, Academy Bay, Isla Socorro, Islas Revillagigedos, Mexico.

DISTRIBUTION.—*Flabellina telja* was originally described from Bahía Cholla, Puerto Peñasco, in the northern extreme of the Gulf of California and subsequently recorded from Bahía San Francisquito (Bertsch and Ferreira 1974, as *F. stohleri*) on the western side of the Gulf of California. Specimens examined in this study extend the range of this species to the Islas Revillagigedos, Gulf of Chiriquí, and the Galapagos Islands.

EXTERNAL MORPHOLOGY.—Living animals 3-9 mm in length. General body color translucent white, sometimes with bluish purple cast. Rhinophores translucent whitish with opaque white apex. Basal portion of oral tentacles same color as body. Distal third of oral tentacles opaque white. Entire surface of body, including basal portion of cerata, frosted with dense opaque white spots. Through translucent surface of cerata, salmon to red pigment of digestive diverticula visible. Apex of cerata opaque white. Rhinophores bulbous and densely perfoliate in their distal halves. Oral tentacles thin and elongate. Cerata are arranged in distinct pedunculate clusters with 3-4 ceratal rows in the antermost



FIGURE 1. *Flabellina stohleri*. Scanning electron micrographs of paratype. (A) Half row of radular teeth, scale = 60  $\mu\text{m}$ . (B) Ventral view of rachidian tooth, scale = 30  $\mu\text{m}$ .

cluster. Posterior peduncles with only a single row of cerata. Gonopore situated on right side of body, ventral to second and third ceratal rows of precardiac cluster. Pleuroproct anus situated within interhepatic space. Anterior corners of foot tentacular.

**INTERNAL MORPHOLOGY.**—Buccal mass short and muscular. Jaws thin and coriaceous. Several rows of denticles present along masticatory border. Radular formula 17–31  $\times$  1.1.1., in two specimens examined (CASIZ 079164, and the paratype of *F. stohleri*, CASIZ 019047, respectively). Rachidian teeth (Fig. 1A, B) simply arched with 6–11 triangular denticles on either side of elongate central cusp. Central cusp slightly wider than adjacent denticles and depressed ventrally from their level. Lateral teeth (Fig. 1A) triangular in shape with broad base extending towards outer edge. Laterals with single prominent, acutely pointed apex. Inner margin of tooth with series of 0–12 irregular denticles.

Arrangement of reproductive organs (Fig. 2) essentially the same as described by Marcus and Marcus (1967). Narrow preampullary duct widens into ampulla consisting of two convolutions. Postampullary duct again narrowing and dividing into oviduct and vas deferens. After short

distance, oviduct joining short stalked receptaculum seminis. Oviduct entering female gland mass in region of albumen gland and continuing towards genital apertures. Large bursa copulatrix

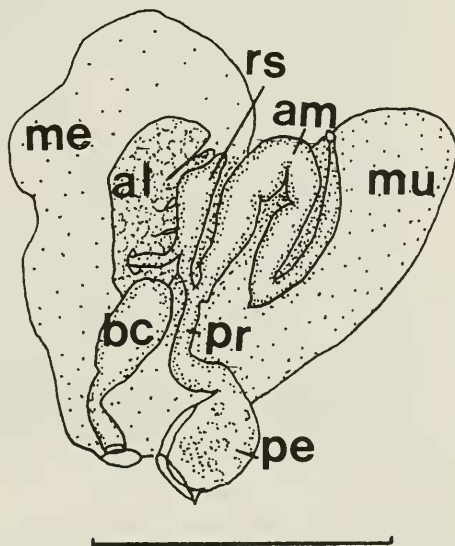


FIGURE 2. *Flabellina telja*. Reproductive system, al = albumen gland; am = ampulla; bc = bursa copulatrix; me = membrane gland; mu = mucous gland; pe = penis; pr = prostate; rs = receptaculum seminis, scale = 1.0 mm.

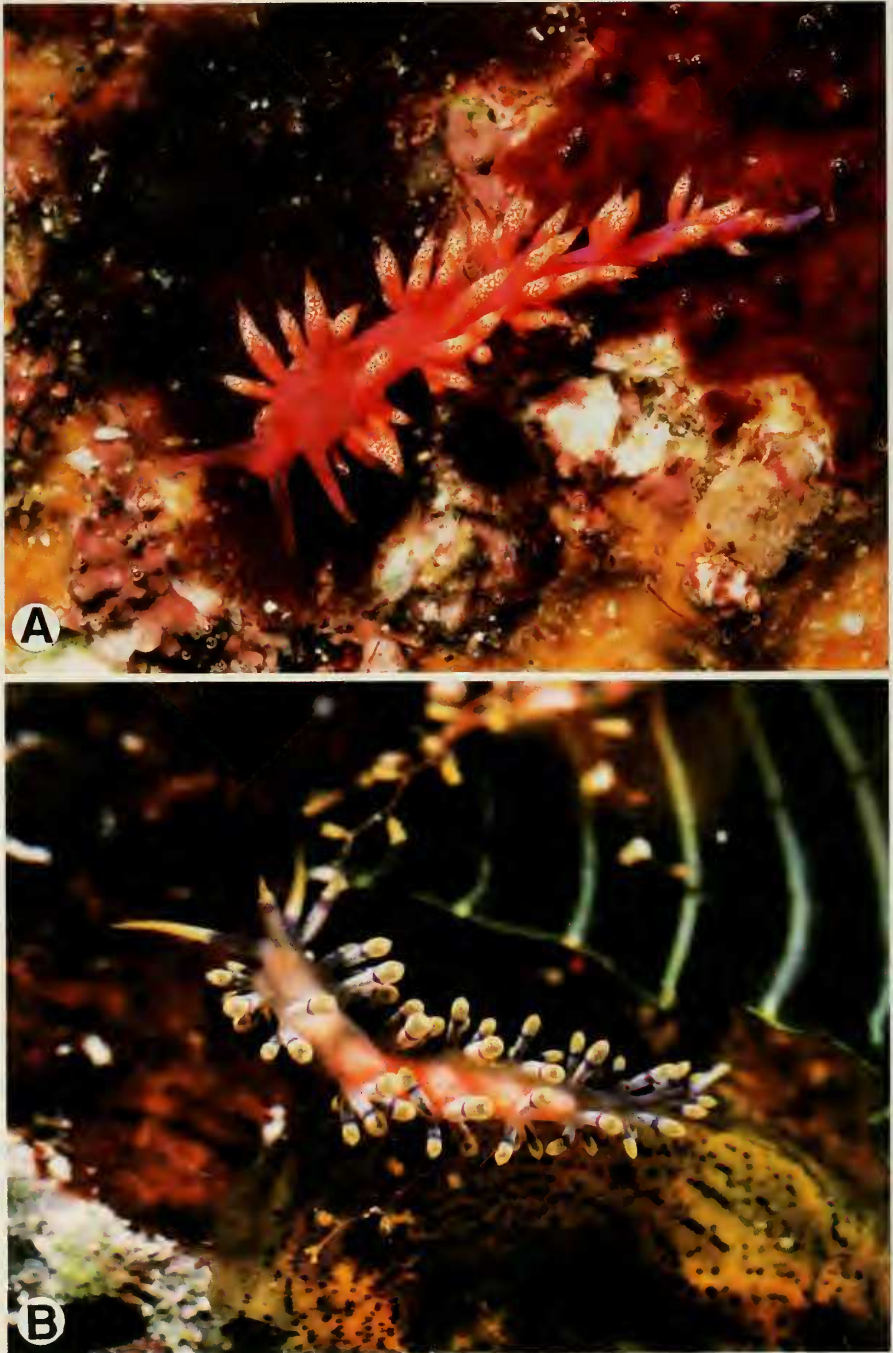


FIGURE 3. Living animals. (A) *Flabellina vansyoci*, photograph of holotype. (B) *Flabellina hamanni*, photograph of specimen from Turks and Caicos Islands.

adjacent to female gonopore. Bursa exiting via moderately long duct. Female gland mass consisting of membrane, albumen, and mucous glands. Vas deferens moderately short and of

uniform diameter. Vas deferens entering bulbous penis. Penis ornamented with many small, glandular papillae.

DISCUSSION.—There has been considerable

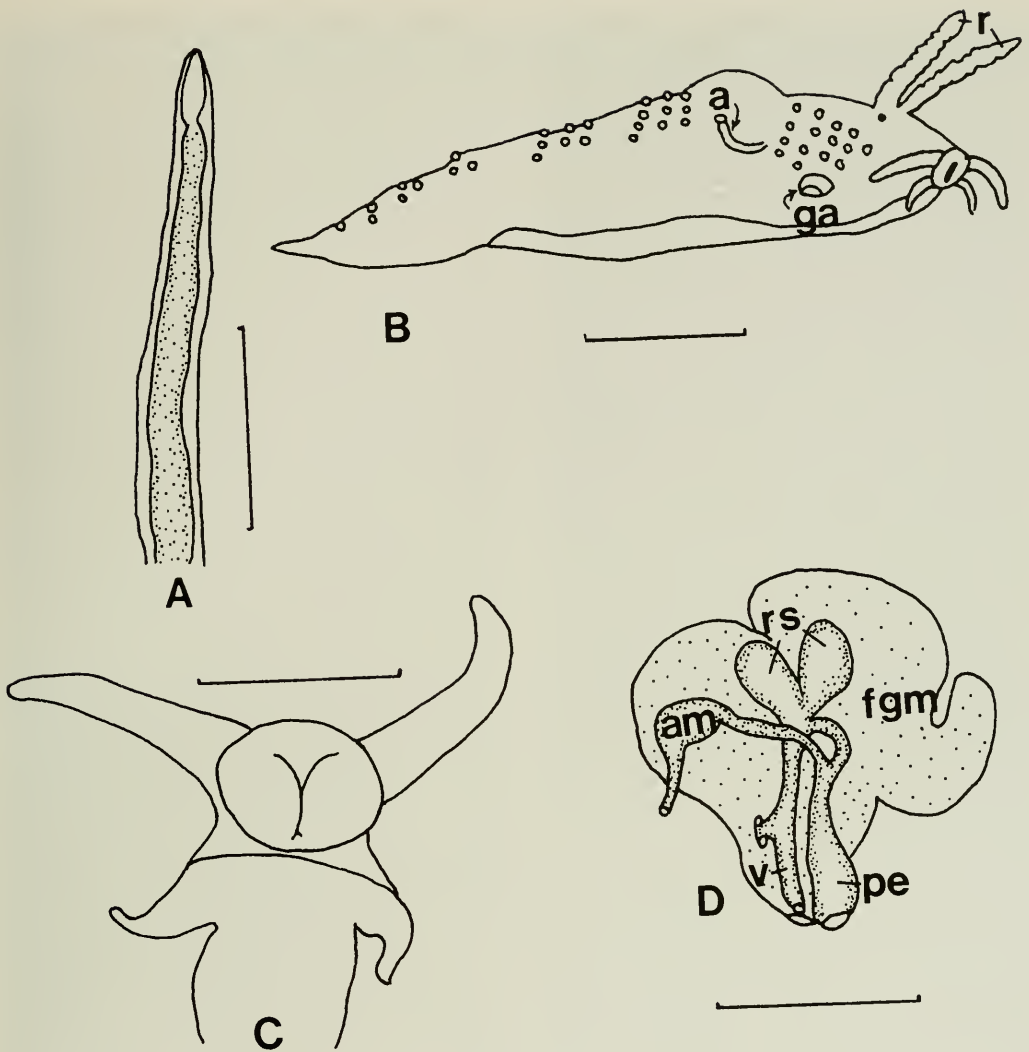


FIGURE 4. *Flabellina vansyoci*. (A) Ceras, scale = 1.0 mm. (B) Lateral view of body showing ceratal arrangement, a = anus; ga = genital aperture; r = rhizophore, scale = 2.0 mm. (C) Ventral view of foot, scale = 2.0 mm. (D) Reproductive system, am = ampulla; fgm = female gland mass, pe = penis; rs = receptaculum seminis; v = vagina, scale = 0.75 mm.

confusion surrounding the systematics of several species of *Flabellina* occurring in the eastern Pacific. Gosliner and Kuzirian (1990) noted that Marcus and Marcus's (1967) description of *Flabellina telja* also included specimens that were subsequently described as *F. bertschi* Gosliner and Kuzirian, 1990. Gosliner and Kuzirian also indicated that specimens identified as *F. telja* by Ferreira and Bertsch (1972) and Kerstitch (1989) were *F. marcusorum* Gosliner and Kuzirian, 1990. Gosliner and Willan (1991), in comparing *Flabellina rubropurpurata* Gosliner and Willan, 1991 to other taxa, indicated that *Flabellina telja*

and *Flabellina stohleri* are likely synonymous with each other. Bertsch and Ferreira (1974) stated that *F. stohleri* differed from *F. telja* in its color, number of radular rows, and shape and denticulation of the radular teeth. Both taxa were described as having a translucent body densely covered by opaque white spots. The orange body color described by Bertsch and Ferreira is due to the color of the viscera rather than the epidermis. The bluish purple color described by Marcus and Marcus is evident in some specimens and absent in others, even from the same locality. The morphology of specimens of *Flabellina telja* studied

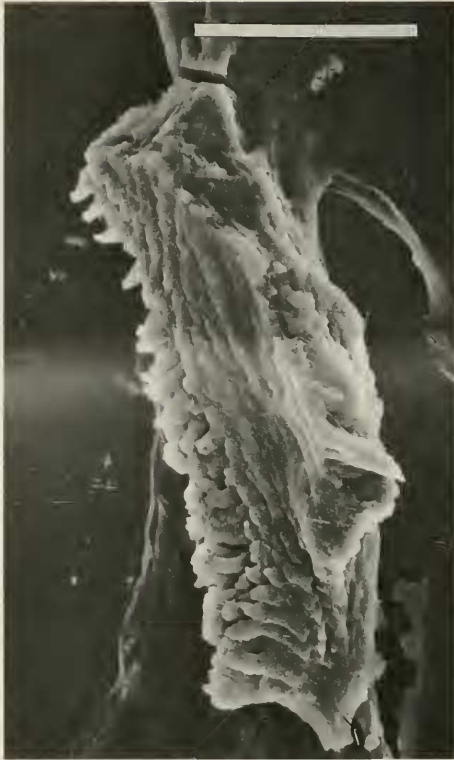


FIGURE 5. *Flabellina vansyoci*. Scanning electron micrograph of masticatory border of paratype, scale = 43  $\mu$ m.

here from Islas Revillagigedos, Panama, and the Galapagos is entirely consistent with morphology described by Marcus and Marcus (1967) and the holotype of *F. telja* (USNM 678418) examined at the Smithsonian. The Galapagos specimen examined here had fewer radular rows than the type material, but was of smaller body size. The morphology of a paratype of *F. stohleri* was examined in this study (Fig. 1A, B). Its number of radular rows (31) is more similar to the 30 rows described for *F. telja* than the 14 rows described for *F. stohleri*. Also, the number of denticles and shape of teeth are intermediate to the material examined by Marcus and Marcus (1967) and Bertsch and Ferreira (1974). The reproductive system of *F. stohleri* was not originally described by Bertsch and Ferreira. Examination of two paratypes of *F. stohleri* (present study) indicates that these specimens have a papillate penial papilla as described for *F. telja*. There remains no basis for separation of the taxa, and *F. stohleri* is here regarded as a junior synonym of *F. telja*.

### *Flabellina vansyoci* sp. nov.

(Figs. 3A, 4–6)

*Flabellina* sp. 2 Behrens, 1991:86, Fig. 173.

**TYPE MATERIAL.**—Holotype, California Academy of Sciences, San Francisco, CASIZ 088274, S end of Isla Magdalena, Magdalena Bay, Pacific coast Baja California, 16 January, 1984, R. Van Syoc. Paratypes, CASIZ 088081, two specimens, one dissected, 10 m depth, anchorage Islas Ladrões, Gulf of Chiriquí, Pacific coast of Panama, 13 April 1993, T. Gosliner.

**DISTRIBUTION.**—*Flabellina vansyoci* has been collected from Magdalena Bay on the Pacific coast of Baja California and from Islas Ladrões along the Pacific coast of Panama.

**ETYMOLOGY.**—*Flabellina vansyoci* (pronounced “van psyche”) is named for my friend and colleague, Robert Van Syoc, of the California Academy of Sciences, who collected the first specimen of this species.

**EXTERNAL MORPHOLOGY.**—Living animals (Fig. 3A) 15–30 mm in length. General body color translucent rose pink to purple. Cerata translucent purplish with red digestive gland visible through surface of cerata. Distal half of each ceras bearing congested spots of opaque white. Whitish cnidosac visible at apex of ceras. Rhinophores and oral tentacles same color as body. Rhinophores elongate (approximately 4 mm in length) and conical. Rhinophores each bearing indistinct rugose markings along their entire length. Oral tentacles thin and elongate, tapering to a rounded apex. Oral tentacles slightly longer than rhinophores. Cerata (Fig. 4A) cylindrical and elongate with rounded apex and elongate cnidosac. Thick core of digestive gland filling most of diameter of ceras. Cerata arranged in distinct clusters of rows (Fig. 4B). Only anterior cluster slightly elevated from notum. Anterior, precardiac cluster with five rows of cerata on either side of animal with 1–5 cerata per row. Postcardiac cerata arranged in 6–8 clusters per side of body. Generally, each group containing 1–3 tightly packed rows with 1–5 cerata per row. Only posteriormost 1–2 clusters consist of single ceratal row. Gonopore situated on right side of body, ventral to second and third ceratal rows of precardiac cluster. Pleuroproct anus situated near middle of interhepatic space, anterior to first postcardiac ceratal row. Nephroproct immediately anterodorsal to anus. Foot (Fig. 4C) grooved anteriorly and possessing elongate, tentacular foot corners. Foot tapering gradually to narrow tail posteriorly.

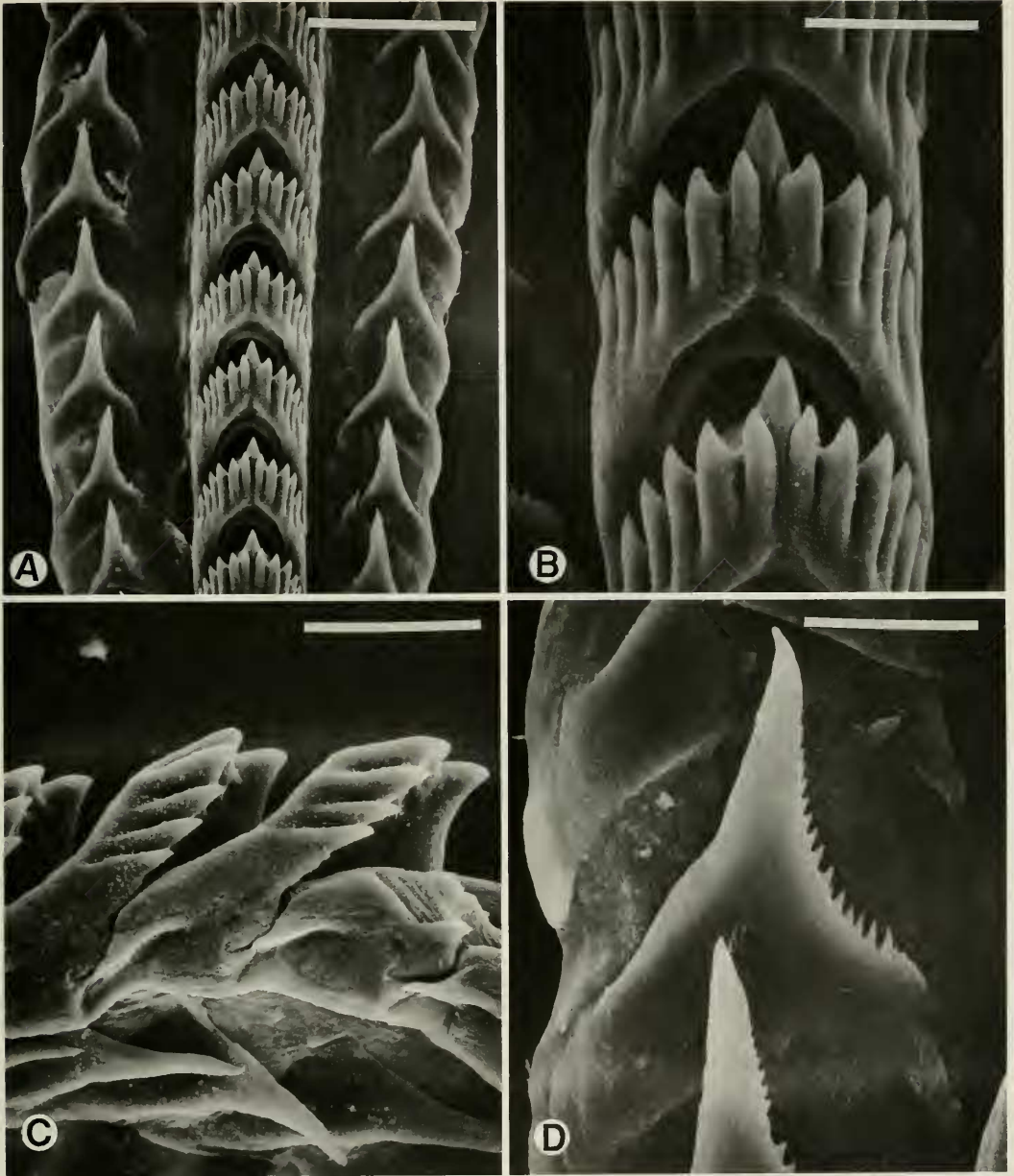


FIGURE 6. *Flabellina vasyoci*. Scanning electron micrographs of paratype. (A) Dorsal view of radula, scale = 60  $\mu\text{m}$ . (B) Rachidian teeth, scale = 20  $\mu\text{m}$ . (C) Lateral view of radula, scale = 25  $\mu\text{m}$ . (D) Lateral tooth, scale = 15  $\mu\text{m}$ .

**INTERNAL MORPHOLOGY.**—Buccal mass short and muscular. Large digitate oral gland extending from anteroventral portion of either side of buccal mass and continuing into widened portion of notum in region of precardiac cerata. Large pair of chitinous jaws situated within buccal mass.

Jaws ovoid with elongate masticatory margin (Fig. 5). Margin bearing five or six rows of denticles with about 34 denticles on outer row. Radular formula  $36 \times 1.1.1.$ , in one paratype examined. Rachidian teeth (Figs. 6A–C), simply arched with 5–6 triangular denticles on either side of more

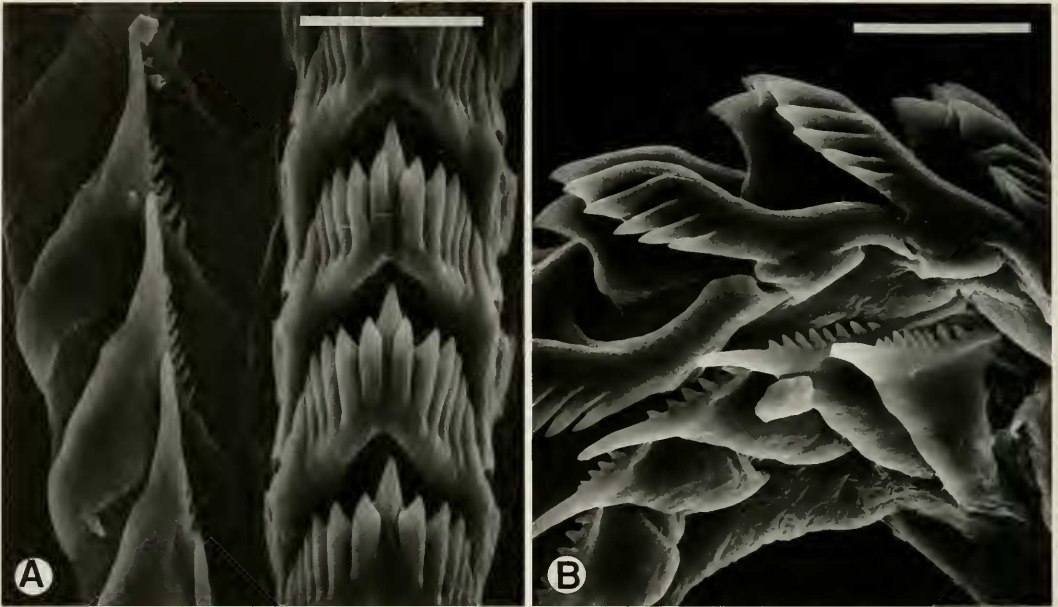


FIGURE 7. *Flabellina pedata*. Scanning electron micrographs. (A) Dorsal view of rachidian teeth, scale = 20  $\mu\text{m}$ . (B) Lateral view of radula, scale = 20  $\mu\text{m}$ .

elongate central cusp. Central cusp approximately same width as adjacent denticles, but depressed ventrally from their level (Fig. 6C). Lateral teeth (Fig. 6A, D) triangular with a broad base extending towards outer edge. Single prominent, acutely pointed apex present on lateral. Inner margin of tooth with series of 15–20 triangular denticles. Laterals on right side of the radula of paratype entirely lack denticles (likely aberration rather than characteristic feature of species). Pair of elongate salivary glands that extend posteriorly on dorsolateral surface of stomach present at posterior limit of buccal mass, near its junction with esophagus.

Arrangement of reproductive organs essentially triaualic (Fig. 4D). Narrow preampullary duct widening into simply saccate ampulla. Ampulla narrowing into elongate hermaphroditic duct and dividing into vas deferens and oviduct. Oviduct curving and joining pair of equally sized receptacula seminorum and vaginal duct. More distally, vaginal duct entering female gland mass in region of albumen gland. Vaginal duct continuing towards genital apertures. Nidamental glands comprising bulk of reproductive system. Mucous gland largest portion by far. Albumen and membrane glands smaller. Nidamental glands emptying via their own gonopore, ventral to vaginal

and penial apertures. Vas deferens narrow, but appearing to contain prostatic cells throughout most of its length. Vas deferens entering short penial sac, wider than the vas deferens. Penial papilla simple and unarmed.

DISCUSSION.—*Flabellina vansyoci* differs markedly from other eastern Pacific species of *Flabellina*. It is the only species with rugose rhinophores. The other eastern Pacific species all have annulate, perfoliate, or smooth rhinophores. *Flabellina vansyoci* has a reddish-purple body similar to that of *F. marcusorum*. It can be readily distinguished by the opaque white spots and a lack of purple bands on the cerata. *Flabellina telja* may also have a purplish body color and opaque white spots. However, its spots are scattered over the body surface, not restricted to the cerata. This species also has perfoliate rather than rugose rhinophores.

*Flabellina vansyoci* is related to other flabellinids with a bilobed receptaculum seminis. It is most similar to *F. pedata* (Montagu, 1815) and the sympatric *F. bertschi*, both of which have smooth rather than rugose rhinophores. All other species with a bilobed receptaculum have papillate rhinophores. In order to make comparisons with *F. vansyoci*, six specimens of *F. pedata* (CASIZ 072597, one dissected, intertidal pools,



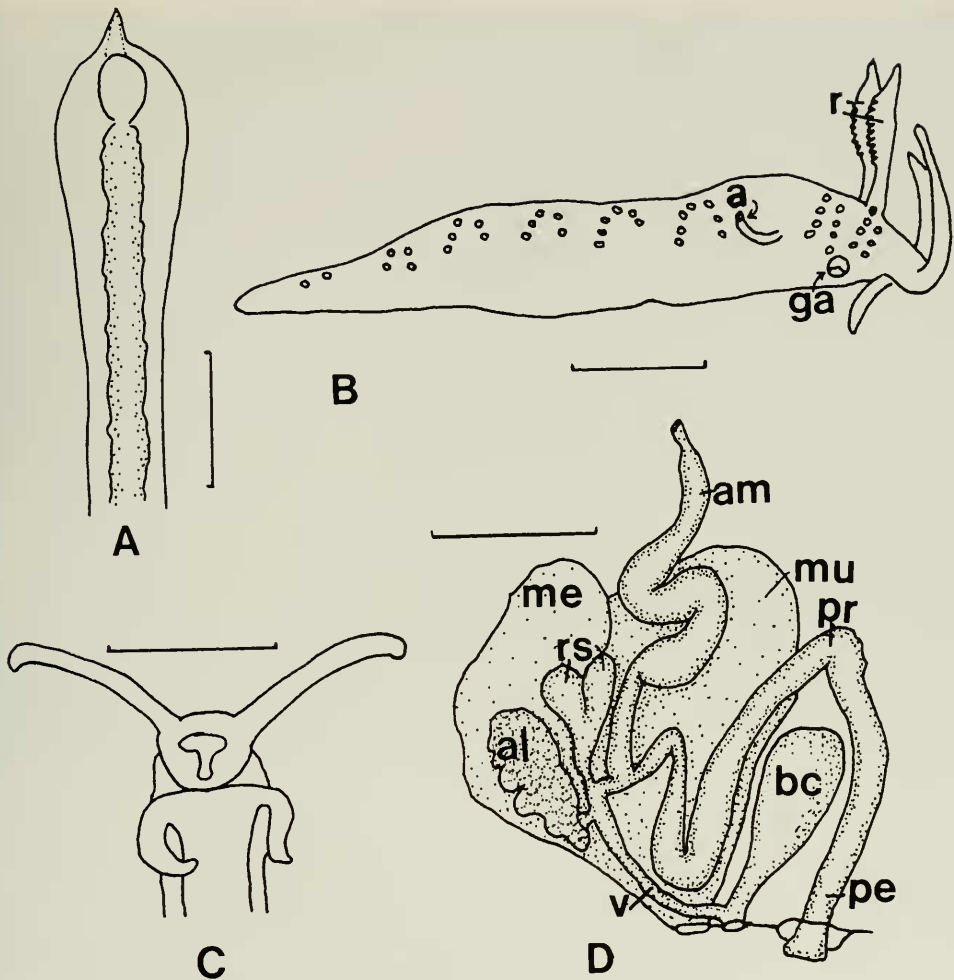


FIGURE 8. *Flabellina hamanni*. (A) Ceras, scale = 0.5 mm. (B) Lateral view showing arrangement of cerata, a = anus; ga = genital aperture; r = rhinophore, scale = 2.0 mm. (C) Ventral view of anterior end of foot, scale = 2.0 mm. (D) Reproductive system, al = albumen gland; am = ampulla; bc = bursa copulatrix; me = membrane gland; mu = mucous gland; pe = penis; pr = prostate; rs = receptaculum seminis; v = vagina, scale = 1.0 mm.

Ponta Delgada Harbor, Ilha São Miguel, Açores, Portugal, 17 July 1988, T. Gosliner) were examined. The specimens of *F. pedata* studied here represent the first record of this species from the Açores. The ground color of *F. pedata* is a deep purple violet while *F. vansyoci* is reddish purple. *Flabellina pedata* lacks the opaque spots on the basal portion of the cerata that are present in *F. pedata*. As noted above, *F. pedata* has smooth rhinophores, while in *F. vansyoci* they are rugose. In *F. pedata*, the postcardiac ceratal groups are arranged in arches while in *F. vansyoci* the groups contain 1–3 rows of cerata. While the rachidan teeth of *F. pedata* (Fig. 7A, B) are similar to those

of *F. vansyoci*, the lateral teeth are markedly different. In *F. pedata*, the lateral teeth bear 6–9 coarse denticles, while *F. vansyoci* has 15–20 fine denticles. The reproductive systems are very similar, but it appears that the prostate is thicker in *F. pedata* than in *F. vansyoci* (Schmekel and Portmann, 1982; present study).

#### *Flabellina hamanni* sp. nov.

(Figs. 3B, 8–10)

TYPE MATERIAL.—Holotype, California Academy of Sciences, San Francisco, CASIZ 088275, 3 m depth, Freeport, Grand Bahama Island, Caribbean Sea, June 1986, J. Hamann. Paratypes, CASIZ 088276, one specimen dissected, same lo-

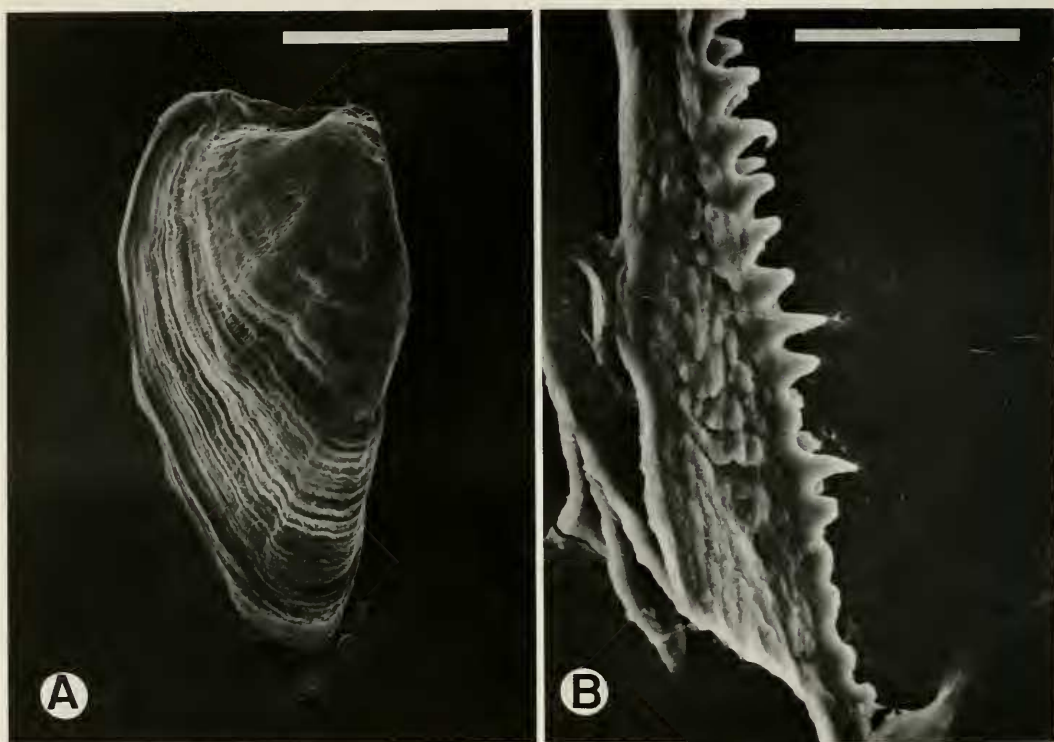


FIGURE 9. *Flabellina hamanni*. Scanning electron micrographs. (A) Jaw, scale = 430  $\mu\text{m}$ . (B) Masticatory margin, scale = 43  $\mu\text{m}$ .

cality and date as holotype. Paratype, CASIZ 072269, one specimen, living on hydroids, 20 m depth, Thea's Wreck, Bahamas, Caribbean Sea, April 1986, B. Rose. Paratypes, CASIZ 088882, three specimens and egg mass, reef S of West Caicos, Turks and Caicos Islands, 20 m depth, December 1983, Jeff Hamann.

**DISTRIBUTION.**—*Flabellina hamanni* has been collected from the Turks and Caicos Islands and Grand Bahama Island (Jeff Hamann, pers. comm.)

**ETYMOLOGY.**—This species is named for my friend and colleague, Jeff Hamann, who first collected this species.

**EXTERNAL MORPHOLOGY.**—Living animals (Fig. 3B) 25–32 mm in length. General body color translucent rose pink. Oral tentacles, foot corners, and rhinophores rose basally with narrow band of purple pigment and opaque yellowish-white present on apical portion. Oral tentacles with wide area of opaque yellow covering two-thirds of their length. Cerata and rhinophores bearing only proportionately narrower band of yellow. Surface of cerata covered with dusting of opaque white. Dusting absent from inner basal

portion of cerata. Posterior end of foot also purple with opaque yellowish line or spot on its posterodorsal end. Digestive gland within cerata charcoal gray and visible through inner transparent portion of ceratal bases. Rhinophores elongate (approximately 4 mm in length) and conical. Each rhinophore bearing approximately 100 elongate papillae on its posterior face. Papillae approximately 0.5 mm in length and arranged in indistinct rows, covering middle two-thirds of rhinophores. Apex of rhinophores conical and devoid of papillae. Oral tentacles thin and elongate, tapering to acutely pointed apex.

Cerata narrow at base and widening to just below their apices. Cerata terminating in acute apex (Fig. 8A). Thin core of digestive gland filling much of diameter of each cerata. Cerata arranged in distinct groups (Fig. 8B). Only anterior cluster slightly elevated from notum. Anterior, precardiac cluster containing four rows of cerata on either side of animal, with 3–4 cerata per row. Postcardiac cerata arranged in six groups of arches per side of body. Generally, each arch con-

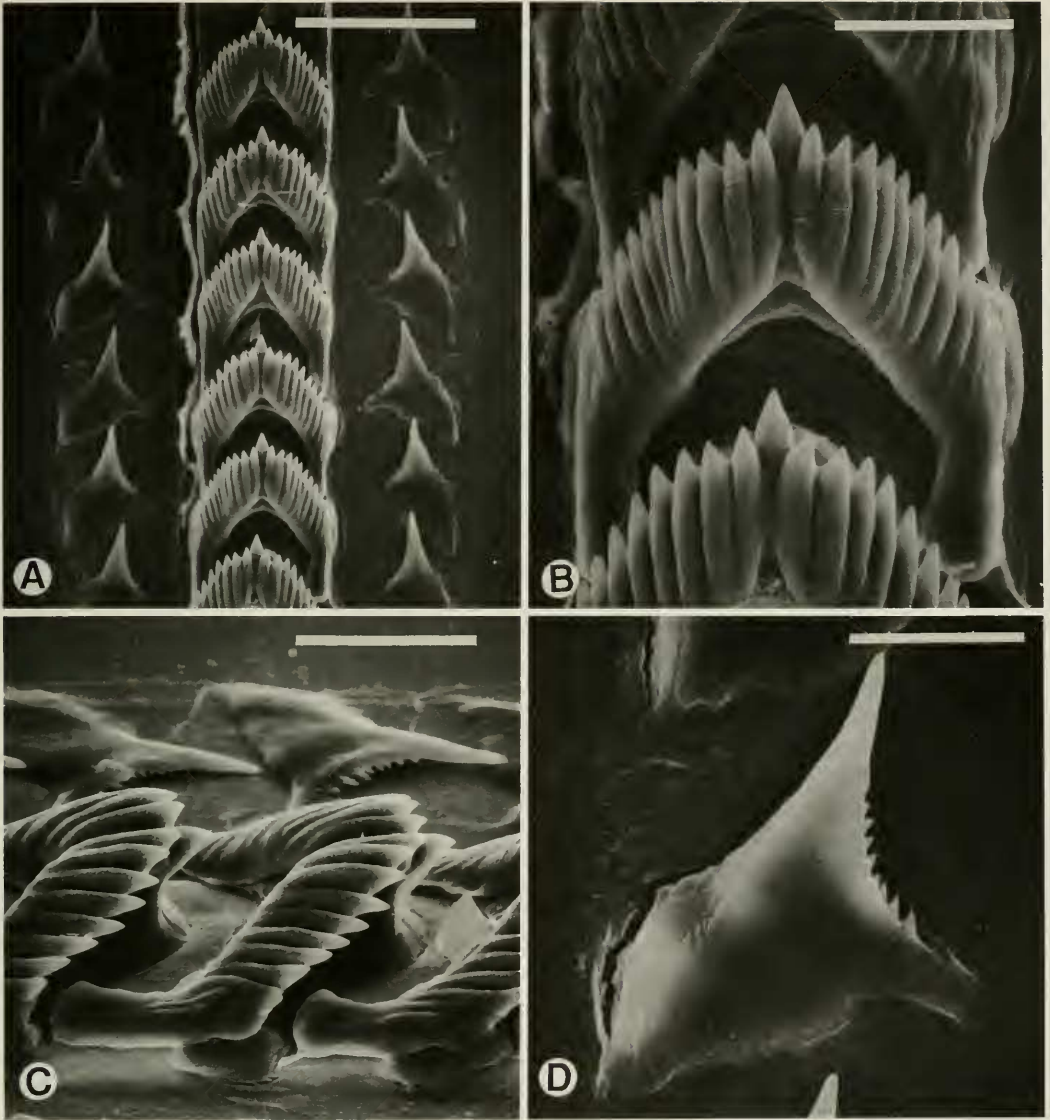


FIGURE 10. *Flabellina hamanni*. Scanning electron micrographs. (A) Dorsal view of entire width of radula, scale = 60  $\mu\text{m}$ . (B) Rachidian teeth, scale = 20  $\mu\text{m}$ . (C) Lateral view of radula, scale = 25  $\mu\text{m}$ . (D) Lateral tooth, scale = 15  $\mu\text{m}$ .

taining 2–7 cerata. Only posteriormost arch present as row containing two cerata. Gonopore situated on right side of body, ventral to second and third ceratal rows of precardiac cluster. Pleuroproct anus situated at posterior end of interhepatic space, just anterior to first postcardiac ceratal arch. Nephroproct immediately anterodorsal to the anus. Foot (Fig. 8C) grooved anteriorly and possessing elongate, tentacular foot corners. Foot tapering gradually to narrow tail posteriorly.

**INTERNAL MORPHOLOGY.**—Buccal mass short and muscular. Large digitate oral gland extending from anteroventral portion of either side of buccal mass and continuing into widened portion of notum in region of precardiac cerata. Pair of ovoid chitinous jaws (Fig. 9A) within buccal mass. Elongate masticatory margin (Fig. 9B) bearing several rows of triangular denticles. Radular formula  $40 \times 1.1.1.$ , in one paratype examined. Rachidian teeth (Fig. 10A–C) simply arched with 8–11 triangular denticles on either side of elon-

gate central cusp. Central cusp slightly wider than adjacent denticles and depressed ventrally from their level (Fig. 10C). Lateral teeth (Fig. 10A, C, D) triangular in shape with broad base extending towards outer edge. Lateral tooth with single prominent, acutely pointed apex. Series of 8–9 triangular denticles present on inner margin of lateral tooth. Pair of elongate salivary glands present at posterior limit of buccal mass, near its junction with the esophagus. Glands extending posteriorly on dorsolateral surface of stomach.

Arrangement of reproductive organs triaulic (Fig. 8D). Narrow preampullary duct widening into ampulla consisting of two convolutions. Postampullary duct narrowing slightly and passing between lobes of albumen and membrane glands. Preampullary duct dividing into oviduct and vas deferens. Oviduct joining pair of receptacula seminorum of equal size after short distance. Oviduct again narrowing and entering nidamental glands near the middle of albumen gland. Distinct, narrow vaginal duct continuing towards the genital apertures from this junction. Vagina joining with large saccate bursa copulatrix immediately before exiting at its own genital pore. Bursa thin walled and short stalked. Nidamental glands comprising the bulk of reproductive system. Mucous gland by far largest portion, while albumen and membrane glands smaller. Nidamental glands empty via their own gonopore, ventral to vaginal and penial apertures. Vas deferens expanding slightly into smooth, slightly convoluted prostatic portion. Vas deferens wide throughout its length and expanding into slightly wider apex of penial papilla. No armature associated with the penial papilla.

**DISCUSSION.**—The systematics and phylogeny of flabellinids have recently been reviewed (Gosliner and Kuzirian 1990; Gosliner and Willan 1991). Five previously described species of *Flabellina* have a triaulic reproductive system and papillate rhinophores (Gosliner and Willan 1991), which are also present in *F. hamanni*. The only other species with a well-developed bursa copulatrix (a plesiomorphic feature) is *Flabellina marcusorum*. Both of these species are found in the western Atlantic, though *F. marcusorum* is also present in the tropical eastern Pacific.

Externally, the two species are similar in appearance. *Flabellina hamanni* has narrower bands of purple on the cerata than does *F. marcusorum*. Specimens of *F. hamanni* also have opaque white

pigment covering the basal portion of the cerata, which is absent in *F. marcusorum*. The cerata of *F. hamanni* are blunter than those of *F. marcusorum* and terminate in an abruptly pointed rather than gradually tapering apex.

The radular morphology differs significantly between *F. hamanni* and *F. marcusorum*. The single specimen of *F. hamanni* had 40 rows of radular teeth. No specimen of *F. marcusorum* has been described with more than 34 rows of radular teeth. More significantly, the rachidian teeth of *F. hamanni* have 8–11 denticles on either side of the central cusp, while *F. marcusorum* has only 5–6 denticles per side. The rachidian teeth of *F. hamanni* are more similar to those of *F. exoptata* Gosliner and Willan, 1991, and *F. delicata* Gosliner and Willan, 1991. The lateral teeth of *F. hamanni* are similar to those of *F. marcusorum*, *F. rubrolineata* (O'Donoghue, 1929) and *F. poenicia* (Burn, 1957), with relatively few denticles along their masticatory margin.

The reproductive system is most similar to that of *F. marcusorum*, in that the bursa copulatrix remains large and well developed. The reproductive systems of the two species differ in one important regard. The vas deferens of *F. hamanni* is uniform throughout its length, while in *F. marcusorum* it is constricted immediately prior to its entrance into a more distinct, expanded penial sac.

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#### RESUMEN

Dos especies nuevas de *Flabellina* son identificadas de las aguas tropicales de América. La primera, *Flabellina vansyoci* sp. nov., ocupa un área que se extiende desde la Bahía Magdalena, en la costa pacífica de Baja California, hasta el Golfo de Chiriquí, Panamá. Esta especie se compara a la especie más cercana en la cadena evo-

lucionaria, *F. pedata* (Montagu, 1815), que ha sido encontrada por primera vez en las Islas Azores. La segunda, *Flabellina hamanni* sp. nov., ha sido encontrada en el Mar Caribe, de las Islas Bahamas hasta Venezuela. Evolucionariamente, esta nueva especie se relaciona mas cerca a la especie *F. marcusorum* Gosliner y Kuzirian, 1990. *Flabellina bertschi*, concocida previamente solamente en el Mar de Cortés, ha sido encontrada en la costa pacifica de Panamá. *Flabellina marcusorum* fue inicialmente encontrada en el Mar de Cortés y en el Mar Caribe y ahora ha sido encontrada por primera vez en Panamá. Voy a designar *F. stohleri* Bertsch y Ferreira, 1974, como sinónimo de *F. telja* Marcus y Marcus, 1967. El rango de distribución de *F. telja* se extiende hacia al sur, a las Islas Revillagigedos, Panamá y las Islas Galápagos.

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