

Rediscovery and Redescription of *Rostanga lutescens* (Bergh, 1905), comb. nov. (Gastropoda: Nudibranchia)

by

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Abstract. Living specimens of *Rostanga lutescens* (Bergh, 1905) are described for the first time. The generic position, left uncertain by Bergh, is emended, and the reproductive system and the proper arrangement of the radular teeth are described. This species is now known from Timor, Indonesia, and Enewetak Atoll.

AMONG THE opisthobranch collections of the Siboga Expedition was a single, preserved, 14 mm long dorid nudibranch, which BERGH (1905) questionably assigned to the genus *Discodoris* Bergh, 1877. Recent collections at Enewetak Atoll, Marshall Islands, west central Pacific (11°33'N, 162°20'E) have yielded three specimens essentially fitting Bergh's description; the species is here described for the first time in the living state. Voucher specimens, with mounted radulae and color slides of the living animal, have been deposited in the Bernice P. Bishop Museum (number 207564), Honolulu, Hawaii, and the United States National Museum, Washington, D.C.

The spelling of the species name needs comment. In BERGH's text (1905:107) describing the new species is printed: "*Discodoris ? lutesceus* Bgh. n.sp." There is no further mention of the name in the text. However, in the two indices (Inhaltsverzeichnis, p. 244; Register, p. 247), and on the explanation to plate XIV, the species is listed as *lutescens*. The single misspelling is obviously a printer's error, which Bergh himself corrected (BERGH, 1905:248, Corrigenda): "Seite 107 statt: *Disc. lutesceus*, lese man: *lutescens*."

Rostanga Bergh, 1879

Rostanga lutescens (Bergh, 1905), comb. nov.

Reference and synonymy: *Discodoris lutescens* BERGH, 1905:107-108; pl XIV, figs. 22-28.

Material examined: One specimen, 12 × 4 mm. Lagoonside Medren Island, Enewetak Atoll, Marshall Islands; under dead coral, 5 m; 2 August 1981, *leg.* S. Johnson.

One specimen, 19 × 8 mm. Lagoonside Enewetak Island, Enewetak Atoll, Marshall Islands; under dead coral at night, 5 m; 26 February 1982, *leg.* L. Boucher.

One specimen, 15 × 6 mm. Lagoonside Enewetak Island, Enewetak Atoll, Marshall Islands; under dead coral, 5 m; 14 July 1982, *leg.* S. Johnson. This specimen, illustrated in Figure 1, has been deposited in the Malacology Department of the Bishop Museum under number 207564.

Habitat: All three specimens were collected on shallow, subtidal, lagoon reefs consisting of sand, rubble, and limestone flats in 3-6 m of water. At one time, these reefs were apparently populated by numerous colonies of the tabletop coral *Acropora hyacinthus* (Dana, 1846). Most of these colonies are long dead and lying on the bottom, with their undersides thickly overgrown with sponges, bryozoans, tunicates, and other encrusting organisms.

Description: The notum is soft and elongate-oval, and its

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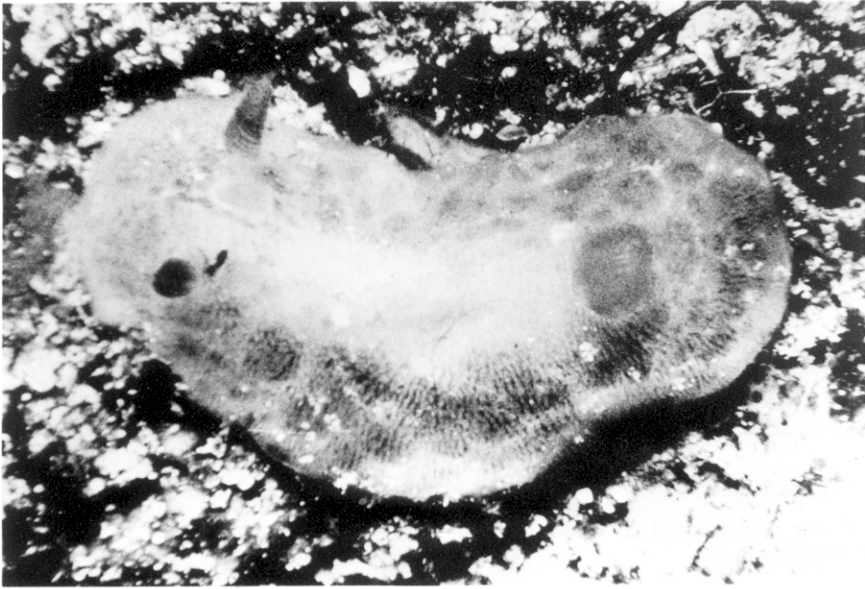


Figure 1

Photograph of living *Rostanga lutescens*, 15 × 6 mm.

wide margin hides the foot. The dorsal surface is densely crowded with fine, rounded papillae from which protrude bundles of spicules (caryophyllidia), giving the animal a hispid appearance. Notal color is light cream-yellow to light tan, usually with close-set, large, round, very slightly darker brownish spots. Irregularly scattered over the dorsal surface are small patches of opaque white. Mid-dorsally the notum appears more pinkish to orange in color, apparently because of the coloration of the underlying viscera. The underside of the overhanging hyponotum is translucent white with a white network of epidermal spicules. The foot is translucent white to pale orange, with light-orange, relatively long and slender oral tentacles. The

rhinophores, which protrude from spicule-edged pockets, have transparent stalks and yellow-brown clubs, each bearing 12–16 oblique, darker colored lamellae. Branchiae are colored as the rhinophores and consist of about 6 small, tripinnate stalks crowded together in a close circle around the anus. In ethanol, the animals become white with grayish viscera.

The radulae of the 19 and 15 mm long specimens measured 2.1 × 1.3 mm and 1.5 × 1.0 mm respectively, and the radular formulae were 56 (70.0.70) and 51 (56.0.56). The morphology of the teeth differed slightly between the two individuals. Selected teeth from a typical right half-row of the larger specimen are shown in Figure 2, and a

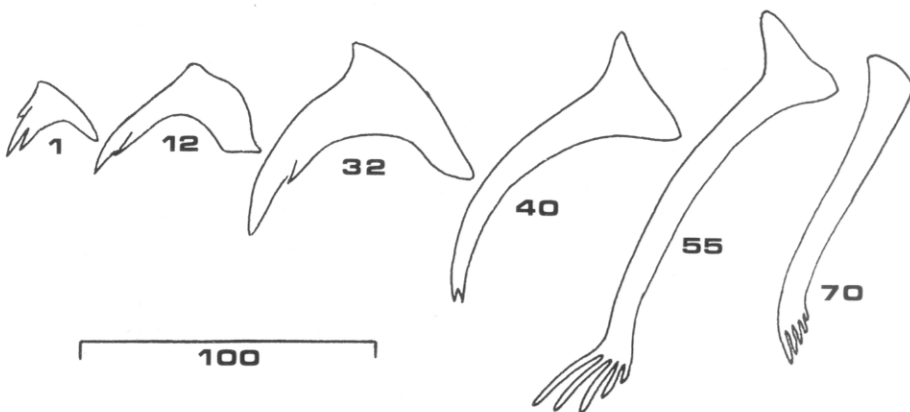


Figure 2

Rostanga lutescens, 19 mm long specimen: selected radular teeth from the right half-row. Scale bar in μm .

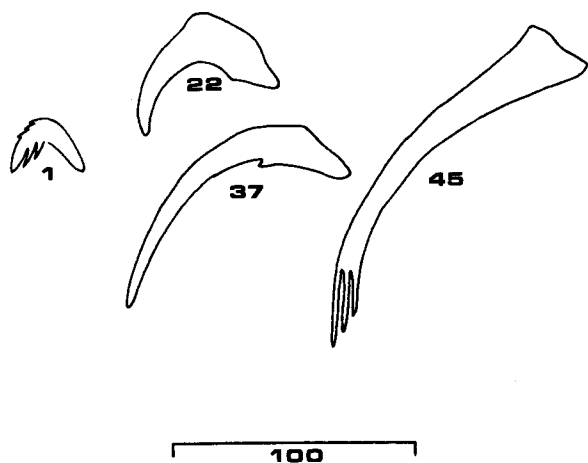


Figure 3

Rostanga lutescens, 15 mm long specimen; selected radular teeth from the right half-row. Scale bar in μm .

few of the more variant teeth from the smaller specimen in Figure 3. Generally, innermost laterals are hamate with 1 to 5 small inner denticles and 1 or 2 large outer denticles. Outwardly, teeth become larger, and denticulation may disappear by the middle of the half-row. Outer teeth are very elongate, with the tip split into as many as 5 very long, sometimes bent, fingerlike terminal spines. The outermost teeth become slightly shorter again. The long outer teeth overlap much of the radula when mounted on a slide, making details difficult to resolve. Buccal armature consists of long, slightly curved elements, which are rather bluntly pointed rods bearing ringlike, transverse thickenings (Figure 4).

The reproductive system (Figure 5) is similar to that reported for other species of *Rostanga* (compare with

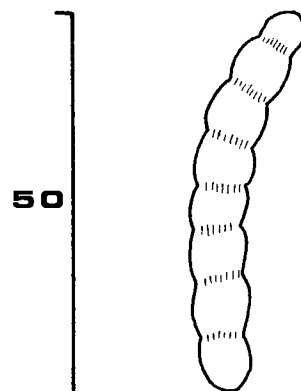


Figure 4

Rostanga lutescens; buccal element. Scale bar in μm .

SCHMEKEL & PORTMANN, 1982:text fig. 7.9 c, and plate 31, fig. 2; and MARCUS, 1958:fig. 36). A long, narrow vagina terminates in a spherical bursa copulatrix, from which an equally narrow uterine duct leads into the nidamental gland complex slightly below the ampullary and prostatic ducts. An ovate receptaculum seminis is at the end of a rather long, narrow duct budding from approximately the middle of the uterine duct. A long, curved ampulla leads into an ampullary duct that joins with the prostatic duct external to the nidamental glands. The wide, white, somewhat granular appearing prostate curls over 180° and leads into a much narrower, short penis.

Discussion: BERGH's original description (1905) mentions that there were numerous black dots along the margin of the animal. The dark spots of our animal are at times apparently composed of small darker colorations. These do not seem to be contradictory descriptions. Moreover,

Table 1

Radular characteristics and body coloration of species of *Rostanga* (modified in part from THOMPSON, 1975:490).

Species	Body color	Hamate lateral teeth	Terminal denticles of marginal teeth	Distribution
<i>R. rubra</i> (Risso, 1818)	red	first: 4 or 5 small lateral denticles following: 1 large side denticle	bifid	east Atlantic
<i>R. tenerana</i> Pruvot-Fol, 1953	—	—	bifid	east Atlantic
<i>R. evansi</i> Eliot, 1906	violet-gray	—	multifid	east Atlantic
<i>R. byga</i> Marcus, 1958	red	—	multifid	west Atlantic
<i>R. arbutus</i> (Angas, 1864)	red	first: 13 or 14 denticles	multifid	west Pacific
<i>R. muscula</i> (Abraham, 1877)	red	first: 20-30 denticles	multifid (2-4 terminal)	west Pacific
<i>R. atrata</i> (Kelaart, 1859)	black	—	multifid (10-15 terminal)	Indo-Pacific
<i>R. lutescens</i> (Bergh, 1905)	cream yellow, light tan	first: 1-5 inner denticles 1 or 2 outer following: 1 side denticle	multifid (up to 5)	west Pacific
<i>R. pulchra</i> MacFarland, 1905	red	first: 4-11 denticles	multifid	east Pacific

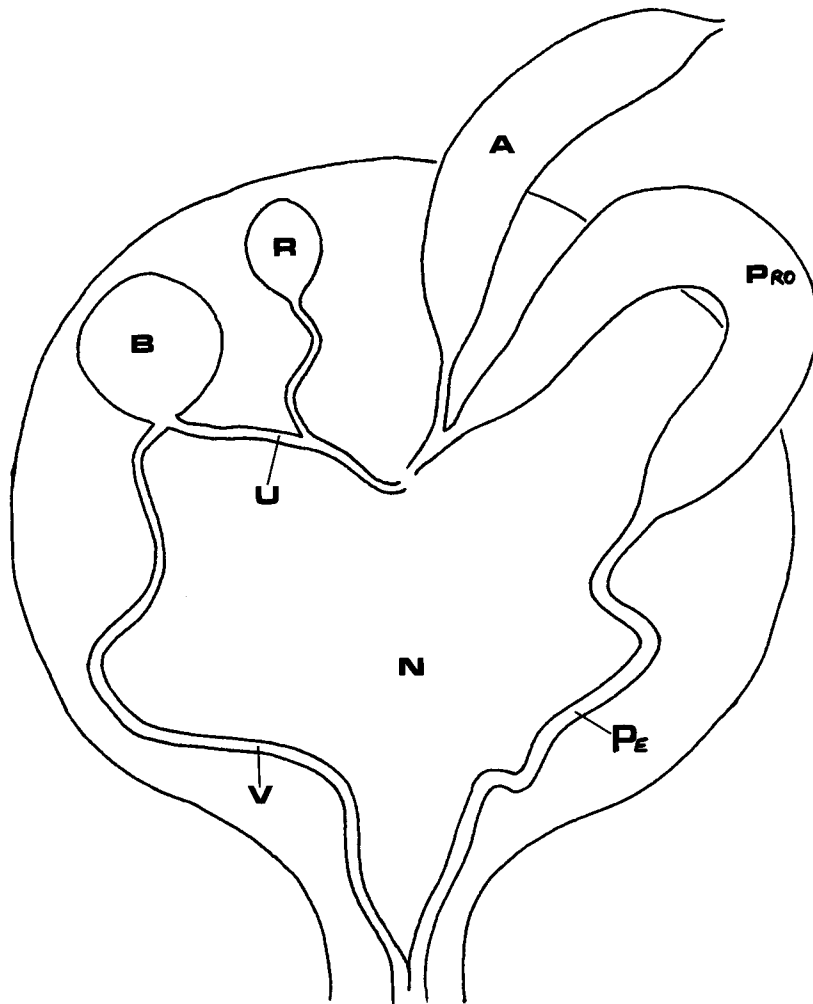


Figure 5

Rostanga lutescens; anterior genital mass. A, ampulla; B, bursa copulatrix; N, nidamental gland complex; Pe, penis; Pro, prostate; R, receptaculum seminis; U, uterine duct; V, vagina.

our specimens match his animal in general shape, size, spiculate surface, and small gills. The radular teeth of the Enewetak specimens also resemble those in Bergh's description, reproduced here in Figure 6, except for their arrangement. According to BERGH (1905), the elongate, denticulate teeth were in the middle of the half-row, and the outermost were smooth and hamate, like those from the middle of the half-row of one of the present specimens. Bergh, however, did note that he was uncertain as to how the radula was constructed: "Es glückte nicht den Bau der Raspel genauer zu bestimmen" (BERGH, 1905:108). Radulae with elongate, narrow teeth are easily jumbled, and details can be difficult to resolve. Considering Bergh's uncertainty regarding the arrangement of the elongate, denticulate teeth, it seems most likely that the correct placement of the teeth from the Siboga specimen should be as we describe from the conspecific Enewetak specimens.

Bergh was uncertain of the generic placement of his specimen, stating that he was unable to verify the arrangement of the gills (according to BERGH, 1891:129-130, tri- or quadripinnate gills are important to differentiate species of *Discodoris*). Although difficult to determine even in the living specimens from Enewetak, close examination found them to be tripinnate. However, the gill arrangement is not a differentiating characteristic, at the generic level, for this species.

Most characteristic and diagnostic for the generic placement of this species is the shape of the radular teeth. THOMPSON (1975:487) concisely describes the *Rostanga* radula: "radula broad, without median tooth, lateral teeth numerous and hook-shaped, marginal teeth bifid or multifid and brush-like." Comparison of our illustrations (Figures 2, 3) and BERGH's (1905:pl. XIV, figs. 23-28; reprinted here as Figure 6) with those of other species of

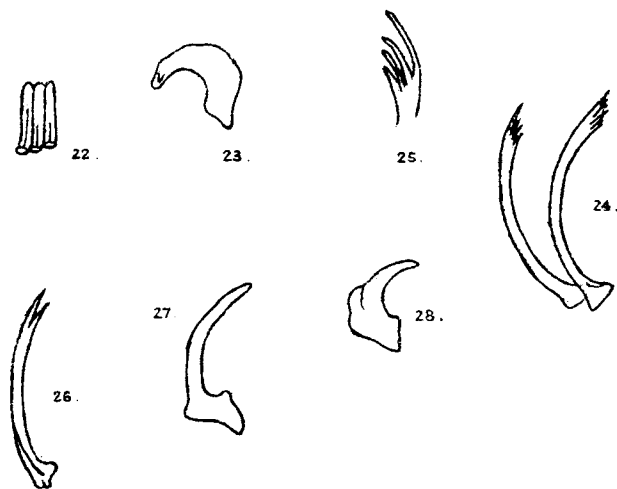


Figure 6

Reproduction of illustration of radular teeth by BERGH, 1905: pl. XIV, figs. 22-28.

Rostanga (e.g., MACFARLAND, 1966:pl. 35, figs. 1-8; THOMPSON, 1975:fig. 4; SCHMEKEL & PORTMANN, 1982: pl. 20, fig. 14; BABA, 1949:fig. 74) indubitably confirms our identification of this species as a *Rostanga*. Other features, such as reproductive system morphology and structure of the buccal elements, also match those of *Rostanga*. *Rostanga lutescens* is separable from the eight other species of *Rostanga* by its external coloration and radular characteristics (Table 1).

Rostanga hartleyi Burn, 1958, has simple hamate teeth; the innermost teeth have no accessory lateral denticle and the thin, outermost 5 or 6 marginal teeth do not have their tips split into a bifid or multifid arrangement (BURN, 1962: 164, fig. 15). The species probably should not be included in the genus *Rostanga*.

Externally, *Rostanga lutescens* bears considerable resemblance to *Jorunna alisonae* Marcus, 1976, and *Discodoris fragilis* (Alder & Hancock, 1864), both found in the same general area at Enewetak. *Jorunna alisonae* differs externally in its grayish color with darker grayish, variably sized circular spots, and internally in radular and reproductive system morphology (see the figures of *J. alisonae* in KAY & YOUNG, 1969:185, as *J. tomentosa*; and in MARCUS, 1976:40). *Discodoris fragilis* is much larger than *R. lutescens*, with more grayish coloration and more variation in the size of the dorsal, darker colored blotches (see the photographs in BERTSCH & JOHNSON, 1981:40).

Discodoris fragilis also lacks caryophyllidia, having simple tubercles. Again, radular tooth morphology easily separates the two species (see the figures in KAY & YOUNG, 1969:187; and in EDMUNDS, 1971:340).

This is apparently the first record of *Rostanga lutescens* since its original description from Timor, Indonesia (BERGH, 1905). The present collection from Enewetak (over 4500 km northeast of its type locality) indicates that the species is probably more widely distributed, at least in the western and west central Pacific.

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