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Redescription of *Nembrotha megalocera* Yonow, 1990 (Gastropoda: Nudibranchia: Polyceratidae) from the Red Sea

by

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Abstract. *Nembrotha megalocera* Yonow, 1990, is redescribed from one specimen from Al-Ghardaqah (Egypt) collected during the expedition to the Red Sea organized by the Marine Biology Laboratory of the University of Sevilla in 1992. New data on its internal anatomy are presented. Moreover, a comparison between this species and others similar to it, *N. rutilans* Pruvot-Fol, 1931, *N. purpureolineata* O'Donoghue, 1924, and *N. lineolata* Bergh, 1905, is provided.

INTRODUCTION

One specimen of a polyceratid nudibranch of the genus *Nembrotha* Bergh, 1877, was collected by researchers from the Marine Biology Laboratory of the University of Sevilla in the Red Sea in April 1992. We later concluded that this specimen belongs to the species *N. megalocera* Yonow, 1990. The original description of this species is short and does not provide schemes or drawings of the animal's external or internal anatomy; it does provide a color photograph of one specimen.

In this paper, we redescribe the species, supplementing Yonow's data with ours.

SYSTEMATICS

Family POLYCERATIDAE Alder & Hancock, 1845

Nembrotha Bergh, 1877

Nembrotha megalocera Yonow, 1990

Material: Al-Ghardaqah (Egypt) (27°32′24″N, 33°48′06″E): 1 specimen of 70 mm in length collected, April, 1992, at 20 m depth on colonies of the coral genus *Acropora* Oken, 1815. The specimen was deposited at the Laboratorio de Biología Marina at the University of Sevilla.

Description: Specimen limaciform, elongate, and slightly undulate. Foot linear and tail pointed. Cephalic veil inconspicuous, rounded and without lobes (Figure 1A). Rhinophores perfoliate, retractile in their sheaths, with 54 and 51 laminae (Figure 1B). Strong oral tentacles, grooved dorsolaterally along part of their length. Small and blunt foot corners. Branchial tuft composed of three large multipinnate and non-retractile trunks (Figure 1C). Dorsum black, except head and area around gills that are yellow lemon. Two pale grey areas also situated on head at rear of rhinophores. Flanks mostly orange; area closest to foot is whitish. Foot edge, oral and propodial tentacles, base of

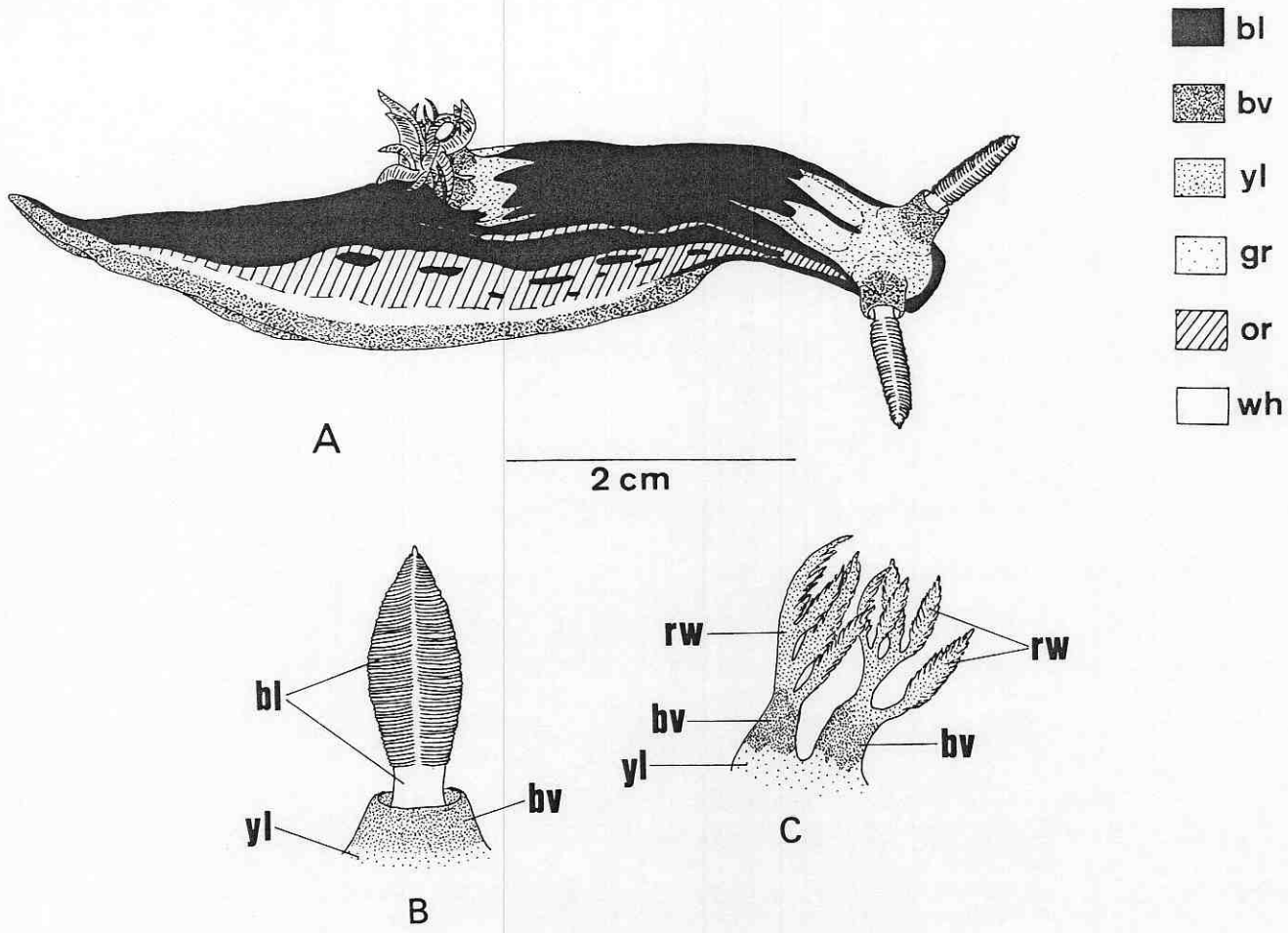

Figure 1

A. General view of the specimen. B. Detail of one rhinophore. C. Detail of the gills. Key: bl, black; bv, bluish violet; gr, grey; or, orange; rw, red wine; wh, whitish; yl, yellow lemon.

gills and rhinophoral sheaths are blue or bluish violet. Gills are red-wine and rhinophores are black.

A general view of the internal anatomy can be seen in Figure 2. The radular formula of the specimen is 27 × 7-8.1.1.1.7-8. The rachidian tooth is square, with four strong denticles, of which the innermost on the right side is bifid (Figure 3C, D). This is probably an aberration in our specimen, and not taxonomically significant. The well-developed innermost lateral teeth are hooked, and they have a spur at their base (Figure 3A, B). The remaining radular teeth are very poorly developed. The thin and delicate labial cuticle has a central and two lateral areas on which a weak armature appears. The genital system (Figure 4A) is characterized by a big and rounded gametolytic gland, largely covered by a well-developed prostate. The size of the seminal receptacle is not very big. We have not seen the presence of a vestibular gland. The efferent duct is relatively elongate and coiled over itself. The penis is very elongate, and it is armed with spines (Figure 4B).

Discussion: The ground color of our specimen agrees with that of the specimens described by Yonow (1990). The radular formula described by this author is similar to that

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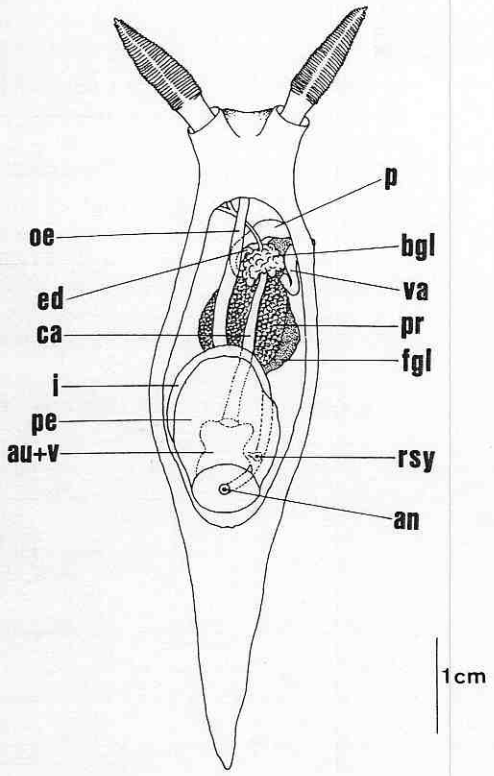
Figure 3

Radula: A. general view; B. Detail of the lateral teeth; C. Detail of the rachidian tooth to SEM; D. Detail of the rachidian tooth with camera lucida.



of our specimen; however, that animal had three denticles on the rachidian tooth, as opposed to the four observed in our specimen. Yonow (1990) did not describe any more anatomical details. This author commented that *Nembrotha rutilans* Pruvot-Fol, 1931, from the Western Australia coasts (Willan & Coleman, 1984; Coleman, 1989), is similar to *N. megalocera*. A comparison between these two species and two others from the Indo-Pacific area (*N. purpureolineata* O'Donoghue, 1924, and *N. lineolata* Bergh, 1905) is given in Table I. All four species share similar features, and hence should be compared. The descriptions of the ground color of the specimens attributed to *N. purpureolineata* by Baba (1976) and Gosliner (1987) show differences from that of the specimen photographed by Wells & Bryce (1993). According to Gosliner (personal communication), this last specimen probably belongs to *N. purpureolineata*, whereas Baba's and Gosliner's specimens probably belong to one or more undescribed species.

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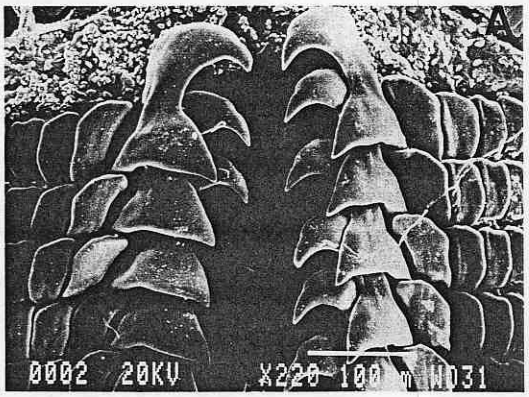
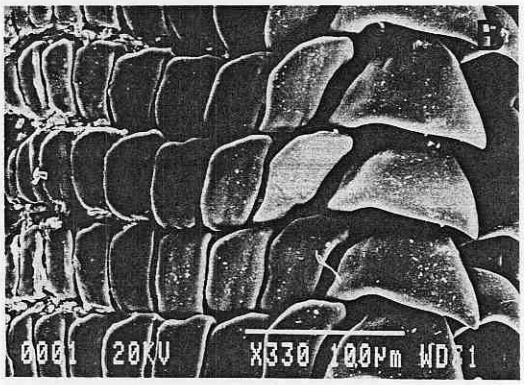
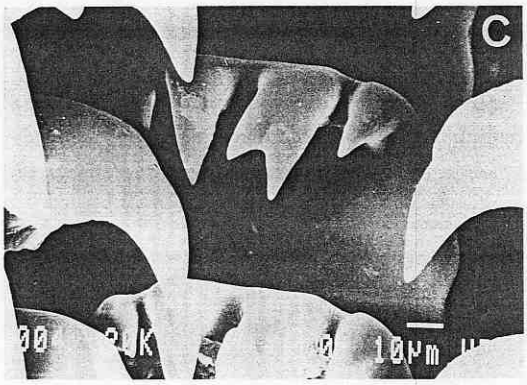
Figure 2

Gross internal anatomy. Key: an, anus; au, auricle; bgl, blood gland; ca, cephalic arteria; ed, efferent duct; fgl, female gland; i, intestine; oe, esophagus; p, penis; pe, pericardium; pr, prostate; rsy, renal syrinx; v, ventricle; va, vagina.







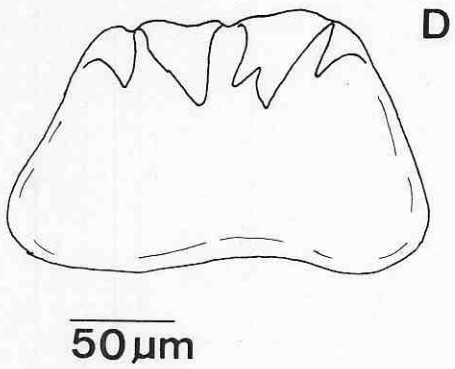


Table 1

Comparison of the features of the Indo-Pacific species *Nembrotha lineolata, N. purpureolineata, N. rutilans,* and *N. megalocera.*

	N. lineolata Bergh, 1905	*N. purpureolineata* O'Donoghue, 1924	*N. rutilans* (Pruvot-Fol, 1931)	*N. megalocera* Yonow, 1990
Color of the dorsum	White or yellowish white with brown or red-brown straight lines	Translucent slate-grey and dark purple-brown bands,* or milky white with a big red-brown area on the middle	White or whitish yellow/cream with very wide chocolate brown bands, fused in many cases	Black, with the head and the surrounding gill area of a yellow lemon color
Color of the flanks	The same as on the dorsum	Translucent slate-grey and dark purple-brown bands,* or milky white with few red-brown wide bands	The same as on the dorsum, but with more white/whitish yellow/cream surface	Orange, with some black lines
Foot color	Edged with two bands, one violet and other yellow	Edged bluish-violet	Violet	Bluish-violet or blue
Color of the oral tentacles	Violet	Blue or violet	Violet	Bluish-violet or blue
Color of the rhinophores	Red or vermillion; edge of rhinophoral sheaths violet. Below it, there is another yellow band	Orange-red, with bluish-violet tips. The sheaths are bluish-violet, except their bases that are yellow lemon	Blood-red. Edge of rhinophoral sheaths violet	Black. Rhinophoral sheaths bluish-violet or blue
Gills	3 bipinnate. Red or vermillion color. Bases of each gill rachis are violet and yellow	3 bipinnate. Orange-red color. The lower part of the bigger rachis are bluish-violet. Bases of these are yellow lemon	3 multipinnate. Blood-red color, with a violet band at the base of each gill	3 multipinnate. Dark blood red color, with a violet base at each gill
Radula	27 × 5-6.1.1.1.5-6. Rachidian tooth with 4 denticles, the innermost of the right side bifid	32 × 7-8.1.1.1.7-8. Rachidian tooth with 4 denticles, the innermost of the right side bifid	?	27-21 × 6-8.1.1.1.6-8. Rachidian tooth with 3 or 4 denticles (the innermost of the right side can be bifid)
Labial armature	Absent	Absent	?	Present
Reproductive system	?	?	?	Gametolytic gland big, rounded and surrounded by a very developed prostate. Seminal receptacle medium-sized. No vaginal (vestibular) gland. Armed penis
References	Baba (1976); Willan & Coleman (1984); Coleman (1989); Wells & Bryce (1993)	O'Donoghue (1924); Wells & Bryce (1993)	Pruvot-Fol (1931); Willan & Coleman (1984); Coleman (1989); Wells & Bryce (1993)	Yonow (1990); present study

* The ground color provided by O'Donoghue (1924) is based on preserved specimens, although he stated in the same paper: "Professor Dakin informs me that in life the body-colour of the animal was a translucent slate-grey and the dark bands were purple-brown."

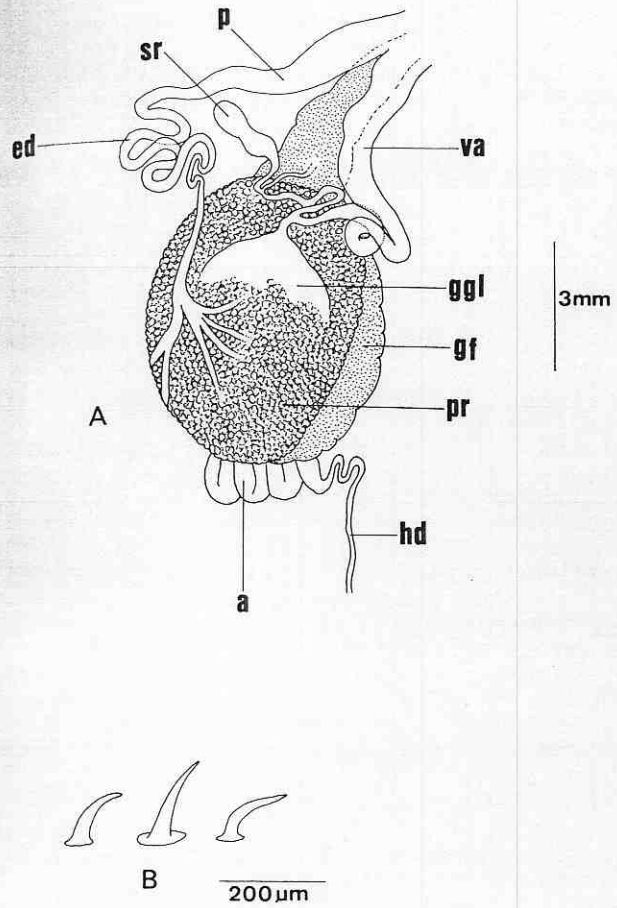


Figure 4

A. Reproductive system (the prostate is partially removed to show the gametolytic gland). B. Detail of the penial spines. Key: a, ampulla; ed, efferent duct; fgl, female gland; ggl, gametolytic gland; hd, hermaphroditic duct; p, penis; pr, prostate; sr, seminal receptacle; va, vagina.

ACKNOWLEDGMENTS

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