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**GALACERA, NEW GENUS OF
POLYCERID NUDIBRANCHS**

BY CARLOS J. RISSO-DOMINGUEZ

When searching for nudibranchs in the port of Mar del Plata in January, 1957, opportunity arose to collect two specimens of a polycerid, immediately recognized in the field as a new genus closely allied to *Thecacera* and *Polycera*. The name *Galacera* was selected at that time. Surprisingly, I further realized that this curious polycerid is the same nudibranch described by Franceschi (1928) as a variety of *Polycera quadrilineata* and reported by Odhner (1941) as a distinct species. This was evident after a careful consideration of the causes for the incomplete description by Franceschi and an examination of the type material in the Museo Argentino de Ciencias Naturales.

The imaginary animal described by Odhner and Franceschi belongs to *Polycera*, but the real nudibranch found by the latter (no. 17206, Invert. Div. MACN) and observed alive by the writer in the type locality, markedly differs from the diagnosis elaborated by Odhner (1941:16) and some original figures.

The paper by Franceschi only meant to claim the presence of the well known European polycerid sea-slug on the Atlantic coast of South America, with the pretense that it was the first record of

the genus for this coast.¹ To force this assumption, the animal was described as a variety because the author was unable to avoid or neglect the conspicuous differences. This author apparently did not consult detailed color plates, illustrating the most common European polycerid, and the supposed resemblance with *P. quadrilineata*, chiefly was a matter of conjecture. Only the comparison with pl. 22 (Fam. 1) of Alder and Hancock (1851) or pl. "*P. quadrilineata*" by Meyer and Möbius (1865), might have supplied the certainty of the distinctness of the specimens as belonging to a new species.

The work by Franceschi is rather contradictory. He early states that the specimens do not show appreciable differences from those of European coasts (p. 580). Nevertheless he is further perplexed because he was unable to find any trace of tubercles or similar structures in living specimens (p. 584). The inconsistency of important details between some figures and the text is obvious; e.g., 8-10 digitations are indicated for adult specimens, but the animal depicted in the plate has only 6 veil digitations and probably an author, who had an ample supply of adult specimens, would not select a young one for the illustrations. No word about the pallial margin is given, but a very exaggerated one is depicted in the figures, and no description is provided for the rhinophores, quite overlooking the retractility into sheaths, a rather important diagnostic character in nudibranchs. Even if Franceschi had a good number of living specimens before him, he evidently overlooked this feature, of high taxonomic value, in his attempt to identify them with *Polycera quadrilineata*.

Even more difficult to justify (and really mystifying) is the diagnosis by Odhner (1941)². Since Odhner did not have any living or preserved material and his only source of knowledge was the paper by Franceschi, such an imaginary diagnosis might

¹ This error recently was repeated by Marcus (1955). As early as in 1854, Alder and Hancock (1854) mentioned a *Polycera* from Brazil ("... Of extra European species, one occurs in the Canary Islands, another on the coast of North America, and a third in Rio de Janeiro . . .") that might be described in some account of earlier travels. Either *Polycera odhneri* Marcus, 1955, or *Polycera hummi* Abbott, 1952 (= *P. aurisula* Marcus, 1957) might be a synonym of that species.

² "... Back margin *very distinct*, smooth. Frontal processes at least 6. Back surface with indistinct *tubercles*. Colour whitish, with series of *yellow spots* on back, sides and tail (*each a minute tubercle*) frontal digitations yellow, *red in the middle*, . . ."

have been the direct result of a misinterpretation of the Spanish text. The "very distinct" pallial ridge came from the wrong figures, but Franceschi did not mention the presence of tubercles, indistinct or minute. The veil digitations are yellow from the base to the tip, and no "red in the middle" is present. The lines of spots in the body are scarlet red, not yellow. Obviously, this is very clear in the original paper and corresponds in all details with the specimens studied by me in 1957. Consequently, I cannot accept Odhner's diagnosis or take into account the relationship or taxonomic position given by him for this nudibranch.

GALACERA, genus novum.

Type species: Polycera marplatensis (Franceschi). Belonging to the group *Thecacera-Polycera-Ohola* in the sense of Odhner (1941, p. 11)³. Body limaciform, smooth, resembling *Polycera* at certain extent, but rather high, without tubercles or tuberculate pallial margin. Rhinophores very small, without the conspicuous differences between clavus and stalk shown in *Polycera*, fully retractile into narrow sheaths with indistinct borders; disappearing below the skin level when retracted, the sheaths being closed by a sphincter-like action of the borders. Indistinct pallial margin, almost reduced to the dorsal sloping borders, and not continued behind the branchiae. Foot prehensile, which makes difficult crawling on a flat surface, such as glass.⁴

Galacera mainly differs from *Polycera* by the retractile rhinophores within sheaths and the lack of a tuberculate pallial margin. From *Thecacera*, it differs by the absence of the typical large sheaths of this genus. Like *Trevelyana*, *Crimora* and *Ohola*, *Galacera* has small rhinophores, retractile into narrow or indistinct sheaths. *Galacera marplatensis* has some external resemblance in morphology and colouring with *Polycera quadrilineata*⁵ and Odhner (1941) places it in the group *quadrilineata-capensis-atra* but, in addition to the generic differences, this species does not show the black pigmentation that is a noteworthy peculiarity in the group formed by these 3 species.

The coloration resembles more that found in the species of *Trevelyana* with opaque white background and scarlet red spots.

³ United by the similarity of radula and jaws.

⁴ The taxonomic value of this peculiarity is not yet fully known in the *Polyceridae*, because no data are available for most species.

⁵ Chiefly by the yellow frontal digitations and yellow tipped extra-branchial appendages.

A species with retractile rhinophores and without tuberculate pallial margin cannot possibly be included in *Polycera*.

Since the very clear diagnosis for *Polycera* by Alder and Hancock (1854, 1855), the non-retractile rhinophores and the absence of sheaths has been recognized by authors as a sharp and distinguishing diagnostic character for the genus, and Odhner also mentioned it (1941, p. 11). The term "retractile" used by Vayssi re (1901, p. 61 and 1913, p. 339) for *Palio* and Risbec (1928, p. 201) for *Polycera picta*, must be taken as "contractile." Evidently, there is an obvious difference between a rhinophore or a tentacle that contracts as a very sensitive organ, and a rhinophore which completely enters into a sheath (= invaginable).

Moreover, there are no species of *Polycera* without tubercles or a tuberculate pallial margin. The diagnosis by Alder and Hancock (1855, p. xviii) proved to be right after one century of research on polycerids. All the species in this genus divide naturally into three groups: (1) One includes all those species with a brownish pigmentation, from a reddish hue (*P. japonica*, *P. cooki*) to an olivaceous, greenish one, or even yellowish-green (*P. lessonii*, *P. ocellata*, *P. picta*, *P. risbeci*), with numerous tubercles in the pallial margin and mostly with a very tuberculate skin. This group comprises: *P. lessonii* D'Orb., 1837; *P. ocellata* A. & H., 1842; *P. cooki* Angas, 1864; *P. zoster e* O'Donoghue, 1924; *P. picta* Risbec, 1928; *P. faroensis* Lemche, 1929; *P. fujitai* Baba, 1937; *P. risbeci* Odhner, 1941; *P. japonica* Baba, 1949; *P. maculata* Pruvot-Fol, 1951; *P. hummi* Abbott, 1952; *P. odhneri* Marcus, 1955; and *P. priva* Marcus, 1959⁶. The whole group (by far the most numerous in species) can be included in *Palio* if an amended diagnosis is provided for this subgenus.

(2) The second includes the blue-yellow pigmented polyceras or in other words, the subgenus *Greilada*. *P. (G.) elegans* (Bergh), 1894; *P. (G.) messinensis* Odhner, 1941 and *P. (G.) atlantica* Pruvot-Fol, 1955, have been described, being all doubtful, rare or with very unsatisfactory descriptions. See Pruvot-Fol (1955).

(3) To the third group belong the white-yellow-black forms, that are *P. quadrilineata* O. M ller, 1776; *P. capensis* Quoy and

⁶ Only with hesitation, I include *P. priva* in this list, because the species is based upon examination of only one very contracted, preserved specimen, with all the inconveniences of such material. It is rather unfortunate that "Bergh's style" in creating species could still be used.

Gaimard, 1824 and *P. atra* MacFarland, 1905⁷, or the subgenus *Polycera sensu stricto*. This relationship is recognized by Pruvot-Fol (1954) in her description of *P. quadrilineata*⁸. They have large and conspicuous yellow frontal digitations, a character in common with *Galacera marplatensis*. They could be interpreted as the connecting linkages, from this restricted standpoint, with *Thecacera*, *Galacera* and *Trevelyana*, genera which include species with white backgrounds and orange-yellow or red spots. Noteworthy, the shape of the animal is also intermediate. *P. atra* and *P. capensis*, with their tendency towards disappearance of the pallial margin and tubercles, do resemble, more than other polyceras, *Thecacera pennigera*, *Galacera marplatensis* and *Trevelyana alba*, if the sharply distinguishing, generic peculiarities be overlooked.

Moreover, there are true tubercles in the pallial margin of *P. capensis*, even if not recognized by Odhner (1941) and Barnard (1927). To apply an unequivocal terminology to identify each of these different structures is of paramount importance in the taxonomy of this family. The terms used by some authors, such as "papillae" and "processes," must be abandoned and only "tubercles," "veil digitations" and "extrabranchial appendages" be used. The "flanking processes" (= extrabranchial appendages) of Barnard (1927, p. 191-192) for *P. capensis* (= *P. nigrocrocea*) are real tubercles, obviously equal in structure as those of *P. atra*, very clearly described in the correct sense by MacFarland (1906, p. 142). In *Polycera* the tubercles of the pallial margin (or even the appendage-like tubercles), are pigmented with the same colour as the veil digitations, a fact that may indicate identical histological structure, whereas the true appendages in *Ancula*, *Trapania*, *Polycera*, *Galacera*, *Thecacera*, etc. are of the same color as the background of the body, and additional, superficial pigmentation is also similar in the branchiae and the body. I must conclude, consequently, that no species of *Polycera* has tubercles in the pallial margin⁹, whereas *Galacera* has appendages but no tubercles of any kind. Those reported by

⁷ *P. pallida* Bergh, 1880 is not included here since it is a very doubtful species, founded upon insufficient evidence.

⁸ "... et des especes vicariantes au Cap et en Californie ..."

⁹ In *Greilada*, one must take into account living specimens only, which as described by Pruvot-Fol (1951, 1955) have conspicuous tubercles in the pallial margin, and not the preserved specimens of Bergh and Odhner.

Odhner for *G. marplatensis* are imaginary. Franceschi has very clearly stated the lack of any trace of tubercles in living specimens (p. 584),¹⁰ an observation corroborated by my research in 1957.

This nudibranch, the only known polycerid in the puelchean malacological zone of the Argentine coasts, lives on *Bugula* and little differences could be found with the habitat mentioned for *Thecacera pennigera* in Brazil by Marcus (1957), except that I have found it only on those arborescent bryozoan colonies on which it feeds. This explains the prehensile nature of the foot. Strangely enough, the spawning season comes during the coldest weeks of winter, rather than in summer months as do those of most opisthobranchs and all other nudibranchs observed at that locality.

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10 ". . . no hay tuberculos apreciables sino manchas coloreadas . . ."

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LAND SNAILS FROM THE DOE RUN CREEK AREA, MEADE COUNTY, KENTUCKY

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The terrestrial molluscan fauna of Kentucky is known largely from early descriptions of species and from collections that have been recorded in publications dealing with other areas of the United States. This paper lists the species of land snails, exclusive of the slugs, that we have identified from collections made at five sites along Doe Run Creek, Meade County, Kentucky, in the months of March, April, and December, 1959.

Methods and description of the area: Most of the specimens recorded here were picked by hand from stream-drifted debris along Doe Run Creek. However, many specimens were obtained from logs, beneath rocks, and beneath leaf litter and humus in wooded areas. Identifications were made by use of keys published by F. C. Baker (1939) and Pilsbry (1939-1948), with only shell characters being used.

The Doe Run Creek area is located in the Pennyryle region of Kentucky, and is underlain almost entirely by limestones of Mississippian age. Doe Run begins as a spring located at 37° 56' N and 86° 07' W, and enters the Ohio River near 38° 00' N and 86° 06' W, about 3.5 miles east of Brandenburg, Kentucky. The latter two localities were our stations I and V, respectively. Other stations were as follows: Station II—37° 57' N and 86° 07' W. Station III (approximately same coordinates as Station II, but about one mile north). Station IV—37° 58' N and 86° 06' W (determined from U. S. Geological Survey. Topographic Maps: Rock Haven quadrangle—Stations I, III, IV; Guston quadrangle—Station II; and Laconia quadrangle—Station IV).

Much of the valley floor in the Doe Run Area, and also the karsted uplands, is cultivated, with a fringe of trees persisting as a riparian forest. Wooded areas also occur on the precipitous hillsides along the creek, in areas of limestone outcroppings, and

¹ Contribution No. 32 (New Series) from the Department of Biology, University of Louisville, Louisville, Kentucky.



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