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NOTULAE MALACOLOGICHE, XXXIV

AGAIN ON THE TAXONOMIC STATUS OF *DEROCERAS PANORMITANUM* (LESSONA & POLLONERA, 1882), *DEROCERAS POLLONERAI* (SIMROTH, 1889) AND *DEROCERAS CARUANAI* (POLLONERA, 1891) (GASTROPODA: PULMONATA) (1)

Abstract

In a first replay to VAN GOETHEM & DE WILDE (1985) the author shows how it is possible to consider *D. panormitanum* (LESSONA & POLLONERA, 1882), *D. pollonerai* (SIMROTH, 1889) and *D. caruanai* (POLLONERA, 1891) as belonging to the same species when considering materials coming from Malta, Sicily and other localities in Italy.

Riassunto

In una prima replica ad una recente nota di VAN GOETHEM & DE WILDE (1985), l'autore dimostra come sia possibile giungere a considerare come sinonimi le seguenti tre «specie» del genere *Deroceras: D. panormitanum* (LESSONA e POLLONERA, 1882), *D. pollonerai* (SIMROTH, 1889) e *D. caruanai* (POLLONERA, 1891). Ciò, ovviamente, qualora ci si limiti ad una classica analisi morfologica di esemplari raccolti a Malta, in Sicilia ed in altre località italiane.

Introduction

The recent paper by VAN GOETHEM & DE WILDE (1985) had the purpose of demonstrating that the following Siculo-Maltese species should not be considered as synonyms: *Deroceras panormitanum* (LESSONA & POLLONERA, 1882), *Deroceras pollonerai* (emend. for *pollonerae*!) (SIMROTH, 1889), *Deroceras caruanai* (emend. for *caruanae!)* (POLLONERA, 1891) (2).

As the only recent proposal to consider them as synonyms derives from my research (GIUSTI, 1973, 1976), I think it useful to repeat here some of my arguments and to stress the possibility of reaching conclusions completely different from those of VAN GOETHEM & DE WILDE (1985).

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(1) Paper published with M.P.I. 60% funds.

(2) The emendation of the names of the two last species, already proposed by myself in preceding papers (GIUSTI, 1973, 1976) is in linea with the art. 31 of the I.C.Z.N., becouse POLLONERA (CARLO) and CARUANA GATTO (ALFRED) were males.

The VAN GOETHEM & DE WILDE (1985) paper has not added new contributions, has not sufficiently considered the literature (HOFFMANN, 1941; FORCART, 1960; VAN REGTEREN ALTENA, 1962; GIUSTI, 1973, 1976) and, consequently, it has not succeeded in its objective.

The problem, to be definitively solved, requires long and thorough researches, so that for the moment, I limit myself to stressing the following points:

A) The same comparisons among the characters which can be found in the original descriptions of the three species by VAN GOETHEM & DE WILDE (1985: 306) was previously carried out by GIUSTI (1973: 208-209). But, GIUSTI, partly in following HOFFMANN (1941), added a critical analisis of both descriptions and original drawings, without a doubt necessary in view of the summary descriptions and the unclear drawings (particularly those of LESSONA & POLLONERA, 1882 and POLLONERA, 1891). Without a critical analysis, in fact, every hypothesis could be valid. It would be possible to suggest among others both that «*Agriolimax panormitanus*» LESSONA & POLLONERA was really a synonym of «*A. agrestis*» (= *D. reticulatum*, MÜLLER, 1774; non *D. agreste* LINNAEUS, 1758) such as SIMROTH (1889) suggested and that «*A. caruanae*» POLLONERA does not correspond to a form of the *D. panormitanum* group but to the other Maltese species more recently described by VAN REGTEREN ALTENA (1962): *D. golcheri*.

My interpretation of the anatomical drawings by LESSONA & POLLONERA, SIMROTH and POLLONERA, indicates the same characters present on the basal portion (= proximal portion) of the penial complex (GIUSTI, 1976: 226, fig. 26) (Fig. 1, A-C):

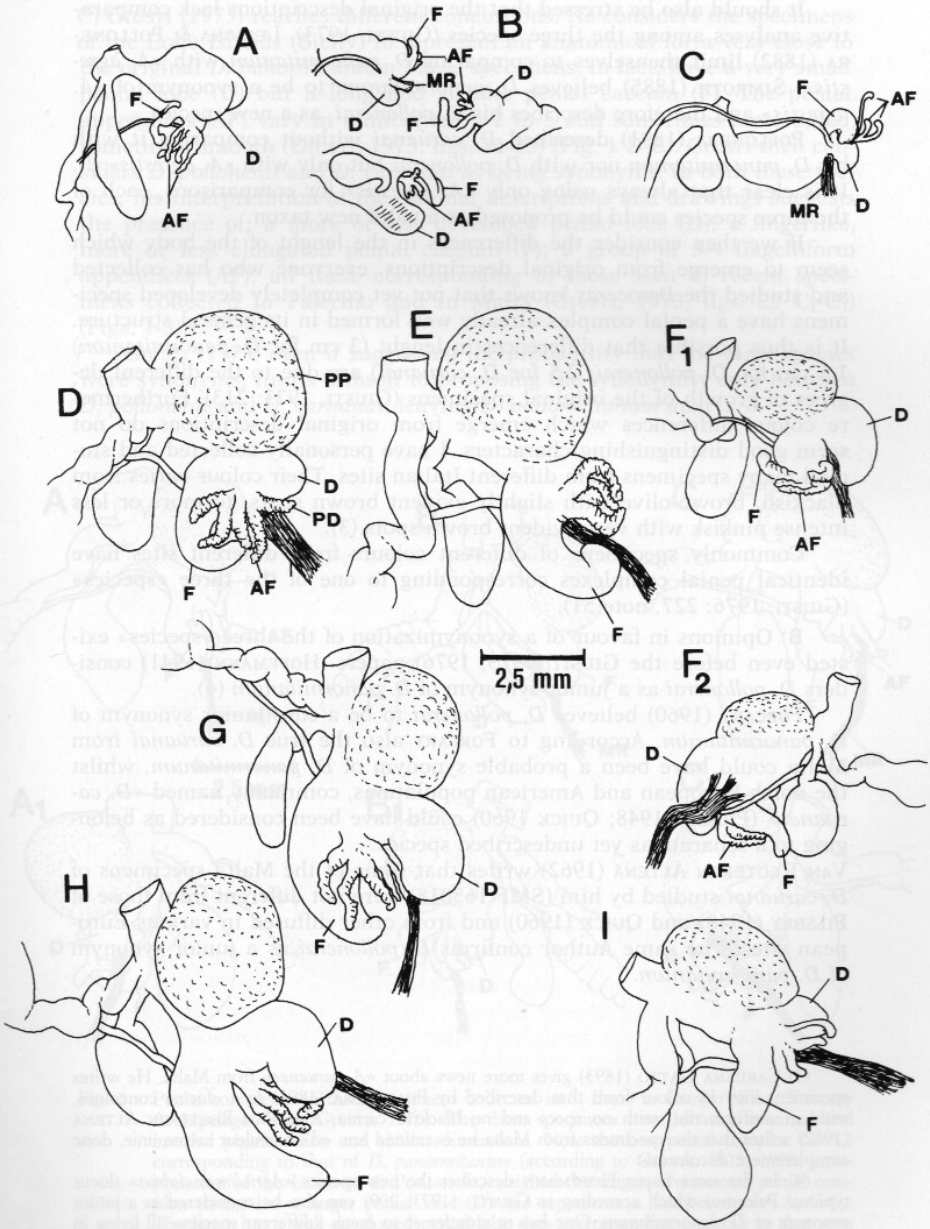
I - a more or less developed penial lobe (D)

II - a more or less slender and elongated, digitiform, penial caecum (F) (this corresponding to the «5th larger flagelliform appendix» described by LESSONA & POLLONERA (1882) in *D. panormitanum* and to the «upper long, narrow and bent appendix» described by SIMROTH (1889) in *D. pollonerai*).

III - a group of flagelliform appendices (AF), sometimes smooth, other times more or less lobated.

IV - a penial retractor (MR), inserted on one side of the base of the penial complex, between the penial lobe and the penial caecum, opposite to the flagelliform appendices (the retractor is not represented in the LESSONA & POLLONERA, 1882, drawing).

Fig. 1 - The penial complex in the forms of the *Deroceras panormitanum* group.
A, «*A*». *panormitanus* from LESSONA & POLLONERA (1882); B, «*A*», *pollonerae* from SIMROTH (1889); C, «*A*». *caruanae* from POLLONERA (1891).
D-I, specimens collected in different sites of central-southern Italy (from GIUSTI, 1973).
D, Filicudi (Eolie Islands, Sicily); E, Vulcano (Eolie Islands, Sicily; F_1-F_2 Palermo (M. Pellegrino, Sicily): the penial complex is seen from both sides; G-H, S. Stefano di Aspromonte (Calabria) (two specimens); I, S. Gimignano (Siena, Tuscany).
Note how the two extreme forms E (= *D. panormitanum*) and F_1-F_2 (= *D. pollonerai* - *D. caruanai*) are connected by the forms, D,G,H.


A
F
D
AF
B
F
AF
MR
D
D
F
F
AF
D
C
F
AF
MR
D
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PP
D
PD
F
AF
E
F
F1
D
F
AF
2,5 mm
G
D
F
F2
D
AF
F
H
D
F
I
D
F

It should also be stressed that the original descriptions lack comparative analyses among the three species (GIUSTI, 1973). LESSONA & POLLONERA (1882) limit thenselves to comparing *D. panormitanum* with «*A. agrestis*». SIMROTH (1885) believes *D. panormitanum* to be a synonym of «*A. agrestis*» and therefore describes his *D. pollonerai* as a new species.

POLLONERA (1891) described *D. carûanai* without comparing it with his *D. panormitanum* nor with *D. pollonerai* but only with «*A. agrestis*» (!). It is clear that always using only «*A. agrestis*» for comparisons, each of the three species could be proposed as a valid new taxon.

If we then consider the differences in the lenght of the body which seem to emerge from original descriptions, everyone who has collected and studied the *Deroceras* knows that not yet completely developed specimens have a penial complex already well formed in its general structure. It is thus possible that differences in lenght (3 cm for *D. panormitanum*) 1,5 cm for *D. pollonerai*; 2,5 for *D. caruanai*) are due to the different degrees of growth of the original specimens (GIUSTI, 1973: 213). Furthermore colour differences which emerge from original descriptions do not seem good distinguishing characters. I have personally collected and studied many specimens from different Italian sites. Their colour varies from blackish, brown-olive with slightly evident brown spots, to more or less intense pinkisk with very evident brown spots (3).

Commonly specimens of different colours from different sites have identical penial complexes corresponding to one of the three «species» (GIUSTI, 1976: 227, note 51).

B) Opinions in favour of a synonymization of the three «species» existed even before the GIUSTI (1973, 1976) papers. HOFFMANN (1941) considers *D. pollonerai* as a junior synonym of *D. panormitanum* (4).

FORCART (1960) believes *D. pollonerai* to be a sure junior synonym of *D. panormitanum*. According to FORCART also the true *D. caruanai* from Malta could have been a probable synonym of *D. panormitanum*, whilst the north-European and American populations, commonly named «*D. caruanae*» (PILSBRY 1948; QUICK 1960) could have been considered as belonging to a separate as yet undescribed species.

VAN REGTEREN ALTENA (1962) writes that some of the Malta specimens of *D. caruanai* studied by him (SMF 165018) were not different from those of PILSBRY (1948) and QUICK (1960) and from other diffused in various European sites. The same Author confirms *D. pollonerai* as a junior synonym of *D. panormitanum*.

(3) CARUANA GATTO (1893) gives more news about «*A. caruanae*» from Malta. He writes specimens vary in colour form that described by POLLONERA (1891) to a «forma concolor», with an uniform tint, with no spots and no blackish carina. Also VAN REGTEREN ALTENA (1962) writes that the specimens from Malta he examined are: «d'un couleur crème unie, donc completement décolorés».

(4) In the same paper HOFFMANN describes the new species «*Agriolimax dubius*» (locus typicus: Palermo) which according to GIUSTI (1973: 209) can also be considered as a junior synonym of *D. panormitanum*. One has to wonder at so many «different species» all living in Palermo. Would not a more probable explanation be that they are different anatomical variations of an unique species?

C) GIUSTI (1973) reaches different conclusions. He considers the specimens of the Eolie Islands (Sicily) to represent an anatomical form very close to the original *D. panormitanum*. These specimens, in fact, have a very small penial lobe (D) but a long and slender penial caecum (F). The penial appendices (AF) vary in number from 2 to 5 and sometimes are lobated, sometimes smooth (GIUSTI, 1973, figs. 21-23) (Fig. 1 D-E). GIUSTI then considers *D. pollonerai* and *D. caruanai* as being synonyms. In both these species, his interpretation of the original descriptions and drawings suggests the presence of: a more or less developed penial lobe (D); a fingerlike, more or less elongated penial caecum (F); a group of 3-4 flagelliform appendices (AF); all these corresponding to those seen in recent specimens collected in Palermo and in Malta (GIUSTI, 1973, figs. 23 C_1-C_3) (Figs. 1-3).

GIUSTI (1973) even if suggesting the probability that the three species were synonyms, limits himself to proposing the synonymity only between *D. pollonerai* and *D. caruanai*, leaving *D. panormitanum* apart.

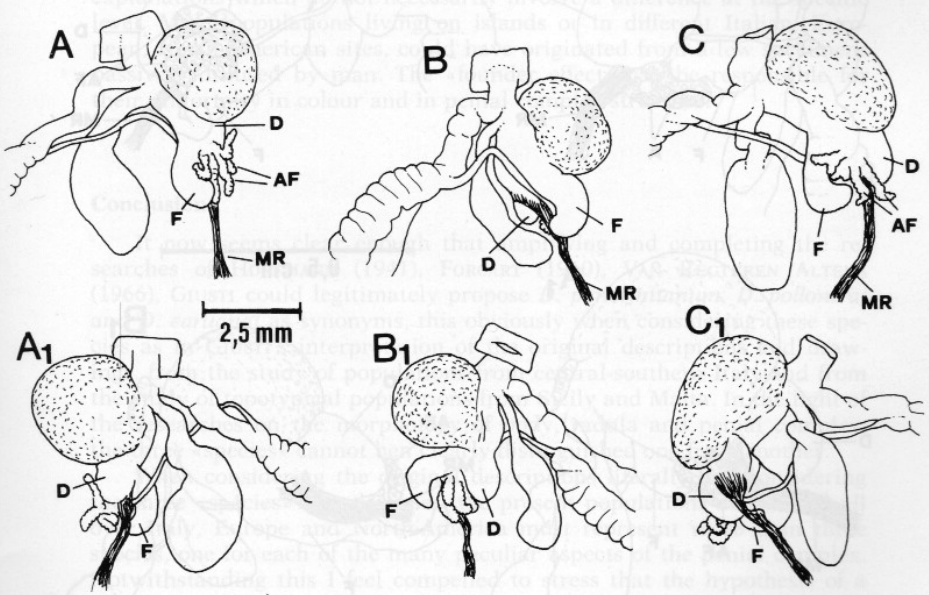

Fig. 2 - Penial complexes in three specimens collected in S. Ilario in Campo (Elba; Tuscany Archipelago; from GIUSTI, 1976). The three specimens have identical external and internal pigmentation and similar dimensions. Note the first penial complex (A-A_1) corresponding to that of *D. panormitanum* (according to GIUSTI, 1973, 1976, interpretation of the LESSONA & POLLONERA original drawings). The second penial complex (B-B_1) has a larger penial lobe (D) and represents a link between A-A_1-C-C_1. The latter has a well developed penial lobe thus corresponding perfectly to that seen in *D. pollonerai* - *D. caruanai*. In B-B_1, the basal (= proximal) portion of the penis is rotated 180° in respect to the apical (= distal portion).

Only later on (GIUSTI, 1976), increase in available data, the discovery of populations in which specimens externally identical had different penial complexes corresponding that of one of the three «species» (Fig. 2) and the discovery in different sites of populations with specimens with varying types of the penial complex (GIUSTI, 1976: 218-229, figs. 23-26) led GIUSTI to write: «even if the spatial disposition of the structures rising from the base of the penial complex is always the same, these can vary in their shape and dimensions». In his fig. 26, GIUSTI (1976) gives a summarized scheme of his results.

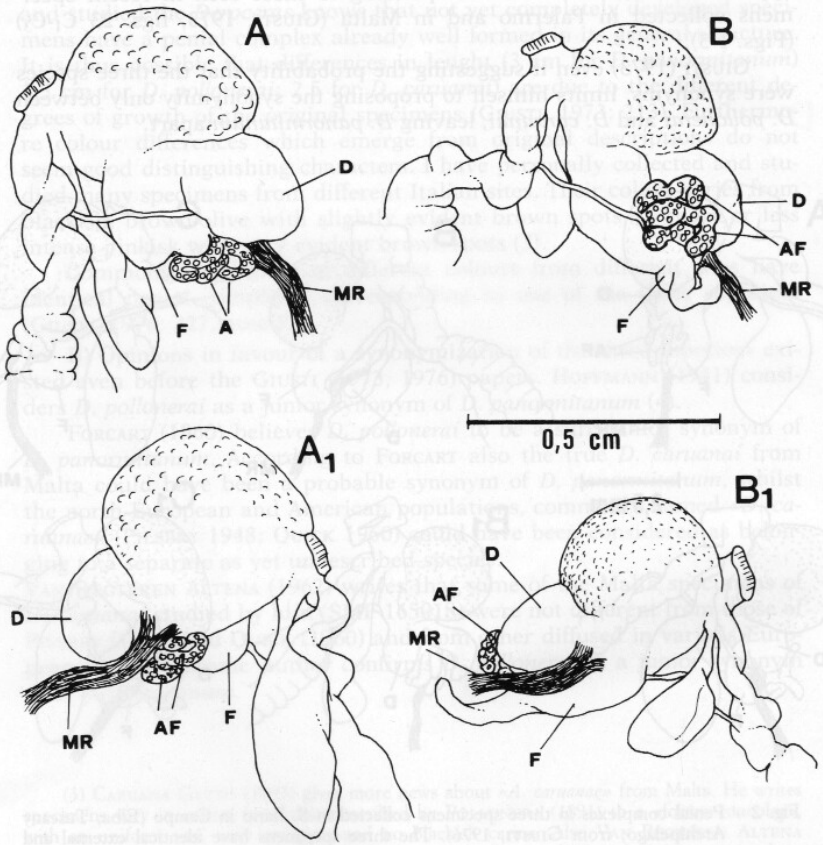

Fig. 3 - The penial complex in two specimens identical in their external and internal pigmentation and in their dimensions (J.P. Schembri leg. 21/12/78: Wied Incita Malta). Note the first penial complex (A-A_1) corresponding to that of *D. pollonerai* - *D. caruanai* and the second one corresponding to that of *D. panormitanum* because of its longer penial caecum (F).

D) All this disagrees with what VAN GOETHEM & DE WILDE (1985: 308) wrote: «after having dissected hundreds of specimens belonging to *D. caruanae* in all growth stages and with different degrees of contraction, we did not encounter a single specimen presenting penial appendages comparable with SIMROTH's description of *D. pollonerae*».

In Italy there exist, as I have demonstrated (GIUSTI, 1976) (Fig. 2), populations in which the specimens show a penial complex varying from that known in *D. panormitanum* to that known in *D. pollonerai-D. caruanai*. This happens also in Malta. Unfortunately I have only three specimens from this island, collected in Wied Incita (21/12/78) (5). They are externally and internally identical and show different penial complexes, one corresponding to *D. pollonerai-D. caruanai* (Fig. 3 A_1-A_2) two to *D. panormitanum* (Fig. 3 B_1-B_2). The only difference between them consists in the penial caecum which is globular in one, fingerlike in the others. It is certainly true, and I have already stressed this point (GIUSTI 1973: 214-215; 1976: 229), usually the populations are more uniform in the structure of the penial complex. Such a fact, nevertheless, can have explanations which do not necessarily involve a difference at the specific level. Many populations living on islands or in different Italian, European, North-American sites, could have originated from a few specimens passively diffused by man. The «founder effect» can be responsible for their uniformity in colour and in penial complex structure.

Conclusions

It now seems clear enough that amplifying and completing the researches of HOFFMANN (1941), FORCART (1960), VAN REGTEREN ALTENA (1966), GIUSTI could legitimately propose *D. panormitanum, D. pollonerai* and *D. caruanai* as synonyms, this obviously when considering these species as in GIUSTI's interpretation of the original descriptions and drawings, from the study of populations from central-southern Italy and from the study of topotypical populations from Sicily and Malta. In the light of the researches on the morphology of body, radula and penial complex, the three «species» cannot ben clearly distinguished one from another.

When considering the original descriptions literally and considering the three «species» as valid ones, the present populations distributed all over Italy, Europe and North-America must represent more than three species, one for each of the many peculiar aspects of the penial complex. Notwithstanding this I feel compelled to stress that the hypothesis of a synonymity does not necessarily involve all the populations known to date. Even if they all seem to belong to the same «morphospecies» (6), is

(5) My sincere thanks to Dr. P.J. Schembri from Malta, who has sent me his malacological materials and who cooperates with me in revising the malacofauna of the Maltese Archipelago. Specimens corresponding to POLLONERA's *«A. caruanae»* seem very rare in Malta. All the other specimens from different sites belong to *D. golcheri* VAN REGTEREN ALTENA.

(6) As for «morphospecies» I consider fairly uniform a set of monophyletic populations, in which are possibly included not yet morphologically clearly differentiated biological species.

it possible that some of them represent separate biological species (sibling species) not recognizable through the simple morphological analysis.

All that has been pointed out in other genera of terrestrial Gastropods (GIUSTI & Al. 1985) shows that such a possibility exists but that, in the lack of clear and stable morphological differences and of genetic analyses it is absurd to try to introduce or reintroduce subdivisions into specific or subspecific taxa whose validity would remain definitely subjective.

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