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THE STATUS OF *GREGARIELLA*
SIMPLICIFILIS BARNARD, WITH
RECORDS OF MYTILIDAE FROM
SOUTHERN ANGOLA

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(With 3 figures)

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INTRODUCTION

In order to complete a survey by the South African Museum and the State Museum, Windhoek, of the intertidal fauna of rocky shores in South West Africa, an expedition was made to the southern coast of Angola (Moçâmedes to the Kunene River mouth) in September 1969. The Mytilidae collected during this expedition proved interesting, particularly from the point of view of comparison with the northern South West African mytilid fauna (Kensley & Penrith, 1970).

Perna perna (Linnaeus) was found to be very common throughout the area of the survey as in northern South West Africa (Kensley & Penrith, 1970). Another species, *Brachydontes puniceus* Gmelin, is also abundant from Cabo Negro northwards. This species replaces *Semimytilus algosus* (Gould) in that it occurs at the same levels of the shore in the same type of habitat as does *Semimytilus algosus* in South West Africa (i.e. at the bases of algal tufts and amongst the byssus threads of *Perna perna* at the lower levels of the shore). In the Angolan collections, *Semimytilus algosus*, although common just north of the Kunene mouth, was represented only by a single juvenile specimen collected at Moçâmedes.

The occurrence in southern Angola, whose fauna includes many Mediterranean elements, of specimens corresponding with *Gregariella simplicifilis* Barnard, 1964, prompted us to investigate further the status of this recently described southern African species. Two other cryptic mytilids were collected

in southern Angola; these three species are discussed below.

The material on which the present work is based included specimens collected in Angola by the South African Museum in 1966. Localities referred to in the text are given with their co-ordinates in table 1.

TABLE 1. Localities referred to in text

Novo Redondo	11°11'S., 13°52'E.
Moçâmedes	15°10'S., 12°10'E.
Cabo Negro	15°40'S., 12°04'E.
Kunene River mouth	17°15'S., 11°45'E.
Rocky Point	18°59'S., 12°29'E.
Möwe Bay	19°20'S., 12°43'E.
Honolulu	20°36'S., 13°18'E.
Torra Bay	20°18'S., 13°15'E.
Gordon's Bay	34°10'S., 18°52'E.
Still Bay	34°23'S., 21°24'E.
Mossel Bay	34°12'S., 22°08'E.
Port Elizabeth	33°58'S., 25°36'E.
Amanzimtoti	30°03'S., 30°53'E.

NOTES ON SPECIES

Modiolus carvalhoi Klappenbach, 1966

Modiolus carvalhoi Klappenbach, 1966: 251, figs 1-5, 7, 8. Kensley & Penrith, 1970: 21, fig. 5.

Material

Catalogue No.	Size range (mm)	Locality	Date
S.A.M. A31381	5.2, 10.6	Praia das Conchas, Moçâmedes	July 1966
S.A.M. A31382	2.5	Praia das Conchas, Moçâmedes	10 September 1969
S.A.M. A31383	11.8	Rocks 15 km north of Kunene R. mouth	23 September 1969

Remarks

The Angolan specimens agree well with the South West African specimens, and were found in similar habitats.

Gregariella barbatella (Cantraine, 1835)

Modiolus sulcatus (non Lamarck), Risso, 1826: 324.

Modiolus barbatellus Cantraine, 1835: 397.

Modiolaria (*Gregariella*) *barbatella*: Lamy, 1937: 32 (synonymy and references).

Modiolaria barbatella: Nicklès, 1950: 170, fig. 319; 1955: 127.

Gregariella simplicifilis Barnard, 1964: 402, fig. 9 e-f. Kensley & Penrith, 1970: 23.

Material

Catalogue No.	Size range (mm)	Locality	Date
S.A.M. A31375	4.1-5.3	Cabo Negro	16 September 1969

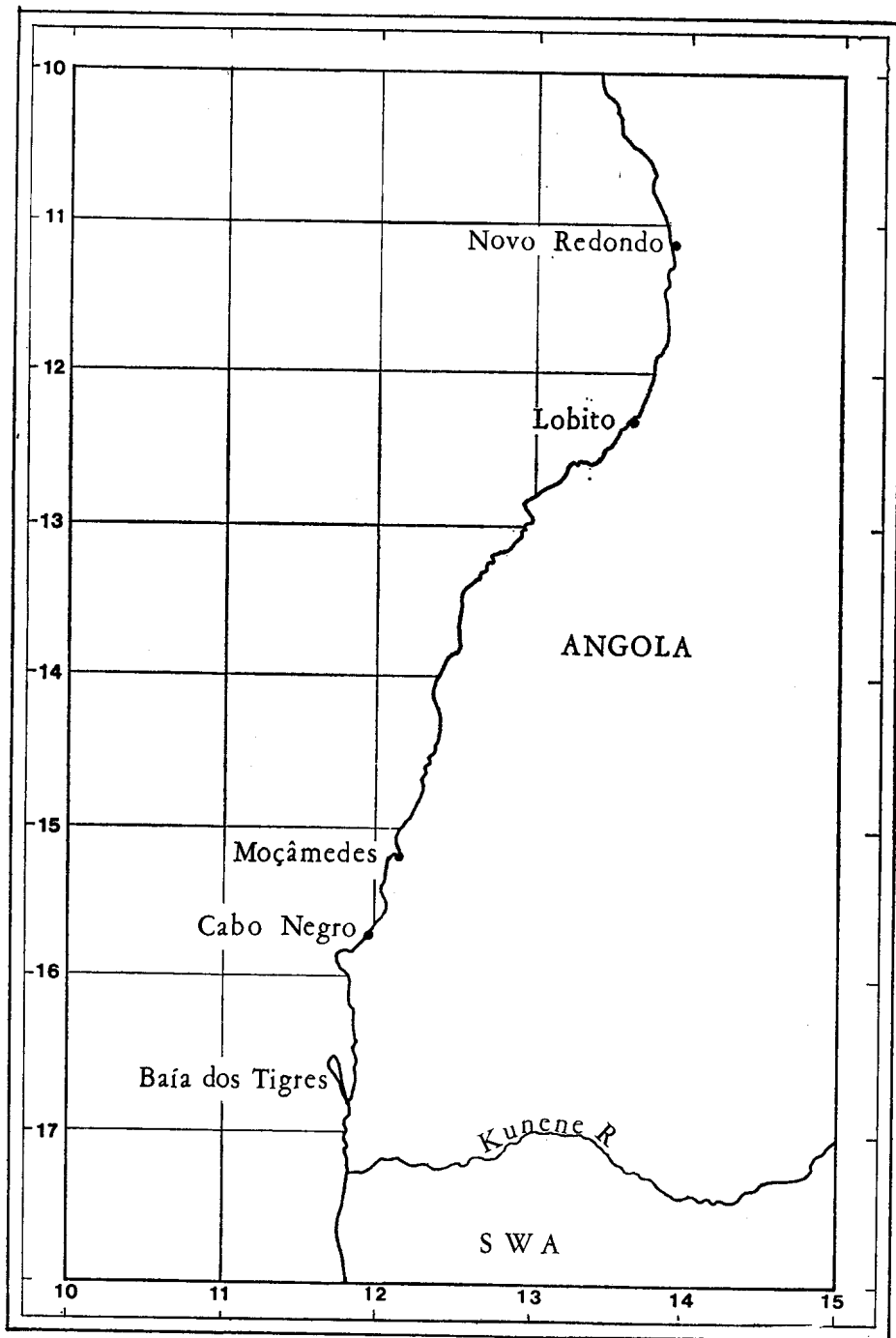


FIG. 1. Map of area of survey

Material used for comparison

<i>Catalogue No./</i> <i>Institution</i>	<i>Size range (mm)</i>	<i>Locality</i>	<i>Date</i>
Muséum National d'Histoire Naturelle, Paris	9·8-11·1	Marseille	1892
S.A.M. 6878 (type series of <i>Gregariella</i> <i>simplicifilis</i>)	8·8-11·9	Gordon's Bay	1901
S.A.M. A7642	6·1-12·0	False Bay	1930
S.A.M. A31376	1·2-9·8	Still Bay	—
S.A.M. 2472	10·5	Mossel Bay	1898
S.A.M. A31377	8·9-10·2	Port Elizabeth	—
S.A.M. A31378	11·3	Amanzimtoti, Natal	26 March 1938
S.A.M. A31209	6·6	6-8 km south of Kunene R. mouth	3-4 October 1968
S.A.M. A31210, State Museum M259	4·3, 7·2	Honolulu, S.W.A.	9 November 1968
S.A.M. A31297	3·6-6·8	Möwe Bay, S.W.A.	31 May-3 June 1969
S.A.M. A31298	7·0	Rocky Point, S.W.A.	15 June 1969
S.A.M. A31305	9·7	Torra Bay, S.W.A.	29 May 1969

Remarks

Barnard (1964) gave the name *Gregariella simplicifilis* to a species of mytilid occurring on the South African coast from Cape Town to Natal. He distinguished the species from the Mediterranean species by its simple periostracal hairs. Kensley & Penrith (1970) recorded specimens of *Gregariella* with simple periostracal hairs from the northern coast of South West Africa, which they placed in *Gregariella simplicifilis* Barnard.

Subsequent comparison of South African, South West African, and Angolan material with specimens from Marseille indicates that the southern forms of *Gregariella* are not distinct from the Mediterranean species *Gregariella barbatella* (Cantraine, 1835).

The specimens from Cabo Negro agree well with Barnard's (1964) description and type specimens, and with Lamy's (1937) description of *Gregariella barbatella*, as well as with the three specimens from Marseille. Lamy (1937) mentioned long, compactly arranged periostracal hairs but did not state that these were branched. Nicklès's (1950) figure shows *Gregariella barbatella* with simple periostracal hairs. It seems probable that Barnard was confused by Soot-Ryen's (1955) discussion of the nomenclature of the species, in which he suggested that the name *Modiolus opifex* Say, 1825, should probably be applied to the Mediterranean species, although it has subsequently been used for an American species with strongly branched periostracal hairs. It

seems likely that Barnard interpreted this as meaning that the Mediterranean species also had branched periostracal hairs; Soot-Ryen (1955) did not in fact state that it had. In view of the similarity between the Angolan, South West African, South African, and Mediterranean specimens, we feel that *Gregariella simplicifilis* Barnard should become a synonym of *Gregariella barbatella* (Cantraine).

The nomenclature of *Gregariella barbatella* is rather confused. Dautzenberg (1910), followed by other authors, e.g. Lamy (1937), proposed the use of Cantraine's (1835) name, *barbatella*, for this species in preference to the older name *sulcatus* Risso, 1826, as the latter name was preoccupied by a species in the same family. Soot-Ryen's (1955) suggestion that the name *opifex* should be used does not seem feasible in view of the general confusion surrounding the use of that name. At present it seems preferable to retain the name *Gregariella barbatella* for the Mediterranean/African species.

The distribution of *Gregariella barbatella* is remarkable; however, dispersal is no great problem for attached, cryptic species. An analysis of temperature data in relation to distribution of this species would almost certainly prove highly significant.

Gregariella sp.

(Fig. 2)

Material

<i>Catalogue No.</i>	<i>Size (mm)</i>	<i>Locality</i>	<i>Date</i>
S.A.M. A31379	8.1	Novo Redondo	11 July 1966

Description

Shell elongate, inflated. Dorsal margin straight. Umbo subterminal. Lunule distinct. Antero-dorsal angle about 90°, postero-dorsal angle broadly obtuse. Posterior margin smoothly convex. Ventral margin slightly convex. Anterior margin very short, distinctly convex, extending markedly in front of the umbo. Hinge without teeth. Inner surface nacreous, muscle scars fairly distinct. Entire shell covered with a thick, brown periostracum produced into numerous hairs over the whole region postero-dorsal to the umbo and the low rounded umbonal carina. Hairs immediately posterior to umbo and along umbonal carina simple; hairs above and behind these regions branched (fig. 2). Lunule with crenulate radiating ribs; faint radial sculpture in region of umbonal carina. Ligament occupying about seven-eighths of dorsal margin. Inner edge immediately behind ligament with faint irregular crenulations; anterior margin internally with fourteen strong, slightly elongate crenulations. Byssus threads very fine and silky.

Remarks

This specimen differs from all other specimens of *Gregariella* examined in the nature of the periostracal hairs, as well as in the more acutely produced

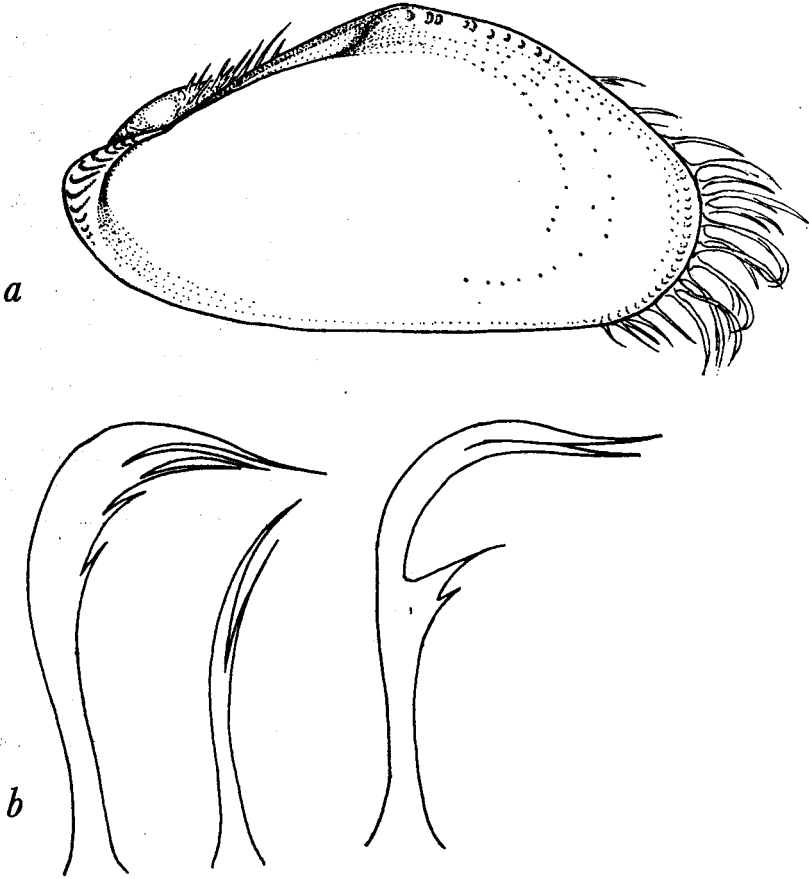


FIG. 2. a. Internal view of *Gregariella* sp. b. Periostracal hairs of *Gregariella* sp., enlarged

anterior region and the weakness of the crenulations on the posterior dorsal margin. The muscular system agrees well with that of specimens of *Gregariella barbatella*, as does the sculpture of the lunule and the posterior part of the shell.

In view of the fact that only one specimen showing the branched hairs and other divergent features was available, we give this description and figure in the hope that with a larger range of comparative material it may be able to be placed.

Lithophaga aristata (Solander, 1807)

(Fig. 3)

Lithophaga aristata: Nicklès, 1955: 128 (synonymy and references). Franca, 1960: 29.

Material

Catalogue No.	Size range (mm)	Locality	Date
S.A.M. A31380	5·8–30·4	Praia das Conchas, Moçâmedes	10–14 September 1969

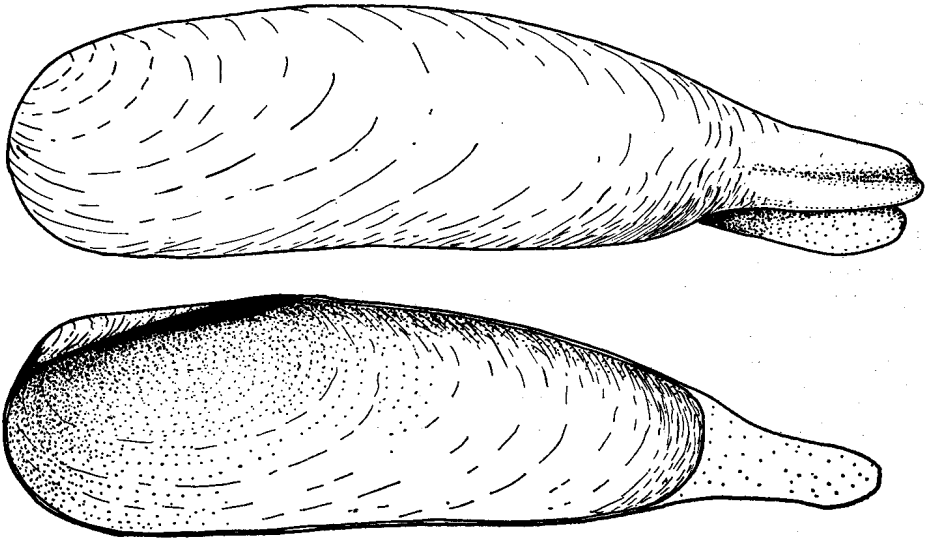


FIG. 3. *Lithophaga aristata* (Solander)

Remarks

Lithophaga aristata was found to be very common, boring between the tubes of the mollusc *Vermetus adansonii* Daudin, which cover the rocks at the lower levels of the shore at Praia das Conchas, Moçâmedes.

DISCUSSION

A comparison of the mytilid faunas of southern Angola and northern South West Africa indicates that the occurrence of *Perna perna* and the cryptic species *Modiolus carvalhoi* and *Gregariella barbatella* are the same on the two adjacent stretches of coast. However, from Cabo Negro northwards, *Semimytilus algosus* is replaced by *Brachydontes puniceus*.

The coast of Angola south of Moçâmedes is mainly sandy or consists of vertical sandstone cliffs dropping sharply into the sea, so that the development of an extensive rocky intertidal fauna is discouraged. This inhospitable stretch of coast may assist existing temperature barriers in inhibiting the southward and northward spread of species.

SUMMARY

The mytilid fauna of southern Angola is compared with that of northern South West Africa. *Gregariella simplicifilis* Barnard is synonymized with *Gregariella barbatella* (Cantraine). A description and figure are given of a specimen of *Gregariella* from Novo Redondo which could not be placed in any existing species.

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Style manual for biological journals. Washington: American Institute of Biological Sciences.

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ILLUSTRATIONS

To be reducible to 12 cm × 18 cm (19 cm including caption). A metric scale to appear with all photographs.

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FISCHER, P.-H. 1948. Données sur la résistance et de le vitalité des mollusques. *J. Conch., Paris* **88**: 100-140.

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Example

Scalaria coronata Lamarck, 1816: pl. 451, figs 5 *a*, *b*; Liste: 11. Turton, 1932: 80.