Ann. Natal Mus. Vol. 32 Pages 305–318 Pietermaritzburg October, 1991

New records of Mollusca from southern Africa and Mozambique. Part 1. (Mollusca: Gastropoda)

by

D. G. Herbert

(Natal Museum, P. Bag 9070, Pietermaritzburg, South Africa)

ABSTRACT

This paper discusses new records of ten species of mollusc from south-eastern Africa. The following species have not previously been recorded in either Mozambique or South Africa; *Clanculus flosculus* (Fischer, 1880), *Tricolia variabilis* (Pease, 1861), *Phyllocoma convoluta* (Broderip, 1833), *Amathina tricarinata* (Linnaeus, 1758) and *Thyca astericola* (Adams & Reeve, 1850). The following are new records for South Africa; *Patella flexuosa* Quoy & Gaimard, 1834, *Tricolia ios* Robertson, 1985, *Rhinoclavis diadema* Houbrick, 1978, *Colina macrostoma* (Hinds, 1844) and *Natica violacea* Sowerby, 1825. Distributional data, taxonomic remarks and figures are given for all species.

INTRODUCTION

The Natal Museum's collection of Mollusca contains a large amount of material from south-eastern Africa. Much of this, particularly the tropical component from northern Zululand and Mozambique, has never been documented in the literature. As this material is studied, much of it will be covered in the systematic revisions undertaken by Dr R. N. Kilburn and myself, and colleagues in other institutions. However, a number of groups, for several reasons, are unlikely to be treated in the foreseeable future and thus new information is likely to remain unpublished for many years. The present paper is the first of a series in which I will discuss members of these groups, about which new data are available.

Patellidae

Patella flexuosa Quoy & Gaimard, 1834

Figs 1–2

Patella flexuosa Quoy & Gaimard, 1834: 344, pl. 70, figs 9–11; Powell, 1973: 129, pl. 65, figs 8, 9; pls 99–101, 104 (synonymy); Tantanasiriwong, 1978: 4, fig. 11; Christiaens, 1980: 65; *idem*, 1986: 102, pl. 1, fig. l–q, pl. 3, fig. d–e; Mienis, 1982: 59; Drivas & Jay, 1988: 32, pl. 1, fig. 13. Type loc.: Ile Vanikoro.

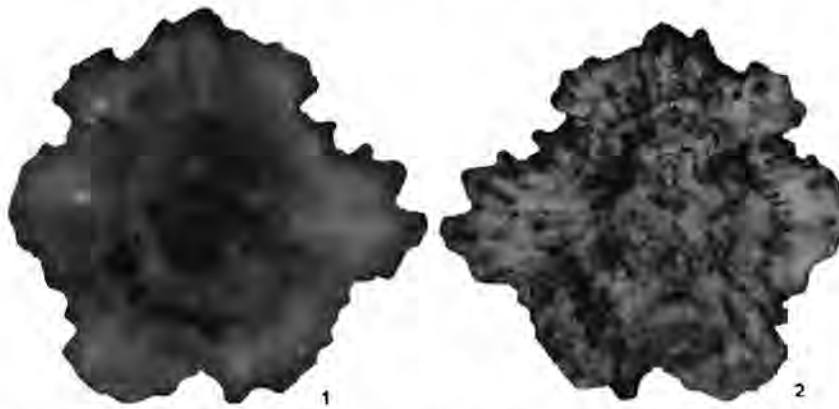
Patella (Scutellastra) flexuosa flexuosa; Cernohorsky, 1972: 35, pl. 2, figs 4, 4b (synonymy).

Patella stellaeformis Reeve, 1842: 15, pl. 136, fig. 3; Christiaens, 1973: 1357, figs 24a, 24b (synonymy). Type loc.: none given.

Patella (Scutellastra) stellaeformis; Dautzenberg, 1929: 344.

Distribution: Indo-West Pacific; here recorded for the first time from Zululand; intertidal to 50 m.

Regional locality data (all NMSA): ZULULAND: Kosi Bay, leg. L. Graham, *ex* B. J. Young coll'n (B2066); off Kosi Bay, main coral reef 1–4 km south of estuary, 9–17 m, dived D. Herbert *et al.* (D9247); do, ±18 m, underwater pump,



Figs 1–2. *Patella flexuosa* Quoy & Gaimard, 1834, Kosi Bay, Zululand, length 28,1 mm (NMSA B2066).

dived D. Herbert & K. Bloem (S2261); between Bhanga Neck and Kosi Bay, 6–18 m, dived D. Herbert *et al.* (D9506); do, reef off marker 13 north, living, 9–14 m, dived D. Herbert (S1665); off Boteler Point, 50 m, dead coral rubble, *Lithothamnion*, dredged NMDP (D9196, D9228); off Hully Point, 35 m, few shells, algae, dredged NMDP (D9068); Sodwana Bay, Nine-Mile Reef, 10–18 m, living, dived D. Herbert (D3222); do, Two-Mile Reef, 10–15 m, dived D. Herbert, R. Broker & M. Mander (D1727, D5119, E672); Leadsman Shoal, 9–14 m, mixed algal and coral reef, 1–2 km north of Leven Point, dived D. Herbert & NPB (E2523).

Remarks: A coral reef species of cryptic habit, evidently subtidal in Zululand, occurring under stones and coral blocks. Fresh shells are often heavily encrusted with a variety of marine growths, enhancing crypsis.

Powell (1973) did not record this species further west than the Andaman Islands, but Christiaens (1973) (under *P. stellaeformis*) cited a number of western Indian Ocean localities including Mozambique and Madagascar. In 1986, Christiaens, believing *P. moreli* Deshayes, 1863, from Réunion Island, to be a synonym of *flexuosa*, extended the range further to include Réunion and the Comoros. *P. moreli*, however, had previously been regarded as a synonym of *P. pica* Reeve, 1854 (Powell, 1973) and from Deshayes' figure and his description in particular, this would seem more probable. Significantly, Deshayes stated that *moreli* 'lives in the same place and on the same rocks as *P. chitonoides*' (= *P. pica*), a habitat in which I would not expect to find *P. flexuosa*.

The evident confusion regarding the synonymy of this species must cast doubt on the reliability of distribution records. For this reason a local specimen of what I consider to be an undoubted *P. flexuosa* is here figured in order to validate its occurrence in the south-western Indian Ocean. Most local shells have a strongly lobed margin and, though small (< 30 mm in length), resemble the *optima* form of the species (Pilsbry 1927) which Powell maintained as a subspecies and believed to be restricted to southern Japan and the Ryukyu Islands.

Trochidae

Clanculus flosculus (Fischer, 1878)

Figs 3–6

Trochus flosculus Fischer, 1878*a*: 211; *idem*, 1878*b*: 300, pl. 96, fig. 1; Pilsbry, 1889: 67, pl. 11, figs 56, 57; Sheppard, 1984: 46. Type loc.: Seychelles.
Trochus (Clanculus) flosculus; Von Martens, 1880: 296.
Clanculus flosculus; Dautzenberg, 1923: 56; *idem*, 1929: 331(537); Spry, 1968: 33, N° 275.
Clanculus rarus; Abbott & Dance, 1982: 43; Drivas & Jay, 1988: 36, pl. 3, fig. 2.

Distribution: East Africa and western Indian Ocean Islands; here recorded for the first time from Mozambique and Zululand.

Regional locality data (all NMSA): NORTHERN MOZAMBIQUE: Lunga to Memba Bay, K. Grosch (H4042); Lunga to Nacala Bay. K. Grosch (H4043); Nacala Bay, S.E. of Maxilone, K. Grosch (J2897). SOUTHERN MOZAMBIQUE: Bazaruto Island, east reef, E. Roscoe (J9606, G857); do, north point, E. Roscoe (G3667); do, north reef, E. Roscoe (K1969); Benguerua Island, Bazaruto Archipelago, Two Mile Reef, E. Roscoe (G2034, G2162). ZULULAND: off Kosi Bay, main coral reef 1–4 km south of estuary, 9–17 m, dived D. Herbert *et*

Figs 3–6. *Clanculus flosculus* (Fischer, 1880), northern Zululand, diameter, 10,3 mm (NMSA D9508).

al. (D9244); do, living, 16–20 m (S1365); do, 17–18 m, dived D. Herbert (S1119); do, 18–22 m, dived D. Herbert (S1062); do, ±18 m, underwater pump, dived D. Herbert & K. Bloem (S2269); between Bhanga Neck and Kosi Bay, No 13 reef, 6–18 m, dived D. Herbert *et al.* (D9508); do, 4–10 m, dived D. Herbert (S945, S1411); do, 5–11 m, dived D. Herbert (S1718); do, 8–14 m, dived D. Herbert (S1761); do, ±13 m, hand dredged sand, dived D. Herbert (S3107); Sodwana Bay, Seven Mile Reef, 17–18 m, O.R.I. (E2280); do, Two Mile Reef, living, 10–15 m, dived D. Herbert (D1729, D3307, D5111, D5348); do, Two Mile Reef/Sponge Reef, 15–20 m, dived D. Herbert (D3317); do, Sponge Reef, living, 20–22 m (D4939); Leadsman Shoal, main portion of coral reef, living, 7–11 m, dived D. Herbert & N.P.B. (E2481); Leven Point, sorted from stranded coralline algal debris, D. Herbert (E2776); Mission Rocks/Perrier Rocks, littoral (dead), R. Kilburn & D. Herbert (D5582).

Remarks: Locally not uncommon in coral reef systems. Living specimens have been found under rocks and coral slabs at depths of 7–22 m.

This species is sometimes known as *Clanculus rarus* (Dufo, 1840), but as pointed out by previous authors including Fischer (1878b), Pilsbry (1889) and Dautzenberg (1929), Dufo's description of his *Trochus rarus* is poor and is perhaps more suggestive of *C. pharaonius* (Linnaeus, 1758), than of the present species. The position cannot be resolved by simple re-examination of the type material as this is evidently lost (Bouchet in lit.). Dufo gave some details of spiral cord patterning and arrangement, but both *C. flosculus* and *C. pharaonius*, though clearly distinct species, show overlapping individual variability in this respect. Colour and overall shape are more diagnostic characters.

It is possible that *C. pharaonius* is endemic to the extreme north-western Indian Ocean (Mienis 1990) in which case Dufo's material (from the Seychelles) was more likely to have been *C. flosculus*. However, there are unconfirmed records of *C. pharaonius* from several Indian Ocean islands (von Martens 1880, Dautzenberg 1929) and it is thus not possible to eliminate it on the basis of distributional data. The name *rarus* therefore cannot be restricted with certainty to either species and furthermore there are additional Indian Ocean shells in the Natal Museum, belonging to a third, possibly undescribed, species, to which Dufo's description could also apply. In the absence of type material *C. rarus* is best considered a *nomen dubium*.

Turbinidae

Tricolia ios Robertson, 1985

Fig. 7

Tricolia ios Robertson, 1985: 50 pls 29–35. Type loc.: 19 km north east of Mogadishu, Republic of Somalia.

Distribution: Eastern Africa, from the Republic of Somalia to Mozambique, here extended to the Natal South Coast.

Regional locality data (all NMSA): ZULULAND: Kosi Bay, main reef 1–4 km south of estuary mouth, 20–22 m, underwater pump, dived D. Herbert &

Figs 7–8. *Tricolia ios* Robertson, 1985 and *T. variabilis* (Pease, 1861). 7. *T. ios* Kosi Bay, northern Zululand, length 2,3 mm (NMSA S2415); 8. *T. variabilis*, northern Zululand, length 1,6 mm (NMSA S2691).

K. Bloem (S1974); between Bhanga Neck and Kosi Bay, reef off marker 13 north, ±8 m, underwater pump, dived D. Herbert & K. Bloem (S2681); do, algal portion of reef, 5–9 m, living, underwater pump, dived D. Herbert & K Bloem (S2864); do, near pinnacles, 10–12 m, hand-dredged sand, dived D. Herbert (S2415); do, ±13 m, hand-dredged sand, dived D. Herbert (S3091); off Lala Neck, living, 74 m, shell sand, dredged NMDP (S3485); do, 75 m, coarse sand, sandstone, dredged NMDP (S3487); Mission Rocks, St Lucia area, beach-drift, J. Marais (S3691). NATAL: Aliwal Shoal, off Scottburgh, ± 14 m underwater pump, dived D. Herbert (S3773).

Remarks: This material is quite unlike any other species of *Tricolia* known from south-eastern Africa and may be readily identified by the numerous small, more or less randomly distributed, red dots which form a conspicuous part of the colour pattern. Some Cape *Tricolia* species have spotted colour forms, but the spots are usually coarser, less uniform in size and shape, and are often restricted to discrete bands eg. *Tricolia formosa* Turton, 1932, or combined with other features such as subsutural green spots as in *Tricolia capensis* (Dunker, 1846). Only two Indo-West Pacific species show this type of coloration (Robertson 1985) *viz: T. ios* and *T. fordiana* (Pilsbry, 1888) (spotted forms of *T. variabilis* (Pease, 1861) have the spots arranged in spiral rows). *T. fordiana* has a more elongate shell, finer spotting and lacks spiral sculpture except near the apex where the early teleoconch whorls bear raised spiral threads (Robertson 1985). It has not been recorded from eastern Africa. In comparison, the present specimens have relatively bold spots, smooth apical whorls and sometimes develop fine incised spiral lines on subsequent whorls—features shared with *T. ios*. It must be noted, however, that local shells are small (maximum length, 2,75 mm) and that some appear almost totally smooth. Robertson reported that the Tanzanian population of *T. ios* was also smooth and the NMSA paratypes of this species from Mozambique are similarly small.

Tricolia variabilis (Pease, 1861)

Fig. 8

Collonia variabilis Pease, 1861: 436; Kay, 1965: 61, pl. 7, figs 1, 2 (lectotype). Type loc.: Sandwich Islands (Hawaii).
Tricolia variabilis; Roberston, 1985: 72, pls 55–96 (full synonymy).

Distribution: Tropical and warm temperate Indo-West Pacific, from East Africa, the Red Sea and Indian Ocean islands to Australia, Hawaii and the Line Islands. Here recorded for the first time from south-eastern Africa.

Regional locality data (all NMSA): ZULULAND: Kosi Bay, main reef 1–4 km south of estuary mouth, 20–22 m, underwater pump, dived D. Herbert & K. Bloem (S1975); do, sorted from stone washings, 9–17 m, dived D. Herbert *et al.* (D9830); do, ±15 m, dived D. Herbert (S2883); between Bhanga Neck and Kosi Bay, reef off marker 13 north, ±18 m, underwater pump, dived D. Herbert & K. Bloem (S2691). RÉUNION ISLAND: l'Étang-Salé les Bains, lagoon; volcanic sand, coral, R. Kilburn & D. Herbert (K5145).

Remarks: This characteristic species has not been recorded from the coast of East Africa further south than Tanzania (Robertson 1985). The above specimens from Zululand indicate that the species must also occur in Mozambique. All southern African shells examined appear to be juvenile (length < 2,0 mm) and are of the spirally dotted colour morph (Fig. 8). The species has been recorded from Madagascar and Mauritius (Robertson 1985), but not previously from Réunion Island.

Cerithiidae

Rhinoclavis diadema Houbrick, 1978

Figs 9–11

Rhinoclavis (Rhinoclavis) diadema Houbrick, 1978: 64, pls 33–35 *n. nov.* (synonymy); Drivas & Jay, 1988: 40, pl. 5, fig. 14.

Distribution: West Pacific, Indian Ocean Islands and Mozambique, here extended to Zululand.

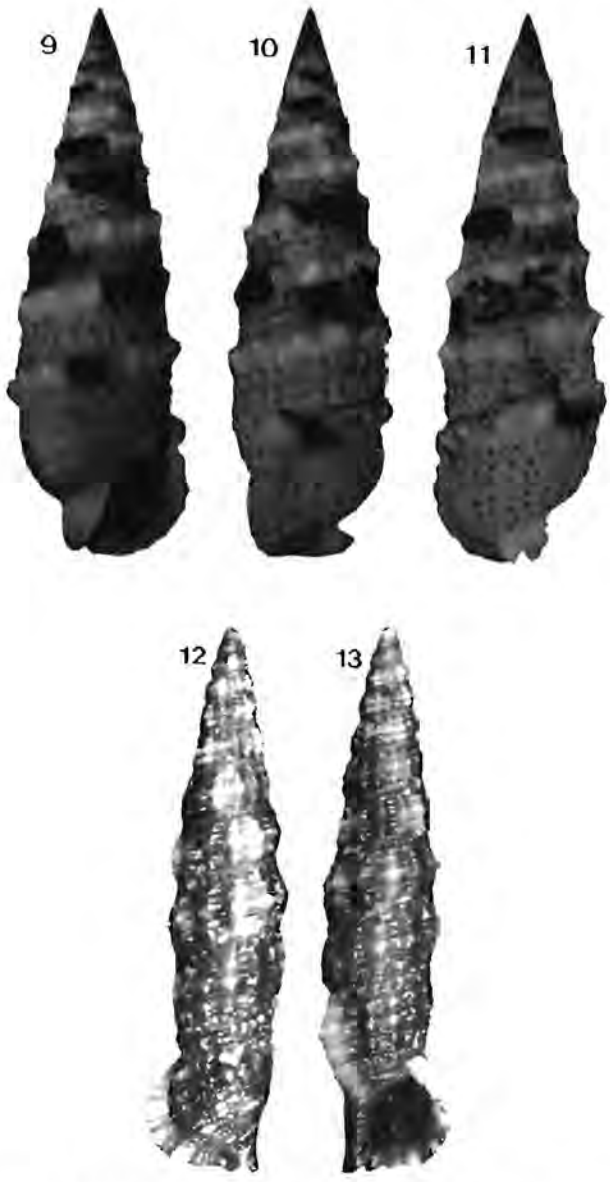
Regional locality data (all NMSA): ZULULAND: off Kosi Bay, main coral reef 1–4 km south of estuary, 9–17 m, dived D. Herbert *et al.* (D9254); do, 10–16 m, dived D. Herbert (S1820); do, 17–18 m, dived D. Herbert (S1125); Kosi Bay, off marker 17 north, 9–12 m, dived D. Herbert *et al.* (S1907); Sodwana Bay, Two Mile Reef, 10–15 m, dived D. Herbert (D3294, D5121); do, outer edge of reef, 14–17 m, dived D. Herbert (D5061).

Remarks: Found shallowly buried in coral sand pockets. Houbrick (1978) recorded Natal Museum material of this species from Conducia Bay, northern Mozambique, but there is no record of these specimens in the museum's collection.

Colina macrostoma (Hinds, 1844)

Figs 12–13

Cerithium macrostoma Hinds, 1844; 27, pl 26, figs 11, 12. Type loc.: Borneo.
Cerithium (Colina) macrostoma; Barnard, 1963: 135, fig. 26*b*.
Colina macrostoma; Houbrick, 1990: 36, figs 6–45 (synonymy).



Figs 9–13. *Rhinoclavis diadema* Houbrick, 1978 and *Colina macrostoma* (Hinds, 1844). 9–11. *R. diadema*, Sodwana Bay, northern Zululand, length 22,6 mm (NMSA D5121); 12–13. *C. macrostoma*, off Boteler Point, northern Zululand, length 8,3 mm (NMSA E1585).

Distribution: Indo-West Pacific; Japan to tropical Australia, India and Mozambique, here extended to the Natal south coast.

Regional locality data (all NMSA): NORTHERN MOZAMBIQUE: Conducia Bay, K. Grosch (J4098). ZULULAND: south east of Kosi Bay, 50 m, algae,

shells, dredged NMDP (D6083); between Bhanga Neck and Kosi Bay, sand of outer edge of N° 13 reef, ±34 m, dived D. Herbert *et al.* (D9766); off Boteler Point, living, 50 m, coral rubble, dead *Lithothamnion*, dredged NMDP (E1585). NATAL: Aliwal Shoal, off Umkomaas, *ex* J. P. Marais coll'n (S3293) do, underwater pump, ± 14 m, dived D. Herbert (S3716); do, hand-dredged sand, ± 16 m, dived D. Herbert (S3379).

Remarks: Houbrick (1990) has recently revised the genus *Colina* and gave eastern India and Ceylon as the western distribution limit of *C. macrostoma*. Barnard (1963), however, had previously recorded the species from Delagoa Bay, Mozambique. The present material extends the distribution to the Natal south coast. Houbrick noted that the Indian Ocean and Australian specimens available to him were shorter, broader, and more pupiform than the more typical, slender, highly elongate shells from Japan and the Philippines. This led him to postulate a south-westerly trend toward a decrease in relative shell length. However, all south-east African specimens are narrow and very typical in appearance suggesting that such a trend is not present or that the situation is more complex.

Naticidae

Natica violacea Sowerby, 1825

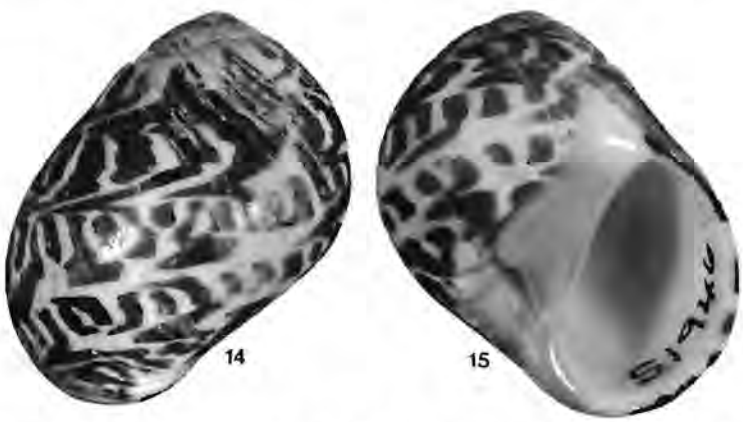
Figs 14–15

Natica violacea Sowerby, 1825: xi; Kilburn, 1971: 852 (further references); Drivas & Jay, 1988: 42, pl. 6, fig. 17. Type loc.: East Indies.

Distribution; Indo-West Pacific; locally recorded from the Mascarene Islands and Mozambique; range here extended to northern Zululand.

Additional regional locality data: ZULULAND: Kosi Bay, main reef 1–4 km south of estuary mouth; shallow furrows and gullies filled with coral sand, 21–24 m, dived D. Herbert *et al.* (NMSA S1946).

Remarks: Kilburn (1971) has commented previously on this species and recorded



Figs 14–15. *Natica violacea* Sowerby, 1825, Kosi Bay, northern Zululand, length 21 mm (NMSA S1946).

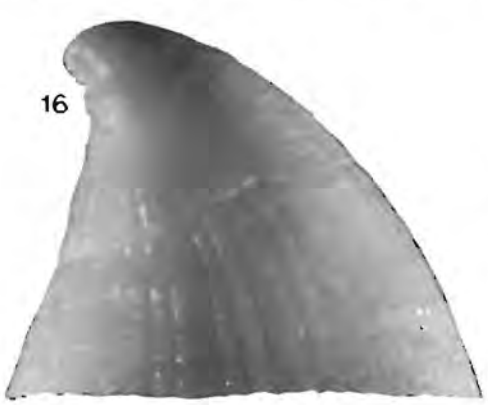
it from Mozambique. The present specimens are the first known from South African waters.

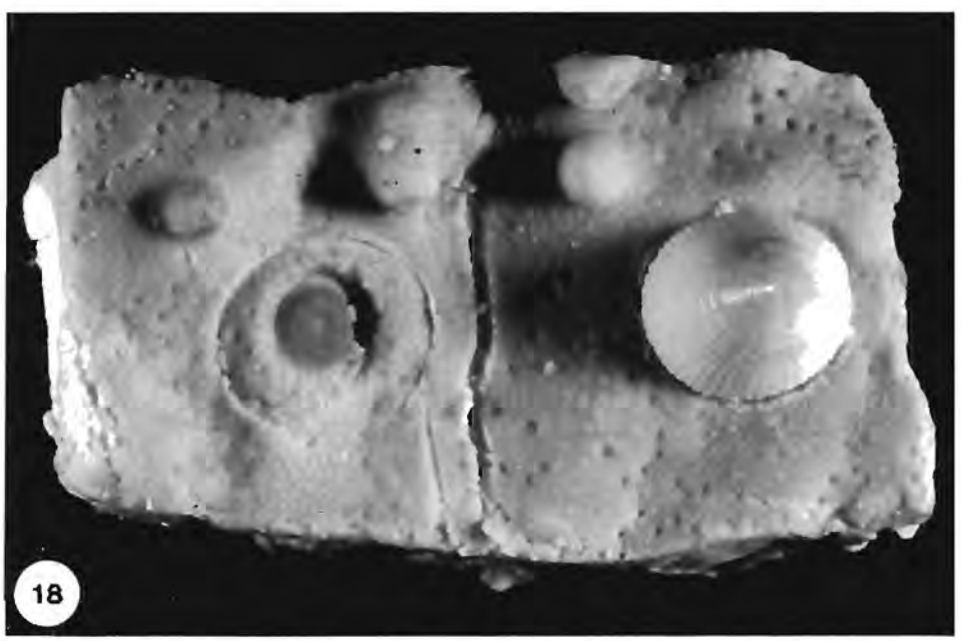
Eulimidae

Thyca astericola (Adams & Reeve, 1850)

Figs 16–18

Pileopsis astericola Adams & Reeve, 1850: 69, pl. xi, fig. 1. Type loc.: Soolo [Sulu] Sea, Philippines, on tubercule of a starfish.
Thyca astericola: Warén, 1980: 188, fig. 19 (holotype).





Figs 16–18. *Thyca astericola* (Adams & Reeve, 1850). Kosi Bay, northern Zululand, height 4,6 mm (NMSA D6191); figure 18 showing a section of the host with one *T. astericola in situ* and the scar left by the shell and snout of the second specimen.

Distribution: Previously known only from the Philippines, here recorded for the first time from the western Indian Ocean.

Regional locality data: ZULULAND: south east of Kosi Bay, living on aboral surface of a large oreasterid asteroid, 50 m, medium sand, algae, dredged NMDP (NMSA D6191).

Remarks: Warén (1980) has discussed the familial affinities of the genus *Thyca* and provided a key to the Recent species. *T. astericola* is the type species of the genus, but according to Warén it is known only from the holotype. The present specimens represent the first new record of the species since its original description. Two individuals were found living close together (separated by only 5,5 mm) on the aboral surface of an oreasterid starfish. They were of similar size and, somewhat surprisingly, both were male (each had a well developed, grooved penis). Species of *Thyca* usually live in pairs and may show marked sexual dimorphism, the male being smaller and sometimes living attached to the female (Warén 1980).

Muricidae

Phyllocoma convoluta (Broderip, 1833)

Figs 19–20

Triton convolutus Broderip, 1833: 7; Reeve, 1844: pl. 19, fig. 92. Type loc.: unknown
Tritonium (Colubraria) convolutum; von Martens, 1880: 267.
Epidromus (Phyllocoma) convolutus; Tapparone-Canefri, 1881: 44.
Phyllocoma convolutum; Cernohorsky, 1967: 127, pl. 14, fig. 4.

Figs 19–20. *Phyllocoma convoluta* (Broderip, 1833), Kosi Bay, northern Zululand, length 21,2 mm (NMSA S1795).

Colubraria convoluta; Michel, 1974: 226.
Phyllocoma convoluta; Kay, 1979: 239 (fossil); Whitehead, 1990: 6.
Phyllocoma convolutus; Drivas & Jay, 1988: 72, pl. 21, fig. 10.

Distribution: Indo-West Pacific; Hawaii (fossil), Japan, Fiji, Solomon Islands, northern Australia, Philippines, Mascarene Islands, here recorded from south-eastern Africa.

Regional locality data (all NMSA): NORTHERN MOZAMBIQUE: Conducia Bay, K. Grosch (H221). ZULULAND: Kosi Bay, main coral reef 1–4 km south of estuary mouth, 23–24 m, dived D. Herbert *et al.* (S1795).

Remarks: *P. convoluta*, the type species of *Phyllocoma* Tapparone-Canefri, 1881, is widespread, but evidently nowhere common. Only two examples are known from south-eastern Africa. The shell is relatively thin, dull greyish-white and easily recognised by its well developed varices and close-set spiral ridges. The radula of the West American species *P. scalariformis* (Broderip, 1833) has been figured by D'Attilio (1980).

Amathinidae

Amathina tricarinata (Linnaeus, 1767)

Figs 21–23

Patella tricarinata Linnaeus, 1767: 1259. Type loc.: not given.
Amathina tricarinata; Ponder, 1987 (references and synonymy).

Distribution: Japan, Hong Kong, Thailand, Madagascar; here extended to Mozambique and the Natal south coast.

Regional locality data (all NMSA): MOZAMBIQUE: Jangamo (G3414). NATAL: Durban Bay, Salisbury Island dredgings, B. J. Young (B2598); on wreck of 'Produce', off Umkomaas, 20–30 m, living on *Pteria* sp. dived D. Herbert (D9886); on wreck of 'Produce', off Umkomaas, ±30 m, living on *Perna perna* (Linnaeus, 1758), dived R. Emanuel (E7128).

Remarks: A very rare species in this area and one which has only been found living at a single locality. It is known to live on the shells of bivalves including *Pinna*, *Atrina*, *Pteria*, *Ostrea* and *Anadara* where it is almost certainly parasitic, feeding on the tissues of the host (Ponder 1987). Local specimens were found living on an as yet unidentified species of *Pteria* (NMSA D9883) and on *Perna perna* (Linnaeus, 1758). Those living on *P. perna* were clustered in a small group amongst barnacles and were partially covered in their own spawn.

Ponder (1987) has shown that this genus is more closely related to the Pyramidellidae than to capulid or hipponicid limpets and proposed a new family, the Amathinidae, within the Pyramidelloidea.

ABBREVIATIONS

NMSA = Natal Museum, Pietermaritzburg, South Africa.
NMDP = Natal Museum dredging programme.
NPB = Natal Parks Board, Pietermaritzburg.
ORI = Oceanographic Research Institute, Durban.

Figs 21–23. *Amathina tricarinata* (Linnaeus, 1767), Natal south coast, length 9,3 mm (NMSA D9886); figure 23 showing two specimens *in situ* (arrows) on a living *Perna perna* (Linnaeus, 1758). The area between the two shells is filled with spawn.

ACKNOWLEDGMENTS

I wish to thank the Natal Parks Board for the considerable assistance which they provided during the course of fieldwork and for permission to collect material in the St Lucia and Maputaland Marine Reserves. Thanks are also extended to Dr R. N. Kilburn for comments on the manuscript, Dr J. P. Marais for additional specimens and to the Council for Scientific and Industrial Research for the use of the R. V. *Meiring Naudé,* from which dredged material was collected.

REFERENCES

ABBOTT, R. T. & DANCE, S. P. 1982. *Compendium of seashells*. New York: E. P. Dutton Inc. 411 pp.

ADAMS, A. & REEVE, L. 1848–50. Mollusca. In: Adams, A. ed. *The zoology of the voyage of HMS 'Samarang': under the command of Capt. Sir Edward Belcher during the years 1843–46.* 1–24(1848), 25–87(1850). London: Reeve, Bentham & Reeve.

BARNARD, K. H. 1963. Contributions to the knowledge of South African marine Mollusca. Part III. Gastropoda: Prosobranchiata: Taenioglossa. *Ann. S. Afr. Mus.* **47**(1): 1–199.

BRODERIP, W. J. 1833. [Characters of new species of Mollusca and Conchifera collected by Mr Cuming]. *Proc. Zool. Soc. Lond.* **1**(1–3): 4–9.

CERNOHORSKY, W. O. 1967. The Muricidae of Fiji (Mollusca: Gastropoda). Part 1—Subfamilies Muricinae and Tritonaliinae. *Veliger* **10**(2): 111–132.

——— 1972. *Marine Shells of the Pacific*. **2**. Sydney: Pacific Publication.

CHRISTIAENS, J. 1973. Revision du genre *Patella* (Mollusca, Gastropoda). *Bull. Mus. Hist. nat. Paris*, (3: Zoologie) **121**: 1305–1392.

——— 1980. The limpets of Hong Kong with descriptions of seven new species and subspecies. *Proceedings of the first international workshop on the malacofauna of Hong Kong and southern China, 23 March—8 April, 1977.* Hong Kong: Hong Kong University Press, pp. 61–84.

——— 1986. Notes sur quelques Patellidae (Gastropoda) de l'Ocean Indien. *Apex* **1**(4): 97–128.

D'ATTILIO, A. 1980. Deception in shell appearance. *Festivus* **12**(11): 129–132.

DAUTZENBERG, P. 1923. Liste preliminaires des mollusques marins de Madagascar et description de deux especes nouvelles. *J. Conchyliol.* **68**(1): 21–74.

——— 1929. Contribution a l'étude de la faune de Madagascar. Mollusca II, Mollusca marina testacea. *Faunes des colonies Francais* **3**(4): 115–430 (321–636).

DRIVAS J. & JAY, M. 1988. *Coquillages de La Réunion et de l'île Maurice*. Singapore: Times Editions.

DUFO, H. 1840. Observations sur les mollusques marins, terrestres et fluviatiles des îles Séchelles et des Amirantes. *Ann. Sci. nat.* (2)**14**: 45–80, 166–221.

FISCHER, P. 1878a. Diagnoses molluscorum novorum. *J. Conchyliol.* **26**: 211–213.

——— 1878b. Genres *Calcar, Trochus, Xenophora, Tectarius, Risella*. *In*: Kiener, L. C. *Species général et iconographie des coquilles vivantes*. . . . vol. 11. Paris: J-B. Bailliere.

HINDS, R. B. 1844. Mollusca. *In*: The *Zoology of the voyage of HMS* Sulphur *under the command of Capt. Sir Edward Belcher during the years* 1836–42. London: Smith, Elder. Vol. 2: 1–72, 21 pls.

HOUBRICK, R. S. 1978. The family Cerithiidae in the Indo-Pacific. Part 1: the genera *Rhinoclavis, Pseudovertagus* and *Clavocerithium*. *Monographs of marine Mollusca* **1**: 1–130.

——— 1990. Review of the genus *Colina* H. and A. Adams, 1854 (Cerithiidae: Prosobranchia). *Nautilus* **104**(2): 35–52.

KAY, E. A. 1965. Marine molluscs in the Cuming collection, British Museum (Natural History) described by William Harper Pease. *Bull. Brit. Mus. nat. Hist. Zoology, suppl.* **1**: 1–96, pls 1–14.

——— 1979. *Hawaiian marine shells: reef and shore fauna of Hawaii. Section 4: Mollusca*. Honolulu: Bishop Museum Press. Bernice P. Bishop Museum special publication, **64**(4): i–xviii, 1–653.

KILBURN, R. N. 1976. A revision of the Naticidae of southern Africa and Mozambique (Mollusca). *Ann. Natal Mus.* **22**(3): 829–884.

LINNAEUS, C. VON. 1767. *Systema naturae*. 12th edition. **1**(2), 533–1327 index. Holmiae.

MICHEL, C. 1974. Notes on marine biology studies made in Mauritius. *Mauritius Inst. Bull.* **7**(2): 1–287.

MIENIS, H. K. 1982. Contributions to the knowledge of the malacofauna of Somalia. *Inf. Soc. Belge. Malacol.* **10**(1–4): 57–76.

——— 1990. Riddles from the Red Sea. Is *Clanculus puniceus* living in the Red Sea? *Hawaiian Shell News* **362**: 8.