

***Gulella herberti* spec. nov. (Gastropoda, Pulmonata, Streptaxidae),  
a new species from Swaziland, southern Africa**

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A single characteristic shell with a marked, sharply angled, neck or keel and an almost completely disconnected aperture with four-fold dentition among which a very prominent angular lamella is described as *Gulella herberti* spec. nov. from Mbabane, Swaziland, southern Africa. A few notes on the terrestrial molluscs of Swaziland are added. Also, *Gulella pervitrea* (Preston, 1913) should be expunged from the southern African list.

Key words: Gastropoda, Pulmonata, Streptaxidae, *Gulella*, southern Africa, Swaziland, taxonomy.

INTRODUCTION

Many years ago some shells of *Gulella* in the Natal Museum (Pietermaritzburg, South Africa) were recognized as representing various undescribed species. Relevant notes were filed and forgotten in the fullness of time. In checking through old files preliminary descriptions turned up and the specimens were recovered for study. Among these there is a single characteristic shell from Swaziland. In view of the fact that it is unlikely that another specimen will be available in the near future, the shell in question is here described as a representative of a new taxon. Collection abbreviations used are the following: NM for Natal Museum, Pietermaritzburg; RMNH for National Museum of Natural History (formerly Rijksmuseum van Natuurlijke Historie), Leiden.

As regards land molluscs the Kingdom of Swaziland in the eastern parts of southern Africa is virtually terra incognita. In Connolly's classic comprehensive monographic treatment of the southern African non-marine molluscs (1939), there is only a single record of a land snail from Swaziland (p. 76): *Gulella swaziensis* from Bremersdorp (now Manzini). To the present author's knowledge the sum total of all published Swaziland records (Altena, 1966; Van Bruggen, 1966a,b, 1967a,b, 1969, 1985; Forcart, 1967; Herbert, 1997) results in the following rather meagre checklist to which three new records are added.

*Laevicaulis n. natalensis* (Krauss, 1848) [Forcart, 1967: slug]

*Rachis jejuna* (Melvill & Ponsonby, 1893) [Van Bruggen, 1969]

*Gulella collicola* Van Bruggen, 1966 [Van Bruggen, 1966b]

*Gulella contraria* Connolly, 1932 [Van Bruggen, 1985]

*Gulella instabilis* (Sturany, 1898), new record – Mbabane, W. Falcon colln., don. H. Boswell & A.C. van Bruggen (RMNH)

*Gulella perissodonta* (Sturany, 1898) [Van Bruggen, 1969]

*Gulella swaziensis* Connolly, 1932 [Connolly, 1939]

*Gulella triglochis* (Melvill & Ponsonby, 1903) [Van Bruggen, 1969]

*Gulella warreni* (Melvill & Ponsonby, 1903), new record – dense bush at c. 400 m. a.s.l. along road northward from Gollel (now Lavumisa) to (I)Ngwavuma, where it crosses the Lebombo ridge (i.e. c. 10 km from turn-off from main road), 8.i.1964, leg. A.C. & W.H. van Bruggen (NM, RMNH)

*Natalina cafra* (Férussac, 1821), new record – Mbabane, 17.x.1938, leg. L.D. Brongersma (RMNH)

*Trochonanina mozambicensis* (Pfeiffer, 1855) [Van Bruggen, 1966a]

*Archachatina transvaalensis* (Smith, 1878) [Van Bruggen, 1967b]

*Metachatina kraussi* (Pfeiffer, 1846) [Van Bruggen, 1969]

*Achatina immaculata* Lamarck, 1822 [Van Bruggen, 1966a]

*Deroceas laeve* (Müller, 1774) [Altena, 1966; Van Bruggen, 1967a; Herbert, 1997; slug, alien species].

There is still unpublished material in the Natal Museum (e.g. specimens collected by A.C. & W.H. van Bruggen in south-eastern Swaziland in January 1964, and more modern material) and in the Leiden museum collected by L.D. Brongersma in 1938. Naturalists have always been fascinated by the rich biodiversity of the nearby (tropical) parts of the South African province of KwaZulu-Natal (northern Zululand: Tongaland/Maputaland) so that a number of studies have been devoted to this particular area. Yet, Swaziland occupies a biogeographically interesting position in southern Africa because the mean 18° C July isotherm (defining a tropical climate in the sense of Köppen, 1931) more or less follows the north-south oriented Lebombo range on the borders of Swaziland and north-eastern Zululand (Van Bruggen, 1969: 78, fig. 27). This seemingly excludes Swaziland from the southern African tropics as defined here.

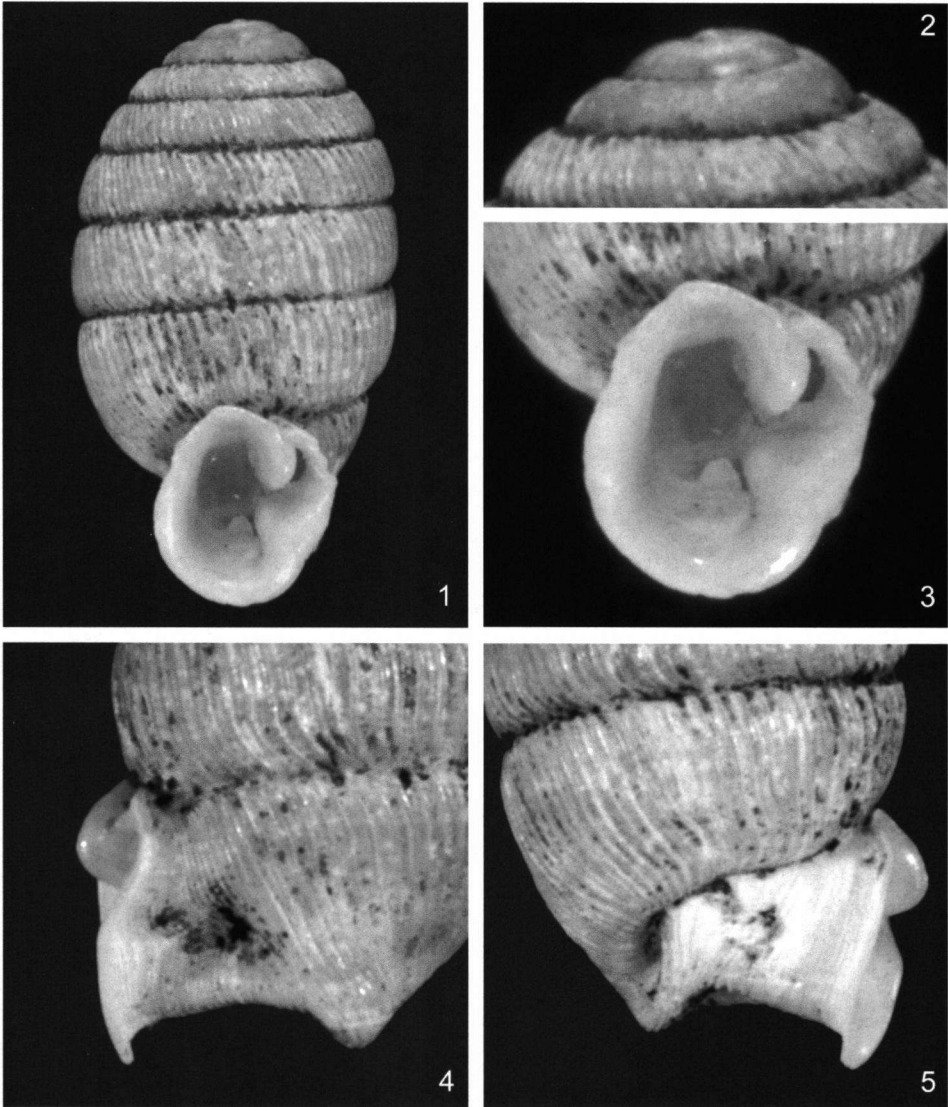
## DESCRIPTION

### *Gulella herberti* spec. nov. (figs 1-5)

Material examined. – Swaziland, Mbabane, c. 1000 m a.s.l., 1939, leg. Dr. R.F. Lawrence (holotype: NMSA L6693/T2000, figs 1-5).

Diagnosis. – A species of *Gulella* s.l. characterized by a smallish ovate, costulate shell with smooth apex, seven-and-a-half whorls, and an almost completely detached aperture (Herbert, 2002: 125 – “a continuous, flaring peristome”) with four-fold dentition consisting of a prominent angular lamella, an inrunning labral complex, a deeply situated mid-basal process and a weak columellar process; neck of shell sharply angled forming some kind of keel.

Description. – Shell (fig. 1) smallish, ovate-elongate or barrel-shaped, with somewhat flattened apex, greatest width about the middle of the shell, (semi)transparent. Umbilicus closed. Spire produced, sides convex, tapering to a flattened, hardly subacute, apex (fig. 2). Whorls seven-and-a-half, hardly convex, sculptured with well-marked, fairly close, somewhat oblique and fairly coarse costulae with smooth interstices; the body whorl in front view exhibits c. 26 costulae. Sutures deeply impressed, crenellate. First two whorls smooth, faintly pitted or granulate (fig. 2). Aperture (fig. 3) less than one third of height of shell, ovate, almost totally detached from body whorl, much obstructed by dental processes, peristome well reflected, white and glossy, dentition four-fold. On the right of paries a large oblique, inrunning angular lamella in the form of a continuation or pleat of the upper peristome (in side view this lamella is particularly prominent, see figs 4-5); a large open sinus is limited basally by a well-developed inrunning mid-labral complex (leaving little space between angular and labral processes), corresponding to a marked outside depression (fig. 4) limited basally by a kind of ridge or keel the end of which is sharply angled (here called ‘neck’), which is particularly noticeable behind the peristome on the columellar side (fig. 5); a deeply situated mid-basal denticle; a deeply situated



Figs 1-5. Holotype shell of *Gulella herberti* spec. nov., Mbabane, Swaziland (Natal Museum, Pietermaritzburg, South Africa: no. NMSA L6693/T2000), actual size of shell  $4.0 \times 2.3$  mm. 1, shell in front view; 2, apex with embryonic whorls; 3, aperture more highly enlarged; 4, view behind right (labral) side of aperture (note prominent angular lamella and depression corresponding to labral complex in aperture); 5, view behind peristome on columellar side of aperture (note prominent angular lamella and marked neck of shell). Digital photography by J. Goud.

mamillate inner columellar process.

Measurements of shell:  $4.0 \times 2.3$  mm, l/d 1.73, length of last whorl 2.1 mm, aperture  $1.4 \times 1.3$  mm.

Anatomy. – Unknown.

Distribution. – Swaziland (so far only known from the type locality).

Etymology. – This species is dedicated to my friend, colleague and successor in southern African terrestrial mollusc studies, Dr. Dai G. Herbert of the Natal Museum.

## DISCUSSION

The genus *Gulella* Pfeiffer, 1856, sensu lato, is almost certainly a group of convenience sharing some shell characters. It is likely that it will be split up into a number of separate units as soon as more details of the genital anatomy become known.

Connolly's key (1939: 19-23) to the shells is still the best introduction to differentiating the numerous southern African taxa collected under the name *Gulella*. The new species runs down to groups 3i and 4i where obviously no satisfactory outcome is reached. Next we have to consider the species that have been described or identified since Connolly's treatise (1939: 23-97). These are the following 19 new southern African *Gulella* s.l. taxa:

- Gulella lawrencei* Van Bruggen, 1964 (Mozambique)
- G. cf. pervitrea* (Preston, 1913) [Van Bruggen, 1964]
- G. barnardi* Van Bruggen, 1965 (Mpumalanga)
- G. inobstructa* Van Bruggen, 1965 (Limpopo)
- G. obstructa* Van Bruggen, 1965 (Eastern Cape)
- G. collicola* Van Bruggen, 1966 (Swaziland)
- G. verdcourti* Van Bruggen, 1966 (Limpopo)
- G. browni* Van Bruggen, 1969 (Zululand, Mozambique)
- G. crassidens jonesi* Van Bruggen, 1969 (Zululand)
- G. gouldi discriminanda* Van Bruggen, 1969 (Zululand)
- G. ceciliae* Van Bruggen, 1971 (Zimbabwe)
- G. incurvidens* Van Bruggen, 1972 (Mpumalanga)
- G. appletoni* Van Bruggen, 1975 (Zululand)
- G. wendalinae* Van Bruggen, 1975 (Mpumalanga)
- G. peakei continentalis* Van Bruggen, 1975 (Zululand)
- G. darglensis benthodon* Van Bruggen, 1980 (Eastern Cape)
- G. elliptica tesseraula* Van Bruggen, 1980 (Zululand)
- G. vicina luci* Van Bruggen, 1980 (Zimbabwe)
- G. salpinx* Herbert, 2002 (Eastern Cape)

However, further study of a subadult specimen from Mt. Gorongosa (Mozambique, NM 4065), recorded s.n. "*Gulella cf. pervitrea* (Preston, 1913)" by Van Bruggen (1964: 119), has revealed that it does not belong to this species, mainly because of its columellar process and its comparatively high l/d. There is a possibility that it belongs to *G. lawrencei* Van Bruggen, 1964. The absence of a basal process, which in this species in any case is weak, may be explained by the fact that the shell certainly is subadult. It measures  $7.4 \times 3.3$  mm, l/d 2.24. The type and only known specimen of *G. lawrencei* is smaller and more slender, but it is not impossible that the doubtful specimen, when full-grown, would have developed into a large variant of *G. lawrencei*. The type of the latter measures  $5.6 \times 1.9$  mm, l/d 2.95. It is advisable to leave this matter in abeyance until further material becomes

available (if ever). Thus, *G. peroitrea* should definitely be expunged from the southern African list.

A close scrutiny of the above newly introduced taxa has revealed nothing like what is here described as *G. herberti* spec. nov. *Gulella salpinx* has a (much more) flaring apertural margin, but at the same time displays a wide open aperture with minimal dentition so that the lack of obstruction allows for the exit of juvenile snails ex utero. The present new species cannot by any means be ovoviviparous because of the much obstructed aperture. Also, the sharply angled neck is highly characteristic – a feature rarely observed in this genus group.

Dr Reginald Frederick Lawrence (1897-1987), long connected to the Natal Museum as director and arachnologist (1935-1964), was an avid and skilled collector of arthropods living in leaf litter on the forest floor. Incidentally he came across small terrestrial molluscs which invariably were incorporated in the Natal Museum collections. Usually his labelling was quite adequate as regards his forest locations and it is to be regretted that in the present case there is no indication where exactly *Gulella herberti* spec. nov. was found. It is known that Lawrence made only a few collecting trips to or including Swaziland; at that time (1939) there was still a lot of forest around Mbabane. A search through a number of his papers on forest floor arthropods has revealed that a number is recorded from Mbabane, some dated as of January 1939. None of these does give any more details as regards the locality. However, the type locality of *G. collicola* is "Mbabane, ravine of mountain slopes, ± 3000 ft., 23 November 1964, leg. R.F. Lawrence" (Van Bruggen, 1966b: 72). The question now arises: may we assume that Lawrence did return in 1964 to his old locality known to be so prolific? If so, then this might also be the exact type locality of the taxon here described.

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#### NOTE ADDED IN PROOF

The unexpected has indeed happened. Dr. Herbert recently submitted photos of newly collected *Gulella* material from Barberton (c. 60 km north of Mbabane), Mpumalanga, in the Natal Museum. It is evident that the specimens indeed belong to *G. herberti* spec. nov. so that obviously the distribution is not limited to Swaziland.

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