

**Notes on the status of *Gulella caryatis* var. *diabensis* Connolly, 1939
(Gastropoda, Pulmonata, Streptaxidae), a land snail from Namibia**

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Opgedragen aan mijn oude vriend Hans Kuiper
ter gelegenheid van zijn 90ste verjaardag;
hij bracht mij de liefde voor de landslakken bij!

The presence of a right basal process in the aperture of the shell of *Gulella caryatis* (Melvill & Ponsonby, 1898) var. *diabensis* Connolly, 1939, combined with more whorls at the same size and isolated occurrence in south-western Africa (Namibia), contributes to its proposed status as a separate taxon on the species level: *Gulella diabensis*.

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

INTRODUCTION

The carnivorous land snail family Streptaxidae is widely distributed in southern Africa and at the same time is extremely diverse; in fact it is by far the largest family encompassing slightly more than one-fifth of all terrestrial gastropod species locally. However, the distribution over the subcontinent is far from uniform (Van Bruggen, 1973: fig. 1) and it appears that the dry south-western parts of the continent are only sparingly inhabited by just one taxon, described as *Gulella caryatis* var. *diabensis*, and hitherto known as *G. caryatis diabensis*. This taxon, the only one of an otherwise in southern Africa very speciose genus (*Gulella* L. Pfeiffer, 1856, almost certainly a polyphyletic group), is decidedly rare in Namibia. Recently some more material of this form has become available and it is now the time to re-assess its status. In view of its shell morphology and distribution the question arises whether it is indeed a subspecies of *G. caryatis* or not. Unfortunately no anatomical data are available for both taxa.

Museum abbreviations are the following: BM = The Natural History Museum [British Museum (Natural History)], London; NM = Natal Museum, Pietermaritzburg; RMNH = Nationaal Natuurhistorisch Museum (National Museum of Natural History, formerly Rijksmuseum van Natuurlijke Historie), Leiden; SAM = South African Museum, Cape Town; SMF = Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main; ZMB = Museum für Naturkunde der Humboldt-Universität, Berlin. The abbreviation l/d stands for the ratio length/major diameter of the shell; this has been calculated from micrometer readings before translating these into mm. Aperture measurements always refer to height × width.

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THE NAMIBIAN GULELLA

Gulella diabensis Connolly, 1939 (fig. 1)

Gulella caryatis (Melvill & Ponsonby, 1898) var. *diabensis* Connolly, 1939: 40, pl. 2 fig. 1 (shell).

Gulella caryatis diabensis; Van Bruggen, 1970: 68; 1973: 421, fig. 1 (distribution); Van Bruggen & Rolán, 2003: 101, figs 22-24 (shell).

Shell small (always under 4.2 mm), cylindrical and costulate, apex smoothish or granulate; whorls $6\frac{3}{4}$ - $7\frac{1}{4}$. Aperture small and much obstructed by six-fold dentition, i.e. a fairly large and vertical parietal lamella, a fairly large labral complex with two cusps corresponding to an outside depression, a small but deeply situated right basal process, a small more superficial left basal process, and a deeply situated mamillate columellar complex.

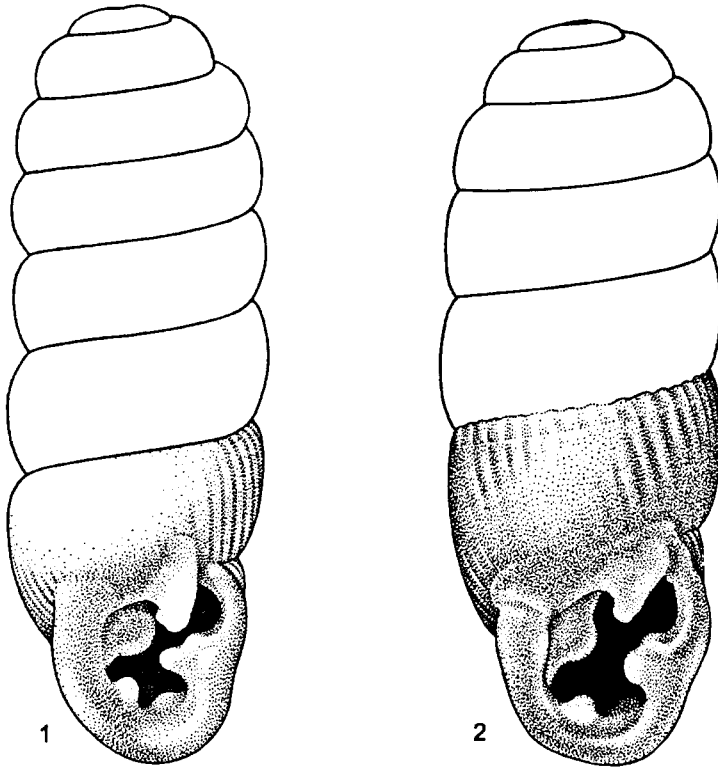
Apart from the published records shown above, two more samples were studied, i.e., Omaruru Dist., farm Ondongantje, leg. W. Hoesch, 26.i.1951 & B. von Kadzler, 1954 (SMF 70827/4, here shown as SMF); Grootfontein Dist., Farm Grosswarlencourt, Kleiner Kuduberg, 19.viii.1993, leg./don. P. Schnell (RMNH, also in private collection of Mr. P. Schnell, Kerpen-Buir, Germany). In addition, there is a paratype in Frankfurt am Main: SMF 203935/1 (ex Jaeckel colln.). All numerical shell data (inclusive of those of Van Bruggen, 1970: 68, here shown as NM) may now be tabulated as follows (for the Rolán specimens vide Van Bruggen & Rolán, 2003, here shown as Rolán; for six shells the number of whorls unfortunately was not recorded):

NM	2.9 × 1.1 mm	l/d 2.48	-
RMNH	3.2 × 1.2 mm	l/d 2.55	-
Rolán	3.2 × 1.2 mm	l/d 2.55	6+ whorls
RMNH	3.2 × 1.2 mm	l/d 2.57	-
NM	3.2 × 1.2 mm	l/d 2.60	-
paratype (SMF)	3.2 × 1.2 mm	l/d 2.68	6 $\frac{3}{4}$ whorls
Rolán	3.2 × 1.3 mm	l/d 2.48	5 $\frac{3}{4}$ whorls
RMNH	3.3 × 1.2 mm	l/d 2.65	-
holotype	3.5 × 1.2 mm	l/d 2.80	7 $\frac{1}{4}$ whorls
Rolán	3.5 × 1.4 mm	l/d 2.55	6 $\frac{1}{2}$ whorls
paratype (ZMB)	3.6 × 1.2 mm	l/d 2.85	7 whorls
SMF	3.6 × 1.2 mm	l/d 2.85	7 whorls
RMNH	3.7 × 1.4 mm	l/d 2.68	-
SMF	3.8 × 1.3 mm	l/d 2.90	7 whorls
SMF	3.8 × 1.3 mm	l/d 2.90	7 whorls
SMF	4.1 × 1.4 mm	l/d 3.00	7+ whorls

This may be summarized as follows: 2.9-4.1 × 1.1-1.4 mm, l/d 2.48-3.00 (n = 16), 6+- $7\frac{1}{4}$ whorls. The table also shows that variation does not cluster, i.e. that the four samples studied do show some intrapopulation variation, but the SMF shells appear to be comparatively large and slender:

NM	2.9-3.2 × 1.1-1.2 mm	l/d 2.48-2.60
Rolán	3.2-3.5 × 1.2-1.4 mm	l/d 2.48-2.55
RMNH	3.2-3.7 × 1.2-1.4 mm	l/d 2.55-2.68
types	3.2-3.6 × 1.2 mm	l/d 2.68-2.85
SMF	3.6-4.1 × 1.2-1.4 mm	l/d 2.85-3.00

The few known localities of *G. diabensis* appear to cluster in north-eastern Namibia (fig. 3), while the type locality is widely distant in Great Namaqualand, "Djab [or Diab] is situated about a hundred miles SW. of Windhoek" (Van Bruggen, 1970: 69).



Figs 1-2. Shells of southern African *Gulella* species. 1, *G. diabensis* Conn., holotype, 3.5 × 1.2 mm, whorls 7¼ (ZMB), note deeply situated right basal denticle; 2, *G. caryatis* (M. & P.), Eastern Cape, Cradock, leg. J. Farquhar, 3.4 × 1.2 mm, whorls 6¾ (NM). H. Heijn del.

THE STATUS OF THE NAMIBIAN GULELLA

As regards the status of this form, it is not altogether easy to come to a well-founded conclusion. *G. caryatis* (Melvill & Ponsonby, 1898) is a South African species known from a few scattered localities in the Eastern Cape (Cradock, Cathcart, Grahamstown and surroundings), and the Northern Cape (Prieska) (distribution according to Connolly, 1939; BM, NM, RMNH, SAM: fig. 3).

Connolly (1939: 46) defines his var. *diabensis* as follows: "Differs from all examples of *caryatis* I have seen in having more convex whorls and stronger sculpture, which extends in equal strength right across the later whorls." However, these characters are subject to sometimes considerable variation and therefore his diagnosis appears to be without any taxonomic significance. We may summarize that Connolly was aware of the separate identity of his taxon, but had seen too few specimens (a maximum of two or three from only one locality) to notice the significant characters so that he failed to properly diagnose it.

G. caryatis (Melvill & Ponsonby, 1898) does vary a lot as regards shell characters (size, number of whorls, shape, sculpture, apertural dentition), reason why it has two synonyms (refer to Connolly, 1939: 45 – *Ennea montana* Melvill & Ponsonby, 1903, and *E. parallela* Melvill & Ponsonby, 1909). The measurements of specimens studied may be tabulated as follows:

Martindale	3.0 × 1.1 mm	l/d 2.64	6 whorls	NM
Grahamstown	3.1 × 1.1 mm	l/d 2.78	6¼ whorls	NM
Grahamstown	3.1 × 1.2 mm	l/d 2.47	6 whorls	NM
Martindale	3.1 × 1.2 mm	l/d 2.58	6+ whorls	NM
Grahamstown	3.2 × 1.2 mm	l/d 2.55	6½ whorls	RMNH
Grahamstown	3.2 × 1.2 mm	l/d 2.60	6+ whorls	NM
Grahamstown	3.2 × 1.4 mm	l/d 2.36	6+ whorls	RMNH
Cradock	3.4 × 1.2 mm	l/d 2.75	6¾ whorls	NM
Martindale	3.4 × 1.3 mm	l/d 2.57	6½ whorls	NM
Martindale	3.4 × 1.3 mm	l/d 2.68	6¼ whorls	NM
Grahamstown	3.5 × 1.4 mm	l/d 2.55	6½ whorls	RMNH
Prieska	4.2 × 1.6 mm	l/d 2.61	6½ whorls	SAM
Prieska	4.9 × 1.8 mm	l/d 2.72	<7 whorls	SAM
Prieska	5.0 × 1.7 mm	l/d 2.94	<8 whorls	BM

Summary of these measurements: 3.0-5.0 × 1.1-1.8 mm, l/d 2.36-2.94, 6-<8 whorls.

The three Prieska specimens (BM, SAM) are aberrant, measuring 4.2-5.0 × 1.6-1.8 mm, l/d 2.61-2.94, 6½-<8 whorls, representing by far the largest known shells in the species. In fact there is a gap of 0.7 mm in length between the largest specimen from the Grahamstown area and the smallest from Prieska; small though this difference may be, it does represent about 14-23 % of the total shell height. The locality Prieska is closest to the nearest locality of *G. diabensis* (the type locality), but all shells of the latter are not only smaller to considerably smaller than the Prieska ones, i.e. 2.9-4.1 vs 4.2-5.0 mm, but also have fewer whorls: 6+-7¼ vs. 6½-<8. As regards *G. caryatis*, all this makes one doubt the relationship between the Prieska population and the Eastern Cape sensu lato populations – does the Prieska material represent a taxon on its own? However, a note of caution is in order here: all data on the Prieska population are derived from only three shells.

Shells of *G. diabensis* at the same size as those of *G. caryatis* (i.e. shells of the Grahamstown area sensu lato) always have from ¼ to ½ more whorls, i.e. 6+-7¼ vs 6-6¾.

The taxa are widely allopatric as shown in the map (fig. 3). The distance in a straight line between the southernmost locality of *G. caryatis diabensis* (the type locality) and the westernmost locality of *G. c. caryatis* (Prieska) amounts to c. 900 km. The Northern Cape is malacologically severely undercollected so that this gap may seem larger than it really is.

However, it appears that there is an overlooked character in the apertural dentition that clearly differentiates *G. caryatis* from the Namibian taxon. Fig. 1, depicting the holotype of Connolly's *G. caryatis* var. *diabensis*, clearly shows the presence of a deeply situated right basal process in the aperture, which denticle is present in all Namibian material and absent in all examined material of *G. caryatis* (BM, NM, RMNH, SAM, fig. 2). Relationship with *G. caryatis* is therefore probably not as close as surmised by Connolly when he described the var. *diabensis*. This character is now considered sufficient reason to treat the Namibian form as a completely separate taxon, *Gulella diabensis* Connolly, 1939.

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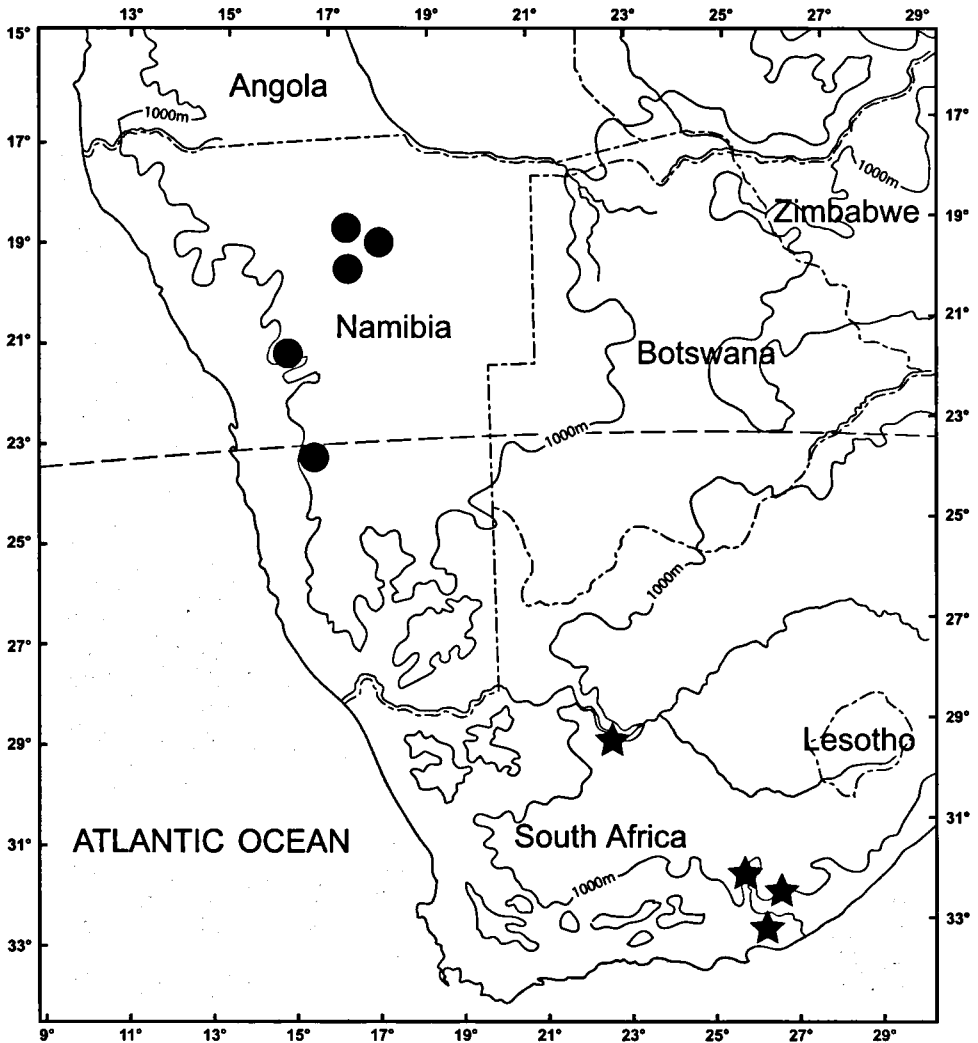


Fig. 3. Distribution of *Gulella diabensis* Conn. (dots) and *G. caryatis* (M. & P.) (stars). Note the apparent gap between known distribution patterns. H.C.M. Caspers del.

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