

NOTES, INFORMATION & NEWS

Kalidos griffithshauchleri, sp. nov., Madagascar's Largest Helicarionid Snail (Pulmonata)

Kenneth C. Emberton

Florida Museum of Natural History, Box 117800,
Gainesville, Florida 32611-7800, USA

Introduction

Owen Griffiths of Mauritius (along with his associates and assistants) was a major participant in the author's 1992–1996 survey and inventory of Madagascar's land mollusks. Griffiths' unique and strongest contribution was in surveying the Reserve Naturelle Integrale de Tsingy de Bemaraha, a little-explored limestone karst region in west-central Madagascar. After some preliminary scouting in 1992 and 1993, Griffiths led expeditions in 1995 and 1996 into the southern and central-plus-northern parts of Bemaraha, respectively (Griffiths, 1995, 1996). Among the many new species of land snails resulting from Griffiths' Bemaraha collections (in Emberton, 1999a, b, 2001, 2002, in press) is the remarkable new *Kalidos* described herein.

The genus *Kalidos* Gude, 1911, is endemic to Madagascar; its sister group has been predicted from biogeographic considerations to lie among the ariophantines of India (Emberton & Rakotomalala, 1996). The *Faune de Madagascar* (Fischer-Piette et al., 1994) listed 71 *Kalidos* species (23 new), Emberton (1994) added one new species, and Emberton & Pearce (2000) added four new species. Thus this current new species brings the total to 77.

The author's 1992–1996 survey and inventory of Madagascar yielded over 2000 lots of *Kalidos* species. Only 438 of these lots have been identified so far, and the 1995–1996 Bemaraha *Kalidos* materials have not been reached yet in this process. However, three specimens of *K. griffithshauchleri*, sp. nov. that were collected in 1992–1993 were sent to the author's attention some time ago and merit description now—in advance of the author's plan to monograph the genus—because of this species' unique size and its conservation implications for Bemaraha Reserve.

The author's identifications of 438 of the some 2000 lots of *Kalidos* have yielded 65 presumed species, of which 42 seem new and undescribed (Emberton, unpublished). Thus Madagascar's total *Kalidos* species now in collections is likely to be at least 250 (contradicting Emberton & Rakotomalala's 1996: table II estimate of "75?"). Most of those species are small, and none begins to approach this new species in its gigantic shell size. All other known and collected Madagascan helicarionids, with the exception of this gigantic Bemaraha species, are much smaller in size

(Fischer-Piette et al., 1994; Emberton 1994; Emberton & Pearce, 2000; Emberton, unpublished).

Systematics

Higher classification follows Ponder & Lindberg (1997), Nordsieck (1986), and Vaught (1989). Type materials are placed in the Florida Museum of Natural History, University of Florida, Gainesville (UF) and the Australian Museum, Sydney (AMS). Description follows the format applied to other *Kalidos* by Emberton & Pearce (2000).

Class GASTROPODA

Clade HETEROBRANCHIA

Clade PULMONATA

Order STYLOMMATOPHORA

Suborder SIGMURETHRA

Infraorder HELICIDA

Superfamily HELICARIONOIDEA

Family HELICARIONIDAE

Subfamily ARIOPHANTINAE

Genus *Kalidos* Gude, 1911

Kalidos griffithshauchleri Emberton, sp. nov.

(Figure 1)

Kalidos sp. 1, Griffiths, 1995; Griffiths, 1996.

Diagnosis: Unique within the genus for its large initial whorls and very rapid whorl-expansion rate producing a gigantic adult shell. *Kalidos griffithshauchleri*, sp. nov. is most similar to *K. bathensis* (Robson, 1914), from which it differs in both its larger initial whorls (diameters of first and first-plus-second whorls = 2.2 mm and 5.1 mm versus 1.7 mm and 3.8 mm) and its looser coiling (whorls/ $\ln$ [diameter] 1.51–1.60 versus 1.76).

Holotype: UF285447 (1 adult), Owen Griffiths lot A1680: Madagascar: near Tsingy de Bemaraha: 15 km east of Antsalova: in cave mouth, April 1992.

Paratypes: UF285448 (1 adult), type lot. AMS C. 204776 (1 adult), Owen Griffiths lot A1737: Madagascar: near Tsingy de Bemaraha: southeast of Antsalova: near Tsiandro: in cave mouth, April 1993.

Description of holotype:

Shell Size and Shape. Shell rather thick and robust for

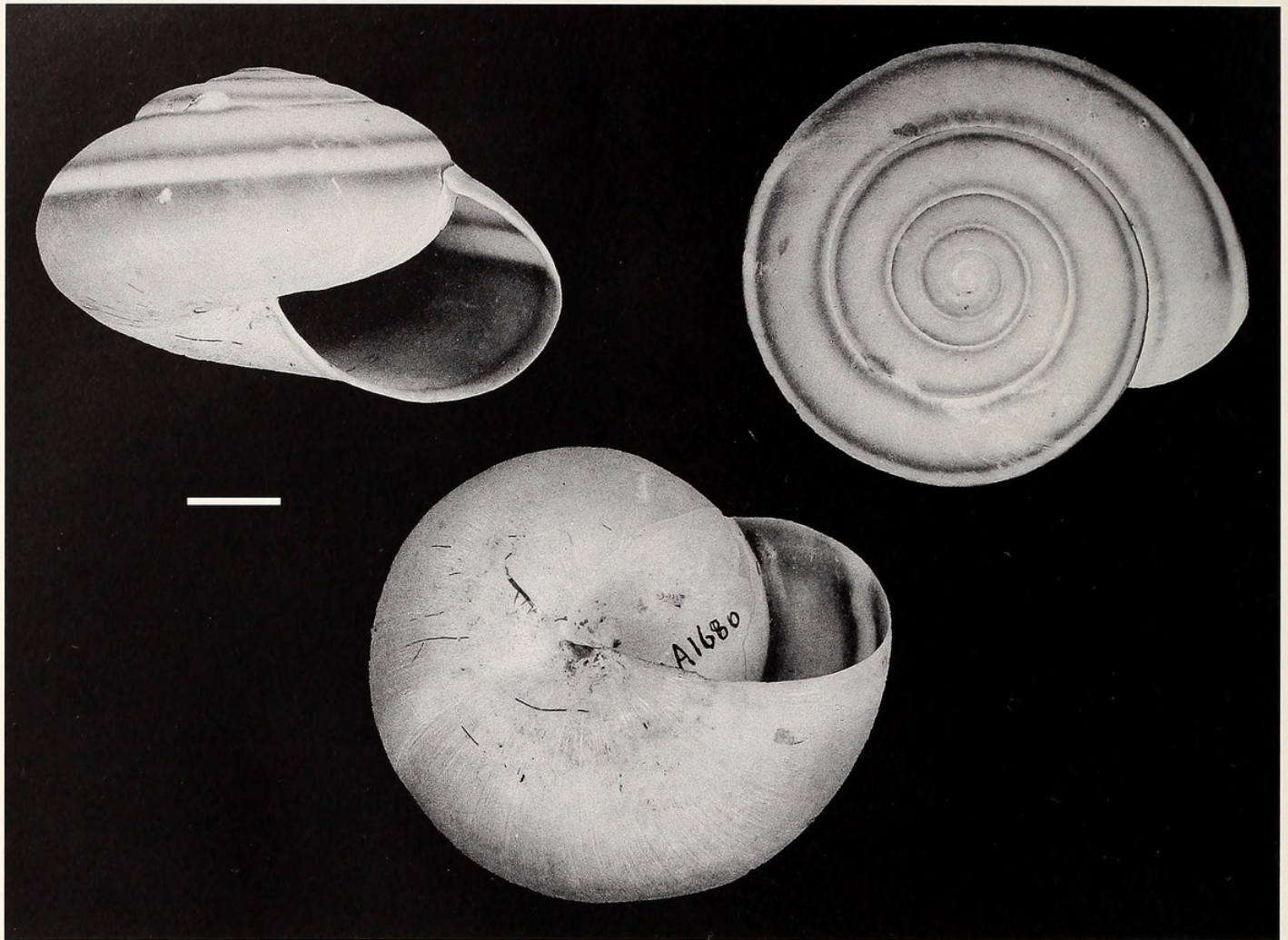


Figure 1. *Kalidos griffithshauchleri* Emberton, sp. nov., holotype. Scale bar = 10 mm.

the genus. Diameter 58.5 mm, height 38.4 mm (h/d 0.66). Whorls 6.5 (coiling tightness = $\text{whorls}/\ln(\text{diameter}) = 1.6$). Spire angle 155 degrees. Shell domed. Whorl periphery rounded. A faint, rather narrow, subsutural, spiral gutter is present throughout ontogeny. Suture depth one-half whorl from aperture is 1.4% of shell diameter. Subsutural line (where inside of shell wall meets previous whorl) not visible through shell. Umbilicus 3% of shell diameter, half covered by columellar reflection of apertural lip. Shell color whitish above, and a light yellowish brown below that grades to whitish on the base, marked both by a very conspicuous supraparipheral spiral band that is white, sharply bordered above and below by dark brown to purple-brown, and by a narrower and less conspicuous subsutural spiral band that is white bordered below by dark brown to purple-brown.

Aperture. Aperture width (measured parallel to a line between the columellar and upper peristome insertions) 45% of shell diameter. Aperture height-width ratio (height measured to and perpendicular to a line between the columellar and upper peristome insertions) 0.90. Distance

between the columellar and upper peristome insertions 87% of aperture width. Penultimate whorl projects into body whorl, occupying 23% of aperture height. Lower peristome angle where it meets parietal wall (apertural view) 20 degrees.

Apex. First whorl diameter 2.2 mm. First two whorls diameter 5.1 mm. Embryonic whorls 2.1. Embryonic sculpture (partially eroded) of close-set, dense, wrinkled axial striae crossed by dense, fine spiral grooves.

Post-Embryonic Shell Sculpture. Close-set, obliquely axial striae, somewhat uneven in width, crossed by close-set spiral grooves to produce a pustulose appearance. Spiral grooves and their resulting pustules fading below the shell periphery, absent from the base, where only axial striae are visible.

Variation:

	Diameter	Ht/Diam	Whorls	Wh/ $\ln$ Diam
Holotype	58.5	0.66	6.5	1.60
"Paratopotype"	56.3	0.60	6.1	1.51
Paratype	57.0	0.62	6.2	1.53

Griffiths (1996) reported a maximum diameter of 65 mm in the central and northern parts of Bemaraha Reserve.

The "paratopotype" is the freshest shell, with embryonic sculpture much more sharply detailed than in the holotype or other paratype.

Distribution: Bemaraha Reserve and its karstic vicinity, from the Manombolo River north to at least opposite the town of Antsalova, latitudes 18°02'–19°08'S, longitudes 44°32'–44°53'E (Griffiths, 1995, 1996).

Ecology: Griffiths (1995, 1996) reported, "This is the most obvious tsingy [=limestone karst] snail at Bemaraha. It can be found dead all over the tsingy in large numbers. Aestivates deep inside narrow tsingy slots where it sticks itself firmly to the substrate."

Etymology: For this species' co-discoverers, Owen Griffiths and Jorg Hauchler, both of Mauritius.

Acknowledgments. The staff at Ranomafana National Park Project in Antananarivo helped in getting collecting and export permits. Owen Griffiths' field surveys of Bemaraha were aided especially by Jorg Hauchler, Vincent Florens, and Roger Randallana.

Literature Cited

- EMBERTON, K. C. 1994. Thirty new species of Madagascan land snails. *Proceedings of the Academy of Natural Sciences of Philadelphia* 145:147–189.
- EMBERTON, K. C. 1999a. New acavid snails from Madagascar. *American Malacological Bulletin* 15:83–96.
- EMBERTON, K. C. 1999b. *Edentulina* of Madagascar (Pulmonata: Streptaxidae). *American Malacological Bulletin* 15:97–108.
- EMBERTON, K. C. 2001. Dentate *Gulella* of Madagascar (Pulmonata: Streptaxidae). *American Malacological Bulletin* 16: 71–129.
- EMBERTON, K. C. 2002. The genus *Boucardicus*, a Madagascan endemic (Caenogastropoda: Cyclophoridae). *Archiv für Molluskenkunde* 130:1–199.
- EMBERTON, K. C. In press. *Parvedentulina* and edentate *Gulella* of Madagascar (Pulmonata: Streptaxidae). *Archiv für Molluskenkunde*.
- EMBERTON, K. C. & M. F. RAKOTOMALALA. 1996. Madagascar's biogeographically most informative land-snail taxa. Pp. 563–574 in W. R. LOURENCO (ed.), *Biogeography of Madagascar*. Editions de l'ORSTOM: Paris.
- EMBERTON, K. C. & T. A. PEARCE. 2000. Helicarionid snails of Mounts Mahimana, Ilapiry, and Vasiha, southeastern Madagascar. *The Veliger* 43:218–247.
- FISCHER-PIETTE, E., C. P. BLANC, F. BLANC & F. SALVAT. 1994. Gastéropodes terrestres pulmonés. *Faune de Madagascar* 83: 1–552.
- GRIFFITHS, O. 1995. A preliminary survey of the non marine Mollusca of the southern part of the Reserve Naturelle Intégrale de Bemaraha in the central west of Madagascar. *The Papustyla*, 9.
- GRIFFITHS, O. 1996. A survey of the non marine Mollusca of the central and northern parts of the Reserve Naturelle Intégrale de Bemaraha in the central west of Madagascar. *The Papustyla*.
- NORDSIECK, H. 1986. The system of the Stylommatophora (Gastropoda), with special regard to the systematic position of the Clausiliidae. II. Importance of the shell and distribution. *Archiv für Molluskenkunde* 117:93–116.
- PONDER, W. F. & D. R. LINDBERG. 1997. Towards a phylogeny of gastropod molluscs: an analysis using morphological characters. *Zoological Journal of the Linnean Society* 119: 83–265.
- ROBSON, G. C. 1914. On a collection of land and freshwater Gastropoda from Madagascar, with descriptions of new genera and new species. *Zoological Journal of the Linnean Society* 32:375–389, pl. 35, figs. 1–6.
- VAUGHT, K. C. 1989. *A Classification of the Living Mollusca*. American Malacologists Incorporated: Melbourne, Florida. 189 pp.

Fungi and Other Items Consumed by the Blue-Gray Tailed Slug (*Prophysaon coeruleum*) and the Papillose Tailed Slug (*Prophysaon dubium*)

Rex McGraw¹, Nancy Duncan¹ and Efren Cazares²

¹Bureau of Land Management, 777 NW Garden Valley Boulevard, Roseburg, Oregon 97470, USA

²Department of Forest Science, Oregon State University, Corvallis, Oregon 97331, USA

Introduction

Six species of slugs, in addition to 29 other aquatic and terrestrial mollusk species, were listed in the Record of Decision for the Northwest Forest Plan (USDA and USDI, 1994). They were included in a list of rare taxa associated with late successional forests, referred to as Survey and Manage species, that require additional mitigation in order to assure their persistence. These species were listed, in part, due to the lack of information on their natural history and ecology.

Two Survey and Manage slug species were the focus of this study: the blue-gray tailed slug (*Prophysaon coeruleum* Cockerell, 1890) and the papillose tailed slug (*P. dubium* Cockerell, 1890). Studies have shown slugs of other species to be mycophagists (Buller, 1922; Chatfield, 1976; Pallant, 1969). Field observations of these two *Prophysaon* slug species on and within partially eaten fungi suggested that they are also mycophagous. We tested this hypothesis by examining fecal pellets from these slug species for evidence of ingested fungal material.

Materials and Methods

P. coeruleum and *P. dubium* were collected during field surveys within several proposed timber sale areas in Douglas County, Oregon on Bureau of Land Management lands from March 1998 through May 1999. These were



Emberton, Kenneth C. 2002. "Kalidos griffithshauchleri, sp nov., Madagascar's largest helicarionid snail (Pulmonata)." *The veliger* 45, 259–261.

View This Item Online: <https://www.biodiversitylibrary.org/item/134673>

Permalink: <https://www.biodiversitylibrary.org/partpdf/97968>

Holding Institution

Smithsonian Libraries and Archives

Sponsored by

Biodiversity Heritage Library

Copyright & Reuse

Copyright Status: In Copyright. Digitized with the permission of the rights holder.

Rights Holder: California Malacozoological Society

License: <http://creativecommons.org/licenses/by-nc-sa/3.0/>

Rights: <https://www.biodiversitylibrary.org/permissions/>

This document was created from content at the **Biodiversity Heritage Library**, the world's largest open access digital library for biodiversity literature and archives. Visit BHL at <https://www.biodiversitylibrary.org>.