

**New studies on the land molluscs of Malawi, a second interim progress report.
Prolegomena for a new checklist**

A.C. VAN BRUGGEN

National Museum of Natural History, P.O. Box 9517, 2300 RA Leiden, The Netherlands;
bruggen@naturalis.nnm.nl

New data for Malawi additional to Van Bruggen & Meredith (1984) and Van Bruggen (1993b) are given. The contents of papers published since 1993 and unpublished data have been collated. *Cyathopoma tres* n. sp. is described from the Misuku Hills in the North. *Pseudoglossula (Kempioconcha) liederi* (Mts.) and *Cecilioides pergracilis* Conn. are new to the Malawi list. Furthermore a number of taxa already known to occur in Malawi has been treated in (more) detail. These notes may serve as prolegomena for a new checklist of the terrestrial molluscs of the country.

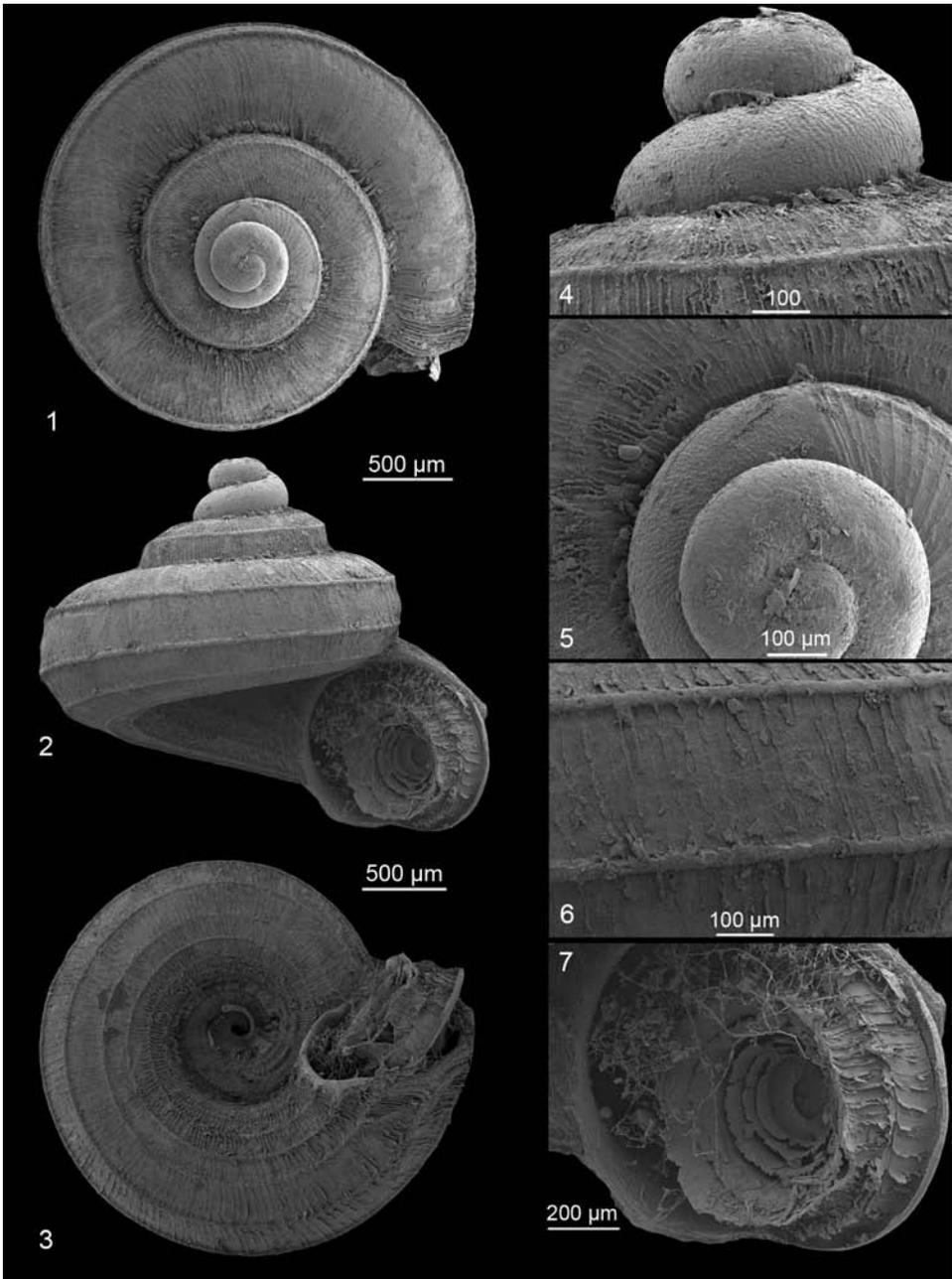
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INTRODUCTION

In order not to lose coherence it is imperative that long drawn-out projects are subject to interim reporting. New studies on the terrestrial molluscs of Malawi were initiated in the late seventies of last century culminating in a preliminary checklist in 1984 (Van Bruggen & Meredith, 1984) and an additional first interim report appeared nine years later (Van Bruggen, 1993). Now, fifteen years later, although progress has been slow, it is time to start updating the available data. More Malawi material has been received at the Leiden Museum. In 1993 the author and his wife made a third collecting trip mainly exploring the southern and central districts of the country, resulting in material from 14 stations. Since that time valuable series were received from Dr K.-D.B. Dijkstra (2002, one specimen of which subsequently was designated a paratype of *Gulella streptostelopsis*) and Mr W.J. Kuijper. The latter, a staff member of the Archaeology Department of Leiden University, in processing material from a southern Malawi site up to c. 60 cm deep (2003-2004), noticed abundant land mollusc material which he passed on to the present author. This contained a number of species with small shells, among which taxa seldom seen such as the subterranean *Cecilioides* (see below).

Meanwhile the following publications on the land molluscs of Malawi have appeared: Van Bruggen (1992, 1993a/b, 1995, 1996, 2000, 2001a, 2001b, 2007b, 2007c, 2008), and Van Bruggen & De Winter (2003). The following papers also more or less extensively deal with terrestrial snails from that country: Van Bruggen (1994a, 1994b, 2006), Van Bruggen & De Winter (1995), Mead (1994), Mordan (1998), and De Winter & Van Bruggen (1992). In addition, the publication of Herbert & Kilburn's book (2004) is, of course, a landmark in African terrestrial malacology.



Figs. 1-7. *Cyathopoma tres* n. sp., holotype shell (RMNH 109.611), Mugesse Forest in N. Malawi; maximum major diameter 2.5 mm. 1, top view; 2, side view; 3, bottom view (all at the same enlargement); 4, apex (protoconch), side view, more highly enlarged; 5, do., top view; 6, sculpture (i.e. periostracum), bottom view, more highly enlarged; 7, operculum in situ (the threads shown are probably fungal threads).

SEM photos J. Goud (RMNH).

It should be reiterated here that the geographical position of Malawi in South-Central Africa at the crossroads of Central, East and southern Africa is unique – the fauna and flora contain elements of all three regions with a limited restricted range endemism.

Acknowledgements are due to Ms Hazel M. Meredith (Newquay, U.K.) for manifold assistance including reviewing the manuscript and Messrs J. Goud and E. Kruidenier (RMNH) for the photographs. Abbreviations used are HMM for Ms Hazel M. Meredith, l/d for the ratio length/major diameter of shells, BM for The Natural History Museum (London), MCZ for Museum of Comparative Zoology (Cambridge, Mass., U.S.A.), NMW for National Museum of Wales (Cardiff), and RMNH for National Museum of Natural History (Leiden).

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NEW DATA IN SYSTEMATIC ORDER

Family Cyclophoridae

The following new species is described on a single subadult (?) shell; it is unlikely that at the present time more material from this remote locality will become available. A number of collectors [A. Loveridge (see his publications 1953, 1954), but mainly (co-workers of) Ms. H.M. Meredith] have visited the type locality (some repeatedly), among which the present author and his wife (1990), but this particular snail has not been found again. It is either very rare or strictly localized in the Mugesse Forest Reserve. It is therefore best now to draw attention to this peculiar taxon so that in future searches will have some guidance what to look for. The Malawi locality is the southernmost for the genus in Africa.

De Winter (2002: 243-244) first of all shows *Afroditropis* Bequaert & Clench, 1936, to be a synonym of *Cyathopoma* W. & H. Blanford, 1861, and next enumerates all known species of African *Cyathopoma*, a total of seven of which one doubtful: *C. mollerii* (Nobre, 1886), from São Thomé, possibly representing another genus.

Cyathopoma tres nov. spec. (figs 1-7)

Afroditropis strongi Bequaert & Clench, 1936, sensu Van Bruggen, 1993: 101.

[*Cyathopoma*]. *strongi* – De Winter, 2002: 244, “?Malawi”.

Diagnosis. – A species of *Cyathopoma* with the shell slightly wider than high, maximum major diameter probably c. 3.0 mm, body whorl with only six major spiral keels, of which none above the periphery, teleoconch with pronounced axial sculpture, and operculum with a remarkably high spiral crest on the outer surface.

Description. – Shell (figs 1-7) small, turbinata, comparatively high-spired, slightly wider than high, covered by a coarse and deciduous pale brick-red periostracum (fig. 6), apical whorls dark greyish blue (colour may be due to desiccated body parts still inside). Whorls in the subadult (?) holotype just under 4 (adult will probably have about 4.5 whorls), protoconch (figs 4-5) 1¾ whorls, prominent, particularly in side view (fig. 2). Protoconch with indistinct axial sculpture, together with a vague, indeed hardly dis-

cernible, spiral element resulting in a weakly reticulate pattern, transition to teleoconch with more marked axial sculpture is noticeable (figs 1 and 5); axial sculpture on teleoconch fairly distant (less so towards the aperture) and coarse, particularly near the suture, so that this looks crenulated, crossing the spiral keels – axial sculpture is here interpreted as folds in the periostracum. Body whorl with prominent and blunt major spiral keels, of which about six are visible on the external side of the body whorl and inside the umbilicus; top keel on the suture (in fact constituting the suture), second keel just above the periphery, third keel just below the periphery, fourth keel at the level of attachment of the apex of the aperture, additional keels further down into the umbilicus, first/second/third keels about equidistant, next keels closer together; there is no spiral element on the surface of the teleoconch except for the major spiral keels (fig. 6). Sutures fairly deep and canaliculated, covered by the uppermost keel. Umbilicus wide and deep, about one third of maximum major diameter, exposing all previous whorls. Aperture more or less circular, not detached from spire. Exposed side of operculum concave due to a thin, spirally coiled, noticeably high and serrated lamella that increases in height towards the outer edge (fig. 7); inner side of operculum (fig. 3) flat and smooth.

Measurements of shell (holotype only): height \times maximum major diameter 2.1 \times 2.5 mm, l/d 0.85, umbilicus c. 0.9 mm, aperture 1.0 \times 1.0 mm, operculum 0.6 \times 0.6 mm, whorls <4.

Anatomy. – No data available.

Distribution. – So far only known from the Mugesse Forest Reserve in the far north of Malawi.

Material examined. – Malawi, Chitipa Dist., Misuku Hills, Mugesse Forest Reserve, evergreen forest, leaf litter, c. 1900 m, 12.IX.1986, leg. Mrs I. La Croix, don. Ms H.M. Meredith, holotype (RMNH 109.611).

Etymology. – *tres* (a noun in apposition), Latin for *three*, the species being named after three persons, i.e., Dr E. Gittenberger on his official retirement, my colleague Dr A.J. de Winter for suggesting the above taxon being new, and the collector, Mrs Isobyl la Croix, one of the star collectors of Hazel M. Meredith's Malawi snail collections. It is also the third time the species in question is discussed, viz., in Van Bruggen (1993), in De Winter (2002), and above. In addition, the present paper is the third contribution to a new checklist of the terrestrial molluscs of Malawi.

The new species occurs at the very edge of the range of *Cyathopoma*, at the same time representing a considerable extension southward. The nearest localities are in Kenya and on the Uganda/D.R.Congo border. The other species in this assemblage as enumerated by De Winter (2002) are *C. africanum* Pilsbry, 1919, *C. azaniense* Verdcourt, 1978, *C. camerunensis* De Winter, 2002, *C. papillaris* (Von Martens, 1892), *C. straeleni* Adam, 1987, and *C. stroggi* (Bequaert & Clench, 1936). The combination of the following characters makes the new species sufficiently different to merit its own status: small size and markedly turbinate shape, pronounced axial sculpture on the teleoconch, limited number of spiral keels, and the remarkably high spiral crest on the outer surface of the operculum.

Family Vertiginidae

Negulus ruwenzoriensis Adam, 1957

Negulus ruwenzoriensis is treated in detail by Van Bruggen (1994a: 14-17) and it appears to occur throughout Malawi.

Truncatellina naivashaensis (Preston, 1911)

In addition to *Truncatellina ninagongonis* (Pilsbry, 1935) (Van Bruggen, 1993b: 101) and *T. pygmaeorum* (Van Bruggen & Meredith, 1984: 160) the genus is represented in Malawi by one more species (Van Bruggen, 1994b), i.e. *T. naivashaensis* (from one locality only in the south-central part of the country).

Truncatellina pygmaeorum (Pilsbry & Cockerell, 1933)

T. pygmaeorum has about the same distribution as *T. ninagongonis*. However, the former, reaching its southern limits in southern Malawi (Van Bruggen, 1994b, anatomical data supplied), has recently been shown to occur in eastern South Africa – a considerable extension southward (Herbert & Kilburn, 2004: 112, fig., map, in montane *Podocarpus* forests on the Drakensberg escarpment in north-western KwaZulu-Natal).

Family Cerastidae

Cerastus procrastinationis (Van Bruggen, 1993)

Cerastua procrastinationis, a new species from the Misuku Hills and the western edge of the Nyika Plateau on the border of Zambia and Malawi (Chowo Forest), is the southernmost representative of a Central-East African group that occurs on the mountains as far north as Ethiopia. Nomenclatorial rules dictate change in spelling of the generic name (fide Verdcourt, 2006: 19, footnote).

Limicena nyanasa (E.A. Smith, 1899) (fig. 8)

This species has been treated in detail (shell, radula, genitalia) by Mordan (1998), confirming its position as a monotypic genus in the Cerastidae. Distribution is shown to encompass southern Tanzania (Lake Rukwa), southern Malawi ("Zomba Plateau", Mt. Chiradzulu, Mt. Mulanje area), central Mozambique [Mt. Vengo (recte Panga), Macequece; Mtisherra R. valley] and Zambia (Victoria Falls). Distribution in Malawi seems restricted to the southern districts, although there is one record from the Rumphi District (fig. 8). Interestingly, there are no records from the Zomba Plateau proper; extensive collections have been made here by a number of collectors so that absence may be genuine. Mordan (loc. cit.: 60, 65) has restricted the type locality to "Zomba Plateau at 5000 ft." However, my colleague Hazel Meredith (in litt., 30.V.2008) states firmly "This species has not been found on any of the plateaux. All Malawi sites are riverine/streamside and are between c. 550 m and c. 1250 m." Another record, i.e. from the Mpatamanga Gorge on the Shire River, seems somewhat out of place. This is in an essentially arid area, but the six specimens (among which some very fresh shells) were found amongst boulders on the East bank of the river. Undoubtedly these were washed down from a suitable patch of riverine forest not too far upstream.

Malawi material (all specimens in RMNH). – Mulanje Dist., Lichenya Forest Reserve, Mabuka, riverine forest leaf litter, c. 550 m, 25.I.1986, leg. HMM; ibidem, 11.IV.1987, leg. HMM; ibidem, c. 600 m, V.1986, leg. J. Chapman; near Mulanje, Ruo Estate, Wyke-Smith's grave, c. 650 m, V.1986, leg. J. Chapman; near Mulanje, Ruo Estate, evergreen forest at junction of Ruo-Muloza Rivers, on Wyke-Smith's gravestone, c. 650 m, 4.II.1983, leg. HMM; Mt. Mulanje, Lichenya path between Satwe stream and Breakfast Rock, c. 1250 m, 5.IX.1986, leg. HMM; Mwanza Dist., Mpatamanga Gorge, Shire River (Blantyre-Mwanza

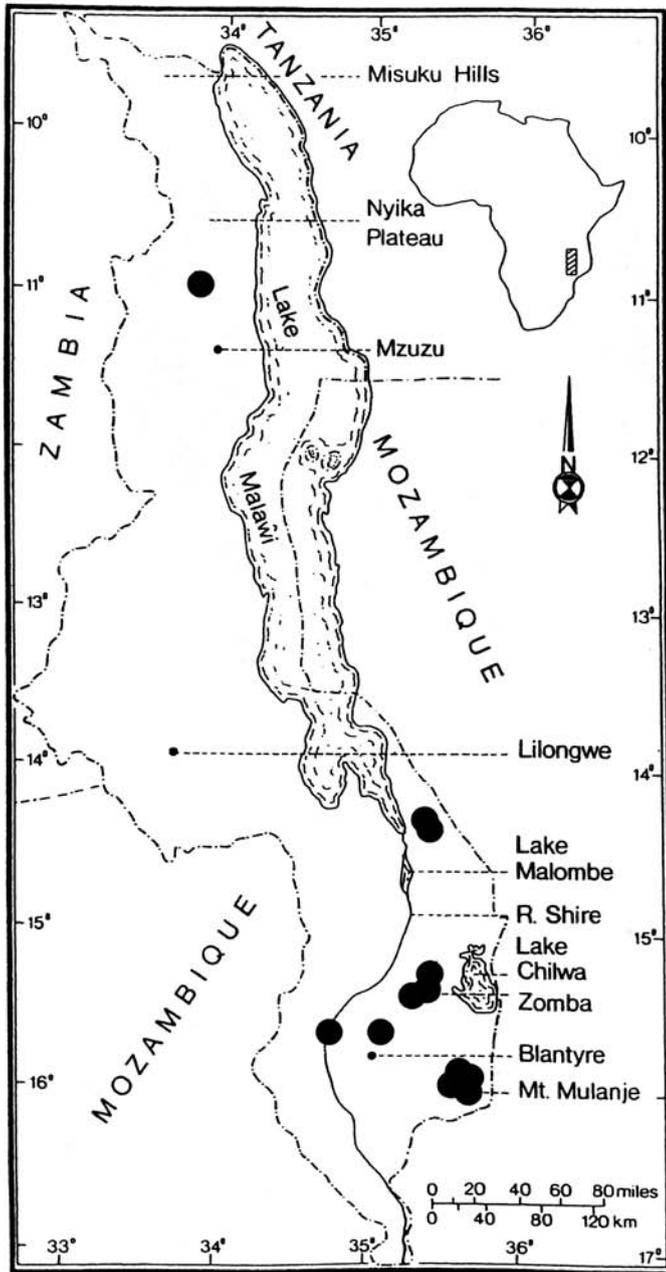


Fig. 8. Distribution in Malawi of *Limicena nyasana* (Smith).

road), c. 300 m, 20.VII.1986, leg. HMM; Chiradzulu Dist., Njuli River riverine forest leaf litter, c. 1100 m, 16.II.1985, leg. HMM; do., "litter kept for several weeks in laboratory"; Zomba, Namitembo River, riverine forest leaf litter, c. 1000 m, 24.IV.1984, leg. HMM; Zomba, Mulunguzi River bridge, *Newtonia* forest leaf litter, c. 1000 m, 22.III.1986, leg. HMM; Zomba, Mulunguzi River bridge, riverine forest, under bark, c. 1000 m, 25.III.1987, leg. HMM; Zomba, Mulunguzi, garden stream and tree bark, c. 1000 m, 21.I.1985, leg. HMM; Zomba, forest road, Mbewa gulley, leaf litter, c. 1100 m, 31.III.1986, leg. HMM; Zomba Dist., Zomba, forest road Naisi, aestivating under *Khaya nyasica* bark, c. 1000 m, 2.VIII.1986, leg. HMM; Zomba forest road *Ficus* gulley, leaf litter, c. 1100 m, 10.VIII.1986, leg. HMM; Mangochi Dist., Mt. Mangochi, riverine forest leaf litter below Skull Rock, c. 1200 m, 19.IV.1987, leg. HMM; Uzuzu Hill, gulley SW. side, leaf litter, c. 1000 m, 18.IV.1987, leg. HMM; Rumphu Dist., Rumphu Gorge, leaf litter by bridge, c. 1100 m, 5.IV.1987, leg. HMM.

Rachis cunctatoris Van Bruggen, 1975 (fig. 9)

A colour picture is supplied here (fig. 9) as an improvement to the original figure (Van Bruggen, 1975: 220, fig. 7). Apart from a mere record in Van Bruggen & Meredith (1984) his taxon has not been mentioned in the literature since the original description in 1975.

The Leiden Museum contains the following additional specimens: – Chikwawa Dist., Lengwe National Park, under bushes between chalets and main hide path, c. 100 m, 14.XI.1982, leg./don. HMM; ibidem under bushes at edge of thicket on Happold's grid, c. 100 m, 17.XII.1984, leg./don. HMM; ibidem, thicket, 100 m, 13.II.1985, leg. M. Happold, don. HMM; Blantyre Dist., Nkula, "22 mi NNW. of Chileka, Middle Shire River", end XII.1948/early I.1949, leg. A. Loveridge (MCZ, duplicates in RMNH; Loveridge, 1953); Machinga Dist., Liwonde National Park, on *Commiphora* near line 1, c. 500 m, 30.XII.1978, leg./don. HMM.

This shows that as far as present data go the species is restricted to the dry lowlands in south-western Malawi. The Loveridge material measures 16.1-18.5 × 7.9-9.0 mm, l/d 2.03-2.18, 6½ -<7 whorls which dimensions are almost entirely within the range of those of the type material (Van Bruggen, 1975: 218): 15.4-20.9 × 7.0-8.8 mm, l/d 2.03-2.37, 6½ -7½ whorls. The Liwonde shells, both with damaged apex (length c. 15 mm), are fairly squat with l/d <1.90 – these may not be full-grown. No material for dissection has been yet obtained.

Classification with the genus *Rachis* may perhaps be considered preliminary in view of that of some of the other local coloured cerastids (see below).

Rhachistia braunsi (Von Martens, 1869) var. *quadricingulata* (E.A. Smith, 1890)

Rhachistia chiradzuluensis (E.A. Smith, 1899)

Rhachistia usagarica (E.A. Smith, 1890)

These three species are now classified with *Rhachistia* Connolly, 1925, rather than *Rhachidina* Thiele, 1911, following Dr P.D. Mordan in Herbert & Kilburn (2004: 123).

Family Achatinidae

Achatina (*Lissachatina*) *immaculata* Lamarck, 1822

Achatina (*Lissachatina*) *mulanjensis* Crowley & Pain, 1981, is a synonym of the above taxon. Van Bruggen (2007c: 24) writes as follows: "According to Ms. Meredith *Achatina*



Figs 9-10. Voucher specimens of Cerastidae from Malawi. 9, holotype shell of *Rachis cunctatoris* vB. (RMNH 55014), length 18.7 mm (cf. fig. 7 in Van Bruggen, 1975: 220); 10, shell of *Pseudoglessula liederii* (Mts.) (RMNH), length 27.6 mm, both specimens from Lengwe National Park. Photos E. Kruidenier and J. Goud (RMNH)

(Lissachatina) mulanjensis Crowley & Pain 1981, purportedly endemic to Mt. Mulanje (type locality: Lauderdale Estate, "rain forest near the Mlosa River below the crater"), appears to be a pallid morph of *Achatina immaculata*. She writes (manuscript notes compiled in the late eighties of last century; live material studied from the Tea Estates at Mulanje): "Evidence from shell size, dissection and segregation of the two forms in the progeny of

controlled mating suggests that the yellowish-brown *Achatina mulanjensis* is likely to be a genetic morph of the streaked *Achatina immaculata*."

This is sufficient evidence for the present author who has the relevant data and drawings in his files to fully accept Ms. Meredith's findings. What remains now is to get this confirmed by molecular data.

Bequaertina pinto (Bourguignat, 1889)

Mead (1994) studied this taxon in detail and it transpires that it was featured in the literature relevant to Malawi under a variety of names, e.g. *Achatina fragilis* E.A. Smith, 1899 [nec *A. fragilis* Deshayes, 1864], "*Achatina*" *nyikaensis* Pilsbry, 1909 (in the original checklist by Van Bruggen & Meredith, 1984: 161), *Callistoplepa nyikaensis* and *Callistoplepa nyikaensis*. Full synonymy is given in Mead (loc. cit.: 26). This author also discusses the range, which is extensive. In fact, this is the most widespread species in his new genus: "eastern Zaïre, eastern and western central Tanzania, nearly all of Malawi, south central Zambia, southern and eastern Zimbabwe, and far west central Mozambique" (Mead, loc. cit.: 29, fig. 16 on p. 17).

Bruggenina bequaerti Crowley & Pain, 1961

Archachatina bequaerti Crowley & Pain, 1961, appears to belong to the new genus *Bruggenina* Mead, 2004 (vide Mead, 2004: 421, 444, fig. 38, Uzumara Forest Reserve, Nyika Plateau).

Family Subulinidae

Pseudoglossula (Kempioconcha) lieder (Von Martens, 1895) (fig. 10)

A fresh shell, measuring 27.6 x 12.1 mm, l/d 2.28, with 8+ whorls (RMNH, fig. 10), from Chikwawa Dist., Lengwe National Park, thicket along main road just beyond southern junction Mbawala Drive, 2.3 km from rest camp, leaf litter, c. 100 m a.s.l., 26.V.1993, leg. A.C. & W.H. van Bruggen, STA 1993-04, has been identified with this taxon following Verdcourt's key (Verdcourt, 1967: 52). It runs down this key without any trouble and also shows the "apical whorls with costae only slightly more widely spaced than on the lower whorls". This is the southernmost locality for a little known East African species; according to Verdcourt (2006: 24) it is to date only known from its type locality in south-eastern Tanzania (SW. Lindi). Indeed, this is an enormous extension of the known range. Incidentally, *P. lieder* is not mentioned in Verdcourt's checklist of the snails of the coastal forests of East Africa (Verdcourt, 2000).

Family Ferussaciidae

Cecilioides pergracilis Connolly, 1939

Cecilioides pergracilis Connolly, 1939: 371, pl. 8 fig. 13; Van Bruggen & Rolán, 2003: 97-98, fig. 21; Herbert & Kilburn, 2004: 127, figs.; Van Bruggen, 2007a: 109; Rowson, 2007: 452.

This is a species new to Malawi. So far only one sample is available (RMNH): Chikwawa Dist., Mbewe ya Mitengo (near entrance of Lengwe National Park), in soil (surface to c. 60 cm deep), c. 100 m a.s.l., 2003-2004, leg. Archaeology Department Leiden

University, don. W.J. Kuijper. Judging by the number of specimens obtained the species must be locally common (duplicates deposited in BM and NMW). The largest shell in this lot measures 4.7×1.2 mm, l/d 3.95, c. 6 whorls. This confirms the identity of this taxon as being comparatively large and slender – in fact, any southern/central/East African *Cecilioides* with a length of over 3.9 mm, an l/d of over 3.5 and 5-6 whorls is likely to be *C. pergracilis*. With a distribution encompassing Namibia, southern Africa, (southern) Malawi, and (perhaps) northern Kenya this taxon can no longer be considered a “southern species” (Rowson, loc. cit.).

Shells of the genus *Cecilioides* are difficult to identify; for an incomplete series of figures of African taxa the reader is referred to Van Bruggen & Van Goethem (2001: 155-158, figs 2-12).

Cecilioides (Geostilbia) callipeplum (Connolly, 1923)

Further to the note in Van Bruggen (1993: 103) relevant material was more closely scrutinized and it appears that the Leiden museum has the following samples from Malawi: Mulanje Dist., Litchenya Forest Reserve, Mabuka, riverine forest leaf litter, c. 550 m, 25.I.1986, leg./don. HMM; ibidem, 11.IV.1987, leg./don. HMM; ibidem, but c. 600 m, V.1986, leg. J. Chapman, don. HMM; Mini Mini Estate near Mulanje, leaf litter from hill, c. 600 m, 18.III.1984, leg./don. HMM; Lujeri Estate near Mulanje, Ruo River bank forest leaf litter, c. 900 m, 18.III.1984, leg./don. HMM; Zomba Dist., Zomba, Chilwa Road, Kadzamira's farm, riverine vegetation leaf litter, c. 750 m, 15.XI.1987, leg. P. Kamkodo, don. HMM; Zomba, Chilwa Road, Chimpeni Estate, *Brachystegia* leaf litter, c. 750 m, 14.XII.1985, leg./don. HMM.

The seven above samples are only from a few localities in the southern part of the country (Mulanje and Zomba Districts). The sculpture is rather characteristic although shape and size may vary; the largest shells measure 3.4 mm (<5 whorls; Mabuka, 25.I.1986) and 4.0 mm (>5 whorls; Mini Mini Estate). The student is referred to the figures of Verdcourt (1986: 376, figs. 1-4) and Rowson (2007: 464, fig. 21).

Micractaeon koptawelilensis (Germain, 1934)

Micractaeon koptawelilensis is a taxon widely distributed in tropical Africa. It does occur in Malawi, where sparingly distributed from south to north; it here reaches its southernmost limits at Mt. Mulanje (Van Bruggen & De Winter, 1995: 81, 89, figs 17-18).

Family Streptaxidae

Austromarconia hamiltoni (E.A. Smith, 1897)

Austromarconia malavensis (Kobelt, 1904)

What was featured as *Marconia hamiltoni* in the 1984 checklist is now considered to represent a new genus in the Streptaxidae (likely to be endemic to the uplands in south-eastern Malawi) with two species, i.e. *Austromarconia hamiltoni* (E.A. Smith, 1897) and *A. malavensis* (Kobelt, 1904) (fide Van Bruggen & De Winter, 2003). For the present these two species may be the only genuine endemics in Malawi; with the splitting of what was considered to be one taxon into two, a species is added to the list. The above paper also contains anatomical details.

Streptostele (Raffraya) herma Connolly, 1912 (fig. 11)

Occurrence of *Streptostele herma* in Malawi is casually mentioned in Van Bruggen (2006: 127, figs 2-3): "restricted to the south-central parts of the country". This may be detailed as follows (fig. 11).

Malawi material (all specimens in RMNH unless otherwise indicated). – Chikwawa Dist., Mbewe ya Mitengo (near entrance of Lengwe National Park), in soil (surface to c. 60 cm deep), c. 100 m, 2003-2004, leg. Archaeology Dept. Leiden University, don. W.J. Kuijper; Mulanje Dist., Thuchila Forest Reserve, leaf litter, c. 500 m, 11.VII.1986, leg. Malawi Herbarium; Litchenya Forest Reserve, Mabuka, riverine forest leaf litter, c. 550 m, 25.I.1986, leg. HMM; ibidem, 11.IV.1987, leg. HMM; Mulanje, Mini Mini Estate, Mini Mini River bank leaf litter, c. 600 m, 2.III.1985, leg. HMM; Mulanje, Mini Mini Estate, Boyd-Moss garden, one from ant spoil heap, alive on moss on bricks, c. 600 m, 4.II.1983, leg. HMM; Mulanje, Mini Mini Estate, leaf litter from hill, c. 600 m, 18.III.1984, leg. HMM; Mulanje area, Likabula Forest Station (15.9402°S, 35.5054°E), riverine gallery forest, leg. M. Cunningham, 15.I.2005, L6788 (Natal Museum); Nandino Forest Reserve E. of Mchese, miombo leaf litter, c. 1100 m, 7.VIII.1986, leg. H. Patel; Mwanza Dist., Mpatamanga Gorge, Shire River east bank, among boulders, c. 300 m, 20.VII.1986, leg. HMM; Zomba Dist., Zomba, University of Malawi, in litter in Chancellor College dry fish ponds, c. 800 m, 4.III.1986, leg. HMM; southern slope of Zomba Plateau, Zomba-Namitembo road, Namitembo River riverine forest leaf litter, c. 1000 m, 24.IV.1984, leg. HMM; Mangochi Dist., Nkopola Lodge/Lake Malawi, leaf litter on path to bat cave, c. 500 m, 14.V.1985, leg. HMM; Nkudzi Bay, leaf litter between rocks on point, c. 600 m, 6.VII.1986, leg. HMM; Lilongwe Dist., Lilongwe Nature Sanctuary, forest leaf litter, c. 1100 m, 5.V.1984, leg. Dr J.H. Seyani & H. Patel; ibidem, 10.XI.1984, leg. Dr J.H. Seyani & H. Patel.

According to Ms Hazel Meredith (in litt., 25.III.2008) *S. herma* also occurs in the Mpita Forest, a seasonal evergreen forest at c. 1100 m near Thondwe in the Zomba Dist. Unfortunately no voucher specimens have been preserved, but occurrence here is entirely conversant with the distribution pattern in Malawi. Incidentally, characteristic though this local distribution pattern is, it should be considered in conjunction with fig. 3 in Van Bruggen (2006 : 126) – for the time being no explanation can be offered for restriction in Malawi to the south-central districts.

Gulella farquhari (Melvill & Ponsonby, 1895)

Gulella farquhari already features in the first additional paper (Van Bruggen, 1993b); a new evaluation of the material (Van Bruggen, 1992, containing anatomical details) shows that it occurs throughout Malawi above c. 1200 m.

Gulella hildae Van Bruggen, 2001

Gulella hildae was described on a single specimen from the Mt. Mulanje area. The author stated on p. 104: "The fact that so far only one shell of *G. hildae* has been obtained may indicate that either the species is extremely rare or indeed very localized in its distribution." However, this very characteristic taxon has now appeared in various collections from Tanzania (Verdcourt, 2004: 312, figs. 18-19, Mt. Meru, N. Tanzania; Verdcourt, 2006: 50, "Arusha, Usa R."; P. Tattersfield, in litt.).

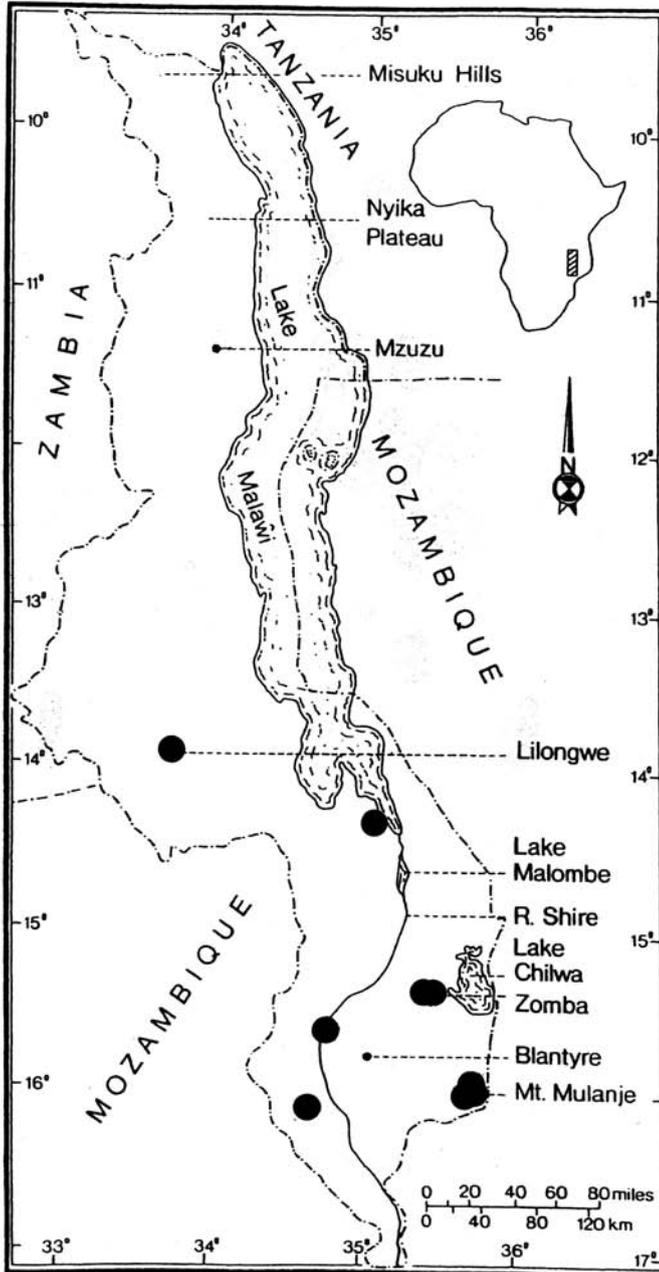


Fig. 11. Distribution in Malawi of *Streptostele herma* Conn. This map should be compared to the one featured in Van Bruggen (2006, 126, fig. 3) depicting all records from throughout the range of *S. herma*.

Rowson (2007: 441, fig. 50) suggests that *G. hildae* is a synonym of *G. jod* (Preston, 1910) "although the teeth differ slightly from the type of *jod*." The fact that Verdcourt (2006: 50) keeps *G. jod* and *G. hildae* separate is for the time being sufficient reason to consider both independent taxa.

Gulella (?*Plicigulella*) *loveridgei* Van Bruggen, 1996

Gulella (?*Plicigulella*) *loveridgei* is described from the Misuku Hills in the far north. Attribution to *Plicigulella* is doubtful as this taxon has been poorly defined (see e.g., discussion in Van Bruggen, 1996: 329-331). Thus far it has not been recorded from elsewhere.

As far as known the only other Malawi representative of *Plicigulella* s.s., *G. (P.) v. vicina* (Smith, 1899), an otherwise in Central-East Africa widely distributed taxon, in Malawi only occurs in the Zomba and Chiradzulu Districts in the South.

Gulella meredithae Van Bruggen, 2000

Van Bruggen & Meredith (1984: 165) stated "the *Gulella browni* Van Bruggen (1969: 71) complex is represented by an as yet unidentified species from Malawi." This has now been fittingly named *Gulella meredithae* (after Ms Hazel M. Meredith, Malawi's land mollusc collector par excellence) and appears to be a characteristic species with juvenile apertural dentition. It is common in Central and Northern Malawi with most localities centred on the forests of the Nyika Plateau. So far it has not been recorded from elsewhere.

Gulella microrutshuruensis Van Bruggen, 1995

Gulella microrutshuruensis superficially looks like a miniature of *G. rutshuruensis* Pilsbry, 1919; it was described from the Misuku Hills in northern Malawi. So far it has not been recorded from outside Malawi.

Gulella streptostelopsis Van Bruggen, 2007

Gulella streptostelopsis is described from forest environment mainly between 1000 and 1500 m a.s.l. scattered throughout Malawi south of 11°S. According to Rowson (2007: 442, fig. 52) this species also occurs at sea level on Zanzibar Is. Therefore it exhibits a wide distribution. Undoubtedly it does live in the intervening area – obviously its small size (length of the shell 2.00-2.37 mm) and hidden existence among the cryptofauna in the leaf litter on the forest floor has precluded it being collected easily.

Gulella sursum Van Bruggen, 2001

Gulella sursum is a newly described species inhabiting at least two forests on the eastern rim of the Nyika Plateau in the north. So far it has not been found elsewhere.

Gulella systemanaturae Van Bruggen, 2008

Gulella systemanaturae is described from forest between c. 1700-c. 2100 m on Dedza Mountain in South Central Malawi. So far it has not been recorded from elsewhere although the Malawi collections in Leiden contain material of kindred forms. The name celebrates 250 years of zoological nomenclature, i.e. publication of the 10th edition of *Systema Naturae* by Carolus Linnaeus in 1758.

Family Charopidae

Prositala butumbiana (Von Martens, 1895)

Prositala butumbiana (Von Martens, 1895) now takes precedence over the earlier combination *Massaihelix butumbiana* (Von Martens, 1895) [*Prositala* Germain, 1915, against *Massaihelix* Germain, 1913] following a proposal by Verdcourt & Van Bruggen (2002) and granted by the International Commission on Zoological Nomenclature in 2004 (Opinion 2081).

Family Euconulidae

Afropunctum seminium (Morelet, 1873)

Afropunctum seminium occurs in south-central Malawi as far north as Lilongwe; anatomical data show that this genus belongs to the family Euconulidae (De Winter & Van Bruggen, 1992).

Afroguppya rumrutiensis (Preston, 1911)

What used to be called '*Guppya*' *rumrutiensis* (Van Bruggen & Meredith, 1984) is now classified as *Afroguppya rumrutiensis*. This new genus also on the base of anatomical details belongs to the Euconulidae (De Winter & Van Bruggen, 1992); this species occurs throughout Malawi but not in the Misuku Hills in the north.

The above two species were originally classified with the family Charopidae.

DISCUSSION

The net result of the above new data is as follows:

- change in status (4: *Afroditropis* is a junior synonym of *Cyathopoma*; *Afropunctum seminium* is not a charopid but an euconulid; the genus '*Guppya*' in the combination *G. rumrutiensis* is replaced by the new genus *Afroguppya* for '*Guppya*' *rumrutiensis*; '*Marconia*' in the combination *M. hamiltoni* is replaced by the new genus *Austromarconia* for two Malawi species of Streptaxidae);
- genera new to Malawi (5: *Bequaertina*, *Bruggenina*, *Micractaeon*, *Austromarconia*, *Afroguppya*);
- new species (9: *Cyathopoma tres* n. sp., here described; *Cerastus procrastinationis*, *Gulella hildae*, *G. loveridgei*, *G. meredithae*, *G. microrutshuruensis*, *G. streptostelopsis*, *G. sursum*, *G. systemanaturae*);
- species new to Malawi (13, inclusive of new taxa);
- one species deleted [*Achatina mulanjensis* is a synonym (pale morph) of *A. immaculata*].

The following of the above-mentioned species have not (yet) been recorded from outside Malawi: *Cyathopoma tres* n. sp., *Gulella loveridgei*, *G. meredithae*, *G. microrutshuruensis*, *G. sursum*, and *G. systemanaturae*. In view of their distribution in Malawi it is unlikely that these are endemics. According to Van Bruggen (2007c) of the taxa in the present paper only the two *Austromarconia* species may be genuine endemics. More species new to science await detailed studies and undoubtedly more species new to the list will be identified in the near future.

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