Australasian Journal of Herpetology **40:56-58.**
Published 10 July 2019.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

New subspecies of the Australian Bandy Bandy *Vermicella* Gray, 1841 (Serpentes: Elapidae).

LSID urn:lsid:zoobank.org:pub:B58ABACB-E8B6-4BC1-9DDA-05B092E6FB3F

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Received 20 July 2018, Accepted 30 July 2018, Published 12 June 2019.

ABSTRACT

A review of the wide-ranging Bandy Bandy group of snakes, *Vermicella* Gray, 1841, as defined by Cogger (2014), via the inspection of specimens from all parts of their range in continental Australia, indicates a greater diversity than indicated by the current taxonomy.

As a result, the composition of the genus is changed, via a revised taxonomy presented herein.

Five species are now recognized.

This paper also formally names three new subspecies based on consistent morphological differences in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999).

Keywords: Taxonomy; nomenclature; snakes; Elapidae; Australia; Queensland; Victoria; Western Australia; New South Wales; South Australia; Northern Territory; *Vermicella*; *annulata*; *occipitalis*; *lunulata*; *latizonatus*; *snelli*; *multifasciata*; *intermedia*; *vermiformis*; *parscauda*; new subspecies; *kimberleyensis*; *paulmulvanyi*; *isaensis*.

INTRODUCTION

As part of a wide-ranging audit of the Australian snake fauna, specimens of the iconic Bandy Bandy Snakes (Genus *Vermicella*, Gray, 1841) of all recognized species from across the range of each were inspected with a view to ascertaining if there were any hitherto unnamed forms.

While some apparently unnamed morphologically distinct, geographically disjunct populations were identified, the final publication of this paper was held up pending resolution of the identities of previously named forms and potential synonyms.

This was particularly significant in terms of specimens from Cape York in Queensland, which were being identified in texts as *V. annulata* (Gray, 1841), but clearly involved more than one species-level taxon.

In anticipation of my impending publication, a group of people associated with a group known as the (Wolfgang) Wüster gang and Bryan Fry (the same general group) rushed into publication a description of a relevant new species in the online PRINO (Peer reviewed in name only journal) *Zootaxa*.

While I had intended naming the taxon and the actions of the other authors in hastily coining a new name for the species in order to "scoop" my work, was in breach of the ethics of the rules of *the International Code of Zoological Nomenclature* (Ride *et al.* 1999), that nomen is recognized herein.

That species, now known as *V. parscauda* is the narrow-banded form from northern Cape York in Queensland.

In terms of other previously recognized species, all were recognized bar two, which I have chosen to merge into one, thereby decreasing the number of species. However three distinct regional forms worthy of taxonomic recognition are herein formally named as new subspecies.

MATERIALS, METHODS AND RESULTS

Besides inspecting live specimens, museum specimens and quality photos with accurate location data, I also reviewed all relevant available literature. This included the following: Boulenger (1896), Cogger (2014), Cogger *et al.* (1983), Couper and Covacevich (1996), Covacevich (1971), De Vis (1905), Derez *et al.* (2018), Duméril *et al.* (1851), Gray (1841), Hoser (1989), Keogh and Smith (1996), Krefft (1869), Longman (1915, 1916), Simpson (1973), Storr (1968) and Wells and Wellington (1984, 1985) including sources cited therein.

The results as mentioned already included five species being recognized and some newly identified and named (herein) subspecies as well. Material relevant to this paper was stolen during an illegal armed raid by government wildlife officers on our research facility on 17 Aug 2011 and this was not returned in spite of orders by courts to do so (Court of Appeal Victoria 2014, Victorian Civil and Administrative Tribunal 2015).

The destructive illegal armed raid was initiated by false complaints made by associates of the Wüster gang and Fry.

The actions of the raid and the numerous bogus criminal charges arising from it, all of which were defended in court and won by myself (i.e. all claims by the wildlife department were found to be false) (Court of Appeal Victoria 2014, Victorian Civil and Administrative Tribunal 2015), delayed the publication of this paper in any form indefinitely and also enabled Fry's group to publish their paper online in 2018 naming the North Queensland taxon before I was able to re-gather relevant data to do so.

Before dealing with the descriptions in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* (19999), I raise other significant matters below.

IMPORTANT NOTES AND CONSIDERATIONS

Prior to the resolution of this issue, a group ostensibly led by Bryan Fry rushed out a "paper" in the online PRINO (peer reviewed in name only) journal *Zootaxa* on 16 July 2018 and then SPAM posted the internet and tabloid media with a range of claims, including having caught and discovered a new species of Bandy Bandy from Weipa in Queensland.

This all happened on 16 and 17 July 2018.

They called this taxon *Vermicella parscauda* Derez *et al.* (2018) and it is clearly a different taxon to those already recognized in Cogger (2014) and hence recognized herein.

However the group had not in fact "discovered" the species as alleged by them. It had in fact been known for some years and there were already voucher specimens held in the Queensland Museum in Brisbane.

My own audit of *Vermicella*, Gray, 1841 essentially validated the exiting taxonomy save for minor differences and these related to forms best described as subspecies of previously named forms.

I was unable to reliably separate the species *Vermicella multifasciata* (Longman, 1915) and *V. intermedia* Keogh and Smith, 1996 and had sought to synonymise these taxa, which ironically was one of the few useful bits of evidence provided by Derez *et al.* (2018) in their paper in that they also showed both to be conspecific.

However the west Kimberley population assigned to *V. intermedia* is herein formally described as a new subspecies *V. multifasciata kimberleyensis* based on consistent morphological differences.

In terms of *V. annulata*, the serious issue I faced was ascertaining the provenance of the type specimen and those synonymised with that taxon.

Eventually I was able to ascertain that the types of both *Calamaria annulata* Gray, 1841 and *Elaps occipitalis* Duméril and Bibron, 1854 both conformed with the best known variant of *V. annulata*, this being the form from coastal New South Wales and found further north to North Queensland and including most of both New South Wales and Queensland.

This form is typified by well-defined black and white bands, which on the dorsal surface have fairly even demarcation between the colours and from 2-3 full scales of white on the first two cross bands past that on the nape.

Examples of these snakes in life include that on page 175 of Hoser (1989) or page 937 of Cogger (2014) in the top two photos.

The taxa *Elaps occipitalis* Duméril *et al.* (1854), *Vermicella lunulata* Krefft, G. (1869) and *Rhynchelaps latizonatus* De Vis (1905) all apply to the normal morphotype of *V. annulata* (Gray, 1841).

The specimens assigned to *V. annulata* from north-west Victoria and nearby South Australia are significantly different in that they have a far greater preponderance of black, more jagged demarcation between black and white on the dorsal surface and the first two white bands beyond the name are always narrower than two full scales.

These snakes are geographically separated from other populations and there is no available name for them and so they are formally described for the first time as a new subspecies in this paper as *V. annulata paulmulvanyi subsp. nov.*.

Specimens of *V. annulata* from Mount Isa in Queensland also differ from others in the species in that the white rings are of even width on the dorsum and flanks, versus the otherwise typical widening on the lower flanks in typical *V. annulata.* Hence it is formally named as a new subspecies *V. annulata isaensis subsp. nov.*.

In terms of the relevant species in *Vermicella*, the key in Cogger (2014) still applies, save for paragraph 2 (of 4). This is because the taxa *V. multifasciata* and *V. intermedia* are now both one and the same and treated as *V. multifasciata.*

The species *Vermicella parscauda* Derez *et al.* (2018) is most like *V. multifasciata* but is separated from it by way of presence of internasals (versus absence). It is readily separated from *V. annulata* by the presence of 52-87 black body bands versus 35-37 in *V. annulata* (40-46 in *V. vermiformis* Keogh and Smith, 1996). *V. parscauda* has 213-231 ventrals as opposed to 262-302 in *V. snelli* Storr, 1968.

VERMICELLA MULTIFASCIATA KIMBERLEYENSIS SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:54B3DA37-1E84-4009-981F-52B9B1446F6A

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R29588 collected from Liveringa, Western Australia, Latitude -18.05 S., Longitude 124.167 E. The Western Australian Museum, Perth, Western Australia, Australia is a government-owned facility that allows access to its holdings.

Until now this holotype has been referred to the taxon *Vermicella intermedia* Keogh and Smith, 1996.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number: WAM R61727, collected from Camp Creek, Mitchell Plateau, Western Australia, Latitude -14.83 S., Longitude 125.83 E.

Diagnosis: *Vermicella multifasciata kimberleyensis subsp. nov.* is readily separated from *V. multifasciata fasciata* (Longman, 1915), including specimens until now referred to the taxon *V. intermedia* Keogh and Smith, 1996, herein treated as conspecific to it by colouration.

Vermicella multifasciata kimberleyensis subsp. nov. does not have white on the upper labials beneath the eye, whereas *V. multifasciata fasciata* does.

The dorsal surface of the second and third black bands past the nape in *Vermicella multifasciata kimberleyensis subsp. nov.* are 6 scales wide, versus 5 or less in *V. multifasciata multifasciata.*

Vermicella multifasciata kimberleyensis subsp. nov. is characterised by significantly reduced white pigment at the anterior part of the body and head, which manifests as very thin and sometimes broken white rings and increased black on the snout, often manifesting as the absence of the characteristic white cross band between the eyes and the nose as seen in most other *Vermicella* other than aberrant specimens.

All subspecies of *Vermicella multifasciata* are separated from all other *Vermicella* by the absence of internasals.

Distribution: Believed to be confined to the Kimberley district of north-west Western Australia.

Etymology: Named in reflection of where the subspecies occurs.

VERMICELLA ANNULATA PAULMULVANYI SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:12FB9430-977E-43D0-A294-15764896515D

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R53540, collected at 1.5 KM east of Flashjack Dam, Bookmark Biosphere Reserve, South Australia, Australia, Latitude -33.92 S., Longitude 140.48 E.

The South Australian Museum, Adelaide, South Australia, Australia allows access to its holdings.

Paratype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number: R50226, collected at 7.5 km east of Gluepot Homestead, South Australia, Australia, Latitude -33.76 s., Longitude 140.20 E.

Diagnosis: *Vermicella annulata paulmulvanyi subsp. nov.* is readily separated from nominate *V. annulata annulata* (Gray, 1841) by colouration.

V. annulata annulata has white and black bands of similar thickness when measured from the mid dorsal surface, or alternatively the white bands noticeably widen on the lower flanks if narrower on top. By contrast *V. annulata paulmulvanyi*

subsp. nov. has black bands always significantly wider than the white and the white bands are without significant widening on the flanks.

V. annulata annulata has a fairly smooth transition from black to white and vice-versa as one looks at the bands on the upper body. By contrast the edges of the bands are noticeably jagged in *V. annulata paulmulvanyi subsp. nov.*.

The subspecies *V. annulata isaensis subsp. nov.* is readily separated from the other two subspecies by the combination of a smooth line transition between the black and white bands on the dorsal mid body, rings of even thickness on the mid-body and grey as opposed to black on the anterior snout.

Distribution: *Vermicella annulata paulmulvanyi subsp. nov.* has a distribution centred on the border between New South Wales, Victoria and South Australia, extending to the Flinders Ranges in the west and Bendigo in the East. Nominate *V. annulata annulata* is found in most parts of New South Wales and Queensland, excluding the top end of Cape York and far north-west.

V. annulata isaensis subsp. nov. is only known from the Mount Isa area in north-west Queensland.

Etymology: Named in honour of Paul Mulvany of Blackburn, Victoria, Australia in recognition of his services to wildlife conservation. For decades he has built and maintained some of the wildlife breeding cages at the Snakebusters: Australia's best reptiles facility, making it the world leader at saving threatened and endangered wildlife.

The distinctive black and white colour of this taxon also matches that of the Australian Rules Football Team he supports, namely Collingwood.

VERMICELLA ANNULATA ISAENSIS SUBSP. NOV.

LSID urn:lsid:zoobank.org:act:50EE351B-E3F5-4AE5-8CA9-CDEEB12BDEF3

Holotype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number: J87432, collected on the Boulia Road, Mount Isa, Queensland, Australia, Latitude -20.72 E., Longitude 139.48 E.

The Queensland Museum, Brisbane, Queensland, Australia allows access to its holdings.

Diagnosis: The subspecies *V. annulata isaensis subsp. nov.* is readily separated from the other two subspecies of *V. annulata* (Gray, 1841) by the combination of a smooth line transition between the black and white bands on the dorsal mid body, rings of even thickness on the mid-body and grey as opposed to black on the anterior snout.

Vermicella annulata paulmulvanyi subsp. nov. is also readily separated from nominate *V. annulata annulata* (Gray, 1841) by colouration.

V. annulata annulata has white and black bands of similar thickness when measured from the mid dorsal surface, or alternatively the white bands noticeably widen on the lower flanks if narrower on top. By contrast *V. annulata paulmulvanyi subsp. nov.* has black bands always significantly wider than the white and the white bands are without significant widening on the flanks.

V. annulata annulata has a fairly smooth transition from black to white and vice-versa as one looks at the bands on the upper body. By contrast the edges of the bands are noticeably jagged in *V. annulata paulmulvanyi subsp. nov.*.

Distribution: *V. annulata isaensis subsp. nov.* is only known from the Mount Isa area in north-west Queensland. *Vermicella annulata paulmulvanyi subsp. nov.* has a distribution centred on the border between New South Wales, Victoria and South Australia, extending to the Flinders Ranges in the west and Bendigo in the East. Nominate *V. annulata annulata* is found in most parts of New South Wales and Queensland, excluding the top end of Cape York and far north-west.

Etymology: Named in reflection of where the subspecies occurs.

REFERENCES CITED

Boulenger, G. A. 1896. *Catalogue of the snakes in the British Museum, Vol. 3*. London (Taylor and Francis), xiv+727 pp.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia*, 7th ed. CSIRO Publishing, xxx+1033 pp.

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia, Volume 1: Amphibia and Reptilia.* AGPS, Canberra, ACT:313 pp.

Court of Appeal Victoria. 2014. *Hoser v Department of Sustainability and Environment* [2014] VSCA 206 (5 Sept 2014).

Couper, P. J. and Covacevich, J. A. 1996. A Bandy Bandy with a difference. *Memoirs of the Queensland Museum* 39(2):242.

Covacevich, J. 1971. Amphibian and reptile type specimens in the Queensland Museum. *Memoirs of the Queensland Museum* 16:49-68.

Derez, C. M., Arbuckle, K., Ruan, Z., Xie, B., Huang, Y., Dibben, L., Shi, Q., Vonk, F. J. and Fry, B. G. 2018. A new species of Bandy Bandy (*Vermicella*: Serpentes: Elapidae) from the Weipa Region, Cape York, Australia. *Zootaxa* (online): 4446(1):1-12, 16 July.

De Vis, C. W. 1905. Rhynchelaps latizonatus n. s. *Ann. Queensland Museum* (Brisbane) 6:48.

Duméril, A. M. C., Bibron, G. and Duméril, A. H. A., 1854. *Erpétologie générale ou histoire naturelle complète des reptiles. Tome septième. Deuxième partie, comprenant l'histoire des serpents venimeux.* Paris, Librairie Encyclopédique de Roret: i-xii + 781-1536.

Gray, J. E. 1841. A catalogue of the species of reptiles and Amphibia hitherto described as inhabiting Australia, with a description of some new species from Western Australia. Appendix E, pp. 422-449. In: G. Grey, Journals of Two Expeditions of Discovery in Northwest T. and W. Boone, London. Vol. 2: 422-449 + plates.

Hoser, R. T. 1989. *Australian Reptiles and Frogs*. Pierson and Co., Mosman, NSW, 2088, Australia:238 pp.

Keogh, J. S. and Smith, S. A. 1996. Taxonomy and natural history of the Australian bandy-bandy snakes (Elapidae: *Vermicella*) with a description of two new species. *Journal of Zoology* 240:677-701.

Krefft, G. 1869. *The Snakes of Australia; an Illustrated and Descriptive Catalogue of All the Known Species*. Sydney, Govt. Printer xxv+100 pp.

Longman, H. A. 1915. Reptiles from Queensland and the Northern Territory. *Mem. of the Queensland Museum* 3: 30-34.

Longman, H. A. 1916. Snakes and lizards from Queensland and the Northern Territory. *Mem. of the Qld Museum* 5:46-51.

Ride, W. D. L. (ed.) *et. al.* (on behalf of the International Commission on Zoological Nomenclature) 1999. *International code of Zoological Nomenclature*. The Natural History Museum - Cromwell Road, London SW7 5BD, UK (also commonly cited as "ICZN 1999").

Simpson, K. N. G. 1973. Amphibians, reptiles and mammals of the Murray River region between Mildura and Renmark, Australia. *Mem. Nat. Mus. Vict.* 34:275-279.

Storr, G. M. 1968. The genus *Vermicella* (Serpentes : Elapidae) in Western Australia and the Northern Territory. *J. Roy. Soc. West. Aust.* 50:80-92.

Victorian Civil and Administrative Tribunal (VCAT). 2015. *Hoser v Department of Environment Land Water and Planning* (Review and Regulation) [2015] VCAT 1147 (30 July 2015, judgment and transcript).

Wells, R. W. and Wellington, C. R. 1984. A synopsis of the class Reptilia in Australia. *Australian Journal of Herpetology* 1(3-4):73-129.

Wells, R. W. and Wellington, C. R. 1985. A classification of the Amphibia and Reptilia of Australia. *Australian Journal of Herpetology Supplementary Series* 1:1-61.

CONFLICTS OF INTEREST - NONE