Australasian Journal of Herpetology 32:50-52.
Published 1 August 2016.

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

No longer a monotypic lizard genus. A new species of *Gnypetoscincus* Wells and Wellington, 1983 from the Wet Tropics of North Queensland, Australia.

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Received 5 February 2016, Accepted 15 May 2016, Published 1 August 2016.

ABSTRACT

The species of lizard originally described as *Tropidophorus queenslandiae* De Vis, 1890, from Australia's "wet tropics" was first transferred out of that genus by Wells and Wellington in 1983.

They erected a new monotypic genus *Gnypetoscincus* to accommodate the taxon. At all materially relevant times to the present, all authors have treated populations of these lizards restricted to the hillier parts of the wet tropics of Australia as being of just one species.

However when engaged in extensive fieldwork in the region in the early 1980's I formed the view that there were in fact two separate allopatric species under the one label.

A molecular study by Moritz *et al.* in 1993 confirmed this to be the case with the data they presented. However the authors failed to explicitly state this obvious fact in their conclusions, indicating that they remained of the belief that there was only one species involved, albeit two highly divergent lineages.

As a result, all authors in the following 23 years have treated these lizards as a single species taxon.

Drawing on the obvious morphological differences between the southern and northern populations of these lizards, previously not noted by any other author, as well as the molecular results published by Moritz *et al.* in 1993, showing a mtDNA sequence divergence of 8.6% for the two populations, this paper formally describes as a new species the previously unnamed northern form. It is called *Gnypetoscincus smythi sp. nov.* recognizing the significant contributions to herpetology by Michael Smyth of Ringwood, Victoria, Australia.

Keywords: Taxonomy; Nomenclature; Lizards; Skink; Queensland; Australia; wet tropics; genus; *Gnypetoscincus*; species; *queenslandiae*; new species; *smythi.*

INTRODUCTION

From 1890 when De Vis first described a north Queensland lizard species *Tropidophorus queenslandiae* to 1983, it had attracted little if any attention from taxonomists, who considered the generic placement of the putative species as correct.

This was challenged by Wells and Wellington (1983), who copped considerable flak from the wider herpetological community at the time, even though they affirmed their position in their major paper of 1985.

Their new genus was *Gnypetoscincus* Wells and Wellington, 1983.

Molecular studies including that of Moritz *et al.* (1993) affirmed the actions of Wells and Wellington (1983, 1985) and since 1993, no serious herpetologist has doubted this position as seen by the retention of this status quo by very conservative text published by Cogger (2014).

As mentioned in the abstract, at all materially relevant times to the present, all authors have treated populations of these lizards from the wet tropics of Australia as being of just one species.

However when engaged in extensive fieldwork in the region in the early 1980's and able to view many live specimens I formed the view that there were in fact two separate allopatric species being lumped under the one label.

I note here that I formed a similar view for other putative species of skinks and geckos similarly restricted to the most humid of hilly rainforest habitats in the same region. That is, what were being treated as single species were in fact two!

A molecular study by Moritz *et al.* (1993) in my view confirmed this to be the case for the genus *Gnypetoscincus* with the data they presented, this most significantly being an 8.6% mtDNA sequence divergence between the population centred in the ranges south and west of Cairns and those in the ranges north of the lowlands around Cairns and immediately north of there. However the authors failed to properly consider this obvious fact in their conclusions, except for one oblique reference to the fact that there may be two species and not one, thereby indicating that they remained of the belief that there was only one species involved.

As a result, all authors in the following 23 years have treated these lizards as a single species taxon.

Drawing on the obvious morphological differences between the southern and northern populations of these lizards, this paper formally describes as a new species the unnamed northern form as *Gnypetoscincus smythi sp. nov.* in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The formal description is published below.

In terms of arriving at my decision to give the northern taxon formal recognition, I also note the following key facts.
The type locality for the southern (named species) is Bellenden Ker, just south of Cairns, Qld. Cogger *et al.* (1983) also cite Herberton, which also includes the range for the southern form.

No name is currently available for the northern lineage necessitating myself creating one now.

Moritz *et al.* (1993), wrote: "This species and thus the genus is restricted to the wet tropical rainforests, occurring from near Cooktown in the north, to the southern Cardwell Ranges, a linear distance of only 275 km." In terms of the distribution of both forms and the geographic break between populations in the lowlands region immediately north of Cairns, Moritz *et al.* (1993), wrote: "The geographic location of the genetic break is intriguing. The rainforests of the Atherton Tableland (localities 3-7; Fig. 1) and those on the Carbine Tableland (i.e. Mt Lewis) and areas to the north are currently connected by remnants of lowland rainforest and a thin strip of rainforest along the eastern face of the Great Dividing range (Bell *et al.*, 1987). This relatively dry zone is recognized as a significant biogeographic barrier to mammals (Winter *et al.*, (sic) 1984; Crome, 1990)."

The mtDNA sequence divergence between the northern and southern populations was reported by Moritz *et al.* (1993), as being in the order of 8.6%, representing a likely 4-5 million year divergence between the two populations. Considerably lesser divergences (under 5% mtDNA divergences) between populations of other reptiles have led to species being erected to account for each population (e.g. Harvey *et al.* 2000).
Moritz *et al.* (1993) also stated "the northern vs southern populations appear to represent very distinct evolutionary lineages that should be considered separately in any analyses of ecology, biogeography or conservation status. According to some views (e.g. Frost and Hillis, 1990), these separate lineages should be recognised as separate species."
My view obviously concurs with that of Frost and Hillis (1990) in that I herein formally name the northern lineage as a new species.

What hasn't been noted anywhere in the literature to date are the obvious morphological differences between specimens in each population. The most obvious is the ventral patterning, which in both forms is mainly light whitish-yellow in colour with obvious darker markings. In the nominate southern species, these markings are heavy and nearly black, wheras in the northern taxon, these markings are thin to moderate and a lighter brown colour. The southern species has more dark pigment on the belly, versus more light on the northern one.

Dorsally, the northern taxon specimens have relatively indistinct lighter flecks or indistinct broken crossbands, versus distinct and significant lighter markings as part of the dorsal pattern in the southern species.

I also note that unless this potentially threatened northern population has a name, it cannot possibly be managed by any government conservation authority!

Publications relevant to the lizards within *Gnypetoscincus* and the "new" taxonomic judgement made herein include the following: Bell *et al.*, (1987), Cogger (2014), Cogger *et al.* (1983), Covacevich *et al.* (1993), Crome (1990), Cunningham (1993), Cunningham and Moritz (1998), de Vis (1890), Frost and Hillis (1990), Greer (1979), Harvey *et al.* (2000), Naylor (1980), Moritz *et al.* (1993), Pianka and Vitt (2003), Reeder (2003), Skinner *et al.* (2013), Sumner *et al.* (1999), Wells and Wellington (1983, 1985), Wilson and Swan (2010) Winter *et al.* (1984) and sources cited therein.

Notwithstanding the theft of relevant materials from this author in an illegal armed raid on 17 August 2011, which were not returned in spite of later court orders to have this material returned (Court of Appeal Victoria 2014 and VCAT 2015), I have made a decision to publish this paper in view of the conservation significance attached to the formal recognition of unnamed species and on the basis that further delays may in fact put this unnamed taxon at greater risk of extinction.

It is also worth noting the ongoing rapid human population growth in the North Queensland area and the associated influences of habitat destruction and potential for introduced pests and pathogens to attack vulnerable rainforest populations.

GNYPETOSCINCUS SMYTHI SP. NOV.

Holotype: A specimen in the Queensland Museum, Brisbane, Queensland, Australia, specimen number: J60740, collected at Thornton Peak, North Queensland, Australia, Latitude -16.10, Longitude 145.34.

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

Paratypes: Two specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen number: J47622, collected at Mt Lewis, via Mt Molloy, North Queensland, Australia, Latitude -16.58, Longitude 145.28 and specimen number: J60877, collected at Mount Finnigan, North Queensland, Australia, Latitude -15.82, Longitude 145.29.

Diagnosis: *Gnypetoscincus smythi sp. nov.* is most readily separated from *Gnypetoscincus queenslandiae* (De Vis, 1890), by colouration.

The most obvious is the ventral patterning, which in both species is a light whitish-yellow in colour with obvious darker markings. In the nominate southern form (*G. queenslandiae*), these darker markings are heavy and nearly black, whereas in the northern taxon, these markings are thin to moderate and a lighter medium brown colour. The southern species has more dark pigment on the belly, or rarely dark and light pigment in even amounts, versus significantly more light pigment on the venter (versus darker markings) in the the northern species (*Gnypetoscincus smythi sp. nov.*).

Dorsally, the northern taxon specimens (*Gnypetoscincus smythi sp. nov.*) have relatively indistinct lighter flecks or indistinct broken crossbands, versus distinct and significant lighter markings as part of the dorsal pattern in *G. queenslandiae*, but this character is both variable in specimens and also depending on age and stage of the shedding cycle, making it a potentially unreliable diagnostic character in the absence of locality data.

In preserved specimens the dark pigment (dorsally and ventrally) fades significantly.

Diagnostic characters used to separate both species of *Gnypetoscincus* (treated as one) from all other Australian skinks is found on page 571 of Cogger (2014).

Distribution: The northern wet tropics of Australia, in a region generally commencing about 50 km north of Cairns, Queensland, Australia, to north of Cape Tribulation.

Etymology: Named in honour of Michael Smyth, of Ringwood, Victoria, Australia, who has worked with Snakebusters, Australia's best reptiles shows, for a decade. His contributions to the conservation of Australian wildlife and associated scientific research has been significant.

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CONFLICT OF INTEREST

The author has no known conflicts of interest in terms of this paper and conclusions within.

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Published by Kotabi Pty Ltd
PO Box 599
Doncaster, Victoria, 3108.
Australia.

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

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