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Stuck in the jungle! A break up of the Australian agamid species *Hypsilurus boydii* (Macleay, 1884).

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ABSTRACT

Fieldwork by this author in wet tropics of Queensland, Australia spanning some two decades yielded morphologically distinct variants of the putative species *Hypsilurus boydii* (Macleay, 1884)**.**

These populations, separated by an area of low hills and lowlands around Cairns and immediately north of this point, share the same geographical gap in their range as for other putative rainforest obligate species that have been shown both morphologically and by molecular studies to represent separate species level taxa.

By way of example Moritz *et al*. 1993, showed a mtDNA divergence of 8.6% for two populations of wet tropics skinks divided by the same barrier, indicating a 4-5 MYA divergence.

Noting the inability or lack of inclination of *Hypsilurus sensu lato* to traverse habitats that are not thermally inert, as detailed by Rummery *et al*. (1995), it is clear that the isolation of these morphologically distinct populations is not recent.

Therefore in order to allow other herpetologists to do more meaningful studies on each biological entity and to facilitate proper conservation and management for each biological entity, this paper formally names the currently unnamed form from the northern wet tropics of Australia.

In accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) *Hypsilurus boydii ruivenkamporum subsp. nov*. is named in honour of Gerard Ruivenkamp and his son Nathan Ruivenkamp of Warrandyte, Victoria, Australia in recognition of their services to herpetology spanning more than a decade.

Keywords: Taxonomy; Nomenclature; Lizards; Dragon; Agamidae; Queensland; Australia; Wet tropics; genus; *Hypsilurus*; species; *boydii*; new subpecies; *ruivenkamporum.*

INTRODUCTION

Fieldwork by this author in the wet tropics of far north Queensland, Australia spanning some two decades yielded morphologically distinct variants of the putative species *Hypsilurus boydii* (Macleay, 1884)**.**

In the light of more recent papers dealing with population splits of putative species in the wet tropics of far north Queensland (e.g. Moritz *et al.* 1993 and sources cited therein), the idea that more than one taxon was being labelled as *H. boydii* was revisited by myself in the post year 2000 period. In the ten years that followed a substantial body of evidence was gathered.

An illegal armed raid led by corrupt wildlife officers, Glenn Sharp and Emily Gibson on 17 August 2011, netted all computers, hard drives and the like as well as other vitally important research files and other important materials at our facility. Much of this was either not returned or returned damaged, effectively scuttling the relevant research project (Court of Appeal, Victoria 2014 and VCAT 2015).

However with ongoing habitat destruction in the north Queensland region and accelerating human population growth, I have made the decision to publish a formal description of the as yet unnamed northern form of *H. boydii* so that the species can be properly managed and not allowed to become extinct as a result some kind of benign neglect by government regulators.

The two North Queensland populations of *H. boydii*, separated by an area of low hills and lowlands around Cairns and immediately north of this point, share the same geographical gap in their range as for other putative rainforest obligate species that have been shown both morphologically and by molecular studies to represent separate species level taxa.

By way of example Moritz *et al.* (1993), showed mtDNA divergence of 8.6% for two populations of wet tropics skinks, putatively of a single species, divided by the same barrier, indicating a 4-5 MYA divergence.

Noting the inability or lack of inclination of *Hypsilurus sensu lato* to traverse habitats that are not thermally inert, as detailed by Rummery *et al.* (1995) for the species *Adelynhosersaur spinipes* (Duméril and Bibron, 1851), it is clear that the isolation of these morphologically distinct populations of *H. boydii* is not recent.

Therefore and as already stated, that in order to allow other herpetologists to do more meaningful studies on each biological entity and to facilitate proper conservation and management for

each biological entity, this paper formally names the currently unnamed form from the northern wet tropics of Australia.

In accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) *Hypsilurus boydii ruivenkamporum subsp. nov.* is named in honour of Gerard Ruivenkamp and his adilt son Nathan Ruivenkamp of Warrandyte, Victoria, Australia in recognition of their services to herpetology spanning more than a decade.

As each population are clearly evolving independently, they are herein formally treated as subspecies according to the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

This is the most conservative level of taxonomic recognition allowed by the *International Code of Zoological Nomenclature.*

I also note that it is likely that further study may result in the formally named subspecies being elevated to full species status.

Type locality for the species *H. boydii* is the Herbert River area, Queensland, a location south of Cairns, which is the approximate point of barrier between the southern and to date unnamed northern form.
While the taxonomic judgements made herein are based on a direct inspection of specimens from each of the relevant populations, it is prudent for me to refer to some of the literature relevant to the species complex herein.

Key references include Boulenger (1885), Cogger (2014), Cogger *et al.* (1983), Denzer and Manthey (2016), Greenbaum (2000), Hoser (2013, 2014), Kahl *et al.* (1980), Macleay (1884), Manthey and Denzer (2006), Wells (1972), Wells and Wellington (1983, 1985), Wilson (2015), Wilson and Swan (2003), Zwinenberg (1974), and sources cited therein.

While it could be argued that the differences between specimens in the isolated populations are not worthy of taxonomic recognition, this view is contradicted by those expressed and actioned by Harvey *et al.* (2000) or Keogh *et al.* (2003). Also see the relevant paper of Moritz *et al.* (1993) in terms the issues of cryptic diversity of putative rainforest species in Australia, based on the home range fidelity of individual specimens.

HYPSILURUS BOYDII RUIVENKAMPORUM SUBSP. NOV.

Holotype: A preserved specimen at the Queensland Museum, Brisbane, Australia, specimen number: J65679, collected at Chapmans Corner, near Bloomfield. North Queensland, Australia, Latitude -15.94, Longitude 145.32.

The Queensland Museum, Brisbane, Australia is a government-owned facility that allows access to its specimens.

Paratypes: 1/ A preserved specimen at the Queensland Museum, Brisbane, Australia, specimen number: J58108 from Upper Roaring Meg, Queensland, Australia, Latitude -16.07, Longitude 145.42.

2/ A preserved specimen at the Australian Museum, Sydney, Australia, specimen number: Herpetology:R.2254, from Bloomfield River, Cooktown, Queensland, Australia, Latitude -15.97, Longitude 145.32.

Diagnosis: Both subspecies of *H. boydii* are diagnosed and separated from other *Hypsilurus* Peters, 1867 and *Adelynhosersaur* Hoser, 2013 by the following unique suite of characters: It is a medium-sized, short tailed species with heterogeneous dorsal scalation and a discontinuous vertebral crest. Several enlarged plates and large conical scales next to the tympanum; no row of enlarged submaxillaries; anterior edge of the gular pouch with enlarged, triangular scales. *H. boydii* differs from *H. dilophus* and *A. spinipes* by the presence of plates and large conical scales below the tympanum; all other species are characterised by a heterogeneous dorsal scalation.

Adult males of *H. boydii ruivenkamporum subsp. nov.* are readily separated from *H. boydii boydii* by the following suite of characters: *H. boydii ruivenkamporum subsp. nov.* have large white raised conical scales at the lower back of the head, versus orange, pink or pinkish white in the nominate form.

In both sexes of *H. boydii ruivenkamporum subsp. nov.* there are a large number of small raised yellow scales (dots) on the lower flanks, versus a small number in the nominate form.

The dorsal colour of *H. boydii ruivenkamporum subsp. nov.* includes distinct crossbands across the spine, versus indistinct or absent in the nominate form.

The spines running down the centre of the back of *H. boydii ruivenkamporum subsp. nov.* have an obvious reddish colour or reddish tinge, versus absent in *H. boydii boydii.*

Distribution: The newly named subspecies *H. boydii ruivenkamporum subsp. nov.* is restricted to the northern wet tropics in a region generally bounded by Jullatten and Mount Lewis in the south and Cape Tribulation in the north, North Queensland, Australia. The nominate form of *H. boydii boydii* is generally found in a region bounded by Mount Bartle Frere in the north, west and including the Atherton Tableland south to Mount Sullivan in North Queensland, Australia.

Etymology: Named in honour of Gerard Ruivenkamp (father) and Nathan Ruivenkamp (adult son with own children), of Warrandyte, Victoria, Australia in recognition of logistical support in their roles as builders and electricians for the wildlife conservation business Snakebusters, who do Australia's best wildlife shows and displays and fund critically important scientific research.

NOTES ON THIS DESCRIPTION FOR ANY POTENTIAL REVISORS

Unless mandated by the rules of the *International Code of Zoological Nomenclature*, the spelling of the newly proposed name should not be altered in any way.

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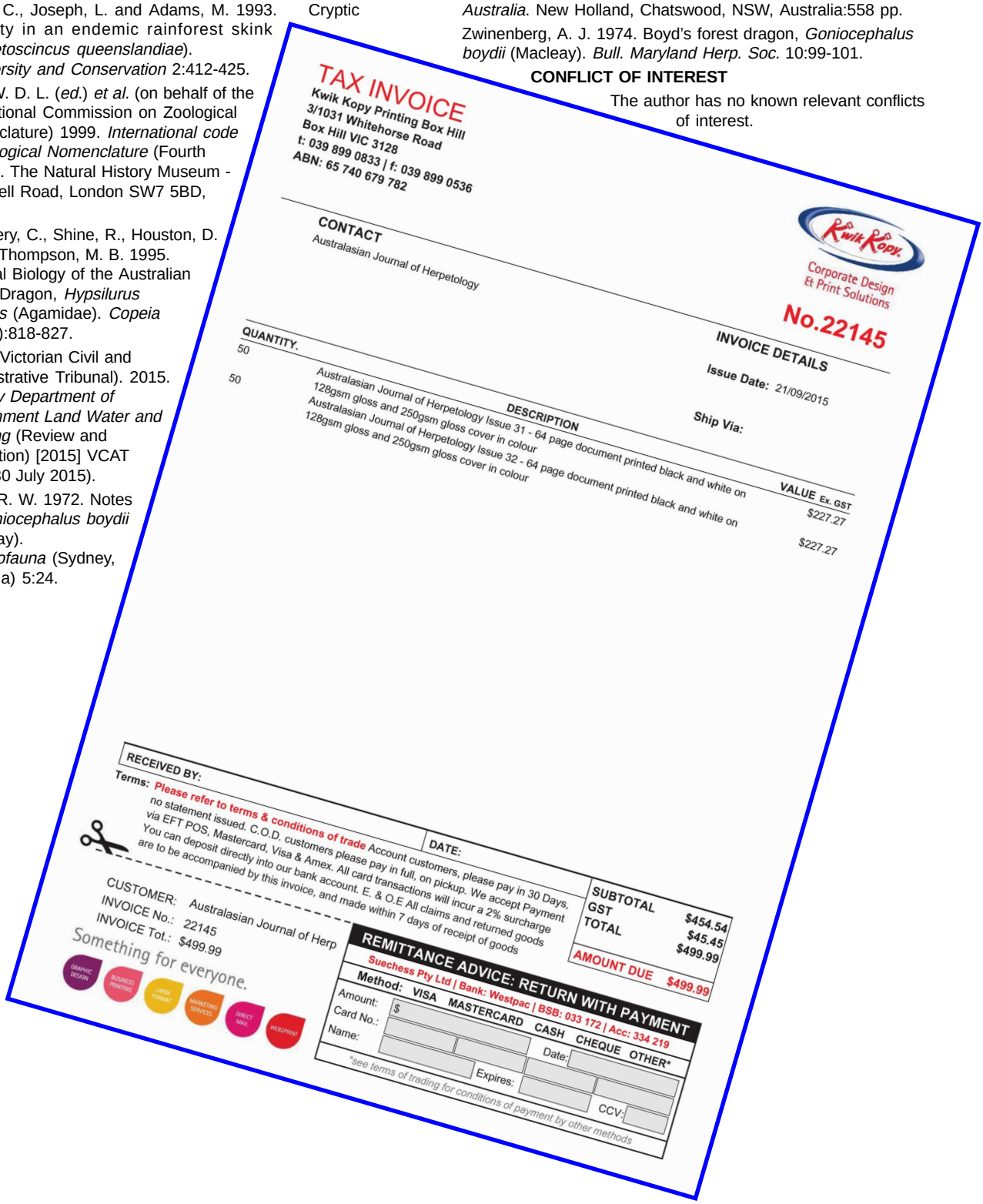
CONFLICT OF INTEREST

The author has no known relevant conflicts of interest.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