Australasian Journal of Herpetology 33:23-24.
Published 1 August 2016.

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

Two new subspecies of *Hoplocephalus* Wagler, 1830 from eastern Australia (Serpentes: Elapidae).

RAYMOND T. HOSER

488 Park Road, Park Orchards, Victoria, 3134, Australia.
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
Received 12 September 2015, Accepted 26 September 2015, Published 1 August 2016.

ABSTRACT

The East Australian elapid genus *Hoplocephalus* Wagler, 1830 has long been treated by the majority of Australian taxonomists as consisting of three well-defined species as seen in the definitive texts of Cogger 2014, Hoser 1989, Wells and Wellington 1985.

Notwithstanding this, Keogh *et al.* (2003) found sufficient genetic divergences in the two main populations of the species *H. stephensi* Krefft, 1869 to state that "managers should treat the Queensland and NSW populations of *H. stephensi* as separate conservation units".

This paper formalizes that division by naming as a subspecies the unnamed population from south-east Queensland in the region north of the McPherson Range. A second isolated Queensland population from the Kroombit Tops area south-west of Gladstone, an area about 100 km straight line north of the nearest outlier of the more southern population is also named herein as a new subspecies.

Descriptions of both taxa is made in accordance of the provisions of the current edition of the *International Code of Zoological Nomenclature*.

Keywords: Taxonomy; elapid; snake; Australia; New South Wales; Queensland; *Hoplocephalus*; *stephensi*; *bitorquatus*; new subspecies; *andrewgedyei*; *boutrosi*; mtDNA; sequence divergence; geographical barrier; morphological differences.

INTRODUCTION

As part of a study of Australian snakes spanning more than 40 years, the east Australian elapid genus *Hoplocephalus* Wagler, 1830 was scrutinized in detail. In the 1970's I became aware of strong regional differences in populations of both *H. stephensi* Krefft, 1869 and *H. bitorquatus* (Jan, 1859).

For the latter taxon, there appears to be a distinct southern and northern population. The name "*revelata*" De Vis (1911) is available for the otherwise unnamed northern population (Cogger *et al.* 1983).

Stephen's Banded Snakes, *H. stephensi* are a species usually found in wetter forests in hilly areas from the Central Coast of New South Wales to the lower Central Coast of Queensland, in the hills south-west of Gladstone.

Living in Sydney in the 1970's and 1980's I had access to numerous specimens from the Ourimbah area about 80 km north of Sydney CBD. Subspequent to that I had access to numerous live specimens from the Mount Glorious region on the outer edge of Brisbane in Queensland in early 1987.

Noting significant differences in the morphology of the relevant snakes, I had intended at the time considering naming the Queensland animals as a different subspecies, pending further investigations, but was prevented from doing so by several factors. This included uncertainty as to the exact boundary between the relevant populations and whether or not the variation was clinal or clearly defined and separated by geography.

These questions were largely answered by Keogh *et al.* (2003) who found that there were indeed two well defined populations with a mtDNA 1.7% sequence divergence. The geographical barrier between the two groups was shown to be the McPherson Range on the NSW/Queensland border.

Significantly Keogh *et al.* (2003) did not examine specimens with a view to establishing morphological differences between the two forms. Furthermore as part of their analysis they did not investigate the northern outlier population from the Kroombit Tops area south-west of Gladstone in southern-central coastal Queensland.

This population consists of mainly melanistic specimens and all specimens are readily separated from southern individuals.

In fact it appears that at the time they wrote their paper, the authors were unaware of the existence of this population. They wrote: "*Hoplocephalus stephensii* is found along a near-coastal strip from the Newcastle area in central eastern New South Wales to the Gympie area in southern Queensland."

On the basis of the preceding and noting the comments by Keogh *et al.* (2013) that "managers should treat the Queensland and NSW populations of *H. stephensi* as separate conservation units", I have no hesitation in assigning names to each of the relevant populations in accordance with the rules of the current edition of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

Cogger *et al*. (1983) lists the type locality of *H. stephensi* as Port Macquarie, NSW, this being the southern population and now herein regarded as the nominate subspecies. This means each of the Queensland populations are until now unnamed as subspecies.
They are formally described below.

The papers of Keogh *et al*. (2013) and Pyron *et al*. (2013) both indicate that the three species of *Hoplocephalus* are reasonably closely related in terms of their molecular data, indicating that subspecies is the appropriate level for each of the newly described taxa herein.

HOPLOCEPHALUS STEPHENSI BOUTROSI SUBSP. NOV.

Holotype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, specimen number: J49881, collected from about 40 km North West of Brisbane, Queensland.

The specimen had another catalogue number, namely 1948241.

The Queensland Museum, Brisbane, Queensland is a government-owned facility that allows public access to its specimen holdings.

Paratype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, specimen number: J15335, collected from about 10 km north west of Brisbane, Queensland.

The specimen had another catalogue number, namely 1932139.

Diagnosis: *H. stephensi boutrosi subsp. nov*. is separated from the nominate subspecies *H. stephensi stephensi* by having a weakly defined difference between the brown and black scales on the dorsal surface of the head, as opposed to a strongly defined difference between the lighter (but still darkish) brown and the black on the dorsal surface of the head in *H. stephensi stephensi.*

In *H. stephensi boutrosi subsp. nov*. the yellow blotches behind the eye are tending to form striping backwards, albeit broken. This contrasts with *H. stephensi stephensi* which tends not to have these yellow blotches, instead having the yellow on the upper labial/s and brown on the upper temporals in a configuration not seen in *H. stephensi boutrosi subsp. nov*.. In *H. stephensi boutrosi subsp. nov*. the upper temporals are black, fading to dark brown as one moves to the centre of the back of the head.

The taxon, *Hoplocephalus stephensi andrewgedyei subsp. nov*. formally described below, is readily separated from the other two subspecies (*H. stephensi stephensi* and *H. stephensi boutrosi subsp. nov*.) by the distinct lightish striping on the lower flanks (versus indistinct or absent in other populations). It is further separated from the other two subspecies by having a very thick dark bar running from the lip, up the labials to the eye and immediately underneath it, versus small and or triangular dark blotches running from the lip to the eye in the other two species. Most, but not all *Hoplocephalus stephensi andrewgedyei subsp. nov*. are unbanded, although this is not in itself diagnostic of the subspecies as unbanded *H. stephensi boutrosi subsp. nov*. and *H. stephensi stephensi* are also known.

A key to separate of the three species of *Hoplocephalus* is provided by Cogger (2014) and good colour photos of the three relevant species are provided in proximity in Hoser (1989).

Distribution: Known from the vicinity of the NSW/Queensland border along the coast and nearby ranges (mainly the hilly areas) north to about Gympie in South-east Queensland. The isolated population known from the vicinity of Kroombit Tops south-west of Gladstone in Queensland, is of the subspecies *Hoplocephalus stephensi andrewgedyei subsp. nov*. where it is found in wet forests.

Etymology: Named in honour of Templestowe, Victoria businessman Steve Boutros for services to the fitness industry, wildlife conservation and upholding the law in Australia.

HOPLOCEPHALUS STEPHENSI ANDREWGEDYEI SUBSP. NOV.

Holotype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, specimen number: J40218, collected from near Kroombit Tops, Queensland.

The specimen had another catalogue number, namely 1952519.

The Queensland Museum, Brisbane, Queensland is a government-owned facility that allows public access to its specimen holdings.

Paratype: A preserved specimen in the Queensland Museum, Brisbane, Queensland, specimen number: J43752, collected from near Kroombit Tops, Queensland. The specimen had another catalogue number, namely 1944126.

Diagnosis: The taxon, *Hoplocephalus stephensi andrewgedyei subsp. nov*. is readily separated from the other two subspecies of *H. stephensi* by the distinct lightish striping on the lower flanks immediately above the venter and along that linear plane (versus indistinct or absent in other populations of the other subspecies). It is further separated from the other two subspecies by having a very thick dark bar running from the lip, up the labials to the eye and immediately underneath it, versus small and or triangular dark blotches running from the lip to the eye in the other two species.
Most, but not all *Hoplocephalus stephensi andrewgedyei subsp. nov*. are unbanded, although this is not in itself diagnostic of the subspecies as unbanded *H. stephensi boutrosi subsp. nov*. and *H. stephensi stephensi* are also known.

A key to separate of the three species of *Hoplocephalus* is provided by Cogger (2014) and good colour photos of the three relevant species are provided in proximity in Hoser (1989).

Distribution: Known only from the vicinity of Kroombit Tops south-west of Gladstone in Queensland, where it is found in wet forests.

Etymology: Named in honour of Andrew Gedye, in recognition of his excellent work with reptiles spanning many decades. His main activity has been in the captive breeding of many rare and potentially threatened species as well as many months of extensive fieldwork in all parts of mainland Australia.

He currently lives in a suburb of Cairns, Queensland, formely living in Cheltenham, Victoria.

REFERENCES CITED

Cogger, H. G., Cameron, E. E. and Cogger, H. M. 1983. *Zoological Catalogue of Australia (1): Amphibia and Reptilia*. Australian Government Publishing Service, Canberra, ACT, Australia:313 pp.

Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh edition), CSIRO. Sydney, Australia:1064 pp.

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

Keogh, J. S., Scott, I. A. W., Fitzgerald, M. and Shine, R. 2003. Molecular phylogeny of the Australian venomous snake genus *Hoplocephalus* (Serpentes, Elapidae) and conservation genetics of the threatened *H. stephensii*. *Conservation Genetics* 4:57-65.

Pyron, R. A., Burbrink, F. T. and Wiens, J. J. 2013. A phylogeny and revised classification of Squamata, including 4161 species of lizards and snakes. *BMC Evolutionary Biology* 13:1-53.

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

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.

CONFLICT OF INTEREST

The author has no known relevant conflicts of interest.