

A new species of Tree Frog in the genus *Shireenhoserhylea* Hoser, 2020 from north Queensland, Australia.

LSIDURN:LSID:ZOOBANK.ORG:PUB:9DC84668-AF56-4C10-98E3-BF81FCFD8B0B

RAYMOND T. HOSER

LSIDurn:lsid:zoobank.org:author:F9D74EB5-CFB5-49A0-8C7C-9F993B8504AE

488 Park Road, Park Orchards, Victoria, 3134, Australia.

Phone: +61 3 9812 3322 Fax: 9812 3355 E-mail: snakeman (at) snakeman.com.au

Received 14 June 2020, Accepted 23 June 2020, Published 6 August 2020.

ABSTRACT

A new species of Tree Frog closely associated with *Shireenhoserhylea gracilenta* (Peters, 1869) is formally described according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999). *Shireenhoserhylea shireenhoserae* sp. nov. from the wet tropics of Queensland, Australia, is separated from the similar *S. gracilenta* from south of the Burdekin Gap, by the possession of numerous tiny, but distinct raised white-tipped tubercles on the upper body and lower limbs. These are not seen in either *S. gracilenta* from the region bound by the Burdekin River in the north and St. Lawrence Gap further south or *S. luteiventris* (Ogilby, 1907), until recently treated as *S. gracilenta*, which is found in south-east Queensland and north-east New South Wales.

The most closely related species to this genus (*Shireenhoserhylea* gen. nov.) are the morphologically divergent species within the genus *Pelodyras* Günther, 1858, type species being *Rana caerulea* White, 1790. According to Duellman *et al.* (2016) the two species groups diverged 24.7 MYA, making genus level division by Hoser (2020), from the even more divergent *Litoria* Tschudi, 1838 a common-sense decision.

Keywords: Tree Frogs; Australia; Queensland; nomenclature; taxonomy; ICZN; *Litoria*; *Shireenhoserhylea*; Burdekin Gap; wet tropics; *gracilenta*; *luteiventris*; new species; *shireenhoserae*.

INTRODUCTION

Hoser (2020) did a family-wide revision of the Australasian frog family Pelodyadidae, including formal descriptions of 12 tribes, 11 subtribes, 34 genera, 26 subgenera, 62 species and 12 subspecies new to science. The single newly named species subject of this paper was inadvertently omitted from this three volume monograph and so it is formally described herein according to the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 2020).

MATERIALS AND METHODS

These are as for Hoser (2020) and general comments about the formal descriptions within that paper also apply herein, including that all relevant details are for normal adult specimens in good health and normal conditions by day unless otherwise stated. References consulted prior to the publication of both papers (this and Hoser 2020) are cited in full in Hoser (2020). Specimens of putative "*Litoria gracilenta* (Peters, 1869)" as is generally known and as identified by Anstis (2013), Cogger (2014) or Eipper and Rowland (2018) from their entire range were examined over a thirty year period from all parts of the known range, with a view to ascertaining how many species were in fact within this assemblage.

Live specimens, including tadpoles were examined, as were dead specimens in museums, photographs and all relevant literature.

RESULTS

Duellman *et al.* (2016) found frogs in the so-called *Hyla chloris* Boulenger, 1893 group diverged from nearest named relatives in

the genus *Pelodyras* Günther, 1858, type species being *Rana caerulea* White, 1790 some 24.7 MYA. This extensive time line of evolution, coupled with significant morphological divergence led Hoser (2020) to erect the new genus *Shireenhoserhylea* Hoser, 2020 to accommodate the relevant species as listed in Hoser (2020).

The newly named species in this paper, *Shireenhoserhylea shireenhoserae* sp. nov. is a formal addition to the list of species in this genus.

Based on clear morphological differences, Hoser (2020), resurrected *S. luteiventris* (Ogilby, 1907) with a type locality of Brisbane, Queensland from the synonymy of *S. gracilenta* (Peters, 1869) with a type locality of Mackay in mid-northern Queensland, but inadvertently failed to account for those similar frogs within putative *S. gracilenta* from the wet tropics of far north Queensland.

Those frogs are also morphologically divergent and herein formally named.

The formal description of *S. shireenhoserae* sp. nov. in this paper also formally separates the relevant three species from one another to allow for identification of each in the absence of locality data.

Based on collection records in Australian museums, the three species *S. gracilenta*, *S. luteiventris* and *S. shireenhoserae* sp. nov. are all distributed in line with several other wet forest constrained species in Queensland being bound by the established biogeographical barriers of the Burdekin Gap and St. Lawrence Gap in eastern Queensland.

Nominate *S. gracilenta* is found in wetter areas between the

Burdekin Gap just south of the Burdekin River, south of Townsville in far north Queensland and the St. Lawrence Gap further south, near Rockhampton, Queensland, being most common in the ranges near Mackay.

S. luteiventris is found in wetter parts of south-east Queensland and nearby north-east New South Wales.

The newly named species *S. shireenhoserae* sp. nov. is found from Alligator Creek, Bowling Green Bay National Park, Latitude -19.4853 S., Longitude 146.9785 E. in the south along the coast and nearby ranges as far north as Cooktown, Queensland, Latitude -15.3978 S., Longitude 145.0394 E.

Genetic divergence between this taxon and *S. gracilentia* (Peters, 1869) is minimal, but the morphological divergence is significant. As this taxon is geographically disjunct and evolving separately, I have chosen to classify and name it as a species, rather than subspecies.

SHIREENHOSERHYLEA SHIREENHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:56CCA034-CB87-4028-B349-90C582C8C45C

Holotype: A preserved specimen at the Australian Museum in Sydney, New South Wales, Australia, specimen number R.53924 collected from 3 miles south of Daintree, North Queensland, Australia, Latitude -16.283 S., Longitude 145.316 E. This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number J29616, collected in the Daintree area, far north Queensland, Australia, Latitude -16.25 S., Longitude 145.3167 E.

Diagnosis: Until 2020, the species *Shireenhoserhylea shireenhoserae* sp. nov. has been treated as a northern population of putative *S. gracilentia* (Peters, 1869). The genus-level placement of both these species and the morphologically similar *S. luteiventris* (Ogilby, 1907) within *Shireenhoserhylea* Hoser, 2020 is explained and justified by Hoser (2020) with a significant divergence from the closest species group, being *Pelodyras* Günther, 1858, type species being *Rana caerulea* White, 1790.

According to Duellman *et al.* (2016) the two species groups diverged 24.7 MYA, making genus level division sensible.

All of *S. gracilentia*, *S. luteiventris* and *S. shireenhoserae* sp. nov. have until 2020 been treated by publishing authors, including Anstis (2013), Cogger (2014) or Eipper and Rowland (2018) as putative "*Litoria gracilentia* (Peters, 1860)", these species now being within *Shireenhoserhylea*.

The three species are separated from one another as follows: *S. luteiventris* is identified and separated from the other two species by having a generally lime green dorsum with a densely granular dorsum. The yellow line between the nostril and top of eye is indistinct. The yellow line posterior to the eye and above the tympanum is also only semidistinct. Supratympanic ridge is moderately defined and feet are orange. There is a significant amount of yellow on the upper and lower edges of the iris. Posterior surfaces of thighs are purple.

S. gracilentia is identified and separated from the other two species by having a generally lime green dorsum with a coarsely granular dorsum. There is a thick and extremely well defined yellow line from nostril to eye, running over the eye and along the moderately defined supratympanic fold. Feet are orange. There is a significant amount of yellow on the upper and lower edges of the iris. Posterior surfaces of thighs are purplish brown. *S. shireenhoserae* sp. nov. is readily separated from both *S. luteiventris* and *S. gracilentia* by being dark green as opposed to lime green dorsally. The yellow line posterior to the eye and above the tympanum is narrow to medium in width and moderately distinct. The supratympanic fold is moderately well defined. Feet are yellow. There is no obvious yellow pigment in the upper or lower iris. Posterior surfaces of thighs are dark reddish-brown.

S. shireenhoserae sp. nov. is most easily separated from both *S. luteiventris* and *S. gracilentia* by having a dorsum that is not densely granular, but instead with numerous spaced tubercles, usually being white or yellow tipped, these being found mainly on the upper flanks and upper surfaces of the lower fore and hind limbs. These distinctive tubercles in this arrangement are not seen in either of the other two species.

Large pre-metamorphosing tadpoles of both *S. shireenhoserae*

sp. nov. and *S. gracilentia* have a mainly light brown iris, with significant amounts of dark venation, versus mainly blackish grey in *S. luteiventris*. While tadpoles of all three species have a thin well-defined brown ring around the pupil, this is prominent and obvious in *S. luteiventris*, but not so in the other species.

S. shireenhoserae sp. nov. in life is depicted on page 209 of Anstis (2013) on left, and page 20 of Tyler (1992).

McDonald *et al.* (2016) indicated limited genetic divergence between populations of putative *S. gracilentia*, however obvious morphological divergence between the disjunct distributions warrants recognition of each of *S. shireenhoserae* sp. nov., *S. luteiventris* and *S. gracilentia* as separate taxonomic entities. Photos of the type form of *S. gracilentia* can be found online at: https://www.flickr.com/photos/martin_hadley/8478514505/in/photolist-dVdAYz

uploaded on February 16, 2013 and last viewed on 20 May 2020.

Photos of the type form of *S. luteiventris* can be found in Anstis (2013) on p. 209, right and Cogger (2014) on p. 166, top right.

Distribution: *S. shireenhoserae* sp. nov. is found from Alligator Creek, Bowling Green Bay National Park, Latitude -19.4853 S., Longitude 146.9785 E. in the south along the coast and nearby ranges as far north as Cooktown, Queensland, Latitude -15.3978 S., Longitude 145.0394 E.

Etymology: Named in honour of my long-suffering wife, Shireen Hoser in recognition of her many contributions to herpetology in Australia and wildlife conservation globally. For more detail see the etymology in Hoser (2020).

REFERENCES CITED

- Anstis, M. 2013. *Tadpoles and frogs of Australia*. Reed / New Holland, Sydney, Australia:829 pp.
- Boulenger, G. A. 1893. Description of a new tree-frog from New South Wales. *Proc. of the Linn. Soc. of NSW*, Series 2, 7:403.
- Cogger, H. G. 2014. *Reptiles and Amphibians of Australia* (Seventh Edition). CSIRO, Collingwood, Aust.:1033 pp.
- Duellman, W. E., Marion, A. B. and Blair Hedges, S. 2016. Phylogenetics, classification, and biogeography of the treefrogs (Amphibia: Anura: Arboranae). *Zootaxa* (PRINO) (online):4104:1-109.
- Eipper, S. and Rowland, P. 2018. *A Naturalist's Guide to the Frogs of Australia*. John Beaufoy Publishing, Oxford, UK:176 pp.
- Günther, A. 1858. *Catalogue of the Batrachia Salienata in the Collection of the British Museum*, London. British Museum, UK:xvi+160 pp.
- Hoser, R. T. 2020. For the first time ever! An overdue review and reclassification of the Australasian Tree Frogs (Amphibia: Anura: Pelodyadidae), including formal descriptions of 12 tribes, 11 subtribes, 34 genera, 26 subgenera, 62 species and 12 subspecies new to science. *Australasian J. Herp.* 44-46:1-192.
- McDonald, K. R., Rowley, J. J. L., Richards, S. J. and Frankham, G. J. 2016 A new species of treefrog (*Litoria*) from Cape York Peninsula, Australia. *Zootaxa* (PRINO) (online) 4171:153-169.
- Ogilby, J. D. 1907. A new tree frog from Brisbane. *Proceedings of the Royal Society of Queensland* 20:31-32.
- Peters, W. C. H. 1869. Über neue Saurier (*Chaunolaemus multicarinatus*, *Tropidolepisma richardi* und *Gymnodactylus steudneri*) und Batrachier (*Cyclorhamphus fasciatus* und *Hyla gracilentia*). *Monatsberichte der Königlich Preussische Akademie des Wissenschaften zu Berlin* 1869:786-790.
- 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.
- Tschudi, J. J. von. 1838. *Classification der Batrachier mit Berücksichtigung der fossilen Thiere dieser Abtheilung der Reptilien*. Neuchâtel: Petitpierre.
- Tyler, M. J. 1992. *Encyclopedia of Australian Animals: Frogs*. The Australian Museum / National Photographic Index of Wildlife. Angus and Robertson, Pymble, NSW, Australia:109 pp.
- White, J. 1790. *Journal of a Voyage to New South Wales with Sixty-five Plates of Non-descript Animals, Birds, Lizards, Serpents, Curious Cones of Trees and Other Natural Productions*. J. Debrett, London, UK.

CONFLICTS OF INTEREST

None.