

Formal identification and naming of a new subspecies of *Mixophyes (Quasimixophyes) fleayi* Corben and Ingram, 1987 from the Conondale Range, south-east Queensland.

LSIDURN:LSID:ZOOBANK.ORG:PUB:77FE3112-B487-4CDD-B69B-2660DA36F902

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Received 10 October 2022, Accepted 9 June 2023, Published 16 June 2023.

ABSTRACT

Long known to be morphologically divergent from populations south of the Brisbane River valley, this paper formally identifies and names *Mixophyes (Quasimixophyes) fleayi* Corben and Ingram, 1987 from the Conondale Range, south-east Queensland as a new subspecies in accordance with the rules of the *International Code of Zoological Nomenclature*.

This is a critically important first step to the conservation of this unique population, which in line with other frogs in the genus appears to be vulnerable to population declines arising from introduced pathogens.

Keywords: Taxonomy; Amphibia; nomenclature; Frog; Australia; Queensland; Conondale Range; *Mixophyes*; *Quasimixophyes*; *fleayi*; new subspecies; *conondaleensis*.

INTRODUCTION

In spite of a number of recent papers dealing with unnamed taxa within the genus *Mixophyes* Günther, 1864 *sensu lato* (e.g. Hoser, 2016, 2020a, 2020c), the divergent population of *Mixophyes (Quasimixophyes) fleayi* Corben and Ingram, 1987 from the Conondale Range, south-east Queensland has yet to receive taxonomic recognition.

While morphologically similar to the nominate form of *M. fleayi* with a type locality of Lamington National Park, south-east Queensland (south of the Brisbane River valley), The Conondale Range population is consistently sufficiently divergent to warrant taxonomic recognition at the subspecies level.

While normally there is no major urgency in identifying subpopulations or subspecies at a taxonomic level, this is not the case for frogs within the genus *Mixophyes*, which collectively have declined sharply over the last 50 years. This is presumably as a result of a high Chytrid Fungus (*Batrachochytrium dendrobatidis* Longcore, Pessier and Nichols, 1999) susceptibility.

Entire populations of *Mixophyes* have apparently vanished from areas where they were formally common, including in particular in southern New South Wales.

With the preceding in mind, it was decided to view specimens of *M. fleayi* from across the range of the putative species to confirm the need to formally recognize one or more populations at the subspecies level.

MATERIALS AND METHODS

Following on from the publications of Hoser (2016, 2020a, 2020c) there was no need to review the literature in any way, as the relevant species (*M. fleayi*) is well known, as is the distribution. Based on the habits of the species and the genus, it can be reasonably assumed that there are no other major unknown populations of this species awaiting detection by herpetologists.

The bulk of the population occurs south of the Brisbane River,

generally near the border ranges, including west of the coast in the east-facing ranges.

Specimens from here and the outlying population from the Conondale Range north of Brisbane were inspected (live, dead and from photos), to determine consistent differences (if any) that would enable taxonomic recognition of that population as a subspecies, when considered in combination with its divergence across a biogeographical barrier of known antiquity.

Noting that in times of recent glacial maxima, the south-east Queensland climate was drier than at present, there could not have been any recent mixing of populations in the recent geological past.

South of the Brisbane River there were two main populations, but it was quickly ascertained that they were morphologically indistinguishable.

In all about 20 (adult) specimens from the Conondale Range were inspected as was about 200 (adults) from areas generally south of the Brisbane River.

RESULTS

The Conondale Range population did show consistent morphological divergence, enabling it to be formally named as a new subspecies, which is done below.

This was not unexpected.

The Conondale Range is known for its endemism and includes the frog taxa *Assa jamesbondi* Hoser, 2020 (Hoser 2020b) and of course the well-known Gastric Brooding Frog *Rheobatrachus silus* Liem, 1973 also only known from the Conondale Range and nearby Blackhall Range.

While *Mixophyes sensu lato* is an archaic group, I have retained a conservative position by formally naming the Conondale Range population of putative *M. fleayi* as a subspecies and not a full species, in accordance with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

**MIXOPHYTES (QUASIMIXOPHYTES) FLEAYI
CONONDALEENSIS SUBSP. NOV.**

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Holotype: A preserved specimen at the Queensland Museum, Brisbane, Queensland, Australia, specimen number QM J86613, collected from Bundaroo Creek, Conondale National Park, Queensland, Australia, Latitude -26.690 S., Longitude 152.610 E. This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the Queensland Museum, Brisbane, Queensland, Australia, specimen numbers J77256 and J92737 both collected from the Conondale Range, South-east Queensland, Australia.

Diagnosis: *Mixophyes fleayi conondaleensis* subsp. nov. from the Conondale Range is readily separated from the nominate form of *M. fleayi* from south of the Brisbane River valley by the following combination of adult characters: On the yellow area of the mid to lower flanks there are only a few blackish spots, versus many in nominate *M. fleayi*; the barring of the fore and hind limbs upper surfaces is either absent or barely noticeable, versus bold and well defined in nominate *M. fleayi*.

M. fleayi (both subspecies) are separated from the other two species within the subgenus *Quasimixophyes* (*M. hoserae* Hoser, 2020 and *M. balbus* Straughan, 1968) by having at least some well defined black spots on the mid or lower flanks.

M. fleayi conondaleensis subsp. nov. in life from the Conondale Range is depicted online at:

<https://www.inaturalist.org/observations/106232978>

M. fleayi of the nominate form is depicted in life in Clulow and Swan (2018) on page 229 and online at:

<https://www.flickr.com/photos/toddburrows/6829698020/>

and

<https://www.inaturalist.org/observations/145008570>

(all relevant links last checked and OK as of 5 May 2023)

Frogs within the subgenus *Quasimixophyes* Hoser, 2020 are separated from the nominate subgenus of *Mixophyes* Günther, 1864 by having a grey (not whitish) upper lip and areas of darker pigment being prominent on the upper lip, versus a pale creamy white upper lip without obvious darker blotches in *Mixophyes*.

The subgenus *Feremixophyes* Hoser, 2020 is readily separated from the other two subgenera within *Mixophyes* Günther, 1864 by the following two characters: The length of the inner metatarsal tubercle is approximately half the length of the first toe versus nearly equal to the length in the other two subgenera and the webbing between the toes extends to the second most distal joint of the fourth toe. The web extends to the third most distal joint of the fourth toe in the other two subgenera and to the terminal disc of the fourth toe in *Oxyslop* Hoser, 2020. *Feremixophyes* can be separated from *Paramixophyes* Hoser, 2016 by having a few or no scattered dark spots on the side versus a broad zone of numerous dark spots on the side.

Feremixophyes can also be distinguished from *Oxyslop* by the absence of an uninterrupted narrow vertebral stripe extending from between the eyes to just above the vent.

The nominate subgenus of *Mixophyes* includes the so-called *M. fasciolatus* Günther, 1864 species group, including *M. fasciolatus* Günther, 1864, *M. shireenae* Hoser, 2016 and *M. couperi* Hoser, 2016 from wet forested riverine habitats south of the wet tropics in Queensland along the coast and nearby ranges to southern New South Wales.

The subgenus *Feremixophyes* includes the north Queensland clade of species being *M. schevilli* Loveridge, 1933 (type species), *M. coggeri* Mahony, Donnellan, Richards and McDonald, 2016 and *M. carbinensis* Mahony, Donnellan, Richards and McDonald, 2016 and is confined to the wet tropics region of far north Queensland.

The subgenus *Quasimixophyes* includes members of the so-called *M. balbus* Straughan, 1968 group of species, including *M. hoserae* Hoser, 2020 (type species) (including relevant

subspecies), *M. balbus* and *M. fleayi* Corben and Ingram, 1987 and are found from south-east Queensland south along the coast and nearby ranges to northeast Victoria. Species in each of the three subgenera also have significantly different reproductive biology's further supporting the subgenus level split of Hoser (2020a)

Distribution: *Mixophyes fleayi conondaleensis* subsp. nov. is only known from the Conondale Range, Queensland, Australia.

Etiymology: Named in reflection of where it is known from.

Conservation: Due to the small area of known distribution of the subspecies and vulnerability of the genus to pathogens such as Chytrid Fungus, it is essential that this taxon be recognized immediately and a proper management plan be enacted to ensure the long term survival of this subspecies.

The comments in Hoser (2019a, 2019b) with respect to improper synonymisation of taxa are particularly relevant with regards to this subspecies.

END NOTE

On or about 2 June 2023, Jodi Rowley, published a paper in the notorious online PRINO "journal" *Zootaxa*, quite properly known in many circles as "*Zootoxic*".

The paper, known as Mahony *et al.* (2023) had as its sole basis the renaming of the frog *Mixophyes hoserae* Hoser, 2020 as *M. australis*.

It goes without saying that the junior synonym name should not be used.

Significantly the paper also provided substantiation of the generic and subgeneric arrangement of *Mixophyes sensu lato* as determined by Hoser (2016, 2020a, 2020c) as well as the newly named species and subspecies within those papers, most notably including those species named from Queensland.

What was particularly disgusting about the publication of Mahony *et al.* (2023) was the simultaneous and well-coordinated campaign of marketing, including a series of fake news releases and stories online within a week of the *Zootaxa* paper, alleging that Mahony *et al.* had in fact discovered this species.

See for example:

<https://www.miamiherald.com/news/nation-world/world/article276119091.html>

and

<https://phys.org/news/2023-06-species-frog-nsw-endangered.html>

and

<https://reptilemagazine.com/researchers-discover-new-australian-barred-frog-species-in-new-south-wales/>

At all materially relevant times, Rowley and Mahony *et al.* knew this to be untrue.

Simultaneous to this was a next-level negative SEO campaign to ensure effective removal of *M. hoserae* from the searchable internet and its replacement with the improperly coined junior synonym *M. australis*.

This included Code-defying entries on the FrogID App run by Rowley on behalf of the Australian Museum as well as Darrel Frost's high traffic "Amphibians of the World" website under the umbrella of the American Museum of Natural History.

To maintain their veneer of unanimous approval, the cohort systematically removed posts and comments alerting others of the senior synonym *M. hoserae* from Facebook and other online platforms.

It goes without saying that the rules of the International Code of Zoological Nomenclature and Copyright laws are absolute and on this basis the correct nomen for the relevant taxon is *M. hoserae*.

REFERENCES CITED

Clulow, S. and Swan, M. 2018. *Australian Geographic, A complete guide to Frogs of Australia*. Australian Geographic, Sydney, Australia:336 pp.

Corben, C. J. and Ingram, G. J. 1987. A new barred river frog

(Myobatrachidae: *Mixophyes*). *Memoirs of the Queensland Museum* 25:233-237.

Günther, A. C. L. G. 1864. Third contribution to our knowledge of batrachians from Australia. *Proceedings of the Zoological Society of London* 1864:46-49.

Hoser, R. T. 2016. New frogs of the genus *Mixophyes* Günther, 1864 from Eastern Queensland, and New South Wales, Australia (Anura: Myobatrachidae). *Australasian Journal of Herpetology* 33:60-64.

Hoser, R. T. 2019a. 11 new species, 4 new subspecies and a subgenus of Australian Dragon Lizard in the genus *Tympanocryptis* Peters, 1863, with a warning on the conservation status and long-term survival prospects of some newly named taxa. *Australasian Journal of Herpetology* 39:23-52.

Hoser, R. T. 2019b. Richard Shine *et al.* (1987), Hinrich Kaiser *et al.* (2013), Jane Melville *et al.* (2018 and 2019): Australian Agamids and how rule breakers, liars, thieves, taxonomic vandals and law breaking copyright infringers are causing reptile species to become extinct. *Australasian Journal of Herpetology* 39:53-63.

Hoser, R. T. 2020a. The inevitable reassessment of the Australasian frog genera *Mixophyes* Günther, 1864 and *Taudactylus* Straughan and Lee, 1966, resulting in the formal descriptions of two new families, new subfamilies and tribes, three new genera, 2 new subgenera, 1 new species and 2 new subspecies. *Australasian Journal of Herpetology* 43:15-26.

Hoser, R. T. 2020b. Four new species of frog in the genus *Assa* from eastern Australia. *Australasian Journal of Herpetology* 47:57-63.

Hoser, R. T. 2020c. 3 new tribes, 3 new subtribes, 5 new genera, 3 new subgenera, 39 new species and 11 new subspecies of

mainly small ground-dwelling frogs from Australia. *Australasian Journal of Herpetology* 50-51:1-128.

Liem, D. S. S. 1973. A new genus of frog of the family Leptodactylidae from S. E. Queensland, Australia. *Memoirs of the Queensland Museum* 16:459-470.

Longcore, J. E., Pessier, A. P. and Nichols, D. K. 1999. *Batrachochytrium dendrobatidis* gen. et sp. nov., a chytrid pathogenic to amphibians. *Mycologia* 91(2):219-227.

Loveridge, A. 1933. Four new crinine frogs from Australia. *Occasional Papers of the Boston Society of Natural History* 8:55-60.

Mahony, M. J., Donnellan, S. C., Richards, S. J. and McDonald, K. R. 2006. Species boundaries among barred river frogs, *Mixophyes* (Anura: Myobatrachidae) in north-eastern Australia, with descriptions of two new species. *Zootaxa* (PRINO) (online) 1228:35-60.

Mahony, M. J., Bertozzi, T., Guzinski, J., Hines, H. B. and Donnellan, S. C. 2023. A new species of barred frog, *Mixophyes* (Anura: Myobatrachidae) from south-eastern Australia identified by molecular genetic analyses. *Zootaxa* (PRINO) (Online) 5297 (3):301-336.

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 "The Rules", "Zoological Rules" or "ICZN 1999").

Straughan, I. R. 1968. A taxonomic review of the genus *Mixophyes* (Anura, Leptodactylidae). *Proceedings of the Linnean Society of New South Wales* 93: 52-59.

CONFLICTS OF INTEREST

None.

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