

**A new subspecies of *Hesperoedura reticulata* (Bustard, 1969)
from south-central Western Australia.**

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ABSTRACT

Until early 2023 the gecko species *Hesperoedura reticulata* (Bustard, 1969), endemic to southern parts of Western Australia, has been treated as monotypic by all authors.

This included Hoser (2017), being the most recent systematic analysis of the Australian gecko genus *Oedura* Gray, 1842 *sensu lato* as recognized at the time.

Prior to the publication of that paper in 2017, specimens of the taxon were inspected and significant west-east differences were noted. What was unsure at the time was whether or not the population variations were clinal and with the holotype being from an area roughly between the two main population groups, the question arose as to from which grouping it was best placed.

Since 2017, more specimens of putative *H. reticulata* including some from the type locality have been inspected and it has been possible to ascertain the following facts.

1/ The type form is that from the western part of the species range.

2/ Those from most of the putative species range, including from generally east of the type locality are morphologically divergent and warrant recognition at the taxonomic level.

While they are almost certainly full species level divergent, there is no molecular evidence available.

Therefore, they are conservatively formally named as a new subspecies *H. reticulata wongi* *subsp. nov.* in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

The Wongi tribe are the original native inhabitants of the region, who had most of their land and possessions taken from them before the majority were exterminated in the name of the British Royal Family.

Keywords: Taxonomy; nomenclature; Australia; Western Australia; velvet gecko; *Hesperoedura*; *reticulata*; *wongi*.

INTRODUCTION

It has been common knowledge among herpetologists in Australia that until recently, much of the gecko biodiversity awaited formal cataloguing and naming.

Hoser (2017) formally named 14 new species and four new subspecies within the greater *Oedura* Gray, *sensu lato*, this sort of number of new taxa being in line with similar systematic break ups among other main Australian gecko groups.

See for example Hoser (2016), with the gecko family Carphodactylidae reviewed, including the formal descriptions of 9 new species and four new subspecies; Hoser (2022), with 11 new species and 4 new subspecies within the genus *Heteronotia* Wermuth, 1965 *sensu lato* and Hoser (2023) with 23 new species and 4 new subspecies within the genus *Diplodactylus* Gray, 1827 *sensu lato*.

In each of the latter two papers the number of recognized species in each genus was effectively doubled.

When Hoser (2017) was being prepared, numerous specimens of *Hesperoedura reticulata* (Bustard, 1969), a species endemic to southern parts of Western Australia, were inspected.

At all times prior to 2017, all publishing herpetologists had treated the putative taxon as monotypic.

No one had ever considered the possibility of taxonomic recognition of either species or subspecies beyond the single monotypic form.

However, in the process of preparing Hoser (2017) all putative species, including *H. reticulata* were scrutinized for the potential of so-called "cryptic" or hidden taxa.

Specimens of putative *H. reticulata* were inspected and

significant west-east differences were noted. What was unsure at the time in 2017 and prior to then, was whether or not the population variations were clinal and with the holotype being from an area roughly between the two main population groups, from which grouping it was best placed.

Since 2017, more specimens of putative *H. reticulata* including some from the type locality have been inspected and it has been possible to ascertain the following facts.

- 1/ The type form is that from the western part of the species range, it being from the eastern extremity of this range.
- 2/ Those from most of the putative species range, including from generally east of the type locality are morphologically divergent and warrant recognition at the taxonomic level.

This variation does not appear to be clinal.

Furthermore, the closest points known between the type of the (nominate) western form and the hitherto unnamed eastern form is well over 100 km in a straight line, indicating, long-term separation of populations as befits the obvious morphological divergence.

While the two groupings are almost certainly full species level divergent, there is no molecular evidence available at the present time and ongoing commitments render it unlikely either myself or anyone else I know, will be getting usable molecular samples in the near future.

Therefore, the eastern population of putative *H. reticulata* is conservatively formally named as a new subspecies *H. reticulata wongi* subsp. nov. in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride et al. 1999).

The Wongi tribe are the original native inhabitants of the region, who had most of their land and possessions taken from them before the majority were exterminated in the name of the British Royal Family.

The scientific nomen "*wongi*" is deliberate as use of the alternative name "*wongiorum*", as may perhaps properly be the case in terms of name formation, may risk the name being a homonym and so therefore the shortened version "*wongi*" is used in this case.

MATERIALS AND METHODS

Specimens were inspected from across the putative range for the putative species *H. reticulata*, including specimens from the type locality, that being 9 miles north of Kelanning, Western Australia, Australia, Latitude 33.22 S., Longitude 117.2 E and the holotype itself depicted online at:

<https://museum.wa.gov.au/catalogues-beta/digitised-types/herpetology/oedura-reticulata>

The location is most easily located (approximately) by drawing a straight line north from Albany in the south and Bunbury to the west and it is at the transect.

Consistent differences were noted and readily matched with the relevant subspecies.

These were either of the type form from coastal west Australia, generally west of North Tarin Rock Reserve, Latitude -32.983333 S., Longitude 118.233333 E., just east of Kelanning and in an area bounded by here and just north of Kellerberrin, WA in the north-east (Latitude -31.366667 S., Longitude 117.633333 E.), Woodanilling in the south (Latitude -33.566667 S., Longitude 117.533333 E.), and the Indian Ocean in the west.

The newly named form occurs in the rest of the known range of putative *H. reticulata* and include an area generally bound by Holt Rock, WA, (Latitude -32.683333 S., Longitude 119.45 E.) in the southwest, Zanthus, WA (Latitude -31.033333 S., Longitude 123.6 E.) in the east, Mount Gibson, WA (Latitude -29.55 S., Longitude 119.15 E.) in the north and Buntine Nature Reserve, WA. (Latitude -29.983333 S., Longitude 116.6) in the north-west.

Relevant literature was consulted to see if consistent differences across the range of the putative species *H. reticulata* had been previously noted, but none had been.

Publications relevant to the taxonomic decision to recognize the relevant subspecies of putative *H. reticulata* included Bustard (1969), Han et al. (2004), How and Kitchener (1983), Hoser (2017), Oliver et al. (2012), Ride et al. (1999), Wells and Wellington (1984, 1985) and sources cited therein.

RESULTS

Sufficient consistent differences between specimens between east and west populations, allowed me to be able to formally name the new subspecies of putative *H. reticulata* as is done in this paper below.

Furthermore inspection of live and preserved specimens enabled me to ascertain the distributions of each form with a high degree of certainty as is laid out in this paper.

In summary, the type (western) form has generally less distinct markings on the dorsum and the blotches on the dorsum are somewhat merged, versus somewhat separated circles or blotches in the eastern form.

The known distributions of each subspecies based on material seen is also laid out in the formal description below.

There is no conflict of interest in terms of this paper or the conclusions arrived at herein.

Several people including anonymous peer reviewers who revised the manuscript prior to publication are also thanked as are relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal description, spelling should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature (ICZN) including for the reason already noted above.

This includes if Latinisation is wrong, apparent spelling mistakes and so on.

Any online citations within this paper, including copied emails and the like, are not as a rule cited in the references part of this paper and have the same most recent viewing and checking date of 30 July 2023 (at which time they were still online as cited).

Unless otherwise stated explicitly, colour and other descriptions apply to living adult male specimens of generally good health, as seen by day and not under any form of stress by means such as excessive cool, heat, dehydration, excessive ageing, abnormal skin or reaction to chemical or other input.

While numerous texts and references were consulted prior to publication of this paper, the criteria used to separate the relevant subspecies has already been spelt out and/or is done so within the formal description and does not rely on material within publications not explicitly cited herein.

HESPEROEDURA RETICULATA WONGI SUBSP. NOV.

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Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R91508 collected from 4 km east of Zanthus, Western Australia, Australia, Latitude -31.033333 S., Longitude 123.6 E.; the specimen was caught about 2 metres up a Mallee Tree.

This government-owned facility allows access to its holdings.

Paratypes: Five preserved specimens at the Australian Museum, Sydney, New South Wales, Australia, specimen numbers R.179801, R.179802, R.179803, R.179804 and R.179805 all collected from 16 km south-east of Coolgardie, along the Coolgardie-Esperance Highway at an abandoned homestead, Western Australia, Australia, Latitude -31.01263 S., Longitude 121.28224 E.

Diagnosis: Until now *Hesperoedura reticulata wongi* subsp. nov. has been treated simply as nominate *H. reticulata*.

However, it is consistently morphologically divergent,

geographically disjunct and so is formally named herein as a new subspecies.

The two subspecies are separated as follows:

H. reticulata wongi subsp. nov. has a body which has a dorsum including semi-detached or fully separated semi-distinct irregular-shaped blotches along the midline, these generally being partially split or paired and bounded by dark blackish in colour in parts, especially along the upper flank boundary.

On the upper surface of the nominate form of *H. reticulata* the dorsal blotches are joined to form a continuum and are even less distinct and obvious than seen in *H. reticulata wongi subsp. nov.* giving the dorsum a more peppered grey appearance.

The outer edges of the blotches are bound by dark peppering, rather than bold dark edges. This is likewise at the anterior end of the upper parts of the (original) tail.

The separation of the dorsal blotches is still prominent at the rear end of the body in *H. reticulata wongi subsp. nov.* versus not so in *H. reticulata*.

The genus *Hesperoedura* as diagnosed by Oliver *et al.* 2012, being the sum total of the two subspecies described above is the same as for the monotypic subtribe *Hesperoedurina* Hoser, 2017 as formally named in that paper.

Hesperoedura is diagnosed and defined as follows:

Hesperoedura is a monotypic genus within the Diplodactylidae (*sensu* Han *et al.* 2004) and is distinguished from all related genera within Fiacumminggeckoini Hoser, 2017 by the combination

of;

- 1/ Minute granular dorsal scales much smaller than the ventrals,
- 2/ A dorsal pattern consisting of a broad brown pale edged vertebral stripe,
- 3/ Up to 70 mm snout vent length,
- 4/ A single cloacal spur, and,
- 5/ A long, slender and only slightly horizontally flattened tail.

Characters 1-2 specifically separate this subtribe from Fiacumminggeckoina Hoser, 2017, characters 3-4 separate this subtribe from Celertenuina Hoser, 2017, and characters 3-5 separate this genus from the genus *Nebulifera* Oliver, Bauer, Greenbaum, Jackman and Hobbie, 2012, which is monotypic (at the recognized species-level) within the subtribe *Nebuliferina* Hoser, 2017.

Hesperoedura reticulata wongi subsp. nov. in life is depicted in Storr, Smith and Johnstone (1990) on plate 14 at bottom left and in life online at:

<https://www.inaturalist.org/observations/146517026>

and

<https://www.flickr.com/photos/136643623@N03/49312995128/>

and

<https://www.inaturalist.org/observations/146517025>

The nominate form of *H. reticulata* is depicted in life online at:

<https://www.flickr.com/photos/stephenmahony/9056415149/>

and

<https://www.flickr.com/photos/reptileshots/10725693873/>

and

<https://www.flickr.com/photos/124699310@N06/24033571541/>

and

<https://www.flickr.com/photos/171250498@N08/52911883869/>

Distribution: *Hesperoedura reticulata wongi subsp. nov.*

occurs in an area generally bound by Holt Rock, WA, (Latitude -32.683333 S., Longitude 119.45 E.) in the southwest, Zanthus, WA (Latitude -31.033333 S., Longitude 123.6 E.) in the east, Mount Gibson, WA (Latitude -29.55 S., Longitude 119.15 E.) in the north and Buntine Nature Reserve. WA. (Latitude -29.983333

S., Longitude 116.6) in the north-west.

Nominate *H. reticulata* is found from coastal west Australia, generally west of North Tarin Rock Reserve, Latitude -32.983333 S., Longitude 118.233333 E., just east of Kelanning and in an area bounded by here and just north of Kellerberrin, WA in the north-east (Latitude -31.366667 S., Longitude 117.633333 E.), Woodanilling in the south (Latitude -33.566667 S., Longitude 117.533333 E.), and the Indian Ocean in the west.

Etymology: *H. reticulata wongi subsp. nov.* is named in honour of the Wongi tribe of original Australian inhabitants.

The Wongi tribe are the original native inhabitants of the region in Western Australia, from where this subspecies occurs. They had most of their land and possessions taken from them before the majority were exterminated in the name of the British Royal Family during the 1800's.

The scientific nomen "*wongi*" is deliberate as use of the alternative name "*wongiorum*", as may perhaps properly be the case in terms Latinisation, may risk the name being a homonym and so therefore the shortened version "*wongi*" is used in this case and should not be changed by a first reviser.

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CONFLICTS OF INTEREST - NONE.