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Bulls-eye for Bog-Eye taxonomy. There are four species of extant Shingleback Lizards and two are finally getting formally named!

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ABSTRACT

The iconic Australian Shingleback Lizard, *Trachydosaurus rugosus* Gray, 1825, type locality of King George's Sound, south-west Western Australia also locally known as the "Bog Eye" has been treated by most herpetologists as a single wide-ranging Australian taxon.

Found across drier parts of the southern third of the continent, extending north in the far east and far west, these lizards vary significantly in colour and form by locality.

In addition to the type form, scientific names have been coined for three other variants, which have variously been treated by herpetologists as either conspecific (e.g. Hoser 1989), with up to 4 subspecies (e.g. Cogger 2014 and Brown 2014), or as a number of full species (e.g. Wells and Wellington, 1985).

A recent molecular study of Ansari *et al.* (2019), effectively repeated by Brown *et al*. (2023) has confirmed that putative *Trachydosaurus rugosus* Gray, 1825 across Australia are in fact a complex of four species.

Unfortunately, only one of these, *Trachydosaurus asper* Gray, 1845, with a type locality of Adelaide, South Australia conforms to a population of a different species to *Trachydosaurus rugosus* Gray, 1825.

Two other putative taxa carry names, being *Tiliqua rugosus konowi* Mertens, 1958 from Rottnest Island, Western Australia and *Tiliqua rugosus palarra* Shea, 2000, with a type locality of Amala Station rubbish tip, Shark Bay area, Western Australia.

However, based on the molecular studies of both Ansari *et al.* (2019) and Brown *et al*. (2023) these are in effect synonyms of *Trachydosaurus rugosus.*

They are not even sufficiently divergent to warrant being recognised as subspecies.

The two divergent forms that are divergent at the species level and until now are unnamed are the distinctive west Victorian / south-east South Australian form herein formally named as *Trachydosaurus adelynhoserae sp. nov*. and the unusual form from the Nullarbor Plain near the coast around the South Australian and Western Australian border, herein formally named as *Trachydosaurus jackyhoserae sp. nov*..

With Shingleback lizards extremely popular in the pet trade and regularly unlawfully smuggled outside of Australia on a large scale (Hoser 1993, 1996) it is important that the forms be properly recognised to aid scientific inquiries, conservation and law enforcement actions for the reasons given in Hoser (2007, 2019a-b).

Keywords: Lizards; Shingleback; Bog Eye; Stumpy tail; *Trachydosaurus*; *Tiliqua*; *rugosus*; *aspera*; *konowi*; *palarra*; taxonomy; Australia; nomenclature; synonyms; reclassification; new species; *adelynhoserae*; *jackyhoserae*.

INTRODUCTION

The iconic Australian Shingleback Lizard, *Trachydosaurus rugosus* Gray, 1825, type locality of King George's Sound, south-west Western Australia also locally known as the "Bog Eye" or "stumpy tail" has been treated by most herpetologists as a single wide-ranging Australian taxon.

They are found across drier parts of the southern third of the continent, extending north in the far east and far west.

These lizards vary significantly in colour and form by locality.

Most Australian herpetologists are very familiar with these lizards and what they look like.

Readers unfamiliar with these common and widespread lizards may simply consult photo sharing websites like

http://www.flickr.com

or

https://www.inaturalist.org

and view the hundreds of available photos from all parts of the Australian distribution.

In addition to the type form from with a type locality of King George's Sound, south-west Western Australia , scientific names have been coined for three other variants, which have variously been treated by herpetologists as either conspecific (e.g. Hoser 1989), with up to 4 subspecies (e.g. Cogger 2014 and Brown 2014), or as a number of full species (e.g. Wells and Wellington, 1985).

The most common classifications treat the putative species as one, but with four widely recognized subspecies (e.g. Cogger 2014 and Brown 2014).

There have been a number of recently published molecular studies involving these lizards, including that of Ansari *et al.* (2019), which was essentially duplicated by Brown *et al.* (2013).

That study in particular confirmed the following important facts.

That is, that putative *Trachydosaurus rugosus* Gray, 1825, with a type locality of King George's Sound in Western Australia, and occurring across Australia as currently recognised is in fact a complex of four species.

Unfortunately, only one of these, *Trachydosaurus asper* Gray, 1845, with a type locality of Adelaide, South Australia conforms to a population of a different species to *Trachydosaurus rugosus* Gray, 1825.

The other two putative taxa that carry names, namely *Tiliqua rugosus konowi* Mertens, 1958 from Rottnest Island, Western Australia and *Tiliqua rugosus palarra* Shea, 2000, with a type locality of Amala Station rubbish tip, Shark Bay area, Western Australia are both in effect synonyms of *Trachydosaurus rugosus* and not even sufficiently divergent to warrant being recognised as subspecies.

They are best described as colour variants in a widespread species noted for having locally differently coloured lizards.

Most of the distribution of Shingleback lizards is occupied by the ranges of a so-called western form as in *T. rugosus* that is found south and west of the major deserts in Western Australia, extending east to near the Western Australia and South Australian border and *T. asper* which occupies most of the range in South Australia from the Nullarbor in the west, across the State, into New South Wales and southern Queensland.

East of the southern Flinders Ranges and Adelaide Hills, and in an area extending into Victoria and south of the Murray River is a distinctive form, divergent at the species level and to date unnamed.

On the Nullarbor, near the Western Australian / South Australian border and extending a short distance either side (just over 150 km each way from the border), is another distinctive and divergent form, also to date unnamed.

Ansari *et al.* (2019) found putative *T. rugosus* and *T. asper* to have diverged from each other about 2.7 MYA.

Within each of the following, Ansari *et al.* (2019) found that the Nullarbor form diverged from type *T. rugosus* about 1.5 MYA and likewise for the Victorian form from the type of *T. asper*.

A 1.5 MYA divergence for a lizard is usually treated as species-level divergence and I have no issue at all with this.

Inspection of numerous lizards from across the range of putative *T. rugosus* confirms that the Victorian and Nullarbor forms are diagnostically different to the other two taxa and so the purpose of this paper is to name them as new species.

These are formally named as follows:

The distinctive west Victorian / south-east South Australian form is herein formally named as *Trachydosaurus adelynhoserae sp. nov.*.

The unusual form from the Nullarbor Plain near the coast around the South Australian and Western Australian border, is herein formally named as *Trachydosaurus jackyhoserae sp. nov.*.

With Shingleback lizards extremely popular in the pet trade and regularly unlawfully smuggled outside of Australia on a large scale (Hoser 1993, 1996) it is important that the forms be properly recognised to aid scientific inquiries, conservation and law enforcement actions for the reasons given in Hoser (2007, 2019a-b).

MATERIALS, METHODS AND RESULTS

All the relevant named forms and unnamed forms were very familiar to me as I had been dealing with these lizards for over 50 years and kept many in captivity for decades.

For the purposes of this paper and the formal exercise of naming the two unnamed species, I embarked on a sweep of available specimens of the two relevant forms, combined with an overview look at numerous specimens of the nominate taxa *T. rugosus* and *T. asper.*

The purpose of this was to identify consistent differences between the forms allowing them to be diagnosed as separate taxa.

Given a 1.5 MYA divergence established by Ansari *et al.* (2019), the decision to describe the relevant taxa as full species was effectively already made up and would only be changed if compelling evidence to the contrary emerged, which did not happen.

Obviously, I made inquiries as to pre-existing names, as in synonyms, to make sure that neither form had been previously named, including by reviewing the important publications of Cogger *et al.* (1983) and Wells and Wellington (1984, 1985).

As already mentioned, besides, *T. rugosus* and *T. asper,* the only other available names for Shinglebacks, applied exclusively to far west Australian specimens and so could not be used as identifiers for the hitherto unnamed forms.

Relevant literature was consulted, including the following: Ansari *et al*. (2019), Brennan *et al.* (2024), Brown (2014), Brown *et al*. (2023), Cogger (2014), Cogger *et al.* (1983), Duméril and Bibron (1839), Gardner *et al.* (2007), Gray (1825, 1826, 1839, 1845), Haacke (1885), Hallermann (2020), Hoser (1989), ICZN (2012), Lucas and Frost (1894), Maryan *et al.* (2024), Mertens (1958), Mitchell (1950), Ride *et al.* (1999), Sare *et al*. (1990), Shea (1990, 2000), Smith (1834), Storr, Smith and Johnstone (1999), Swan *et al*. (2017), Switak (1997), Thorn *et al*. (2019, 2023), Wagler (1830, 1833), While *et al*. (2015), Wilson and Swan (2010) and sources cited therein.

The result herein is the decision to formally name the two species of Shingleback lizard as already indicated.

The Victorian / Southeast South Australian form is herein formally named as *Trachydosaurus adelynhoserae sp. nov.* and the central south Nullarbor form is herein formally named as *Trachydosaurus jackyhoserae sp. nov.*.

Brown (2014) on pages 469 and 470 has photos of specimens of all four previously formally named forms, identified by the relevant names as well as the form herein identified as *Trachydosaurus adelynhoserae sp. nov.* which he identified on page 469 as "*Tiliqua rugosus aspera*".

Photos of *Trachydosaurus jackyhoserae sp. nov.* are available for download on "Inaturalist" at https://www.inaturalist.org (listed as "*Tiliqua rugosus*").

T. jackyhoserae sp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/103334206

from Nullarbor, South Australia, Australia, photographed by Scott Rolph, and https://www.inaturalist.org/observations/177625624

from Nullarbor, South Australia, Australia, photographed by Steve Paradox, and https://www.inaturalist.org/observations/186834480

from Unincorp, South Australia, Australia, photographed by "beneficiallime", and

https://www.inaturalist.org/observations/201887621

being a deceased juvenile specimen from Bunda View Campground, Nullarbor Plain, South Australia, Australia, photographed by Mike and Cathy Beamish.

INFORMATION RELEVANT TO THE FORMAL DESCRIPTIONS THAT FOLLOW

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 descriptions, spelling of names 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 (Ride *et al.* 1999 and ICZN 2012).

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 21 April 2025, unless otherwise stated and were accurate in terms of the context cited herein as of that date.

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

This includes the descriptions of the lizards not including pre-sloughing animals, which are often significantly different to the usual colouration for the specimen or species, being usually more whitish or dull.

Note that there is ordinarily some sexual dimorphism between adults of species within the relevant taxa (in all four species), that is females usually have a longer body and a proportionately smaller head as well as other quantifiable differences.

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

Some material within descriptions may be repeated to ensure each fully complies with the *International Code of Zoological Nomenclature* (Ride *et al*. 1999) and the 2012 amendments (ICZN 2012).

The "version of record" is the printed version and not pdf version. Both are identical in all materially relevant ways except for the fact that the images in the printed version may be in black and white, as opposed to colour as seen in the pdf version.

The people who assisted with provision of photos and other materials used within this paper or for research by me are also thanked for their assistances, for which they sought nothing in return.

Because of the depth of knowledge about these relatively common lizards both generally and in the herpetological literature, as well as numerous detailed studies of various populations, the descriptions herein are published without such superfluous information.

Other herpetologists will not have issues separating out the four relevant species on the basis of the information within this paper.

However, what is most important is that they are properly identified from here onwards, as it is self-evident that they will have different ecologies and conservation requirements.

Hence a study on one particular species may not be able to have the results simply transposed to another as may have been inadvertently done prior.

Older studies on given populations should have their results read only in the context of the relevant species involved and not necessarily all four species as identified within this paper.

TRACHYDOSAURUS ADELYNHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:B7A028D3-3658-4BE3-852B-5918E32C7CAB

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R22772 collected from Bucks Lake Game Reserve, South Australia, Australia, Latitude -37.92 S., Longitude 130.4 E.

This government-owned facility allows access to its holdings.

Paratypes: Two preserved specimens at the South Australian Museum, Adelaide, South Australia, Australia, being specimen number R22773 collected from Bucks Lake Game Reserve, South Australia, Australia, Latitude -37.92 S., Longitude 130.4 E., and specimen number R21484 collected from Tea Tree Crossing, Coorong National Park, South Australia, Australia, Latitude -36.18 S., Longitude 139.65 E.

Diagnosis: The Shingleback lizards of Australia form within two main clades.

These are the western one including *Trachydosaurus rugosus* Gray, 1825, with a type locality of King George's Sound in Western Australia and occupying most of the southern third of that State and *T. jackyhoserae sp. nov*. occurring on the southern coastal strip of the Nullarbor to about 150 km either side of the Western Australia / South Australia State border.

The so called eastern clade includes *Trachydosaurus asper* Gray, 1845, with a type locality of Adelaide, South Australia and found from the eastern Nullarbor in South Australia, throughout the southern half of the state of South Australia, extending into New South Wales, to occupy most parts of that state except for the wetter eastern section, generally east of the Great Dividing Range, and also into most parts of southern Queensland, except the wetter coastal regions. Also within this eastern clade is *T. adelynhoserae sp. nov*. which is essentially found south of the Murray River in Victoria and nearby South Australia. It is found north and west of the Murray River near the lower reaches, where it is separated from *T. asper* by the Adelaide Hills. The distribution of both *T. asper* and *T. adelynhoserae sp. nov*. appears to meet on the east side of the lower Flinders Ranges but are otherwise separated by the Murray River floodplains in Victoria and adjacent parts of the Riverland in South Australia.

The four preceding species are separated from one another by the following unique combinations of characters:

T. rugosus including the putative subspecies *Tiliqua rugosus konowi* Mertens, 1958 from Rottnest Island, Western Australia and *Tiliqua rugosus palarra* Shea, 2000, with a type locality of Amala Station rubbish tip, Shark Bay area, Western Australia is separated from the other three species by having a large ear opening, irregular pale bands that widen on the flanks and a pale head, flushed with white, yellow, orange or red. While banding is reduced in the two putative subspecies, in particular putative *Tiliqua rugosus palarra* Shea, 2000, it remains present and obviously widening at the flanks.

T. asper is separated from the other three species by having a relatively small ear opening, a very robust build (significantly more robust than *T. rugosus*), a short thick and bulbous tail (versus quite elongate in *T. rugosus*), wrinkled scales and not having a pale head. That is the head is of the same colour as the body. Light markings on the upper body is not in the form of bands.

T. jackyhoserae sp. nov. is superficially similar to *T. asper* in that it is stocky in build like that taxon and similar in colour dorsally. *T. jackyhoserae sp. nov*. does have a large ear opening (in contrast to the smaller one in *T. asper* and *T. adelynhoserae sp. nov*.), a smaller head size (for both sexes) than seen in *T. asper* (and *T. adelynhoserae sp. nov*.) and a tail intermediate in shape and length between both *T. asper* and *T. rugosus* but not at all bulbous as seen in *T. asper* or *T. adelynhoserae sp. nov*.. The tail is not as obviously flattened as in the other three species.

The dorsal colouration of *T. jackyhoserae sp. nov*. is brown or greyish brown all over, but every scale is tipped with, or infused with whitish or yellow colour, giving the lizard a distinctive appearance of being like brown dirt with white gravel scattered on the surface. There is no indication of the crossbands as seen in *T. rugosus*. The head of *T. jackyhoserae sp. nov*. is the same colour as the body, or even slightly darker in colour (in contrast to *T. rugosus*), this effect being due to the lower amount of white or yellow on the scales of the upper surfaces of the head.

There is increasing amounts of whitish yellow on the scales of the lower flanks, but no indication of cross-bands on the lizard.

T. adelynhoserae sp. nov. is separated from the three preceding species by its relatively small ear hole (in common with *T. aspera*), a bulbous tail like seen in *T. aspera*, but one that is more noticeably flattened in shape, versus not so much in *T. aspera*, this being more noticeable in males, a head that is usually much darker than the body (versus similar colour or sometimes lighter in *T. rugosus*), a dorsal colouration usually consisting of reasonably well-defined bands, except in aged specimens (which retain traces of them, or have them very faded), the lighter cross bands not obviously widening on the lower flanks (in contrast to both *T. rugosus* or *T. jackyhoserae sp. nov*. the latter that also has more light on the lower flanks).

The four preceding species are all so-called Shinglebacks and the entirety of the genus

Trachydosaurus Gray, 1825, type species *Trachydosaurus rugosus* Gray, 1825.

They are instantly recognised as distinct from all other species of Australian skink by their pine-cone like scales, especially on the tail and general appearance, caused by grossly enlarged bluntly rugose dorsal scales, a very short blunt ended tail, that may be slightly to very flattened in appearance (depending also on species, gender within species and amount of fat stored in it at the time), being only 20-25 per cent of the body length, head shields fragmented with

little obvious symmetry, except for the rostral, labials and the large interparietal shield that separates the interparietals. There are no anterior lobules in the ear; third and fourth toes are subequal in length or the third is slightly longer; subdigital lamellae that are divided or at least divided basally.

Photos of all relevant species and putative subspecies are depicted in Brown (2014) on pages 469 and 470, excluding for *T. jackyhoserae sp. nov*..

T. adelynhoserae sp. nov. is depicted in life online at:
https://www.flickr.com/photos/91908502@N03/
from Edenhope Victoria, Australia, photographed by "Spiranthes2013" and,
https://www.flickr.com/photos/88708273@N03/22172408423/
from Murray Sunset Region, north-western Victoria, Australia, photographed by Matt Clancy, and
and
https://www.flickr.com/photos/88708273@N03/51338439961/
from the north-west Mallee, north-western Victoria, Australia, photographed by Matt Clancy, and
https://www.flickr.com/photos/88708273@N03/11022355863/
from Nhill, Victoria, Australia, photographed by Matt Clancy, and
https://www.flickr.com/photos/88708273@N03/9107527236/
from Bendigo, Victoria, Australia, photographed by Matt Clancy, and
https://www.flickr.com/photos/45437563@N07/42966244900/
from Maldon, Victoria, Australia, photographed by Albert Wright, and
https://www.flickr.com/photos/nikborrow/24243194098/
from Little Desert, Victoria, Australia, photographed by Nik Borrow
https://www.flickr.com/photos/euprepiosaur/50628199057/
and
https://www.flickr.com/photos/euprepiosaur/50628102121/
all from Millicent, South Australia, Australia photographed by Stephen Zozaya, and
https://www.flickr.com/photos/paulthrelfall/31778695855/
from just below Chatauqua Peak, near Halls Gap, Victoria, Australia, photographed by Paul Threlfall, and
https://www.flickr.com/photos/127392361@N04/25718996546/
from Flora Hill, Bendigo, Victoria, Australia, photographed by Nick Gale, and
https://www.flickr.com/photos/dhobern/32284540730/
from Wyperfeld National Park, Victoria, Australia, photographed by Donald Hobern, and
https://www.inaturalist.org/observations/154350528
from North Ward, Yanac, Victoria, Australia, photographed by Mia Hoskin, and
https://www.facebook.com/snakebusters/photos/pb.100057667771163.-2207520000/869799333112731/?type=3
being an aged adult male from Sea Lake, Victoria.

T. jackyhoserae sp. nov. is depicted in life online at:
https://www.inaturalist.org/observations/103334206
from Nullarbor, South Australia, Australia, photographed by Scott Rolph, and
https://www.inaturalist.org/observations/177625624
from Nullarbor, South Australia, Australia, photographed by Steve Paradox, and
https://www.inaturalist.org/observations/186834480
from Unincorp, South Australia, Australia, photographed by "beneficiallime", and
https://www.inaturalist.org/observations/201887621
being a deceased juvenile specimen from Bunda View Campground, Nullarbor Plain, South Australia, Australia, photographed by Mike and Cathy Beamish.

T. asper is depicted in life in Hoser (1989) on page 112 bottom and online at:
https://www.facebook.com/snakebusters/photos/pb.100057667771163.-2207520000/869799373112727/?type=3
and
https://www.facebook.com/snakebusters/photos/pb.100057667771163.-2207520000/681315318627801/?type=3
female from Morgan, South Australia.

T. rugosus is depicted in life online at:
https://www.flickr.com/photos/colonel_007/52978411985/
from Cheynes Beach, Western Australia, Australia, photographed by Mark Sanders, and
https://www.flickr.com/photos/chris_chafer/38823032255/
from Dryandra, Western Australia, Australia, photographed by Chris Chaffer.

Putative *T. rugosus konowi* Mertens, 1958 from Rottnest Island, Western Australia, herein treated as the same taxon as nominate *T. rugosus* is depicted online at:
https://www.flickr.com/photos/colonel_007/53048393531/
photographed by Mark Sanders.

Putative *T. rugosus palarra* Shea, 2000 from the Shark Bay area of Western Australia, herein treated as the same taxon as nominate *T. rugosus* is depicted online at:
https://www.flickr.com/photos/gazs_pics/52395875116/
from Shark Bay area, Western Australia, Australia, photographed by Gary Stephenson, and
https://www.flickr.com/photos/127392361@N04/54014223161/
from Edel Land Peninsula, Western Australia, Australia, photographed by Nick Gale, and
https://www.flickr.com/photos/114192916@N07/54098742926/
from Edel Land Peninsula, Western Australia, Australia, photographed by Justin Wright.

The molecular results of Ansari *et al.* (2019), effectively repeated by Brown *et al*. (2013) estimated a divergence of 1.5 MYA for *T. jackyhoserae sp. nov*. from its nearest relative, being *T. rugosus*, and a similar 1.5 MYA divergence for *T. adelynhoserae sp. nov*. from its nearest relative, being *T. aspera.*

Distribution: *T. adelynhoserae sp. nov*. is essentially found south of the Murray River in Victoria and nearby South Australia. It is found north and west of the Murray River near the lower reaches, where it is separated from *T. asper* by the Adelaide Hills. The distribution of both *T. asper* and *T. adelynhoserae sp. nov*. appears to meet on the east side of the lower Flinders Ranges but are otherwise separated by the Murray River floodplains in Victoria and adjacent parts of the Riverland in South Australia.

Etymology: *T. adelynhoserae sp. nov*. is named in honour of my eldest daughter, Adelyn Kimberley Hoser, who as of 2025 has spent the past quarter century making significant contributions to wildlife science, conservation and education globally.

Significantly both Adelyn and Jacky Indigo Hoser (my younger daughter) both asked to have the two new species of Shingleback named in their honour as they have worked with them extensively all their lives.

TRACHYDOSAURUS JACKYHOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:2DC5CF91-B3A8-4D69-AEB9-B792A0CC99FF

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R23074 collected from 20 km west of the Nullarbor Homestead, South Australia, Australia, Latitude -31.43 S., Longitude 130.7 E.
This government-owned facility allows access to its holdings.

Paratype: A preserved male specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R23075 collected from 31 km west of Madura, Western Australia, Australia, Latitude -31.92 S., Longitude 127.32 E.

Diagnosis: The Shingleback lizards of Australia form within two main clades.

These are the western one including *Trachydosaurus rugosus* Gray, 1825, with a type locality of King George's Sound in Western Australia and occupying most of the southern third of that State and *T. jackyhoserae sp. nov*. occurring on the southern coastal strip of the Nullarbor to about 150 km either side of the Western Australia / South Australia State border.

The so called eastern clade includes *Trachydosaurus asper* Gray, 1845, with a type locality of Adelaide, South Australia and found from the eastern Nullarbor in South Australia, throughout the southern half of the state, extending into New South Wales, to occupy most parts of the state except for the wetter eastern section, generally east of the Great Dividing Range, and also into most parts of southern Queensland, except the wetter coastal regions. Also within this eastern clade is *T. adelynhoserae sp. nov*. which is essentially found south of the Murray River in Victoria and nearby South Australia. It is found north and west of the Murray River near the lower reaches, where it is separated from *T. asper* by the Adelaide Hills. The distribution of both *T. asper* and *T. adelynhoserae sp. nov*. appears to meet on the east side of the lower Flinders Ranges but are otherwise

separated by the Murray River floodplains in Victoria and adjacent parts of the Riverland in South Australia.

The four preceding species are separated from one another by the following unique combinations of characters:

T. rugosus including the putative subspecies *Tiliqua rugosus konowi* Mertens, 1958 from Rottnest Island, Western Australia and *Tiliqua rugosus palarra* Shea, 2000, with a type locality of Amala Station rubbish tip, Shark Bay area, Western Australia is separated from the other three species by having a large ear opening, irregular pale bands that widen on the flanks and a pale head, flushed with white, yellow, orange or red. While banding is reduced in the two putative subspecies, in particular putative *Tiliqua rugosus palarra* Shea, 2000, it remains present and obviously widening at the flanks.

T. asper is separated from the other three species by having a relatively small ear opening, a very robust build (significantly more robust than *T. rugosus*), a short thick and bulbous tail (versus quite elongate in *T. rugosus*), wrinkled scales and not having a pale head. That is head of the same colour as the body. Light markings on the upper body is not in the form of bands.

T. jackyhoserae sp. nov. is superficially similar to *T. asper* in that it is stocky in build like that taxon and similar in colour dorsally. *T. jackyhoserae sp. nov*. does have a large ear opening (in contrast to the smaller one in *T. asper* and *T. adelynhoserae sp. nov*.), a smaller head size (for both sexes) than seen in *T. asper* (and *T. adelynhoserae sp. nov*.) and a tail intermediate in shape and length between both *T. asper* and *T. rugosus* but not at all bulbous as seen in *T. asper* or *T. adelynhoserae sp. nov*.. The tail is not as obviously flattened as in the other taxa.

The dorsal colouration of *T. jackyhoserae sp. nov*. is brown or greyish brown all over, but every scale is tipped with, or infused with whitish or yellow colour, giving the lizard a distinctive appearance of being like brown dirt with white gravel scattered on the surface. There is no indication of the crossbands as seen in *T. rugosus*. The head of *T. jackyhoserae sp. nov*. is the same colour as the body, or even slightly darker in colour (in contrast to *T. rugosus*), this effect being due to the lower amount of white or yellow on the scales of the upper surfaces of the head.

There is increasing amounts of whitish yellow on the scales of the lower flanks, but no indication of cross-bands on the lizard.

T. adelynhoserae sp. nov. is separated from the three preceding species by its relatively small ear hole (in common with *T. aspera*), a bulbous tail like seen in *T. aspera*, but one that is more noticeably flattened in shape, versus not so in *T. aspera*, this being more noticeable in males, a head that is usually much darker than the body (versus lighter in *T. rugosus* or a similar colour in the other species), a dorsal colouration usually consisting of reasonably well-defined bands, except in aged specimens (which retain traces of them, or have them very faded), the lighter cross bands not obviously widening on the lower flanks (in contrast to both *T. rugosus* and *T. jackyhoserae sp. nov*. which has more light on the lower flanks as opposed to obvious bands).

The four preceding species are all so-called Shinglebacks and the entirety of the genus

Trachydosaurus Gray, 1825, type species *Trachydosaurus rugosus* Gray, 1825.

They are instantly recognised as distinct from all other species of Australian skink by their pine-cone like scales, especially on the tail and general appearance, caused by grossly enlarged bluntly rugose dorsal scales, a very short blunt ended tail, that may be slightly to very flattened in appearance (depending also on species, gender within species and amount of fat stored in it at the time), being only 20-25 per cent of the body length, head shields fragmented with little symmetry, except for the rostral, labials and the large interparietal shield that separates the interparietals. There are no anterior lobules in the ear; third and fourth toes are subequal in length or the third is slightly longer; subdigital lamellae that are divided or at least divided basally.

Photos of all relevant species and putative subspecies are depicted in Brown (2014) on pages 469 and 470, excluding for *T. jackyhoserae sp. nov*..

T. adelynhoserae sp. nov. is depicted in life online at:
https://www.facebook.com/snakebusters/photos/pb.100057667771163.-2207520000/869799333112731/?type=3
being an aged adult male from Sea Lake, Victoria, and
https://www.flickr.com/photos/91908502@N03/
from Edenhope Victoria, Australia, photographed by “Spiranthes2013” and,
https://www.flickr.com/photos/88708273@N03/22172408423/
from Murray Sunset Region, north-western Victoria, Australia, photographed by Matt Clancy, and
and
https://www.flickr.com/photos/88708273@N03/51338439961/
from the north-west Mallee, north-western Victoria, Australia, photographed by Matt Clancy, and
https://www.flickr.com/photos/88708273@N03/11022355863/
from Nhill, Victoria, Australia, photographed by Matt Clancy, and
https://www.flickr.com/photos/88708273@N03/9107527236/
from Bendigo, Victoria, Australia, photographed by Matt Clancy, and
https://www.flickr.com/photos/45437563@N07/42966244900/
from Maldon, Victoria, Australia, photographed by Albert Wright, and
https://www.flickr.com/photos/nikborrow/24243194098/
from Little Desert, Victoria, Australia, photographed by Nik Borrow
https://www.flickr.com/photos/euprepiosaur/50628199057/
and
https://www.flickr.com/photos/euprepiosaur/50628102121/
all from Millicent, South Australia, Australia photographed by Stephen Zozaya, and
https://www.flickr.com/photos/paulthrelfall/31778695855/
from just below Chatauqua Peak, near Halls Gap, Victoria, Australia, photographed by Paul Threlfall, and
https://www.flickr.com/photos/127392361@N04/25718996546/
from Flora Hill, Bendigo, Victoria, Australia, photographed by Nick Gale, and
https://www.flickr.com/photos/dhobern/32284540730/
from Wyperfeld National Park, Victoria, Australia, photographed by Donald Hobern, and
https://www.inaturalist.org/observations/154350528
from North Ward, Yanac, Victoria, Australia, photographed by Mia Hoskin.

T. jackyhoserae sp. nov. is depicted in life online at:
https://www.inaturalist.org/observations/103334206
from Nullarbor, South Australia, Australia, photographed by Scott Rolph, and
https://www.inaturalist.org/observations/177625624
from Nullarbor, South Australia, Australia, photographed by Steve Paradox, and
https://www.inaturalist.org/observations/186834480
from Unincorp, South Australia, Australia, photographed by “beneficiallime”, and
https://www.inaturalist.org/observations/201887621
being a deceased juvenile specimen from Bunda View Campground, Nullarbor Plain, South Australia, Australia, photographed by Mike and Cathy Beamish.

T. asper is depicted in life in Hoser (1989) on page 112 bottom and online at:
https://www.facebook.com/snakebusters/photos/pb.100057667771163.-2207520000/869799373112727/?type=3
and
https://www.facebook.com/snakebusters/photos/pb.100057667771163.-2207520000/681315318627801/?type=3
both images being an adult female from Morgan, South Australia.

T. rugosus is depicted in life online at:
https://www.flickr.com/photos/colonel_007/52978411985/
from Cheynes Beach, Western Australia, Australia, photographed by Mark Sanders, and
https://www.flickr.com/photos/chris_chafer/38823032255/
from Dryandra, Western Australia, Australia, photographed by Chris Chaffer.

Putative *T. rugosus konowi* Mertens, 1958 from Rottnest Island, Western Australia, herein treated as the same taxon as nominate *T. rugosus* is depicted online at:
https://www.flickr.com/photos/colonel_007/53048393531/
photographed by Mark Sanders.

Putative *T. rugosus palarra* Shea, 2000 from the Shark Bay area of Western Australia, herein treated as the same taxon as nominate *T. rugosus* is depicted online at:
https://www.flickr.com/photos/gazs_pics/52395875116/

from Shark Bay area, Western Australia, Australia, photographed by Gary Stephenson, and https://www.flickr.com/photos/127392361@N04/54014223161/ from Edel Land Peninsula, Western Australia, Australia, photographed by Nick Gale, and https://www.flickr.com/photos/114192916@N07/54098742926/ from Edel Land Peninsula, Western Australia, Australia, photographed by Justin Wright.

The molecular results of Ansari *et al.* (2019), effectively repeated by Brown *et al*. (2013) estimated a divergence of 1.5 MYA for *T. jackyhoserae sp. nov*. from its nearest relative, being *T. rugosus*, and a similar 1.5 MYA divergence for *T. adelynhoserae sp. nov*. from its nearest relative, being *T. aspera.*

Distribution: *T. jackyhoserae sp. nov*. is only known from a relatively small area being on the southern coastal strip of the Nullarbor to about 150 km either side of the Western Australia / South Australia State border. How far inland populations go is uncertain.

If the population is solid for 20 km inland (and it may go much further), the range would be at least 3,000 square km.

Due to the remote location, the population is probably secure.

Etymology: *T. jackyhoserae sp. nov*. is named in honour of my youngest daughter, Jacky Indigo Hoser, who as of 2025 has spent more than 20 years making significant contributions to wildlife science, conservation and education globally.

Significantly both Jacky and Adelyn Kimberley Hoser (my eldest daughter) both asked to have the two new species of Shingleback named in their honour as they have worked with them extensively all their lives.

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CONFLICT OF INTEREST - NONE