

**The further division of the *Nodorha bougainvillii*  
(AKA *Lerista bougainvillii*) *sensu lato* species complex, including  
formal descriptions of five new species and a new subspecies.**

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**ABSTRACT**

The burrowing skinks of the *Nodorha bougainvillii* (AKA *Lerista bougainvillii*) *sensu lato* species complex from south-east Australia are abundant and well-studied. Yet until now, their taxonomy has not been properly sorted.

The single putative species contains both live-bearing and egg-laying forms, as well as one population that appears intermediate in reproductive mode and is separated from others by well-defined biogeographical barriers.

While earlier studies have shown populations worthy of taxonomic recognition by way of molecular divergence, those authors did not take the logical next step of formally naming the relevant forms.

To correct this omission, previously unnamed forms are herein formally identified and named as new species and subspecies in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

**Keywords:** *Lerista*; *Nodorha*; *bougainvillii*; taxonomy; skink; burrowing; nomenclature; New South Wales; Tasmania; Australia; Victoria; South Australia; new species; *hoserae*; *tasmaniensis*; *insularis*; *martinekae*; *absconditus*; new subspecies; *divergans*.

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**INTRODUCTION**

The burrowing skink most widely known as *Lerista bougainvillii* (Gray, 1839) is found throughout many parts of south-east Australia. It is most common in dry, rocky or sandy areas, generally excluding wet areas or excessively dry areas.

The putative species has been placed by most authors in the genus *Lerista* Bell, 1833 (type species *Lerista lineata* Bell, 1833) since the original description.

Günther (1867) formally named the taxon, *Lygosoma laterale*, with a type locality of "South Australia" which was synonymised with *L. bougainvillii* by Cogger *et al.* (1983).

Significantly the following year, Wells and Wellington (1984) published their first of several major publications dealing with the taxonomy of Australian reptiles.

In that paper they formally resurrected the genus *Nodorha* Mittleman, 1952 (type species *Riopa bougainvillii* Duméril and Bibron, 1839). More significantly however, they also resurrected from synonymy *Lygosoma laterale*, renaming it as *Nodorha garymartini* *nom. nov.* which followed Cogger *et al.* (1983) stating

the earlier name was "non *Scincus lateralis* Say, 1823", as well as formally naming the central New South Wales population as *Nodorha cassandrae* Wells and Wellington, 1984.

Post-dating that publication and another in 1985 by the same two authors, Richard Shine of Sydney, New South Wales, Australia petitioned the International Commission of Zoological Nomenclature (ICZN) to formally erase the works of Wells and Wellington from the scientific record to allow their cohort to rename the very same taxa and claim for posterity to be the discoverers.

The plot by Shine and his gang was not unlike that of the Nazi's who burnt books with the aim of fabricating and rewriting the historical record

Ultimately this application by Shine and his cohort of liars and thieves failed in 1991.

However, being sore losers, Shine and the cohort harassed other publishing herpetologists, journal editors and other persons of influence to black-ban and not use any taxonomy and nomenclature of Wells and Wellington.

This has been backed by militarising of police and wildlife department officers to launch armed raids on those who may digress from the various Shine gang mantras.

As a result, no one but Wells and Wellington have recognized or used the name *Nodorha cassandrae* Wells and Wellington, 1984 since original publication.

Notwithstanding the preceding, science is essentially a search for the truth and truth cannot be avoided forever.

Having already been raided by Australian police for thought crimes, I will once again take the risk and use Wells and Wellington names as appropriate and in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999) as amended online since.

Fairbairn, Shine, Moritz and Frommer (1998) published a detailed study of various populations of putative "*Lerista bougainvillii*".

Their study included specimens from across the known range of the putative species, with both live-bearing and egg-laying groups studied.

Not surprisingly, the molecular results indicated at least three separate species, with one of these also further dividable into either species or subspecies.

In their results Fairbairn, Shine, Moritz and Frommer (1998) wrote:

"Based on pairwise comparisons, the variation among individuals of *L. bougainvillii* was between 0 and 14%, and hence is comparable to levels of variation found between species in previous studies (Hedges *et al.*, 1991; Moritz *et al.*, 1992a)."

One of those obvious species conformed with the Wells and Wellington taxon "*Nodorha cassandrae*".

There was no way known that the fundamentally evil and ego-driven Richard Shine as a co-author would be the first to recognize that Wells and Wellington were in any way correct, so rather than admitting what was now obvious on their own scientific evidence, the authors of the paper constructed a series of convoluted arguments as to why all populations should still be treated as being of the one species.

Also already stated and for the reasons already given, this position has remained the case among publishing herpetologists other than by Wells and Wellington since then.

In his major monograph on the genus *Lerista sensu lato*, (Wells, 2012), maintained the same taxonomic position of Wells and Wellington (1984, 1985), save for the non-recognition of *Lygosoma laterale*, or *Nodorha garymartini*, which I presume they decided, by way of reconsideration, was a synonym of "*N. bougainvillii*" in line with Cogger *et al.* (1983).

Also of note is that Pyron *et al.* (2013) published a supermatrix phylogeny for about half the world's generally recognized species including numerous within the genus *Lerista* as recognized at the time.

This phylogeny indicated divergence between the type forms of *Lerista* and *Nodorha*, in effect vindication of the actions of Mittleman (1952), Wells and Wellington (1984, 1985) and Wells again in 2012.

So in effect it needs to be noted that the more recently available scientific evidence that has NOT been published by any of Mittleman (1952), Wells and Wellington (1984, 1985) and Wells again in 2012 indicated that the taxonomy and nomenclature of these authors has been generally correct.

#### SYNONYM NAMES

An issue not mentioned explicitly, but that needed to be dealt with, was the actual origin of the type specimen for Gray's *Riopa bougainvillii* specimen. The type locality was listed by Gray in 1839 as "Australia", but no location was given in the actual description.

However based on the description and other species from Australia he named at the time, it is evident that the specimen came from somewhere north-east of Adelaide, most probably the

Adelaide Hills or nearby to the east or north.

The preceding also applies in terms of "*Lygosoma laterale*" in that a type locality is given as just "South Australia". However that specimen conforms with those from north-east of Adelaide as per Table 1, in Qualls *et al.* (1995) to the exclusion of all other populations, based on the same table (22 midbody rows).

Hence it can be now said with certainty that *Nodorha bougainvillii* is the name to be applied to populations north-east of Adelaide in South Australia and that the names "*Lygosoma laterale*" and "*Nodorha garymartini*" are both junior synonyms of that.

Assuming one recognises the population from central east New South Wales as a different species, as indicated by the phylogenies published by Fairbairn, Shine, Moritz and Frommer (1998) then the first and only available name for this population is *Nodorha cassandrae* Wells and Wellington, 1984 with a type locality of Denman, New South Wales, Australia.

Significantly, I note that Wells (2012) published an extremely detailed diagnosis for this species taxon, which has been derided and disparaged with false and defamatory comments continually by Wolfgang Wüster and his gang of thieves in breach of both the Copyright Act Australia (1968) and parallel laws as per the Berne Convention and the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

#### MATERIALS AND METHODS

In light of the preceding, it is noted that putative "*Lerista bougainvillii*" and associated species are better placed in the genus *Nodorha*, where it is from here treated as being within.

*Nodorha bougainvillii* is treated as the mainland South Australian population from generally north or east of Adelaide.

*Nodorha cassandrae* Wells and Wellington, 1984 is treated as the form from central New South Wales, with a centre of distribution in the northern Wollemi National Park and extending south along the western edge of the Blue Mountains in New South Wales.

All other populations as identified by Fairbairn, Shine, Moritz and Frommer (1998) and other authors were scrutinized to see if they were morphologically divergent from one another and able to be taxonomically recognized.

This is noting that there were two distinct live-bearing populations (one in Tasmania and another in South Australia), as well egg-layers elsewhere, with one population in south-east Victoria laying thin-shelled eggs that hatch very shortly after being laid.

Within the egg-layers, there also appeared to be regional divergences.

Inspected were live and dead specimens from across the range of the putative species *Nodorha bougainvillii sensu lato*, as well as photos with good quality locality data.

All relevant literature was reviewed as well.

Publications relevant to the ultimate taxonomic conclusions within this paper included Bell (1833), Cogger (2014), Cogger *et al.* (1983), Duméril and Bibron (1839), Fairbairn *et al.* (1998), Gray (1839), Greer (1967, 1990), Günther (1867), Hoser (1989), Hugi *et al.* (2012), Lucas and Frost (1894), Metcalfe and Peterson (2007), Mittleman (1952), Qualls (1997), Qualls and Shine (1998), Qualls *et al.* (1995), Pyron *et al.* (2013), Reeder (2003), Skinner *et al.* (2008), Smith (1937), Swan *et al.* (2022), Turner (2017), Wells (2012), Wells and Wellington (1984, 1985), Wilson and Swan (2017) and sources cited therein.

#### RESULTS

Inspection of specimens yielded consistent morphological differences between populations.

The phylogenies published by Fairbairn, Shine, Moritz and Frommer (1998) also implied several species.

They wrote:

"*Viviparous and oviparous populations of L. bougainvillii are genetically similar (genetic distance of approximately 5%)*".

Typically with lizards, 1% separation in mtDNA implies 500K

years, meaning that the relevant populations diverged some 2.5 MYA.

This is clearly species-level divergence.

In the absence of any observed introgression, and none likely due to geographical separation of populations, it makes sense to recognize the relevant identified populations as full species.

The Eyre Peninsula, South Australia and Denman, New South Wales populations were shown by Fairbairn, Shine, Moritz and Frommer (1998) to be even more divergent than the other populations as cited above and so must be recognized as full species.

One of course is *Nodorha cassandrae* Wells and Wellington, 1984, while the other from the Eyre Peninsula in South Australia is not yet named and so is formally named herein.

In terms of NSW specimens, those from the New England region are divergent from the specimens further south as in *N. cassandrae* and so are formally named as a new subspecies in the absence of molecular data. There is also a gap in known distribution of over 80 km between the two relevant populations.

I note here that Wells (2012) also stated:

*"In my view, the 'variable' reproductive states exhibited likely indicate that 'bougainvillii' is a species-complex of several different taxa that exhibit forms of ovoviviparity, rather than a single species with a highly variable reproductive mode as is usually believed."*

The opinion of Wells (2012) is supported by the molecular data of Fairbairn, Shine, Moritz and Frommer (1998) and is quite likely their considered opinion of that work and its results.

In summary the following populations are formally named for the first time in accordance with the International Code of Zoological Nomenclature (Ride *et al.* 1999):

*Nodorha hoserae* sp. nov. from the Eyre Peninsula in South Australia;

*N. tasmaniensis* sp. nov. from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. from the arid zone south of the Murray River near the Victorian and South Australian border; and;

*N. cassandrae divergens* subsp. nov. from the New England region and hillier areas to the west in north-west New South Wales.

#### 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 24 June 2023, 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 or abnormal skin 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 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.

In the unlikely event any "first reviser" seeks to merge two or more newly named taxa into one, then the name to be retained is that which is first by page priority as listed in the abstract keywords.

#### CONSERVATION

Delays in recognition of these species and subspecies could jeopardise the long-term survival of the taxa as outlined by Hoser (2019a, 2019b) and sources cited therein.

Also refer to the relevant comments within Hoser (1989, 1991, 1993, 1996 and 2007).

Therefore attempts by taxonomic vandals like the Wolfgang Wüster gang via Kaiser (2012a, 2012b, 2013, 2014a, 2014b) and Kaiser *et al.* (2013) (as frequently amended and embellished, e.g. Rhodin *et al.* 2015, Thiele *et al.* 2020, Hammer and Thiele 2021) to unlawfully suppress the recognition of these taxa on the basis they have a personal dislike for the person who formally named it should be resisted (e.g. Ceriaco *et al.* 2023, Cogger 2014, Dubois *et al.* 2019, Mosyakin 2022 and Wellington 2015). Claims by the Wüster gang against this paper and the descriptions herein will no doubt be no different to those the gang have made previously, all of which were discredited long ago as outlined by Ceriaco *et al.* (2023), Cogger (2014), Cotton (2014), Dubois *et al.* (2019), Hawkeswood (2021), Hoser, (2007a-b, 2009, 2012a, 2012b, 2013, 2015a-f, 2019a, 2019b), ICZN (1991, 2001, 2012, 2021), Mosyakin (2022), Wellington (2015) and sources cited therein.

Some material within descriptions is repeated to ensure each fully complies with the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

#### NODORHA HOSERAE SP. NOV.

LSIDurn:lsid:zoobank.org:act:B66268B4-8B89-4BF3-BEE0-B93EBC3B564D

**Holotype:** A preserved adult female specimen at the South Australian Museum, Adelaide South Australia, Australia, specimen number R31140 collected from an islet south of Taylor's Island, South Australia, Australia, Latitude -34.90 S., Longitude 136.02 E.

This government-owned facility allows access to its holdings.

**Paratypes:** Three preserved specimens at the South Australian Museum, Adelaide South Australia, Australia, specimen numbers R31141-3 collected from an islet south of Taylor's Island, South Australia, Australia, Latitude -34.90 S., Longitude 136.02 E.

**Diagnosis:** Until now, *Nodorha bougainvillii* (Gray, 1839) has been treated as a single wide-ranging species of small burrowing skink with a distribution extending from northern New South Wales along an arc through Victoria and into south-east South Australia.

That taxon is now broken up into the following species:

*N. bougainvillii* is confined to the Adelaide Hills area and nearby elevated parts of South-east South Australia;

*N. hoserae* sp. nov. is from the Eyre Peninsula in South Australia;

*N. tasmaniensis* sp. nov. is from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. is from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. is from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. is from the arid zone south of the Murray River near the Victorian and South Australian border;

*N. cassandrae* Wells and Wellington, 1984 is mainly from the western slopes of the Great Dividing Range of central New South Wales, with an eastern infusion along the Hunter Valley and;

*N. cassandrae divergens* subsp. nov. is from the New England region and hillier areas to the west in north-west New South Wales.

The preceding seven species are all divergent from one another by an estimated 2.5 or more MYA based on the published evidence of Fairbairn, Shine, Moritz and Frommer (1998).

There is no comparative molecular evidence for the form *N. cassandrae divergens subsp. nov.*

The eight preceding taxa are separated from one another by the following unique combinations of characters:

*N. bougainvillii* has an average of 22 midbody rows; 17-18 subdigital lamellae; 69-78 paravertebrals; 4 rows of well defined small to tiny dark blackish spots running longitudinally down the back of the generally light brown body; lower parts and posterior of the tail are often orange or orangeish in colour. Adult females average 54.5 mm in snout-vent length and adult males 48.5 mm.

*N. hoserae sp. nov.* has an average of 20-21 midbody rows; 17-19 subdigital lamellae; 69-78 paravertebrals; spots on the back of the dorsum if present are brown, not black or blackish in colour and when present are elongate (longitudinal) and well separated. Lower parts of the tail are yellowish and the dorsum is generally a greyish-brown colour. Adult females average 57.5 mm in snout-vent length and adult males 50.3 mm.

*N. tasmaniensis sp. nov.* has an average of 20-22 midbody rows; 17-18 subdigital lamellae; 70-80 paravertebrals; spots on the back are elongate, black and somewhat irregularly shaped. Lower parts of the tail and distal end are whitish-cream in colour. The dorsum is medium brown in colour. Heavy black spotting on the white lower flanks is often joined to form lines. Adult females average 68.5 mm in snout-vent length and adult males 59.2 mm making this by far the largest species in the complex.

*N. insularis sp. nov.* has an average of 21-22 midbody rows; 17-19 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, usually only in the middle two rows, where they are tiny, indistinct and blackish in colour. There are only scattered black spots on the white lower flanks. Lower surfaces of the tail are a pale yellowish-orange colour. The dorsum is light brown in colour. Adult females average 58.7 mm in snout-vent length and adult males 47.9 mm.

*N. martinekae sp. nov.* has an average of 20-22 midbody rows; 17-20 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, are distinct in the middle two rows, where they are tiny, and the lines of blackish spots are broken, while on the two side rows, they spotting is blurred and less distinct. There is greyish peppering as opposed to black spots on the pale surfaces of the lower flanks. Lower surfaces of the tail are either whitish, brown or sometimes yellow. The dorsum is a very light brown in colour. This species is characterised further by significant dark spotting on the crown of the upper surface of the head. Adult females average 56.4 mm in snout-vent length and adult males 48.6 mm.

*N. absconditus sp. nov.* has an average of 20-22 midbody rows; 16-18 subdigital lamellae; 65-77 paravertebrals. Spots on the dorsum along the two midline sets are so prominent as to be joined to form relatively thick lines running down the dorsum. The side rows are only generally visible at the level of the front legs and are absent on the dorsum posterior to this. The upper surfaces of the tail in this species are unusual in that the colouration is one of a dark brownish background with light grey spotting. The dorsum itself is a dark greyish-brown colour. The lighter lower surfaces of the flanks have the outer surfaces of the scales etched dark brown, but there are no black spots or marks on an otherwise white or whitish background. Lower surfaces of the tail are usually whitish. As for *N. martinekae sp. nov.*, this species is characterised further by significant dark spotting on the crown of the upper surface of the head, in this case generally merging to form large blotches and areas of dark. Adult females average 59.5 mm in snout-vent length and adult males 50.1 mm.

*N. cassandrae* has an average of 20 midbody rows; 16-18 subdigital lamellae; 67-77 paravertebrals. Adult females average 47.5 mm in snout-vent length and adult males 44.8 mm making this species, including the associated form *N. cassandrae divergens subsp. nov.* by far the smallest

species in the complex. The dorsal base colour is silver-grey or greyish-brown, with the lower surfaces and distal part of the tail usually russet-red or bright orange and usually speckled with darker brown.

There are usually a few tiny dark flecks only on the head and these are indistinct. Rarely are there lines of spots running down the dorsum and is present, they are tiny and indistinct.

The whitish lower flanks are generally immaculate anteriorly and irregularly spotted black posteriorly.

*N. cassandrae divergens subsp. nov.* is similar in most respects to *N. cassandrae cassandrae* of the type form just described, but is separated from it by complete black barring of the white upper labials, versus incomplete black barring in *N. cassandrae cassandrae* of the type form; less and smaller amounts of black spotting on the white surfaces of the rear lower flanks and two rows of semi-distinct blackish spots running down either side of the mid-dorsal line.

All the preceding species and subspecies forming the entirety of the *N. bougainvillii* complex are separated from all other species within *Nodorha* Mittleman, 1952 and *Lerista* Bell, 1833 *sensu lato* by the following unique combination of characters: Forelimbs and hindlimbs present and all pentadactyle; three supraoculars; five supraciliaries and the hindlimb is shorter than the distance from the snout to forelimb.

Species within *Lerista* Bell, 1833 *sensu lato* (including those above) are separated from all other Australasian skinks by the following unique combination of characters: Parietal shields in contact behind the interparietal; lower eyelid with a transparent disc and either movable or fused to form a permanent spectacle; limbs short and separated by at least several scale lengths when adpressed; ear opening small, minute or hidden; supranasals absent; nasals enlarged, undivided and usually in contact medially.

The preceding description was derived from inspection of specimens and the accounts of Wells (2012), Cogger (2014) and Fairbairn, Shine, Moritz and Frommer (1998).

*N. bougainvillii* in life is depicted in Wilson and Swan (2021) on page 359 centre left and online at:

<https://www.inaturalist.org/observations/116044074>

*N. hoserae sp. nov.* in life is depicted online at:

<https://www.inaturalist.org/observations/2392168>

and

<https://www.inaturalist.org/observations/72242636>

*N. tasmaniensis sp. nov.* in life is depicted online at:

<https://www.inaturalist.org/observations/96864514>

*N. insularis sp. nov.* in life is depicted online at:

<https://www.inaturalist.org/observations/129802509>

*N. martinekae sp. nov.* in life is depicted online at:

<https://www.inaturalist.org/observations/138344709>

and

<https://www.inaturalist.org/observations/143329609>

and

<https://www.inaturalist.org/observations/143315333>

*N. absconditus sp. nov.* in life is depicted online at:

<https://www.inaturalist.org/observations/15715785>

and

<https://www.flickr.com/photos/bassia09/8752272908/>

and

<https://www.flickr.com/photos/126237772@N07/18003872523/>

and

<https://www.flickr.com/photos/126237772@N07/18440600370/>

*N. cassandrae* in life is depicted in Hoser (1989) on page 104 at top, as well as in Swan, Sadler and Shea (2022) on page 104 at top.

*N. cassandrae divergens subsp. nov.* in life is depicted online at: <https://www.inaturalist.org/observations/93144635>

**Distribution:** *N. hoserae sp. nov.* appears to be restricted to

the lower Eyre Peninsula in South Australia and while not of immediate conservation concern, should be monitored in the event of declines caused by other species, climate change, pathogen or other potentially unforeseen factors.

**Etymology:** *N. hoserae* sp. nov. is named in honour of my mother, Katrina Hoser, of Lane Cove, New South Wales, Australia, in recognition of her many contributions to herpetology spanning more than 50 years.

**NODORHA TASMANIENSIS SP. NOV.**

**LSIDurn:lsid:zoobank.org:act:41466B15-872D-4B53-8AFF-68D8938E6F86**

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R37506 collected from Cape Portland, Tasmania, Australia, Latitude -40.78 S., Longitude 147.98 E.

This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the South Australian Museum, Adelaide South Australia, Australia, specimen number R37507 collected from Cape Portland, Tasmania, Australia, Latitude -40.78 S., Longitude 147.98 E.

**Diagnosis:** Until now, *Nodorha bougainvillii* (Gray, 1839) has been treated as a single wide-ranging species of small burrowing skink with a distribution extending from northern New South Wales along an arc through Victoria and into south-east South Australia.

That taxon is now broken up into the following species:

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*N. tasmaniensis* sp. nov. is from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. is from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. is from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. is from the arid zone south of the Murray River near the Victorian and South Australian border;

*N. cassandrae* Wells and Wellington, 1984 is mainly from the western slopes of the Great Dividing Range of central New South Wales, with an eastern infusion along the Hunter Valley and;

*N. cassandrae divergens* subsp. nov. is from the New England region and hillier areas to the west in north-west New South Wales.

The preceding seven species are all divergent from one another by an estimated 2.5 or more MYA based on the published evidence of Fairbairn, Shine, Moritz and Frommer (1998).

There is no comparative molecular evidence for the form *N. cassandrae divergens* subsp. nov.

The eight preceding taxa are separated from one another by the following unique combinations of characters:

*N. bougainvillii* has an average of 22 midbody rows; 17-18 subdigital lamellae; 69-78 paravertebrals; 4 rows of well defined small to tiny dark blackish spots running longitudinally down the back of the generally light brown body; lower parts and posterior of the tail are often orange or orangeish in colour. Adult females average 54.5 mm in snout-vent length and adult males 48.5 mm.

*N. hoserae* sp. nov. has an average of 20-21 midbody rows; 17-19 subdigital lamellae; 69-78 paravertebrals; spots on the back of the dorsum if present are brown, not black or blackish in colour and when present are elongate (longitudinal) and well separated. Lower parts of the tail are yellowish and the dorsum is generally a greyish-brown colour. Adult females average 57.5 mm in snout-vent length and adult males 50.3 mm.

*N. tasmaniensis* sp. nov. has an average of 20-22 midbody rows; 17-18 subdigital lamellae; 70-80 paravertebrals; spots on the back are elongate, black and somewhat irregularly shaped. Lower parts of the tail and distal end are whitish-cream in colour.

The dorsum is medium brown in colour. Heavy black spotting on the white lower flanks is often joined to form lines. Adult females average 68.5 mm in snout-vent length and adult males 59.2 mm making this by far the largest species in the complex.

*N. insularis* sp. nov. has an average of 21-22 midbody rows; 17-19 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, usually only in the middle two rows, where they are tiny, indistinct and blackish in colour. There are only scattered black spots on the white lower flanks. Lower surfaces of the tail are a pale yellowish-orange colour. The dorsum is light brown in colour. Adult females average 58.7 mm in snout-vent length and adult males 47.9 mm.

*N. martinekae* sp. nov. has an average of 20-22 midbody rows; 17-20 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, are distinct in the middle two rows, where they are tiny, and the lines of blackish spots are broken, while on the two side rows, they spotting is blurred and less distinct. There is greyish peppering as opposed to black spots on the pale surfaces of the lower flanks. Lower surfaces of the tail are either whitish, brown or sometimes yellow. The dorsum is a very light brown in colour. This species is characterised further by significant dark spotting on the crown of the upper surface of the head. Adult females average 56.4 mm in snout-vent length and adult males 48.6 mm.

*N. absconditus* sp. nov. has an average of 20-22 midbody rows; 16-18 subdigital lamellae; 65-77 paravertebrals. Spots on the dorsum along the two midline sets are so prominent as to be joined to form relatively thick lines running down the dorsum. The side rows are only generally visible at the level of the front legs and are absent on the dorsum posterior to this. The upper surfaces of the tail in this species are unusual in that the colouration is one of a dark brownish background with light grey spotting. The dorsum itself is a dark greyish-brown colour. The lighter lower surfaces of the flanks have the outer surfaces of the scales etched dark brown, but there are no black spots or marks on an otherwise white or whitish background. Lower surfaces of the tail are usually whitish. As for *N. martinekae* sp. nov., this species is characterised further by significant dark spotting on the crown of the upper surface of the head, in this case generally merging to form large blotches and areas of dark. Adult females average 59.5 mm in snout-vent length and adult males 50.1 mm.

*N. cassandrae* has an average of 20 midbody rows; 16-18 subdigital lamellae; 67-77 paravertebrals.

Adult females average 47.5 mm in snout-vent length and adult males 44.8 mm making this species, including the associated form *N. cassandrae divergens* subsp. nov. by far the smallest species in the complex. The dorsal base colour is silver-grey or greyish-brown, with the lower surfaces and distal part of the tail usually russet-red or bright orange and usually speckled with darker brown.

There are usually a few tiny dark flecks only on the head and these are indistinct. Rarely are there lines of spots running down the dorsum and is present, they are tiny and indistinct.

The whitish lower flanks are generally immaculate anteriorly and irregularly spotted black posteriorly.

*N. cassandrae divergens* subsp. nov. is similar in most respects to *N. cassandrae cassandrae* of the type form just described, but is separated from it by complete black barring of the white upper labials, versus incomplete black barring in *N. cassandrae cassandrae* of the type form; less and smaller amounts of black spotting on the white surfaces of the rear lower flanks and two rows of semi-distinct blackish spots running down either side of the mid-dorsal line.

All the preceding species and subspecies forming the entirety of the *N. bougainvillii* complex are separated from all other species within *Nodorha* Mittleman, 1952 and *Lerista* Bell, 1833 *sensu lato* by the following unique combination of characters: Forelimbs and hindlimbs present and all pentadactyle; three supraoculars; five supraclaviculars and the hindlimb is shorter than the distance from the snout to forelimb.

Species within *Lerista* Bell, 1833 *sensu lato* are separated from all other Australasian skinks by the following unique combination of characters: Parietal shields in contact behind the interparietal; lower eyelid with a transparent disc and either movable or fused to form a permanent spectacle; limbs short and separated by at least several scale lengths when adpressed; ear opening small, minute or hidden; supranasals absent; nasals enlarged, undivided and usually in contact medially.

The preceding description was derived from inspection of specimens and the accounts of Wells (2012), Cogger (2014) and Fairbairn, Shine, Moritz and Frommer (1998).

*N. bougainvillii* in life is depicted in Wilson and Swan (2021) on page 359 centre left and online at:

<https://www.inaturalist.org/observations/116044074>

*N. hoserae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/2392168>

and

<https://www.inaturalist.org/observations/72242636>

*N. tasmaniensis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/96864514>

*N. insularis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/129802509>

*N. martinekae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/138344709>

and

<https://www.inaturalist.org/observations/143329609>

and

<https://www.inaturalist.org/observations/143315333>

*N. absconditus* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/15715785>

and

<https://www.flickr.com/photos/bassia09/8752272908/>

and

<https://www.flickr.com/photos/126237772@N07/18003872523/>

and

<https://www.flickr.com/photos/126237772@N07/18440600370/>

*N. cassandrae* in life is depicted in Hoser (1989) on page 104 at top, Swan, Sadlier and Shea (2022) on page 104 at top.

*N. cassandrae divergens* subsp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/93144635>

**Distribution:** *N. tasmaniensis* sp. nov. occurs from north-east Tasmania and includes the immediately adjacent islands to the north in Bass Strait.

**Etymology:** *N. tasmaniensis* sp. nov. is named in reflection of where the taxon occurs.

**NODORHA INSULARIS SP. NOV.**

**LSIDurn:lsid:zoobank.org:act:8783CE62-9319-424C-8C41-FD58D2B90F8E**

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide South Australia, Australia, specimen number R37430 collected from 12 km east of Karatta, Kangaroo Island, South Australia, Australia, Latitude -35.9917 S., Longitude 137.025 E. This government-owned facility allows access to its holdings.

**Paratype:** A preserved specimen at the South Australian Museum, Adelaide South Australia, Australia, specimen number R37417 collected from 11 km south-east of Karatta, Kangaroo Island, South Australia, Australia, Latitude -36.0067 S., Longitude 137.0183 E.

**Diagnosis:** Until now, *Nodorha bougainvillii* (Gray, 1839) has been treated as a single wide-ranging species of small burrowing skink with a distribution extending from northern New South Wales along an arc through Victoria and into south-east South Australia.

That taxon is now broken up into the following species:

*N. bougainvillii* is confined to the Adelaide Hills area and nearby

elevated parts of South-east South Australia;

*N. hoserae* sp. nov. is from the Eyre Peninsula in South Australia;

*N. tasmaniensis* sp. nov. is from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. is from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. is from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. is from the arid zone south of the Murray River near the Victorian and South Australian border;

*N. cassandrae* Wells and Wellington, 1984 is mainly from the western slopes of the Great Dividing Range of central New South Wales, with an eastern infusion along the Hunter Valley and;

*N. cassandrae divergens* subsp. nov. is from the New England region and hillier areas to the west in north-west New South Wales.

The preceding seven species are all divergent from one another by an estimated 2.5 or more MYA based on the published evidence of Fairbairn, Shine, Moritz and Frommer (1998).

There is no comparative molecular evidence for the form *N. cassandrae divergens* subsp. nov..

The eight preceding taxa are separated from one another by the following unique combinations of characters:

*N. bougainvillii* has an average of 22 midbody rows; 17-18 subdigital lamellae; 69-78 paravertebrals; 4 rows of well defined small to tiny dark blackish spots running longitudinally down the back of the generally light brown body; lower parts and posterior of the tail are often orange or orangeish in colour. Adult females average 54.5 mm in snout-vent length and adult males 48.5 mm.

*N. hoserae* sp. nov. has an average of 20-21 midbody rows; 17-19 subdigital lamellae; 69-78 paravertebrals; spots on the back of the dorsum if present are brown, not black or blackish in colour and when present are elongate (longitudinal) and well separated. Lower parts of the tail are yellowish and the dorsum is generally a greyish-brown colour. Adult females average 57.5 mm in snout-vent length and adult males 50.3 mm.

*N. tasmaniensis* sp. nov. has an average of 20-22 midbody rows; 17-18 subdigital lamellae; 70-80 paravertebrals; spots on the back are elongate, black and somewhat irregularly shaped. Lower parts of the tail and distal end are whitish-cream in colour. The dorsum is medium brown in colour. Heavy black spotting on the white lower flanks is often joined to form lines. Adult females average 68.5 mm in snout-vent length and adult males 59.2 mm making this by far the largest species in the complex.

*N. insularis* sp. nov. has an average of 21-22 midbody rows; 17-19 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, usually only in the middle two rows, where they are tiny, indistinct and blackish in colour. There are only scattered black spots on the white lower flanks. Lower surfaces of the tail are a pale yellowish-orange colour. The dorsum is light brown in colour. Adult females average 58.7 mm in snout-vent length and adult males 47.9 mm.

*N. martinekae* sp. nov. has an average of 20-22 midbody rows; 17-20 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, are distinct in the middle two rows, where they are tiny, and the lines of blackish spots are broken, while on the two side rows, they spotting is blurred and less distinct. There is greyish peppering as opposed to black spots on the pale surfaces of the lower flanks. Lower surfaces of the tail are either whitish, brown or sometimes yellow. The dorsum is a very light brown in colour. This species is characterised further by significant dark spotting on the crown of the upper surface of the head. Adult females average 56.4 mm in snout-vent length and adult males 48.6 mm.

*N. absconditus* sp. nov. has an average of 20-22 midbody rows; 16-18 subdigital lamellae; 65-77 paravertebrals. Spots on the dorsum along the two midline sets are so prominent as to be joined to form relatively thick lines running down the dorsum. The side rows are only generally visible at the level of the

front legs and are absent on the dorsum posterior to this. The upper surfaces of the tail in this species are unusual in that the colouration is one of a dark brownish background with light grey spotting. The dorsum itself is a dark greyish-brown colour. The lighter lower surfaces of the flanks have the outer surfaces of the scales etched dark brown, but there are no black spots or marks on an otherwise white or whitish background. Lower surfaces of the tail are usually whitish. As for *N. martinekae* sp. nov., this species is characterised further by significant dark spotting on the crown of the upper surface of the head, in this case generally merging to form large blotches and areas of dark. Adult females average 59.5 mm in snout-vent length and adult males 50.1 mm. *N. cassandrae* has an average of 20 midbody rows; 16-18 subdigital lamellae; 67-77 paravertebrals.

Adult females average 47.5 mm in snout-vent length and adult males 44.8 mm making this species, including the associated form *N. cassandrae divergens* subsp. nov. by far the smallest species in the complex. The dorsal base colour is silver-grey or greyish-brown, with the lower surfaces and distal part of the tail usually russet-red or bright orange and usually speckled with darker brown.

There are usually a few tiny dark flecks only on the head and these are indistinct. Rarely are there lines of spots running down the dorsum and is present, they are tiny and indistinct.

The whitish lower flanks are generally immaculate anteriorly and irregularly spotted black posteriorly.

*N. cassandrae divergens* subsp. nov. is similar in most respects to *N. cassandrae cassandrae* of the type form just described, but is separated from it by complete black barring of the white upper labials, versus incomplete black barring in *N. cassandrae cassandrae* of the type form; less and smaller amounts of black spotting on the white surfaces of the rear lower flanks and two rows of semi-distinct blackish spots running down either side of the mid-dorsal line.

All the preceding species and subspecies forming the entirety of the *N. bougainvillii* complex are separated from all other species within *Nodorha* Mittleman, 1952 and *Lerista* Bell, 1833 *sensu lato* by the following unique combination of characters: Forelimbs and hindlimbs present and all pentadactyle; three supraoculars; five supraciliaries and the hindlimb is shorter than the distance from the snout to forelimb.

Species within *Lerista* Bell, 1833 *sensu lato* are separated from all other Australasian skinks by the following unique combination of characters: Parietal shields in contact behind the interparietal; lower eyelid with a transparent disc and either movable or fused to form a permanent spectacle; limbs short and separated by at least several scale lengths when adpressed; ear opening small, minute or hidden; supranasals absent; nasals enlarged, undivided and usually in contact medially.

The preceding description was derived from inspection of specimens and the accounts of Wells (2012), Cogger (2014) and Fairbairn, Shine, Moritz and Frommer (1998).

*N. bougainvillii* in life is depicted in Wilson and Swan (2021) on page 359 centre left and online at:

<https://www.inaturalist.org/observations/116044074>

*N. hoserae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/2392168>

and

<https://www.inaturalist.org/observations/72242636>

*N. tasmaniensis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/96864514>

*N. insularis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/129802509>

*N. martinekae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/138344709>

and

<https://www.inaturalist.org/observations/143329609>

and

<https://www.inaturalist.org/observations/143315333>

*N. absconditus* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/15715785>

and

<https://www.flickr.com/photos/bassia09/8752272908/>

and

<https://www.flickr.com/photos/126237772@N07/18003872523/>

and

<https://www.flickr.com/photos/126237772@N07/18440600370/>

*N. cassandrae* in life is depicted in Hoser (1989) on page 104 at top, Swan, Sadler and Shea (2022) on page 104 at top.

*N. cassandrae divergens* subsp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/93144635>

**Distribution:** *N. insularis* sp. nov. occurs only on Kangaroo Island, South Australia, Australia.

**Etymology:** *N. insularis* sp. nov. is named in reflection of the fact that it appears to be an insular island restricted taxon.

**NODORHA MARTINEKAE SP. NOV.**

**LSIDurn:lsid:zoobank.org:pub:767CCB97-FEAD-477F-8075-48FD290D06D6**

**Holotype:** A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D62024 collected from 4 km south, south-west of Woodside East, Victoria, Australia, Latitude -38.57 S., Longitude 146.85 E. This government-owned facility allows access to its holdings.

**Paratypes:** Two preserved specimens at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D62025-6 collected from 4 km south, south-west of Woodside East, Victoria, Australia, Latitude -38.57 S., Longitude 146.85 E.

**Diagnosis:** Until now, *Nodorha bougainvillii* (Gray, 1839) has been treated as a single wide-ranging species of small burrowing skink with a distribution extending from northern New South Wales along an arc through Victoria and into south-east South Australia.

That taxon is now broken up into the following species:

*N. bougainvillii* is confined to the Adelaide Hills area and nearby elevated parts of South-east South Australia;

*N. hoserae* sp. nov. is from the Eyre Peninsula in South Australia;

*N. tasmaniensis* sp. nov. is from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. is from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. is from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. is from the arid zone south of the Murray River near the Victorian and South Australian border;

*N. cassandrae* Wells and Wellington, 1984 is mainly from the western slopes of the Great Dividing Range of central New South Wales, with an eastern infusion along the Hunter Valley and;

*N. cassandrae divergens* subsp. nov. is from the New England region and hillier areas to the west in north-west New South Wales.

The preceding seven species are all divergent from one another by an estimated 2.5 or more MYA based on the published evidence of Fairbairn, Shine, Moritz and Frommer (1998).

There is no comparative molecular evidence for the form *N. cassandrae divergens* subsp. nov..

The eight preceding taxa are separated from one another by the following unique combinations of characters:

*N. bougainvillii* has an average of 22 midbody rows; 17-18 subdigital lamellae; 69-78 paravertebrals; 4 rows of well defined small to tiny dark blackish spots running longitudinally down the back of the generally light brown body; lower parts and posterior of the tail are often orange or orangeish in colour. Adult females average 54.5 mm in snout-vent length and adult males 48.5 mm. *N. hoserae* sp. nov. has an average of 20-21 midbody rows; 17-

19 subdigital lamellae; 69-78 paravertebrals; spots on the back of the dorsum if present are brown, not black or blackish in colour and when present are elongate (longitudinal) and well separated. Lower parts of the tail are yellowish and the dorsum is generally a greyish-brown colour. Adult females average 57.5 mm in snout-vent length and adult males 50.3 mm.

*N. tasmaniensis* sp. nov. has an average of 20-22 midbody rows; 17-18 subdigital lamellae; 70-80 paravertebrals; spots on the back are elongate, black and somewhat irregularly shaped. Lower parts of the tail and distal end are whitish-cream in colour. The dorsum is medium brown in colour. Heavy black spotting on the white lower flanks is often joined to form lines. Adult females average 68.5 mm in snout-vent length and adult males 59.2 mm making this by far the largest species in the complex.

*N. insularis* sp. nov. has an average of 21-22 midbody rows; 17-19 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, usually only in the middle two rows, where they are tiny, indistinct and blackish in colour. There are only scattered black spots on the white lower flanks. Lower surfaces of the tail are a pale yellowish-orange colour. The dorsum is light brown in colour. Adult females average 58.7 mm in snout-vent length and adult males 47.9 mm.

*N. martinekae* sp. nov. has an average of 20-22 midbody rows; 17-20 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, are distinct in the middle two rows, where they are tiny, and the lines of blackish spots are broken, while on the two side rows, they spotting is blurred and less distinct. There is greyish peppering as opposed to black spots on the pale surfaces of the lower flanks. Lower surfaces of the tail are either whitish, brown or sometimes yellow. The dorsum is a very light brown in colour. This species is characterised further by significant dark spotting on the crown of the upper surface of the head. Adult females average 56.4 mm in snout-vent length and adult males 48.6 mm.

*N. absconditus* sp. nov. has an average of 20-22 midbody rows; 16-18 subdigital lamellae; 65-77 paravertebrals. Spots on the dorsum along the two midline sets are so prominent as to be joined to form relatively thick lines running down the dorsum. The side rows are only generally visible at the level of the front legs and are absent on the dorsum posterior to this. The upper surfaces of the tail in this species are unusual in that the colouration is one of a dark brownish background with light grey spotting. The dorsum itself is a dark greyish-brown colour. The lighter lower surfaces of the flanks have the outer surfaces of the scales etched dark brown, but there are no black spots or marks on an otherwise white or whitish background. Lower surfaces of the tail are usually whitish. As for *N. martinekae* sp. nov., this species is characterised further by significant dark spotting on the crown of the upper surface of the head, in this case generally merging to form large blotches and areas of dark. Adult females average 59.5 mm in snout-vent length and adult males 50.1 mm.

*N. cassandrae* has an average of 20 midbody rows; 16-18 subdigital lamellae; 67-77 paravertebrals.

Adult females average 47.5 mm in snout-vent length and adult males 44.8 mm making this species, including the associated form *N. cassandrae divergens* subsp. nov. by far the smallest species in the complex. The dorsal base colour is silver-grey or greyish-brown, with the lower surfaces and distal part of the tail usually russet-red or bright orange and usually speckled with darker brown.

There are usually a few tiny dark flecks only on the head and these are indistinct. Rarely are there lines of spots running down the dorsum and if present, they are tiny and indistinct.

The whitish lower flanks are generally immaculate anteriorly and irregularly spotted black posteriorly.

*N. cassandrae divergens* subsp. nov. is similar in most respects to *N. cassandrae cassandrae* of the type form just described, but is separated from it by complete black barring of the white upper labials, versus incomplete black barring in *N. cassandrae cassandrae* of the type form; less and smaller amounts of black

spotting on the white surfaces of the rear lower flanks and two rows of semi-distinct blackish spots running down either side of the mid-dorsal line.

All the preceding species and subspecies forming the entirety of the *N. bougainvillii* complex are separated from all other species within *Nodorha* Mittleman, 1952 and *Lerista* Bell, 1833 *sensu lato* by the following unique combination of characters: Forelimbs and hindlimbs present and all pentadactyle; three supraoculars; five supraciliaries and the hindlimb is shorter than the distance from the snout to forelimb.

Species within *Lerista* Bell, 1833 *sensu lato* are separated from all other Australasian skinks by the following unique combination of characters: Parietal shields in contact behind the interparietal; lower eyelid with a transparent disc and either movable or fused to form a permanent spectacle; limbs short and separated by at least several scale lengths when adpressed; ear opening small, minute or hidden; supranasals absent; nasals enlarged, undivided and usually in contact medially.

The preceding description was derived from inspection of specimens and the accounts of Wells (2012), Cogger (2014) and Fairbairn, Shine, Moritz and Frommer (1998).

*N. bougainvillii* in life is depicted in Wilson and Swan (2021) on page 359 centre left and online at:

<https://www.inaturalist.org/observations/116044074>

*N. hoserae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/2392168>

and

<https://www.inaturalist.org/observations/72242636>

*N. tasmaniensis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/96864514>

*N. insularis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/129802509>

*N. martinekae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/138344709>

and

<https://www.inaturalist.org/observations/143329609>

and

<https://www.inaturalist.org/observations/143315333>

*N. absconditus* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/15715785>

and

<https://www.flickr.com/photos/bassia09/8752272908/>

and

<https://www.flickr.com/photos/126237772@N07/18003872523/>

and

<https://www.flickr.com/photos/126237772@N07/18440600370/>

*N. cassandrae* in life is depicted in Hoser (1989) on page 104 at top, Swan, Sadlier and Shea (2022) on page 104 at top.

*N. cassandrae divergens* subsp. nov. in life is depicted online at: <https://www.inaturalist.org/observations/93144635>

**Distribution:** *N. martinekae* sp. nov. occurs in southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west.

**Etymology:** *N. martinekae* sp. nov. is named in honour of Maryann Martinek of Bendigo, Victoria, Australia in recognition of her significant contributions to exposing scams in the so-called wildlife conservation business. For further details refer to Hoser (2010).

**NODORHA ABSCONDITUS SP. NOV.**

LSIDurn:lsid:zoobank.org:act:66B7651D-AADD-498B-8787-351D1B495140

**Holotype:** A preserved specimen at the South Australian Museum, Adelaide South Australia, Australia, specimen number R37508 collected from 5 km west of Alawoona, South Australia, Australia, Latitude -34.75 S., Longitude 140.45 E.

This government-owned facility allows access to its holdings.



**Paratypes:** Two preserved specimens at the South Australian Museum, Adelaide South Australia, Australia, specimen numbers R37509 and R37510 collected from 9.5 km north of Alawoona, South Australia, Australia, Latitude 34.67 S., Longitude 140.52 E.

**Diagnosis:** Until now, *Nodorha bougainvillii* (Gray, 1839) has been treated as a single wide-ranging species of small burrowing skink with a distribution extending from northern New South Wales along an arc through Victoria and into south-east South Australia.

That taxon is now broken up into the following species:

*N. bougainvillii* is confined to the Adelaide Hills area and nearby elevated parts of South-east South Australia;

*N. hoserae* sp. nov. is from the Eyre Peninsula in South Australia;

*N. tasmaniensis* sp. nov. is from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. is from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. is from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. is from the arid zone south of the Murray River near the Victorian and South Australian border;

*N. cassandrae* Wells and Wellington, 1984 is mainly from the western slopes of the Great Dividing Range of central New South Wales, with an eastern infusion along the Hunter Valley and;

*N. cassandrae divergens* subsp. nov. is from the New England region and hillier areas to the west in north-west New South Wales.

The preceding seven species are all divergent from one another by an estimated 2.5 or more MYA based on the published evidence of Fairbairn, Shine, Moritz and Frommer (1998).

There is no comparative molecular evidence for the form *N. cassandrae divergens* subsp. nov.

The eight preceding taxa are separated from one another by the following unique combinations of characters:

*N. bougainvillii* has an average of 22 midbody rows; 17-18 subdigital lamellae; 69-78 paravertebrals; 4 rows of well defined small to tiny dark blackish spots running longitudinally down the back of the generally light brown body; lower parts and posterior of the tail are often orange or orangeish in colour. Adult females average 54.5 mm in snout-vent length and adult males 48.5 mm.

*N. hoserae* sp. nov. has an average of 20-21 midbody rows; 17-19 subdigital lamellae; 69-78 paravertebrals; spots on the back of the dorsum if present are brown, not black or blackish in colour and when present are elongate (longitudinal) and well separated. Lower parts of the tail are yellowish and the dorsum is generally a greyish-brown colour. Adult females average 57.5 mm in snout-vent length and adult males 50.3 mm.

*N. tasmaniensis* sp. nov. has an average of 20-22 midbody rows; 17-18 subdigital lamellae; 70-80 paravertebrals; spots on the back are elongate, black and somewhat irregularly shaped. Lower parts of the tail and distal end are whitish-cream in colour. The dorsum is medium brown in colour. Heavy black spotting on the white lower flanks is often joined to form lines. Adult females average 68.5 mm in snout-vent length and adult males 59.2 mm making this by far the largest species in the complex.

*N. insularis* sp. nov. has an average of 21-22 midbody rows; 17-19 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, usually only in the middle two rows, where they are tiny, indistinct and blackish in colour. There are only scattered black spots on the white lower flanks. Lower surfaces of the tail are a pale yellowish-orange colour. The dorsum is light brown in colour. Adult females average 58.7 mm in snout-vent length and adult males 47.9 mm.

*N. martinekae* sp. nov. has an average of 20-22 midbody rows; 17-20 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, are distinct in the middle two rows, where they are tiny, and the lines of blackish spots are broken, while on the two side rows, they

spotting is blurred and less distinct. There is greyish peppering as opposed to black spots on the pale surfaces of the lower flanks. Lower surfaces of the tail are either whitish, brown or sometimes yellow. The dorsum is a very light brown in colour. This species is characterised further by significant dark spotting on the crown of the upper surface of the head. Adult females average 56.4 mm in snout-vent length and adult males 48.6 mm.

*N. absconditus* sp. nov. has an average of 20-22 midbody rows; 16-18 subdigital lamellae; 65-77 paravertebrals. Spots on the dorsum along the two midline sets are so prominent as to be joined to form relatively thick lines running down the dorsum.

The side rows are only generally visible at the level of the front legs and are absent on the dorsum posterior to this. The upper surfaces of the tail in this species are unusual in that the colouration is one of a dark brownish background with light grey spotting. The dorsum itself is a dark greyish-brown colour. The lighter lower surfaces of the flanks have the outer surfaces of the scales etched dark brown, but there are no black spots or marks on an otherwise white or whitish background. Lower surfaces of the tail are usually whitish. As for *N. martinekae* sp. nov., this species is characterised further by significant dark spotting on the crown of the upper surface of the head, in this case generally merging to form large blotches and areas of dark. Adult females average 59.5 mm in snout-vent length and adult males 50.1 mm.

*N. cassandrae* has an average of 20 midbody rows; 16-18 subdigital lamellae; 67-77 paravertebrals.

Adult females average 47.5 mm in snout-vent length and adult males 44.8 mm making this species, including the associated form *N. cassandrae divergens* subsp. nov. by far the smallest species in the complex. The dorsal base colour is silver-grey or greyish-brown, with the lower surfaces and distal part of the tail usually russet-red or bright orange and usually speckled with darker brown.

There are usually a few tiny dark flecks only on the head and these are indistinct. Rarely are there lines of spots running down the dorsum and if present, they are tiny and indistinct.

The whitish lower flanks are generally immaculate anteriorly and irregularly spotted black posteriorly.

*N. cassandrae divergens* subsp. nov. is similar in most respects to *N. cassandrae cassandrae* of the type form just described, but is separated from it by complete black barring of the white upper labials, versus incomplete black barring in *N. cassandrae cassandrae* of the type form; less and smaller amounts of black spotting on the white surfaces of the rear lower flanks and two rows of semi-distinct blackish spots running down either side of the mid-dorsal line.

All the preceding species and subspecies forming the entirety of the *N. bougainvillii* complex are separated from all other species within *Nodorha* Mittleman, 1952 and *Lerista* Bell, 1833 *sensu lato* by the following unique combination of characters: Forelimbs and hindlimbs present and all pentadactyle; three supraoculars; five supraciliaries and the hindlimb is shorter than the distance from the snout to forelimb.

Species within *Lerista* Bell, 1833 *sensu lato* are separated from all other Australasian skinks by the following unique combination of characters: Parietal shields in contact behind the interparietal; lower eyelid with a transparent disc and either movable or fused to form a permanent spectacle; limbs short and separated by at least several scale lengths when adpressed; ear opening small, minute or hidden; supranasals absent; nasals enlarged, undivided and usually in contact medially.

The preceding description was derived from inspection of specimens and the accounts of Wells (2012), Cogger (2014) and Fairbairn, Shine, Moritz and Frommer (1998).

*N. bougainvillii* in life is depicted in Wilson and Swan (2021) on page 359 centre left and online at:

<https://www.inaturalist.org/observations/116044074>

*N. hoserae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/2392168>

and

<https://www.inaturalist.org/observations/72242636>

*N. tasmaniensis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/96864514>

*N. insularis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/129802509>

*N. martinekae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/138344709>

and

<https://www.inaturalist.org/observations/143329609>

and

<https://www.inaturalist.org/observations/143315333>

*N. absconditus* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/15715785>

and

<https://www.flickr.com/photos/bassia09/8752272908/>

and

<https://www.flickr.com/photos/126237772@N07/18003872523/>

and

<https://www.flickr.com/photos/126237772@N07/18440600370/>

*N. cassandrae* in life is depicted in Hoser (1989) on page 104 at top, Swan, Sadler and Shea (2022) on page 104 at top.

*N. cassandrae divergens* subsp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/93144635>

**Distribution:** *N. absconditus* sp. nov. occurs in the arid zone south of the Murray River near the Victorian and South Australian border on both sides of the border.

**Etymology:** *N. absconditus* sp. nov. is named in reflection of the fact that the taxon has been hidden from science until now and yet is found relatively near to two major urban areas in Australia, being Adelaide and Melbourne.

#### **NODORHA CASSANDRAE DIVERGANS SUBSP. NOV.**

**LSID**Durn:lsid:zoobank.org:act:EA03678F-62AE-4CA4-8D98-A2171571CDC4

**Holotype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.161730 collected from Mt. Kaputar National Park (Nandewar Survey Site No. Nba4.21 - Mid Slope), New South Wales, Australia, Latitude -30.36055 S., Longitude 150.15805 E.

This facility allows access to its holdings.

**Paratype:** A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.156055 collected from Moema State Forest, East of Bellata, New South Wales, Australia, Latitude -30.05 S., Longitude 149.9411 E.

**Diagnosis:** Until now, *Nodorha bougainvillii* (Gray, 1839) has been treated as a single wide-ranging species of small burrowing skink with a distribution extending from northern New South Wales along an arc through Victoria and into south-east South Australia.

That taxon is now broken up into the following species:

*N. bougainvillii* is confined to the Adelaide Hills area and nearby elevated parts of South-east South Australia;

*N. hoserae* sp. nov. is from the Eyre Peninsula in South Australia;

*N. tasmaniensis* sp. nov. is from north-east Tasmania and immediately adjacent islands to the north;

*N. insularis* sp. nov. is from Kangaroo Island in South Australia;

*N. martinekae* sp. nov. is from southern Victoria between about Bairnsdale in the east and the northern slopes of the Otways in the west;

*N. absconditus* sp. nov. is from the arid zone south of the Murray River near the Victorian and South Australian border;

*N. cassandrae* Wells and Wellington, 1984 is mainly from the western slopes of the Great Dividing Range of central New South Wales, with an eastern infusion along the Hunter Valley and;

*N. cassandrae divergens* subsp. nov. is from the New England region and hillier areas to the west in north-west New South Wales.

The preceding seven species are all divergent from one another by an estimated 2.5 or more MYA based on the published evidence of Fairbairn, Shine, Moritz and Frommer (1998).

There is no comparative molecular evidence for the form *N. cassandrae divergens* subsp. nov..

The eight preceding taxa are separated from one another by the following unique combinations of characters:

*N. bougainvillii* has an average of 22 midbody rows; 17-18 subdigital lamellae; 69-78 paravertebrals; 4 rows of well defined small to tiny dark blackish spots running longitudinally down the back of the generally light brown body; lower parts and posterior of the tail are often orange or orangeish in colour. Adult females average 54.5 mm in snout-vent length and adult males 48.5 mm.

*N. hoserae* sp. nov. has an average of 20-21 midbody rows; 17-19 subdigital lamellae; 69-78 paravertebrals; spots on the back of the dorsum if present are brown, not black or blackish in colour and when present are elongate (longitudinal) and well separated. Lower parts of the tail are yellowish and the dorsum is generally a greyish-brown colour. Adult females average 57.5 mm in snout-vent length and adult males 50.3 mm.

*N. tasmaniensis* sp. nov. has an average of 20-22 midbody rows; 17-18 subdigital lamellae; 70-80 paravertebrals; spots on the back are elongate, black and somewhat irregularly shaped. Lower parts of the tail and distal end are whitish-cream in colour. The dorsum is medium brown in colour. Heavy black spotting on the white lower flanks is often joined to form lines. Adult females average 68.5 mm in snout-vent length and adult males 59.2 mm making this by far the largest species in the complex.

*N. insularis* sp. nov. has an average of 21-22 midbody rows; 17-19 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, usually only in the middle two rows, where they are tiny, indistinct and blackish in colour. There are only scattered black spots on the white lower flanks. Lower surfaces of the tail are a pale yellowish-orange colour. The dorsum is light brown in colour. Adult females average 58.7 mm in snout-vent length and adult males 47.9 mm.

*N. martinekae* sp. nov. has an average of 20-22 midbody rows; 17-20 subdigital lamellae; 66-79 paravertebrals; spots on the back of the dorsum are either absent or if present, are distinct in the middle two rows, where they are tiny, and the lines of blackish spots are broken, while on the two side rows, they spotting is blurred and less distinct. There is greyish peppering as opposed to black spots on the pale surfaces of the lower flanks. Lower surfaces of the tail are either whitish, brown or sometimes yellow. The dorsum is a very light brown in colour. This species is characterised further by significant dark spotting on the crown of the upper surface of the head. Adult females average 56.4 mm in snout-vent length and adult males 48.6 mm.

*N. absconditus* sp. nov. has an average of 20-22 midbody rows; 16-18 subdigital lamellae; 65-77 paravertebrals. Spots on the dorsum along the two midline sets are so prominent as to be joined to form relatively thick lines running down the dorsum.

The side rows are only generally visible at the level of the front legs and are absent on the dorsum posterior to this. The upper surfaces of the tail in this species are unusual in that the colouration is one of a dark brownish background with light grey spotting. The dorsum itself is a dark greyish-brown colour. The lighter lower surfaces of the flanks have the outer surfaces of the scales etched dark brown, but there are no black spots or marks on an otherwise white or whitish background. Lower surfaces of the tail are usually whitish. As for *N. martinekae* sp. nov., this species is characterised further by significant dark spotting on the crown of the upper surface of the head, in this case generally merging to form large blotches and areas of dark. Adult females average 59.5 mm in snout-vent length and adult males 50.1 mm.

*N. cassandrae* has an average of 20 midbody rows; 16-18 subdigital lamellae; 67-77 paravertebrals.

Adult females average 47.5 mm in snout-vent length and adult males 44.8 mm making this species, including the associated form *N. cassandrae divergens subsp. nov.* by far the smallest species in the complex. The dorsal base colour is silver-grey or greyish-brown, with the lower surfaces and distal part of the tail usually russet-red or bright orange and usually speckled with darker brown.

There are usually a few tiny dark flecks only on the head and these are indistinct. Rarely are there lines of spots running down the dorsum and is present, they are tiny and indistinct.

The whitish lower flanks are generally immaculate anteriorly and irregularly spotted black posteriorly.

*N. cassandrae divergens subsp. nov.* is similar in most respects to *N. cassandrae cassandrae* of the type form just described, but is separated from it by complete black barring of the white upper labials, versus incomplete black barring in *N. cassandrae cassandrae* of the type form; less and smaller amounts of black spotting on the white surfaces of the rear lower flanks and two rows of semi-distinct blackish spots running down either side of the mid-dorsal line.

All the preceding species and subspecies forming the entirety of the *N. bougainvillii* complex are separated from all other species within *Nodorha* Mittleman, 1952 and *Lerista* Bell, 1833 *sensu lato* by the following unique combination of characters: Forelimbs and hindlimbs present and all pentadactyle; three supraoculars; five supraciliaries and the hindlimb is shorter than the distance from the snout to forelimb.

Species within *Lerista* Bell, 1833 *sensu lato* are separated from all other Australasian skinks by the following unique combination of characters: Parietal shields in contact behind the interparietal; lower eyelid with a transparent disc and either movable or fused to form a permanent spectacle; limbs short and separated by at least several scale lengths when adpressed; ear opening small, minute or hidden; supranasals absent; nasals enlarged, undivided and usually in contact medially.

The preceding description was derived from inspection of specimens and the accounts of Wells (2012), Cogger (2014) and Fairbairn, Shine, Moritz and Frommer (1998).

*N. bougainvillii* in life is depicted in Wilson and Swan (2021) on page 359 centre left and online at:

<https://www.inaturalist.org/observations/116044074>

*N. hoseri* sp. nov. in life is depicted online at:  
<https://www.inaturalist.org/observations/2392168>

and

<https://www.inaturalist.org/observations/72242636>

*N. tasmaniensis* sp. nov. in life is depicted online at:  
<https://www.inaturalist.org/observations/96864514>

*N. insularis* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/129802509>

*N. martinekae* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/138344709>

and

<https://www.inaturalist.org/observations/143329609>

and

<https://www.inaturalist.org/observations/143315333>

*N. absconditus* sp. nov. in life is depicted online at:

<https://www.inaturalist.org/observations/15715785>

and

<https://www.flickr.com/photos/bassia09/8752272908/>

and

<https://www.flickr.com/photos/126237772@N07/18003872523/>

and

<https://www.flickr.com/photos/126237772@N07/18440600370/>

*N. cassandrae* in life is depicted in Hoser (1989) on page 104 at top, Swan, Sadlier and Shea (2022) on page 104 at top.

*N. cassandrae divergens subsp. nov.* in life is depicted online at:  
<https://www.inaturalist.org/observations/93144635>

**Distribution:** *N. cassandrae divergens subsp. nov.* is found in the western part of the New England region and hillier areas to the west in north-west New South Wales, including nearby sandy flatter areas that are elevated above the black soil areas dominating further west.

**Etymology:** *N. cassandrae divergens subsp. nov.* is named in reflection of the fact that the taxon has diverged from the species *N. cassandrae*.

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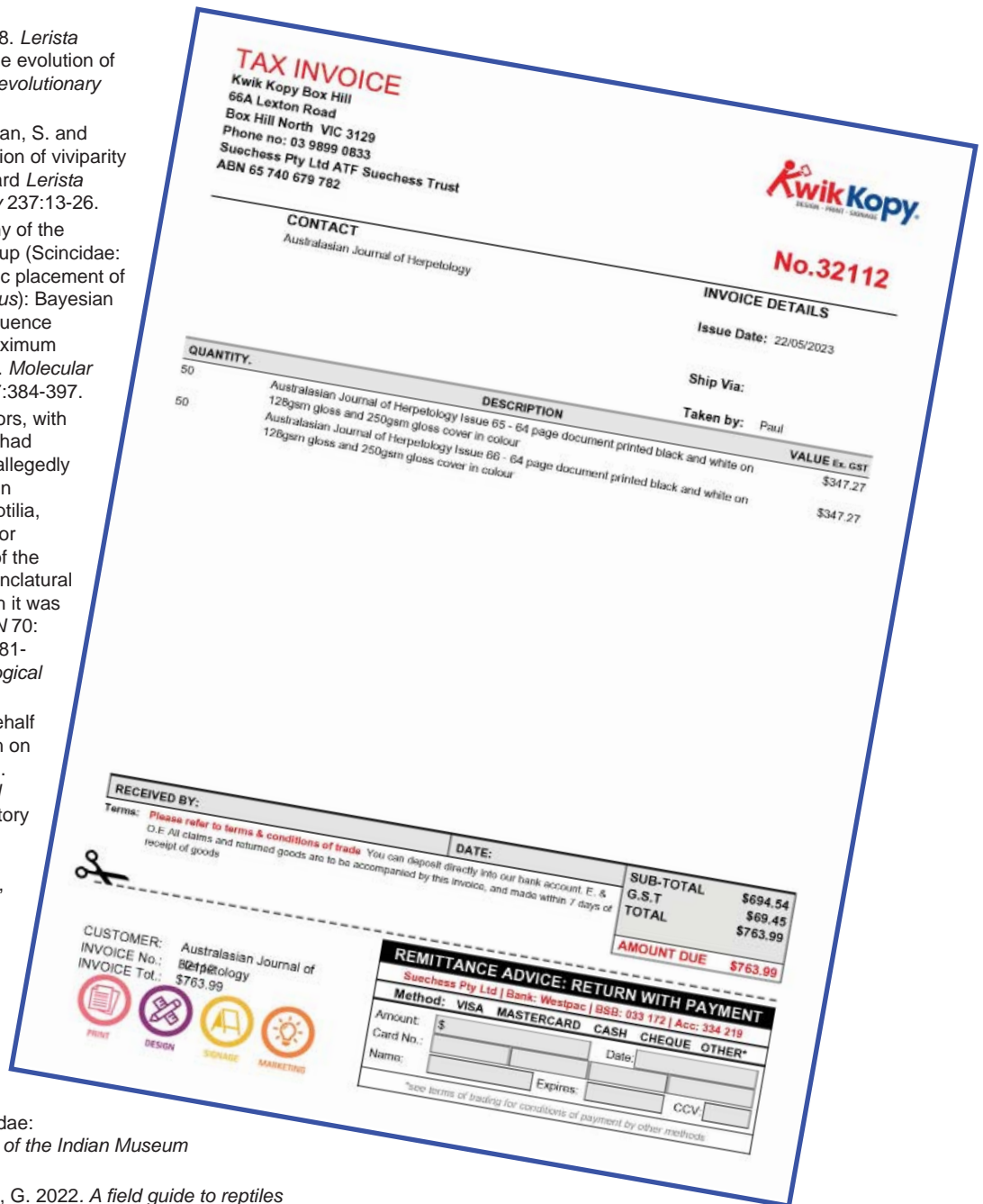
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**CONFLICT OF INTEREST**  
 None.

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