Australasian Journal of Herpetology **63:23-33.**
Published 16 June 2023.

ISSN 1836-5698 (Print)
ISSN 1836-5779 (Online)

Six new snakes from southern Australia (Squamata: Serpentes: Elapidae).

LSIDURN:LSID:ZOOBANK.ORG:PUB:76E2B0AC-26AB-4533-8EF7-28FBF066B49B

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Received 23 March 2023, Accepted 20 April 2023, Published 16 June 2023.

ABSTRACT

In the face of accelerating human population growth in southern Australia, brought about mainly because of the "Big Australia Policy" of successive Federal Governments (Saunders 2019, Zaczek 2019), and their massive tax-payer funded immigration programs (Karp 2023), habitat destruction in southern Australia is an ever increasing problem.

This underpins the urgency in cataloguing the biodiversity here in order to locate and identify taxa before they run the risk of extinction.

To that end, this paper formally names as subspecies, six snakes from southern Australia, significantly divergent from the nominate forms.

They are identified on the basis of morphological divergences, distributional disjuncture and in some cases earlier molecular studies have identified the relevant taxa as sufficiently divergent to warrant formal recognition.

These are:

1/ The eastern population of the Western Australian endemic, the Square-nosed Snake *Rhinoplocephalus bicolor* Müller, 1885, (type locality "Australia", but quite evidently of the western form), herein named as *Rhinoplocephalus bicolor rodneyscanesi subsp. nov.* (being found from Israelite Bay, through Esperance to Bremer Bay in Western Australia),

2/ The similarly distributed Eastern population of the Western Australian endemic, the Western Crowned Snake *Elapognathus* (*Hawkeswoodelapidus*) *coronatus* (Schlegel, 1837), (with a type locality of King George's Sound, Western Australia), herein named as *Elapognathus coronatus staszewskii subsp. nov.*,

3/ The divergent, light coloured Stirling Range population of *R. bicolor* is formally named as *R. bicolor bulliardi subsp. nov.*,

4/ The main southern Victorian population of the Eastern Small-eyed Snake *Cryptophis nigrescens* Günther, 1862, (with a type locality of near Sydney, New South Wales), herein formally named as *Cryptophis nigrescens minor subsp. nov.*,

5/ A divergent lineage of White-lipped Snake *Drysdalia coronoides* (Günther, 1858), (with a type locality of Tasmania from far south in Tasmania, named as *Drysdalia coronoides divergans subsp. nov*. and

6/ Another divergent lineage of White-lipped Snake *Drysdalia coronoides* (Günther, 1858) this one being from mainland Australia named as *Drysdalia coronoides absconditus subsp. nov.*.

Keywords: Taxonomy; nomenclature, reptile; snake; elapid; Square-nosed Snake; Crowned snake; Small-eyed Snake; White-lipped Snake; *Rhinoplocephalus* ; *bicolor*; *Elapognathus*; *coronatus*; *Cryptophis*; *nigrescens*; *Drysdalia*; *coronoides*; Australia; Western Australia; Tasmania; New South Wales; South Australia; Victoria; new subspecies; *rodneyscanesi*; *bulliardi; staszewskii*; *minor*; *divergans*; *absconditus.*

INTRODUCTION

In 2023, the newly elected Federal Labor Government of Australia firmly committed itself to the continued acceleration of human population growth as part of a human and military build up against the perceived geopolitical threat of Communist China.

In fact, as part of the Federal Government policy of bringing more and more people to overpopulate Australia, the estimated intake of people is 300,000, mainly breeding age people in 2023 alone! (Karp 2023).

In the face of accelerating human population growth in southern Australia, brought about mainly because of the "Big Australia Policy" of successive Federal Governments, and their massive tax-payer funded immigration programs (see for example Saunders 2019 or Zaczek 2019), habitat destruction in southern

Australia is an ever increasing problem (see also Hoser 1989 and 1991a).

This underpins the urgency in cataloguing the biodiversity here in Australia in order to locate and identify taxa before they run the risk of extinction.

To that end, I have been a leader among Australian herpetologists and zoologists in the last 30 years, seeking to locate, identify and catalogue any overlooked vertebrates from within Australia, ensuring they are correctly named within the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

While it seems that most living Australian snake species and subspecies have already been formally named and/or if a given taxon is not widely recognized, there is a name available for it, there remain some exceptions, including six that have seemed obvious to me for some years.

Within this latter category are the eastern population of the Square-nosed Snake *Rhinoplocephalus bicolor* Müller, 1885, (type locality "Australia", but quite evidently of the western form), herein named as *Rhinoplocephalus bicolor rodneyscanesi subsp. nov.* (found from Israelite Bay, through Esperance to Bremer Bay in Western Australia) as well as another divergent population from the Stirling Range, which in many ways is similar to the eastern form, but found proximally to the western form, albeit an isolated range to the north.

Each are significantly morphologically divergent to the nominate form and much of their available habitat has already been reduced to monoculture agriculture in the relevant parts of their ranges.

I had intended formally naming these taxa for some years, but awaited either a molecular basis for doing so, further specimens to be made available, or both.

Unfortunately neither appear to forthcoming, save for a limited number of specimens of the eastern and western forms and the Stirling Range animal that I have managed to inspect in recent years.

With the only relevant issue being whether these divergent forms are different species, or just subspecies, I have decided to take a conservative approach and name them as a subspecies.

While conservation should not dictate taxonomy, I do note that by identifying these forms as separate taxa, governments can and should be able to manage them as entities separate from the better-known western population (nominate form).

Hence the formal naming of the eastern population as *Rhinoplocephalus bicolor rodneyscanesi subsp. nov.* and the Stirling Range population as *Rhinoplocephalus bicolor bulliardi subsp. nov.*

A near identical situation exists for the eastern population of the Western Crowned Snake *Elapognathus* (*Hawkeswoodelapidus*) *coronatus* (Schlegel, 1837), (with a type locality of King George's Sound, Western Australia), herein named as *Elapognathus* (*Hawkeswoodelapidus*) *coronatus staszewskii subsp. nov..*

Hawkeswoodelapidus Hoser, 2013 is the subgenus for the species.

A similar scenario also exists with respect of the Eastern Small-eyed Snake *Cryptophis nigrescens* Günther, 1862, (with a type locality of near Sydney, New South Wales).

Since arriving in Melbourne, Victoria at end 1985, I have noted substantial differences between putative *C. nigrescens* from around the east of Melbourne, versus those from around Sydney in New South Wales.

However, based on published distribution maps, the populations of putative *C. nigrescens* appeared to be continuous from Sydney to Melbourne, through the relevant parts of south-east Australia, along the coast and ranges between the two major cities.

Because of the preceding situation, I had assumed that differences were probably clinal and so could not justify recognition of the central-southern Victorian specimens at any new taxonomic level.

In support of the preceding contention is the absence of any *Cryptophis* from the Otway Ranges, south-west of Melbourne, which in terms of hill-dwelling eastern Victorian taxa has only been cut off from these ranges in recent geological times (estimated at 3-5 MYA), (see Hoser 2020, 2022a, 2022b, 2022c).

Note also that species complexes within *Abbasaurum* Hoser, 2022 and *Limnodynastes* Fitzinger, 1843, managed to get to the Otway Ranges from eastern Victoria before the volcanic plains barriers formed in the 3-5 MYA period, which further implies that *Cryptophis* is a relatively recent immigrant into southern Victoria from further north and most certainly arrived here after 5 MYA, which broadly matches the situation of the skink genus *Allengreerus* Hoser, 2009, which also made it to central Victoria (viz. *A. jackyhoserae* (Hoser, 2012)), but did not make it to the Otway Ranges (see Hoser 2009b, 2012a, 2020, 2022a-c).

If one looks at the evidence of Hoser (2009c and 2013c), it appears in the most outlandish scenario, that the population of north-east Victoria by *Cryptophis* may in fact be measured in just tens of thousands of years, rather than millions, again negating any likelihood they are a different species from those further north, but in terms of small reptile species, of which *C. nigrescens* is, the scenarios outlined in Hoser (2020, 2022a-c) are more likely, supporting the idea of species-level divergence of the putative Victorian *C. nigrescens*.

In recent years, in particular from 2010 to 2023, I have been able to see large numbers of specimens of putative *C. nigrescens* from near Melbourne and north-east Victoria, previously not collected by myself or colleagues and also been able to see females produce young on a number of occasions, with invariably just 1-2 (rarely 3) being produced at a time, which is significantly lower than the 4-5 average I got from specimens north, south and west of Sydney in the nearby sandstone plateaux or similarly on the NSW south coast to at least as far south as Bega.

That alone implies taxonomic divergence.

In terms of distribution, it also appears that the populations from the hills and ranges immediately west, north, east and south-east of Melbourne, including flat areas on the Mornington Peninsula, and extending across most of south-east Victoria, east of the main Great Dividing Range, are disjunct from those found in most of New South Wales (along the coast and ranges), implying potential for taxonomic divergence.

The south-central Victorian snakes are similar to those further east in Victoria, but consistently smaller than those from the south coast of New South Wales, which are effectively similar to those from the NSW South Coast and nearby ranges, including Sydney, the Blue Mountains and immediately north and west of these places.

Noting recent divisions of putative *Allengreerus delicata* (De Vis, 1888) by Hoser (2009b, 2012b and 2022b), including at least three species being found within the State boundaries of Victoria, including one (*A. jackyhoserae* (Hoser, 2012)) from the central and eastern parts, south of and on the Great Dividing Range, sneaking into north-east Victoria, for which genetic validation was available, putative *Cryptophis nigrescens* from the same general range as that taxon and apparently divergent from the nominate Sydney form, warranted further investigation in the same way Queensland specimens had been examined and dealt with by Hoser (2012b).

As a result, these snakes were flagged as a potentially unnamed taxon, at least as a new subspecies.

In terms of the two species *Rhinoplocephalus bicolor* Müller, 1885 and *Elapognathus coronatus* (Schlegel, 1837), they have repeatedly been flagged as a putative taxa in which there may be one or more potentially hidden or cryptic species.

See also Hoser (2013b).

For example Cogger (2014) wrote of "*Genus* Rhinoplocephalus *Müller, 1885*", the following:

"*a genus containing a single species found in the south-west of Western Australia*".

Pyron *et al.* (2013) in their supermatrix showed each of *R. bicolor*, *E. coronatus* and *C. nigrescens* occupying long single stems, implying a strong likelihood of other species or subspecies within each clade as shown.

In terms of biogeographic barriers at play with respect of the two putative snake taxa within south-west Western Australia, a number of other species of reptiles and frogs have been shown to be composite across the same barrier/s, that is in an area slightly west of Esperance, Western Australia and/or confined to the Stirling Range.

Most notable of these included the recent formal division of *Contundo napoleonis* (Gray, 1839) into two species. The newly named *C. rosswellingtoni* Hoser, 2018, is the taxon found from Esperance and east, with *C. napoleonis* (Gray, 1839) being found along the coast west of Hopetoun and as far north as Green Head, Western Australia. That division was made on the basis of a molecular study showing divergence of the populations and consistent morphological differences (Hoser 2018 and sources cited therein).

Distribution maps and specimen data from Australian museums, as well as photographic evidence on "inaturalist.org" also shows population breaks for the relevant putative snake species across the same biogeographical barrier, implying taxonomic divergence.

Also notable was the division of the previously monotypic genus *Metacrinia* Parker, 1940, with the type species *Pseudophryne nichollsi* Harrison, 1927, known only from south-west Western Australia, into three species by Hoser (2020), each being morphologically and genetically divergent, each species being at least 2.6 2 MYA divergent from the other nearest relatives (based on earlier studies) and including an isolated Stirling Range taxon (*Metacrinia bettyswilae* Hoser, 2020).

In terms of the populations of *Cryptophis nigrescens* in south-east Australia, there are no useful molecular studies, although most other species complexes of small reptiles in south east Australia do in fact have different species in Sydney and Melbourne, including species within the *Allengreerus delicata* (De Vis, 1888) complex (see above) and *Lampropholis guichenoti* (Duméril and Bibron, 1839) species complexes (Hoser 2022b).

Based on Hoser (2022b), relying in turn on multiple earlier studies, including molecular ones, both putative species, which were until recently being treated as monotypic, turned out to be four species for *Lampropholis guichenoti* (Duméril and Bibron, 1839), one previously not named and nineteen within *Allengreerus delicata* (De Vis, 1888), 14 of which were previously not named, meaning that 15 species were formally named in that paper for the first time!

As already stated, no members of the *A. delicata* complex ever made it to the Otways in south-west Victoria (being unable to cross the basalt plains formed in the past 3-5 MYA) and like for *C. nigrescens*, are believed to have arrived in Victoria from further north in recent geological times, postdating the most significant volcanic events in central and western Victoria.

Finally, Dubey *et al.* (2010) published a study of the phylogeny of the genus *Drysdalia*, also referred to by Hoser (2013b).
The three recognized species in that southern Australian genus are the White-lipped Snake *Drysdalia coronoides* (Günther, 1858), being the type species for the genus, The Masters Snake *Drysdalia mastersi* (Krefft, 1866) and the Rose-bellied Snake *Drysdalia* (*Staszewskius*) *rhodogaster* (Jan and Sordelli, 1873)

In terms of the species, *D. mastersi*, and relying in part on the data from Dubey *et al.* (2010), the species was divided into three subspecies (including the nominate form), each with a divergence of about 500K years from one another.

The authors only provided a single sample for putative *D.* (*Staszewskius*) *rhodogaster* even though there are two distinctive populations, being one found mainly in the Blue Mountains, west of Sydney, and another on the NSW South Coast. While the exact provenance of the holotype is unknown, there are available names for both forms, being, "*Hoplocephalus collaris* Macleay, 1887" for the south coast form, with a type locality of Bega, New South Wales, and "*Pseudelaps minutus* Fry, 1915", for the Blue Mountains form, with a type locality of Colo Vale, New South Wales.

Staszewskius Hoser, 2013 is the subgenus for *D. rhodogaster.*

For *D. coronoides*, the picture was somewhat more complicated.

This species, with a type locality of "Tasmania" being found throughout Tasmania, Victoria, eastern New South Wales and south-east South Australia, comprised three quite divergent lineages, with apparently little or no admixture, even though specimens were found proximal to one another.

They diverged from one another over 1 MYA, but the authors made no taxonomic changes as a result of their findings.

This in part was due to the need to ascertain the exact provenance or form of the holotype material from Tasmania and also to quantify the differences between the lineages if this were possible.

Neither were attempted by Dubey *et al.* (2010), or for that matter anyone else in the ensuing years.

To resolve the matter, I set out to determine if it was possible to identify the three putative forms morphologically and then to confirm which of the three forms was the type material for *D. coronoides*.

Assuming both were possible, the next step would be to formally identify and name each lineage, which is in fact what has happened.

The type form for *D. coronoides* is that from most parts of Tasmania, with a population from the far south, being unnamed. That is herein formally named as *Drysdalia coronoides divergans subsp. nov*..

Interestingly on mainland Australia where two morphologically similar lineages coccur, I was able to identify and separate each.

The one which is of the Tasmanian type form is obviously already named, but the other is formally named herein as *Drysdalia coronoides absconditus subsp. nov*..

Notable is that all appear to be evolving separately as different species, even when in contact with one another, as in no evidence of cross-breeding or introgression.

In spite of this, I have conservatively identified each as subspecies, rather than as full species.

MATERIALS AND METHODS

In the absence of any detailed molecular studies on relevant populations of each of three putative snake species, namely, *Rhinoplocephalus bicolor* Müller, 1885, *Elapognathus coronatus* (Schlegel, 1837) and *Cryptophis nigrescens* Günther, 1862, no funds or government hand outs available to me to commence one and no one else in Australia or elsewhere with any stated interest in these snakes, it was decided to inspect specimens of each species from all areas they are known to occur to see if there were any consistent identifiable differences between given populations and if so, whether these alone warranted taxonomic recognition of any populations at either species or subspecies level.

Relevant literature on each putative species was also examined to confirm if there were any available synonyms for any potential new taxa (none were) and also to see if any other relevant information could be gathered in order to make a better taxonomic determination with respect to populations of each species.
Included in the inspections were live specimens, photos with good locality data and museum specimens.

Literature relevant to the taxonomic and nomenclatural decisions with respect of *Rhinoplocephalus bicolor* Müller, 1885 included Bush and Maryan (2006), Christensen (1972), Cogger (2014), Cogger *et al.* (1983), Fitzinger (1843), Hoser (2018, 2020),

Hutchinson (1990), Keogh *et al.* (1998), Müller (1885), Pyron *et al.* (2013), Wallach *et al.* (2014), Wells and Wellington (1984, 1985), Wilson and Knowles (1988), Wilson and Swan (2017) and sources cited therein.

Literature relevant to the taxonomic and nomenclatural decisions with respect of *Elapognathus coronatus* (Schlegel, 1837) included Bush and Maryan (2006), Christensen (1972), Cogger (2014), Cogger *et al.* (1983), Coventry and Rawlinson (1980), Dubey *et al.* (2010), Duméril and Bibron (1839), Fitzinger (1843), Fleay (1952), Gray (1841), Gray and Neill (1845), Guibé and Roux-Estève (1972), Hallermann (2020), Hoser (2018, 2020), Hutchinson (1990), Keogh *et al.* (1998, 2000), Kinghorn (1924), Pyron *et al.* (2013), Ride *et al*. (1999), Schlegel (1837), Shine (1981, 1994), Wallach *et al*. (2014), Wells and Wellington (1984, 1985), Wilson and Knowles (1988), Wilson and Swan (2017) and sources cited therein.

Literature relevant to the taxonomic and nomenclatural decisions with respect of *Cryptophis nigrescens* (Günther, 1862) included Bridge (1979), Cogger (2014), Cogger *et al*. (1983), Coventry and Rawlinson (1980), Fearn (2000), Günther (1862a-b), Hoser (1980, 1989, 1990, 1991b, 2012c, 2013c, 2018, 2019a, 2019b, 2020, 2022a-c), Hutchinson (1979), Macleay (1885), Murphy (1994), Pyron *et al.* (3013), Ride *et al*. (1999), Shine (1994), Stapley *et al*. (2005), Swan *et al.* (2017), Turner (2018), Wallach *et al*. (2014), Wells and Wellington (1984, 1985), Wilson and Swan (2017), Worrell (1961) and sources cited therein.

In terms of *Drysdalia coronoides*, Dubey *et al.* (2010) laid out which populations needed to be inspected and over the ten years post-dating that paper, I have been able to inspect hundreds of specimens including in Museums, in captivity, in the wild and via photographs with good locality data.

This has enabled me to determine consistent differences between the three forms identified in Dubey *et al.* (2010).

Literature relevant to the taxonomic and nomenclatural decisions with respect of *Drysdalia coronoides* Günther, 1858 included Cogger (2014), Cogger *et al*. (1983), Coventry and Rawlinson (1980), De Vis (1905), Dubey *et al.* (2010), Gomard (2015), Günther (1858), Hoser (1989, 1990, 1991b, 2009b, 2009c, 2012b-c, 2013b-c, 2018, 2019a, 2019b, 2020, 2022a-c), Hutchinson (1979, 1990), Jan and Sordelli (1873), Kinghorn (1924, 1926), McCoy (1878), Pyron *et al.* (2013), Ride *et al*. (1989), Shine (1981), Swan *et al*. (2017), Wallach *et al.* (2014), Wells and Wellington (1984, 1985), Wilson and Swan (2017) and sources cited therein.

RESULTS

Consistent differences between eastern and western populations of *Rhinoplocephalus bicolor* Müller, 1885 and *Elapognathus coronatus* (Schlegel, 1837) were identified and as a result, in each case the eastern forms are formally named below as new subspecies.

The Stirling Range population *R. bicolor* of was also found to be sufficiently divergent to warrant taxonomic recognition as well.

In terms of *Cryptophis nigrescens* Günther, 1862, the specimens from near Melbourne, Victoria were sufficiently divergent from the Sydney animals to warrant formal naming as a new subspecies, being *Cryptophis nigrescens minor subsp. nov*.. This divergence included size, shape, colouration and reproductive biology, combined with apparently allopatric distribution.

I was able to identify consistent differences between the three forms of *Drysdalia coronoides* Günther, 1858 as identified by Dubey *et al.* (2010) and hence the two forms for which there are no available names are formally named, like the others mentioned above, in accordance with the rules of the *International Code of Zoological Nomenclature* (Ride *et al.* 1999).

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 a relevant staff at museums who made specimens and records available in line with international obligations.

In terms of the following formal descriptions, spelling should not be altered in any way for any purpose unless expressly and exclusively called for by the rules governing Zoological Nomenclature as administered by the International Commission of Zoological Nomenclature.

Material downloaded from the internet and cited anywhere in this paper was downloaded and checked most recently as of 18 April 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.
Delays in recognition of these subspecies could jeopardise the long-term survival of the taxa as outlined by Hoser (2019a, 2019b) and sources cited therein.

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) 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 (Dubois *et al*. 2019).
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 Dubois *et al*. (2019), Hawkeswood (2021), Hoser, (2007, 2009a, 2012a, 2012b, 2013, 2015a-f, 2019a, 2019b), ICZN (1991, 2001, 2012, 2021) 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).

RHINOPLOCEPHALUS BICOLOR RODNEYSCANESI SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:B0497E4F-23BB-492D-85CE-DC13D1A4A157

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R89479 collected from Yokinup Bay, Western Australia, Australia, Latitude -33.866667 S., Longitude 123.033333 E.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R151714, collected from Mason Bay, Western Australia, Australia, Latitude -33.95 S., Longitude 120.45 E.

Diagnosis: The subspecies *Rhinoplocephalus bicolor rodneyscanesi subsp. nov.* is the eastern population of the western Australian endemic species *Rhinoplocephalus bicolor* Müller, 1885. *Rhinoplocephalus bicolor rodneyscanesi subsp. nov.* occurs along the coast from Israelite Bay in the east, through Esperance to Bremer Bay in the west. Specimens found from Mount Many Peaks in the east, west along the coast and nearby hinterland to Broke Inlet, are of the nominate form *R. bicolor bicolor.*
R. bicolor bulliardi subsp. nov. appears to be restricted to the Stirling Range, southwest Australia.

The three relevant subspecies are separated from one another by the following three suites of characters:

Nominate *R. bicolor* has a lead-grey upper surface of the head, which extends down the sides to the level of the bottom of the eye. The upper labials are all or mainly a deep yellow colour (the very top of each beginning to turn grey). The lead grey colour

of the head extends along the dorsum and includes the upper flanks. In turn, the lower flanks are a deep yellow, like the venter, but with a strong orange tinge on the flanks.

There is no obvious yellow line down the mid-dorsal line. The dorsal scales are of even colouration and not obviously etched.

R. bicolor rodneyscanesi subsp. nov. is a light brown colour on the upper surface of the dorsum, rather than grey or greyish, with a faint yellow-orange line running along the midline of the dorsum, being one scale wide. The upper part of the head and nape, behind the eyes is blackish, but the snout is light brown. Sides of the head and upper labials are a faded brown, very light yellow or cream in colour, but not a deep yellow. Lower flanks and venter are light yellow, with an orange tinge on the lower flanks.

The anterior of each scale on the dorsum is semi-distinct darker and gradually fades as one moves down the scale in a posterior direction.

R. bicolor bulliardi subsp. nov. is in many ways intermediate in form between the other two subspecies.

However it is separated from both as follows:

It has a dark grey upper surface of the head behind the eyes and anteriorly has a blue-grey snout. Upper labials are cream. The dorsum is brown, but with a strong blue-grey overlay. There is a very faded orange stripe running down the mid-dorsal line, being one scale wide.

The anterior edge of each dorsal scale is thinly etched dark purple-brown but each scale is otherwise of even colour.

Lower flanks and venter are light yellow with a strong orange hue on the lower flanks, especially anteriorly.

R. bicolor, treated as monotypic for the genus *Rhinoplocephalus* Müller, 1885, including the subspecies formally named here, are separated from all other Australian elapids by the following unique suite of characters: tail not paddle shaped or ending in a spine; head and dorsum are more or less uniformly coloured above, though sometimes with a thin line down the midline of the dorsum; nasal contacts the preocular; smooth scales with 15 mid-body rows; frontal longer than broad; more than one and a half times as broad as the supraocular; supranasals present; internasals absent; anal single; 25-40 all single subcaudals; 135-165 ventrals; no suboculars; two to five small, solid maxillary teeth follow the fang; labials are uniform in colour and lack bars; belly lacks transverse bars and is creamish, yellow or orange in colour; no keeling of ventral scales; smallish eyes, (modified from Cogger, 2014).

R. bicolor of the type form is depicted in life in Cogger (2014) on page 929 and online at:

https://www.inaturalist.org/observations/119158305

and

https://www.inaturalist.org/observations/149950272

and

https://www.inaturalist.org/observations/112344420

and

https://www.inaturalist.org/observations/112343754

A specimen of *R. bicolor rodneyscanesi subsp. nov.* in life from Lort River, Western Australia, photographed by Brian Bush of Western Australia can be found online at:
http://members.iinet.net.au/~bush/bicolor.html

R. bicolor bulliardi subsp. nov. in life is depicted online at:
https://www.inaturalist.org/observations/91497711
(six images) or at:
https://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+0407+1884

Distribution: As stated above.

Etymology: *R. bicolor rodneyscanesi subsp. nov.* is named in honour of Rodney Nathan Scanes, currently of Ramornie, New South Wales, Australia in recognition of his many services for herpetology, ornithology, herpetoculture and aviculture in Australia spanning some decades.

RHINOPLOCEPHALUS BICOLOR BULLIARDI SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:91A474FA-4742-4FBC-B709-83B64C9B57E2

Holotype: A live specimen depicted in the four images posted at:
https://www.inaturalist.org/observations/91497711
being an adult male specimen (one snake only) collected from the Stirling Range National Park, Western Australia, Australia.

Diagnosis: The subspecies *R. bicolor bulliardi subsp. nov.* appears to be restricted to the Stirling Range, southwest Australia, being proximally distributed to the western Australian endemic species *Rhinoplocephalus bicolor* Müller, 1885, (of the type form) found generally south and west of there in south-west Australia.

Rhinoplocephalus bicolor rodneyscanesi subsp. nov. is the eastern population of *Rhinoplocephalus bicolor* Müller, 1885. *Rhinoplocephalus bicolor rodneyscanesi subsp. nov.* occurs along the coast from Israelite Bay in the east, through Esperance to Bremer Bay in the west. Specimens found from Mount Many Peaks in the east, west along the coast and nearby hinterland to Broke Inlet, are of the nominate form *R. bicolor bicolor.*
The three relevant subspecies are separated from one another by the following three suites of characters:

Nominate *R. bicolor* has a lead-grey upper surface of the head, which extends down the sides to the level of the bottom of the eye. The upper labials are all or mainly a deep yellow colour (the very top of each beginning to turn grey). The lead grey colour of the head extends along the dorsum and includes the upper flanks. In turn, the lower flanks are a deep yellow, like the venter, but with a strong orange tinge on the flanks.

There is no obvious yellow line down the mid-dorsal line. The dorsal scales are of even colouration and not obviously etched.

R. bicolor rodneyscanesi subsp. nov. is a light brown colour on the upper surface of the dorsum, rather than grey or greyish, with a faint yellow-orange line running along the midline of the dorsum, being one scale wide. The upper part of the head and nape, behind the eyes is blackish, but the snout is light brown. Sides of the head and upper labials are a faded brown, very light yellow or cream in colour, but not a deep yellow. Lower flanks and venter are light yellow, with an orange tinge on the lower flanks.

The anterior of each scale on the dorsum is semi-distinct darker and gradually fades as one moves down the scale in a posterior direction.

R. bicolor bulliardi subsp. nov. is in many ways intermediate in form between the other two subspecies.

However it is separated from both as follows:

It has a dark grey upper surface of the head behind the eyes and anteriorly has a blue-grey snout. Upper labials are cream. The dorsum is brown, but with a strong blue-grey overlay. There is a very faded orange stripe running down the mid-dorsal line, being one scale wide.

The anterior edge of each dorsal scale is thinly etched dark purple-brown but each scale is otherwise of even colour.

Lower flanks and venter are light yellow with a strong orange hue on the lower flanks, especially anteriorly.

R. bicolor, treated as monotypic for the genus *Rhinoplocephalus* Müller, 1885, including the subspecies formally named here, are separated from all other Australian elapids by the following unique suite of characters: tail not paddle shaped or ending in a spine; head and dorsum are more or less uniformly coloured above, though sometimes with a thin line down the midline of the dorsum; nasal contacts the preocular; smooth scales with 15 mid-body rows; frontal longer than broad; more than one and a half times as broad as the supraocular; supranasals present; internasals absent; anal single; 25-40 all single subcaudals; 135-165 ventrals; no suboculars; two to five small, solid maxillary teeth follow the fang; labials are uniform in colour and lack bars; belly lacks transverse bars and is creamish, yellow or orange in colour; no keeling of ventral scales; smallish eyes, (modified from

Cogger, 2014).

R. bicolor of the type form is depicted in life in Cogger (2014) on page 929 and online at:

https://www.inaturalist.org/observations/119158305

and

https://www.inaturalist.org/observations/149950272

and

https://www.inaturalist.org/observations/112344420

and

https://www.inaturalist.org/observations/112343754

A specimen of *R. bicolor rodneyscanesi subsp. nov.* in life from Lort River, Western Australia, photographed by Brian Bush of Western Australia can be found online at:
http://members.iinet.net.au/~bush/bicolor.html

R. bicolor bulliardi subsp. nov. in life is depicted online at:
https://www.inaturalist.org/observations/91497711
(six images)

or at:
https://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+0407+1884

Distribution: Apparently confined to the Stirling Ranges, Western Australia.

Etymology: *R. bicolor bulliardi subsp. nov.* is named in honour of Kaj-erik Bulliard of Esperance, Western Australia, previously of Perth, Western Australia, and before that, of Sydney, NSW, Australia in recognition of a contribution to herpetology in Australia spanning some decades.

ELAPOGNATHUS CORONATUS STASZEWSKII SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:DC2457D0-505A-496D-8CDC-FD02422A8BC6

Holotype: A preserved specimen at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R97561 collected from Gulch island, Recherche Archipelago, Western Australia, Australia, Latitude -34.033333 S., Longitude 123.233333 E.

This facility allows access to its holdings.

Paratypes: Two preserved specimens at the Western Australian Museum, Perth, Western Australia, Australia, specimen number R97562-R97563 collected from Gulch island, Recherche Archipelago, Western Australia, Australia, Latitude -34.033333 S., Longitude 123.233333 E.

Diagnosis: *Elapognathus coronatus staszewskii subsp. nov.* is readily separated from the nominate form of *Elapognathus coronatus* by the fact that the dark nape marking is significantly wider at the midline of the neck, versus not so in *E. coronatus.* This means that it is 4 scales wide at the widest point in *E. coronatus staszewskii subsp. nov.*, versus 2-3 in the nominate form of *E. coronatus.*

The top of the head in *E. coronatus staszewskii subsp. nov.* is a dark greenish-grey versus lead-grey to grey in *E. coronatus.*

Both subspecies of *E. coronatus* are separated from the other species within *Elapognathus* Boulenger, 1896, namely *E. minor* (Günther, 1863) by having a distinct black band across the nape, continuous or more-or-less continuous with a narrow black stripe that extends around the sides of the head, through each eye and around the snout and 1-4 solid maxillary teeth behind the fang, versus none in *E. minor* and 130-160 ventrals, versus 115-130 in *E. minor.*

In *E. minor* the head and neck are more or less uniformly coloured when viewed from above, although in younger specimens a faded nape, most prominent on the lateral surfaces may be visible.

The snakes in the genus *Elapognathus* Boulenger, 1896 are separated from all other Australian elapids by the following unique suite of characters: no paddle on the tail, no spine at the end of the tail, all scales smooth, with 15 mid body rows, frontal shield longer than broad; suboculars absent; internasals present; 115-160 ventrals; 35-65 single subcaudals; single anal; subcaudals single; no bar markings or keels on the ventrals (Modified from Cogger, 2014).

Type *E. coronatus coronatus* is depicted in life online at:

https://www.inaturalist.org/observations/91928994

and

https://www.inaturalist.org/observations/120476753

and

https://www.inaturalist.org/observations/151820898

E. coronatus staszewskii subsp. nov. is depicted in life online at:
https://www.inaturalist.org/observations/144918599

and

https://www.inaturalist.org/observations/68396590

Distribution: *Elapognathus coronatus staszewskii subsp. nov.* is found from Cobinup Lake in the west, along the coastal strip, including near shore islands to Israelite Bay in the east.

Nominate *E. coronatus coronatus* is found from Hopetoun in the east, west along the coastal strip, including near shore islands to through south-west Australia and then north along the coast to near Perth, Western Australia.

Etymology: *E. coronatus staszewskii subsp. nov.* is named in honour of well-known snake keeper and breeder, Alex Staszewski of Blacktown, New South Wales, Australia in recognition of his contributions to herpetology in Australia spanning some decades. He has had success breeding large numbers of Taipans and Death Adders.

CRYPTOPHIS NIGRESCENS MINOR SUBSP. NOV.

LSIDurn:lsid:zoobank.org:act:B92ACF0B-1437-4F71-B587-7E3F8B3A6C96

Holotype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D56366 collected from Christmas Hills / Kinglake, Victoria, Australia.

This government-owned facility allows access to its holdings.

Paratype: A preserved specimen at the National Museum of Victoria, Melbourne, Victoria, Australia, specimen number D73200 collected from Kinglake National Park, Victoria, Australia, Latitude -37.57 S., Longitude 145.33 E.

Diagnosis: *Cryptophis nigrescens minor subsp. nov.* is separated from nominate *C. nigrescens* Günther, 1862, (with a type locality of near Sydney, New South Wales), *Cryptophis assimilis* (Macleay, 1885), from north Queensland and *Cryptophis edwardsi* Hoser, 2012, from south-east Queensland, by its smaller adult size, being never more than 55 cm, versus sometimes more than 60 cm for the other three species, no red or pink on the belly of juveniles, or if so, only light or faint, versus strong pink or orange on the belly of juveniles of the other three above-named taxa and a small litter size, 3 or less, versus (usually) 4 or more in the other three species.

Adult *C. nigrescens minor subsp. nov.* have a white belly, rarely with any hint of pink, which while seen in type *C. nigrescens*, is less frequent, with most *C. nigrescens* having at least some element of pink on the belly or margins. *C. edwardsi* is characterised by a strongly orange venter. *C. assimilis* is similar in most respects to *C. nigrescens.*

C. nigrescens minor subsp. nov. is also separated from the other three above-named taxa by having a relatively smaller head and in large adults lacks the bulbousity of the venom glands, showing at the back of the upper surface of the head from beneath the scales.

Cryptophis nigrescens, *C. assimilis*, *C. edwardsi* and *C. nigrescens minor subsp. nov.* are separated from all other Australian elapid snakes by the following unique suite of characters: tail not paddle shaped or ending in a spine; head and dorsum are uniformly grey or black above, with the head often a shiny grey or black; nasal contacts the preocular; smooth scales with 15 mid-body rows; frontal longer than broad; more than one and a half times as broad as the supraocular; supranasals present; internasals present; anal single;30-45 all single

subcaudals; 165-210 ventrals; no suboculars; two to five small, solid maxillary teeth follow the fang; labials are uniform in colour and lack bars; belly lacks transverse bars; no keeling of ventral scales; small beady eyes, the diameter of each eye is usually less than the distance of the eye from the margin of the upper lip (modified from Cogger, 2014).

C. nigrescens is depicted in life in Cogger (2014) on page 875 top left.

C. assimilis is depicted in life in Hoser (1989) on page 152 at top left.

An image of *C. edwardsi* in life can be found in Wilson and Swan (2017) on page 543 (middle), or online at:

https://www.flickr.com/photos/90956804@N04/15570443387/

and

https://www.flickr.com/photos/126002448@N02/15121139430/

and

https://reptile-database.reptarium.cz/species?genus=Cryptophis&species=nigrescens

(snake from Bellthorpe, Queensland, photographed by Scott Eipper) where in this case it has been deliberately mislabelled by controller and owner of the domain, Peter Uetz as *C. nigrescens*, as part of their ego-driven fraud in pretending that anything named by Raymond Hoser, Ross Wellington, Richard Wells or any Russian author does not exist (see Uetz, 2022 and 2023).

(Note Peter Uetz has deleted the original material stating his censorship of the relevant material following howls of protest from the herpetological community, including his own cohort (Various authors 2022), but numerous people took and kept screen shots, page source texts and print outs of the relevant material as part of the permanent historical record. He has also uploaded altered material on the same url's to deceive people into believing that he has not censored anything or intended doing so, both claims or inferences of which are untrue).

C. nigrescens minor subsp. nov. in life can be found in images online at:

https://www.flickr.com/photos/126237772@N07/49918516812/

and

https://www.flickr.com/photos/128497936@N03/51292085180/

Distribution: *C. nigrescens minor subsp. nov.* appears to be restricted to central southern Victoria, being mainly the hilly country surrounding Melbourne, including the Kinglake Ranges, Dandenongs and Mornington Peninsula and extending south-east and east to the region of the NSW, Victorian border.

The type form of *C. nigrescens* appears to occupy coastal New South Wales from the far south coast, northwards. The exact distribution of *C. nigrescens minor subsp. nov.* has been confused somewhat by the inadvertent translocation of specimens by way of people moving them from one place to another, but appears to reflect that of *Allengreerus jackyhoserae* Hoser, 2012 in being all or mainly Victorian.

Etymology: The name "*minor*" reflects the fact that this is the smallest subspecies of *Cryptophis nigrescens* and is also smaller in adult size than the other two species in the genus.

***DYSDALIA CORONOIDES DIVERGANS SUBSP. NOV*.**

LSIDurn:lsid:zoobank.org:act:0F24ADC6-9D4D-45DC-B055-DE192E868566

Holotype: A preserved specimen at the Vertebrate Collection in the Tasmanian Museum and Art Gallery, Hobart, Tasmania, Australia, specimen number C873 collected from Pigsty Ponds, southern Tasmania, Latitude -43.488627 S., Longitude 146.731059 E. This facility allows access to its holdings.

Diagnosis: The three subspecies of white-lipped snake are readily separated from one another by the three following unique suites of characters:

1/ Nominate *Drysdalia coronoides* (Günther, 1858), (with a type locality of Tasmania, occupying most of Tasmania, except for the very far south, as well as occurring in cooler parts of south-east South Australia, Victoria, the Australian Capital Territory and New South Wales, is identified and defined as having a well-defined thick whitish bar running from the nostril, under the eye, running 12-13 scales along from the nostril, with a general absence of colour or peppering on the white. The upper surfaces of the head and snout in particular either lack peppering, or if present it is indistinct, although close inspection will reveal some peppering between the eye and nostril on either side of the snout.

2/ *Drysdalia coronoides divergans subsp. nov.* known only from around Pigsty Ponds, southern Tasmania is similar in most respects to nominate *Drysdalia coronoides* but differs in having dark purple-brown markings (blotched) across the centre of each white scale (the upper labials), which is not seen in either of the other subspecies. There is absolutely no peppering on the top of the head or between the eyes, but there are some obvious dark spots anteriorly.

3/ *Drysdalia coronoides absconditus subsp. nov*. from scattered locations between south-east South Australia, through Victoria to north-east, New South Wales is readily separated from the preceding two taxa by the fact that the whitish bar running from the nostril, under the eye is thinner than in the other two taxa (particularly nominate *D. coronoides*) invariably broken by at least one dark intrusion under the eye, as well as extensive whitening on the upper surfaces and side surfaces of the snout, which is in turn extensively peppered. The whitish bar running from the nostril, under the eye, only goes 8-10 scales along from the nostril.

Drysdalia coronoides is readily separated from the other two species in the genus *Drysdalia* Worrell, 1961 by the absence of an obvious pale band across the nape.

All species within the genus *Drysdalia* Worrell, 1961 are separated from other Australian elapid snakes by being small, slender smooth-scaled snakes with 15 mid-body rows, an absence of noticeably enlarged lower lateral scales, no terminal spine at the end of the tail; tail not paddle shaped; no transverse black bars on the belly; ventrals are not keeled or notched; frontal much longer than broad, being usually less than 1.5 times as wide as the supraocular; single anal; 35-70 single subcaudals; 120-160 ventrals; internasals present; suboculars absent; 3-5 small, solid maxillary teeth following the fang (modified from Cogger, 2014).

The nominate form of *Drysdalia coronoides* is depicted in life online at:

https://www.flickr.com/photos/ryanfrancis/49637441087/

and

https://www.flickr.com/photos/tindo2/4649930592/

and

https://www.naturepl.com/stock-photo-white-lipped-snake-drysdalia-coronoides-male-a-small-diurnal-venomous-image01214213.html

Drysdalia coronoides divergans subsp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/156335699

Drysdalia coronoides absconditus subsp. nov. is depicted in life online at:

https://www.inaturalist.org/observations/106508355

and

https://www.inaturalist.org/observations/34113598

Distribution: *Drysdalia coronoides divergans subsp. nov.* is presently known only from around Pigsty Ponds, southern Tasmania and likely not to occur far from this site. This is not the only endemic Tasmanian species or subspecies with a distribution restricted to the far south of the state.

Litotescincus wellsi Hoser, 2016 is also found in the far south-west of Tasmania, being known only from the vicinity of New Harbour and Melaleuca.

Etymology: The subspecies name "*divergans*" represents the fact that this taxon is divergent from the nominal form. The spelling of this name should not be changed.

***DYSDALIA CORONOIDES ABSCONDITUS SUBSP. NOV*.**

LSIDurn:lsid:zoobank.org:act:14CC60CD-754E-42F5-8155-B4A1FE4BCE43

Holotype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.153789 collected from Racecourse Swamp on the Racecourse Trail, Werrikimbe National Park, New South Wales, Australia, Latitude -31.12693 S., Longitude 152.27971 E.

As of 2022, this government-owned facility allows access to its holdings pursuant to international treaties (but under the management of Ms. Kim McKay (she / her), this facility does not comply with the provisions of the GIPA Act of NSW, NSW Copyright Act 1968 or the *International Code of Zoological Nomenclature*).

Paratype: A preserved specimen at the Australian Museum, Sydney, New South Wales, Australia, specimen number R.139109 collected from 300m West of Midslope Site on the Werrikimbe Trail, Werrikimbe National Park, New South Wales, Australia, Latitude -31.19194 S., Longitude 152.16444 E.

Diagnosis: The three subspecies of white-lipped snake are readily separated from one another by the three following unique suites of characters:

1/ Nominate *Drysdalia coronoides* (Günther, 1858), (with a type locality of Tasmania, occupying most of Tasmania, except for the very far south, as well as occurring in cooler parts of south-east South Australia, Victoria, the Australian Capital Territory and New South Wales, is identified and defined as having a well-defined thick whitish bar running from the nostril, under the eye, running 12-13 scales along from the nostril, with a general absence of colour or peppering on the white. The upper surfaces of the head and snout in particular either lack peppering, or if present it is indistinct, although close inspection will reveal some peppering between the eye and nostril on either side of the snout.

2/ *Drysdalia coronoides divergans subsp. nov.* known only from around Pigsty Ponds, southern Tasmania is similar in most respects to nominate *Drysdalia coronoides* but differs in having dark purple-brown markings (bloched) across the centre of each white scale (the upper labials), which is not seen in either of the other subspecies. There is absolutely no peppering on the top of the head or between the eyes, but there are some obvious dark spots anteriorly.

3/ *Drysdalia coronoides absconditus subsp. nov*. from scattered locations between south-east South Australia, through Victoria to north-east, New South Wales is readily separated from the preceding two taxa by the fact that the whitish bar running from the nostril, under the eye is thinner than in the other two taxa (particularly nominate *D. coronoides*) invariably broken by at least one dark intrusion under the eye, as well as extensive whitening on the upper surfaces and side surfaces of the snout, which is in turn extensively peppered. The whitish bar running from the nostril, under the eye, only goes 8-10 scales along from the nostril.

Drysdalia coronoides is readily separated from the other two species in the genus *Drysdalia* Worrell, 1961 by the absence of an obvious pale band across the nape.

All species within the genus *Drysdalia* Worrell, 1961 are separated from other Australian elapid snakes by being small, slender smooth-scaled snakes with 15 mid-body rows, an absence of noticeably enlarged lower lateral scales, no terminal spine at the end of the tail; tail not paddle shaped; no transverse black bars on the belly; ventrals are not keeled or notched; frontal much longer than broad, being usually less than 1.5 times as wide as the supraocular; single anal; 35-70 single subcaudals; 120-160 ventrals; internasals present; suboculars absent; 3-5 small, solid maxillary teeth following the fang (modified from Cogger, 2014).

Distribution: *Drysdalia coronoides absconditus subsp. nov.* is presently known from mainland Australia in an area stretching from south-east South Australia, through Victoria, to northern New South Wales, in cooler parts of the coast and ranges within this region.

Populations of nominate *Drysdalia coronoides* within this same range appear to occur in separate areas (and is by far the more widespread of the two, for example being the only form known from southern New South Wales), are often separated by zones of unsuitable habitat or lower elevation, where warm climate species of snakes predominate instead. Notwithstanding the preceding, there is no evidence at this stage, suggesting habitat displacement by one subspecies over another, although the apparently mutually exclusive distributions of each subspecies implies this fact.

Etymology: The subspecies name "*absconditus*" represents the fact that this taxon was hidden or absconded from science by being confused with the nominal form for over 160 years. The spelling of this name should not be changed.

CONSERVATION THREATS TO THE PRECEDING TAXA

There are no known significant immediate conservation threats to these newly named subspecies, although the best part of the habitat for these taxa have been effectively erased or degraded by intensive human activities in the form of urbanisation or land-clearing for agriculture.

Unforseen threats may include direct human activities (e.g. yet more land clearing for homes or farming activities), as well as potential threats caused by changed vegetation regimes, introduced pests and potential pathogens, including those introduced via the legal importation of foreign reptiles and amphibians by government-owned zoos and other government backed commercial enterprises.

Denial of the existence of the relevant taxa *sensu* Wüster *et al.* as outlined by Hoser (2019a, 2019b), could ultimately cause extinction of these taxa in the same way it caused one or more earlier extinctions as documented by Hoser (2019a, 2019b).

The conservation of these species will also be hampered by the issues raised in Hoser (1989, 1991a, 1993, 1996 and 2007).

Translocation of specimens should be discouraged and captives should only be released into the wild if part of a carefully planned wildlife management program.

In case it has not been made clear, there is a likelihood that molecular studies in the future may necessitate the elevation of one or more of the just described subspecies taxa to full species status.

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CONFLICTS OF INTEREST

None.

***Drysdalia coronoides absconditus subsp. nov.* from the Macedon Ranges, Victoria.**