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# A new species of Chameleon Dragon *Chelosania* Gray, 1845 from the Northern Territory, Australia.

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**RAYMOND T. HOSER**

**488 Park Road, Park Orchards, Victoria, 3134, Australia.**
***Phone*: +61 3 9812 3322 *Fax*: 9812 3355 *E-mail*: snakeman (at) snakeman.com.au**
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**ABSTRACT**

The Chameleon Dragon, genus *Chelosania* Gray, 1845 has until now been treated as a single species throughout its known range across the dry tropics of Northern Australia. As part of an audit of the taxonomy and nomenclature of Australian agamids, it emerged that those specimens from the eastern sector of the Northern Territory (NT) are significantly different to the type race of *Chelosania brunnea* Gray, 1845, from Western Australia (WA) and separated by a well defined distribution gap in the western side of the Northern Territory.

Other putative species also split across the same biogeographcal barrier, approximating the Daly River, have recently on the basis of morphological and molecular evidence been found to consist of multiple species.

These include *Odatria glauerti* (Mertens, 1957) from WA, and *O. hoserae* Hoser, 2013 from the NT, or *Cannia weigeli* Wells and Wellington, 1987 from WA and *Cannia burgessi* (Hoser, 2001) from the NT).

Therefore I have no hesitation at all in formally describing the eastern NT population of *Chelosania* as a new species, namely *Chelosania neilsonnemanni sp. nov.*.

**Keywords:** Taxonomy; nomenclature; lizards; agamids, Australia; Northern Territory; Western Australia; Arnhem Land; *Chelosania*; Chameleon Dragon; *Chelosania brunnea*; new species; *neilsonnemanni.*

## INTRODUCTION

The Chameleon Dragon, genus *Chelosania* Gray, 1845 has until now been treated as a single species throughout its known range across the dry tropics of Northern Australia including the states of Western Australia (WA), the Northern Territory (NT) and Queensland (Qld).

Examples of this taxonomic judgement is seen in the original description of Gray (1845) as well as more recently Cogger *et al.* (1983), Wells and Wellington (1985) and Cogger (2014).

The latter three publications are all effectively taxonomic reviews of this genus and component species based on available knowledge, but do not in themselves represent a scientific assessment of relevant specimens from across the range of the putative species (Kimberley, West Australia to far north-west Queensland).

In fact at no point in time to date (end 2018) has any author even been known to have speculated that there may be more than one species in the genus.

As part of an audit of the taxonomy and nomenclature of Australian agamids, it emerged that those specimens from the eastern half of the Northern Territory are significantly different to the type race of *Chelosania brunnea* Gray, 1845 and separated by a well defined distribution gap in the western side of the Northern Territory.

These key facts emerged initially when a phylogeny of Pyron *et al.* (2013) of squamates globally showed a single sample of this putative species on a significantly long stem on its own and divergent from all other Australian agamids.

The phylogeny of Pyron *et al.* (2013) was not calibrated by date or time in any way.

However, because other Australian dragon species within the phylogeny had been tested for divergences and calibrated in the results of other papers, it was the only reasonable conclusion available to infer that the genus *Chelosania* and species *brunnea* had been divergent from all others for a long time (est. 18 MYA determined by Hugall *et al.* 2008) and therefore potential speciation within the putative species as recognized was possible.

That there may be more than one species within the genus as known was considered more likely on the basis that the distribution was wide, as in across most of the dry tropics of Australia and a straight line distance of over 1,500 km and including three Australian states.

Furthermore the species is habitat specific, preferring a certain type of savannah habitat and usually in proximity to rocky locations and water, meaning that even when found in a given region, distribution may not be continuous throughout.

Observational data of herpetologists including that reported by Trainor (2005) and sources cited therein, confirm that *Chelosania brunnea* as identified by them are a slow moving and generally sedentary species, two traits that do not aid in dispersal over any biogeographical barriers.

Trainor (2005) gives a detailed explanation of collection records for the species he identified as *Chelosania brunnea* and while he notes evident gaps in known distribution potentially arising due to a lack of collection effort in many northern Australian localities and the cryptic nature of the species, he made a point of stressing that the gap across most of the western Northern Territory in a north-south band or line bound by Darwin in the east and the Victoria

River Region in the west, was most likely due to actual absence rather than a lack of collection effort.

Other putative species also split across the same biogeographcal barrier (essentially the Daly River basin) have recently on the basis of morphological and calibrated molecular evidence been found to consist of multiple species. This includes *Odatria glauerti* (Mertens, 1957) from WA, split with *O. hoserae* Hoser, 2013 from the NT, recently formally named, or *Cannia weigeli* Wells and Wellington, 1987 from WA and *Cannia burgessi* (Hoser, 2001) being described from the NT.

Inspection of numerous specimens by myself of putative *Chelosania brunnea* from all known parts of the range show morphologically distinct specimens in the various parts of the known range. However the most obvious differences can be seen between specimens on either side of the west NT gap.

Therefore, based on the preceding, I have no hesitation at all in formally describing the eastern NT population of *Chelosania* as a new species, namely *C. neilsonnemanni sp. nov.*.

References of relevance which supports the taxonomic conclusion within this paper include the following: Boulenger (1885), Bush (1985), Cogger (2014), Gray (1845), Hoser (2001, 2013, 2014, 2018), Hugall *et al.* (2008), Husband (1979), Hutchinson and Hutchinson (2011), Macey *et al.* (2000), Maryan *et al.* (2014), McLean *et al.* (2013), Melville *et al.* (2007, 2014, 2018, 2019), Pengilley (1982), Rosauer *et al.* (2018), Scott and Scott Keogh (2000), Shoo *et al.* (2008), Smith *et al.* (1999), Storr, Smith and Johnstone (1983), Trainor (2005), Wilson and Knowles (1988), Wilson and Swan (2017) and sources cited therein.

The ICZN compliant nomenclature in this paper, pursuant to the *International code of Zoological Nomenclature* (Fourth edition) (Ride *et al.* 1999), logically follows the taxonomic conclusion herein.

While the taxonomy of this paper is a certainty, what is not certain is if there are other as yet unrecognized species within the genus *Chelosania.* Based on the preceding, this is highly likely and so that there is no doubt one way or other, genetic sampling across the entire range of the genus should be undertaken with urgency. This can be easily paid for by way of the Australian government diverting funds currently used for killing people in imperialist wars in third world countries and spending it on genetic sampling and analysis instead.

***CHELOSANIA NEILSONNEMANNI SP. NOV.***

**LSID urn:lsid:zoobank.org:act:2812529D-ABFA-4058-B112-5B9D14DADDE0**

**Holotype:** A preserved specimen at the Australian Museum, in Sydney, New South Wales, Australia, specimen number: R.88842 collected at Jabiluka, NT, Australia, Latitude 12.58 S., Longitude 132.95 E. The Australian Museum in Sydney is a government-owned facility that allows access to its holdings.

**Paratype:** A preserved specimen at the Northern Territory Museum in Darwin, Northern Territory, Australia, specimen number: R08700 collected at Jabiru, Northern Territory, Australia, Latitude 12.67 S., Longitude 132.88 E.

**Diagnosis:** *Chelosania neilsonnemanni sp. nov.* until now treated as the eastern population of *C. brunnea* Gray, 1845 (type locality of Western Australia) is readily differentiated from that species by the following suite of characters (in life in adults): Reddish-brown, olive-brown or yellow brown in general dorsal colouration, versus grey in *C. brunnea*; strong yellow colour under the chin and upper neck versus none or on rare occasions very little in *C. brunnea*; minimal dorsal markings or pattern in adults versus a distinctive arrangement of joined dark flecks or spots tending to form obviously discernible dorsal cross-bands in *C. brunnea*; few if any black flecks or spots on the limbs, versus prominent black flecks and spots on the limbs of *C. brunnea*; adult female *C. neilsonnemanni sp. nov.* have significant striations behind the ear and lower neck versus none or very few in *C. brunnea*; *C. neilsonnemanni sp. nov.* have few spots or markings on the head, or if present are indistinct, versus significant spots and markings on *C. brunnea.* The second band on the tail of *C. neilsonnemanni sp. nov.* is not strongly etched with black, versus strongly etched in *C. brunnea.*

Species within the genus *Chelosania* Gray, 1845 are separated from all other Australian agamids by the possession of an exposed tympanum, slender compressed body, absence of either a transverse gular fold, pre-anal or femoral pores, a short tail that is 1.25 to 1.5 times the length of the body and no large conical spines all over the body (derived from Cogger 2017).

Photos of *Chelosania neilsonnemanni sp. nov.* in life can be found in Cogger (2014) on page 699 at bottom, Wilson (2012) at page 149, top left, Storr, Smith and Johnstone (1983) at plate 1, image 3, Wilson and Knowles (1988) at page 205, bottom left and Wilson and Swan (2017) at page 409 top right.

Photos of *C. brunnea* in life can be found in Storr, Smith and Johnstone (1983) on plate 1, middle right, Wilson and Swan (2017) on page 409 at middle left.

**Distribution:** As defined here, besides being found in the type locality of Arnhem Land in the Northern Territory, Australia, *Chelosania neilsonnemanni sp. nov.*is found in a region bound by a line running south of Darwin and east of there to include the top end of the Northern Territory and east to the Gulf of Carpentaria to include nearby parts of far north-west Queensland, at least as far east as Doomadgee, Queensland, all within Australia.

**Etymology:** Named in honour of well-known Victorian snake breeder, Neil Sonnemann of Murmungee, Beechworth, Victoria, Australia, who besides making significant contributions to herpetology in Australia in his role as snake breeder and via relevant publications, has also worked with *Chelosania* in the Lake Argyle region of north-west Australia and made a significant contribution to our body of knowledge on the genus (Trainor 2005).

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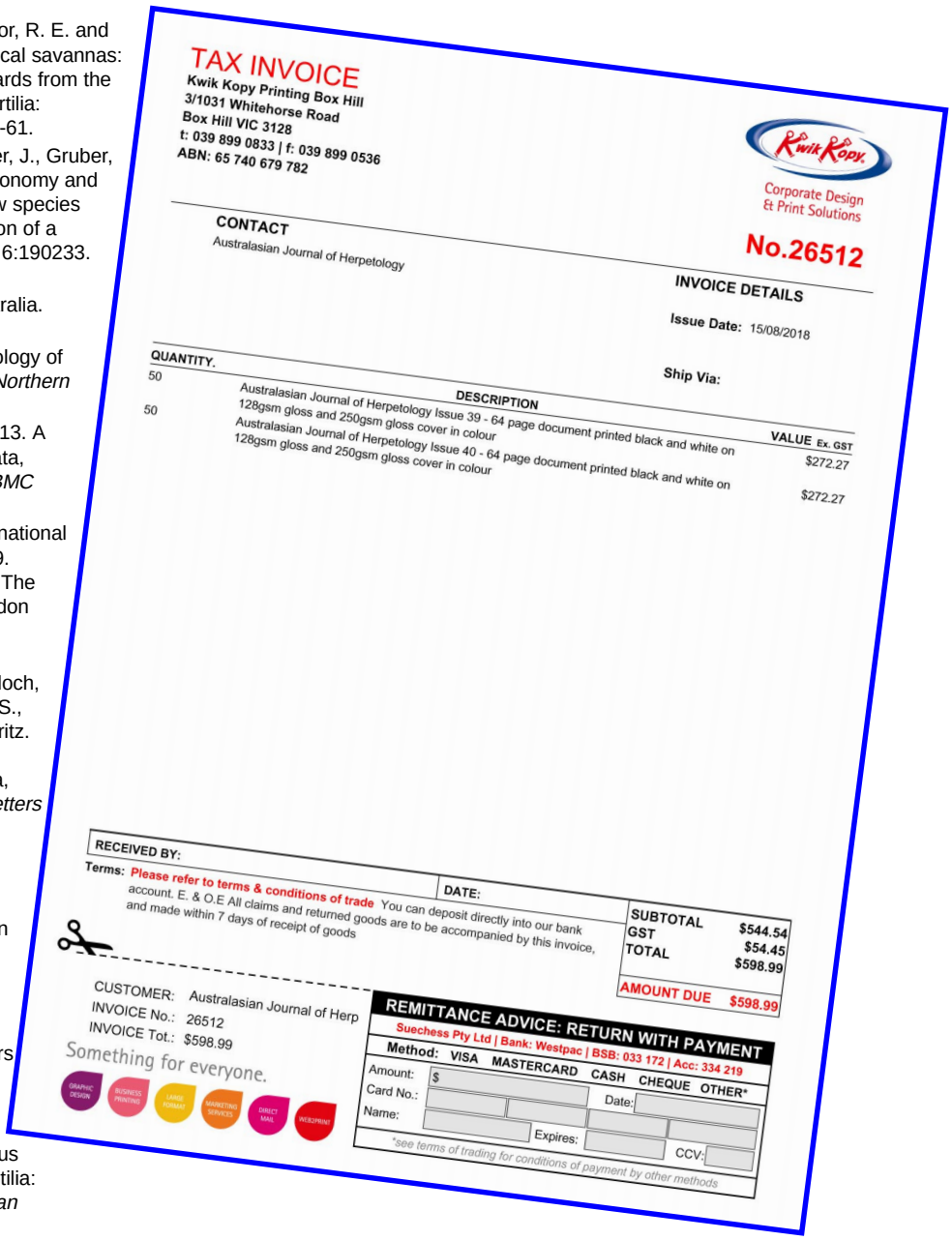

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