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Delma honlami sp. nov.: A new species of Pygopodid legless lizard from South Australia (Squamata: Gekkota: Pygopodidae: *Delma*: *Honlamopus*).

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ABSTRACT

Hoser (2017) confirmed the previously underestimated diversity of Australian Pygopodids by formally naming six new genera, two new subgenera and 13 new species. This was followed up with three more species in Hoser (2018).

This paper formally names as a new species, a population until now treated as a geographically and morphologically divergent population of *Delma* (*Honlamopus*) *inornata* Kluge, 1974, from South Australia.

Delma honlami sp. nov. is restricted to grasslands west of the lower Murray River, near Lake Alexandrina. It is most readily separated from *D inornata* of Victoria, New South Wales and Queensland and the closely related *D. megleesae* Hoser, 2017 of the Australian Capital Territory and New South Wales by the presence of a single pair of internasals, versus two pairs and a greyish, rather than brownish upper surface of the head.

Keywords: Herpetology; taxonomy; nomenclature; Australia; South Australia; *Delma*; *Honlamopus*; *inornata*; *megleesae*; new species; *honlami*.

INTRODUCTION

Following a major review of the Australian legless lizards (Pygopodidae), Hoser (2017) confirmed the previously underestimated diversity of Australian Pygopodids by formally naming six new genera, two new subgenera and 13 new species. This was followed up with three more species in Hoser (2018), giving an Australia-wide total in excess of 50 species.

The Hoser papers also followed a number of major revisions of the group as cited by Hoser (2017) and again cited in this paper.

For many years, a population of putative *Delma impar* Kluge, 1974 from south-east South Australia, on the western side of Lake Alexandrina has been known to be geographically separated from the main population which is found in a wide region from western Victoria, extending across drier parts of that state and along the western slopes and nearby plains of New South Wales, to south-east Queensland.

The South Australian population has also been known to be morphologically distinct for many years as well. It was inadvertently omitted from the papers of Hoser (2017) and Hoser (2018) which formally named numerous Australian pygopodids, even though it was obvious that this population warranted formal taxonomic recognition.

To correct this anomaly, the purpose of this paper is to formally name as a new species this hitherto unnamed taxon.

MATERIALS AND METHODS

Live and dead specimens of putative *Delma* (*Honlamopus*) *inornata* Kluge, 1974 from across the known range of the putative species (Qld, NSW, ACT and SA) were inspected over some decades in field trips across this region (in all states and territories of relevance), as were relevant museum holdings in Australia.

Literature as cited by Hoser (2017, 2018) was also reviewed, including literature specifically relevant to *Delma inornata*, to confirm that the South Australian population from west of Lake Alexandrina should be given taxonomic recognition as either a species or subspecies.

References relevant to the taxonomy of *Delma* (*Honlamopus*) *inornata* Kluge, 1974 *sensu lato* included Boulenger (1885, 1903), Brennan (2014), Brennan *et al*. (2015), Cogger (2014), Cogger *et al.* (1983), Duméril and Bibron (1839), Fischer (1882), Glauert (1956), Gray (1831, 1867), Günther (1873), Hoser (2017, 2018), Kinghorn (1926), Kluge (1974, 1976), Ride *et al.* (1999), Shea (1987, 1991), Wells (2007), Wells and Wellington (1984, 1985), Wilson and Knowles 91988), Wilson and Swan (2017) and sources cited therein.

RESULTS

Morphologically the specimens from the South Australian population from west of Lake Alexandrina were consistently divergent from their allopatric eastern counterparts in terms of several features including virtually all specimens having a single pair of internasals as opposed to an obvious two pairs in the nominate form of *D. inornata* from western Victoria (type locality of Kewell, Victoria), as well as having a greyish, rather than brownish upper surface of the head.

With the added knowledge that each population was separated by a wide zone where putative *D. inornata* are absent, it is clear that each population are evolving as separate species. Therefore in light of the preceding, I have no hesitation in naming the South Australian population from west of Lake Alexandrina as a new species, being *Delma* (*Honlamopus*) *honlami sp. nov.*.

This is done in accordance with the rules of the *International code of Zoological Nomenclature* (Ride *et al*. 1999).

DELMA (HONLAMOPUS) HONLAMI SP. NOV.

LSIDurn:lsid:zoobank.org:act:CAE029C6-0C37-4909-AC95-D4BBA1AA6D06

Holotype: A preserved specimen at the South Australian Museum, Adelaide, South Australia, Australia, specimen number R23530 collected from Lake Alexandrina, South Australia, Australia, Latitude -35.1900 S., Longitude 139.1300 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 R23870 and R26138 collected from Lake Alexandrina, South Australia, Australia, Latitude -35.1900 S., Longitude 139.1300 E.

DIAGNOSIS

Until now *Delma* (*Honlamopus*) *honlami sp. nov.* has been treated as a western population of *D. inornata* Kluge, 1974. The following description refers to adult specimens in normal health and condition.

D. honlami sp. nov. is readily separated from *D. inornata* and the similar *D. megleesae* Hoser, 2017 by having a single pair of internasals, versus an obvious two pairs in *D. inornata* and *D. megleesae*, as well as a greyish upper surface of the head, versus brownish in the other two species.

In rare cases, one or other relevant character may not be present in *D. honlami sp. nov.,* but so far none have been seen without both.

Upper labials of *D. honlami sp. nov.* are greyish brown, versus whitish, cream or yellow in *D. inornata* and *D. megleesae.*

The ear opening of *D. honlami sp. nov.* is obviously larger than the immediately surrounding scales in the second row above it, versus only slightly so in *D. inornata* and *D. megleesae.*

In *D. honlami sp. nov.* the posterior end of each dorsal scale (or any), does not have any black tip or similar. That feature is particularly common in *D. inornata* from north-west New South Wales and south-east Queensland.

D. megleesae Hoser, 2017 is readily separated from *D. inornata* and *D. honlami* by a strongly yellow chin, snout and upper labials, versus cream or at best light yellow in *D. inornata* and while sometimes yellow under the chin in *D. honlami*, this does not extend to the upper labials*. D. megleesae* is also readily separated from *D. inornata* by the absence of obviously dark etched scales on the top and sides of the head and neck, which is seen in *D. inornata*.

In *D. inornata* the dark etched scales are formed by the rear of each scale having a dark etching, giving the entirety of each brownish scale a dark etched appearance.

In *D. inornata* the posterior pair of internasals are either the same size as or larger than the anterior pair. By contrast in *D. megleesae* the posterior pair of internasals are very reduced in size to be smaller than or much smaller than the anterior pair.

The subgenus *Honlamopus* Hoser, 2017 which includes the species *D. inornata*, *D. honlami* and *D. megleesae* Hoser, 2017 are separated from the other subgenus *Delma* Gray, 1831 by the following suite of characters:

Conspicuous dorsal cross-bands are not present on the head and nape in adults; ventral scales lack dark edges; there are usually fewer than 16 scales along a line across the top of the head and fewer than 17 scales along a line across the throat, each line extending from the angle of the mouth on each side; no dark dorso-lateral stripe extending from the posterior third of the body to the tail, no conspicuous lip pattern and flesh coloured ventral surfaces (in life).

Brennan (2014) at page 52 in Fig.III.5, found the species within *Honlamopus* Hoser, 2017 to have diverged from other *Delma* species more than 20 MYA, confirming that the genus or subgenus level designation is correct and appropriate.

The genus *Delma* Gray, 1831 is readily separated from the genera *Aclys* Kluge, 1974, *Crottyopus* Hoser, 2017, *Pseudodelma* Fischer, 1882, *Sloppopus* Hoser, 2017, *Wellingtonopus* Hoser, 2017 and *Wellsopus* Hoser, 2017 by the following suite of characters:

Anterior nasals in contact, or fewer than 20 mid-body rows, and smooth dorsal scales; no pale stripes on the body or tail; nasal and first supralabial are not fused anterior to the nostril; one or no dark transverse bands posterior either to the parietal scales or to any dark transverse band fully or partly enclosing the parietal scales; usually fewer than 18 mid-body scale rows; usually seven scales on top of the snout between the rostral and frontal; usually three pre-anal scales; lateral lip pattern and dorsal head bands may be present or absent; fourth or fifth supralabial is usually below the eye; dark pigment on the throat or venter may be present or absent; and one or other of the following two sets of characters:

1/ Conspicuous dorsal cross-bands are present on the head and nape; there is rarely a conspicuous dark lateral stripe present posteriorly; rostral noticeably projecting between the anterior pair of supranasals; strong dark bars or reticulations on the throat; usually more than five infralabials and three hindlimb scales (*D. fraseri* and *D. petersoni*), or:

2/ Conspicuous dorsal cross-bands are not present on the head and nape in adults; ventral scales lack dark edges; there are usually fewer than 16 scales along a line across the top of the head and fewer than 17 scales along a line across the throat, each line extending from the angle of the mouth on each side; no dark dorso-lateral stripe extending from the posterior third of the body to the tail (*D. grayi*, *D. inornata*, *D. megleesae* or *D. honlami sp. nov.*).

The genus *Delma* Gray, 1831, and the six genera *Aclys* Kluge, 1974, *Crottyopus* Hoser, 2017, *Pseudodelma* Fischer, 1882, *Sloppopus* Hoser, 2017, *Wellingtonopus* Hoser, 2017 and *Wellsopus* Hoser, 2017 (all until now treated as being within *Delma*) are separated from all other Australasian Pygopodids by the following suite of characters: The head is covered with enlarged symmetrical shields; the ventral scales are smooth; there are no pre-anal pores; parietal scales are present; the external ear opening is present and obvious; there are more than 8 scales along a line across the top of the head joining the angle of the mouth on each side.

D. honlami sp. nov. in life is depicted online at:
https://www.inaturalist.org/observations/84128409
and
https://www.inaturalist.org/observations/105537457
and
https://www.inaturalist.org/observations/66288250
and
https://www.flickr.com/photos/128497936@N03/52039313989/

D. inornata in life is depicted online at:
https://www.inaturalist.org/observations/37549164
and
https://www.inaturalist.org/observations/108425006

D. megleesae in life is depicted online at:
https://www.inaturalist.org/observations/78279474
and
https://www.inaturalist.org/observations/6491957
and
https://www.flickr.com/photos/171250498@N08/51408275885/
and
https://www.flickr.com/photos/171250498@N08/51394014293/
and
https://www.flickr.com/photos/189037423@N06/51375190376/

and

https://www.flickr.com/photos/189037423@N06/50935343492/

All the preceding urls were most recently checked as correct and showing as indicated above on 1 June 2022.

Distribution: *Delma* (*Honlamopus*) *honlami sp. nov.* is a range-restricted endemic that is confined to a region west of the Murray River near its mouth in coastal south-east, South Australia, generally south of Murray Bridge and Adelaide and including drier parts of the Fleurieu Peninsula. It should be listed as Vulnerable by the South Australian National Parks and Wildlife Service as well as the Federal Australian counterpart.

Etymology: As for the subgenus *Honlamopus* Hoser, 2017, this species is named in honour of Mr Hon Lam, owner of the Park Orchards, Fish Cafe, for his magnificent efforts catering to the staff at Snakebusters, Australia's best reptiles displays over more than a decade preceding year 2022. People who work hard to give logistical support to frontline conservationists and educators should not have their efforts go unrecognized.

Conservation: The relevant comments of Hawkeswood (2021), Hoser (1989, 1991, 1993, 1996, 2007, 2009, 2012a-c, 2013, 2015a-f, 2019a, 2019b, 2020, 2021) apply to this taxon.

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CONFLICTS OF INTEREST

None.