Zootaxa 3746 (2): 201–239
www.mapress.com/zootaxa/

Article

ISSN 1175-5326 (print edition)
ZOOTAXA
ISSN 1175-5334 (online edition)

http://dx.doi.org/10.11646/zootaxa.3746.2.1
http://zoobank.org/urn:lsid:zoobank.org:pub:878A20EE-FCFE-43D4-B716-A57A4C752625

A new dasyurid marsupial from Kroombit Tops, south-east Queensland, Australia: the Silver-headed *Antechinus*, *Antechinus argentus* sp. nov. (Marsupialia: Dasyuridae)

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Abstract

Antechinus argentus **sp. nov.** is currently only known from the plateau at the eastern escarpment of Kroombit Tops National Park, about 400km NNW of Brisbane and 60km SSW of Gladstone, south-east Queensland, Australia. *Antechinus flavipes* (Waterhouse) is also known from Kroombit Tops NP, 4.5km W of the nearest known population of *A. argentus*; *A. mysticus* Baker, Mutton and Van Dyck has yet to be found within Kroombit Tops, but is known from museum specimens taken at Bulburin NP, just 40km ESE, as well as extant populations about 400km to both the south-east and north-west of Kroombit NP. *A. argentus* can be easily distinguished in the field, having an overall silvery/grey appearance with much paler silver feet and drabber deep greyish-olive rump than *A. flavipes*, which has distinctive yellow-orange toned feet, rump and tail-base; *A. argentus* fur is also less coarse than that of *A. flavipes*. *A. argentus* has a striking silver-grey head, neck and shoulders, with pale, slightly broken eye-rings, which distinguish it from *A. mysticus* which has a more subtle greyish-brown head, pale buff dabs of eyeliner and more colourful brownish-yellow rump. Features of the dentary can also be used for identification: *A. argentus* differs from *A. flavipes* in having smaller molar teeth, as well as a narrower and smaller skull and from *A. mysticus* in having on average a narrower snout, smaller skull and dentary lengths and smaller posterior palatal vacuities in the skull. *A. argentus* is strongly divergent genetically (at mtDNA) from both *A. flavipes* (9.0–11.2%) and *A. mysticus* (7.2–7.5%), and forms a very strongly supported clade to the exclusion of all other antechinus species, in both mtDNA and combined (mtDNA and nDNA) phylogenies inferred here. We are yet to make detailed surveys in search of *A. argentus* from forested areas to the immediate east and north of Kroombit Tops. However, *A. mysticus* has only been found at these sites in low densities in decades past and not at all in several recent trapping expeditions conducted by the authors. With similar habitat types in close geographic proximity, it is plausible that *A. argentus* may be found outside Kroombit. Nevertheless, it is striking that from a range of surveys conducted at Kroombit Tops in the last 15 years and intensive surveys by the authors in the last 3 years, totalling more than 5 080 trap nights, just 13 *A. argentus* have been captured from two sites less than 6 km apart. If this is even close to the true geographic extent of the species, it would possess one of the smallest distributions of an Australian mammal species. With several threats identified, we tentatively recommend that *A. argentus* be listed as Endangered, pending an exhaustive trapping survey of Kroombit and surrounds.

Key words: *Antechinus argentus*, *Antechinus flavipes*, *Antechinus mysticus*, mammal, morphological, genetic, evolutionary, south-east Queensland, Gladstone

Introduction

In the last two decades, the dasyurid marsupial Brown Antechinus (*A. stuartii*) complex has been split into four separate species: *A. agilis* (Dickman et al. 1998), *A. stuartii*, *A. subtropicus* and *A. adustus* (Van Dyck & Crowther, 2000). Van Dyck's (2002) morphological-based assessment of the genus *Antechinus* thus recognised ten extant species in the genus: *A. minimus* (Geoffroy); *A. flavipes* (Waterhouse); *A. stuartii* Macleay; *A. swainsonii* (Waterhouse); *A. bellus* (Thomas); *A. adustus* (Thomas); *A. godmani* (Thomas); *A. leo* Van Dyck; *A. agilis* Dickman, Parnaby, Crowther and King and *A. subtropicus* Van Dyck and Crowther. Subsequently, Krajewski et al.

Accepted by P. Gaubert: 30 Oct. 2013; published: 11 Dec. 2013

Acknowledgements

Steve Van Dyck unreservedly shared his taxonomic expertise.

David Benfer, Peter Lehmann, Ben Nottidge, Angus McNab, Eridani Mulder, Jesse Rowland and Eli Walton kindly helped with the (usually frustrating) trapping efforts.

Luke Hogan had the rare foresight to retain a DNA tissue sample from his specimen collected way back in 1992. South Australian Museum Evolutionary Biology Unit generously provided a subsample of Luke Hogan's specimen.

Much of the field work in 2012–2013 was only possible due to funding from the Fitzroy Basin Association and support from QPWS (especially Dr Rhonda Melzer), which allowed for trapping incidental to threatened frogs and feral animal monitoring.

Teresa Eyre generously provided information on the location and survey effort of small mammal trapping at Kroombit during the CRA surveys.

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APPENDIX 1. A key to extant members of the genus *Antechinus* using cranial and dental characters.

NB. The key applies only to adult antechinus skulls. Adult antechinus can be distinguished from sub-adults / juveniles by possessing a fully emerged P^3 tooth, which is larger than P^1 or P^2, and a fully emerged M^4. Abbreviations for skull measures are the same as those used in the results section of this paper.

Antechinus skulls, like those of all Australian mammals, can be distinguished from other vertebrates by the presence of complex molar teeth at the back of the tooth row. Each molar has a range of cusps (peaks and valleys), permitting precise occlusion between upper and lower molars, which aid in shearing and grinding of prey items. By contrast, reptiles have conical teeth that are relatively uniform in shape throughout the jaw.

Antechinus are marsupials and their skulls can be distinguished from those of placentals, by the presence of 4 pairs of upper molar teeth, rather than the usual 3 pairs in placentals. In addition, the placental rodents have a single enlarged pair of upper incisors, and no canine or premolar teeth, whereas antechinus have 4 pairs of smaller upper incisors and possess both canine and premolar teeth.