Systematics, Morphology and Biogeography

*Aulacocyclus yorkensis* a new species of Passalidae (Coleoptera: Scarabaeoidea) from Australia, with a key to the identification of Australian species of the genus

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**A R T I C L E   I N F O**

Article history:
Received 27 January 2016
Accepted 23 May 2016
Available online 16 June 2016
Associate Editor: Lúcia M. Almeida

Keywords:
Aulacocyclinae
New species
Passalid beetles
Taxonomy

**A B S T R A C T**

A new species, *Aulacocyclus yorkensis* sp. nov., is described from Cape York Peninsula, Australia. This species is similar to *A. feres* Percheron, these two being the largest *Aulacocyclus* in Australia, but they can be distinguished by the shape of the central tubercle and the pattern of pubescence on the mentum and metasternum. Additionally, illustrations of the new species and a key to the identification of the species of *Aulacocyclus* of Australia are provided.

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**Introduction**

Passalidae is a pantropical family composed of 640 described species (Reyes-Castillo et al., 2005), occurring mostly in humid forest. The genus *Aulacocyclus* was proposed by Kaup (1868) and then redefined by Gravely (1918). Nowadays, the genus is composed of 32 species and presents a discontinuous geographical distribution from India to Australia (Dibb, 1933). Mjöberg (1917) described *A. tambourinensis* and cited 12 species of this genus from Australia, four of which synonymized later (Table 1). The most comprehensive work about *Aulacocyclus* of Australia is that of Dibb (1938), who proposed a key to identify 11 species, not including *A. tambourinensis*. More recently Cassis and Weir (1992) cited 12 species from Australia, including *A. deyrollei* Kaup, a species transferred earlier to *Taeniocerus* Kaup (Kaup, 1871). Finally, Doesburg (1992) described additional species from Queensland. Thus, prior to this study, 12 species of *Aulacocyclus* were recognized from Australia, most of them found in Queensland. Here we describe a new species and provide a new key to the genus for Australia.

**Material and methods**

We reviewed material deposited in the South Australian Museum, Adelaide, Australia (SAM). The terminology used in the description of the head characters corresponds to Boucher (2005) and Reyes-Castillo (1970) for the rest of the body. The drawings were made using a camera lucida coupled to a stereomicroscope.

**Taxonomy**

*Aulacocyclus yorkensis* sp. nov. (Fig. 1).

**Description**

*Habitus*: Cylindrical, parallel sides, shiny black. Total length (tip of mandibles to tip of elytra): 35.4–39.6 mm.

*Head*: Labrum asymmetric, anterior margin concave with angles rounded, evenly covered by long setae. Clypeus transverse, straight and narrow, with small punctures. Frontal and occipital areas smooth. Frontal ridges, internal tubercles and cephalic mamelon absent. Central tubercle short, apex truncate (lateral view), projecting anteriorly at 45° and divided lengthwise with punctures on groove. Posterolateral tubercles absent. Supra-orbital ridges straight and thick. Ocular canthus glabrous,
Table 1

<table>
<thead>
<tr>
<th>Species of Australian Aulacocycus cited by different authors.</th>
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<tbody>
<tr>
<td><strong>Mjöberg (1917)</strong></td>
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<tr>
<td><em>A. alicornis</em></td>
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<tr>
<td><em>A. collaris</em></td>
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<td><em>A. edentulus</em></td>
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<td><em>A. errans</em></td>
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<tr>
<td><em>A. tricinctus</em> (synonym of <em>A. errans</em>)</td>
</tr>
<tr>
<td><em>A. foveipunctatus</em> (synonym of <em>A. mastersi</em>)</td>
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<tr>
<td><em>A. kaupi</em></td>
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<tr>
<td><em>A. tambourinensis</em></td>
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<tr>
<td><em>A. teres</em></td>
</tr>
<tr>
<td><em>A. toreoideis</em> (synonym of <em>A. edentulus</em>)</td>
</tr>
<tr>
<td><em>A. rosenbergi</em></td>
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<tr>
<td><em>A. rotundoclypeatus</em> (synonym of <em>A. errans</em>)</td>
</tr>
</tbody>
</table>

**Fig. 1.** *Aulacocycus yorkensis* sp. nov. (1) Head and anterior part of pronotum. (2) Aedeagus ventral view. (3) Aedeagus dorsal view. Scale bars: 1 mm.

**Legs:** Groove over anterior ventral border of profemur complete; protibia widened toward the apex, with dorsal groove complete; meso and metatibiae without lateral spines.

**Abdomen:** Last sternite glabrous, all other sternites setose. Marginal groove of last sternite incomplete laterally.

**Aedeagus:** Elongate; in ventral view (Fig. 1), basal piece fused to parameres; median lobe strongly sclerotized, spherical, being 1/3 of total length of aedeagus. In dorsal view (Fig. 1), ventrodorsal basal sclerotizations of the phallus present.

**Variation:** The lengths of the sides of labrum are variable, in the holotype the right side of labrum is longer than left side; however, in one of paratypes the lengths are reversed and in the other paratypes both sides are of equal length.

**Type material**


**Remarks**

**Affinities:** The length and habitus of *A. yorkensis* sp. nov. resemble *A. teres* Percheron. However, *A. teres* has the central tubercle longer and very free, mesosternum pubescent laterally, ligula not concave and metasternal pubescence reduced to mesocoaxial cavity and anterior part of lateral groove.

**Etymology**

The species is named after Cape York Peninsula, the type locality.
Key to species of Aulacoclycus from Australia (modified from Dibb, 1938)

We have not been able to find differences between a specimen of the type series of A. collaris Blackburn, 1896 and the description made by Doesburg (1992) of A. hangayi. The latter is very probably a synonym, and for this reason, we do not include A. hangayi in this key.

1. Postfrontal groove complete joining supra-orbital ridges behind central tubercle; pronotal scars narrow and irregular. Lateral striae of elytra distinctly punctate. Anterior tibiae broad (body length 27 mm) ................................................................. A. macleyi Kaup.
   - Postfrontal groove incomplete, not joining supra-orbital ridges behind central tubercle. Pronotal scars variable. Lateral striae of elytra distinctly punctate or not. 2.
2. Elytra completely shiny ................................................................. A. tambourinensis Mjoberg
   - Elytra broadly shagreened on tips of elytra ................................................................. A. yurkenensis sp. nov.
3. Lateral areas of metasternum very broad, wider than mesotibia. Species 35 mm or more in length ................................................................. A. teres Percheron.
   - Lateral areas of metasternum not very broad, compared with mesotibia; species less than 35 mm in length ................................................................. 5.
   - Central tubercle of the head not very free. Mesosternum glabrous laterally. Ligula concave. Metasternal pubescence extends beyond mesoceleal cavity and lateral groove (body length 35–40 mm) ................................................................. A. gravelyi Dibb.
5. Central tubercle small, viewed from above with a narrow U-shaped carina (body length 20 mm) ................................................................. A. yurkenensis sp. nov.
   - Central tubercle large or small, viewed from above without U-shaped carina ................................................................. 6.
6. Central tubercle of the head with dorsal groove from cleft apex ................................................................. 7.
   - Central tubercle with dorsal obsolete, oblique centrale tall, steeply inclined and gradually curved forward, anterior face almost vertical; antennal lamellae long and slender; primary pronotal scars small, narrow and punctate, small secondary scars present; lateral areas of metasternum almost smooth; elytra rather short, dorsal striae deep, lateral striae shallower, all striae regularly punctate (body length 25 mm) ................................................................. A. rosei Kaup.
   - Central tubercle pedunculate, not depressed. ................................................................. 8.
7. Central tubercle somewhat depressed, not pedunculate, short and stout, apex blunt; antennal lamellae of average length; pronotal scars deep, angular; lateral areas of metasternum finely rugose; dorsal elytral striae impunctate, lateral striae distinctly punctate (body length 23–28 mm) ................................................................. A. mastersi (MacLeay).
8. Central tubercle, viewed laterally, bent at right angle with apical portion approximately horizontal ................................................................. 9.
   - Central tubercle, viewed laterally, not bent at right angle, apical portion not horizontal ................................................................. 10.
9. Apical portion of central tubercle long, considerably longer than upright basal portion (body length 27–29 mm) ................................................................. A. kaupee Kaup.
   - Apical portion of central tubercle short, not longer than upright basal portion (body length 22–28 mm) ................................................................. A. fructicosum Kuwert.
10. Central tubercle angular or almost vertical, never reaching anterior margin of head. Antenna lamellae at least five times as long as broad. Median basal region of mentum glabrous. ................................................................. 11.
   - Central tubercle strongly elevated and arcuate, reaching anterior margin of head. Antenna lamellae less than five times as long as broad. Median basal region of mentum pubescent (body length 23–30 mm) ................................................................. A. enedelus MacLeay.
11. Punctures in elytral striae coarse and large; lateral areas of metasternum rugose (body length 20–22 mm) ................................................................. A. collaris Blackburn.
   - Punctures in elytral striae minute but distinct; lateral areas of metasternum almost smooth (body length 20–26 mm) ................................................................. A. allicornis Kuwert.

Conflicts of interest

The authors declare no conflicts of interest.

Acknowledgments

We thank Dr. Peter Hudson, Collection Manager, Entomology of the South Australian Museum, Adelaide, Australia for the loan of specimens and to Sara Rivera for the illustrations in figure 1. We also thank Alan R. Gillogly for improving the manuscript with his comments. This work was funded by Consejo Nacional de Ciencia y Tecnología, CONACYT-México project no. 169604.

References


