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## A new species of *Austropetalia* Tillyard from north-eastern New South Wales, Australia (Anisoptera, Austropetaliidae)

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### Abstract

A new species, *Austropetalia annaliese*, is described, illustrated and compared to its congeners. The female holotype (New South Wales, Barrington Tops, 12 December 1981) will be deposited in the Collection of the Australian Museum, Sydney, Australia.

### Introduction

The first individuals (two females) of a dragonfly with red wing spots collected in Australia (New South Wales, Blue Mountains, 1903) were identified as *Petalia Apollo* Selys, a species previously known only from Chili (Tillyard 1907). After the discovery of another female and the final instar exuvia, Tillyard (1910) described it under *Phyllopetalia* as a new species *P. patricia*. Finally, finding the male made him also establish the new genus *Austropetalia* for it (Tillyard 1916). For a while *A. patricia* was known only from the Blue Mountains (Fraser 1933) but over the years material was added from further south in New South Wales and from Victoria (Fraser 1960). Only a single female, however, became available from north-eastern New South Wales (Barrington Tops) and accordingly the species was also recorded from this region (Watson et al. 1991). Independently and almost simultaneously the present author and F. Carle discovered that *Austropetalia* from the Australian alpine area and further south was specifically different from material from the Blue Mountains and described the former as *A. tonyana* (Theischinger 1995) and *A. victoria* respectively (Carle 1996). The specimen from Barrington Tops, originally listed under *A. tonyana* (Theischinger 1995), was later, for some zoogeographical considerations and partly with some doubt, included in *A. patricia* (Hawking & Theischinger 1999, Theischinger 2002, Theischinger & Hawking 2006, Theischinger & Endersby 2009).

Intentions by the NSW Fisheries Scientific Committee to list the two available *Austropetalia* species as VULNERABLE SPECIES triggered a closer look at their larvae (Theischinger & Tang 2013) and a more thorough morphological study of the female from Barrington Tops that suggested that it represents a hitherto undescribed species. As numerous serious attempts between 1981 and 2012 at Barrington Tops and other



mountain ranges north of the Hunter River to get more material of this northern *Austropetalia* species have failed, it is described below based on the unique available female.

### Material and methods

Material was studied from the collections of the author, of the Australian Museum, Entomology, and of CSIRO, Entomology. The descriptive terminology follows Chao (1953) and Watson & O'Farrell (1991).

Holotype ♀: Australia, New South Wales, Barrington Tops, 12 December 1981, G. Theischinger & L. Müller leg.

*Austropetalia annaliese* sp. n.

Fig. 1a-d: (a) female specimen, largely lateral view, (b) female face, frontal view, (c) female pterostigma of forewing, dorsal view, (d) female segment 10 plus anal appendages, dorsal view.

Etymology. The species is named for my granddaughter Annaliese, her name being used as a noun in apposition to the generic name.

Female. Head (Fig. 1a, b). – Labium uniformly pale greyish brown; mandibles blackish brown; labrum blackish brown to black with narrow ill-defined yellowish bar across median half just dorsal to the dark ventral margin; anteclypeus, lateral lobes, two short horizontal lines just dorsal and medial to them, and dorsal margin of postclypeus, anterior frons and top of frons, antennae and vertex black; large remainder of postclypeus yellow; occiput reddish to blackish brown; postoccipital lobes short, rounded, yellowish; eyes brown (discoloured); postgenae largely variably reddish brown, broadly black along dorsal eye margin, markedly paler (yellowish grey) along lateral eye margin.

Thorax (Fig. 1a). – Prothorax largely brown to black, margin of anterior lobe dull greyish yellow to greyish brown, and a yellow spot each side and close to midline on median lobe. Spiracular dorsum brown to black. Front of synthorax blackish brown with very slightly wedge-shaped stripe each side, the stripes dorsally separated from each other approximately three times their maximal width; dorsal carina and antearlar ridge and sinus reddish brown; pleura dark reddish brown to blackish brown marked with yellow as follows: a spot each covering most of ventral half of mesokatepisternum and posteroventral corner (almost an appendix) of metakatepisternum; a stripe covering approximately posterior half of mesepimeron and another stripe covering





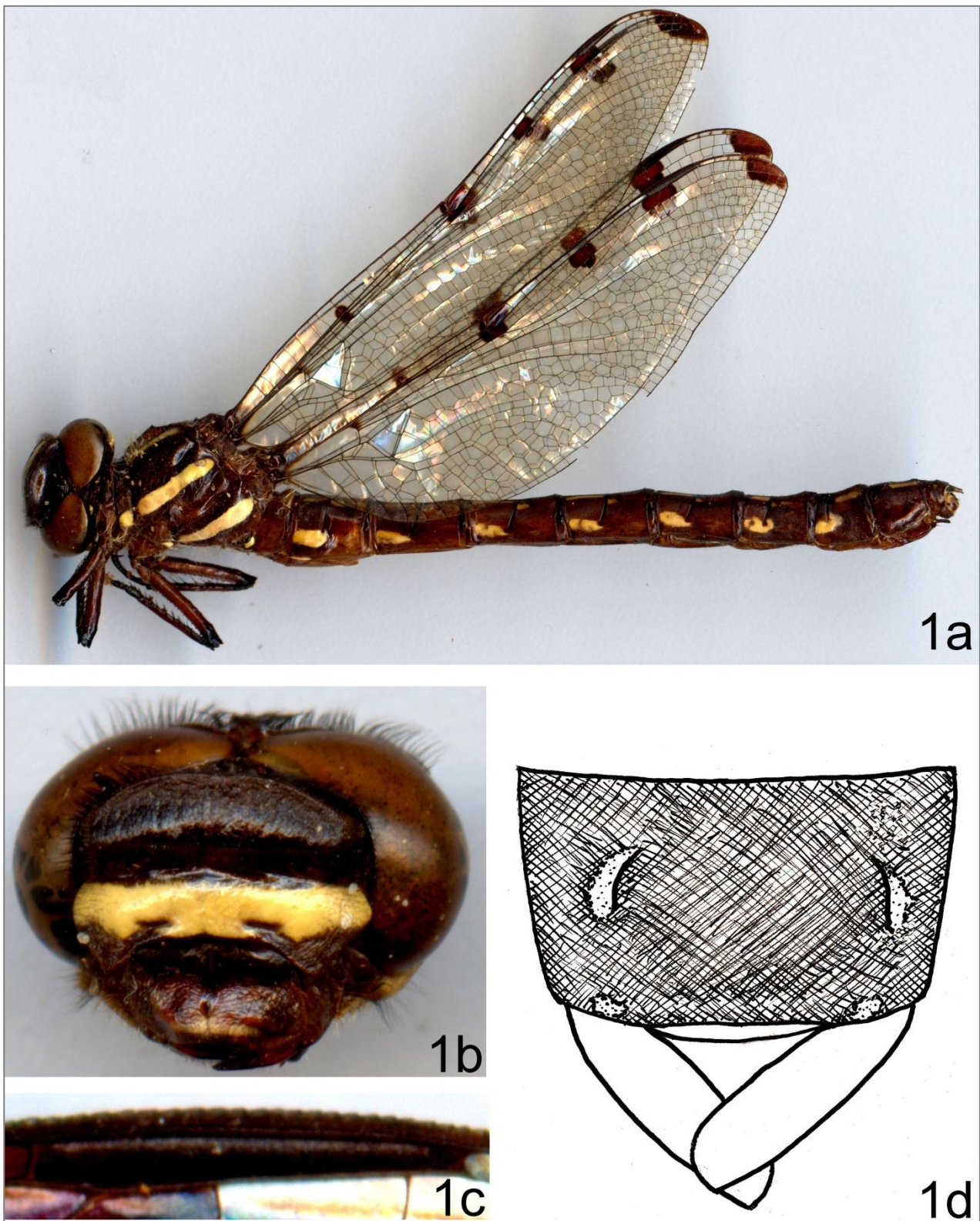


Fig. 1a-d: *Austropetalia annaliese* sp. n.; (a) female specimen, largely lateral view, (b) female face, frontal view, (c) female pterostigma of forewing, dorsal view, (d) female segment 10 plus anal appendages, dorsal view.

about median 1/3 of metepimeron; all of acrotergite. Poststernum reddish brown to black. Coxae, trochanters and 4/5 of femora dark reddish brown, tibiae, tarsi, claws and remainder of femora considerably darker. Wings (Fig. 1a) with venation greyish



brown to black, membrane hyaline, slightly tinged with pale greyish, and membranules very small, greyish. Axillary plates dark reddish brown with yellowish white spot, intermediary pieces yellowish white. Dark wing spots reddish brown to black, positioned as in photo; basal spot taking only basal half of basal costal and subcostal cell in forewing, hardly reaching Ax1 in hind wing; pterostigma (Fig. 1a, c) black, overlying at least 2 cells, tapered, with basal side markedly longer than distal side.

Abdomen (Fig. 1a, d). – Tergum 1 dark brown, somewhat paler dorsally along apical margin; terga 2-9 reddish brown to blackish brown and black with markedly lighter, generally yellow markings as follows: three successive dorsal pairs of short longitudinal stripes, auricles and anterior  $\frac{1}{4}$  of ventral margin on tergum 2; pair of almost parallel, narrowly separated anterodorsal stripes followed by pair of much more widely separated, subtriangular mediodorsal spots, followed again by pair of hardly detectable posterodorsal smudges in terga 3-6, these smudges slightly more distinct in tergum 7; pair of approximately parallel medio-posterodorsal longitudinal stripes only on terga 8 and 9; also irregular shaped antero- to antero-mediolateral patch on terga 3-8, and ventral margin of tergum 9. Segment 10 (Fig. 1d) including spiny denticerous plate variably brown to almost black, with pair of markedly paler, very small, widely separated medio-laterodorsal spots followed by pair of indistinct postero-laterodorsal smudges; supra-anal plate brown; anal appendages black, truncate, apex right- to slightly wide-angled laterally, narrowly curved medially. Sterna brown to black, outer valves and terebra variably brown, styles black.

Dimensions. – Total length 62.0 mm; hind wing 39.0 mm; pterostigma: forewing 3.1 mm, hind wing 3.8 mm.

Male. Unknown.

Habitat. – The unique available female was collected at the origin of Wombat Creek from Black Swamp at ca 1500 m asl, where sphagnum is abundant.

### **Affinities, diagnosis and discussion**

The female of *Austropetalia annaliense* sp. n. is very similar to both its congeners, *A. patricia* Tillyard (Fig 2) and *A. tonyana* Theischinger (Fig 3).

Whereas the front of the synthorax appears rather equally similar to both previously described species, the produced lateral ocellar elevations and the lack of dark blotches on the subcostal section of the basal antenodals are common only to *A. annaliense* and *A. tonyana*. Unique characters of female *A. annaliense* are the considerably re-





duced or lacking pale markings on labrum, vertex and abdominal segment 10, and the black, tapered pterostigma. It is interesting that *A. annaliese* is apparently closer to *A. tonyana* from the Australian Alps and further south than to *A. patricia* which is centered in the Blue Mountains. It is probably geographically separated from *A. patricia* only by the Hunter River valley, whereas a large area between somewhat north of Canberra and the Hunter River valley (= approximate distributional range of *A. patricia*) apparently separates it from *A. tonyana*. Both, the northern limit of the southern highlands and the southern margin of the northern tablelands of New South Wales are regions where ecological and physiographic boundaries are known to coincide with taxonomic discontinuities in numerous Australian freshwater insects including Odonata (Watson & Theischinger 1984), but usually with the immediate neighbour species most closely related to each other.



Figure 2: *Austropetalia patricia* Tillyard, female specimen, dorsal view.

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My wife Christine, Mr L. Müller (Berowra, Australia) und Dr. P. and Dr. H. Zwick (Schlitz, Germany) collected some of the material used for this article. Their help is highly appreciated.



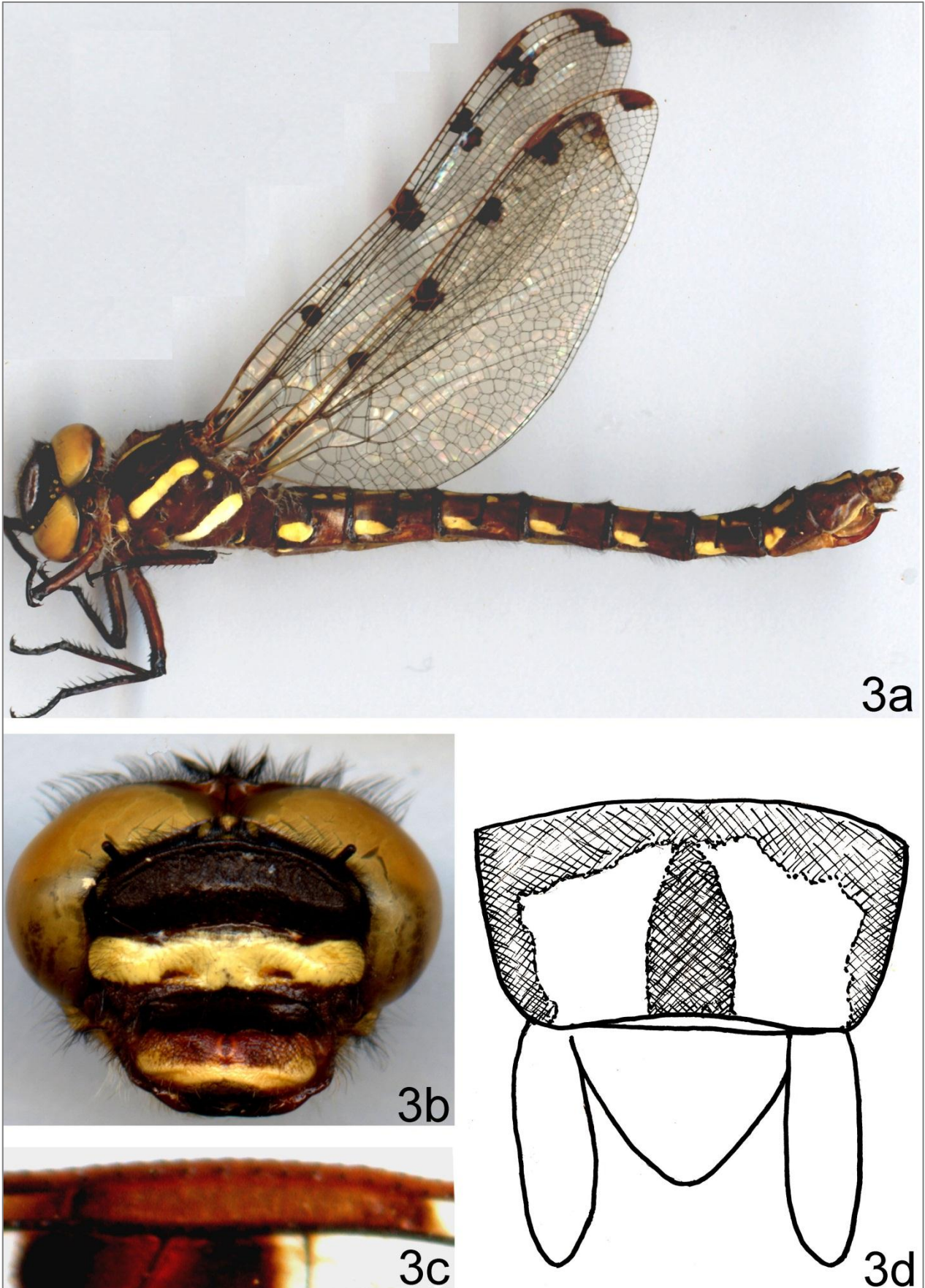


Fig. 3a-d: *Austropetalia tonyana* Theischinger; (a) female specimen, largely lateral view, (b) female face, frontal view, (c) female pterostigma of forewing, dorsal view (d) female segment 10 plus anal appendages, dorsal view.





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