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A second species of *Austropetalia* TILLYARD from Australia (Odonata: Austropetaliidae)

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Abstract: Adults of *Austropetalia tonyana* sp. n. are described from south-eastern Australia and compared with *A. patricia* (TILLYARD).

Key words: *Austropetalia*, new species, Australia.

Introduction

As early as 1968, I noticed consistent differences between material of *Austropetalia patricia* (TILLYARD) from the Blue Mountains (type locality) and FRASER's (1960) illustrations of this species. After that I collected *Austropetalia* in several localities in New South Wales and studied the *Austropetalia* material held in Australian institutional collections. From this it emerged that at least two different forms of *Austropetalia* occur in Australia. All of more than 30 specimens studied from the Blue Mountains represent typical *A. patricia*, whereas all of more than 10 specimens studied from the southern highlands of Australia belong to an undescribed species. It was also found that FRASER (1933) knew *Austropetalia* only from the Blue Mountains, as did TILLYARD (1910, 1916). Strangely, however, FRASER's (1933) illustration of the male anal appendages of *A. patricia* which was reproduced without major changes in FRASER (1960) more closely agrees with *Austropetalia* from the southern highlands than with *A. patricia*. As there is no conclusive evidence of coexistence of two *Austropetalia* species in the Blue Mountains, it appears likely that only inaccuracy in FRASER's (1960) illustration triggered a thorough investigation. After the recent paper of CARLE & LOUTON (1994) who clarified the systematic position of Neopetaliidae and established the new family Austropetaliidae, it appears timely to deliver the results.

The terminology used in the diagnostic description of the new species follows CHAO (1953) and WATSON & O'FARRELL (1991).

The material referred to is held in the Australian Museum, Sydney (AM), in the Australian National Insect Collection, Canberra (ANIC), in the Museum of Victoria (MV) and in my own collection (GT).

Other non-selfexplanatory abbreviations used in this paper:

ck	creek
c. u.	collector(s) unknown
d. a. c. u.	date and collector(s) unknown
ft	feet
km	kilometer
Mts	Mountains
nr	near
R.	River
s. l.	same locality

***Austropetalia tonyana* spec. nov. (Figs 1-3)**

Austropetalia patricia (TILLYARD); FRASER, 1960: 31 (part); WATSON, 1974: 145 (part); HOUSTON & WATSON, 1988: 99 (part); WATSON, THEISCHINGER & ABBEY, 1991: 213 (part); WATSON & HOUSTON, 1994: 28 (part).

Phyllopetalia patricia TILLYARD; DUNKLE, 1985: 198 (part).

Primary type. - Holotype ♂ : New South Wales, Gibraltar Falls, A.C.T., 7.-10.11.1973, c. u. (ANIC). **Paratypes:** New South Wales: 1♂, 1♀, Mount Kosciusko, 4700 ft, Nov. 1928, G.M. Goldfinch (AM); 1♂, Botanic Gardens, Black Mountain, A.C.T., 4.3.1971, G. Veitch (ANIC); 1♀, Brindabella, Nov. 1983, E.S. Nielsen (ANIC); 1♂, Geehi River, Schlink Pass, 5.11.1961, D. Wimbush (ANIC); 1♀, Mount Kosciusko, 5000 ft, Dec. 1931, c. u. (ANIC); 1♂, Mount Kosciusko, d. a. c. u. (ANIC). Victoria: 1♀, Kiewa River, West Kiewa Division Dam, 23.10.1987, J.H. Hawking (ANIC); 1♀, Timbertop, 6.11.1957, 1♂, s. l., 20.11.1957, I. E. (MV).

Other material examined: New South Wales: 1♀, New South Wales, Barrington Tops, 7-8.12.1981, G. Theischinger and L. Müller (GT). Victoria: 1♀, Black Spur (37°35'S/147°38'E), 27.10.1975, W.N.B. Quick (ANIC); 1♀, Kinglake area, Oct. 1954, A. Neboiss (MV); 1♂ (anal appendages missing), Mt Selma Track, 17 km due West Licola, 28.11.1976, A. Calder (MV); 1♀, Wilhelmine Falls, ck nr tributary of Murrindindi R., 12 km E of Glenburn, 6.11.1979, A. Neboiss (MV); the identity of these specimens remains doubtful as only incomplete males or females are available.

Name: A tribute to the late Dr J.A.L. (Tony) Watson, great friend and odonatologist.

Even though the available material is rather limited, the variability in colouration appears remarkable. It is not clear if there are geographical, altitudinal or other trends, or if different methods of preservation are the main reason for this. Therefore, the description of *A. tonyana* does not follow the usual enumerative style. It appears more sensible to introduce *A. tonyana* (Figs 1-3) as basically dark (reddish brown to brownish black) with rather extensive pale (yellow to greyish brown) markings, very similar to *A. patricia* (Figs 4-6), and to give details only if they appear to be of diagnostic value.

Dimensions: Male, hindwing 35.8-37.2 mm, abdomen 50.0-54.0 mm (N = 4); female, hindwing 38.2-40.0 mm, abdomen 43.0-47.0 mm (N = 4).

Head: Frons without pale line along crest. Most specimens of *A. patricia* have such a line or at least the lateral portions of it.

Thorax: Yellow antehumeral stripe rather wide near antealar ridge, thence slightly and rather evenly tapered to a point (Fig. 1). The yellow antehumeral stripe of *A. patricia* is rather narrow and almost parallel sided for most of its length (Fig. 4).

Wings: Membrane generally hyaline except for pterostigma and the dark patches along anterior margin as typical for *Austropetalia* (Fig. 2). In female *A. patricia* the membrane is also strongly pigmented along several subcostal crossveins between the primaries of both wings (Fig. 5).

Abdomen: Pale markings from dull yellow to greyish brown, from defined and well detectable to broadly confluent with each other and merging with darker background. In *A. patricia* the pale markings mostly appear smaller and more clearly defined and are markedly paler than the dark background.

Male anal appendages: Superior appendages quite straight and with apex blunt as seen from dorsal aspect (Fig. 3). In *A. patricia* the superior appendages are more slender and appear convergent with slight bend at about midlength and with apex more pointed (Fig. 6).

Distribution: South-eastern New South Wales, Victoria.

Material of *Austropetalia patricia* (TILLYARD) examined for comparison: New South Wales: 1♀, Blue Mts, 9.11.1908, K. Brown (ANIC), 2♀♀, s. l., 11.10.1913, R.J. Tillyard (ANIC), 2♂♂, 1♀, s. l., 18.10.1913, R.J. Tillyard (AM, ANIC); 2♂♂, Blackheath, Blue Mts, 19.11.1949, 1♂, s. l., 22.11.1949, 1♂, 1♀, s. l., 28.11.1949, R. Dobson (ANIC); 1♂, Bridal Falls, Blackheath, Blue Mts, 3000 ft, 19.11.1949, R. Dobson (MV); 3♂♂, Govetts Leap, nr Blackheath, Blue Mts, Nov. 1992, 1♂, s. l., Nov. 1994, G. Theischinger (GT); 1♂, 1♀, ridge between Leura and Wentworth Falls, 950 m, 19.10.1990, T. Watson (ANIC); 1♂, catchment area Katoomba, 11.10.1963, R. Gilray (AM); 1♀, Katoomba, 6.10.1913, G.A. Waterhouse (ANIC), 1♀, s. l., 6.10.1913, c. u. (AM), 1♀, s. l., 21.10.1965, R. Gilray (AM); 1♂, Wentworth Falls, Blue Mts, 21.10.1913, c. u. (AM), 1♂, 1♀, s. l., 27.10.1930, A.N. Burns (MV), 1♂, s. l., 31.10.1949, 1♂, 1♀, s. l., 1.11.1949, 1♂, s. l., 2.11.1949, 1♂, 3♀♀, s. l., 5.10.1950, 2♀♀, s. l., 16.10.1951, R. Dobson (ANIC, MV); 1♀, Woodford, Blue Mts, 6.10.1912, G.F. Waterhouse (AM).

Zoogeography

In several groups of Australian Odonata, there are species pairs with one species mainly or exclusively occurring in the Blue Mountains and one species inhabiting the southern highlands (WATSON & THEISCHINGER 1984). *Austropetalia patricia* (TILLYARD) and *A. tonyana* sp. n. appear to be such a pair. More material is needed to clarify the status of *Austropetalia* populations from north of the Hunter River Valley and from southern Victoria.

Acknowledgements

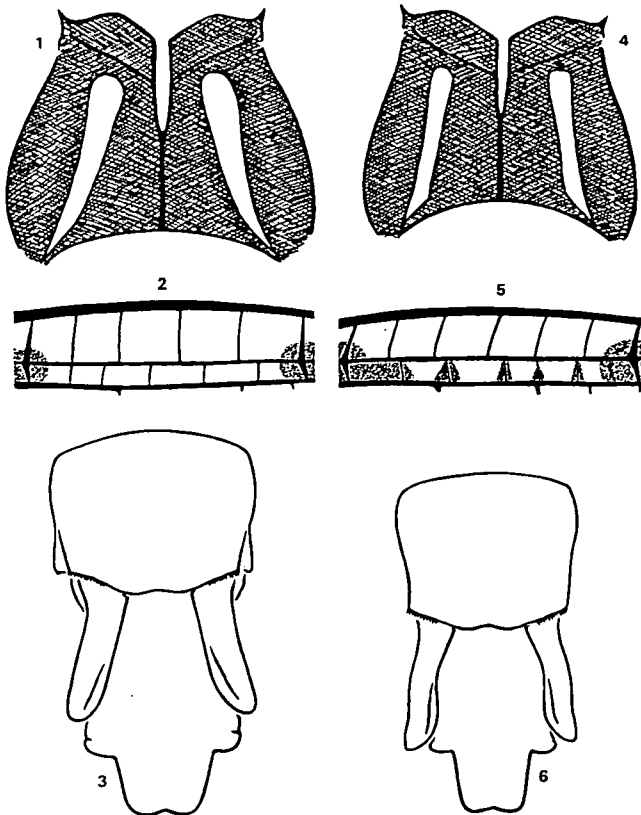
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Figs 1-3: *Austropetalia tonyana* sp. n.: 1: male, front of synthorax; 2: female, forewing, part of costal and subcostal space; 3: male, anal appendages, dorsal aspect.

Figs 4-6: *Austropetalia patricia* (TILLYARD): 4: male, front of synthorax; 5: female, forewing, part of costal and subcostal space; 6: male, anal appendages, dorsal aspect.