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## The *Eusynthemis guttata* (SELYS) group of species from Australia (Odonata, Synthemistidae) - Part 2

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**Abstract:** *Eusynthemis rentziana* sp. n. is described (both sexes of adult and larva) and compared with other species of the *Eusynthemis guttata* group.

**Key words:** *Eusynthemis guttata* group; new species; larvae, adults; Australia.

### Introduction

In comprehensive treatments of the Australian dragonflies (FRASER 1960, HOUSTON & WATSON 1988, WATSON et al. 1991, WATSON & HOUSTON 1994) *Eusynthemis guttata* (SELYS) was considered to include the subspecies *guttata* (SELYS), *aurolineata* (TILLYARD) and *melanosoma* (TILLYARD). In a paper on the *Eusynthemis guttata* group of species (THEISCHINGER 1995), following FRASER (1959), *Eusynthemis guttata aurolineata* was considered as a distinct species, *Eusynthemis guttata melanosoma*, however, was listed as a synonym of it. The reasons for this were coexistence in places of both typical forms together with intermediate individuals, and the fact that there are populations outside of this range but again with the gap apparently bridged by intermediate forms. It was also expressed that the above synonymy was possibly preliminary and temporary, but subsequent study of the lectotype of *Metathemis guttata melanosoma* has strengthened it.

Recently, however, from the discovery of characters unusual for *Eusynthemis*, in *E. ursula* (THEISCHINGER 1998) and in all individuals of what I believed to be *E. aurolineata* from Chichester State Forest in New South Wales, and from subsequent re-examination of material of *E. aurolineata* from elsewhere, it emerged that an as yet undescribed species had been included in the type series of *Metathemis guttata melanosoma* by TILLYARD (1913) and accordingly had been listed under *E. aurolineata* by THEISCHINGER (1995).

Below, this species is described as new and compared with its most similar congeners, with particular emphasis on the larvae.

The terminology used in the descriptions follows CHAO (1953) and WATSON & O'FARRELL (1991).

The material referred to is held in the Australian National Insect Collection, Canberra (ANIC), in the Museum of Victoria, Melbourne (MV), and in the collection of the author (GT). In the list of material E indicates last instar exuviae, L last instar larva(e).

***Eusynthemis rentziana* spec. nov. (Figs 1-3, 7-9)***Metathemis guttata melanosoma* TILLYARD 1913: 231 (part).*Eusynthemis aurolineata* (TILLYARD); THEISCHINGER 1995: 303 (part).

**Primary type:** Holotype ♂: New South Wales, Chichester State Forest, 300-900 m, Jan. 1998, G. Theischinger (ANIC). **Paratypes:** New South Wales: 2♂♂, same data as holotype (GT); 3♂♂, 15E, same locality, 600-800 m, Dec. 1997, G. Theischinger and L. Müller (GT); 10E, Barrington Tops (foothills), 7-8.12.1981, G. Theischinger and L. Müller (GT); 1♂, Barrington Tops, halfway up from Allyn River Camping Ground, 10.1.1977, G. Theischinger (GT); 1♂, Barrington Tops, Kidamidi Ck, 8.12.1979, P. Brookhouse (ANIC); 1E, Barrington Tops, Patterson River, Basin Road Crossing, 31.1.1998, G. Theischinger (GT); 2E, Barrington Tops, Williams River, Rocky Crossing, 31.1.1998, G. Theischinger (GT); 1♀, Barrington Tops N. P., Gloucester River, 2.12.1976, P. Brookhouse (ANIC); 1♀, Great Sugarloaf Mt, nr West Wallsend, 16.11.1983, D.C.F. Rentz & M.S. Harvey (ANIC); 1E, Lansdowne near Taree, G. Theischinger (GT); 1L, downstream Newell Falls, 5.10.1997, N. Waddell (GT); 1♂, Rocky Creek, 22 mi. E of Glen Innes, 22.12.1966, A. O'Farrell (ANIC). Queensland: 1♀, Bon Accord Falls, Montville, 22.9.1966, R. Dobson (ANIC); 1♀, Killarney Falls, Dec. 1982, G. Theischinger and L. Müller (GT); 1♂ (paratype of *Metathemis guttata melanosoma* TILL.), Tambourine, 21.12.1912, R.J. Tillyard (ANIC); 1♂, Mt Tamborine, 2.1.1956, C. King (MV).

**Name:** Dedication to Dr D.C.F. Rentz of Canberra whose record of the species is the only one from south of the Hunter River.

**Male** (Figs 1, 2)

**Dimensions:** Hindwing 29.0-31.5 mm; abdomen 34.0-35.0 mm.

**Head:** Labium pale yellow; mandibles brownish black; labrum black; anteclypeus pale to dull yellow; postclypeus black with one ill-defined greyish brown patch on each side; frons black with two yellow patches, taking approximately 1/2 of anterior portion and anterior 1/3 of posterior portion and separated widely along midline; vertex and antennae black; occiput largely brownish black above, yellow behind; postgenae black with large pale yellow lateral mark; compound eyes green in life, greyish brown in preserved specimens.

**Cervix and prothorax:** Dorsal cervical sclerites greyish yellow, dorsal portion of eucervicale dark brown and yellow, ventral portion largely greyish brown; postcervicale dark brown; episternum and epimeron blackish brown; pronotum largely blackish brown to black, except for anterior rim of anterior lobe and most of posterior lobe which are yellow; coxa and trochanter largely yellow; basal portion of femur yellow, remainder black; tibia and tarsus black; claws reddish- to brownish black; tibial keel dark brown, ca 55 % of tibial length.

**Synthorax:** Spiracular dorsum, mesostigmatic lamina and collar black; dorsal carina yellow; antealar ridge and sinus black; front of synthorax brownish black with some indication of a paler streak on each side; mesokatepisternum brownish black; mesopostcoxa greyish yellow; mesepimeron and metepisternum brownish black with long wide yellow stripe in front of and engulfing metathoracic spiracle; dorsal lobe of metanepisternum largely blackish brown; metepimeron black with almost straight yellow stripe from subalar ridge to approximately 3/4 distance subalar ridge - metapleural suture; metapostepimeron yellow; metapostcoxa and metapoststernum largely greyish brown; terga blackish brown except for midline of mesoscutum, postscutella and metascutum which are yellow; coxae blackish brown in front and largely on outer side, dull yellow behind; trochanters blackish brown to black; femora, tibiae and tarsi black; claws reddish- to brownish black; tibial keels blackish brown, on mesotibia ca 60 %, on metatibia

ca. 70 % of tibial length.

**W i n g s :** Membrane hyaline, veins black (without yellow median ray of costa); axillary, humeral and intermediary plates brownish black; antenodals 14-16/10-12; postnodals 7-11/10-14; Ax1, Ax3 and Ax5 in forewing and, beginning from Ax1, every second antenodal in hindwing distinctly thickened; in forewing often an incomplete antenodal before Ax1 in subcostal space; other antenodals of first and second series mostly coinciding; pterostigma 1.6-2.2 mm long, black, usually overlying 2-3 crossveins; sectors of arculus with long stalk; triangles free or crossed; subtriangle of forewing free or crossed; hypertriangles crossed by 1-2 veins; discoidal field of forewing with 1 or 2 cells adjacent to triangle, then 1 cell wide for a few cells, broadening to 10-14 cells at wing margin; discoidal field of hindwing starting with one row for a few cells, then broadening to 7-9 cells at wing margin; 4-6 bridge crossveins; 2-3 crossveins in basal space; 5-6 cubito-anal crossveins; anal loop of 7-10 cells, 3-5 cells wide, 2 cells deep; anal triangle 2-celled; anal angle rather obtuse; membranules pale greyish- to brownish white.

**A b d o m e n :** Segments 1 and 2 subcylindrical, slightly enlarged, segments 3-5 slightly compressed, from segment 6 to end of 8 widening progressively, parallel sided from end of 8 towards apex. Terga 1-9 black, generally (sometimes markings much reduced) marked with pale greenish yellow or yellow as follows: 1, medial posterodorsal patch, one anteroventral mark each side; 2, two elongate mediodorsal patches, well separated along midline, on supplementary transverse carina, a broad patch each side along ventral margin; 3, two mediodorsal spots, usually not separated along midline, thus resulting in a double-spot, one semicircular anterolateral mark, a narrow line along ventral margin; 4-7, two almond-shaped mediodorsal spots, usually separated along midline (separation progressively wider from segment 4-7), along transverse carina; 8, two larger subcircular mediodorsal spots, occasionally two additional small spots, along transverse carina, one anteroventral patch each side covering approximately 1/2-2/3 length of segment; 9, one ill-defined anteroventral patch each side; segment 10 black; sternum 1 greyish brown; secondary genitalia largely black with bits of yellow, genital hamules (Fig. 1) slender with subapical prong long; sterna 3-9 and bipartite sternum 11 black. Anal appendages (Fig. 2): Superior appendages black, slightly curved, a lateral tooth at about 1/3 length, thence slightly tapered; inferior appendage not much shorter than superiors, truncate and slightly arched, two small dorsal teeth each side of apex.

**F e m a l e** (Fig. 3)

**D i m e n s i o n s :** Hindwing 31.5-32.5 mm; abdomen 34.0-35.0 mm.

**H e a d :** Much as in male; pale frontal spots more widely separated.

**C e r v i x , p r o t h o r a x a n d s y n t h o r a x :** Much as in male but pale streaks on front of synthorax may be yellow and well defined.

**W i n g s :** Much as in male; antenodals 15-16/10-12; postnodals 9-10/11-12; pterostigma 2.0-2.4 mm long; hypertriangles crossed by 1-2 veins; subtriangle of forewing free; discoidal field of both wings with 2 rows of cells for a distance of 6-11 cells; anal loop of 8-13 cells, 3-4 cells wide, 2-3 cells deep; no anal angle.

**A b d o m e n :** Much as in male; shape more uniformly subcylindrical; tergum 2 without auricles; mediodorsal spots on terga 3-7 more widely separated, no or hardly indicated mediodorsal spots on tergum 8; sterna black; supra-anal plate and short straight anal appendages black. Genitalia black; valves (Fig. 3) close to midline, pointing ventrally, with apex widely rounded.

**Larva (Figs 7-9)**

Total length 18.6-21.2 mm; width of head across the eyes 4.2-4.6 mm; length of meta-femur 3.8-4.3 mm; greatest width of abdomen 4.6-5.2 mm.

Frontal plate well developed, rather wide; labial palps (Fig. 7) generally with 7-8 dentations and with 6 larger setae; prementum with 5 primary and 5-7 secondary setae, ligula with rather small but well-developed median lobe (Fig. 8). Abdomen not strongly pointed; abdominal segments, particularly 5-8 (Fig. 9) with prominent laterodorsal groups of well-developed, flattened, occasionally split, setae.

**The larvae of the species of the *Eusynthemis guttata* group**

Compared with the rest of the *Eusynthemis* larvae, the larvae of the species of the *Eusynthemis guttata* group have a prominent median lobe of the premental ligula and the abdomen rather evenly set with long strong setae and not sharply pointed.

The larvae of *E. barbarae* (MOULDS) and *E. tenera* THEISCHINGER are still unknown and will most probably not be found south of the Paluma-Eungella Gap of WATSON & THEISCHINGER (1984).

The larvae of *E. rentziana* spec. nov. (generally north from Hunter River) and of *E. tillyardi* (known only south from Hunter River) generally have a rather small median lobe of the premental ligula (Figs 8, 11) and 6 palpal setae, whereas the larvae of *E. aurolineata* (TILLYARD) (known only north from Hunter River) and of *E. guttata* (SELYS) (alpine; south from about latitude of Canberra) generally have a large median lobe of the premental ligula (Figs 15, 18) and 5 palpal setae. The abdomen of *E. tillyardi* is set with long, more or less single setae (Fig. 12), whereas there are groups of setae in the other three species (Figs 9, 16, 19). The larvae of *E. guttata* stands out from the rest (Figs 7, 10, 13, 14) by particularly large palpal dentations (Fig. 17). There is remarkable variability in size and number of palpal dentations in *E. aurolineata* (Figs 13, 14) which somehow appears to reflect the great variability of the adults - or, there are still more than one species involved in what is regarded here as *E. aurolineata*.

**Affinities and diagnosis**

It appears that *Eusynthemis rentziana* spec. nov. is most closely allied to *E. tillyardi* THEISCHINGER which is known only from south of the Hunter River, and *E. aurolineata* (TILLYARD), a species which is found only north from the Hunter River. *E. rentziana* spec. nov. and *E. aurolineata* coexist in places, and there some individuals of *E. aurolineata* often show remarkable similarity to *E. rentziana* in overall colour pattern. However, the adults of *E. rentziana* can easily be separated from all other members of the *Eusynthemis guttata* group (species with dark intermediary plates at wing bases) by their yellow metascutum and by the structure of the genitalia (Figs 1, 3) and male anal appendages (Fig. 2). The only other *Eusynthemis* species with a yellow metascutum, *E. ursula* THEISCHINGER, does not belong in the *E. guttata* group and has vivid yellow intermediary plates at the wing bases. The larva of *E. rentziana* stands out from all its congeners by the combination of characters listed above (under larva; see there).

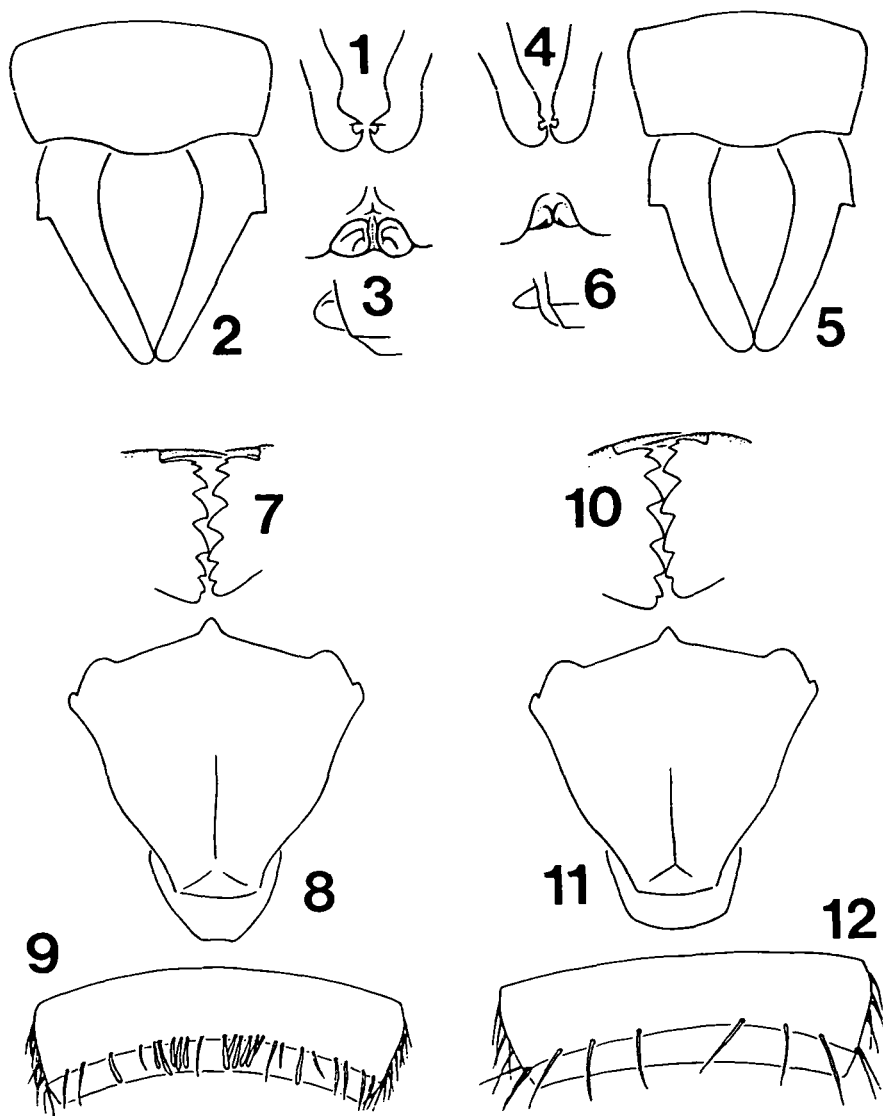
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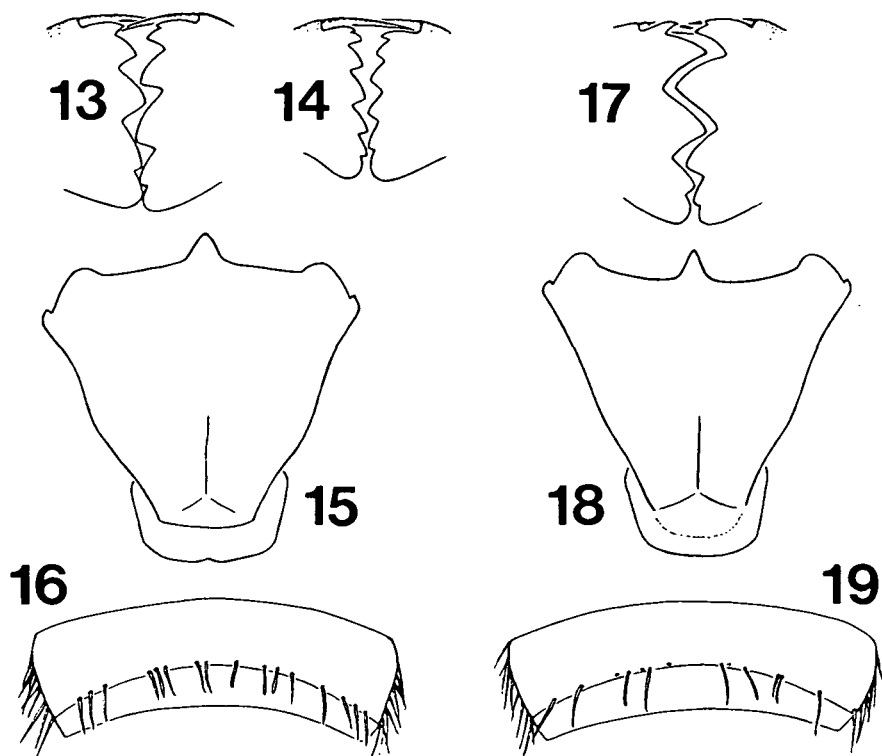
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Figs 1-3: *Eusynthemis rentziana* sp. n.: 1, 2 - male: 1 - genital hamules, ventral aspect; 2 - anal appendages, dorsal aspect; 3 - female valves, ventral and lateral aspect. Figs 4-6: *Eusynthemis aurolineata* (TILLYARD): 4, 5 - male: 4 - genital hamules, ventral aspect; 5 - anal appendages, dorsal aspect; 6 - female valves, ventral and lateral aspect. Figs 7-12: *Eusynthemis* spp., larvae: 7-9 - *E. rentziana* sp. n.: 7 - palpal dentations, frontal aspect; 8 - labium, ventral aspect; 9 - abdominal tergum 7, dorsal aspect; 10-12 - *E. tillyardi* THEISCHINGER: 10 - palpal dentations, frontal aspect; 11 - labium, ventral aspect; 12 - abdominal tergum 7, dorsal aspect.



**Figs 13-19:** *Eusynthemis* spp., larvae: 13-16 - *E. aurolineata* (TILLYARD): 13, 14 - palpal dentations, frontal aspect: 13 - from Barrington Tops, New South Wales; 14 - from Bunya Mountains, Queensland; 15, 16 - from Barrington Tops, New South Wales: 15 - labium, ventral spect; 16 - abdominal tergum 7, dorsal aspect; 17-19 - *E. guttata* (SELYS): 17 - palpal dentations, frontal aspect; 18 - labium, ventral spect; 19 - abdominal tergum 7, dorsal aspect.

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