

**A NEW SPECIES OF *EUSYNTHEMIS* FOERSTER  
FROM AUSTRALIA (ANISOPTERA: *SYNTHEMISTIDAE*)**

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*E. deniseae* sp. n. (♂ holotype, ♂, ♀ paratypes, exuviae: Carnarvon Gorge, Queensland, Australia) is described and illustrated.

**INTRODUCTION**

In December 1976 Odonata were collected by Mr. L. Müller (Sydney) and myself in the Carnarvon Gorge, southern inland Queensland, Australia. A large synthemistide from this locality turned out to be hitherto undescribed.

**DESCRIPTION**

*EUSYNTHEMIS DENISEAE* SPEC. NOV.

Figures 1-13

**Material.** — Holotype ♂ (ANIC Type No. 9869), 27 paratypes (20 ♂, 7 ♀), and exuviae, tributary creeks of Carnarvon Gorge, about 60 miles NW of Injune, Queensland, Australia, 1-2.XII. 1976, L. Müller & G. Theischinger leg.

**Name.** — The new species is named after my daughter, Denise.

**Male.** — Dimensions: forewing 33.5-36.1 mm; hindwing 32.6-35.3 mm; abdomen with appendages 38.0-41.2 mm.

**Head.** — Labium pale yellow; mandibles brownish-black; labrum black with large basal semicircular mark; anteclypeus pale yellow; postclypeus black with one large whitish-yellow semicircular mark on each side; frons black with two very large yellow marks, taking the upper half of anterior portion and anterior half of posterior portion and separated widely along midline; vertex and anten-

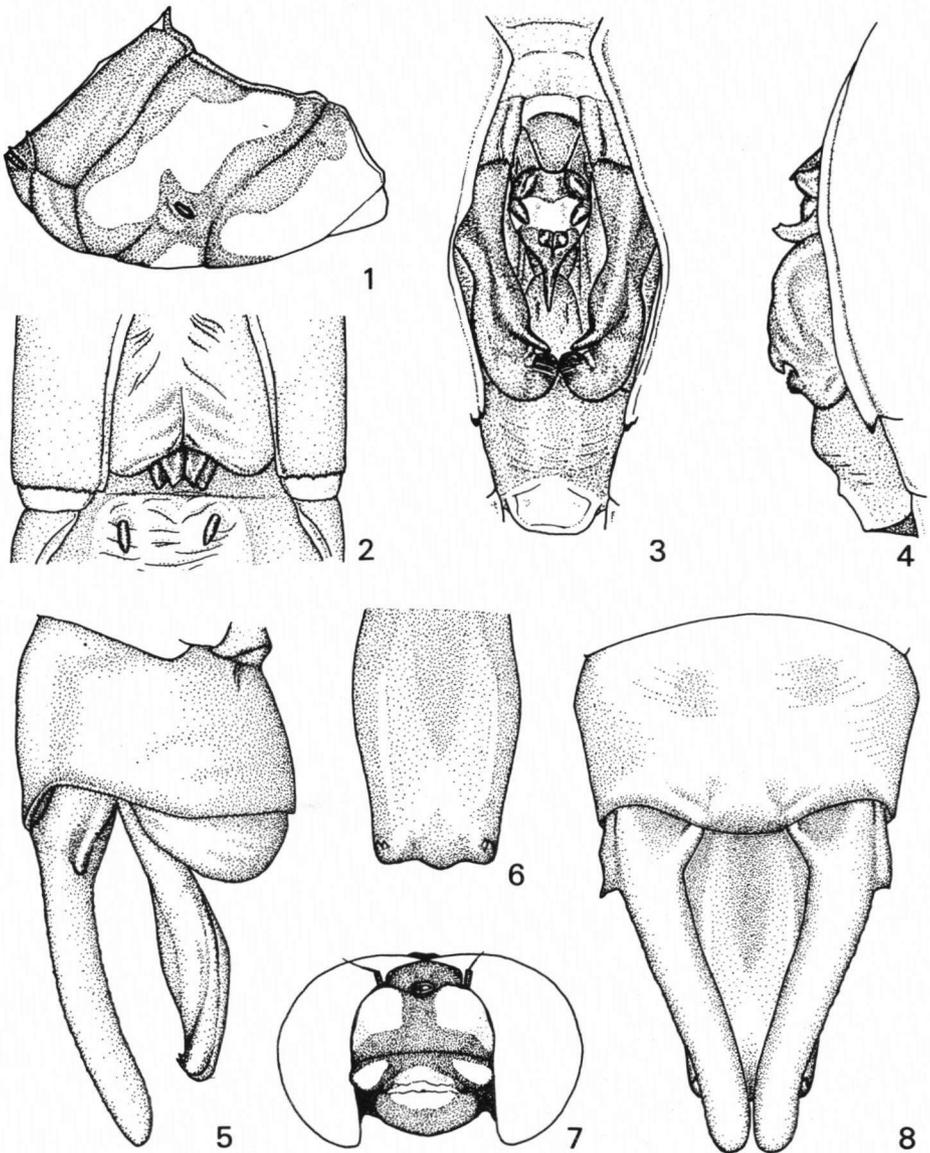
nae black; occiput largely brownish-black above, yellow behind; postgenae black with lateral yellow mark; compound eyes green in life, brown in preserved specimens.

**Cervix and prothorax.** — Dorsal cervical sclerites yellow; ventral part of eucervicale brown, dorsal part yellow in front, black behind; postcervicale dark brown; episternum and epimeron blackish-brown to black; pronotum largely black, except for anterior rim of anterior lobe, a small area along midline of posterior part of median lobe and narrow posterior lobe, which are yellow; coxa, trochanter and basal portion of femur yellow; femur otherwise, tibia, tarsi and claws black; tibial keel brownish-grey, 56-59% of tibial length.

**Synthorax.** — Spiracular dorsum, mesostigmatic lamina and collar black; dorsal carina yellow; antealar ridge black, antealar sinus yellow; front of synthorax black with greenish-black metallic reflection; mesepimeron and metepisternum black with green metallic reflection along surrounding sutures and ridges and around metathoracic spiracle only, large enclosed area yellow; mesokatepisternum black; metepimeron largely yellow, black with green metallic reflections along metapleural suture; metapostepimeron yellow; metapoststernum grey; midline of mesoscutum, mesonotum and metapostnotum yellow, other tergal area brownish-black; coxae blackish-grey in front, otherwise cream; postcoxae cream; trochantera, femora, tibiae, tarsi and claws black; tibial keels brownish-grey, on mesotibia 59-63%, on metatibia 73-76% of tibial length.

**Wings.** — Membrane hyaline; veins black, except for yellow median ray of costa; axillary and humeral plates black, intermediary plates pale yellow; antenodals 13-16/9-12; postnodals 7-10/8-11; Ax<sub>1</sub>, Ax<sub>3</sub> and Ax<sub>5</sub> in forewing, and, beginning from Ax<sub>1</sub>, every second antenodal in hindwing distinctly thickened; other antenodals of first and second series irregular in both wings; pterostigma about 2,5 mm long in both wings, black, overlying 2-3 crossveins; sectors of arculus with long stalk; triangle of both wings and subtriangle of forewing mostly free, rarely crossed; supertriangle crossed mostly by one vein, rarely by two, in both wings; discoidal field of forewing with 2-3 cells adjacent to triangle, then 2 cells wide to about level of nodus (occasionally interrupted by one or a few large single cells), broadening to 12-14 cells at wing margin; discoidal field of hindwing starting with one row for a few cells, then broadening strongly to 11-13 cells at margin; 3-6 bridge crossveins; 2 crossveins in basal space of both wings; 4-6 cubito-anal crossveins in both wings; R4+5 and M almost parallel in both wings; space CuP-A1 slightly widened apically in both wings; anal loop of 8-11 cells, 4-5 cells wide, 2, occasionally partly 3, cells deep; anal triangle 2-celled, anal angle very obtuse; membranule pale yellowish-grey.

**Abdomen.** — Segments 1 and 2 cylindrical, somewhat enlarged; segments 3-5 slightly compressed; from base of segment 6 to end of 7 widening strongly and progressively and slightly depressed, narrowing again slightly from base of 8 to apex. Tergites 1-9 black, marked with yellow as follows: 1, dorsal triangular



Figs. 1-8. *Eusynthemis deniseae* sp. n. (imagines): (1) synthorax ♂, lateral view; – (2) genitalia ♀, ventral view; – (3) secondary genitalia ♂, ventral view; – (4) secondary genitalia ♂, lateral view; – (5) anal appendages ♂, lateral view; – (6) inferior anal appendage ♂, dorsal view; – (7) head ♂, frontal view; – (8) anal appendages ♂, dorsal view.

mark and lateral patch, covering ventral half of whole tergite; 2, two small almond-shaped spots along supplementary transverse carina, broad patch along ventral margin; 3, two trapezium-shaped marks at base and dorsal mark on supplementary transverse carina (dorsal and lateral marks connected by thin lateral line in some specimens), narrow line along ventral margin; 4 and 5, similar to 3 but basal spots smaller and rather almond-shaped and never confluent with dorsal mark; 6 and 7 similar to 4 and 5, but basal spots still smaller and two almond-shaped spots along supplementary transverse carina instead of one dorsal mark; 8, large dorsal trapezium-shaped mark, taking its whole width and two thirds of its length, a very small black lateral spot in posterior quarter of the large yellow mark, semicircular patch along ventral margin; 9, small dorsal mark of variable shape at base, semicircular mark along ventral margin; segment 10 black; sternite 1 grey; secondary genitalia as illustrated, largely black; sternites 3-9 black; bipartite sternite 11 black. Anal appendages: superior appendages black, converging in basal half, straight to slightly divergent in apical half, very slightly arched dorso-ventrally; large lateral tooth near base, tips well rounded; inferior appendage black, truncate, slightly arched, two dorsal teeth on each side of a trilobed apex.

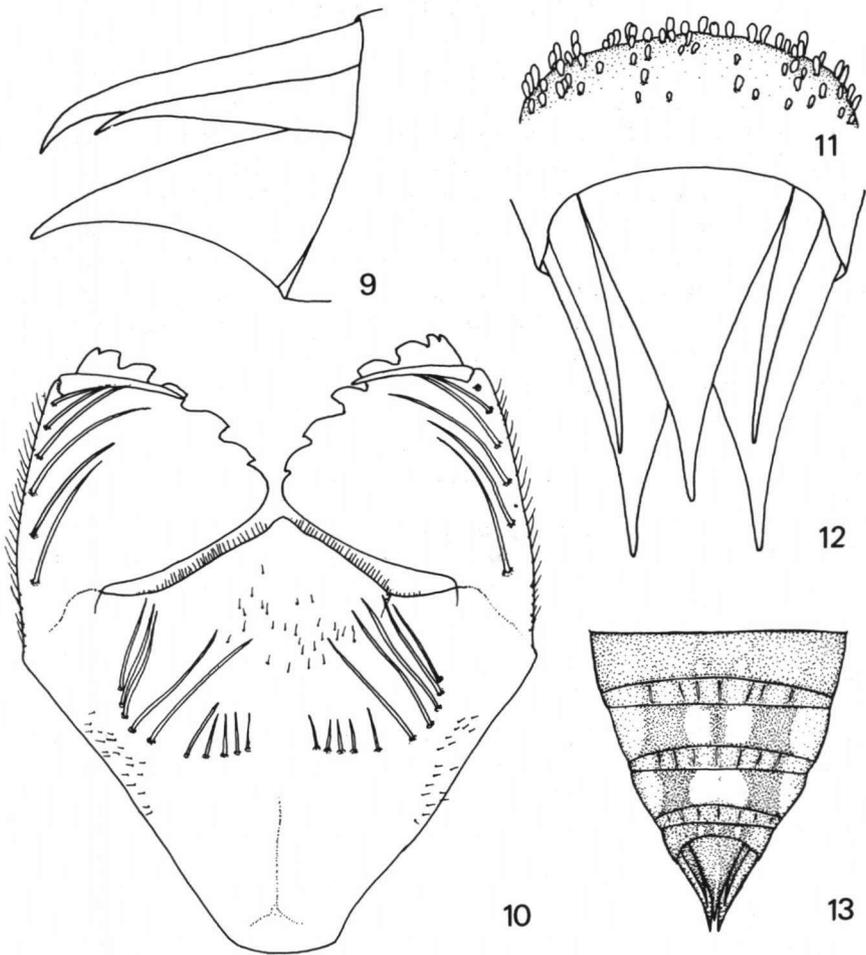
**F e m a l e.** — Dimensions: forewing 37.6-39.7 mm; hindwing 36.7-38.8 mm; abdomen 40.2-43.0 mm.

Head, cervix and thorax. — Much as in male.

Wings. — Much as in male; membrane sometimes suffused variably and irregularly; pterostigma 2.7-2.8 mm long in both wings; anal loop of 12-14 cells, mostly 3 cells deep.

Abdomen. — Much as in male; segments 1-6 stouter, segments 7 and 8 narrower. Tergite 2 with larger yellow areas, extending from base beyond supplementary transverse carina forming an egg-cup-like black dorsal mark; tergite 9 not yellow at base; anal appendages slightly divergent, thin, pointed, as long as tergite 10. Genitalia: valves poorly developed, a small lobe on each side of midline above an emarginate somewhat broader base.

**L a r v a** (described from exuviae). — Appearance typical for a member of *Synthemistidae*: heavily built and short-legged. Coloration yellowish-brown to greyish-brown. Pattern indistinct on abdominal tergites 1-6, as illustrated on 7-10. Frontal plate well developed, beset with many scale-like structures. Antennae seven-segmented. Labial mask very large, concave; ligula slightly protruding at midline, 7 respectively 8 palpal teeth of moderate size; generally 6 palpal, 5 major and 5 minor mental setae; no setae on distal border of palps. Tips of epiproct, paraprocts and cerci extremely sharply pointed and downturned.



Figs. 9-13. *Eusynthemis deniseae* sp. n. (exuviae): (9) anal pyramid, lateral view; - (10) labial mask (flattened), dorsal view; - (11) frontal plate, dorsal view; - (12) anal pyramid, dorsal view; - (13) abdominal segments 7-10 and anal pyramid, dorsal view.

## AFFINITIES AND DIAGNOSIS

*Eusynthemis deniseae* sp. n. seems to be about equally closely related to all other Australian congeners listed by WATSON (1974). While the front of its head resembles that of *E. guttata* (Selys), its front of synthorax comes close to that of *E. nigra* (Tillyard), its lateral synthoracic coloration to that of *E. virgula* (Selys), and its abdominal pattern to that of *E. brevistyla* (Selys). All these resemblances provide ready diagnosis as do the peculiar shape of male anal appendages and male and female genitalia. Knowing the larvae of *E. guttata*, illustrated by TILLYARD (1910), of the species presented here and of *E. nigra*, I assume that the larvae of all *Eusynthemis* species are very similar, and that perhaps the superior size and the extremely pointed epiproct and paraprocts as well as the other illustrated features can be used for identification of *Eusynthemis deniseae* sp. n.

## ACKNOWLEDGEMENTS

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## REFERENCES

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