

THE GENUS EPISYNLESTES KENNEDY (ODONATA: SYNLESTIDAE)*

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Abstract

Episynlestes is redefined, and *E. intermedius* sp. n. is described from Finch Hatton Gorge, near Mackay, Queensland.

Introduction

Kennedy (1920a) briefly described a monotypic genus *Episynlestes* to accommodate *Synlestes albicauda*, which Tillyard (1913) had described from southern Queensland. Kennedy mentioned 3 features that distinguish *Episynlestes* from *Synlestes* Selys: (1) The quadrilateral cell (q) is broad, "its inner end one-third of the hind side"; (2) "First segment of Cu₂ present", i.e. 1A lies well behind CuP at the distal, posterior corner of q, as opposed to fusing, or almost fusing, with it; Kennedy regarded the stout crossvein joining q to 1A as being part of "Cu₂" (for terminology, see O'Farrell 1970); (3) The penis has a long, attenuate tip.

Watson and Moulds (1977) described a second species of *Episynlestes*, *E. cristatus*, from northern Queensland, but did not amplify the generic diagnosis. Recent collections of Odonata from the Eungella area, inland from Mackay, include a third species of *Episynlestes*, intermediate in some respects between *E. albicauda* and *E. cristatus*. In this paper, we redefine *Episynlestes*, and key and describe the new species.

The terminology is that of Chao (1953), except for wing venation, the terminology for which follows O'Farrell (1970). Measurements of the pterostigma include the bounding veins, whereas those of the quadrilateral are internal measurements.

Episynlestes Kennedy

Episynlestes Kennedy, 1920a: 84 (type-species "*Synlestes albicauda* Tilly." = *Synlestes albicauda* Tillyard, 1913); Fraser, 1957: 55; Davies, 1981: 18.

Dull metallic greenish black Synlestinae marked with white or pale yellow, male anal appendages and female abdominal segment 10 white or substantially white. Quadrilateral cell broad, sometimes very broad, its inner side one-sixth to five-sixths the length of its posterior side. 1A not meeting posterior distal corner of q, separated from it by short crossvein.

Superior appendages of male elongate, strongly bifid, the tips of the outer, longer branch gently convergent; inferior appendages vestigial. Penis ending in long flagellum curved downwards and forwards almost in a circle; posterior hamule with broad, rounded tip.

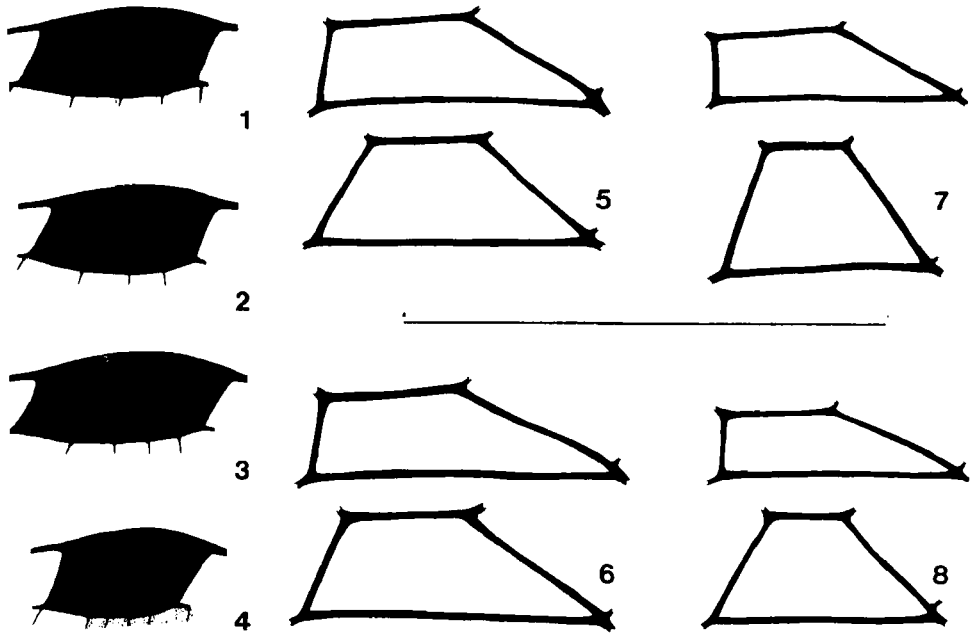
Synlestes, the only other synlestine genus known from Australia, can be distinguished from *Episynlestes* by its contrasting characteristics: terminal abdominal segments and anal appendages dark; quadrilateral cell relatively narrow, its inner side one-quarter to one-eighth the length of its posterior side; 1A meeting, or almost meeting, the posterior distal corner of q; superior appendages of male forcipate, inferior appendages well developed, but much shorter than superiors; penis lacking terminal flagellum (cf. Kennedy 1920b, Figs 14-15; O'Farrell 1970, Fig. 13.8A); posterior hamule sharp-tipped (cf. O'Farrell 1970, Fig. 13.8A).

Key to species of *Episynlestes*

Males

- 1. Base of superior appendage unarmed ***E. albicauda*** (Tillyard)
- Base of superior appendage with flat, upright black process bearing crest of long setae (Fig. 15) 2

* The family name Synlestidae Tillyard, 1917 (as Synlestinae, based on *Synlestes* Selys, 1869, the only genus specifically included in the diagnosis) has priority over Chlorolestidae Fraser, 1957, used in Fraser (1960), O'Farrell (1970), Watson (1969, 1974, 1977, and later papers), and O'Farrell and Watson (1974), and including, *inter alia*, *Chlorolestes* Selys, 1862, *Synlestes* and *Episynlestes* Kennedy, 1920a.



FIGS 1-8—Male *Episyndestes*: (1-4) pterostigma, right fore wing: (1) *E. intermedius*; (2-3) *E. albicauda*; (4) *E. cristatus*. (5-8) discoidal cell, right fore and hind wing: (5) *E. intermedius*; (6) *E. albicauda*; (7-8) *E. cristatus*. Scale line: 5.0 mm for Figs 1-4; 2.5 mm for Figs 5-8.

2. Inner branch of superior appendage with step-like notch on outer side (Figs 16-18) ***E. intermedius*** sp. n.
 Inner branch of superior appendage bifid, the outer fork shorter than the inner (Figs 19-20) ***E. cristatus*** Watson and Moulds

Females

We have not been able to find diagnostic morphological characteristics for females of the 3 species of *Episyndestes*, except for the length of the pterostigma, which separates *E. cristatus* on the one hand from *E. albicauda* and *E. intermedius* on the other (cf. Watson and Moulds 1977). Identification has, therefore, to depend on association with males or, less securely, on locality (see below).

Episyndestes intermedius sp. n. (Figs 1, 5, 9, 13-17)

Episyndestes sp. near *E. cristatus*: Watson and Theischinger, 1984: 150.

Types—*Holotype* ♂, QUEENSLAND: Finch Hatton Gorge, 14-15.xi.1982, L. Müller & G. Theischinger [in Australian National Insect Collection (ANIC), CSIRO, Canberra (ANIC Type No. 9886)]. *Paratypes*: 2 ♂, 2 ♀: teneral adults, 5 last-instar larval skins, same data as holotype (ANIC and Theischinger collection).

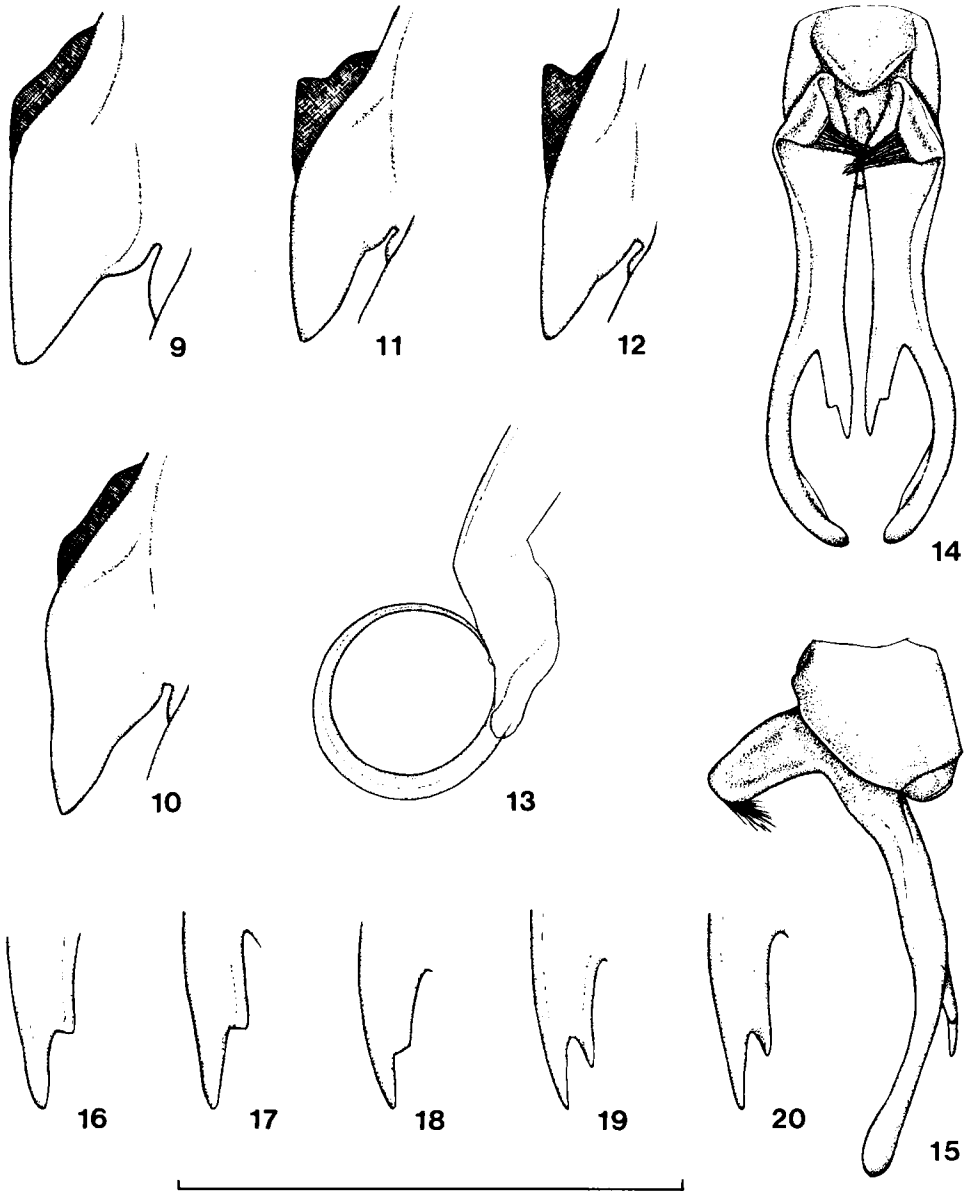
Male

Dimensions—Fore wing length 32.5-33.5 mm; hind wing length 31.0-32.0 mm; length of abdomen with appendages 49.0-51.0 mm.

Colour pattern closely similar to those of *E. albicauda* and *E. cristatus*.

Head—Labium whitish to greyish yellow; labrum metallic green-black; mandible whitish to yellowish green with dark brown upper and lower margins; anteclypeus dull white with 1-2 greyish to blackish brown marks on each side; postclypeus, frons, vertex, occiput and outer part of gena metallic green-black, inner part of gena adjacent to mandible pale yellowish green; scape and basal half of pedicel yellowish white, rest of antenna black; cuticle surrounding antennal socket yellowish to greenish white; back of head dull yellow.

Cervix and prothorax—Cervical sclerites whitish to dull yellow. Central pronotum brown with green or grey tones, darkest medially, in anterior furrow and on posterior lobe, paling peripherally to yellow-brown margin in front and at sides; pleural sclerites green-black; coxa and trochanter pale yellow; femur yellowish



FIGS 9-20—Male *Episynlestes*: (9-12) anterior lamina of secondary genitalia, left lateral view: (9) *E. intermedius*; (10) *E. albicauda*; (11-12) *E. cristatus*. (13) tip of glans, left lateral view, *E. intermedius*. (14-15) anal appendages, *E. intermedius*: (14) dorsal view; (15) lateral view. (16-20) inner branch of right superior anal appendage, dorsal view: (16-17) *E. intermedius*; (18) *E. albicauda*; (19-20) *E. cristatus*. Scale line: 5.0 mm for Figs 14-15; 2.5 mm for Figs 16-20; 2.0 mm for Fig. 13; 1.25 mm for Figs 9-12.

to dark greyish brown, its apex dark brown to black; tibia and tarsus greyish yellow to greyish brown, spines and tibial comb black; claws reddish brown.

Synthorax—Mesostigmatic lamina brownish black; collar largely brownish yellow; mesanepisternum metallic green-black except for yellowish brown humeral stripe along lower four-fifths of mesopleural suture; dorsal carina, antealar ridges and sinus and subalar ridges green-black; mesokatepisternum green-black except for small, dull yellowish brown marginal area in posteroventral corner; mesepimeron largely metallic green-black, with large, triangular, dull yellow patch in anterodorsal corner, continuous with humeral stripe in front and with narrow, irregular pale band along midlateral suture behind, extending into pale yellow area surrounding and below metastigma; rest of metanepisternum largely green-black; metakatepisternum, metepimeron, postcoxa and poststernum pale yellow, except for triangular, green-black patch in upper, anterior corner of metepimeron; terga largely yellowish to greyish brown; mid and hind legs similar to fore legs.

Wings (Figs 1, 5)—Venation black; membrane hyaline; basic venational characters similar to those of *E. albicauda* and *E. cristatus*. Pterostigma moderately long, costal length 1.88-2.02 mm in fore wing, 2.06-2.12 mm in hind wing, about twice as long as broad in both wings; 2-3 cells between R_1 and R_2 behind distal half of pterostigma faintly suffused with brown. Discoidal cell of fore wing elongate, its posterior side 3-5 times longer than inner side, of hind wing broadened, the costal side at least as long as inner side, the posterior side about 2.5 times as long.

Abdomen—Tergites 1-8 metallic greenish black marked with dull, pale yellow as follows: tergite 1 with broad, mediiodorsal patch across anterior two-thirds and broad lateral patch along ventral margin, widest in front; tergite 2 with broad, irregular stripe along ventral margin; tergites 3-7 with pair of short, subtriangular anterolateral marks, broadly separated in midline, each generally narrowing into a pale line along ventral margin; tergite 8 with patch along ventral margin, broadest in front. Tergite 9 dull metallic green-black. Segment 10 deeply excised posterolaterally to accommodate bases of highly modified superior anal appendages; subtriangular median portion dull metallic black, remainder black adjacent to anal appendages, otherwise pale cream. Sternite 1 pale yellow to white. Sternites 3-7 largely black, basally dull yellowish white to pale brown, continuous with pale anterolateral marks of corresponding tergites. Sternite 8 black. Most of sternite 9 black, posterior quarter, behind pale valvules, largely brown.

Secondary genitalia (Figs 9, 13)—Anterior lamina pale brown, with darker brown margins, its inner lobe broadly rounded in lateral view, not strongly produced anteriorly (Fig. 9); posterior hamule pale; apex of glans produced into curved flagellum (Fig. 13), as in other species of *Episynlestes*.

Anal appendages (Figs 14-17)—Superior appendages about 5 mm long, highly modified; long, slender, with upwardly directed, large, black basal lobe bearing long, dark brown to black setae along its upper edge; distal part yellowish white, bifid, with long, gently convex, apically rounded outer branch and short, almost straight, sharply pointed inner branch, its outer margin notched, step-wise, near midpoint. Inferior appendages yellowish white, vestigial, narrowly prominent in midline.

Female

Both specimens are teneral, and their relatively pale colour may not be typical of the mature female.

Dimensions—Fore wing length 33.8, 34.3 mm; hind wing length 32.3, 32.8 mm; length of abdomen 43.0, 44.0 mm.

Colour pattern very similar to that of male but pale areas more extensive; narrow, yellowish brown stripe on mesanepisternum on either side of dorsal carina; lower part of abdominal tergite 9 pale; sternite 2 dark brown; sternite 8 brown centrally, pale laterally; ovipositor and valves yellowish white.

Wings—Pterostigma moderately long, costal length 1.88 and 1.96 mm in fore wing, 2.08 and 2.16 mm in hind wing, breadth about half length; no dark pigmentation in cells behind pterostigma. Discoidal cells of fore wing and hind wing similarly elongate, the posterior side 4-5 times longer than proximal side.

Discussion

Comparison with other species of Episynlestes

As the name implies, *E. intermedius* bridges the gap between *E. albicauda* and *E. cristatus*; it is intermediate in some characters, like *E. albicauda* in some, and like *E. cristatus* in others. It is larger, on average, than is normal in *E. albicauda* (cf. Watson and Moulds 1977), and at least as large as individuals from Carnarvon Gorge, the largest known *E. albicauda* (cf. Theischinger and Watson 1979); its size far exceeds that of *E. cristatus* (cf. Watson and Moulds 1977). In the shape of the pterostigma (Figs 1-4), the anterior lamina of the male secondary genitalia (Figs 9-12), and the inner branch of the male superior appendage (Figs 16-20), *E. intermedius* is more like *E. albicauda*, whereas the highly modified basal lobe of the superior appendage (Figs 14-15) and larval structures, to be described elsewhere, are closely similar to those of *E. cristatus*. The dimorphism of the discoidal cells in the male fore and hind wings is more marked than in *E. albicauda*, but much less extreme than in *E. cristatus* (Figs 5-8).

Distribution and habitat of species of Episynlestes

The distribution of the 3 known species of *Episynlestes* is shown in Fig. 21; the localities are those recorded on specimens and in other data in the ANIC (cf. Watson and Moulds 1977). Watson (1974) recorded *E. albicauda* from north-eastern Queensland, on the basis of a female from Mt Elliott National Park (ca 19°30'S, 146°58'E), in the Ey collection, Ayr, Queensland. Unfortunately, it has not been possible to reexamine this specimen; in retrospect, it seems likely that it was a female *E. cristatus*. The picture emerges that *E. albicauda* extends from coastal northern New South Wales north to the tropic; *E. intermedius* has a range restricted to the Eungella region, to judge from numerous collections made by G.T. in other nearby and more

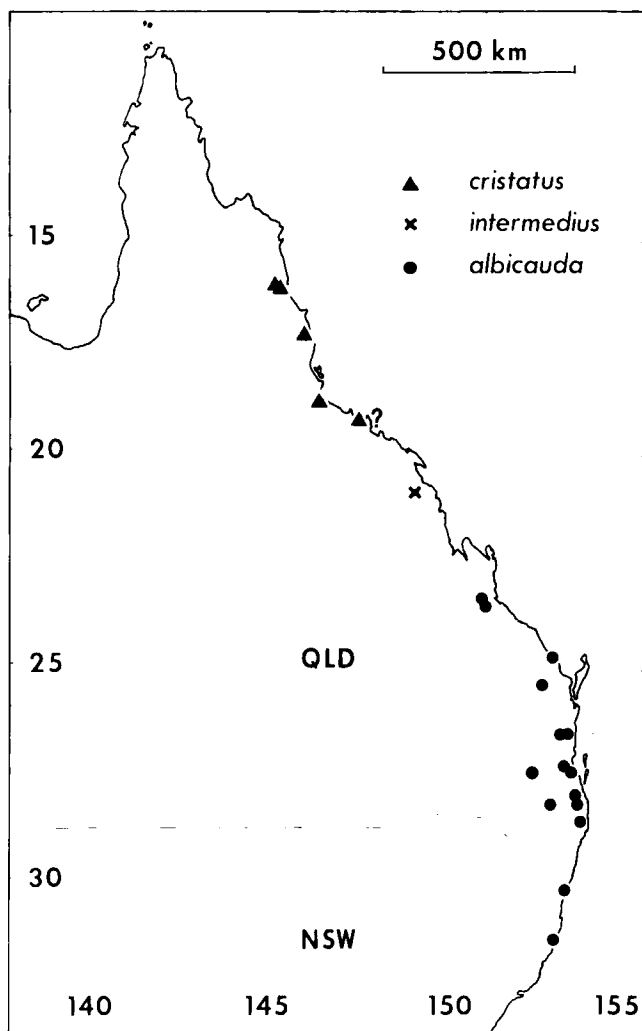


FIG. 21—Distribution of species of *Episynlestes*.

remote areas; and *E. cristatus* is exclusively tropical, separated from *E. intermedius* by the Paluma-Eungella gap, which Watson and Theischinger (1984) have recognised as a region of numerous taxonomic disjunctions in Odonata and other freshwater insects.

The habitats of the 3 species appear to be similar. Like *E. albicauda* and *E. cristatus* (cf. Watson and Moulds 1977), *E. intermedius* was collected in a shaded stream habitat. Freshly emerged adults were taken from rocks in a large and rather open montane pool surrounded by dense forest, in which the only fully mature male was found.

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