

**ACIAGRION PINHEYI SPEC. NOV. FROM SOUTH AFRICA
(ZYGOPTERA: COENAGRIONIDAE)**

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Aciagrion had until now not been recorded in South Africa. The new sp. from a pan in thick subtropical savanna is described, illustrated and compared with similar congeners. Holotype ♂, allotype ♀ (in copula): South Africa, KwaZulu-Natal prov., Ndumo Game Reserve, 21-I-2000; deposited at SAM, Cape Town.

INTRODUCTION

Aciagrion is an Ethiopian, Oriental and Australasian genus of damselflies that inhabit swampy areas, particularly in thick bush and forest (PINHEY, 1972). There are 22 described species, ten of which are African (BRIDGES, 1993). These African species are highly localized, yet some have very wide geographical ranges. There are relatively few preserved specimens, and until now, no *Aciagrion* species have been recorded in South Africa (PINHEY, 1984).

This paper describes a new species from a pan in the hot, low-lying thick bush of northern KwaZulu-Natal.

ACIAGRION PINHEYI SP. NOV.

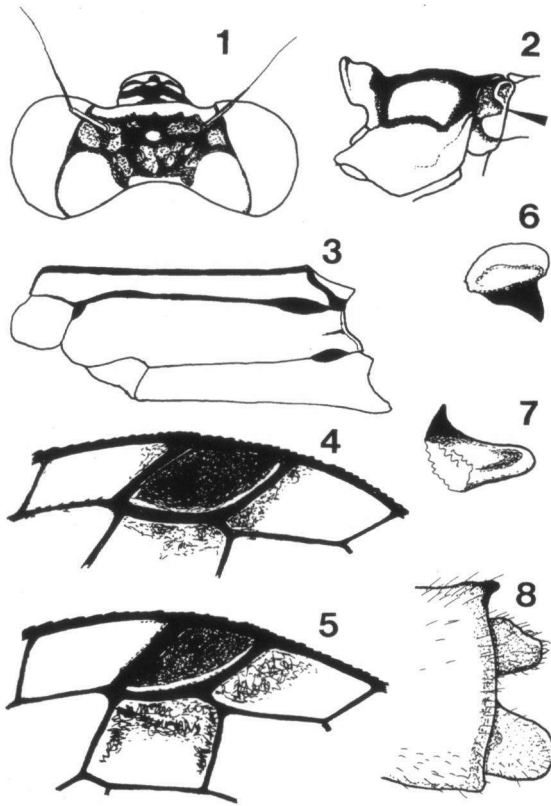
Figures 1-10

M a t e r i a l . — **Holotype** ♂: SOUTH AFRICA: KwaZulu-Natal Province, Ndumo Game Reserve 80 m a.s.l., 26° 52'S, 32° 11' E, 21-I-2000 (M.J. Samways); **allotype** ♀, in copula. Both held in the same envelope, with photographic slides, at the South African Museum, Cape Town. Additional material (6 ♂, 5 ♀ **paratypes**) same data. Paratypes (1 ♂, 1 ♀) currently placed in the Natural History Museum (London) and (5 ♂, 1 ♀) in the Invertebrate Conservation Research Centre, Pietermaritzburg. All specimens acetone-treated. All colours are those in life.

E t y m o l o g y. — Named in honour of the late Dr Elliot P i n h e y.

MALE (Holotype). — General appearance: bluish green and black head, bright salad green and black striped thorax, abdomen black dorsally but bright greenish blue at side of first few segments, bright mid-blue abdomen tip.

H e a d. — Labium whitish buff. Labrum bluish green with a central, and two lateral, black spots. Genae bluish green. Anteclypeus bluish green with fine, brownish tracery. Postclypeus black with a bluish green margin, and two bluish green triangles. Frontal band green. Vertex matt black, with large, green, triangular postocular spots, not quite linked by a bar of the same colour (Fig. 1). Eyes bright green with a small, black cap.



Figs 1-8. Male *Acia grion pinheyi* sp. n.: (1) head from above; — (2) prothorax and mesostigmal lamina with a distinct notch (arrowed); — (3) left side of synthorax; — (4) right forewing pterostigma; — (5) right hindwing pterostigma; — (6) right superior anal appendage positioned to show the spine at its maximum; — (7) right inferior anal appendage positioned to show the spine at its maximum; — (8) left superior appendages in side view and in situ.

T h o r a x. — Prothorax above black, with a green, anterior margin; with a large, green spot on the side, and green below (Fig. 2). Metapleural lamina flange-like, with a wide, distinct notch (Fig. 2). Dorsum of synthorax black; antehumeral stripe bright, salad green; a narrow, black stripe, widening at the distal end, follows the mesopleural suture. Small, elongated black dot at end of metapleural suture (i.e. metapleural fossa) (Fig 3). Rest of side of synthorax bright salad green, becoming pale green; buff below. Interlar area black with green spots. Wings clear but with deeply fumose blotches in the cells surrounding the pterostigmas and distal to the brace vein (Figs 4, 5). Pterostigmas smoky brown with fine, whitish borders (Figs 4, 5). Short, rounded parallelograms, but narrower in the

hindwing. Forewing with $10\frac{1}{2}$ - $12\frac{1}{2}$ postnodal crossveins. Legs light buff, with thin black lines on the outer sides of the femora, and black spots on the distal joints.

A b d o m e n. — Segments 1-8 metallic black above; the band starting narrow and dorsal on 1 gradually becoming wider, enveloping the sides by 7. Segments 1-4 bright bluish green laterally. Segments 8-9 bright mid-blue, with a fine, black, distal margin to 10. Segment 10 with a bifid scallop. Superior appendages black with a whitish inside tip; bearing a large, shiny black triangular, downwards-pointing tooth, only clearly visible on dissection (Fig. 6). Inferior appendages greyish; whitish on the inside tip, and bearing a black, acute, upward-pointing spine at the base, and only visible on dissection (Fig. 7). In side view the inferior appendages are about $1\frac{1}{2}$ -2 times longer than the superior appendages (Fig. 10).

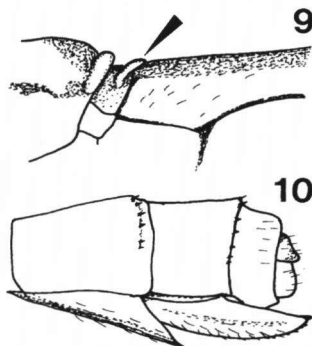
M e a s u r e m e n t s (in mm). — Total length (incl. apps) 37-39, abdomen (incl. apps 30-31), hind wing 20.5-22.

FEMALE (Allotype). — General appearance: long and slender, greenish, blackish and with a salmon-pink abdomen tip.

H e a d. — Labium light buff. Labrum light brown with three small black dots. Anteclypeus dull green with faint, dark marks. Postclypeus brownish green with black splashes. Frontal band bright green. Vertex black with very large, indistinctly-edge green postocular spots, not quite linked by a green bar. Hind margin of vertex and occiput green. Eyes green with black cap.

T h o r a x. — Prothorax with the same patterning and colouring as the male, but not as sharply demarcated (Fig. 9). Mesostigmal lamina, in side view, a ridge (Fig. 9). Synthorax black dorsally, with a light green, adjacent stripe, and a narrow (narrower than male), black line along the mesopleural suture. Rest of synthorax pale green going to buff below. A heart-shaped, black dot at the distal end of the metapleural suture. Pterostigmas as in the male but only very faint traces of smudging in the surrounding cells. Forewing with $12\frac{1}{2}$ postnodal crossveins. Legs pale buff with brownish black smudges and streaks on the distal end of femora and proximal end of tibiae.

A b d o m e n. — Segments 1-7 black above, with the black mark narrowed at the proximal end of each segment and widened at the distal end. Segments 1-7 pale green going to buff below. Segments 8-10 all salmon pink. Segment 8 with sharp, backwards-pointing spine (Fig. 10). Ovipositor extending beyond 10 by about half its length (Fig. 10). Cerci short, conical, pink with brownish tips.



Figs 9-10. Female *Aciagrion pinheyi* sp. n.: (9) part of left side of prothorax, mesostigmal lamina (with ridge arrowed), and part of synthorax; — (10) last three abdominal segments from the left side.

Table I

Comparative features of male *Aciagrion pinheyi* sp. n., *A. g. gracile*, *A. g. attenuatum* and *A. ? hamoni*

Feature	<i>pinheyi</i>	<i>g. gracile</i>	<i>g. attenuatum</i>	? <i>hamoni</i>
Labrum	Bluish-green with a central black dot	Bluish-green with a central black dot	Yellowish brown	Pale green
Postclypeus	Black with two blue triangles	Black with two blue triangles	Yellowish brown	Black
Vertex	Black, with large green postocular spots	Colour? with large (colour?) postocular spots	Reddish brown with faint brown lines demarcating postocular spots	Black with narrowed bluish green postocular spots
Prothorax	Black above, with two green, lateral spots, and green in the lower half	Pale bluish, indistinctly marked in brown	Pale brown	Black with large green, lateral spots and small dorsal twin spots
Mesostigmal lamina	With a deeply notched flange	?	With a long curved post-dorsal ridge	Raised at ventral end, depressed dorsally, with largish post-dorsal ridge
Synthorax pattern	Wide black juxta-carinal line with adjacent bright green line of equal width; thin black line along humeral suture; black dot at distal end of metapleural suture	Faint brown juxta-carinal line ending dorsally in black dot; pale colour pale bluish	Plain brown with small spots	Wide black and very narrow pale green stripes
Pterostigmas	Greyish brown, edged in white; narrower in hindwing; adjacent cells with brown smudges	Brown in forewing and narrower in hindwing	Brown in forewing and narrowed in hindwing; one Mozambique specimen with adjacent black smudges	Deep brown, edged in white
No. forewing postnodals	10 ½ - 12½	14	13	13
Hindwing length (mm)	21	23.5	22.5	21.5
Abdominal segment 2	Black band narrowed distally	Black band narrowed distally	Brown crescentic line	Black band expanded distally blue
Abdominal segments 8-10	Sky blue; dorsal hindmargin of 10 black	Sky blue	Violet blue	Blue
Abdomen length (mm)	30 - 31	37	37	28.5
Superior/inferior appendages	Inferior longer 1½ - 2 times	Inferior slightly longer	Inferior longer 1 ½ times	Inferior slightly longer to equal
Teeth visible in side view	No	Yes	Yes	No
Superior appendage in side view	Squarely conical and hirsute	Rounded conical and hirsute	Rounded conical and hirsute	Sharply conical and glabrous
Inferior appendage in side view	Terminally oval	Terminally oval	Terminally oval	Terminally round-cornered, truncated
Superior appendage tooth	Huge and triangular	Large, long and curved	Large, long and curved	Small and acute
Inferior appendage tooth	Medium-sized, with a curved sharp point	Medium-sized, with a sharp, curved point	Medium-sized, with a sharp, curved point	Minute, long, finger-like and sinuous

Table I, continued

Proportionate size of teeth of anal appendages	Superior about 2 times larger than inferior	Superior and inferior teeth of similar size	Superior and inferior teeth of similar size	Superior tooth about twice the size of inferior tooth
Distribution	KwaZulu-Natal, South Africa	North Malawi, Tanzania, Uganda	South Malawi, Mozambique, Zambia, Zimbabwe	Congo, Ivory Coast, Uganda, Zaire

N.B. The *A. pinheyi* colours are those in life, while the colours of the other taxa are those of variously preserved specimens

Measurements (in mm). — Total length 38-39, abdomen 32, hindwing 22.

HABITAT AND BEHAVIOUR. — The habitat was a shallow (< 50 cm), small (± 1000 m²), grass- and lily-choked pan with fringing rank grass, thick bush and trees. The male hovered slowly and glided in the shade and sunflecks among the long grass and bushes at the margin. The female was sometimes in the same habitat, but more frequently close to the water among the emergent grass stems, where she was very camouflaged. Copulation was in the shade among the long grass and bushes.

DISCUSSION

As pointed out by PINHEY (1972) care must be taken when comparing the pale colours of preserved *Aciagrion* spp. which show varying degrees of fading depending on the quality of preservation. Here only pattern and morphology will be considered definitively.

The male of *A. pinheyi* is very similar to that described by PINHEY (1972) as possibly the male of *A. hamoni* Fraser, the holotype of which is a female. This female, however, was from the Ivory Coast and the tentatively assigned male from Zaire, so the male here will be referred to as *Aciagrion ? hamoni*. Another species very similar to *A. pinheyi* is *A. g. gracile* (Sjöstedt, 1909), with a second subspecies *A. gracile attenuatum* Fraser, 1928. Comparative features of these four taxa are given in Tab. I.

There are not many specimens of these four taxa and although their extent of occurrence is great, their areas of occupancy (sensu IUCN, 1994) are small. This geographical isolation of subpopulations and populations has inevitably led to considerable geographical variation. Nevertheless, *A. pinheyi* shows some consistent differences.

A. pinheyi differs from *A. ? hamoni* in labrum, postclypeus, vertex, prothorax, synthorax and abdominal segment 2 colour pattern. In side view the superior appendage of *A. pinheyi* is not sharply conical as in *A. ? hamoni*, nor is the inferior appendage so square-ended. The teeth of the inferior appendages also differ, being a curved spine in *A. ? hamoni*. Also, the inferior appendages in *A. pinheyi* are distinctly longer than the superior ones, while in *A. hamoni*, they are almost equal.

Although the postclypeus of *A. pinheyi* is similar to that of *A. g. gracile*, it is

quite different from that of *A. g. attenuatum*. *A. pinheyi*, although having a similarly marked vertex to *A. g. gracile* and *A. g. attenuatum*, has a different prothoracic and synthoracic pattern. *A. pinheyi* is consistently much smaller than the other two taxa and has fewer postnodal crossveins. The anal appendages have similar shaped spines to those of the two *A. gracile* subspecies, although the spine of the superior appendages is proportionately much larger than that of the inferior appendages. Also, in side view, these spines cannot be seen (as also in *A.? hamoni*), whereas they can be in *A. g. gracile* and *A. g. attenuatum*.

The most characteristic distinguishing feature of *A. pinheyi* is the deeply-notched flange of the mesostigmal lamina, which is a ridge both in *A.? hamoni* and the two subspecies of *A. gracile*.

In the field, *A. pinheyi* can be recognised by its small size, narrow, well-defined stripes and brown smudges around the pterostigmas. This last feature is not definitive, as one Mozambique *A. g. attenuatum* specimen has them, as do some other *Aciagrion* species (PINHEY, 1972). Within South Africa, *A. pinheyi* is easily distinguished in the field from *Enallagma* and *Pseudagrion* spp. by its slender build, bluish green and black head combined with a bright green and black thorax, dorsally black abdomen which is green at the sides of the first few segments, combined with a bright blue tip. Similarly, the female is also instantly recognised by its light green and black thorax and bright salmon pink abdomen.

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