

TWO NEW ZYGOPTERA SPECIES FROM PAPUA NEW GUINEA (PROTONEURIDAE, COENAGRIONIDAE)

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Nososticta acudens sp. n. and *Papuagrion nigripedum* sp. n. from Papua New Guinea are described, both from lowland rainforest in Gulf prov. (Dark-End Lumber, 3-X-1999). Holotype ♂ are deposited at SAMA, Adelaide, Australia. Diagnostic characters of the adult ♂ are illustrated and the affinities of both spp. are discussed.

INTRODUCTION

The lowland rainforests of southern New Guinea harbour a diverse and poorly known zygopteran fauna. Among these are numerous species of the proto-neurid genus *Nososticta*, small, dark brown or black species often with colourful markings on the synthorax (WATSON et al., 1991). Recent surveys by the junior author in the southern lowlands of Papua New Guinea revealed several undescribed *Nososticta* (RICHARDS et al., 1998) and a new species of the coenagrionid genus *Papuagrion*. In this paper we describe and illustrate a new *Nososticta* species and the new *Papuagrion* species from Dark-End Lumber, an area of lowland rainforest in the Gulf Province of Papua New Guinea. This is the third in a series of papers that aims to address taxonomic novelties in New Guinean Odonata collected by SJR between 1996 and 2001 (THEISCHINGER & RICHARDS 2005, 2006).

MATERIAL AND METHODS

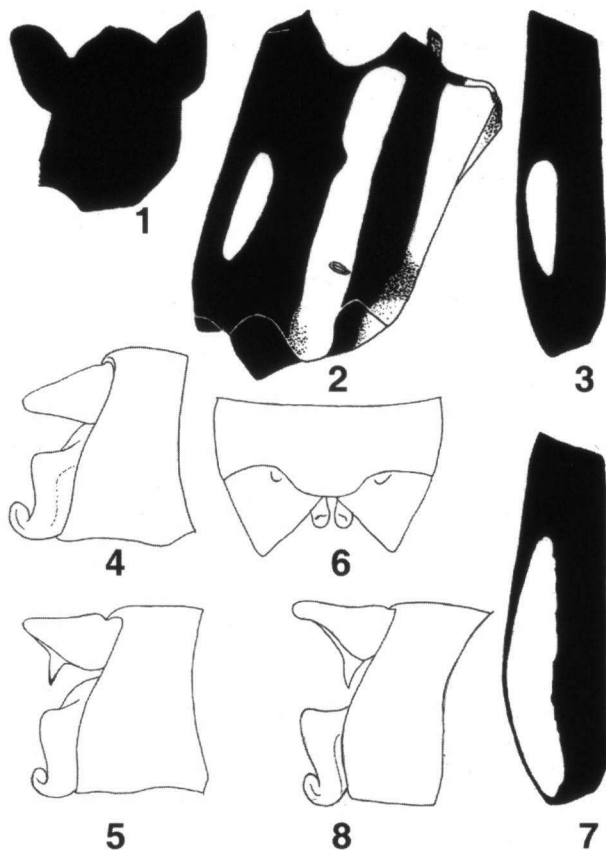
Descriptive terminology largely follows CHAO (1953) and WATSON & O'FARRELL (1991). Descriptions of coloration are based on preserved material and measurements are given in millime-

tres (mm). Illustrations were done with the aid of a camera lucida and are not to scale. Unless indicated otherwise material is deposited in the South Australian Museum (SAMA), North Terrace, Adelaide, South Australia.

NOSOSTICTA ACUDENS SP. NOV.

Figures 1-6

Material. — **Holotype** ♂ (SAMA I 21725). — Papua New Guinea, Gulf Province, Dark-End Lumber (DEL), along small creek ca 100 m W of DEL camp (144°22.937'E, 7°09.894'S), in shade, 3-X-1999, S.J. Richards leg.; 1 paratype ♂ (SAMA I 21728), small stream adjacent DEL camp, other data as in holotype.



Figs 1-8. (1-6) *Nososticta acudens* sp. n., male: (1) prothorax, lateral view; — (2) synthorax, lateral view; — (3) right half of synthorax front, frontal view; — (4-6) anal appendages: (4) lateral view, (5) same, showing ventral tooth of superior anal appendages, (6) same, dorsal view; — (7-8) *N. finisterrae* Förster, male: (7) right half of synthorax front, frontal view, (8) anal appendages, lateral view, showing ventral tooth of superior anal appendages.

Etymology. — The specific name refers to the sharp tooth on the superior anal appendages of the male.

MALE. — **Head.** — Black with moderately broad vivid blue bar from eye to eye across the anterior frons, no indication of pale markings between lateral ocelli and antennal bases.

Thorax. — **Prothorax.** — Pronotum and propleura black. Median lobe of pronotum raised into a small rounded elevation each side. Leg with coxa greyish brown to black, trochanter brownish black, and femur, tibia, tarsus and claws black.

Synthorax. — Mesepisternum largely black; an oval vivid blue patch, covering approximately 3/8 of

its length (from $1/4$ to $5/8$ length) and maximally $1/3$ of its width, along and close to mesopleural suture; mesokatepisternum and mesepimeron black; anterior $2/3$ of metepisternum vivid blue, posterior $1/3$ of metepisternum and anterior $1/2$ of metakatepisternum and metepimeron black, posterior $1/2$ of metakatepisternum and metepimeron blue. Poststernum greyish blue. Legs much as in prothorax.

Wings. — Membrane hyaline. Venation black. Pterostigma of both wings black, almost twice as long as wide, overlying between considerably more than one cell and two cells. Ac situated slightly proximal to Ax1. No transverse cross-vein descending from distal margin of discoidal cell (8 of 8 cases). Postnodals 16-17/15.

A b d o m e n. — Terga largely black, sterna dark brown. Much of sides of tergum 1 and ventral portion of tergum 2 pale. Orange to vivid brownish yellow mid-dorsal patches, covering most of segment length, on terga 8 and 9 and on segment 10, the patch on 8 narrow, the patches on 9 and 10 wide. Anal appendages (Figs 4-6): superiors orange to vivid brownish yellow, very short, broadly conical, armed beyond mid-length with sharply pointed ventral tooth; inferiors darker, merging into greyish brown, with base widely rounded.

M e a s u r e m e n t s (in mm). — Hindwing 20.0-20.4, abdomen (including appendages) 33.5-34.3.

FEMALE unknown.

DISCUSSION. — *Nososticta acudens* sp. n. is similar to *N. finisterrae* Förster (Figs 7, 8), to which it also keys out in the key given by J. Michalski (manuscript) and may therefore be considered closely allied with that species. There are, however, significant differences between these two species. The prothorax is completely black and the pale patches on the front of the synthorax are covering roughly the middle $1/3$ of the length of the mesepisterna in the new species. In *N. finisterrae* the prothorax has blue patches and the blue patches on the front of synthorax cover approximately the basal $2/3$ of the length of the mesepisterna. In addition the male superior anal appendages of the new species are shorter and armed closer to their apex.

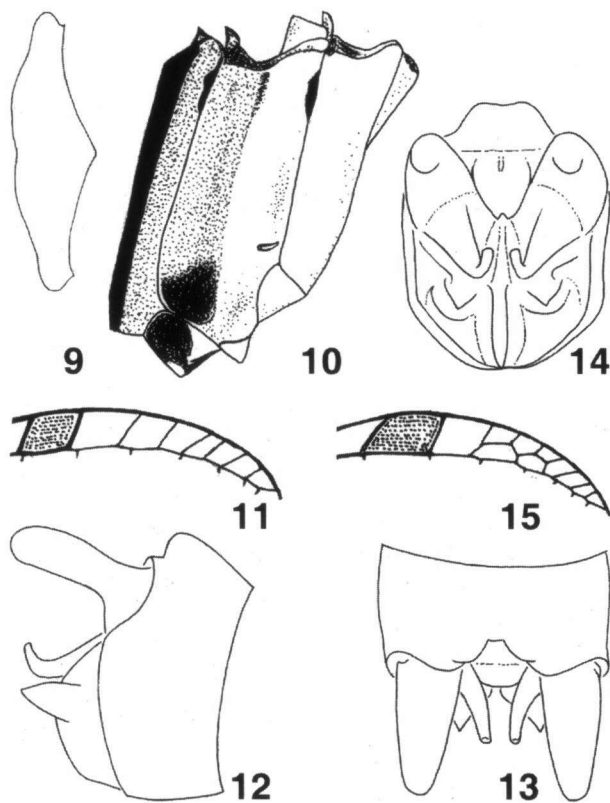
PAPUAGRION NIGRIPEDUM SP. NOV.

Figures 9-14

M a t e r i a l. — Holotype ♂ (SAMA I 21726). — Papua New Guinea, Gulf province, Dark-End Lumber (DEL), under lamp in DEL camp ($144^{\circ}22.937'E$, $07^{\circ}08.894'S$), 3-X-1999, 10 a.m., S. Richards leg.

E t y m o l o g y. — The specific name refers to the leg colouration which is a significant character distinguishing the new species from the morphologically similar *Papuagrion flavipedum* Lieftinck.

M A L E. — H e a d. — Labium pale orange-yellow. Labrum, clypeus and anterior frons pale greenish to greyish blue; mandibles somewhat paler. Remainder of head black except for a hardly noticeable rust-brown spot between each lateral ocel-



Figs 9-15. (9-14) *Papuagrion nigripedum* sp. n., male: (9) posterior lobe of pronotum; — (10) thorax, lateral view; — (11) apex of right forewing, showing pterostigma and costal cells beyond; — (12-14) anal appendages: (12) lateral view, (13) dorsal view, (14) caudal view; — (15) *P. flavipedum* Lieftinck, male: apex of right forewing, showing pterostigma and costal cells beyond.

approximately median $\frac{1}{2}$ of each mesepisternum. Remainder of mesepisternum and mesepimeron largely brown, finely speckled with black. Mesokatepisternum largely black with postero-ventral corner bluish. Metepisternum, metakatepisternum and metepimeron pale greyish- to greenish yellow, poststernum slightly paler. A black streak on both meso- and metapleural suture near their dorsal end. Legs much as in prothorax, but mesotibia greyish yellow for approximately basal $\frac{1}{2}$, thence merging into black, and metatibia greyish yellow with only apex black.

Wings. — Membrane hyaline. Venation black. Pterostigma of both wings black, small, hardly longer than wide, overlying single cell or less; proximal and distal side parallel, both slightly oblique. Ac closer to Ax2 than to Ax1. Post-nodals 14-15/14.

lus and antenna and a transverse bar, broadened on both ends, along occipital ridge. Antennae black.

Thorax. — Prothorax. — Pronotum rusty-brown, propleura largely very pale greyish blue, narrowly brown adjacent to pronotum. Posterior lobe of pronotum a simple, widely rounded flap. Coxa and trochanter pale greyish yellow; femur pale greyish yellow with most of outer and posterior face black, tibia greyish yellow only at extreme base, thence merging into black, tarsus black; claws brown to black.

Synthorax. — A metallic greenish black mid-dorsal, longitudinal stripe covers median carina, antealar ridge and sinus and

A b d o m e n . — Terga 1 and 2 dorsally metallic greenish black, laterally yellow; the black patch on 2 slightly widened distally. Terga 3-8 metallic greenish black with yellowish latero-ventral spot at base connected with narrow yellowish stripe along ventral margin. Tergum 9 and segment 10 orange to reddish brown, 9 with a diffuse blackish dorsal patch, 10 dorsally only with transverse black basal bar and somewhat darker sides. Sterna dark brown to black. Anal appendages (Figs 12-14) ochreous to orange; superiors with lower branch, as seen in profile, almost as long as upper branch, hooked; inferiors approximately 2/3 as long as superiors, with apex prominent and pointed. Anal tergite apically with distinct, narrow median notch.

M e a s u r e m e n t s (in mm). — Hindwing 28.5, abdomen (including appendages) 43.0.

FEMALE unknown.

DISCUSSION. — Twenty-one species and subspecies of *Papuagrion* Ris are recognised from Papua New Guinea (TSUDA, 2000). Of these, the male of *Papuagrion flavipedium* Lieftinck (Fig. 15) has pronotum and anal appendages very similar to those of the new species. *P. flavipedium*, however, is a yellow to orange-faced species with pale yellowish legs and with larger, more irregularly shaped pterostigma and double cells in the costal space beyond the pterostigma, whereas the slightly larger *P. nigripedum* sp. n. has a blue face, largely black legs and a smaller and more regularly shaped pterostigma and lacks double cells in the costal space beyond the pterostigma.

HABITAT of *Nososticta acudens* sp. n. and *Papuagrion nigripedum* sp. n. — Dark-End Lumber is lowland rainforest (40-60 m asl) in the Kikori River Basin. The type locality is in primary forest at the base of a low, heavily forested ridge drained by several small, clear and heavily shaded streams.

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