

**TWO NEW SPECIES OF *NOSOSTICTA* HAGEN IN SELYS
FROM PAPUA NEW GUINEA
(ZYGOPTERA: PROTONEURIDAE)**

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N. conifera sp. n. (holotype ♂: Gulf prov., Lakekamu, Ivimka Camp adjacent Sapoi R., 1-XII-1996) and *N. smilodon* sp. n. (holotype ♂: Gulf prov., Dark-End Lumber, 5-X-1999) are described. The holotypes are deposited in South Australian Museum, Adelaide. Diagnostic characters of the adults are illustrated and the affinities of both species are discussed.

INTRODUCTION

Damselflies of the protoneurid genus *Nososticta* are small, slender, dark brown or black species often exhibiting colourful markings on the synthorax (WATSON et al., 1991). Many of the Australopapuan species were previously included in the genus *Notoneura*, but WATSON & THEISCHINGER (1984) synonymised that genus with *Nososticta* arguing that the Australian taxa of the two genera form a single cohesive group. The latest contribution to protoneurid taxonomy in the Australopapuan region (WATSON & THEISCHINGER, 1984) more than doubled the known Australian fauna, describing six new species from northern Australia.

Knowledge of the New Guinean protoneurid fauna lags far behind that of Australian species. Recent surveys by the junior author in the southern lowlands of Papua New Guinea have revealed a diverse fauna and several undescribed *Nososticta* (RICHARDS et al., 1998). In this paper we describe and illustrate two new *Nososticta* species. This is the second 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).

MATERIAL AND METHODS

The descriptive terminology largely follows CHAO (1953) and WATSON & O'FARRELL (1991). Coloration is given as detectable from the preserved material.

All illustrations were done with the aid of a camera lucida and are not to scale.

If not indicated otherwise the material is deposited in the Collection of the South Australian Museum (SAMA), North Terrace, Adelaide, South Australia.

NOSOSTICTA CONIFERA SP. NOV.

Figures 1-6

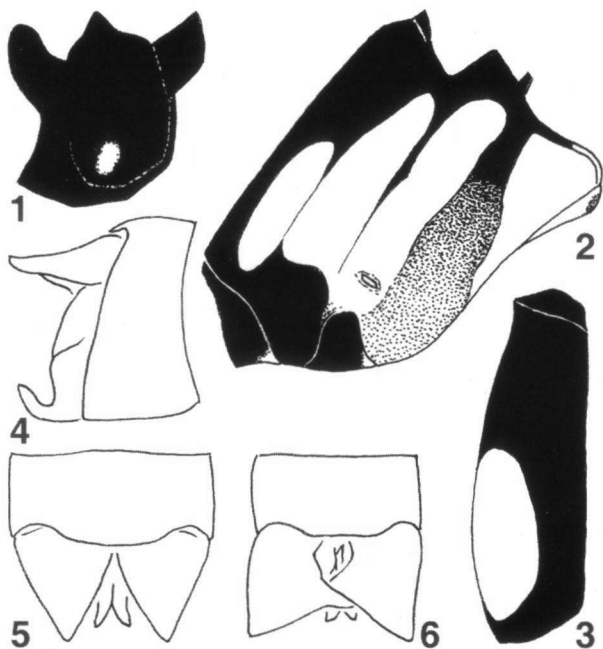
Material. – Holotype ♂ (SAMA I21679): Papua New Guinea, Gulf Province, Lakekamu, lowland forest (120 m asl), 1 km transect Ivimka Camp adjacent Sapoi River (146°29'45"E, 7°44'05"S), 1-XII-1996, S.J. Richards (SAMA); 1 paratype ♂ (SAMA I21680), 22-XI-1996, other data as in holotype.

Etymology. – The specific name refers to the conical elevations of the median lobe of the male pronotum.

MALE. – **Head.** – Black with pale blue to vivid blue, moderately broad bar from eye to eye across the anterior frons and with a poorly indicated rust-brown spot between each lateral ocellus and antenna.

Thorax. – **Pronotum.** – Pronotum black; propleura black, posteriorly with small blue mark. Median lobe of pronotum raised into a somewhat spiny cone each side. Leg blackish brown to black.

Synthorax. – Mesepimeron largely black; an oval vivid blue patch, covering maximally about ventral half of its length and lateral half of its width broadly fused with large pale vivid



Figs 1-6. *Nososticta conifera* sp. n., male: (1) prothorax, lateral; – (2) synthorax, lateral; – (3) right half of front of synthorax, frontal; – (4-6) anal appendages: (4) lateral; (5) dorsal; (6) dorsal, with superior appendages in different position.

blue lateral patches over dorsal $\frac{3}{4}$ of mesepimeron and almost all of metepisternum; remainder of mesepimeron and a narrow line along dorsal $\frac{1}{2}$ of interpleural suture black, and area of metepisternum adjacent to and along metapleural suture and anterior portion of metepimeron black dorsally merging into paler (brownish) ventrally, remainder of metepimeron pale blue. Poststernum almost uniformly pale blue. Legs much as in prothorax.

Wings. — Membrane hyaline. Venation black. Pterostigma of both wings black, longer than wide, overlying slightly to considerably more than one cell. Ac slightly proximal to Ax1. A transverse crossvein descending from distal margin of discoidal cell (8 of 8 cases). Postnodals 13-15/11-13.

A b d o m e n. — Largely black; much of sides of tergum 1 and part of ventrolateral edge of other terga, in particular 2, 7 and 8, pale. Superior anal appendages greyish blue, armed with basal lateral triangular tooth; inferior appendages greyish brown.

M e a s u r e m e n t s (in mm). — Hindwing 18.2-19.0, abdomen (including appendages) 28.8-30.0.

FEMALE unknown.

HABITAT. — The type locality is in the Lakekamu Basin, a vast area of pristine lowland rainforest covering about 2500 km² on the south side of New Guinea's central cordillera. The forest at Ivimka Research Station where this species was found is criss-crossed by numerous small, shaded but sun-dappled streams. *N. conifera* sp. n. were found perched on low vegetation. A detailed description of the vegetation, climate, fauna and flora of the type locality can be found in MACK (1998).

NOSOSTICTA SMILODON SP. NOV.

Figures 7-13

M a t e r i a l. — Holotype ♂ (SAMA I21681): Papua New Guinea, Gulf Province, Dark-End Lumber (DEL), trail above DEL camp (144°22.937'E, 07°08.894'S), in patch of sun, 5-X-1999, 1.45 p.m., S. Richards (SAMA). 1 paratype ♂ (SAMA I21682): stream adjacent DEL camp, in dappled sun, 3-X-1999, midmorning, other data as in holotype.

E t y m o l o g y. — The specific name refers to the large tooth on the superior anal appendages of the male.

M A L E. — Head. — Black with a broad transverse pale yellowish bar from eye to eye across the anterior frons and a hardly noticeable rust-brown spot between each lateral ocellus and antenna.

T h o r a x. — Prothorax. — Pronotum black, propleura largely pale yellowish to bluish, narrowly black adjacent to pronotum. Anterior lobe of pronotum rather complex in structure. Coxa and trochanter from pale to dark yellow and somewhat clouded with brown, to considerably darker; remainder of leg blackish brown to black.

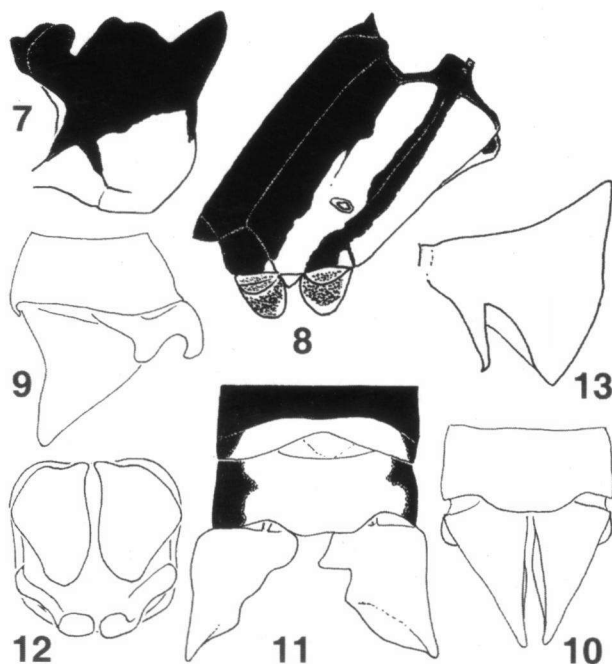
Synthorax. — Area anterior to interpleural suture including a fine line along dorsal $\frac{1}{2}$ of this suture black and a moderately wide stripe covering metapleural suture and some adjacent area brownish black, area in between largely pale blue to pale yellowish. Poststernum pale yellowish to pale blue. Legs as in prothorax.

Wings. — Membrane hyaline. Venation black. Pterostigma of both wings black, overlying slightly to considerably more than one cell. Ac at or slightly proximal to Ax1. A transverse crossvein descending from distal margin of discoidal cell (3 of 8 cases) or absent (5 of 8 cases). Postnodals 17/15.

Abdomen. — Black with much of sides of tergum 1 and part of ventro-lateral edge of tergum 2 pale yellowish and with apical ring of tergum 9 and partly of tergum 8, and all of segment 10 dorsally ochreous to orange. Anal appendages (Figs 9-13) ochreous to orange; superiors triangularly flag-like with large basal tooth set at an angle; inferiors deeply excavated between base and rather stout curled apex (as seen in profile).

Measurements (in mm). — Hindwing 19.2-19.4, abdomen (including appendages) 31.0-32.2.

FEMALE unknown.



Figs 7-13. *Nososticta smilodon* sp. n., male: (7) prothorax, lateral; — (8) synthorax, lateral; — (9-13) anal appendages: (9) lateral; (10) dorsal; (11) dorsal, with superior appendages in different position; (12) caudal; (13) inner side of right superior appendage.

HABITAT. — Dark-End Lumber is a patch of lowland rain-forest (40-60 m asl), with low ridges reaching ~120 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. This species was found in dappled sunny patches during the morning and middle of the day.

DISCUSSION. — *N. conifera* sp. n. keys out to *N. nigrofasciata* (Lieftinck) in the key given by J. Michalski (manuscript) and may therefore be con-

sidered most similar to that species. The pale colouration on the sides of the synthorax, however, is considerably more extensive in the new species than in *N. nigrofasciata*, and the poststernum is uniformly pale as opposed to strongly patterned.

N. smilodon sp. n. is possibly closest to a new species described by J. Michalski (manuscript) from Lakekamu. It is, however, clearly distinguishable by the shape of the male superior anal appendages which are much wider and not particularly pointed and have a much more basal ventral tooth.

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