

**TWO NEW SPECIES OF *DREPANOSTICTA* LAIDLAW  
FROM PAPUA NEW GUINEA  
(ZYGOPTERA: PLATYSTICTIDAE)**

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*D. antilope* sp. n. (holotype ♂: East New Britain, Wanui Camp, 17-III-2000) and  
*D. taurulus* sp. n. (holotype ♂: Eastern Highlands prov., Herowana, 13-XI-2001) are  
described. The holotypes are deposited in South Australian Museum, Adelaide. Di-  
agnostic characters of the adults are illustrated and the affinities of both spp. are  
discussed.

**INTRODUCTION**

Recent research on the systematics of New Guinea Odonata has been both limited and sporadic. Significant contributions include studies of the zygopteran genus *Idiocnemis* (GASSMAN, 1999, 2000) and description of *Hylaeargia magnifica* (MICHALSKI, 1995, 1996). Apart from these studies there have been few attempts since the seminal works of M.A. Lieftinck during the mid-1900s to advance knowledge of the New Guinea fauna. Between 1996 and 2001 the junior author (SJR) made collections of Odonata at a number of localities in Papua New Guinea. Specimens obtained during those studies were sent to N. Donnelly (various genera), D. Gassman (genus *Idiocnemis*) and J. Michalski (genera *Nososticta* and *Pseudagrion*) who are now in the process of working through that material.

The present paper is the first of a series addressing taxonomic novelties of the remaining material. We are also planning a separate paper presenting species lists

(including notes on ecology and zoogeography) for the sampling sites after descriptive taxonomic papers by all authors involved have been published.

#### MATERIAL AND METHODS

Descriptive terminology largely follows CHAO (1953) and WATSON & O'FARRELL (1991). Coloration is given as detectable from the preserved material. Measurements are given in millimetres (mm).

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 South Australian Museum (SAMA), North Terrace, Adelaide, South Australia.

#### *DREPANOSTICTA ANTILOPE* SP. NOV.

Figures 1-8

**Material.** — **Holotype** ♂ (SAMA I21683): Papua New Guinea, East New Britain, Wanui Camp (5°21.638'S, 152°05.266'E), in primary forest, 17-III-2000, S. Richards leg.; — **Paratypes** 3♂, 1♀: locality, year and collector as for holotype: 1♂ (SAMA I21684), along small stream, dappled sun, 2.30 p.m., 25-III; — 1♂ (SAMA I21685), trail in forest, shade, in mid-afternoon, 16-III; — 1♂ (SAMA I21686), nearby garden site, on forest trail, 14-III; — 1♀ (SAMA I21687), in forest, in shade, 17-III.

**Etymology.** — The specific name refers to the shape of the processes on the posterior lobe of the male pronotum.

**MALE.** — **Head.** — Largely blackish brown to black with mandible base and adjacent portion of genae, antennal pedicel and more than anterior half of postclypeus whitish yellow; anterior quarter of labrum pale brown.

**Thorax.** — Prothorax: pronotum largely bronze-brown dorsally, narrowly black along the adjacent black propleura; posterior lobe of pronotum hardly raised, with broad pair of bifid antler-like processes. Leg pale greyish to brownish yellow, with knees, bases of coxae and apices of tarsi slightly more darkened.

**Synthorax.** — Largely bronze-black, some antehumeral and humeral areas, metakatepisternum and some other areas of metapleura near and along subalar ridge merging without clear definition into bronze-brown. Poststernum brown and black. Legs much as in prothorax.

**Wings.** — Membrane hyaline, slightly suffused with pale yellowish- to greenish brown. Venation proximal to arculus largely brownish yellow, remainder blackish brown to black. Pterostigma dark brown, about twice as long as wide, generally overlying slightly more than one cell, proximally very slightly convex, distally rather strongly so. Postnodals 15-18/15-16.

**Abdomen.** — Terga largely bronze-brown to bronze-black; only posterior dorsal edge of tergum 1, bases of terga 3-7 and ventral edges of terga 7 and 8 distinctly brightened to greyish- to brownish yellow. Segment 10 and anal appendages brownish yellow. Sterna brown and black.

**Measurements** (mm). — Hindwing 18.7-21.1, abdomen (including appendages) 27.8-32.3.

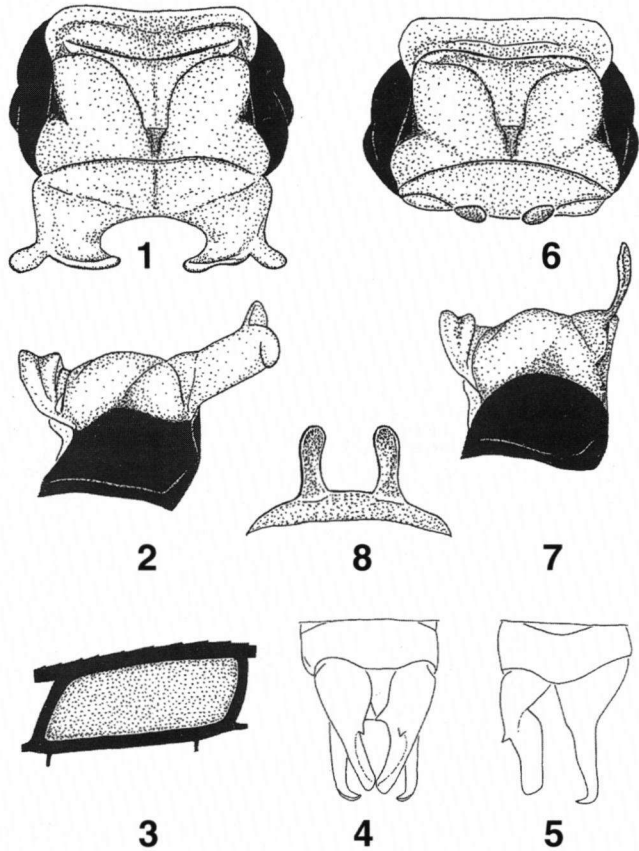
**FEMALE.** — Head much as in male. Prothorax coloration much as in male. Processes on posterior lobe of pronotum distinctly raised into rather simple, narrow, apically rounded lobes. Synthorax much as in male. Wings much as in male. Postnodals 16-17/15.

Abdomen much as in male. Ovipositor black and brown.

Measurements (mm). — Hindwing 21.0, abdomen 31.0.

**HABITAT.** — The type locality is primary rainforest next to Wanui Creek, East New Britain, Papua New Guinea at an altitude of 310 m asl. Adults were

predominantly in shade among understorey vegetation, but one specimen was in dappled sunlight along a shady stream with heavy canopy cover. The forest surrounding the Wanui site is one of the few areas of forest in the region that has some form of protection from logging.



Figs 1-8. *Drepanosticta antilope* sp. n. (1-5 male, 6-8 female): (1-2, 6-7) prothorax, dorsal and lateral view, resp.; — (3) pterostigma of right forewing; — (4-5) anal appendages, dorsal and lateral view, resp.; — (8) posterior lobe of pronotum, frontal view.

***DREPANOSTICTA TAURULUS* SP. NOV.**

Figures 9-16

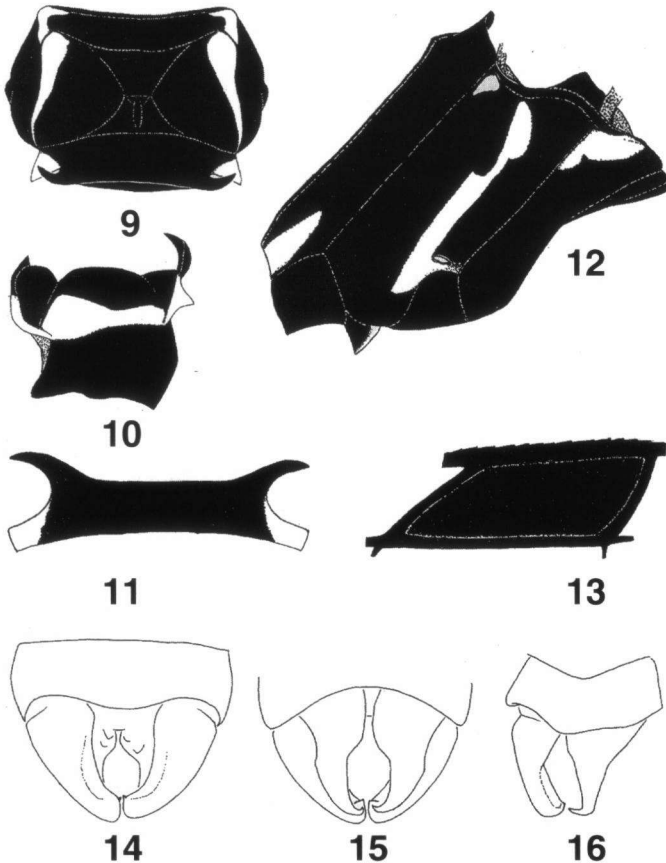
**Material.** — **Holotype** ♂ (SAMA I21688): Papua New Guinea, Eastern Highlands prov., Herowana (6°39.24'S, 145°11.83'E), in house, 13-XI-2001, S. Richards leg.

**E t y m o l o g y.** — The specific name *taurus* (= Latin for little steer) refers to the horn-like processes on the posterior lobe of the male pronotum.

**MALE.** — **H e a d.** — Blackish brown to black with mandible bases and adjacent portion of genae, posterior two thirds of labrum and more than anterior half of postclypeus whitish yellow. Antennal pedicel and flagellum missing.

**T h o r a x.** — **Prothorax:** pronotum bronze-brown dorsally, a conspicuous yellow longitudinal stripe across the lateral edge; posterior lobe raised, with horn-like lateral processes which are about twice as long as they are wide at their bases, slightly reflexed and then forwardly turned. Propleura bronze-black. Leg as in synthorax.

**Synthorax.** — Bronze-black, marked with yellow as follows: a narrow triangular patch on mesepisternum adjacent to spiracular dorsum; a drop-shaped spot



**Figs 9-16.** *Drepanosticta taurus* sp. n., male: (9-10) prothorax, dorsal and lateral view resp.; — (11) posterior lobe of pronotum, frontal view; — (12) synthorax, lateral view; — (13) pterostigma of right forewing; — (14-16) anal appendages, dorsal, ventral and lateral view resp.

on mesepimeron adjacent to dorsal end of mesopleural suture; a long narrow patch across much of anterior portion of metepisternum from close to subalar ridge to well beyond, and thus somewhat engulfing, metastigma; an irregular patch in the anterodorsal corner of metepimeron. Poststernum greyish yellow to black. Legs brown to dark greyish brown, with femora somewhat paler than other segments.

Wings. — Membrane hyaline, faintly suffused with greyish green. Venation black. Pterostigma black with proximal side straight to slightly convex and longer than the distinctly convex distal side. Postnodals 20-22/16-19.

Abdomen. — Terga bronze-brown to bronze-black with the following areas marked paler: two basal lateral spots on tergum 2; approximately basal 1/8 or less in terga 3-6, with the pale becoming increasingly darker and more inconspicuous from 3-6. Segment 10 and anal appendages black. Sterna brown and black.

Measurements (mm). — Hindwing 26.0, abdomen (including appendages) 34.5.

FEMALE unknown.

HABITAT. — Herowana is a large village located at an altitude of 1400 m in Eastern Highlands Province, Papua New Guinea. The immediate vicinity of the type locality has been extensively modified for an airstrip and houses and gardens. Rainforest habitats occur within approximately 100 m of the village but coffee gardens are expanding rapidly in the area. The type locality is in the Crater Mountain Wildlife Management Area, a vast area of tropical rainforest currently without large-scale logging activities. It is likely that *D. taurulus* occurs throughout the region in suitable habitats.

## DISCUSSION

Of the fourteen *Drepanosticta* species listed from New Guinea including the Moluccas (LIEFTINCK, 1932, 1938, 1949; TSUDA, 2000; J. MICHALSKI, manuscript), ten, *D. auriculata* (Selys), *D. bicornuta* (Selys), *D. claaseni* Lieftinck, *D. clavata* Lieftinck, *D. dendrolagina* Lieftinck, *D. eucera* Lieftinck, *D. exoleta* Lieftinck, *D. inconspicua* Lieftinck, *D. inversa* Lieftinck and *D. moluccana* Lieftinck, lack antehumeral markings (LIEFTINCK, 1932, 1938, 1949) as does *D. antilope* sp. n. *D. antilope* can be distinguished from all of these taxa by the unique shape of the processes on the posterior lobe of the prothorax in both sexes. Although the male of *D. exoleta* has bidentate superior anal appendages (LIEFTINCK, 1932) similar to those of *D. antilope*, they are much longer, and the proportions of the different sections are very different in the two species.

Three *Drepanosticta* species described from New Guinea, *D. conica* (Martin), *D. dorcadion* Lieftinck and *D. lepyricollis* Lieftinck, have distinct pale antehumeral markings and clearly defined pale lateral synthoracic markings (LIEFTINCK, 1938, 1949) as has *D. taurulus* sp. n. Whereas the males of *D. conica*, *D. lepyricornis* according to LIEFTINCK (1938, 1949) and *D. taurulus* also share apically

armed superior anal appendages and hooked inferior anal appendages, the outwardly pointing horn-like processes on the posterior lobe of the prothorax are unique in this group for the male of *D. taurulus*.

The available material (a subadult, incomplete male and a female) of *D. robusta* Fraser from the Kai Islands, a species not included in LIEFTINCK's (1932) and J. Michalski's (manuscript) keys, appears insufficient for a comparison with the two species described above.

#### ACKNOWLEDGEMENTS

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#### REFERENCES

- CHAO, H.F., 1953. The external morphology of the dragonfly *Onychogomphus ardens* Needham. *Smithson. misc. Collns* 122(6): 1-56.
- GASSMAN, D., 1999. Taxonomy and distribution of the inornata species-group of the Papuan genus *Idiocnemis* Selys (Odonata: Zygoptera: Platycnemididae). *Invert. Taxon.* 13: 977-1005.
- GASSMAN, D., 2000. Revision of the Papuan *Idiocnemis* bidentata-group (Odonata: Platycnemididae). *Zoöl. Meded. Leiden* 74: 375-402.
- LAIDLAW, F.F., 1917. A list of the dragonflies recorded from the Indian empire, with special reference to the collection of the Indian Museum. 2. The family Agrionidae. A. The sections Podolestes, Platycnemis, Platysticta and Protoneura. *Rec. Indian Mus.* 13(6): 321-348.
- LIEFTINCK, M.A., 1932. The dragonflies (Odonata) of New Guinea and neighbouring islands. 1. Descriptions of new genera and species of the families Lestidae and Agrionidae. *Nova Guinea* 15(3): 485-602.
- LIEFTINCK, M.A., 1938. The dragonflies (Odonata) of New Guinea and neighbouring islands. 5. Descriptions of new and little known species of the families Libellaginidae, Megapodagrionidae, Agrionidae (sens. lat.), and Libellulidae (genera *Rhinocypha*, *Argiolestes*, *Drepanosticta*, *Notoneura*, *Palaiargia*, *Papuargia*, *Papuagrion*, *Teinobasis*, *Nannophlebia*, *Synthemis*, and *Anacordulia*). *Nova Guinea* (N.S.) 2: 47-128.
- LIEFTINCK, M.A., 1949. The dragonflies (Odonata) of New Guinea and neighbouring islands. 7. Results of the Third Archbold Expedition 1938-39 and of the Le Roux Expedition 1939 to Netherlands New Guinea (2. Zygoptera). *Nova Guinea* (N.S.) 5: 1-271.
- MICHALSKI, J.C., 1995. New Guinea continued. *Argia* 7: 12-17.
- MICHALSKI, J.C., 1996. Description of *Hylaeargia magnifica* Michalski, a damselfly from Papua New Guinea (Odonata: Zygoptera). *Tijdschr. Ent.* 139: 29-32.
- TSUDA, S., 2000. *A distributional list of the World Odonata*. Tsuda, Osaka.
- WATSON, J.A.L. & F.A. O'FARRELL, 1991. Odonata (dragonflies and damselflies). In: CSIRO, [Ed.], *The insects of Australia*. 2nd edn, Melbourne Univ. Press, Melbourne.