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sierramadrensis spec. nov from the Northern Sierra
Madre Natural Park, Luzon, the Philippines
(Zygoptera: Platystictidae)**

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***DREPANOSTICTA HAMALAINENI* SPEC. NOV
AND *SULCOSTICTA SIERRAMADRENSIS* SPEC. NOV
FROM THE NORTHERN SIERRA MADRE NATURAL PARK,
LUZON, THE PHILIPPINES
(ZYGOPTERA: PLATYSTICTIDAE)**

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D. hamalaineni sp. n. (holotype ♂: Dipinantahikan area, Dipagsangan, Palanan, Isabela, Luzon Island, the Philippines, 12/20-IX-2008, to be deposited in RMNH, Leiden) and *S. sierramadrensis* sp. n. (holotype ♂, same locality, date and deposition) are diagnosed, described and illustrated.

INTRODUCTION

HÄMÄLÄINEN & MÜLLER (1997) presented a synopsis of what is known about the Odonata in the Philippines and listed 224 named taxa. Since then several papers have been published, increasing the recorded taxa in the country up to 270 species. (GAPUD, 2006; GAPUD & RECUENCO-ADORADA, 2001; GASSMANN & HÄMÄLÄINEN, 2002; HÄMÄLÄINEN, 2000; RAMOS & GAPUD, 2006; VAN TOL, 2005; VILLANUEVA, 2005a, 2005b, 2009a, 2009b, 2009c, 2010a, 2010b, 2010c; VILLANUEVA et al., 2009).

The Northern Sierra Madre Natural Park (NSMNP) situated in north-eastern Luzon is the largest protected region of the Philippines, with an area of 359,486 ha (DENR, 2001). The park represents the majority of habitats and species found on Luzon Island (VAN WEERD & UDO DE HAES, 2010). Agricultural encroachment, logging and the use of destructive hunting and fishing methods

form severe threats to the biodiversity of the Park.

From 12 to 24 September 2008, we conducted a biodiversity survey in *sitio* Dipagsangan, *barangay* Didian in the municipality of Palanan. We recorded 35 species, all except one endemic to the Philippines (VILLANUEVA et al., 2009). The present paper describes two new species found during the survey.

ILLUSTRATIONS AND DEPOSITION OF MATERIAL

Drawings were made with the aid of a stereomicroscope equipped with micro ocular camera. Acronyms for collections are as follows:

- RJTV: Reagan Joseph T. Villanueva
- RMNH: Nationaal Natuurhistorisch Museum Naturalis, Leiden, the Netherlands

DREPANOSTICAT HAMALAINENI SP. NOV.

Figures 1-4

Drepanosticta sp. n. (VILLANUEVA et al., 2009)

Material. – **Holotype** ♂: Dipinantahikan area, Dipagsangaan, Palanan, Isabela, Luzon Island, Philippines, 12/20-IX-2008, R.J.T. Villanueva leg. (to be deposited in RMNH); – **paratypes**: – 6♂, 2♀, same data (in RJTV); – **Other material**: – 11♂, same data (in RJTV).

Etymology. – Dedicated to Dr Matti Hämäläinen, for his constant support to the first author's odonatological study.

DIAGNOSIS. – This is the largest species in the *Drepanosticta halterata*-group and lacks the basal abdominal white ring/spot at least in segments 3-7. It differs from *D. halterata* by the presence of pale spot on the sides of the synthorax, and a shorter posterior lobe. It is distinct from *D. philippa* and *D. trimaculata* since both species have elongate posterior lobe. *D. sugbo* has a similarly short posterior lobe, but the two differ in its shape, the extent of the pale marking on synthorax and in the shape of the cerci and paraproct.

MALE. – **Head.** – Labium and mandible are brownish except for the blackish apices. Labrum, genae and anteclypeus are bluish white except for the black outer margin of labrum. The rest of the head is matt black. Transverse occipital carina is well developed but without distinct lateral extremities.

Thorax. – Prothorax black with streaks of dark brown except for a large white ovoid spot on each medial lobe. Anterior lobe short; its lateral portion broadly fan-shaped and erect. Posterior lobe collar-like with lateral portion broadly triangular, its tip shortly elongate directed caudo-laterad (Fig. 1). Synthorax matt black except for a small ovoid white spot at the distal portion of metepisternum and pale distal third of metepimeron. Legs generally brownish except for the blackish streaks at the lateral portion of coxae, knees and proximo-basal section of tibiae.

Wings hyaline with brown venation. Ac and Ab forming Y-shape. Arc is be-

yond Ax2; Pnx 20/18 in forewing and hind wing respectively; R4+5 at subnodus, while IR3 is a little distal to it. Pterostigma blackish, rhomboidal with costal and basal corners shorter than the opposite sides.

A b d o m e n . — S1 light brown, S2 brown, a little darker on apical and basal portion, S3-S7 black, laterally blackish brown, S8-S10 black. Cerci (Figs 2-3) black, brownish medial aspect, thrice longer than S10, the basal 1/5th directed acute dorsad viewed

laterally, the distal portion is wedge-shaped with a blunt tooth along the dorsal half, and slightly concave on its medial surface. Paraproct kinked at the middle with the distal portion directed outward, brown basal half and blackish distal portion, surpassing the tip of the cerci. The paraproct (Fig. 4) clasper-like, its tip rounded and equipped with a large medio-subterminal tubercle.

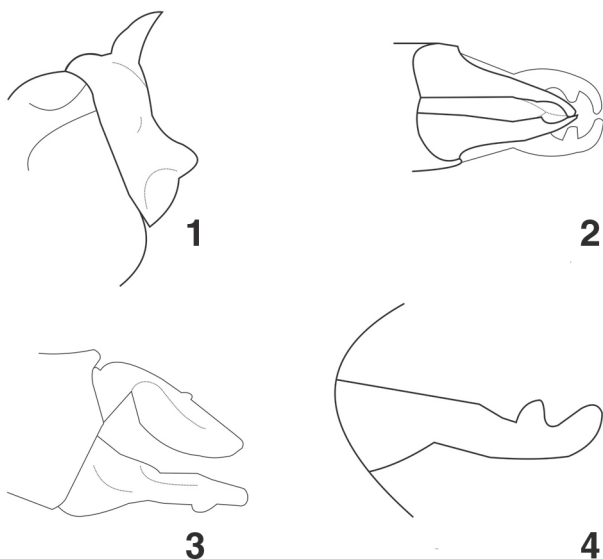
M e a s u r e m e n t s (in mm). — Abdomen + cerci: 50; hindwing: 32.

FEMALE (taken in copula with the holotype). — Similar to male except the lateral portion of posterior lobe is more elongated. Abdominal segments are relatively paler, and S9 is mainly pale/white. Ovipositor surpassing the cerci. Cerci simple, brown with similar length as S10.

M e a s u r e m e n t s (in mm). — Abdomen: 44; hindwing: 29.

VARIATIONS. — S9 has a large blue patch occupying most of the segment. In some wings the pterostigma is five-sided.

M e a s u r e m e n t s (in mm). — Abdomen + cerci: 43-50; hindwing: 29-32



Figs 1-4. *Drepanosticta hamalaineni* sp. n.: (1) posterior lobe of prothorax, oblique lateral view; — (2) cerci, dorsal view; — (3) cerci, lateral view; — (4) paraproct, left ventral view.

SULCOSTICTA SIERRAMADRENSIS SP. NOV.

Figures 5-8

Sulcosticta sp. n. (VILLANUEVA et al., 2009)

M a t e r i a l . — **H o l o t y p e** ♂: Dipinantahikan area, Dipagsangan, Palanan, Isabela, Luzon Island,

Philippines, 12/20-IX-2008, R.J.T. Villanueva leg. (to be deposited in RMNH); — **paratypes**: — 3♂, 1♀, same data.

E t y m o l o g y. — Refers to Sierra Madre, the largest remaining forest in the archipelago.

DIAGNOSIS. — The characteristic Y vein of *Drepanosticta* is present. It is similar to *S. pallida* van Tol, whose Y vein is not close at base, but rather widely separate. The new species differs from the former in the shape of prothorax, cerci and paraproct.

MALE (Holotype). — **H e a d.** — Labium and mandible are pale brown with a little darkening on the apices. Labrum, genae and anteclypeus are pale blue except for the brownish distal half of the labrum. The rest of the head is black except for the yellowish antennae. Transverse occipital carina well developed but its lateral extremities not pronounced.

T h o r a x. — Prothorax pale yellow except for the brownish lateral lobes, brownish patch on the center of median lobes, and a pair of large ovoid greenish patch on the middle portion of posterior lobe. Anterior lobe short, erect and its lateral portion rounded but not elongated. Posterior lobe collar-like, its lateral portion angulated and just surpassing the median line (Fig. 5). Synthorax generally pale grey except for the large greenish patch on the dorsum, occupying the medial half of mesepisternum, black streak on both anterior and posterior sides of the spiracle, thin black line along the second suture, and blackish streak at the posterior corner of metepimeron. Poststernum black except for the pale streak at both sides on the bulging portion.

Legs yellowish except for the brownish tinge on the bases of coxae, blackish tinge on the knees and insertion of the brown spines, and light brown broad band just distal to the middle of the femora. Tarsi brownish.

Wings hyaline with brown veins. 1 pcv situated between the wing base and Ax1. Arc off Ax2. Ac and Ab veins present, but widely separate. Postnodals 13/13 in forewing and hindwing, R4+5 starts just off subnodus; IR3 a little further distal to it. Pterostigma brown, rectangular.

A b d o m e n. — Generally pale yellow-brown except: for the brownish basal and ventro lateral portion of S1, S2 narrow brown basal ring, faint brown dorso-medial spot, and broad dark brown apical ring. S3-S6 thin brown basal ring that is broader dorsally, whitish tinge beside it along the lateral portion, and dark brown apical ring that is broader dorsally, S7 whitish basal half, and black apical portion, S8-S10 entirely black. S7 gradually inflate at the basal 1/5th achieving the maximum size at the middle of S8, about 4.5 times that is S3-S6; S10 nearly 3 times that of S3-S6. Cerci brown (Figs 6, 8), viewed laterally gently curved, a broad basal half, and a sub-cylindrical distal portion with a thin plate-like projection medially. Paraproct brownish and a little darker sub-terminally (Fig. 7), when viewed laterally a little surpassing the cerci, broad base and a pointed sub-terminal tubercle directed dorsad, viewed ventrally the tip is bifid, the inner branch rounded and

covered with fine pale hairs, the outer branch is larger and triangular, when viewed internally a sub-terminal short tubercle forming a ridge obliquely across over the bifurcation.

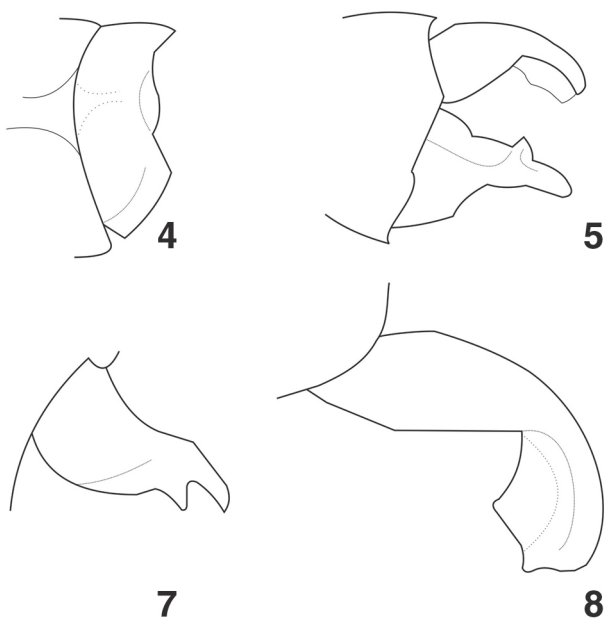
Measurement (in mm). — Holotype: abdomen + cerci: 29; hindwing: 19.

VARIATION. — No variation is noted on the two mature paratype males. The general male paratype is relatively paler in coloration, perhaps due to age.

Measurement (in mm). — Abdomen + cerci: 28-31; hindwing: 19-20.

FEMALE. — Similar to male except for black band on the labrum between the brown distal portion and blue basal portion, blackish streak at both sides of the center on the anteclypeus. S6 generally pale except for the black apical 1/5th. S8 has the whitish streak restricted on the basal 1/4th. S10 brownish. S6 gradually inflate starting on the basal 1/5th with the maximum size on the middle of S7, about 3 times the size of S3-S5. Narrow constriction is noted on the basal portion of S8, about 2.5 times the size of S3-S5. Cerci simple and a little longer than S10. Ovipositor not reaching the tip of cerci.

Measurement (in mm). — Abdomen: 30; hindwing: 21.



Figs 5-8. *Sulcosticta sierramadrensis* sp. n.: (5) posterior lobe of prothorax, lateral slightly oblique; — (6) cerci, lateral view; — (7) paraproct, right ventral view; — (8) cerci, left infero-ventral view.

DISCUSSION

Platystictidae is one of the most speciose families in the archipelago, and at least one species is encountered in any running water habitat. Presently, the country has 30 species in three genera of which *Drepanosticta* constitutes the largest group (VAN TOL, 2005).

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