

Odonata from Batanta (Indonesia, West Papua) with description of two new species

TIBOR KOVÁCS, GÜNTHER THEISCHINGER & TIBOR DANYIK

Dedicated to the memory of Lajos Bíró (1856–1931)

ABSTRACT: Thirty-three taxa of Odonata are reported from Batanta Island (including Arefi and Birie Islands). Two new species are described: *Nososticta dora* sp. n., *Rhyothemis rita* sp. n. The following five species are new to the Raja Ampat Islands: *Palaiargia charmosyna* Lieftinck, 1932, *Argiocnemis rubescens* Selys, 1877, *Teinobasis superba* (Hagen in Selys, 1877), *Diplacina* cf. *ismene* Lieftinck, 1933, *Nannophya* cf. *pygmaea* Rambur, 1842, and eight are new to Batanta: *Argiolestes australis* (Guérin, 1830), *Idiocnemis strumidens* Lieftinck, 1958, *P. charmosyna*, *A. rubescens*, *T. superba*, *D.* cf. *ismene*, *N.* cf. *pygmaea*, *Rhyothemis resplendens* Selys, 1878. *Nososticta* cf. *finisterrae* is deleted from the faunal lists of Odonata of Raja Ampat and Batanta Island. The number of species known to occur on Batanta Island is 47.

Introduction

Information on regular research on Odonata of Batanta Island has been published in two papers (KOVÁCS et al. 2015a, b). The present paper reports the results of the collecting performed in 2016.

Material and methods

The material was collected during one trip (09.02.–22.02.2016) in 20 sites. For collecting methods of larvae, exuviae and adults see KOVÁCS et al. (2015b). All material is preserved in 70% ethanol and deposited in the Mátra Museum of the Hungarian Natural History Museum, Gyöngyös. Data of observed but not captured individuals of three easily recognisable species are also presented. The larvae and the exuviae are still unidentified, except for two species.

Abbreviations: HR = Róbert Horváth, JP = Péter Juhász, KT = Tibor Kovács, SK = Kristian Saujaj; PPER = Papua Paradise Eco Resort; MM = Mátra Museum of the Hungarian Natural History Museum (Gyöngyös).

Results

ZYGOPTERA

PLATYSTICTIDAE Kennedy, 1920

Drepanosticta auriculata (Selys, 1878) – KOVÁCS et al. 2015b. – Batanta Island, right side stream of Forum River, 00°52'22.7", 130°27'45.1", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10.b). – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 3 male, KT-HR-JP (MM: 2016-3.b).

Drepanosticta batanta Kovács & Theischinger, 2015 – KOVÁCS et al. 2015b. – Batanta Island, right side stream of Forum River, 00°52'22.7", 130°27'45.1", 19.02.2016, 1 male, 1 female, KT-HR-JP (MM: 2016-10.b). – Batanta Island,

right side stream of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 1 female, KT-HR-JP-SK-Roni (MM: 21016-4.a). – Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-4). – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, 1 female, KT-HR-JP-SK-Roni (MM: 2016-5). – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 1 male, KT-HR-JP (MM: 2016-1). – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 1 male, 1 female, KT-HR-JP (MM: 2016-3.b). – Batanta Island, Welebed, valley of Kalijakut River, between 00°54'20.59", 130°38'31.70" and 00°53'12.88", 130°38'16.40", 23.01.2014, 1 female, KT-HR-JP (MM: 2014-17).

CALOPTERYGIDAE Selys, 1850

Neurobasis australis Selys, 1897 – KOVÁCS et al. 2015b.

CHLOROCYPHIDAE Cowley, 1937

Rhinocypha tincta cf. *sagitta* Liefstinck, 1938 – KOVÁCS et al. 2015b. – Batanta Island, spring of Warai stream, 00°51'27.2", 130°35'23.3", 10.02.2016, 1 male, 1 female, KT-HR-JP (MM: 2016-3.a). – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, 1 male, 1 female, KT-HR-JP (MM: 2016-10). – Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 1 exuvium, KT-HR-JP-SK-Roni (MM: 2016-4). – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-5). – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 1 male, KT-HR-JP (MM: 2016-1).

ARGIOLESTIDAE Fraser, 1957

Argiolestes australis (Guérin, 1830) – Batanta Island, right side stream of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 21016-4.a).

Metagrion postnodale (Selys, 1878) – KOVÁCS et al. 2015b. – Batanta Island, right side stream of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 21016-4.a). – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10). – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, 2 male, KT-HR-JP-SK-Roni (MM: 2016-5). – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 1 male, KT-HR-JP (MM: 2016-1). – Batanta Island, valley of Warai stream, between 00°50'51.0", 130°35'14.0" and 00°51'11.6", 130°35'20.0", 09.02.2016, 1 male, KT-HR-JP (MM: 2016-2.a). – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 2 males, KT-HR-JP (MM: 2016-3.b).

ISOSTICTIDAE Fraser, 1955

Selysioneura cf. *cervicornu* Förster, 1900 – KOVÁCS et al. 2015b.

PLATYCNEMIDIDAE Yacobson & Bianchi, 1905

Disparoneurinae Fraser, 1957

Nososticta aurantiaca (Liefstinck, 1938) – KOVÁCS et al. 2015b, THEISCHINGER & RICHARDS 2015. – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 4 males, KT-HR-JP-SK-Roni (MM: 2016-7.a). – Batanta Island, right side stream of Kaliselatan River, 00°53'27.29", 130°35'46.71", 14.02.2016, 1 male,

KT-HR-JP-SK-Roni (MM: 2016-5.a). – Batanta Island, spring of Warai stream, 00°51'27.2", 130°35'23.3", 10.02.2016, 1 male, KT-HR-JP (MM: 2016-3.a). – Batanta Island, valley of Forum River, 00°52'26.5", 130°27'45.4", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10). – Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 1 exuvium and 1 emerged female, 2 males, 2 females, KT-HR-JP-SK-Roni (MM: 2016-4). – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, 2 males, 1 female, KT-HR-JP-SK-Roni (MM: 2016-5). – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 1 male, 1 female, KT-HR-JP (MM: 2016-1).

***Nososticta dora* sp. n. Kovács et Theischinger (Figs 1–10)**

Nososticta cf. *finisterrae* (Förster, 1897). KOVÁCS et al. 2015b: 21.

Type material – Holotype. **Indonesia**, Batanta Island, right side stream of Forum River, 00°52'22.7", 130°27'45.1", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10.b). Paratypes (all in KOVÁCS et al. 2015b). Batanta Island, right side stream of Forum River, 00°52'09.6", 130°27'42.3", 13.02.2015, 1 male, KT-HR-JP (MM: 2015-14). – Batanta Island, valley of Warmon stream, between the lower and upper waterfall (00°50'04.50", 130°42'54.01" and 00°50'23.25", 130°42'35.18"), 21.01.2014, 2 males, 2 females, KT-HR-JP (MM: 2014-12). – Batanta Island, valley of Weras stream, 00°49'51.2", 130°38'00.0", 08.02.2015, 1 male, 1 female, KT-JP (MM: 2015-9).

Diagnosis – Male: medium-sized *Nososticta* species (Fig. 1). Largely black, frons with one, pleura with two light blue bands. Abdomen with orange pattern on dorsal face of segments 8–10 and anal appendages orange (Fig. 3).

Description – Male.

Head (Fig. 2). Largely black; only basal half of labium and maxilla light brown and a broad transverse light blue frontal bar from eye to eye.

Prothorax. Pronotum black. Posterior margin of posterior lobe slightly concave in middle, rounded at sides. Coxa and trochanter dark brown, rest of leg black.

Synthorax (Figs 1–2). Pleura black with two light blue patches: one light blue patch across approximately dorsal four-fifth of metepisternum and one light blue patch across most of posterodorsal two-thirds of metepimeron. Poststernum largely dark brown. Coxae and trochanters dark brown, rest of legs black. Wing venation black, membrane hyaline or hyaline with slight yellowish lustre; 16–18 postnodals in Fw, 15–17 in Hw; pterostigma dark brown.

Abdomen. Largely black, segments 8–10 with orange dorsal pattern (Fig. 3). Anal appendages (Figs 5–7) orange, superiors triangular in dorsal view, slightly longer than wide, with rounded apex; inner part with large black-tipped tooth directed downwards, visible in lateral view.

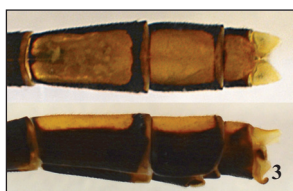
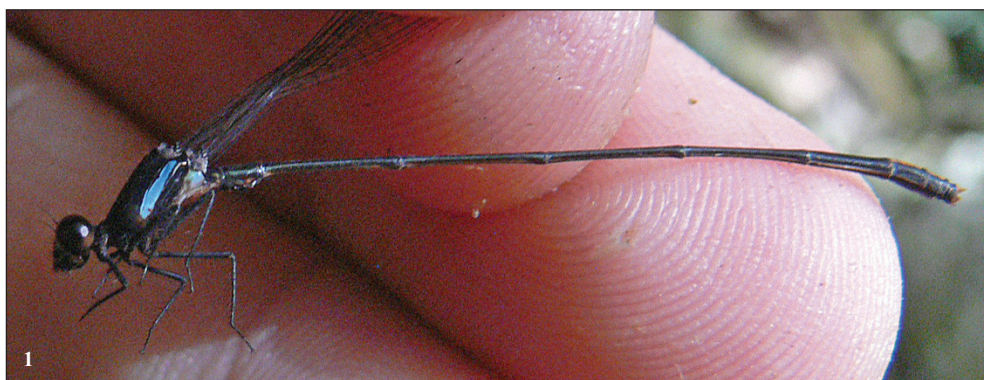
Measurements. Hind wing 20.2–22.3 mm, abdomen (including appendages) 33.4–36.2 mm.

Female.

Head. Similar to that of male.

Prothorax. Pronotum dorsally black, sides dark brown. Anterior rim of anterior lobe with rhomboid notch in middle (Fig. 8). Posterior margin of posterior lobe with four protrusions in caudal view (Fig. 9), these overlap so that only two seem visible in lateral view (Fig. 10). Coxa and trochanter dark brown, rest of leg black.

Synthorax. Pleura similar to that of male, but two light patches of metepisternum and metepimeron larger in extent, and with a third light blue patch in antero-lateral portion and half as long and one-third as wide as mesanepisternum. Poststernum largely light brown. Coxae and trochanters dark brown, rest of legs black. Wing venation black, membrane hyaline; 16–18 postnodals in Fw, 14–16 in Hw; pterostigma brown.



Figs 1–4. *Nososticta dora* sp. n., holotype male: 1 = lateral view; 2 = head and thorax, fronto-dorsal view; 3 = end of abdomen, dorsal view (above) and lateral view (below); 4 = habitat in locus typicus

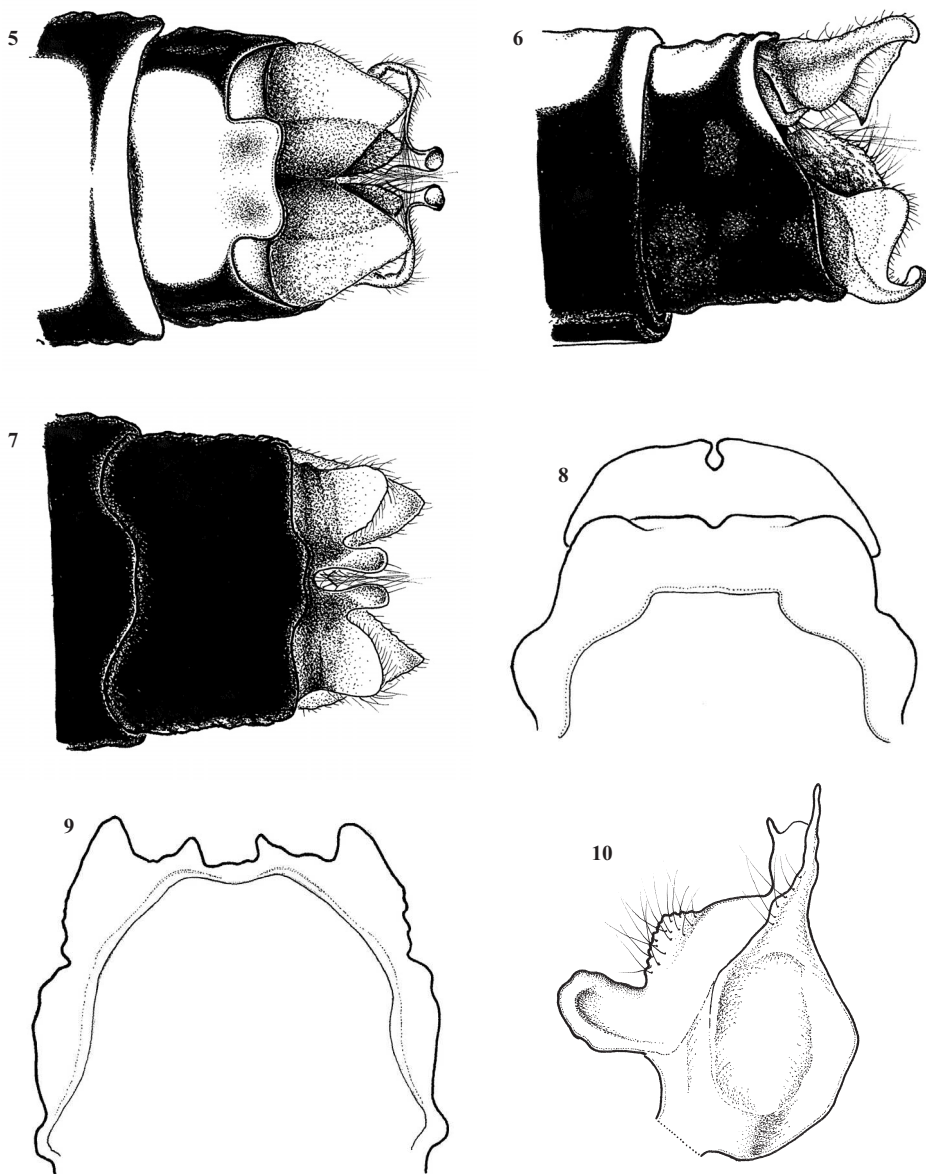
Abdomen. Largely black, first two segments with brown lateral patch, anal appendages orange. Valves largely black, approximately as long as S8–10, and with about 15 teeth along ventral edge.

Measurements. Hind wing 19.4–22.3 mm, abdomen 28.7–32.8 mm.

Larva unknown.

Etymology – The species is dedicated to Dóra Kovács, the beloved older daughter of the senior author.

Habitat – The holotype was collected in tropical rainforest, at 130 m above sea level, along the lower stretches of a small tributary of Forum River. The 1–1.5 m wide, stone-bedded stream was mostly shaded (Fig. 4). It was found there together with *Drepanosticta auriculata*, *D. batanta* and *Idiocnemis strumidens*. The upper stretches of the river (410 m in straight line from the locality of the new species) is the type locality of *Palaiargia susannae*, where *Metagrion postnodale*, *Nososticta aurantiaca* were also present, and one of the upper side springs (365 m



Figs 5–10. *Nososticta dora* sp. n., holotype male (5–7), paratype female (8–10): 5 = anal appendages, dorsal view; 6 = anal appendages, lateral view; 7 = anal appendages, ventral view; 8 = anterior lobe of prothorax, dorsal view; 9 = posterior lobe of prothorax, caudal view; 10 = prothorax, lateral view

in a straight line) is the type locality of *D. batanta*. Paratypes were collected along with the following species in the valley of Warmon stream: *Selysioneura* cf. *cervicornu*, *N. aurantiaca*; and in the valley of Weras stream: *D. batanta*, *Rhinocypha tincta sagitta*, *M. postnodale*, *I. inornata*, *Macromia melpomene*.

Comparison with other species. Because the front of the male synthorax is completely black, without any pale ante-humeral marking, *Nososticta dora* sp. n. belongs to the Group A of THEISCHINGER & RICHARDS (2015). Based on the blue band of the head and the orange pattern of abdominal segments 8–10 it is closest to *N. smilodon* Theischinger & Richards, 2006. The two blue patches of *N. dora* do not extend to the whole length of metepisternum and metepimeron (Fig. 1), whereas those of *N. smilodon* do (THEISCHINGER & RICHARDS 2015: 190, Fig. 3) The superior anal appendages of *N. dora* are only slightly longer than wide (Fig. 5) whereas those of *N. smilodon* are twice as long as wide (THEISCHINGER & RICHARDS 2015: 190, Fig. 3).

Idiocnemidinae Dijkstra, Kalkman, Dow, Stokvis & van Tol, 2014

Idiocnemis bidentata Selys, 1878 – GASSMANN 2000, KOVÁCS et al. 2015b. – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 2 males, KT-HR-JP (MM: 2016-1). – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 2 males, 1 female, KT-HR-JP (MM: 2016-3.b). – Batanta Island, Welebed, valley of Kalijakut River, between 00°54'20.59", 130°38'31.70" and 00°53'12.88", 130°38'16.40", 23.01.2014, 1 female, KT-HR-JP (MM: 2014-17).
Idiocnemis inornata Selys, 1878 – KOVÁCS et al. 2015b. – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 1 male, KT-HR-JP (MM: 2016-3.b).
Idiocnemis strumidens Lieftinck, 1958 – Batanta Island, right side stream of Forum River, 00°52'22.7", 130°27'45.1", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10.b). – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 2 males, KT-HR-JP (MM: 2016-3.b).
Palaiargia charmosyna Lieftinck, 1932 – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-5).
Palaiargia susannae Kovács & Theischinger, 2015 – KOVÁCS et al. 2015b.

COENAGRIONIDAE Kirby, 1890

Agriocnemis femina (Brauer, 1869) – KOVÁCS et al. 2015b. – Batanta Island, mouth of Forum River, stagnant waters, 00°52'49.5", 130°27'24.0", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10.a). – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 2 males, 1 female, KT-HR-JP-SK-Roni (MM: 2016-7.a). – Batanta Island, valley of Ron River, stagnant waters, 00°49'55.8", 130°49'26.6", 22.02.2016, 1 male, KT-HR-JP (MM: 2016-11).
Argiocnemis rubescens Selys, 1877 – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-7.a).
Ceriagrion aeruginosum Brauer, 1869 – KOVÁCS et al. 2015b.
Ischnura senegalensis (Rambur, 1842) – KOVÁCS et al. 2015b.
Pseudagrion civicum Lieftinck, 1932 – KOVÁCS et al. 2015b. – Batanta Island, mouth of Kaliselatan River, stagnant waters, 00°54'45.3", 130°35'54.2", 15.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-6).
Pseudagrion starreanum Lieftinck, 1949 – KOVÁCS et al. 2015b. – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 male, 1 female, KT-HR-JP-SK-Roni (MM: 2016-7.a). – Batanta Island, mouth of Kaliselatan River, stagnant waters, 00°54'45.3", 130°35'54.2", 15.02.2016, 3 male, KT-HR-JP-SK-Roni (MM: 2016-6).
Teinobasis ruffithorax (Selys, 1877) – KOVÁCS et al. 2015b. – Batanta Island, mouth of Pankarai River, stagnant waters, 00°53'58.6", 130°31'27.9", 15.02.2016, 3 male, KT-HR-JP-SK-Roni (MM: 2016-6.a). – Birie Island, PPER, marsh, 00°46'14", 130°44'51", 18.02.2016, 1 male, observed, KT.
Teinobasis superba (Hagen in Selys, 1877) – Batanta Island, valley of Kalijakut River, 00°52'49.1", 130°38'04.9", 13.02.2016, 2 male, KT-HR-JP-SK-Roni (MM: 2016-4). – Batanta Island, valley of Kaliselatan River, 00°53'42.0", 130°35'49.1", 14.02.2016, 3 male, 2 female, KT-HR-JP-SK-Roni (MM: 2016-5).
Xiphiagrion cyanomelas Selys, 1876 – KOVÁCS et al. 2015b.

ANISOPTERA

AESHNIDAE Leach, 1815

Gynacantha mocsaryi Förster, 1898 – Kovács et al. 2015b. – Birie Island, PPER, moor, 00°46'21", 130°44'43", 18.02.2016, 1 male, observed, KT.

MACROMIIDAE Needham, 1903

Macromia euphrosyne Lieftinck, 1952 – Kovács et al. 2015b.

LIBELLULIDAE Leach, 1815

Agrionoptera insignis (Rambur, 1842) – Kovács et al. 2015b.

Agrionoptera longitudinalis Selys, 1878 – Kovács et al. 2015b. – Arefi Island, Arefi, Mandur, east, water hole, 00°47'39.7", 130°42'28.4", 17.02.2016, 1 male, KT (MM: 2016-8.b).

Brachydiplax duivenbodei (Brauer, 1866) – Kovács et al. 2015b. – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Camacinia gigantea (Brauer, 1867) – Kovács et al. 2015b.

Diplacina cf. *ismene* Lieftinck, 1933 – Batanta Island, valley of Warai stream, between 00°50'51.0", 130°35'14.0" and 00°51'11.6", 130°35'20.0", 09.02.2016, 1 male, KT-HR-JP (MM: 2016-2.a).

Diplacina olahi Theischinger et Kovács, 2015 – Kovács et al. 2015b. – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 2 males, KT-HR-JP (MM: 2016-1).

Diplacodes trivialis (Rambur, 1842) – Kovács et al. 2015b. – Arefi Island, Arefi, Mandur, 00°47'17.7", 130°42'20.0", 17.02.2016, 1 female, KT (MM: 2016-8). – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Huonia epinephela Förster, 1903 – Kovács et al. 2015b. – Batanta Island, valley of Warai stream, between 00°51'27.2", 130°35'23.3" and 00°51'11.6", 130°35'20.0", 11.02.2016, 2 females, KT-HR-JP (MM: 2016-3.b).

Huonia thais Lieftinck, 1953 – Kovács et al. 2015b.

Hydrobasileus vittatus Kirby, 1889 – Kovács et al. 2015b.

Nannophlebia amnosia Lieftinck, 1955 – Kovács et al. 2015b. – Batanta Island, valley of Warai stream, between 00°50'25.19", 130°34'59.19" and 00°50'51.0", 130°35'14.0", 09.02.2016, 2 females, KT-HR-JP (MM: 2016-1).

Nannophya cf. *pygmaea* Rambur, 1842 – Batanta Island, mouth of Forum River, stagnant waters, 00°52'49.5", 130°27'24.0", 19.02.2016, 1 male, KT-HR-JP (MM: 2016-10.a). – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 2 males, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Neurothemis ramburii (Brauer, 1866) – Kovács et al. 2015b. – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Neurothemis stigmatizans (Fabricius, 1775) – Kovács et al. 2015b. – Batanta Island, valley of Ron River, stagnant waters, 00°49'55.8", 130°49'26.6", 22.02.2016, 3 males, 1 female, KT-HR-JP (MM: 2016-11). – Birie Island, PPER, marsh, 00°46'14", 130°44'51", 18.02.2016, 1 male, observed, KT.

Orthetrum serapia Watson, 1984 – Kovács et al. 2015b.

Orthetrum villosovittatum (Brauer, 1868) – Kovács et al. 2015b.

Protorthemis coronata (Brauer, 1866) – Kovács et al. 2015b.

Raphismia bispina (Hagen, 1867) – Kovács et al. 2015b. – Batanta Island, mouth of Kaliselatan River, stagnant waters, 00°54'45.3", 130°35'54.2", 15.02.2016, 1 female, KT-HR-JP-SK-Roni (MM: 2016-6).

Rhyothemis rita sp. n. Kovács et Theischinger (Figs 11–12)

Holotype. **Indonesia**, Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 female, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Diagnosis – Female: very small *Rhyothemis* species, body length 21.5 mm. Reddish brown, wings with extensive shining reddish brown pattern (Fig. 11).

Description – Female.

Head. Labium ivory white to light brown, on each side at base of lateral lobes with dark spot; these spots half as large as ivory white median lobe. Mandibles light brown with dark brown apex; whole labrum black, whole anteclypeus light brown, postclypeus reddish brown, frons reddish brown, with upper third brilliant metallic green, with three downward directing spot in middle and at eyes extending to half of frons. Vertex brilliant metallic green, occiput black. Antennae dark brown.

Prothorax. Pronotum reddish brown, other prothoracic and cervical sclerites brownish. Coxa and trochanter reddish brown, rest of legs black.

Synthorax. Pleura largely lighter reddish brown, mesanepisternum reddish brown. Post-sternum lighter reddish brown. Coxa and trochanter reddish brown, rest of legs dark brown to black. Wings with venation black, membranule light brown, membrane hyaline, with shining reddish brown pattern from the wing base to 6th postnodal on Fw and to pterostigma on Hw (Fig. 10); 10.9.8.10 nodals in Fw (only costal section of distal antenodal present); 11.5.6.11 in Hw; pterostigma 1.6–1.8 mm, reddish brown with smaller paler spot. In Fw the discoidal cell is divided by 1/2 cross-veins, the discoidal field starts with 4–5 rows of cells and ends with 4 marginal cells, and the subtriangle is 4-celled; in Hw the discoidal cell is not crossed; the discoidal field starts with 3 cells, then 2 and more cell rows, and ends with 9–11 marginal cells. Hypertriangle of Fw free or crossed by 1 cross-vein, hypertriangle of Hw free.

Abdomen. Segments 1–10 and anal appendages reddish to dark brown.

Measurements. Hind wing 20.0 mm, abdomen 13.6 mm.

Male and larva unknown.

Etymology – The species is dedicated to Rita Kovács, the beloved younger daughter of the senior author.

Habitat – The holotype was collected in tropical rainforest, a few hundred metres from the beach, at 10 m above sea level, at one of the ponds that remained in the dried-up bed of the Kalisamsem River. The water body, with sandy-gravelly bottom, was 10 m long, 1 to 2 m wide and 0.6 m deep at the deepest point, here and there with semiaquatic vegetation (Fig. 12). The new species was found there together with *Agriocnemis femina*, *Agriocnemis rubescens*, *Pseudagrion starreanum*, *Brachydiplax duivenbodei*, *Diplacodes trivialis*, *Nannophya* cf. *pygmaea*, *Neurothemis ramburii*, *Rhyothemis phyllis*, *R. resplendens*.

Comparison with other species. *Rhyothemis rita* is unlike any species known from New Guinea (see ORR & KALKMAN 2015: 80, plate 38; 81, plate 39); it appears most similar to the African *R. notata* (Fabricius, 1781) (RIS 1913: Taf. 7, female (Sierra Leone)). Significant differences in the wing pattern are: Hw with several rather indistinct and ill-defined subhyaline patches in the extensive brown area of *R. notata* vs Hw with two distinct and rather well-defined hyaline patches, one approximately circular, the other approximately elliptical, in *R. rita*. Hw hind margin hyaline or subhyaline from R4 in *R. notata*, shining reddish brown in *R. rita*; anal field of Hw with 3–4 oblique, rather indistinct and ill-defined, subhyaline patches in *R. notata*, without such patches in *R. rita*. Based on KARSCH'S (1890) redescription some measurements of female *R. notata* and female *R. rita* are compared as follows: length 25 mm vs 21.5 mm; abdomen 16 mm vs 13.6 mm; Hw 25 mm vs 20.0 mm; width of Hw at level of arculus 11 mm vs 9.5 mm; at level of nodus 9 mm vs 8.6 mm; Pt 2.5–2.8 mm vs 1.6–1.8 mm. Differences in wing venation: *R. notata* 8.5–9.5 antenodals and 7–9 postnodals in Fw, 5–6 antenodals and 8–10 postnodals in Hw; *R. rita* 7.5–8.5 antenodals and 10 postnodals in Fw, 6 antenodals and 11 postnodals in Hw.



Fig. 11. *Rhyothemis rita* sp. n., holotype female



Fig. 12. *Rhyothemis rita* sp. n., habitat at locus typicus

Rhyothemis phyllis (Sulzer, 1776) – KOVÁCS et al. 2015b. – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 1 male, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Rhyothemis resplendens Selys, 1878 – Batanta Island, mouth of Kalisamsem River, stagnant waters, 00°54'17.69", 130°33'08.14", 15.02.2016, 2 males, KT-HR-JP-SK-Roni (MM: 2016-7.a).

Tramea eurybia Selys, 1878 – KOVÁCS et al. 2015b.

Discussion

Thirty-three species are recorded from Batanta Island (including Arefi and Birie Islands). The following two new species are described: *Nososticta dora* sp. n. and *Rhyothemis rita* sp. n. Further five species are proved to be new to the fauna of the Raja Ampat Islands: *Palaiargia charmosyna*, *Argiocnemis rubescens*, *Teinobasis superba*, *Diplacina* cf. *ismene*, *Nannophya* cf. *pygmaea*, and eight are new to Batanta: *Argiolestes australis*, *Idiocnemis strumidens*, *P. charmosyna*, *A. rubescens*, *T. superba*, *D.* cf. *ismene*, *N.* cf. *pygmaea*, *Rhyothemis resplendens* (KALKMAN & ORR 2013, ORR & KALKMAN 2015, V. Kalkman pers. comm.). *Nososticta* cf. *finisterrae* is deleted from the faunal lists of Odonata of Raja Ampat and Batanta Island. The number of species known to occur on Batanta Island is 47.

Most of the newly recorded species, i.e. *Argiolestes australis*, *Nososticta dora*, *Idiocnemis strumidens*, *Palaiargia charmosyna*, and *Diplacina* cf. *ismene* were found along small streams in rainforest. *Teinobasis superba* was collected at small (1–2 square meters) standing waters, also in rainforest. Compared to the similar periods of the previous years the early months of 2016 had much less precipitation. Several river valleys in the coastal plains dried up, leaving behind smaller or larger standing water bodies where the following species were collected (all but the first are good flyers): *Argiocnemis rubescens*, *Nannophya* cf. *pygmaea*, *Rhyothemis resplendens*, and *R. rita*. Lake Mandur at Arefi, which in 2015 was the most species-rich water body (with 11 species), was completely dry in 2016.

Acknowledgements: Our sincere thanks are due to Albert G. ORR (Griffith School of the Environment, Griffith University, Nathan) and Vincent J. KALKMAN (Naturalis Biodiversity Center, Leiden) for their manifold help and information; to Dirk GASSMANN (Naturalis Biodiversity Center, Leiden; Zoologisches Forschungsmuseum Alexander Koenig, Bonn) for confirming identification of *Idiocnemis strumidens*; to György CSÓKA (NARIC Forest Research Institute, Department of Forest Protection, Mátrafüred) for the possibility of taking microphotos; to Ottó MERKL (Hungarian Natural History Museum, Budapest) for English translation.

Most of the financial support came from János OLÁH (Sakertour, Debrecen) who covered all costs of the first author's trip, and from Róbert HORVÁTH (Ostoros), who provided free accommodation and catering for the first author in Batanta Island. He and the Papua Paradise Eco Resort provided the base camp and helped organise the field trips. Róbert HORVÁTH and Péter JUHÁSZ (Hortobágy National Park Directorate, Debrecen) helped a lot during the field work. We are beholden to Kristian SAUJAJ (formerly Kris) and Roni (both from Welebed), our local helpers.

References

- GASSMANN, D. (2000): Revision of the Papuan *Idiocnemis* bidentata-group (Odonata: Platycnemididae). – Zoologische Mededelingen, Leiden, 74(23): 375–402.
- KALKMAN, V. J. & ORR, A. G. (2013): Field Guide to the Damselflies of New Guinea. – Brachytron 16 Supplement: 3–119.
- KOVÁCS, T., HORVÁTH, R. & JUHÁSZ, P. (2015a): Szitakötők és tegzesek (Insecta: Odonata, Trichoptera) kutatása Batanta szigeten (Indonézia, Nyugat-Pápua). Study of dragonflies and caddisflies (Insecta: Odonata, Trichoptera) on Batanta Island (Indonesia, West Papua). – Annales Musei historico-naturalis hungarici, 107: 269–288.

- KOVÁCS, T., THEISCHINGER, G., JUHÁSZ, P. & DANYIK, T. (2015b): Odonata from Batanta (Indonesia, West Papua) with description three new species. – *Folia historico-naturalia Musei Matraensis*, 39: 17–29.
- KARSCH, F. (1890): Beiträge zur Kenntniss der Arten und Gattungen der Libellulinen. – *Berliner Entomologische Zeitschrift*, 33(1889): 347–392.
- ORR, A. G. & KALKMAN, V. J. (2015): Field Guide to the Dragonflies of New Guinea. – *Brachytron* 17 Supplement: 3–155.
- RIS, F. (1913): Libellulinen 7. Fasc. XV in Collections Zoologiques du Baron Edm. de Selys Longchamps. – Brussels: Institut royal des Sciences naturelles de Belgique, 15: 837–964.
- THEISCHINGER, G. & RICHARDS, S. J. (2015): The genus *Nososticta* Hagen (Odonata: Platycnemididae) from the Papuan region with descriptions of ten new species group taxa. – *Odonatologica*, 44(1/2): 153–224.
- THEISCHINGER, G. & RICHARDS, S. J. (2016): Six new species of *Nososticta* Hagen, 1860 from Papua New Guinea (Odonata: Platycnemididae). – *Odonatologica*, 45(3/4): 291–316.

Tibor KOVÁCS
Mátra Museum of Hungarian Natural History Museum
Kossuth Lajos u. 40.
H-3200 GYÖNGYÖS, Hungary
E-mail: koati@t-online.hu

Günther THEISCHINGER
2A Hammersley Rd
2232 GRAYS POINT NSW, Australia
E-mail: gunther.theischinger@environment.nsw.gov.au

Tibor DANYIK
Hortobágy National Park Directorate
Sumen u. 2.
H-4024 DEBRECEN, Hungary
E-mail: danyiktibor@gmail.com

