

A new species of *Nososticta* Hagen, 1860, from Batanta Island, West Papua, Indonesia (Odonata: Platycnemididae)

Tibor Kovács¹ & Günther Theischinger²

¹ Mátra Museum of the Hungarian Natural History Museum,
Kossuth Lajos utca 40, H-3200 Gyöngyös, Hungary; koati1965@gmail.com

² 2A Hammersley Rd, 2232 Grays Point NSW, Australia;
theischingergunther@gmail.com

ORCID:

TK:  <https://orcid.org/0000-0003-4577-0394>

GT:  <https://orcid.org/0000-0002-5207-2626>

Received 19th September 2023; revised and accepted 5th October 2023

Abstract. A new species of damselfly, *Nososticta peti* sp. nov., is described from Batanta Island, Indonesia. It belongs to a group of *Nososticta* in which the male synthorax exhibits discrete patches of blue, and the tip of the abdomen is blue. The new species differs from some of its congeners exhibiting these characters by lacking light postocular spots and lacking a transverse blue frontal bar from eye to eye. *Nososticta peti* sp. nov. represents the 90th species of the genus and is currently known only from a single location on Batanta Island: Waibin River system. The distributions of *Nososticta peti* sp. nov. and the other species discussed herein are illustrated. Among the dragonflies collected with the new species, *Diplacina cyrene* Lieftinck, 1953, is new to the fauna of the Batanta Island.

Further key words. Damselfly, Zygoptera, taxonomy, New Guinea

Introduction

With 85 recognised species, the platycnemidid genus *Nososticta* Hagen, 1860, was considered to be the most speciose zygopteran genus in the Australo-Papuan region (THEISCHINGER *et al.* 2022). Four more species were recently added by THEISCHINGER *et al.* (2023). Much of this diversity occurs on the large, tropical island of New Guinea and to facilitate species identification THEISCHINGER & RICHARDS (2015) divided the fauna into four ‘Groups’ based on easily detectable colour characteristics. It has not yet been established whether these groups represent monophyletic clades.

Batanta is a small island (453 km²) in the Raja Ampat archipelago, West Papua, Indonesia, situated west of the Bird's Head Peninsula of New Guinea. The first dragonfly species known from Batanta Island was *Idiocnemis bidentata* Selys, 1878 (GASSMANN 2000). The next species recorded was *Nososticta aurantiaca* (Lieftinck, 1938) (THEISCHINGER & RICHARDS 2015), and both, along with another 36 species, were published as a result of the first comprehensive odonatological research (KOVÁCS *et al.* 2015). Currently, 62 Odonata species are known from Batanta (KOVÁCS *et al.* 2021). Among six newly described species included in this list was another *Nososticta*, *N. dora* Kovács & Theischinger, 2016. In an earlier sample collected by our colleagues in 2019, which reached the authors only this year, there is a third species of *Nososticta*, which also proved to be new to science. It is described below.

Material and methods

The specimen was hand-netted and preserved in 70% ethanol. Descriptive terminology largely follows WATSON & O'FARRELL (1991). All illustrations were done with the aid of a camera lucida and are not to scale. Coordinates are presented using World Geodetic System (WGS84). The holotype is deposited in the Mátra Museum of the Hungarian Natural History Museum, Gyöngyös.

Abbreviations

MM – Mátra Museum of the Hungarian Natural History Museum; S – abdominal segment(s).

Nososticta peti sp. nov.

(Figs 1a, b, 2a, b, 3a, b)

Material studied

Holotype ♂. Indonesia, West Papua, Batanta Island, valley of Waibin River, right side of river, between 00°49'20.8" S, 130°45'56.9" E and 00°50'12.8" S, 130°45'41.1" E, ca 22–145 m a.s.l., 09.vii.2019, 1♂, leg. Péter Juhász (MM: ODOTYP-16, A2019-3).

Etymology

The new species is dedicated to Péter (nicknamed: Peti) Juhász, who collected the type specimen and has an active role in researching the Odonata fauna of Batanta. Used as a noun in apposition.

Male (holotype)

Head – Largely black; only the lower third of the labium is light grey.

Thorax – Prothorax black. Synthorax (Figs 1a, b) largely black marked as follows: ante-humeral patches bright blue, approximately $\frac{2}{5}$ as long as mesanepisternum and approximately twice as wide as the black median, dorsal area between the pair and more than $\frac{3}{4}$ as wide as mesanepisternum; ante-humeral patch connected to blue subtriangular mesepimeral patch that is only slightly longer than $\frac{1}{2}$ of the blue metepisternal stripe; this stripe widely separated from an additional blue subtriangular metepimeral patch extending across approximately dorsal half of pleuron. Postcoxae blackish brown. Poststernum pale to darker brown, merging into an ill-defined blackish-brown anterior and more basal patch. Legs largely black, partly blackish brown.

Wings – Membrane hyaline, venation black; pterostigma black, 2.7 times as long as wide; postnodals 16–16/14–15; a transverse cross-vein descending from distal margin of discoidal cell to wing margin.

Abdomen – S1 black, dorsally and laterally with bright blue continuous spot on apical part; S2 black; S3–8 black with bright blue mid-dorsal spot very

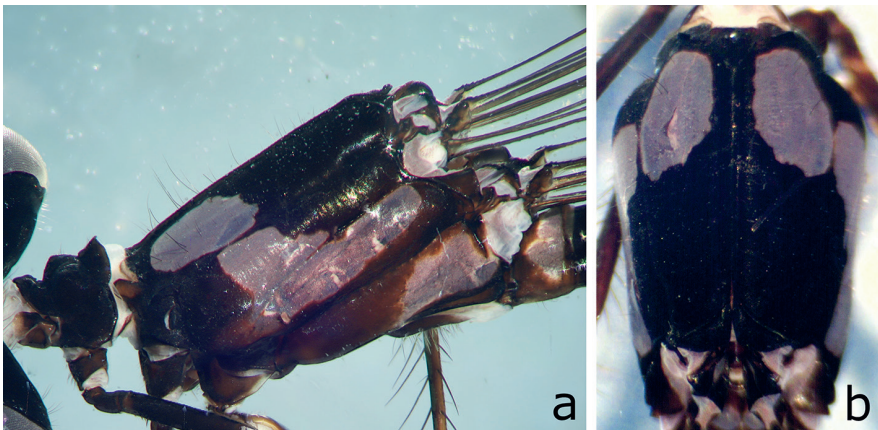


Figure 1. Holotype male of *Nososticta peti* sp. nov. synthorax, a – lateral view, b – dorsal view. Colours have changed in ethanol. Photos: L. Katona (a), TK (b)

close to base, S8 also with lower portion laterally blue; S9 and S10 black. Pattern of abdomen is similar to *N. nigrifrons* (Ris, 1913) (THEISCHINGER & RICHARDS 2015: Photo 13). Anal appendages as illustrated (Figs 2a, b, 3a, b): superiors blue, with substantial subapical mesal tooth, longer than apical ventral extension and clearly visible in lateral view; inferiors long, only slightly curved dorsally.

Measurements (mm) – Fore wing 20.3; hind wing 18.6; abdomen (including anal appendages) 32.2; total length (including anal appendages) 38.5.

Female and larva

Unknown.

Differential diagnosis

Nososticta peti sp. nov., a predominantly black species with a limited blue/light pattern, fits into Group C (species with front of male synthorax with patches of blue, yellow, or green and with tip of male abdomen blue) of THEISCHINGER & RICHARDS (2015). Light post-ocular spots are not developed, and the face is completely black. It resembles *N. nigrifrons* in having prominent blue patches on the synthorax and the male superior appendages blue, dorsally slightly acuminate, with substantial apical ventral expansion, but differs from this species by a larger ante-humeral patch that extends anterior to the collar and is $\frac{2}{5}$ as long and markedly more than $\frac{3}{4}$ as wide as the mesanepisternum (Figs 1a, b) *vs* extending anteriorly far short of the collar and only $\frac{1}{3}$ as long and slightly more than $\frac{1}{2}$ as wide as mesanepisternum in *N. nigrifrons*; see THEISCHINGER & RICHARDS (2015: Fig. 28, Photo 13). The much shorter mesepimeral stripe reaches dorsally only to half the length of the metepisternal stripe (Fig. 1a) *vs* more than $\frac{3}{4}$ the length in *N. nigrifrons*; see THEISCHINGER & RICHARDS (2015: Fig. 28, Photo 13). This makes the ante-humeral patch longer than the mesepimeral stripe in *N. peti* sp. nov., while it is shorter than the mesepimeral stripe in *N. nigrifrons*. There is a large subapical tooth on the meso-ventral edge of the superior appendages and the inferiors are long and only slightly curved in the new species (Figs 2a, b, 3a, b) *vs* an indistinct small tooth, not detectable in lateral view, at the beginning of a slightly serrated meso-ventral edge

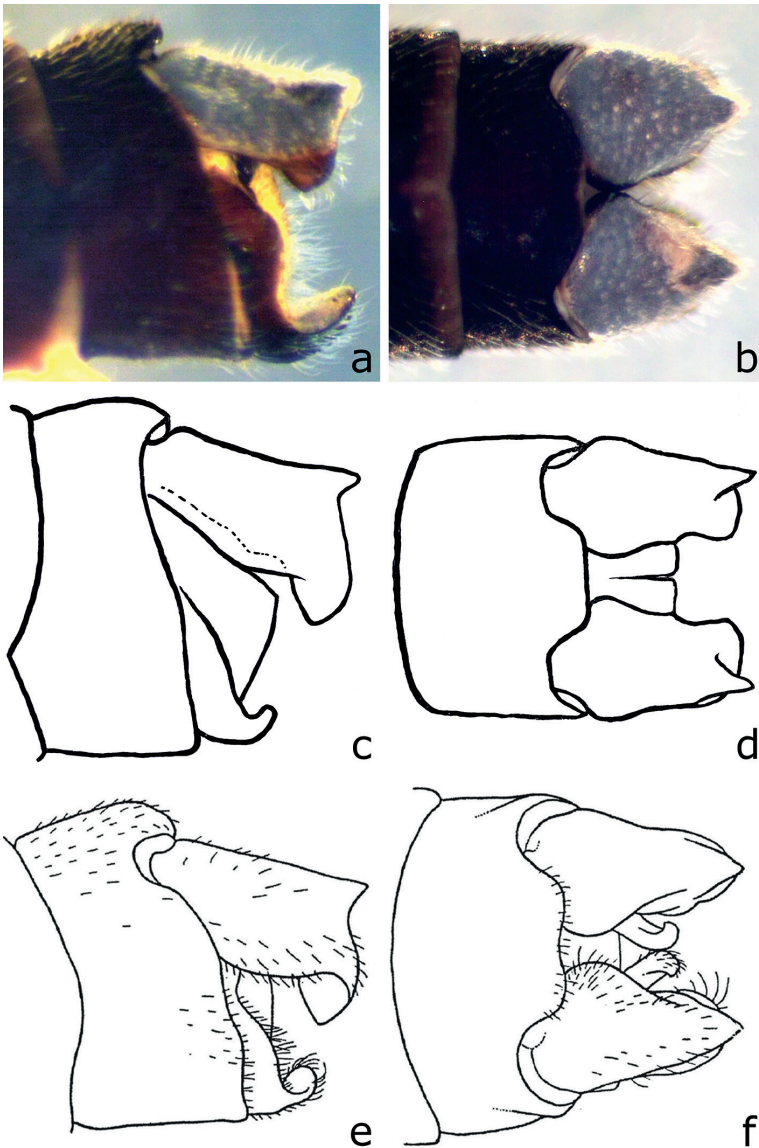


Figure 2. Anal appendages of *Nososticta peti* sp. nov. (a, b), and of *N. nigrifrons* (Ris, 1913) (c–f); a, b – from Batanta; c, d – from Papua New Guinea, Gulf Province; e, f – as treated by LIEFTINCK (1938) as *N. lorentzi*; a, c, e – lateral view, b, d, f – dorsal view. Photos: TK (a, b); drawings: GT (c, d); taken from LIEFTINCK (1938) (e, f)

of the superiors and much shorter, strongly curled inferiors in *N. nigrifrons* (Figs 2c, d, e, f).

Except for *N. nigrifrons* – including *N. lorentzi* Lieftinck, 1938; synonymised by THEISCHINGER & RICHARDS (2015: 180) – *N. peti* sp. nov. can be distinguished from the males of all species of group C by the particular apical ventral expansion of the superior anal appendages alone. However, there are also easier ways: *Nososticta peti* sp. nov. stands out from many species of its group by shorter vs longer ante-humeral patches (e.g., *N. chrismulleri* Theischinger & Richards, 2016), from some species by longer vs shorter ante-humeral patches (e.g., *N. paraconifera* Theischinger & Richards, 2016), or agrees with some species by having ante-humeral patches of similar size (e.g., *N. caelestis* Theischinger & Richards, 2016), see THEISCHINGER & RICHARDS (2016). *Nososticta peti* sp. nov. also stands out from some species by the presence vs absence (e.g., *N. thalassina* Lieftinck, 1949) of a mesepimeral patch, from a few by the mesepimeral patch being larger vs smaller (e.g., *N. truncata* Theischinger & Richards, 2016), and by more species by being smaller vs larger – e.g., *N. salomonis* (Selys, 1886) as in THEISCHINGER *et al.* (2023). *Nososticta peti* sp. nov. also has a shorter metepisternal patch/stripes than many of its congeners of the same group – e.g., *N. nigrofasciata* (Lieftinck, 1932).

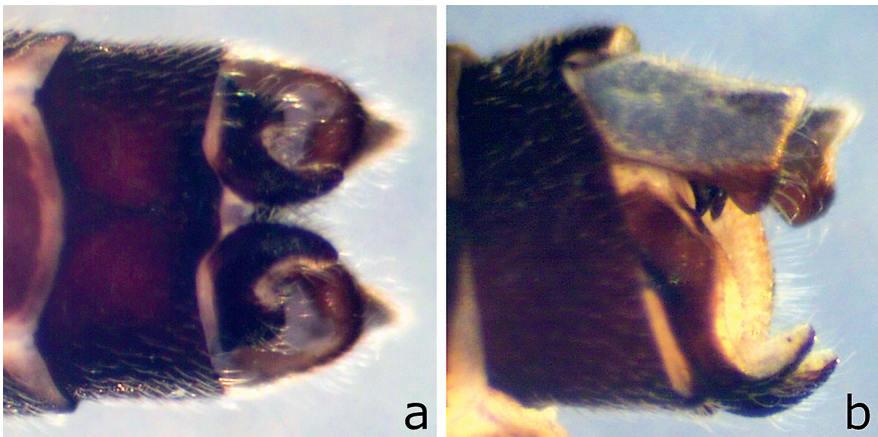


Figure 3. *Nososticta peti* sp. nov., anal appendages of holotype male; a – ventral view, b – anterolateral view. Photos: TK

Distribution and habitat (Figs 4–6)

Nososticta peti sp. nov. is known only from Batanta Island, Indonesia. The distribution of *N. peti* sp. nov. and its most similar relative, *N. nigrifrons*, are shown in Figure 4, and the known distribution of the three *Nososticta* species living on Batanta is shown in Figure 5. The collection site of the *N. peti* sp. nov. holotype is the Waibin River system, which can be divided into two sections. The first is the lower, flat, slowly rising section of the river (Fig. 6a). The second, upper section is the Waibin River right side branch and its tributary, with alternating steep and horizontal sections (Fig. 6b).

Common species found in both sections were: *Huonia thais* Lieftinck, 1953, *Idiocnemis bidentata*, *I. strumidens* Lieftinck, 1958, *Metagrion* sp., *Nososticta aurantiaca*; species of the lower section (main branch) were: *Gynacantha mocsaryi* Förster, 1898, *Nesoxenia mysis* (Selys, 1878), *Palaeosynthemis* cf. *cervula* (Lieftinck, 1938), *Protorthemis coronata* (Kaup in Brauer, 1866), *Pseudagrion civicum* Lieftinck, 1932, *Raphismia bispina* (Hagen, 1867), *Rhinocypha tincta* cf. *sagitta* Lieftinck, 1938, and *Tetrathemis irregularis* Brauer, 1868. Species of the upper section (side branch and its tributary) were: *Argiolestes australis* (Guérin-Meneville, 1832), *Diplacina smaragdina*

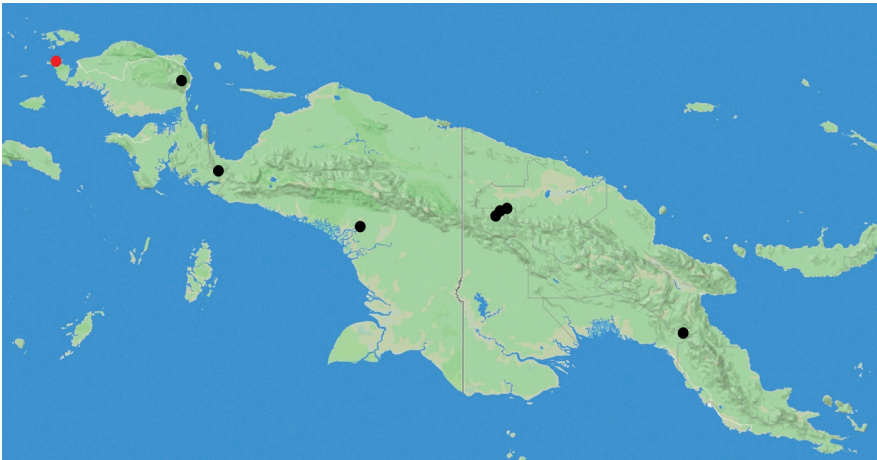


Figure 4. Map of New Guinea and surrounding islands. ● – recording site of *Nososticta peti* sp. nov. in Batanta Island; ● – recording sites of *N. nigrifrons*. Base map © OpenStreetMap, Mapbox, and Mapcarta

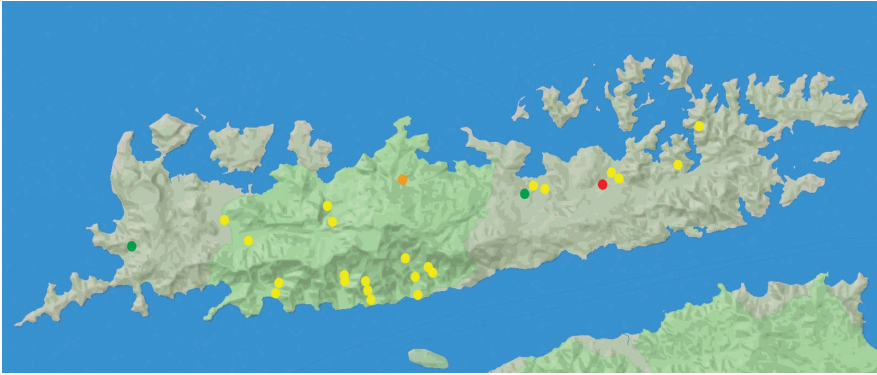


Figure 5. Localities of *Nososticta* species in Batanta, in the Raja Ampat archipelago, Indonesia. The island's geographical location is indicated in Figure 4 by a red dot. ● – *N. aurantiaca*; ● – *N. dora*; ● – *N. aurantiaca* and *N. dora*; ● – *N. aurantiaca*, *N. dora*, and *N. peti*. Base map © OpenStreetMap, Mapbox, and Mapcarta



Figure 6. Potential habitat of *Nososticta peti* sp. nov. in the Waibin River system, island of Batanta, in the Raja Ampat archipelago, Indonesia; a – lower and b – upper section. Photos: R. Horváth (a – iii.2017; b – vii.2019)

Selys, 1878, *Drepanosticta auriculata* (Selys, 1878), *N. dora*, *Selysioneura cornelia* Lieftinck, 1953, and *Teinobasis superba* (Hagen in Selys, 1877).

Together with the holotype of *Nososticta peti* sp. nov., the following species were collected at the same place and on the same day: *Diplacina cyrene* Lieftinck, 1953, 1♂ (immature); *Idiocnemis strumidens* 1♂; *Nannophlebia amnosia* Lieftinck, 1955, 1♀; *Nososticta aurantiaca* 5♂ 1♀; *N. dora* 1♂

2♀; and *Pseudagrion civicum* 1♂. Of these, *D. cyrene* was not known from Batanta Island before. Further research is needed to determine which section or type of water (microhabitat) is the specific habitat of the new species.

Acknowledgements

We would like to thank Péter Juhász (Debrecen) and Róbert Horváth (Ostoros) for donating their Odonata collected in Batanta in July 2019 to the MM (Gyöngyös) collection. We also thank those who helped them: Marco Kabez (Arefi), Réka Vadnay and Márton Vadnay-Horváth (Ostoros). A Papua Paradise Eco Resort (Birie Island) provided the base camp and helped organise the field trips. We thank Lajos Katona (Bakony Natural History Museum of the Hungarian Natural History Museum, Zirc) and Róbert Horváth for the photos, and Ádám Kiss (MM, Gyöngyös) for help in creating the map. Our study was carried out in compliance with the Memorandum of Understanding signed by the Research Center for Biology, Indonesian Institute of Sciences and the Hungarian Natural History Museum.

References

- GASSMANN D. 2000. Revision of the Papuan *Idiocnemis bidentata*-group (Odonata: Platycnemididae). *Zoologische Mededelingen*. Leiden, 74 (23): 375-402, figs 1-32
- KOVÁCS T., THEISCHINGER G., JUHÁSZ P. & DANYIK T. 2015. Odonata from Batanta (Indonesia, West Papua) with description of three new species. *Folia historico-naturalia Musei Matraensis* 39: 17-29
- KOVÁCS T., THEISCHINGER G. & DANYIK T. 2016. Odonata from Batanta (Indonesia, West Papua) with description of two new species. *Folia historico-naturalia Musei Matraensis* 40: 27-37
- KOVÁCS T., THEISCHINGER G., HORVÁTH R. & JUHÁSZ P. 2021. Odonata from Batanta (Indonesia, West Papua) with description of one new species. *Opuscula zoologica*, Budapest, 52: 119-139
- LIEFTINCK M.A. 1938. The dragonflies (Odonata) of New Guinea and neighbouring islands. Part V. 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* (NS) 2: 47-128, figs 1-52
- 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: 153-224
- THEISCHINGER G. & RICHARDS S.J. 2016. Six new species of *Nososticta* Hagen, 1860 from Papua New Guinea (Odonata: Platycnemididae). *Odonatologica* 45: 291-316

THEISCHINGER G., POLHEMUS D.A. & RICHARDS S.J. 2022. *Nososticta digimu* sp. nov., a new damselfly from Papua New Guinea (Odonata: Platycnemididae). *Odonatologica* 51: 167-174

THEISCHINGER G., MITCHELL A., RICHARDS S.J. & POLHEMUS D.A. 2023. Systematics of the *Nososticta salomonis* complex (Odonata: Zygoptera: Platycnemididae). *Zootaxa* 5296 (2): 101-146

WATSON J.A.L. & O'FARRELL F.A. 1991. Odonata (dragonflies and damselflies). In: CSIRO (ed.), *The Insects of Australia*. 2nd ed. Melbourne University Press, Melbourne