International Dragonfly Fund - Report

Journal of the
International Dragonfly Fund

ISSN 1435-3393

Content

Volume 64 2013

The International Dragonfly Fund (IDF) is a scientific society founded in 1996 for the improvement of odonatological knowledge and the protection of species.

Internet: http://www.dragonflyfund.org/

This series intends to publish studies promoted by IDF and to facilitate cost-efficient and rapid dissemination of odonatological data.

Editorial Work: Milen Marinov & Martin Schorr

Layout: Martin Schorr

Indexed by Zoological Record, Thomson Reuters, UK

Home page of IDF: Holger Hunger

Printing: ikt Trier, Germany

Impressum: International Dragonfly Fund - Report - Volume 64

- Date of publication: 17.12.2013
- Publisher: International Dragonfly Fund e.V., Schulstr. 7B, 54314 Zerf, Germany. E-mail: oestlap@online.de
- Responsible editor: Martin Schorr

Two new species of *Hylaeargia* Lieftinck from New Guinea (Zygoptera: Platycnemididae)

G. Theischinger[1] & S. J. Richards[2]

[1]NSW Department of Premier and Cabinet, Office of Environment and Heritage, PO Box 29, Lidcombe NSW 1825 Australia. Email: gunther.theischinger@environment.nsw.gov.au

[2]Museum and Art Gallery of the Northern Territory, Darwin, NT 0801, Australia. Current address: Herpetology Department, South Australian Museum, North Terrace, Adelaide, S. A. 5000 Australia and Wildlife Conservation Society, Goroka, Papua New Guinea. Email: steve.richards@samuseum.sa.gov.au

Abstract

Two species, *Hylaeargia vanmastrigti* sp. n. (holotype male from Star Mountains, Papua Province, Indonesian New Guinea) and *H. lisae* sp. n. (holotype male from Hindenburg Range, Papua New Guinea), are described as new. An illustrated key to the known species of *Hylaeargia* Lieftinck is presented.

Introduction

The damselfly genus *Hylaeargia* Lieftinck, 1949 comprises a group of three moderately large, sombre to brightly-coloured species that are endemic to New Guinea: *H. simulatrix* Lieftinck 1949, *H. magnifica* Michalski 1995 and *H. simplex* Theischinger & Richards 2013. Previously considered to be coenagrionids, *Hylaeargia* and other closely related genera from New Guinea are all now placed in Platycnemididae (Dijkstra *et al.* 2013). Since the description of *Hylaeargia simplex* less than a year ago (Theischinger & Richards 2013) we have obtained additional material of the genus from the Hindenburg Range in western Papua New Guinea, and a single male from the nearby Star Mountains in Indonesian New Guinea was provided to us for study by V. Kalkman. Examination of this freshly acquired material confirmed that they represent two more new species. The two species are therefore described as new, illustrated, and discussed below.

Material and methods

Descriptive terminology largely follows Chao (1953) and Watson & O'Farrell (1991). Colouration is given as detectable from the preserved material and, for one species, from photographs taken in life. Measurements are given in millimetres (mm). All illustrations were done with the aid of a camera lucida and are not to scale. The holotype of the new species from the Star Mountains is deposited in the National Natuurhistorisch Museum Naturalis (RMNH) in Leiden, and the type series of the new species from the Hindenburg Range is in the collections of the Museum and Art Gallery of the Northern Territory in Darwin (MAGNT) and the South Australian Museum in Adelaide (SAMA).

Hylaeargia vanmastrigti sp. n.

Figures 1, 14-16

Fig.1. *Hylaeargia vanmastrigti* sp. n. Holotype male. Photo by G. Theischinger.

Material. – Holotype ♂ (RMNH): Indonesia, Papua Province, Abmisibil, Okbon, Star Mountains, 2,000 m a.s.l., 11-12-xii-1990, HJG van Mastrigt leg.

Etymology. – The specific name (Latinized family name in the genitive case) represents a dedication to the collector of the species.

Male. – Head. – Labium including lobes black; labrum lemon-yellow with black midline in basal half; mandible bases largely lemon-yellow, dark adjacent to labrum, remain-

der of mandibles black; clypeus, top of frons, antennae, vertex and postgenae black; anterior frons and genae lemon-yellow, forming light transverse bar from eye to eye.

Thorax. – Prothorax black with C-shaped blue patch on epimeron and part of episternum and with large blue patch each side of notum covering most of median lobe. Synthoracic pleura black with two substantial blue lateral patches, one somewhat complex across posterior part of mesepimeron and much of metepisternum, the other, more simple, across most of posterior half and anterodorsal corner of metepimeron; ventral tip of metepimeron also blue; the mesepimeral/metepisternal patch partially subdivided by a rather wide black wedge along interpleural suture from subalar ridge to well beyond metastigma. This forms a partial transverse subdivision, with the mesepimeral part (stripe) markedly longer than the metepisternal one; katepisterna narrowly tipped with blue. Terga vivid blue and black. Postcoxae largely blue laterally and ventrally; poststernum framed black with blue anterolateral patch connected to lateral metepimeral stripe, and with blue posteromedian patch. Legs largely black, posterior half of outer face of coxae, anterior face of trochanters and most of inner face of femora blue. Wing membrane hyaline, venation and pterostigma black; postnodals 18-19/17-18.

Abdomen. – Terga largely black; tergum 1 with large irregular blue patch each side, dorsal separation of patches wide anteriorly, narrow posteriorly; tergum 2 with approximately trapezoidal blue median patch in anterior half and small bluish lateral patch dorsal to secondary genitalia; terga 3-7 with only extreme ventral margin pale greyish yellow; terga 8 and 9 with extensive bright blue dorsal patch across posterior two thirds in 8, entire length in 9; segment 10 with extensive bright blue dorsal patch across entire length. Sterna black. Anal appendages black; superiors strongly curving mediad, bilobed, with dorsal and ventral lobe of the superior anal appendages subequal in size, dorsal lobe slightly conical with rounded tip and ventral lobe parallel sided and apically rounded; inferiors with wide base and apex obscured in the unique specimen.

Measurements (in mm). – Hindwing 25.0; abdomen plus appendages 33.5.

Female. – Unknown.

Habitat. – Unknown but the label accompanying the specimen states ‘Okbon’. Ok is the word for river or stream in the Star Mountains and it is likely that the specimen was found adjacent to this mountain stream at 2,000 m a.s.l.

Comparison with other species. – In having the dorsal and ventral lobe of the superior anal appendages subequal in size, the unique male specimen of the new species is most similar to *H. simulatrix*. However the synthoracic pattern of *H. vanmastrigti* sp. n., in which there is a distinct subdivision of the blue anterior lateral patch, is unique for the genus. The new species further differs from *H. simulatrix* in having the supe-

rior anal appendages strongly curved mediad (vs almost straight). *Hylaeargia magnifica*, *H. simplex* and *H. lisae* sp. n. can be readily distinguished from the new species by the colour pattern described above and by having the dorsal lobe of the rather straight male superior anal appendages much larger than the ventral lobe.

***Hylaeargia lisae* sp. n.**

Figures 2-5, 21-24

Figs 2, 3. *Hylaeargia lisae* sp. n. male in life: (2) mature; (3) subadult. Photos by S.J. Richards.

Figs 4, 5. *Hylaeargia lisae* sp. n. paratype female: (4) in life; (5) preserved. Photo 4 by S.J. Richards; photo 5 by G. Theischinger.

Material. – Holotype ♂ (MAGNT): Papua New Guinea, Hindenburg Range, Western Province, Tupnonbil area (5.12017°S, 141.25821°E, 1,817 m a.s.l.), 19-ii-2013, M. Hammer leg. Paratypes (SAMA): Papua New Guinea: 1 ♂, same data as holotype; 1 ♀,

same locality, 17- ii - 2013, A. Gambia leg.; 1 ♂, same locality, 18-ii-2013, S. Richards leg.

Etymology. – The specific name (Latinized family name in the genitive case) represents a dedication to the wife of the second author.

Male (mature). – Head. – Labium black, only laterally near base with some greyish white, labial lobes black; labrum bright yellow with basal ½ of midline very narrowly lined black; mandible bases laterally bright yellow, ventrally including remainder of mandibles black; clypeus, top of frons, antennae, vertex and postgenae black, anterior frons and genae bright yellow, forming bright transverse bar from eye to eye.

Thorax. – Prothorax black with large boomerang-shaped blue patch on epimeron and part of episternum, and similar size blue patch each side of notum covering most of third 1/4 of median lobe. Synthoracic pleura black with two substantial blue lateral patches, one across posterior part of mesepimeron and much of metepisternum, the other across most of posterior half and anterodorsal corner of metepimeron; ventral tip of metepimeron also blue; the mesepimeral/metepisternal patch partly subdivided by a moderately wide stripe along interpleural suture from subalar ridge halfway to metastigma, the thus-formed mesepimeral part (stripe) slightly shorter than the metepisternal one; mesokatepisternum narrowly, metakatepisternum substantially, tipped with blue. Terga vivid blue and black. Mesopostcoxa laterally blue, ventrally black, metapostcoxa black and blue laterally and ventrally; poststernum framed black with blue anterolateral patch connected to lateral metepimeral stripe and with large blue posteromedian patch. Legs largely black, posterior and approximately distal half of outer face of coxae, much of anterior face of trochanters and most of inner face of femora blue. Wing membrane hyaline, venation and pterostigma black; postnodals 19-21/16-20.

Abdomen. – Tergum 1 largely black, with large irregular blue patch each side; dorsal separation of patches wide anteriorly, narrow posteriorly; tergum 2 black with approximately trapezoid shaped blue median patch over anterior half and small rhombic bluish lateral patch dorsal to secondary genitalia; terga 3-7 black with only extreme ventral margin yellowish white; terga 8 and 9 with extensive bright blue patch across apical ½ in 8, almost the entire length in 9; segment 10 with extensive bright blue patch across entire length. Sterna black. Anal appendages black; superiors seen in profile bilobed with dorsal lobe large, almost circular, and ventral lobe small, keel-shaped and somewhat projecting below the horizontal; inferior appendages with base wide, remainder obscured.

Measurements (in mm). – Hindwing 25.7-26.5; abdomen plus appendages 32.7-34.0. Female. – Head. Labium pale brownish blue, lobes greyish blue; labrum pale greyish blue with base and lateral margins partly and more or less distinctly darkened and

anterior margin and basal 2/3 of midline narrowly lined black; mandible bases pale greyish blue, darkened adjacent to labrum, remainder black; clypeus, top of frons, antennae, vertex, postocular lobes and postgenae largely brownish black, only occipital edge medium brown to dull orange; anterior frons and genae pale blue.

Thorax. – Prothorax: pronotum with anterior lobe pale brown, median lobe largely black, steeply rising, and posterior lobe largely dark brown, high, upright, medially engulfed and with prominent lateral lobes; propleura largely greyish to pale blue.

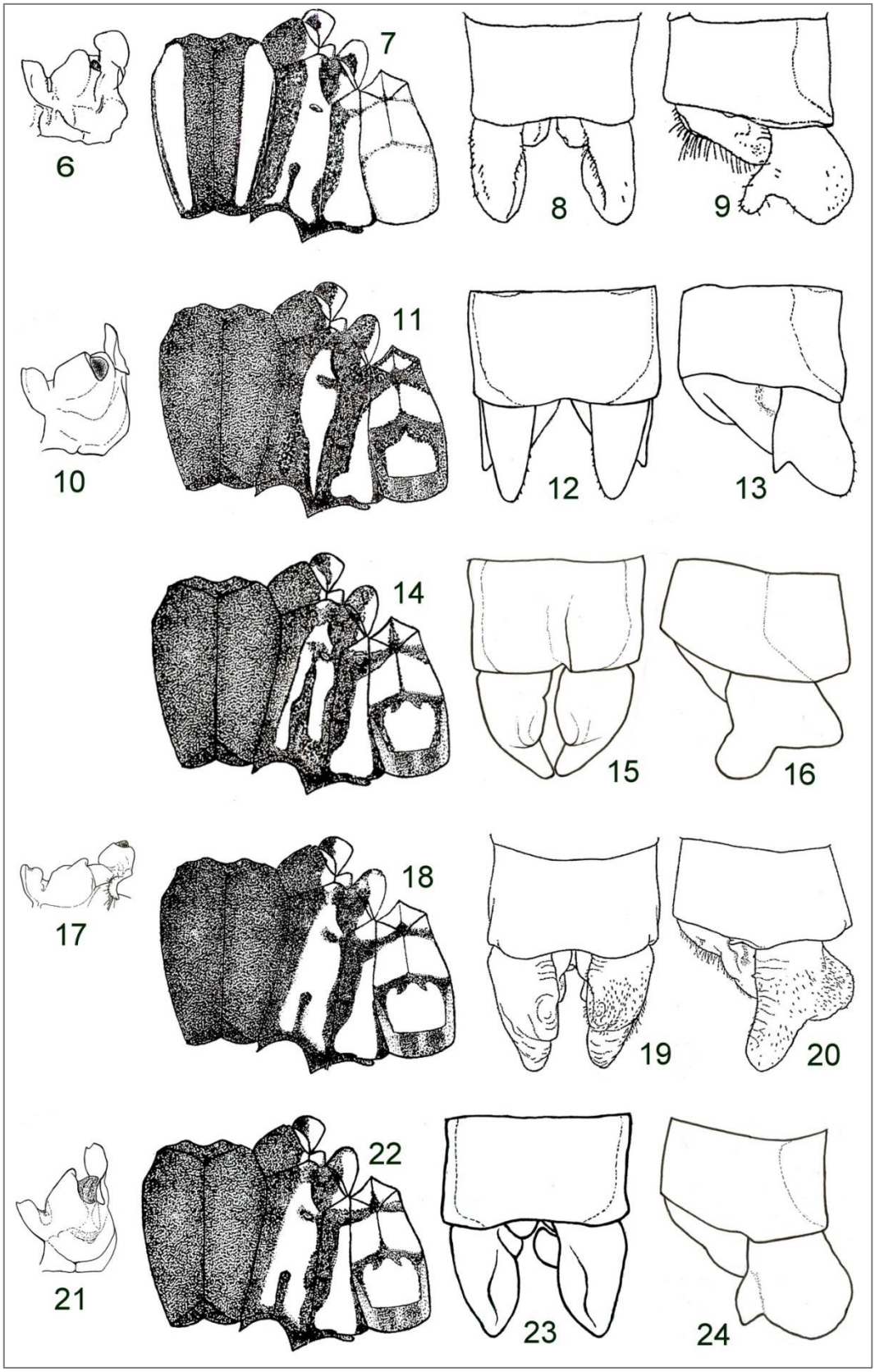
Synthorax much as in male; pleural pattern with less sharply defined light pattern elements pale to greyish blue on brown to blackish brown ground. Poststernum with frame paler and less strongly defined from lighter brownish to greyish blue areas. Legs much as in male but reddish to blackish brown instead of black, with light areas generally paler and with inside of femora largely dull bluish grey. Wings much as in male but pterostigma slightly paler; 18/17 postnodals.

Abdomen. – Terga 1 and 2 much as in male but reddish to blackish brown instead of black and with light pattern elements paler and less clearly defined; terga 3-7 black, slightly paler at base, particularly laterally, and even paler along ventral margin, each with ill-defined reddish brown lateral streak almost as long as segment in 3, increasingly shorter towards end of abdomen, being only ¼ length of segment in 7; terga 8 and 9 and segment 10 much as in male but the dorsal blue patches duller and paler, more greyish, merging laterally into brown, on 9 only half as long as segment. Sterna black; ovipositor brown, valves black and brown with approximately 20 ventral teeth, very small in anterior portion and increasingly larger towards apex. Anal appendages black.

Measurements (in mm). – Hindwing 28.2; abdomen plus appendages 32.0.

Variability. – The description above is given from the holotype, a mature specimen. The rather immature paratype males (somewhat shrivelled by acetone preservation) differ from the holotype by having the structures of the head that are yellow in the holotype being pale blue, in having additional blue patches (irregular and ill-defined) present on top of the head close to the eyes, and the blue colouration of thorax and abdomen being paler/less bright. The blue elements are also somewhat less sharply defined and sometimes larger. The photo of the female in life shows a darker specimen with the thoracic pale pattern reduced and the brown lateral abdominal streaks apparently missing.

Habitat. – The type locality was a clearing near the base of the Hindenburg Wall, where *H. lisae* was found on low vegetation along a small (1-2 m wide) clear stream. The area had been cleared for a garden but small patches of remnant forest remained.



Figs 6-24. *Hylaeargia* spp. (6-9) *H. magnifica* Michalski; (10-13) *H. simplex* Theischinger & Richards; (14-16) *H. vanmastrigti* sp. n.; (17-20) *H. simulatrix* Lieftinck; (21-24) *H. lisae* sp. n.: (6, 10, 17, 21) female pronotum, lateral; (7-9, 11-13, 14-16, 18-20, 22-24) male: (7, 11, 14, 18, 22) synthorax, frontal, lateral, ventral; (8, 9, 12, 13, 15, 16, 19, 20, 23, 24) anal appendages: (8, 12, 15, 19, 23) dorsal; (9, 13, 16, 20, 24) lateral. Figs 6, 8, 9 from Michalski (1996); Figs 10, 12, 13 from Theischinger & Richards (2013); Figs 17-20 from Lieftinck (1949).

All specimens were perched on low plants along the stream during brief periods of sunshine. The climate at the site was extremely wet, and during the course of several days sampling at this site only 3-4 hours of sunshine in total were encountered.

Comparison with other species. – The lateral synthoracic pattern of the male of *H. lisae* sp. n. closely agrees with *H. simulatrix* and *H. magnifica*, and the female pronotum is similar to these two species and to *H. simplex.* The male superior anal appendages of the new species, with the dorsal lobe much larger than the ventral lobe, come nearest to *H. simplex* (which is considered its closest relative) and to *H. magnifica*. However the dorsal lobe of the male superior anal appendages is much plumper than it is in *H. simplex,* and the ventral lobe is much shorter and plumper than in *H. magnifica. H. simulatrix* and *H. vanmastrigti* can be clearly distinguished from *H. lisae* by having dorsal and ventral lobes of the male superior anal appendages that are subequal in size.

Key to the species of *Hylaeargia*

(Colouration and pattern may vary within each species, particularly with degree of maturity.)

1 Front of male synthorax with broad pale (orange/blue) antehumeral stripe (Fig. 7); superior anal appendages with their dorsal lobe widely rounded, ventral lobe thumb-shaped (Fig. 9). Female pronotum as in Fig. 6
…..... ***H. magnifica***

- Male with front of synthorax black (Figs 11, 14, 18, 22); superior anal appendages not as above. Female pronotum not as above
…… **2**

2 Blue meso/metapleural patch of male dorsally undivided, narrow and almost pointed (Fig. 11); female pronotum as in Fig. 10
…… ***H. simplex***

- Blue meso/metapleural patch of male dorsally subdivided along interpleural suture (Figs 14, 18, 22). Female pronotum as in Fig. 17 or Fig. 21
…… **3**

3 Male with black separation along interpleural suture a long wedge, reaching metastigma (Fig. 14); superior anal appendages, seen in dorsal view, strongly curved mediad (Fig. 15). Female unknown
…….. ***H. vanmastrigti***

- Male with black separation along interpleural suture a short line/stripe, covering hardly half the distance between subalar ridge and metastigma (Figs 18, 22); superior anal appendages, seen in dorsal view, rather straight (Figs 19, 23). Female pronotum as in Fig. 17 or Fig. 21
…… **4**

4 Male superior anal appendages with dorsal and ventral lobe similar in size (Fig. 20). Female pronotum as in Fig. 17
…… ***H. simulatrix***

- Male superior anal appendages with dorsal lobe much larger than ventral lobe (Fig. 24). Female pronotum as in Fig. 21
…… ***lisae***

Acknowledgements

Field work in Papua New Guinea by SJR was supported by the Wildlife Conservation Society-PNG through a grant and logistical support from the PNG Sustainable Development Program (PNGSDP) and he is particularly grateful to Nathan Whitmore, Ross Sinclair, John Kuange and John Par Kagl from WCS, and to Stanis Tao and Kaia Songoa from PNGSDP for their assistance. The local communities of Bultem, Wangbin and Tabubil provided access to, and hospitality on, their land and SJR is most grateful to Brian Yapi and the other community members of these areas for their support and field assistance. Permission to conduct research in Western Province, and other assistance, was provided by the PNG Department of Environment and Conservation, the National Research Institute, the Western Province Provincial Government and the Star Mountains Local Level Government. Michael Hammer and Alois Gambia collected a number of important specimens during the survey and Vincent Kalkman kindly provided access to the holotype specimen of *H. vanmastrigti*. JGT is grateful for ongoing support by the management at the NSW Office of Environment & Heritage.

References

Chao, H.F. 1953. The external morphology of the dragonfly *Onychogomphus ardens* Needham. Smithson. Misc. Collns 122(6): 1-56.

Dijkstra, K.-D.B., Bechly, G., Bybee, S. M., Dow, R. A., Dumont, H.J., Fleck, G.R., Garrison, W., Hämäläinen, M., Kalkman, V.J., Karube, H., May, M.L., Orr, A.G., Paulson, D.R., Rehn, A.C., Theischinger, G., Trueman, J.W.H., van Tol, J., von Ellenrieder, N. & Ware, J. (2013). The classification and diversity of dragonflies and damselflies (Odonata). In: Zhang, Z.-Q. (Ed.) Animal biodiversity: An outline of higher-level classification and survey of taxonomic richness (Addenda 2013). Zootaxa 3703: 1-82.

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 (II. Zygoptera). Nova Guinea (N. S.) 5: 1-271.

Michalski, J. 1996. Description of *Hylaeargia magnifica* Michalski, a damselfly from Papua New Guinea (Odonata: Zygoptera). Tijdschr. Ent. 139: 29-32.

Theischinger, G. & Richards, S.J. 2013. *Hylaeargia simplex* spec. nov., a third species of *Hylaeargia* Lieftinck from New Guinea (Zygoptera: Platycnemididae). Odonatologica 42(2): 157-161.

Watson, J.A.L. & O'Farrell, F.A. 1991. Odonata (dragonflies and damselflies). In: CSIRO, [eds], The Insects of Australia, [2nd edn], Melbourne Univ. Press, Melbourne].

INSTRUCTION TO AUTHORS

International Dragonfly Fund - Report is a journal of the International Dragonfly Fund (IDF). It is referred to as *the journal* in the remainder of these instructions. Transfer of copyright to IDF is considered to have taken place implicitly once a paper has been published in the journal.

The journal publishes original papers only. By *original* is meant papers that: a) have not been published elsewhere before, and b) the scientific results of the paper have not been published in their entirety under a different title and/or with different wording elsewhere. The republishing of any part of a paper published in the journal must be negotiated with the Editorial Board and can only proceed after mutual agreement.

Papers reporting studies financially supported by the IDF will be reviewed with priority, however, authors working in general with Odonata are encouraged to submit their manuscripts even if they have not received any funds from IDF.

Manuscripts submitted to the journal should preferably be in English; alternatively German or French will also be accepted. Every manuscript should be checked by a native speaker of the language in which it is written; if it is not possible for the authors to arrange this, they must inform the Editorial Board on submission of the paper. Authors are encouraged, if possible, to include a version of the abstract in the primary language of the country in which their study was made.

Authors can choose the best way for them to submit their manuscripts between these options: a) via e-mail to the publisher, or b) on a CD, DVD or any other IBM-compatible device. Manuscripts should be prepared in Microsoft Word for Windows.

While preparing the manuscript authors should consider that, although the journal gives some freedom in the style and arrangements of the sections, the editors would like to see the following clearly defined sections: Title (with authors names, physical and e-mail addresses), Abstract, Introduction, Material & Methods, Results, Discussion, Acknowledgments and References. This is a widely used scheme by scientists that everyone should be familiar with. No further instructions are given here, but every author should check the style of the journal.

Authors are advised to avoid any formatting of the text. The manuscripts will be stylised according to the font type and size adopted by the journal. However, check for: a) all species names must be given in *italic*, b) the authority and year of publication are required on the first appearance of a species name in the text, but not thereafter, and c) citations and reference list must be arranged following the format below.

Reference cited in the text should read as follows: Tillyard (1924), (Tillyard 1924), Swezey & Williams (1942). The reference list should be prepared according to the following standard:

Swezey, O. & F. Williams, 1942. Dragonflies of Guam. Bernice P. Bishop Museum Bulletin 172: 3-6.

Rebora, M., Piersanti, S. & E. Gaino. 2004. Visual and mechanical cues used for prey detection by the larva of Libellula depressa (Odonata Libellulidae). Ethology, Ecology & Evolution 16(2): 133-144.

Citations of internet sources should include the date of access.

The manuscript should end with a list of captions to the figures and tables. The later should be submitted separately from the text preferably as graphics made using one of the Microsoft Office products or as a high resolution picture saved as a .jpg or .tif file. Hand-made drawings should be scanned and submitted electronically. Printed figures sent by the post could be damaged, in which case authors will be asked to resubmit them.

Manuscripts not arranged according to these instructions may also be accepted, but in that case their publication will be delayed until the journal's standards are achieved.

Nr.	Jahr	geförderte Person bzw. Körperschaft	Fördergegenstand
68	2010	Graham Reels, Hong-Kong	African Odonata (Dijkstra & Clausnitzer, Eds) text edit
69	2011	Rory Dow, Niederlande	Expedition to the Odonata of the Hose Mts., Sarawak, Malaysia
70	2011	Dejan Kulijer, Bosia & Herzegovina	Odonata of the Livanjsko polje karst wetland area, with special emphasis on Coenagrion ornatum
71	2011	Do Manh, Cuong, Hanoi, Vietnam	Study of Odonata in north central Vietnam
72	2011	Kosterin, O.E., Russia	The Odonata of the Cardamon mountains in Cambodia – progress study August 2011
73	2011	Villanueva, Reagan, Philippinen	Odonata of Tawi-Tawi-Island, The Philippines
74	2011	Elena Dyatlova, Ukraine	Odonata of Moldavia – progress study
75	2011	Zhang, Haomiao, Guangzhou, China	The Superfamily Calopterygoidea in South China: taxonomy and distribution III – Travelling grant to the Guizhou and Yunnan Provinces, Summer 2011
76	2011	Marinov, Milen, Christchurch, New Zealand	Odonata at artificial light sources – review paper
77	2011	Do Manh, Cuong, Hanoi, Vietnam	Providing the Odonatological literature database
78	2010	Villanueva, Reagan, Philippinen	Stereomikroskop
79	2010	Villanueva, Reagan, Philippinen	Odonata of the Diomabok-Lake region south of Davao, The Philippines Follow-up
80	2011	Villanueva, Reagan, Philippinen	Odonata of the Catanduanes-Island, The Philippines
81	2012	Villanueva, Reagan, Philippinen	Odonata of Dinapique, The Philippines
82	2012	Dow, Rory, UK/The Netherlands	Odonata of Kalimantan, Borneo, Malaysia
83	2012	Marinov, Milen, Christchurch, New Zealand	Odonata species diversity of the "Eua Island, Kingdom of Tonga"
84	2012	Marinov, Milen, Christchurch, New Zealand	Odonata of Solomon-Islands
85	2012	Villanueva, Reagan, Philippinen	Palawan-Odonata, The Philippines
86	2012	Do Manh, Cuong, Hanoi, Vietnam	Mau Son Mountain Odonata, Vietnam
87	2012	Dow, Rory, UK/The Netherlands	Odonata of Gunung Pueh, Borneo, Malaysia
88	2013	Anna Rychla, Ukraine	Vorkommen der Arktischen Smaragdlibelle Somatochlora arctica (Zetterstedt, 1840) in Planregenmooren der polnischen Ostseeküste (S. arctia in bogs along the coast of the Polish Baltic Sea)
89	2013	Vincent Kalkman/A.B. Orr, The Netherlands/Australia	Field guide New Guinea Zygoptera
90	2013	Oleg Kosterin, Russia	Progress study Cambodia 2013
91	2013	Dejan Kulijer, Bosnia & Herzegovina	Odonata fauna of karst streams and rivers of South Herzegovina (Bosnia and Herzegovina, West Balkan)
92	2013	Villanueva, Reagan, Philippinen	Odonata from Balabac Islands, Palawan, Philippines
93	2013	Villanueva, Reagan, Philippinen	Odonata from Balut Island, Philippines
94	2013	Rory Dow, UK	Malaysian Odonata – Regional progress projects
95	2013	Rory Dow, UK	Sarawak Odonata – documenting the status quo Odonata diversity prior logging
96	2013	Garrison / Ellenrieder, Sacramento, USA	Argia in Costa Rica
97	2013	Villanueva, Reagan, Davao, Philippinen	Odonata of Mt. Lomot and Mt. Sumagaya, The Philippines