AGRION

NEWSLETTER OF THE WORLDWIDE DRAGONFLY ASSOCIATION

PATRON: Professor Edward O. Wilson FRS, FRSE

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AGRION

NEWSLETTER OF THE WORLDWIDE DRAGONFLY ASSOCIATION

AGRION is the Worldwide Dragonfly Association's (WDA's) newsletter, published twice a year, in January and July. The WDA aims to advance public education and awareness by the promotion of the study and conservation of dragonflies (Odonata) and their natural habitats in all parts of the world. *AGRION* covers all aspects of WDA's activities; it communicates facts and knowledge related to the study and conservation of dragonflies and is a forum for news and information exchange for members. *AGRION* is freely available for downloading from the WDA website at http://worlddragonfly.org/?page_id=125. WDA is a Registered Charity (Not-for-Profit Organization), Charity No. 1066039/0.

Editor's notes

Keith Wilson [kdpwilson@gmail.com]

Conference News

The 2015 International Congress of Odonatology was successfully held at La Plata City, 60 km south of Buenos Aires, Argentina in association with the Universidad Nacional de La Plata, Museo de La Plata and Instituto de Limnología. The Congress was convened at the 'Salon Cultural' of the Seguros Rivadavia Company and was held between 15th and 20th November 2015 and a post congress tour took place in Patagonia from November 22nd to 28th, during which two beautiful National Parks, Lanin and Nahuel Huapi, were visited to see a range of ancient patagonic endemics. A website has been established for the Congress at: [http://ico2015-argentina.com.ar/congress/]. A brief Congress report has been provided by Javier Muzón and Federico Lozano providing an organisers viewpoint, see pages 12-13, and a detailed Congress and Post Confence Tour reports are provided from a participant's viewpoint, see pages 14 to 25.

See page 39 for an invitation to 2016 International Congress of Entomology Orlando, Florida, USA, September 25-30, 2016.

WDA website

The WDA website can be accessed at [http://worlddragonfly.org/]. The site contains general information about dragonflies and the Society including, the composition of its WDA Board of Trustees, details of its WDA Conservation and Research Grants, WDA meetings and publications. WDA membership application forms can be completed at [http://worlddragonfly.org/?page_id=141] or downloaded for completion and submission to WDA Secretary at [http://worlddragonfly.org/wp-content/uploads/2013/11/membership_application_form.pdf].

Next issue of *AGRION*

For the next issue of *AGRION,* to be published at the beginning of July 2016, please send your contributions to Keith Wilson [kdpwilson@gmail.com] or Graham Reels [gtreels@gmail.com]. All articles, information and news items related to dragonflies or of interest to WDA members are most welcome and will be considered for publication. Please send all text and figure captions in a Word file by email, preferably, or on a disk by post. Please do not include artwork with the text but provide a separate file or files in soft copy form, ideally in a compressed format (e.g. 'jpeg' or 'gif'), or as files on disk if sent by post.

Cover photo: White-dotted redspot (*Hypopetalia pestilens*) endemic to the central third of Chile. *Hypopetalia* is a monotypic genus belonging to the Austropetaliidae. For many years Austropetaliids were linked to the Cordulegastroid *Neopetalia punctata* (see pages 12, 22-23) within the family Neopetaliidae, due to their superficial resemblance, but in 1994 Carle & Louton showed their true aeshnoid lineage. Norman Moore wrote a note on the behaviour and habitat preferences of a male *Hypopetalia pestilens* observed in Chile in 1994 (see Norman Moore's obituary and bibliography, pages 30-38). Photo credit: Erland R. Nielsen, Puaucho, Chile, 29 November 2015.

If you have an odonate photo illustrating any rarely observed aspect of dragonfly biology, or an unusual species, or simply a stunning dragonfly shot, please submit it for consideration for publication on the front cover of *AGRION*.

Erratum

Pages 20-74 of the July 2015 issue of *Agrion* were erroneously labelled as volume 20(2). The correct volume for these pages in the July 2015 issue is Volume 19(2). The error has been corrected on the high resolution and low resolution issues currently available for download on the WDA website.

Norman Winfrid Moore

Norman Moore died at the age of 92 on 21st October 2015. Norman is of course extremely well known to entomologists and odonatologists for his many outstanding achievements and leadership in the fields of dragonfly behaviour and conservation but he is also well known internationally for his work, during the nineteen-sixties, at the Monks Wood Experimental Station, where he headed the Toxic Chemicals and Wildlife research team that established the link between organochlorine pesticides and the decline in reproductive success among birds of prey, notably the peregrine. He was also Chairman of the IUCN Odonata Specialist Group for many years. An obituary and biobliography is provided in this issue of *Agrion*, see pages 30-38.

Obituaries have already appeared in *The Telegraph* [http://www.telegraph.co.uk/news/obituaries/11948316/Norman-Moore-conservationist-obituary.html], *The Guardian* [http://www.theguardian.com/environment/2015/oct/28/norman-moore] and the *Independent* [http://www.independent.co.uk/news/people/norman-moore-celebrated-authority-on-dragonflies-whose-work-led-to-reduction-in-the-use-of-damaging-a6753371.html] UK newspapers. An obituary has also appeared on the Wildlife Trust for Bedfordshire, Cambridgeshire and Northamptonshire, UK web pages [http://www.wildlifebcn.org/news/2015/10/27/dr-norman-moore-life-remembered].

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Indian news

Subramanian Ka [subbuka.zsi@gmail.com]
Marine Biology Regional Centre
Zoological Survey of India

I hope this recently launched and still developing archive on Indian fauna from our organization will be of great help to you. Please provide your feed back, so that we can improve it further and incorporate more features.

[http://faunaofindia.nic.in/]

Ed. Excellent copies of Fraser's '*Fauna of Bristish India*' trilogy can be downoaded from this web resource [http://faunaofindia.nic.in/php/fbi_books_list.php].

Response from the WDA Board to petition of a journal merger

The Worldwide Dragonfly Association (WDA) was formed in 1997 because many members of the former *Internationalis Odonatologica* (SIO) sought a more transparent, friendly, and democratic organization. WDA has enjoyed substantial success as a member-driven organization [http://worlddragonfly.org/]. We are the only international dragonfly society of record that publishes its own professional journal (*International Journal of Odonatology, IJO*). To relieve any personal financial responsibility of publication and to provide an online process for authors, editors and reviewers (all major journals use such a system) we recently switched to an independent publisher, Taylor & Francis. Because we are under a 5-yr. contract with T&F, WDA is committed to resolving the problems that have frustrated some subscribers. For example, T&F has offered free subscriptions to those still having problems. Currently IJO has an ISI impact factor of 0.5. In 1997, FSIO informed SIO that the society had no legal existence. FSIO is a private foundation governed by a board; it does not have members. *Odonatologica* is published privately on behalf of FSIO [http://osmylus.com/index.php/odonatologica]. The journal *Odonatologica* has a current ISI impact factor of 0.28. A petition signed by 72 interested parties has requested a merger of the two journals. The board of WDA agrees that a single international journal is desirable. A single journal would be a more efficient use of everyone's time, require only one payment for students, allow for a larger publication, and a reduction in the current editorial overlap between the two current journals. Journal unification would also facilitate the most efficient use of scarce resources of the relatively small odonatological community. For example, IJO could actually publish more pages for the same price we currently pay. In 2007-08, with Gordon Pritchard as President, WDA attempted a journal merger, suggesting that the new journal be named '*Odonatologica – the International Journal of Odonatology*'. Unfortunately, that past effort seems to have been interpreted as an attempt by WDA to usurp '*Odonatologica*'; apparently, FSIO was uncompromising in retaining the original name and procedural details. WDA has no interest in repeating that history. Nor do we seek a single journal that is jointly published on behalf of two different entities. That would defy the goal of unity and efficiency which we think is critical in a thriving organization in an age of journal proliferation and media competition. Nevertheless, the petition prompted a direct inquiry by WDA to the publisher of *Odonatologica*. Because the publisher currently views discussion of a merger premature, WDA will not pursue the matter unless approached directly by FSIO or the Osmylus Publisher of *Odonatologica* at some later date. Having twice initiated rapprochement, WDA remains open and committed to creating a single specialty journal and society to accommodate the international odonatological community. To that end, after the 6th WDA Symposium in 2009, we extended our good will to FSIO by inviting subscribers of *Odonatologica* to our international biennial meeting, now called the *International Congress of Odonatology.* Our top priority is to provide our members with value for their membership fees, which includes strengthening IJO. We look forward to discussing your ideas to guide us towards a future, more united organizational model that can serve the needs of odonatologists of all ages and affiliations in La Plata this November!

WDA Board

Extracts from the WDA 2013-2015 Biennial Report

Report from the President
(Ed. Boudjéma stepped down as President at ICO2015)

It is my pleasure and my turn to step down as President of WDA and hand over the torch to the able hands of Ola Fincke, my successor. I am also delighted to report that the last two years have witnessed the strengthening of our association and any apprehensions I might have had about running an international association before I succeeded Göran Sahlen were quickly dispelled by the friendly and forthcoming advice and help from more experienced board members. I would like to take a moment to list some of the activities that the board had to deal with during the past two years:-

1) A new WDA website was created and managed by Rhainer Guillermo and Chris Hassall. We would like to thank Adolfo Cordero for all his past efforts at managing the previous WDA website from Vigo University.
2) Melissa Sanchez-Herrera and Will Kuhn started the WDA Facebook Page on 3 November 2013 and it is gaining in popularity. Please consult the report by the Facebook webmaster for details.
3) The contract that binds us with T & F which publishes IJO was renewed.
4) Due to internal management of T & F and, to a lesser extent, the new WDA website, some members were much frustrated when renewing their subscription or when accessing IJO. We urged T & F to take steps to remedy the handling of these two processes and compensate members. More details from our secretary's report.
5) We replied to a petition initiated by Milen Marinov advocating a merger between WDA and IJO. This open reply has been posted on WDA's website.
6) We provided a grant to Dejan Kulijer for a project on dragonflies of the Dinaric Alps of Bosnia and Herzegovina.
7) We undertook a search for a site for ICO 2019. The choice has settled for one in North America. Richard Rowe will provide more details.
8) We elected a president-elect, Nancy van der Poorten, and new members of the board. The list would be provided by WDA secretary, Jessica Ware.
9) We are most grateful to Mike May who performed a sterling job at editing IJO. Mike has stepped down as editor and will be replaced by John Abbott.
10) IJO has been making steady progress and its impact factor in 2015 is 0.69. This will probably have a snowball effect on submissions of high caliber papers in the near future. The other odonatological journal, Odonatologica, has an impact factor of 0.28.
11) Keith Wilson and Graham Reels agreed to continue as editors of our newsletter *Agrion*. We are most grateful for their time and tremendous efforts at informing and disseminating odonatological news across WDA membership. More details are provided in Keith's report.
12) We are in the process of securing a financial audit for the last two years. The financial audit for the years before 2013 will need more time as paper documents have to be sorted and digitized. This task needs to be carried in the near future.
13) We welcome in the new board members, along with ones that have agreed to serve another term. They are:-

President: Ola Fincke	Webmaster: Rhainer Guillermo
President Elect: Nancy van der Poorten	Symposium Co-ordinator: Richard Rowe
Immediate Past President: Boudjéma Samraoui	Editor Agrion Newsletter: Keith Wilson
Secretary: Jessica Ware	Trustee: Mamoru Watanabe
Treasurer: Manpreet Kohli	Trustee: Peter Brown
Managing Editor: John Abbott	Trustee: Goran Sahlén

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Finally, I have no doubt that our predecessors would be delighted to witness the gradual but significant molt of WDA which has recently passed from a "silverback" stadium into a "damselfly" stadium. I would like to thank all members for their support and various contributions and I wish Ola and the new board plenty of success. I also wish you all a wonderful and instructive ICO 2015 in Argentina and hope to see you all in Algeria in 2017.

Boudjéma Samraoui

Report from the President Elect
(Ed. Ola assumed her position as President at ICO 2015)

I am honored to accept the reins of WDA from Boudjéma Samraoui, who along with the other board members, has so kindly nudged me into learning the inside workings of this organization. It's been a steep learning curve as I'm not preadapted for an administrative role. I only hope that I can fill at least some of the shoes of those who have preceded me. I'm indebted to the 'silverbacks' who have provided me their wisdom and insights, and I've been impressed with the friendly manner in which so many younger board members so graciously offer their time 'behind the scenes'. The past two years have flown by. Indeed, it seems like yesterday that I attended my first international meeting of odonatologists in Chur, Switzerland, followed by the meeting in Paris. These were a turning point for me as a graduate student. For the first time, my audience showed far more appreciation and interest in my work than my graduate committee ever did. I had finally found a family of like-minded friends who seemed to understand my obsessions.

Hence, my first and foremost goal for WDA is to provide a nurturing atmosphere for young scientists. The most successful societies are those that provide a welcoming atmosphere and concrete venues that benefit young researchers. We need to reach out to attract more members from Central and South America, China and SE Asia, and Africa, so that our organization increasingly reflects the world wide dragonfly community. I'd also like to continue the momentum gained during the past two years to modernize our internal workings, making them more efficient and transparent to the membership. Given our healthy budget, I think we could afford to support more conservation research. As we go forward from La Plata, Argentina, the first international conference of odonatologists in South America, and appropriately, also the home of Papa Francesca who has spoken out strongly for protecting all of creation, I hope that we can use our collective passion for odonates to draw public attention to the beauty and fragility of the natural world.

During the next two years, I look forward to working with the WDA board and membership to improve our outreach, maintain the high quality of the publications of IJO and *Agrion*, and ensure that our association remains fiscally sound.

Ola Fincke

Report from the Secretary

Over the last two years, membership has switched to being exclusively handled by Taylor and Francis (T&F). Access to the WDA website was provided by the webmaster, but the two events (becoming a member and getting access to the website) are not yet linked, so the secretary was responsible for trying to coordinate these two events. I sent a survey to the membership to evaluate the complaints people may have had with the membership process. The membership had four main complaints: getting charged twice on their credit card statement, not being charged on their credit card statement, not receiving a renewal notice from T&F, receiving too many renewal notices from T&F. To address these concerns, I had several email exchanges and a Skype meeting with Ailsa Marks and Clare Dean, which proved very helpful and seems to have reduced membership concerns considerably. Membership has stayed relatively stable, after some confusion, as mentioned, regarding the T&F procedures. In addition to membership news, there is news about research grants and a student survey to report. (1) We received three applications for research grants, and two were funded. (2) We helped a student who was doing a survey about membership usage of Odonata Central and other online image databases, and methods of species identification by emailing the membership a link to the survey.

Jessica L. Ware

Report of the Managing Editor

Since the last report, in 2013, part of Vol. 16 (350 pp. in all), Vol. 17 (258 pp.) and Vol. 18 (~375 pp., including issue 4, not yet printed) of the International Journal of Odonatology were published. After a dip in Thompson-Reuters' impact factor to 0.426 in 2012, this important metric has climbed back to 0.686, which is quite respectable for a specialty journal. Given the relatively small audience and narrow focus of papers, I think it is inevitable that this will fluctuate considerably, but we should continue to strive to move it upward as time goes on.

The Editorial Board, including Content Editors, has remained unchanged since I became Editor, and I want to thank them all for their help and dedication. The relationship with Taylor & Francis has continued reasonably smoothly from my perspective, although there continue to be instances in which WDA members were unable to access IJO at the Taylor & Francis website for varying lengths of time. These problems have, however, noticeably abated over time. There has been some turnover of personnel at the Taylor & Francis end. Since my last report, Jolene Butt has replaced Will Lazenby as Production Editor, again with no difficulties during the changeover, while in November 2015 Ailsa Marks announced that she would be taking another position within Taylor & Francis; she will be replaced, at least for the immediate future, by Clare Dean. So far, these transitions have passed remarkably smoothly.

Publication has continued to suffer from late appearance of the print edition, although this is ameliorated to a considerable degree by early online publication. The reasons for late issues are spread throughout the editorial process, but a particular problem often has been the difficulty of finding knowledgeable, willing, and prompt reviewers. No one would argue that time is not precious to most of our members, or to other potential reviewers, but I will take the opportunity to make a plea for timely completion of reviews.

The ScholarOne system, adopted by Taylor & Francis for online manuscript submission and review has been in operation since early 2013. It has certainly made my job as Editor easier in many ways, because it automatically keeps track of the progress of manuscripts and any actions or correspondence concerning them. Nevertheless, although many members have used the system without difficulty, a significant number have found it unsatisfactory because it has been confusing, or unreasonable in the way that computers certainly often are, or seems to place an impersonal intermediary between editors or reviewers and authors. I am honestly not sure how to overcome these problems, nor do I think ScholarOne or some equivalent system is going to go away as long as IJO is produced by a professional publisher. I hope that a spirit of cooperation among publisher, editors, reviewers and authors will continue to prevail so that all parties can find a comfortable means of functioning within this system.

The quality of submissions has generally remained high, although I believe more could be done and, partly as a result of discussion at the ICO of 2013 in Freising, DE, I have begun preliminary efforts to solicit review papers on topics of potentially wide interest and to consider means of perhaps funding more frequent special issues and or use of additional color figures in IJO. The number of submissions has been somewhat irregular, and this has contributed to the late appearance of some issues and also has influenced, to some degree, how selective I have been in acceptance of manuscripts.

I have continued to try to maintain and increase interest of workers resident in biodiverse but poorly studied regions to undertake studies of Odonata and to publish their findings in IJO. In this I think we've had some success, notably in South America, and since 2011 have had authors from Algeria, Argentina, Brazil, China (many), Colombia, Costa Rica, Cuba, Curacao, India, Morocco, Philippines, Romania, Russia, Saudi Arabia, Singapore, South Africa, Taiwan, Thailand, Ukraine, and Venezuela, in addition to the more traditional strongholds of Japan, North America, and Western Europe. It is vital, both for odonatology and Odonata, to keep up these efforts.

Finally, since I'll be turning over the Editorship to John Abbott within the next few weeks, I want to say that, although the experience had its ups and downs, the great pleasures and real value that I'll take from this is the opportunity I've had to come to know, or to know better, the dedicated, knowledgeable, insightful people who make up our community, as well as to learn a lot about Odonata that I probably would never have done without being forced to read all those proofs.

Michael L. May

Report from *Agrion* newsletter editors

Keith Wilson and Graham Reels continued to serve as *Agrion's* editors during the period 2013 to 2015. The January 2014 issue received very few contributions from members and in response Graham and I sought and received Board approval to appoint Regional Representatives to help gather in and disseminate regional news. This move has been moderately successful. Ten regions were established and *Agrion* now has seven appointed Regional Representatives reporting from all regions except North America, Africa and Middle East. The last three issues have received a good number of articles.

Most articles fell into three main categories: faunistic articles, conference and regional meeting reports, and odonate book reviews or news of new books. *Agrion* also received two very interesting articles, involving modern imaging techniques. The first article titled: 'Nematode parasitization of macromiids in northern U.S. lakes' by Ken Tennessen, William Smith, Marla Garrison and Denny Johnson, used the 'stacked image technique' to provide perfectly focused images of *Macromia* larvae. This is the first time this relatively new technique has been mentioned in *Agrion* and I'm sure will be become widely used in the future, even in the field. The second interesting imaging article was received from Germany from Jana Willkommen and Stanislav Gorb, involving the use of non-destructive micro-computed tomography to image caudal appendages and the secondary copulatory apparatus of selected damselflies.

Agrion also received a very fine contribution from Matti Hämäläinen, titled: 'The first collectors of *Somatochlora sahlbergi* – a story of an arduous expedition to Siberia in 1876', which provided a well-researched and excellent read on the discovery of the northern hemisphere's most northerly occurring dragonfly. There were also good regional news round-ups provided by Bert Orr and Rory Dow Regional Representatives for Australia and Southeast Asia respectively. Hopefully *Agrion* will continue to be used as a vehicle for disseminating odonate news from around the globe and I'm sure this will be achieved with the help of the newly appointed Regional Representatives.

Keith DP Wilson

Report from Facebook webmaster

Melissa Sanchez-Herrera and Will Kuhn started the WDA Facebook Page on 3 November 2013 and have posted 29 posts over the past 2 years. Since then, it has accumulated 897 'Likes' from fans that are 39% women, 59% men, falling mostly into the 25-34 age class (9% of women, 17% men); however, fans range from the 13-17 to the 65+ age classes. Ten countries account for the top 67% of the total fanbase: USA (29% of likes), Indonesia (11%), UK (5%), Colombia (4%), Netherlands (4%), Italy (3%), Germany (3%), Spain (3%), Canada (3%), and Sweden (3%). Argentina is number 18 with 1% of the fanbase. Bogotá (Colombia, 18 likes), New York (USA, 16), and 3 cities in Indonesia - Surabaya (15), Bekasi (15), and Semarang (15) - comprise the top 5 (9%) fanbase cities. At the meeting, we would like to discuss the direction that we would like to take our Facebook presence in the next two years and what WDA members would like to get out of it. Should it be geared towards odonatologists, enthusiasts, and/or the general public? Is the goal to attract WDA membership? To raise public awareness and interest in odonates? As a communications forum for WDA members? As a list-serve for photo sharing and odonate sightings?

Melissa Sanchez-Herrera and Will Kuhn

Report from the Treasurer

WDA was in sound financial conditions for the period of Jan 2013-Dec 2014. For both the fiscal years WDA received steady income from memberships, subscriptions and royalties (collected through Taylor and Francis). WDA also received one major donation through American funds for charities and gave out two awards. Please find more details in "Summary of Annual Income and Expense 2013-2014" tables attached with this report here.

WDA should receive steady income form memberships, subscriptions and royalties, unless the membership numbers change. Besides the projected incomes for year 2015 and 2016, WDA also has substantial funds which can used shall the board members decide to so.

Manpreet Kaur Kohli

WDA Biennial Report 2013-2015
Treasurer's Year End 2013 Report
30th Oct 2015

WORLDWIDE DRAGONFLY ASSOCIATION
Summary of income and expenses, Jan. 1 to Dec. 31, 2013

	YTD TOTAL	----- UK ------	--- US Account ---		-- German Account --	
	POUNDS	POUNDS	POUNDS	DOLLARS	POUNDS	EUROS
INCOME						
Membership & Subscriptions & Royalties*	4,972.86	4,849.84	0.00	*0.00*	123.02	*147.00*
Affiliated Societies	0.00	0.00	0.00	*0.00*	0.00	*0.00*
Back issue and reprint sales	0.00	0.00	0.00	*0.00*	0.00	*0.00*
Donations - General	125.00	125.00 #	0.00	*0.00*	0.00	*0.00*
Donations - Sustaining	0.00	0.00 #	0.00	*0.00*	0.00	*0.00*
Total Income	**5,097.86**	**4,974.84**	**0.00**	*0.00*	**123.02**	*147.00*
EXPENSES						
Bank charges	67.27	0.00	21.98	*36.00*	45.28	*54.11*
Publications - IJO - editor reimbursements	0.00	0.00	0.00	*0.00*	0.00	*0.00*
Publications - other (IDS OAS, Agrion)	2,116.65	0.00	0.00	*0.00*	2,116.65	*2,529.15*
Grants (CFC)	0.00	0.00	0.00	*0.00*	0.00	*0.00*
Symposium costs - Odawara 2012**	0.00	0.00	0.00	*0.00*	0.00	*0.00*
Symposium costs - Freising Congress 2013**	0.00	0.00	0.00	*0.00*	0.00	*0.00*
WDA Awards	845.68	0.00	845.68	*1,385.00* **	0.00	*0.00*
Total expense	**3,029.59**	**0.00**	**867.66**	*1,421.00*	**2,161.93**	*2,583.26*
NET INCOME (LOSS)	**2,068.27**	**4,974.84**	**-867.66**	*-1,421.00*	**-2,038.91**	*-2,436.26*
(If major donation omitted)	**1,943.27**					
BALANCE FORWARD FROM PREVIOUS YEAR	35,417.51	**17,311.00**	**15,520.05**	*25,417.71*	**2,586.46**	*3,090.52*
	Note: will not match prior year subtotals due to currency shifts					
NEW BALANCE *	37,485.78	**22,285.84**	**14,652.39**	*23,996.71*	**547.55**	*654.26*
Less funds held for European symposium*	6,663.30 ? ?					
NET BALANCE AVAILABLE FOR WDA	**30,822.48**					

Note 1: * WDA accounts hold 7,980 EU as escrow FBO European Symposium
Note 2: ?? Not sure if this is still true
Note 3: ** This amount is a total of 1350 + 35 dollars. $1350 was given to Sonia Ferrerira as grant (= 1000 Euro). $ 35 is the fee charge by the Bank for this transfer.
Note 4: ## Donations totaling pound 125 were made on Sep 16th and Nov 20th of 2013.
GENERAL NOTES: Currency conversions based on rates 12/31/13 USD/GBP 0.6106; EUR/GBP 0.8369
Italicized figures are actual currency; other figures are converted and subject to exchange fluctuations

WDA Biennial Report 2013-2015

Treasurer's Year End 2014 Report
30th oct 2015

WORLDWIDE DRAGONFLY ASSOCIATION
Summary of income and expenses, Jan. 1 to Dec. 31, 2014

	YTD TOTAL POUNDS	----- UK ----- POUNDS	-- US Account -- POUNDS	DOLLARS	-- German Account -- POUNDS	EUROS	
INCOME							
Membership & Subscriptions & Royalties*	4,950.32	4,950.32	0.00	*0.00*	0.00	*0.00*	
Affiliated Societies	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Back issue and reprint sales	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Donations - General	4,228.42	0.00	4,228.42	*6,610.00*	0.00	*0.00*	
Donations - Sustaining	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Other income	1,571.06	0.00	0.00	*0.00*	1,571.06	*1,995.00*	**
Total Income	**10,749.80**	**4,950.32**	**4,228.42**	*6,610.00*	**1,571.06**	*1,995.00*	
EXPENSES							
Bank charges	92.98	0.00	35.18	*55.00*	57.79	*73.39*	
Publications - IJO - editor reimbursements	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Publications - other (IDS OAS, Agrion)	1,520.62	0.00	0.00	*0.00*	1,520.62	*1,930.94*	
Grants (CFC)	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Symposium costs - Odawara 2012**	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Symposium costs - Freising Congress 2013**	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
WDA Awards	0.00	0.00	0.00	*0.00*	0.00	*0.00*	
Other expenses	1,857.40	0.00	1,857.40	*2,903.55*	** 0.00	*0.00*	
Total expense	**3,470.99**	**0.00**	**1,892.58**	2,958.55	**1,578.41**	*2,004.33*	
NET INCOME (LOSS)	**7,278.81**	**4,950.32**	**2,335.83**	*3,651.45*	**-7.81**	*-9.33*	
(If major donation omitted)	**3,050.39**						
BALANCE FORWARD FROM PREVIOUS YEAR	**38,184.09**	**22,285.84**	**15,350.70**	*23,996.71*	**547.55**	*654.26*	
	Note: will not match prior year subtotals due to currency shifts						
NEW BALANCE *	**45,462.43**	**27,236.16**	**17,686.53**	*27,648.16*	**539.74**	*644.93*	
Less funds held for European symposium*	6,663.30	??					
NET BALANCE AVAILABLE FOR WDA	**38,799.13**						

Note 1: * WDA accounts hold 7,980 EU as escrow FBO European Symposium
Note 2: ?? Not sure if this is still true
Note 3: ** Wire transfer to Wolfgang Schenider from the US account
GENERAL NOTES: Currency conversions based on rates 12/31/14 USD/GBP 0.6397; EUR/GBP 0.7875
Italicized figures are actual currency; other figures are converted and subject to exchange fluctuations

WDA Biennial Report 2013-2015

11th Nov 2015

WORLDWIDE DRAGONFLY ASSOCIATION
Proposed Budgets for 2013 and 2014

All figures GBP	**Actual 2013**	**Actual 2014**	**Budget 2015**	**Budget 2016**
INCOME				
Membership & Subscriptions & Royalties	4,973	4,950	5,000	5,000
Back issue sales	0	0	0	0
Donations - General	125	4,228	0	0
Donations - Sustaining	0	0	0	0
Other Income	0	1,571	0	0
Total Income	**5,098**	**10,750**	**5,000**	**5,000**
Income excluding extraordinary donations	**4,973**	**6,521**		
EXPENSES				
Bank charges	67	93	100	100
Postage	0	0	50	50
Publications - other (IDS OAS, Agrion)	2,117	1,521	1,700	1,700
Publications - other (OA)	0	0	0	0
Grants	0	0	1,500	1,500
Symposium costs	0	0	1,000	1,000
Travel costs	0	0	0	0
WDA Award	846	0	500	500
Other expenses	0	1,857	0	0
Total expense	**3,030**	**3,471**	**4,850**	**4,850**
NET INCOME (LOSS)	**2,068**	**7,279**	**150**	**150**
Net excluding extraordinary donations	1,943	3,050		

Report of the International Congress Coordinator

The ICO2013 was held in Freising, Germany and was well attended by European members, but with global participation. At the completion of the Congress Florian Weihrauch joined the committee, replacing Frank Suhling (representing the organisers of the 2007 Namibia Symposium/Congress of WDA).

ICO2015 was held in La Plata, Argentina from 15th to 20th November, organised by Javier Muzon. It was intended that this location would enable many South American students of the Odonata to attend. At the completion of the Congress Javier joined the committee, replacing Enrique Gonzales Soriano (representing the Xalapa, 2009 team).

ICO2017 is scheduled for Annaba, Algeria from 3rd to 6th July 2017. Boudjéma Samraoui is the organiser. The organiser and committee will monitor the international situation (as always!).

For ICO2019 we have had several invitations from interesting locations. Given the large number of North American odonatologists we need to revisit that continent (last symposium held there being Colgate 1999). We are establishing if it will be possible to meet in some sort of association with the DSA as this may encourage increased awareness of world Odonata science among members of DSA.

Richard Rowe

Report from the Japanese Group of WDA

Together with several other colleagues, the core members of our group were devoted in preparing and running the 2012 International Congress of Odonatology held at Odawara, Japan. I have been serving as Representative of the group since the fiscal year of 2013 and shall serve for the coming two fiscal years (2015-2016), having been elected by the majority of the group. Since the 2012 event, our activity as a group has been limited but we have been busy in research, social education, and conservation of dragonflies as odonatologists.

Haruki Karube

International Congress of Odonatology 2015

Javier Muzón [jmuzon@undav.edu.ar] & Federico Lozano

The ICO2015 was held from Monday 16th to Friday 20th, November at the Cultural Hall of Seguros Rivadavia in the city of La Plata. The welcome cocktail took place in the afternoon on Sunday 15th at the Museo de La Plata with a large number of attendees. Colleagues from Australia, Brazil, Bulgaria, Chile, Colombia, Costa Rica, Czech Republic, France, Germany, Holland, Hong Kong, Mexico, New Zealand, Peru, Portugal, Puerto Rico, Spain, Sweden, UK, USA and Argentina attended to the meeting. Ninety students and researchers from all of these countries, with a large proportion of Latin American odonatologists, exchanged experiences and views in a friendly and pleasant environment. The scientific program featured seven plenary talks, 74 oral presentations, organized in 11 sessions (Neotropics, Corduliidae, Phylogeny, Genomics, Red Listing, Ecology, Ethology, Conservation, Evolution, Larvae, and Miscellanea) and 36 poster presentations. Besides, a workshop on the red listing process and the IUCN criteria was coordinated by Frank Sühling and Mike Samways.

Unfortunately '*The Niño*' took its toll, and the weather conditions made it impossible to make the Mid-Congress tour. However, we were able to enjoy a wonderful lunch in a typical Argentinean '*Parrilla*' and then visit the National Museum of Fine Arts. The week ended with a fantastic farewell dinner in Café Homero, where the combination of tango and wine was the perfect combination to close the week. The Post-Congress tour, with 32 attendees, was quite successful, and even though the weather was once again not on our side, we were able to visit many different wetlands in the steppe and in the subantartic forest, where we could spot many Patagonian endemics like *Neopetalia*, *Phenes*, *Neogomphus*, and *Gomphomacromia*.

Spotwing (Neopetaliidae: *Neopetalia punctata*), female, San Martin, Argentina, 23 November, ICO 2015, Post-Conference Tour. *Neopetalia punctata* is the sole representative of the Neopetaliidae family, that is now placed in the superfamily Cordulegastroidea. Furthermore, *Neopetalia punctata*, is the only representative of the Cordulegastroidea in South America. Photo credit: KDP Wilson.

Participants of ICO 2015, La Plata, gathered at the end of the lecture sessions in the Cultural Hall of Cooperativa de Seguros Rivadavia lecture theatre.

Participants of ICO 2015 Post-Conference Tour gathered in front of traditional restaurent for farewell dinner in Baroloche, Patagonia, Argentina, 27th, November, 2015.

One of the most expected outcomes of the ICO2015 was the creation of the SOL (Sociedad(e) de Odonatología Latinoamericana) the Latin-American Society of Odonatology. On Tuesday 17th, with the participation of 30 colleagues, the first actions for the foundation of the new Society, which received immediate support from a lot of Latin American colleagues and other regions were agreed. SOL is currently being formed and a new meeting in 2016 is being organized.

As organizers we are very grateful for your assistance, your kindness and your patience. We thank the opportunity given and hope to have unveiled at least a little, the wonders of South American Biodiversity.

International Congress of Odonatology 2015
La Plata, Buenos Aires, Argentina - 15th to 20th November 2015

A participant's view
Keith DP Wilson [kdpwilson@gmail.com]

The 2015 International Congress of Odonatology was very successfully held from 15th to 20th November, 2015 at La Plata, which is the capital city of the Province of Buenos Aires, located some 60 km south of the city of Buenos Aires. The Congress venue and facilities, provided in the Cultural Hall of Cooperativa de Seguros Rivadavia, were very good for conference purposes and conveniently located in the central part of the City, opposite the National University of La Plata, which is a short walking distance from many hotels. Ninety-eight delegates attended from many countries; 37 from South America, 33 from Europe, 20 from North America, three from Asia, three from Australasia and two from South Africa. The organisation and day to day management of the Congress was undertaken by Javier Muzón and his able management team comprising Federico Lozano, Lía Ramos, Alejandro del Palacio, Ayelén Lutz, Soledad Weigel Muñoz and Pablo Pessacq. The organisation of the Congress was also aided by a number of collaborators; Natalia Bianchi Chialva, Aldana V. Muzón, Danielle Anjos Dos Santos, Roberto Jensen, Ramiro A. Manzo, Camila Rippel and lastly Alejandro del Palacio, who managed the Congress web site [http://ico2015-argentina.com.ar/congress/]. Many, many thanks to Javier, his management team and collaborators for providing such a smoothly run, full and varied congress. The Congress commenced on Sunday evening, on the 15th November, at a welcome reception held at the Museo de la Plata (Argentina's foremost natural history museum), where delegates were treated to a cocktail, wine and a buffet meal in very fine surroundings.

Figures 1-3. Fig. 1. ICO 2105 logo. Fig. 2. Museo de la Plata; Argentina's foremost natural history museum. Fig. 3. Cocktail reception at the Museo de la Plata, 15 November, 2015, photo credit: Erland Nielsen.

The Congress Programme

The Congress Programme was divided into 11 sessions and seven plenary talks. The sessions comprised (i) Neotropics, (ii) Corduliidae, (iii) phylogeny, (iv) genomics, (v) miscellanea, (vi) red listing, (vii) ethology, (viii) ecology, (ix) conservation, (x) evolution, and (xi) larvae. There were no parallel sessions so it was possible to attend all the presentations, which were typically 15 minutes long, and hear what everyone had to say. Abstracts of the talks and posters were contained in an ICO 2015 book of abstracts provided to all participants in digital form, which also included a list of participants and the planned Congress Programme.

Session 1, Neotropics. Javier Muzón opened the first session with a presentation titled: "Odonata from Patagonia. Diversity and distribution patterns". This was of particular interest to many of the participants who would be attending the Post Conference Tour in Patagonia and for those who wanted to learn more about Patagonia's ancient, endemic Gondwana species. Other presentations in the first session included summaries and the state of knowledge of the odonate faunas from Central and South America with a series of focused talks on Bolivia, Brazil, Argentina, Chile, Uruguay, Colombia and specialist studies on the *Polythore*, *Protallagma* and *Oxyallagma* from Peru.

Figure 4. Participants gather in the Cultural Hall of Cooperativa de Seguros Rivadavia lecture theatre for the opening of the ICO 2015 lecture session on the morning of 16 November, 2015.

Milen Marinov gave the first presentation of Session 2, on corduliids, with a talk titled: "Gone with the wind updated - the Pacific story of *Hemicordulia*", and updated our knowledge of the species and distribution of *Hemicordulia* in the Pacific islands. Ângelo Pinto followed with a talk on the taxonomic status of the corduliid genera of Central and South America. He pointed out that South American *Gomphmacromia* is now placed in Synthemistidae and the only genus in this family known from the region, however the genera *Lauromacromia* and *Neocordulia* are problematic and currently considered *incertae sedis* genera.

Session 3, on phylogeny, chaired by Michael May, included many presentations involving research studies using molecular approaches to help try and explain patterns of speciation, adaptation and biodiversity. Wiebke Feindt's presentation, titled: 'Speciation at the genomic level: First insights into comparative transcriptomics in the Neotropical damselfly genus *Megaloprepus*' introduced the term 'transcriptomics' and her group's findings support the presence of new cryptic species and subspecies closely allied to *Megaloprepus caerulatus* in populations from Corcovado National Park in Costa Rica and Pico Bonito National Park in Honduras. As one of the older members of the audience I was probably not the only one to wonder: 'What the hell are transcriptomics?', and in desperation googled an explanation on my smart phone. It turns out transcriptomics is the study of the transcriptome, which is the complete set of RNA expressed gene transcripts, that are produced by the genome, under specific circumstances or in a specific cell, using high-throughput methods, such as microarray analysis.

Another phylogeny presentation by Manpreet Kohli, focused on molecular studies of the various circumpolar, arctic and subarctic populations of *Somatochlora sahlbergi*, from Alaska, Yukon, Scandinavia and Siberia. We were intrigued to hear from Manpreet, about the team's joy on finding flying *Somatochlora sahlbergi* in the field, and that their return home journey would not involve the horrendous and arduous conditions suffered by John Sahlberg on his return home from his expedition to Siberia in 1876, described by Matti Hämäläinen in the last, July 2015, issue of *Agrion*. But, Manpreet described the finding of flying *Somatochlora sahlbergi* to be the best and worst day of her life, as on return to her team's vehicle, parked many miles from civilisation, she discovered it was locked, with the key inside!

Within the phylogeny session we also received presentations on the phylogeny of the Ansioptera from Mike May, and the combined use of molecular and morphological studies in assessing populations of *Polythore* species suggesting the presence both polymorphic and cryptic species, presented by William Kuhn.

In the fourth session, miscellanea, we were given a presentation on the morphometric analysis of *Ischnura capreolus* and *Ischnura cyane* and a possible intermediate morphotype in Colombia, presented by María Isabel Velásquez Vélez, a talk on morphological adaptations of dragonflies to migration given by Catalina María Suárez Tovar and a presentation on the varied and interesting fossil Odonata from Argentina given by Julián Petrulevičius. In Milan Marinov's miscellanea presentation on: 'The seven "oddities" of Pacific Odonata biogeography' he introduced a controversial idea that vessel transport might explain many or at least some odonate Pacific island distributions and introductions. Klaus-Jürgen Conze provided details of the forthcoming German distribution atlas of dragonflies, which will be published in 2015 (for more information see www.libellula.org) and Tam Tze-wai provided an account of the current status of the dragonflies in Hong Kong, ten years after a territory wide survey conducted in 2002-2004. We were also due to receive a presentation from Adolfo Cordero Rivera on the status of *Rhionaeschna galapagoensis* (Currie, 1901), with notes on its biology, but most unfortunately for Adolfo he fell seriously ill at the beginning of the conference due to a mosquito-transmitted infection, but happily, recovered several days later, after hospitalisation.

In Session 5, on genomics, the term transcriptomics resurfaced in several talks. We were due to hear about the preliminary results from the 1KITE TransOdonata subproject from Jessica Ware but unfortunately Jessica was unable to attend the Congress. 1KITE stands for: '1K Insect Transcriptome Evolution' and the project aims to study the transcriptomes (that is the entirety of expressed genes) of more than 1,000 insect species

encompassing all recognized insect orders, and also aims to use morphology and transcriptomics to infer the phylogeny of Odonata, Ephemeroptera, and the umbrella grouping of 'Palaeoptera'. Seth Bybee gave a useful and informative talk on 'Odonata Genomics: why it matters', which helped to explain some of the emerging technologies and bioinformatics tools now being used in the study of insects. The term SNPs, pronounced 'snips', was used freely in many of the genomic presentations. The acronym stands for 'single nucleotide polymorphisms' where each SNP represents a difference in a single nucleotide.

Erik Svensson gave a genomics presentation titled: 'Ecology and evolutionary dynamics in polymorphic damselflies: how can genomics and transcriptomics increase our understanding of evolutionary processes?' Erik pointed out that frequencies of andromorphism increased the further north in populations of *Ishcnura,* presumably in response to shorter breeding seasons. Mary Duryea followed Erik with a talk on: 'Transcriptomics of mating harassment in a polymorphic damselfly'. Mary described her field studies and lab work to investigate the hypothesis that gene expression related to mating harassment will be detected in the common *Ischnura* morph in biased morph treatments conducted in field enclosures. Rudolf Schilder used Pool-Seq to examine genetic variation affecting male fitness in the 12-spotted skimmer, *Libellula pulchella*. He found considerable variation in flight muscle performance and found parasitic infection significantly affected behaviour and flight muscle fitness. We also heard from M. Olalla Lorenzo Carballa who gave a presentation titled: 'Population genomics of sexual and parthenogenetic *Ischnura hastata*'. Olalla described her technique of Genotyping by Sequencing (GBS) which was used to analyze the genetic diversity of 400 sexual and parthenogenetic *Ischnura hastata*, in order to try and disentangle the geographic origin of the asexual lineage of this species found in the Azores islands, although further studies are still needed to answer the latter question.

Miguel Harte is a renowned Argentine plastic artist who has a passion for insects, especially dragonflies. When Miguel knew the ICO2015 was going to be held in Argentina he kindly made the above drawing in honour of the meeting. For more information visit his website: [http://miguelharte.com.ar/eng/bio.html].

Session 6, red listing, included three talks utilising the IUCN red listing process. These presentations comprised: 'First Red List assessment for Odonata in Colombia, with some study cases' by Cornelio A. Bota-Sierra, Bill Mauffray, Fredy Palacino-Rodriguez, Ken Tennessen & Edwin Ussa. Cornelio informed us that in Colombia (42 endemic species) and Ecuador, a total of 110 endemic Odonata species were assessed of which 5% were Critically Endangered (CR), 19% Endangered, (EN), 15% Vulnerable (VU), 5% Near Threatened (NT), and 31% Data Deficient (DD). Frank Suhling discussed the difficulties in applying IUCN red list criteria, which were originally formulated for larger animals such as mammals, to odonate populations based on size reductions, small geographic ranges, small population sizes and declines, very small restricted populations or quantitative analysis. This presentation was followed by Klaas-Douwe B. Dijkstra who gave a talk on the 'Red List of African Dragonflies: backgrounds and perspectives'. KD also stressed the importance of taxonomy and informed the incredulous audience he has just published a single paper describing 60 new odonate species from Africa, together with Jens Kipping and Nicolas Mézière in the December 2015 issue [Vol. 44(4)] of *Odonatologica*, which adds one new species for every 12 species hitherto known from Africa. An unscheduled presentation was also given by John Simaika on the recent activities of the IUCN, Species Survival Commission's Invertebrate Conservation Sub-Committee (ICSC IUCN/SSC).

Session 7, ethology, included eight talks on the scientific and objective study of animal behaviour. Georg Rüppell showed that amazing slow motion video footage of flying and interacting dragonflies can be taken with a modern digital camera (Sony RX10, with a 1" sensor), at relatively low cost compared to the historical use of very expensive cine film. His presentation compared the flight behaviour of dragonflies and damselflies. Dagmar Hilfert-Rüppell followed with an analysis of high-frequency, threatening flights of *Calopteryx* females and males. Diogo Silva Vilela gave his presentation titled: 'Visual signals influence the outcome of territorial fights in the tiger damselfly *Tigriagrion aurantinigrum*' involving the marking of adult males and studying the outcome of territorial disputes and the influence of facial colour patterns. My vote for the most amusing presentation of the Congress goes to Amanda Whispell whose talk, titled: 'Physiological color change in response to mating-associated behaviours in *Argia apicalis*', involved the filming of American bullfrogs in laboratory conditions and their hilarious lunges at presented specimens of light and dark-forms of male *Argia apicalis.* Amanda found that males do indeed change to a subdued colour following mating and both avian and amphibian predators tested do predate significantly more on the brighter coloured males. In the ethology session we also heard from Rhainer

Guillermo Ferreira on the 'The remarkable wings and behaviour of the morpho-dragonfly *Zenithoptera lanei*'.

To wrap up the ethology session we were treated to two amazing talks by Robert Olberg & Andrea Worthington, the first presented by Robert, titled: 'Individual neurons in the dragonfly ventral nerve cord control wing, head, leg, and mouth movement' and the second given by Andrea, titled: 'Identified neurons in the dragonfly ventral nerve cord signal the approach of flying prey'. We were informed that eight bilateral pairs of large neurons, known as Target-Selective Descending Neurons (TSDNs), in the dragonfly ventral nerve cord respond only to the visual movement of small contrasting objects. Their intricate physiological experiments, conducted in a highly complex laboratory set-up, found that high-frequency activity in the axons of individual TSDNs was sufficient to elicit both head rotation and movements of the wings. Robert and Andrea hypothesise that the same neuron that causes a flight turn in one direction also causes the counter-rotation of the head in the opposite direction, allowing the eye to remain fixated on the prey during pursuit. The role of such simple neural systems goes a long way to explain how insects, such as dragonflies, can respond to visual stimuli in just 30 milliseconds.

Session 8 on ecology included three presentations; the first from Samuel Renner talking on the: 'Habitat selection of dragonflies in terms of vegetation and aquatic environments in an Atlantic Forest conservation unit, RS, Brazil'. We were informed that the mixed ombrophilous forest in the Floresta Nacional de São Francisco de Paula study area occurred in the Southern Brazilian Atlantic Forest, which is one of the richest biomes on Earth. Given that so much of the original Southern Brazilian Atlantic Forest has been felled it is important that these pioneering Brazilian studies to provide overviews of the species distribution patterns among the various habitats and to compile species inventories are continued. Franz-Josef Schiel followed with a talk on his experiments and findings investigating drought resistance in European *Aeshna* and *Sympetrum* eggs. The last ecology talk was given by Diana Goertzen who discussed urban dragonflies and posed the question: 'Do dragonflies benefit from urbanisation?' Her results showed one-third of common European species, such as *Anax imperator*, had a clear preference for urban areas and there was a clear negative impact on two species, namely *Aeshna grandis* and *Lestes sponsa*.

In Session 9, on conservation, Mickaël Le Gall opened with a presentation on the 'Role of ponds in maintaining connectivity between *Ischnura elegans* populations along a Blueway in Normandy, France' followed by John Abbott talking on the 'Distribution, habitat requirements and

Figures 5-7. Mid-Congress Tour and lunch in Buenos Aires. Heavy rain prevented the planned visit to the 'El Destino' nature reserve, which is located inside the Parque Costero Sur, a UNESCO Biosphere Reserve, located approximately 60 km south of the city of La Plata.

conservation of two rare dragoflies in southeast Texas and western Louisiana, United States'. John explained that the species *Cordulegaster sarracenia* and *Somatochlora margarita* were restricted in their distributions to *Sarracenia alata* pitcher plant bogs and small forest streams, respectively, in southeast Texas and western Louisiana and both were threatened by habitat destruction loss due to lack of management. Ulf Bjelke then gave his presentation titled: 'Odonata in the European Habitats Directive' and tried to explain the rationale behind the selection of the 16 Odonata species currently listed. Ulf pointed out that perhaps not all the listed species represented those most in need of conservation effort but in several countries the Habitats Directive had led to a substantial build-up of knowledge, not just on the listed species but on their Odonate faunas in general. Marciel Elio Rodrigues followed with a presentation on 'Nonlinear responses in damselfly community along a gradient of habitat loss in a savannic landscape'. Marciel used Threshold Indicator Taxa Analysis (TITAN) on damselflies collected along 100m stream-side transects in Brazilian agricultural habitat and showed the importance of minimal levels of forest cover; usually above 40% for many species and much higher for a few forest dependant species. John Simaika then returned to give a presentation on: 'Predicted response of dragonflies to climate change along an elevation gradient'. In John's modelling of South African odonates three widespread species were predicted to be extirpated in all three scenarios tested, whilst others moved up in elevation, and either reduced or increased their range.

After Thursday's mid-Congress Tour to Buenos Aires, Session 10, on evolution, commenced on Friday morning, 20th November, 2015. Sónia Ferreira gave the first talk titled: 'Evolutionary history of *Coenagrion mercuriale* clade: the importance of multilocus genetic approaches to detect cryptic diversity, introgression and selective sweeps'. Sónia's studies showed three distinct lineages of *Coenagrion mercuriale* in Europe, Italy and north Africa corresponding to three previously described subspecies. Nick Donnelly followed with his presentation on 'Modes of hybridization in North American Odonata .. implications for fertile hybrids'. Nick pointed out that in zones of intense hybridization examples of 'pure species' are very difficult to find and the abundance of 'intermediate species' strongly suggests they are fertile. Ola Fincke then gave her talk titled: 'Trade-offs in female signal apparency to males offer alternative anti-harassment strategies for color polymorphic females'. Apparently 'signal apparency' means the ease of detecting and recognizing females under scenarios where they are at risk of harassment or predation. Ola's field experiments showed green *Enallagma hageni* females were less likely than blue females to be detected by males when encountered on ferns but in the presence of males, blue females were less likely to be recognised than green females. In conclusion females can behaviourally optimize their signal apparency by morph. Next in the session was Beatriz Willink's presentation titled: 'Ontogenetic color change and intersexual communication in the common bluetail damselfly (*Ischnura elegans*)'. Beatriz informed the audience that all three sexually immature female morphs and males display a blue patch on the eighth abdominal segment. Paired experiments showed females of all morphs and stages experienced more male approaches when the abdominal patch was coloured brown.

After coffee the evolution session continued with a talk from Yesenia Margarita Vega Sánchez titled: 'Is the American rubyspot damselfly a species complex? Unraveling the evolutionary history of *Hetaerina americana*'. Yesenia stated her English was terrible and then delivered an almost flawless presentation in perfectly good English. Yesenia's morphological and genetic studies, using mitochondrial cytochrome oxidase I gene and six nuclear microsatellites, indicate the presence of at least one cryptic species. The mitochondrial DNA sequences revealed the presence of three haplogroups and strong phylogeographic structure and the morphology of the male cerci showed, at least, two clearly distinguishable morphs. However, the mitochondrial DNA variation did not show congruence with the morphological and nuclear DNA differentiation pattern that could be explained as a result of incomplete lineage sorting due to the probably recent divergence of the putative species. The next presentation given by Ingrid E. Alvial was titled: 'Founder effect and signal of adaptation in the most widespread dragonfly, *Pantala flavescens*'. Discriminant analysis of nine morphological measurements of specimens collected from northern Chile, southern Peru and Eastern Island separated Easter island individuals from all other sites. Results of the genetic studies showed reduced COI haplotype diversity in Easter Island population in comparison to Chile and Peru and haplotype frequency distribution in Easter Island showed evidence of bottleneck suggesting a founder effect.

The last two talks in the evolution session were given by John Waller who spoke about body size evolution in odonates on the micro- and macro- scales and Kamilla Koch whose presentation was titled: '*Trithemis stictica* - lost in the desert mountains?' John showed a correlation between larval development time and body size and commented that large species such as *Tetragynacantha* larvae were known to speed up development by eating fish. Kamilla showed that *Trithemis stictica* populations were significantly smaller in the Naukluft mountains of Namibia than in South Africa populations and speculated that the two groups were formed from separate gene pools, leading to an independent development of the wing structures in both populations.

Session 11, the last session, on larvae, involved talks on 'Advances on the larval taxonomy of the genus *Epigomphus*', presented by Rodolfo Novelo Gutiérrez, 'Exploring the vision of larval odonates' presented by Camilla (Milly) Sharkey, 'Unflexible versus flexible: a comparison of the pre and post eyespot development in Libellulidae', presented by Kamilla Koch, 'Estivation of larvae - a rare phenomenon in bionomy of the

Cordulegaster species', presented by Otakar Holuša, 'Cordulegastridae - large dragons of small streams', presented by Klaus Guido Leipelt and lastly 'High proportion of broken and deformed procts and lateral spines in larval *Boyeria irene*', presented by Andreas Martens. In the latter talk the malformed and injured spiny appendages were interpreted as marks of successful defence against fish predation.

In addition to the 11 sessions, scattered throughout the Congress we received six 45 minute long plenary talks. A scheduled seventh plenary talk titled, 'Insights into etho-diversity: a study of two *mirabilis*, *Hemiphlebia* and *Pseudolestes*' was cancelled due to Adolfo Rivera's hospitalisation. The six plenary talks comprised:-

- A framework of Anisoptera phylogeny - Frank Louis Carle, Karl M. Kjer & Michael L. May. Mike brought us up to date on his team's exhaustive studies on the phylogeny of anisopterans.
- Flying colours: will dragonflies be the first insect order to break the 'vertebrate barrier'? - Klaus Douwe B. Dijkstra. As is typical for KD he covered many topics in a short space of time but in essence he explored the idea that odonates could become the new birds as they are so colourful, charismatic and conspicuous, discussed the Odonata Database of Africa and its vulnerable species, noted the potential for the use of citizen science to monitor global change in odonate distributions, and trumpeted the great potential for public involvement and use of social media in promoting odonate studies.
- Conservation of narrow range endemics: what are the ingredients of success - Michael J. Samways. Michael discussed the Dragonfly Biotic Index and showed its application in South Africa. Removal of alien trees, which shade out stream habitat, helped to restore sites supporting rare endemics *Ecchlorolestes peringueyi* and *Syncordulia gracilis*.
- Development in the study of Mexican odonatology. From larval to adult stage - Enrique González Soriano & Rodolfo Novelo Gutiérrez. Enrique described Mexico as a megadiverse country with only Brazil, Colombia, China and Indonesia with higher levels of biodiversity. Enrique also reviewed the history and development of odonate research in Mexico and highlighted four odonate biodiversity hotspots at (i) Cuatro Ciénegas, (ii) Huasteca, (iii) Coalcomán, Michoacán, & (iv) Los Tuxtlas, Veracruz.
- Dragonfly biodiversity in Swedish forest lakes: current interpretations of patterns observed - Göran Sahlén. Göran, in his typical humorous fashion, explored the Swedish boreal landscape, including its 227,000 lakes greater than 0.1 ha, and discussed his Halmstad University team's studies on the factors affecting the temporal changes and distribution patterns in Swedish odonate populations.
- Dragonfly distribution in times of global warming: presumptions, patterns, processes - Frank Suhling. Frank discussed potential range shifts in response to global warming, reviewed some documented range expansions such as *Crocothemis erythrea* in Europe and *Ictinogomphus pertinax* in Japan, and discussed the various factors involved. He also noted some range expansions may be storm driven such as *Anax ephippiger* in South

Figures 8-10. Fig. 8. Participants view some of the 36 posters in the poster display room at the Cultural Hall of Cooperativa de Seguros Rivadavia. Fig. 9. Javier Muzón presents the winning 'best poster' award to Cornelio A. Bota-Sierra. Fig. 10. Javier Muzón thanks his ICO 2105 Management Committee.

America and the Caribbean and anthropogenic such as *Crocothemis erythrea* in Florida.

ICO 2015 Posters

Thirty-six posters were catalogued in the ICO 2015 book of abstracts and these were displayed in a poster display viewing room at the Cultural Hall of Cooperativa de Seguros Rivadavia. A ballot was held of all participants to select an overall winning poster, which was awarded to the poster titled: 'Dragonflies of the Tatamá National Park (Colombia): a case study of altitudinal distribution patterns using critical flight temperatures' by Cornelio A. Bota-Sierra & Gustavo Londoño. The standard was so high a second place award was also given to the poster titled: 'New EPIC nuclear DNA sequence markers to improve the resolution of phylogeographic studies of Coenagrionids and other odonates' by Sónia Ferreira, M. Olalla Lorenzo Carballa, Yusdiel Torres Cambas, Adolfo Cordero Rivera, David J. Thompson & Phillip C. Watts. Following the completion of lecture sessions awards were given to these first and second place poster winners by Javier Muzón.

ICO 2017

After the poster awards Javier Muzón thanked his ICO 2015 Management Committee and handed over the conference wooden baton (a Swedish traditional item, known as a buþkaflar, used to organise assemblies and often heralding impending danger!) to WDA's Symposium Co-ordinator Richard Rowe. The next International Congress of Odonatology is scheduled to be held 3-6 July, 2017 in Annaba, Algeria. Although it is generally safe to move around Algiers and the other main cities in Algeria, there is nevertheless a high threat from terrorism, including kidnapping. Richard Rowe announced that in view of the potential problems convening a 2017 Congress in Algeria, at the present time, it may be necessary to formulate alternative arrangements.

Figures 11-13. Fig. 11. Richard Rowe takes possession of the Symposium baton and announces the potential need for a Plan B venue for hosting ICO 2017 in view of the current travel warnings issued for Algeria. Fig. 12. Erland Nielsen's photo of tango dancers at the farewell dinner. Fig. 13. Participants enjoying the farewell dinner and tango performances in Buenos Aires.

ICO 2015 Post Congress Tour 22-28 November, 2015

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The Post Congress Tour visited the Lanin and Nahuel Huapi National Parks in Argentine Patagonia from 22nd to 28th November, 2015. Thirty-two participants from the Congress made their own way by plane or coach to meet up in San Martin de los Andes town on Sunday, 22nd November for the beginning of the tour. The first three days, 22-24 November, 2015, were centred around San Martin de los Andes, Neuquén Province with visits to Lanin National Park and a boat trip across Lácar Lake. On the 25th November 2015 the group transferred by bus to San Carlos de Bariloche, Río Negro Province. The route taken took us along the scenic National Route 234, known

Figures 14-19. Fig. 14. *Phenes raptor* found dead, after a cold spell, by Federico Lozano in Lanin National Park, San Martin, 23 Nov 2015. Fig. 15. Odonatologists gather in Lanin National Park, San Martin, 23 Nov 2015. Fig. 16. The Argentine guide team at Quilaquina, Lácar Lake, San Martin, 24 Nov 2015. Fig. 17. Odonatologists gather to visit torrent ducks at a waterfall on the Rio Pichi Traful, 25 Nov 2015. Fig. 18. Rio Pichi Traful waterfalls & torrent duck information. Fig. 19. Water temperatures in the Rio Pichi Traful were especially cold, ca. 8°C. Photo credits: Keith DP Wilson.

Figures 20-25. Patagonian dragonflies observed during the Post Congress Tour, 22-28 November, 2015. Figs 20-23. Petaluridae: *Phenes raptor*, San Martin, Argentina. (20) Male, (21) female, (22) female close-up, (23) exuviae, found by Klaus-Jürgen Conze. Figs 24-25. Cordulegastroidea: Neopetalidae: *Neopetalia punctata*, San Martin, Argentina; the only member of Neopetaliidae. (24) male, (25) female. Photo credits: Keith DP Wilson.

Figures 26-31. Patagonian dragonflies observed during the Post Congress Tour, 22-28 November, 2015. Figs 26-27. Cordulegastroidea: Neopetaliidae: *Neopetalia punctata*, San Martin, Argentina. (26) female close-up, (27) female caudal genitalia. Figs 28-29. Synthemistidae: *Gomphomacromia paradoxa*, San Martin, Argentina. (28) Male, (29) female. Figs 30-31. Corduliidae: *Rialla villosa*, San Martin, Argentina, male. Photo credits: Keith DP Wilson.

as Seven Lake's Road, and on the way we visited the Ñivinco Falls on the Rio Pichi Traful, where most of the group were fortunate to view the rare torrent duck (*Merganetta armata*), which was nesting at the falls. On the 26th we visited the Patagonian steppe and on the last field trip day on Friday 27th we enjoyed a great, but bracing boat trip across Nahuel Huapi Lake, with magnificent views and attendant kelp gulls, on our way to visit Nahuel Huapi National Park.

There are just 36 odonate species known from the vast area of Patagonia but 60% of these species and 40% of the genera are endemic to the area in Chile and Argentina. The biodiversity pattern in Patagonia is

Figures 32-37. Patagonian dragonflies observed during the Post Congress Tour, 22-28 November, 2015. Figs 32-33. Aeshnidae: *Rhionaeschna*, San Martin, Argentina. (32) *Rhionaeschna absoluta*, male, (33) *Rhionaeschna diffinis*, male. Figs 34-35. Libellulidae: *Erythrodiplax connata*, San Martin, Argentina. (34) Male, (35) female. Figs 36-37. *Cyanallagma interruptum*, Bariloche steppe, Argentina, 26 Nov 2015. (36) male, (37) female. Photo credits: Keith DP Wilson.

characterized by two main faunistic components: the subantarctic, restricted to the southern beech (*Nothofagus*) forest on both slopes of the Andes, and a widespread Neotropical component, mainly distributed on the dry Argentine steppe. The rare and endemic species inhabit the subantarctic *Nothofagus* forest from 39º S to 45º S, and include the charismatic petalurid *Phenes raptor* and the sole representative of the Neopetaliidae, *Neopetalia punctata*. The nearest extant relatives to *Phenes raptor* are found in New Zealand and Australia, which reflects their Gondwana origins.

The weather was fairly cold during the beginning of the tour but towards the end of the week it had warmed up considerably. Despite the relatively cool Argentine spring we were lucky enough to encounter several of the rare and charismatic species (see Figs 14-37). Many thanks to our Argentine guides Pablo Pessacq, Javier Muzón, Federico Lozano, Lía Ramos, and Alejandro del Palacio and Soledad Weigel Muñoz for your good company, for arranging such enjoyable field trips and for your expert guiding.

Figures 38-39. Patagonian odonate habitats, Post Conference Tour. (38) Stream in southern beech (*Nothofagus*) forest, San Martin. River valley marshy pool in Patagonian steppe, near Bariloche. (39) Photo credits: Keith DP Wilson.

Metamorphosis of *Zyxomma obtusum* in Bali Barat National Park, Bali, Indonesia

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On 22-23 September, 2014, the Indonesia Dragonfly Society (IDS), together with a team from KOMPAS TV (a local television company), were looking to film a sequence of dragonfly emergence. We selected a pool in Prapat Agung, Bali Barat National Park, Bali. The pool was located at the edge of a 'buta-buta' mangrove forest (*Excoecaria agallocha*), and was overshadowed by a canopy of trees. The pond, ca. 10 m x 8 m, was sited approximately 200 m from the beach, had a mud substrate with many stones, and lacked any aquatic plants, or marginal vegetation. The depth was about 20 cm and there were many dytiscid diving beetles (*Sandracottus* spp.) present.

On the first day, we observed the ponds and searched for larvae at 3:00 am, however, we could not observe the emergence process because all metamorphosis had finished. Several teneral dragonflies were ready to take flight. On the second day, we arrived much earlier at 9.00 pm and were successful.

At 10:00 pm we saw a *Zyxomma obtusum* Albarda larva begin to climb up a stone in the pond. Five other larvae were also observed climbing up another stone in an adjacent pond from after 10:00 pm until 11:30 pm. Emergence first commenced at 23:47 pm, when the dorsal part of thorax split first, and the process continued until 02.55 am when the dragonfly was ready to fly. The sex of all six emerging dragonflies was female. Not all the larvae completed their emergence perfectly. Five larvae successfully developed, ready to fly, but one of them failed to fully develop. The wings were curly and could not be stretched; this dragonfly dropped into the water and was eaten by dytiscid diving beetles (*Sandracottus* sp.), see Figure 13.

Z. obtusum is a crepuscular dragonfly, active at dusk (Orr, 2005; Lieftinck, 1954). It is distributed widely over Sundaland and is also known from India and Japan (Orr, 2005; Lieftinck, 1954; Ngoi et al., Tsuda, 2000). In Bali it was recorded by Lieftinck in 1936 (Lieftinck, 1954). Its habitat includes lakes, pools and canals and is tolerant of polluted water (Orr, 2005). The record of emergence of *Zyxomma obtusum* at Bali Barat National Park is the first documented record of the process of metamorphosis in this species.

Acknowledgements

We thank the Kompas TV Team who accompanied us during the survey. We are also very grateful to Magdalena Putri N. for reviewing this manuscript.

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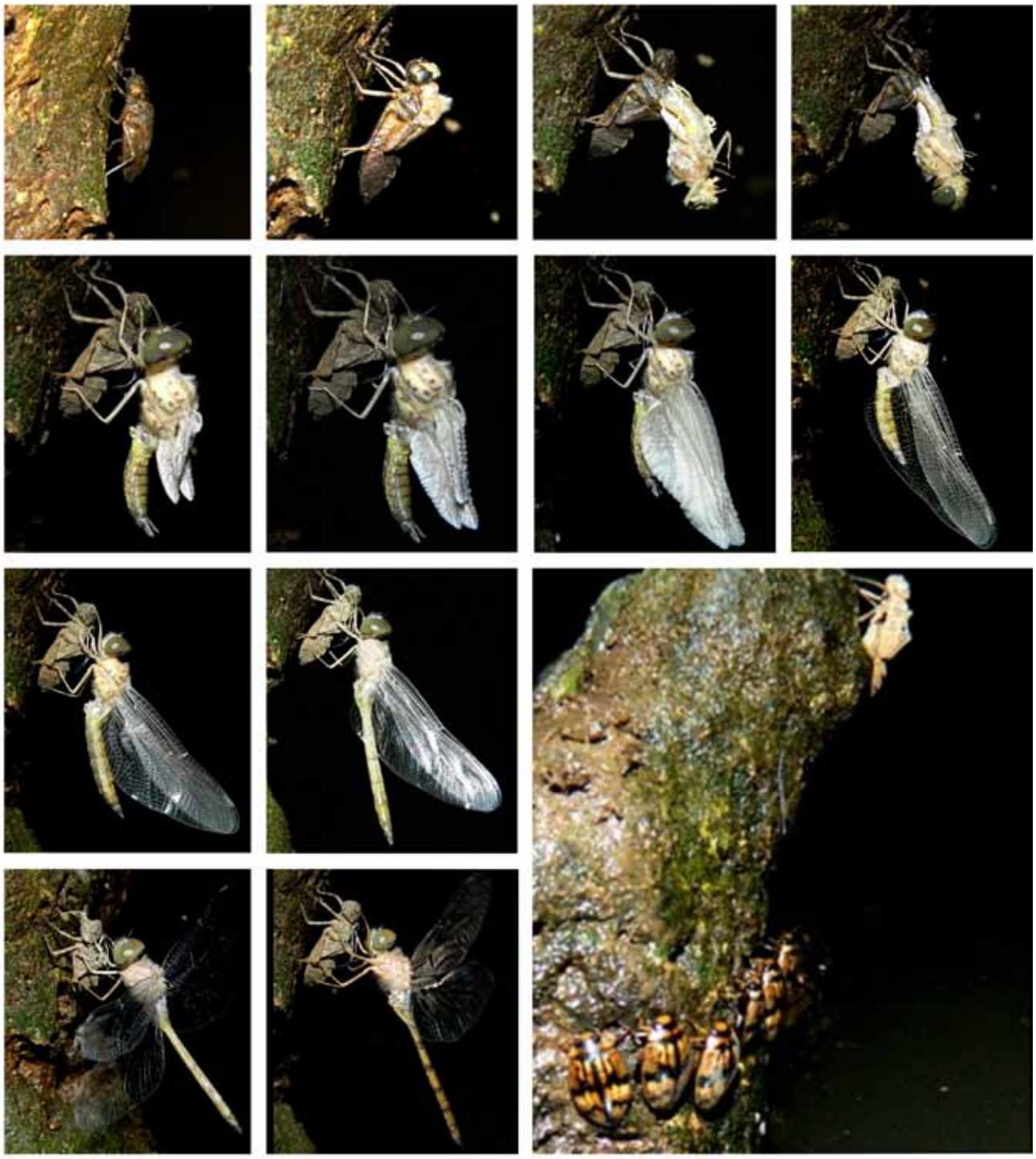

Figures 1-13. *Zyxomma obtusum* emergence. (1) *Z. obtusum* larvae climbs 30 cm from water's surface. (2) 01:23 am, larvae skin splits and emergence commences. (3) 1:28 am, body half emerged. (4) 1:33 am. (5) 1:45 am, whole body extreacted. (6) wings about same length as abdomen. (7) 2:40 am. (8) 2:48 am, wings expanded to full dimensions. (9) 2:49 am. (10) 2:50 am, (11) 2:55 am wing and body fully developed.. (12) 3:00 am wings begin to vibrate and at 5:00 am. (13) One emerging *Z. obtusum* dragonfly failed to develop properly and fell into the water where it was eaten by numerous dysticid diving beetles, *Sandracottus* sp.; these beetles are shown in the photo waiting below an emerging larvae.

Conservation activity for Japanese endemic dragonfly, *Sympetrum maculatum* Oguma, 1915

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Sympetrum maculatum is IUCN Red Listed as Endangered and is endemic to Japan. It has been recorded historically only from Japanese mainland locations in Kinki, Chugoku, Tokai, Hokuriku and Tohoku districts. Suitable habitats are confined to just a few limited areas. In recent years all habitats in Fukui, Kyoto, Nara, Osaka, Okayama, Tottori and Hiroshima Prefectures have been destroyed. The causes of extinction may be related to land reclamation, water pollution, type of water plants present, spraying of agricultural chemicals, and predation by introduced animals, but the exact reasons for declines have not yet been clearly explained. The larvae appear to need very clear water, in areas uninhabited by humans, and the habitat usually has emergent vegetation less than 20 cm high. In the 21st century we have learned that harvesting tall emergent aquatic plants may be essential for *S. maculatum* to provide open water for oviposition. By undertaking emergent vegetation cutting and clearing operations several habitats have been managed to support many generations of *S. maculatum*.

In Niigata Prefecture more than 100 breeding locations of *S. maculatum* were known in the past, but currently, fewer than 10 sites remain. Members of the Japanese society for Odonatology arranged for a special excursion to observe one of the last remaining habitats and to participate in a conservation programme at Matsunokidaira-no-ike (pond and pine tree plateau) in Murakami city in 2015.

The 58th annual meeting of the Japanese Society for Odonatology was held at Murakami city in Niigata Prefecture on 21-22 September, 2015. The organizing committee invited all participants to stay for an extra day to attend a short excursion and join in a programme of conservation activities. In the end more than thirty members from all over Japan decided to join this small tour and working group; such is the appeal of *Sympetrum maculatum,* a rare species for most of the partcipants.

On September 23rd we left our hotel at 9:00 am to visit a pond in Kitashinpo-oike where *S. maculatum* was abundant in the past but is now extinct. Although *S. maculatum* no longer occurs at this pond many other dragonflies were present including rare *Sympetrum croceolum*. We then moved to Matsunokidaira-no-ike at 10:45 am. At Matsunokidaira-no-ike local volunteers gave a brief explanation of how they were maintaining the precious

Figure 1. Participants of the Matsunokidaira-no-ike working party, 23 September, 2015.

habitat suitable for *S. maculatum* and we also made observations of dragonflies and damselflies at the site. Within thirty minutes we observed more than fifty pairs of *S. maculatum*, which had came to the pond to oviposit. *Ceriagrion melanurum*, *Aeshna crenata*, *Sympetrum kunckeli* and *Sympetrum frequens* were also observed in spite of the short period of observation time.

After the observation and limited collection, all of the partcipants engaged in removing water plants according to the instruction of conservation members. We all worked hard together for these lovely insects and left the area in the afternoon.

Figures 2-7. *S. maculatum* at Matsunokidaira-no-ike, 23 September, 2015. (2) Matsunokidaira-no-ike. (3) Male *Sympetrum maculatum*. (4) Female *Sympetrum maculatum*. (5) Working party clearing vegetation to create open water. (6) Kitashinpo-oike. (7) Ovipositing pair of *Sympetrum maculatum*, photo credit Y. Yoshino.

Norman Winfrid Moore – Obituary
Age 92 - 24 February 1923 to 21 October 2015

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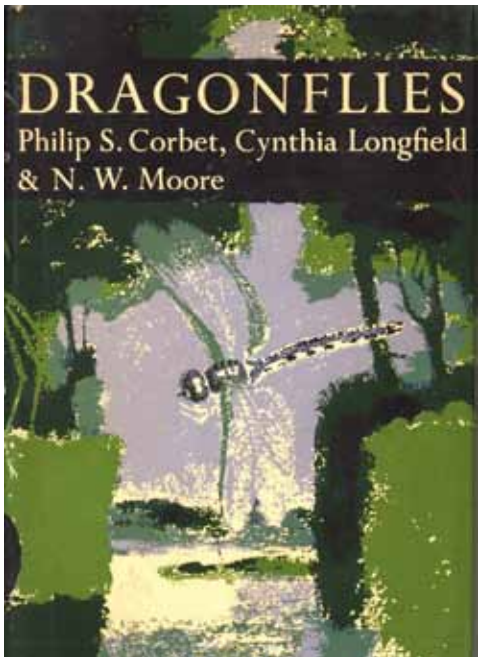
Norman Moore, an extremely polite, gentle and humble man, was a lifelong naturalist, ecologist and conservationist. He is perhaps best known in the wider community, outside the world of dragonflies where he was undoubtedly a world authority, for his research work on the effects of pesticides on wildlife. He was head of the Toxic Chemicals and Wildlife Division at the Nature Conservancy's Monks Wood Experimental Station near Huntington, Cambridgeshire from 1960 to 1974. His team researched the devastating effects that the widespread agricultural use of organochlorine pesticides, such as DDT, aldrin, endrin and dieldrin, had on British wildlife and found that dramatic declines in populations of birds of prey were related to egg-shell thinning caused by these pesticides. Through his many research papers, detailing his work on organochlorine insecticide residues in birds eggs, issued during the nineteen-sixties and early nineteen-seventies, two of which were published in *Nature* (Moore & Walker, 1964; Moore & Walker, 1965), and his advocacy as Chief Advisory Officer to the Nature Conservancy Council from 1975 to his retirement in 1983, Norman played a pivotal role in a long and ultimately successful campaign to ban the agricultural use of these harmful and persistent pesticides. DDT was banned for agricultural use in the US in 1972 and in the UK for all uses in 1984. Its use is now strictly controlled globally under the Stockholm Convention. Following the phasing out of DDT, and the various 'drins for agricultural use, wildlife, and especially birds of prey, began to recover.

Norman Moore, age 21, taken in early December 1944 (just before his capture) in Udenhout, Netherlands by a Dutch photographer.

Norman was born in London to Mary (née Burrows) and Sir Alan Hilary Moore, a medical officer of health, on 24 February 1923. His grandfather Sir Norman Moore was a British doctor and historian of medicine who served as President of the Royal College of Physicians from 1918 to 1922 and was created the 1st Baronet of Hancox in 1919. Norman became the 3rd Baronet of Hancox, upon his father's death in 1959, but he never used the title. Norman's earliest memories as a budding naturalist were of chalk grassland habitat near Lewes, close to where he lived in his family's Lewes house to the age of 10. Norman's paternal grandfather died in 1922, and his paternal step-grandmother Milicent (née Ludlow) handed over her family's large house at Hancox, near Battle in East Sussex, to Norman's parents Alan and Mary eleven years later in 1933. Norman's parents recorded all four of their childrens early sayings and doings and remarked that, from the minute Norman could talk, it was obvious that what interested him most was the natural world, especially birds. Norman kept notes on birds, initially his primary interest, from the age of six and he soon extended his note-keeping to all wildlife, especially dragonflies, which he described as: 'the bird watcher's insect'. At prep school in Hampshire his head teacher described Norman as someone who was more often in the fields studying insects and birds rather than in his proper place in the classroom. Norman went to Eton College in 1936 where he spent a good deal of his time either bird watching at Slough Sewage Treatment Works or painting pictures; he became an amateur artist and was described as a remarkably good painter of landscapes. From 1940 to 1942 Norman read Natural Sciences at Trinity College, Cambridge, where he was President of the Bird Club.

In 1942 he was 'called up' for wartime service in the Royal Artillery and trained as a mountain gunner, using horses and mules, in the Cairngorms of Scotland for the 1st Mountain Regiment. His tent was described as looking more like a scientific expedition than a fighting unit. In October 1944 he saw active service in Belgium and the Netherlands where he manned observation posts and kept two notebooks; one to record enemy activity and the other for wildlife. On December 28th, 1944 Norman Moore and eight others were taken prisoner at



New Naturalist Series '*Dragonflies*' by Philip Corbet, Cynthia Longfield and Norman Moore, first published in 1960.

***Palpopleura lucia*, the beautiful African libelluline species that capitivated Norman during his 3-month trip to Zambia in 1948, when he was studying at Trinity College, Cambridge for his degree in Zoology. Photo credit: KDP Wilson.**

their observation post near Gangelt, just inside Germany. He was initially treated for pneumonia and pleurisy and for a leg wound, that would trouble him for the rest of his life, before being transferred to Stalag 6A, Hemer in the Ruhr, Germany. Norman was one of four British soldiers amongst 23,000 prisoners, most of whom were Russian. Rations were meagre, consisting of a pint of mangel-wurzel soup a day and one loaf of black bread a week. Norman was liberated by the US 7th Armoured Division on 14th April, 1945 and transferred to a French hospital where he was 'fattened-up' and gratefully treated for lice with a liberal spraying of DDT. After returning to UK he served as an instructor at the Larkhill Military Camp in Durrington, Wiltshire until he was demobbed in 1947.

In 1947 Norman returned to Trinity College, Cambridge, where he met his future wife Janet Singer in the Zoology Department. They married in 1950. He also went on a three-month expedition to Gambia and in 1948 completed his degree in zoology. There is a fine passage relating to his Gambia dragonfly experiences, written by Norman in the seminal New Naturalist '*Dragonflies*' book (Corbet, Longfield & Moore, 1960), that reveals his intense passion for dragonflies: '*One of my most treasured memories of a short visit paid to West Africa some years ago is the dance of the males of the little Libelluline Palpopleura lucia (Drury). They were over a stream which flowed through the forest by the edge of the river Gambia. They fluttered in and out of an intricate pattern of brilliant light and deep shade, Spots of sun on golden brown water and on the dark blue wing markings of the dragonflies made regular patterns which varied continually like chips of glass in a kaleidoscope*.'

From 1948 to 1953 Norman lectured at Bristol University and completed a PhD titled: '*On the ecology and behaviour of adult dragonflies (Odonata: Anisoptera)* (1954b).' His behavioural dragonfly field studies at Gordano Valley, Bristol were inspired by Konrad Lorenz and Nikolaas Tinbergen who were publishing ground breaking ideas and studies on innate territorial behaviour in animals and birds. Moore published several important papers on his dragonfly behavioural studies undertaken at Bristol (1952a, 1952b, 1952c, 1953 & 1954), that established Norman's ability to undertake excellent science, and made a lasting contribution to our understanding of dragonfly territoriality. Norman's first two children, Peter and Caroline were born during his period at Bristol.

In 1953 Norman joined the Nature Conservancy in the UK, which was established by Royal Charter in 1949. The formation of the Nature Conservancy arose from the recommendations of the Wildlife Conservation Special Committee (Huxley Committee), which was set-up to examine the needs of nature conservation in England and Wales. The Huxley Committee's Report, published in 1947, recommended the acquisition and establishment of national nature reserves where wildlife would be studied and protected, the creation of Sites of Special Scientific Interest (SSSI) for areas outside the statutory reserves, the undertaking of survey and experimental work, a series of institutes of terrestrial ecology, and the setting up of an official biological service, aka Nature Conservancy, to establish and maintain the reserves, to carry out the necessary research, and to advise on nature conservation generally. When Norman took up the post of Regional Officer for south-west England at

Furzebrook Research Station near Wareham, Dorset he was one of the first regional officers to be appointed in the newly created Nature Conservancy.

Norman documented the loss and fragmentation of the Dorset heathland mainly due to agricultural improvement, planting of extensive forestry plantations and urban expansion, and showed how biodiversity was decreased as areas of continuous heathland became smaller, with rarer species going first (1962a). In response to these threats Norman helped to select, acquire and manage the first National Nature Reserves in the Dorset region at Morden Bog, Yarner Wood and Hartland Moor (home to large numbers of *Ceriagrion tenellum* and *Coenagrion mercuriale*), as part of a nation-wide strategy to safeguard a suite of high conservation value nature reserves representative of the complete range of important habitats. He was also responsible for helping to formulate the SSSI selection criteria guidelines and for designating and notifying SSSIs in the south-west area. In Dorset his dragonfly research work focused on dispersal and population density, involving capture, mark and release, which took place at a series of small crater ponds, formed by 2nd World War bomb explosions on the heathland of the Arne Peninsula; ideal replicate bodies of water for scientific field studies (1957b, 1960, 1962d & 1964a). In the 1962 paper, published in *Nature* (1962d), Moore showed two main features common to all fifteen odonate species studied at Arne: (i) the upper limit of population density of males is determined by the behaviour of the insects themselves and each species has a characteristic highest steady density per unit area of water edge, and (ii) male dragonflies often exhibit atypical and apparently dysgenic behaviour; the control of population density and hence dispersal in some species resulted from attempts to mate with any intruder, male or female, and intruder males subjected to this treatment abandoned the area.

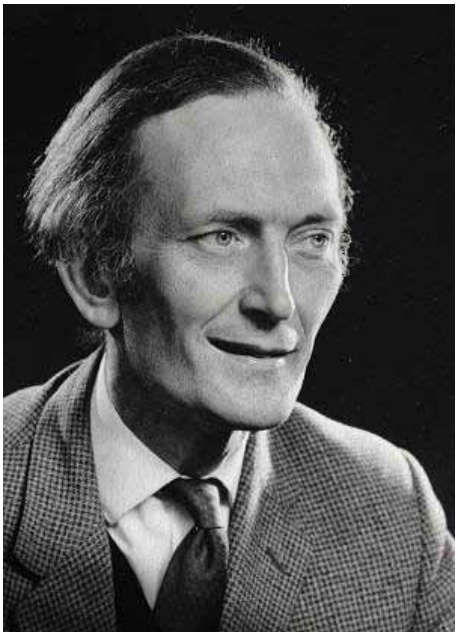
During his period as Regional Officer, together with the help of the British Trust for Ornithology Moore organised a nationwide survey of common buzzards (*Buteo buteo)* and although he found the average clutch size had fallen by half he nevertheless correctly concluded it was mainly persecution rather than the huge decline in the rabbit population caused by myxomatosis, hitherto the buzzard's main prey species, that was mainly responsible for the fall in buzzard numbers (1956 & 1957a). He served on the scientific subcommittee of the Ministry of Agriculture and Fisheries Advisory Committee on Myxomatosis. Norman's third and last child Helena was born during his family's period at Wareham, Dorset.

Under the guidance and stewardship of the Nature Conservancy's Director General, Max Nicholson, the Monks Wood Experimental Station was established just south of the Monks Wood National Nature Reserve near Huntington, Cambridgeshire in 1960. Norman Moore transferred from Dorset to Monks Wood in 1960 to head up the Toxic Chemicals and Wildlife Division, where he organised a research programme on the effects of pesticides on wildlife. In addition the casual links indicating the decline of peregrine falcons was caused by accumulation of pesticides and egg-shell thinning. His research also discovered other wildlife was seriously impacted including otters, eagles and freshwater mussels. The Monks Wood research unit was very influential in Britain and also very influential overseas.

In 1965 he facilitated a NATO Advanced Study Institute at Monks Wood, which was attended by delegates from many countries including USA and USSR (1966). In January 1970 the British Prime Minister Harold Wilson visited Monks Wood Experimental Station and was briefed on the impacts of pesticides on peregrines. Norman served on the Ministry of Agriculture, Fisheries and Food (MAFF) Advisory Committee of the Pesticide Safety Precaution Scheme, went to USA in 1963 to share his findings on pesticides and also advised the CSIRO in Australia in 1972. He was appointed to the Organisation for Economic Co-operation and Development (OCED) Committee on monitoring of pesticides in the environment and he became the secretary of the IUCN committee on chemical controls. In 1962 one of the twentieth century's best non-fiction books, Rachael Carson's '*Silent Spring*' had meticulously documented the harmful effects of the indiscriminate use of pesticides on the environment, especially on birds but hard scientific evidence was desperately needed to fight chemical industry lobbying. The Monks Wood findings were timely (1962b, 1962e, 1962f, 1965a, 1965b, 1965c & 1966) and provided the much needed, scientifically researched and documented evidence. His 1967 papers summarize his understanding of the environmental problems caused by persistent pesticides that were seriously affecting wildlife in the nineteen-sixties (1967a, 1967b). In his article in *New Scientist* titled: '*Pesticides know no frontiers*' (1970), Norman used the phrase to emphasise the international nature of the pesticide problem and the need for international action.

Norman Moore on the island of Herm in the Channel Islands in 1971. Photo credit: Helena Moore.

At this time Norman felt that conservationists and farmers were being kept apart when they should



Norman Moore in 1980.

be working together. He also felt that the farming community were responsible for developing and evolving ideas concerning conservation and were the group of people most able to do something about it. At an informal gathering in 1969 at Silsoe College in Bedfordshire, known as the Silsoe Conference, Norman, together with farmers and conservationists, became founding members of the charitable organisation and cooperative movement called the Farming and Wildlife Advisory Group (FWAG). Much later in 1983, following his retirement, he became Chairman of FWAG during a critical stage in its development.

His dragonfly research at Monks Wood continued at nearby Woodwalton Fen National Nature Reserve, where he dug 20 ponds to study odonate colonisation and territorial behaviour. He developed a standard technique to monitor dragonflies using individual counts along fixed length 'transects'. A standard technique still used today for ecological monitoring studies for many wildlife groups such as birds and butterflies.

Norman's work at Monk Wood, apart from pesticides and dragonfly research, also included studies on the effects on wildlife due to the disappearance of hedges (1962c & 1967c) and culminated in his contribution to the New Naturalist series book: '*Hedges*' (1974), which he co-authored with E. Pollard and M.D. Hooper.

The Edward Heath Conservative government split the Nature Conservancy into the Nature Conservancy Council (NCC) and the Institute of Terrestrial Ecology (ITE) and thus ending the close link between conservation and laboratory based scientific research within one organisation. The NCC's duties were clearly defined by statute in the Nature Conservancy Council Act, 1973 and included managing national nature reserves, notifying SSSIs, providing conservation advice and undertaking applied research. In 1974, when the Nature Conservancy was dissolved and the Monks Wood interdisciplinary team of biologists, toxicologists and chemists disbanded, much to Moore's annoyance, Norman was appointed Chief Advisory Officer to the newly formed NCC. Moore had fought hard to avoid the split but following its implementation he also fought hard to maintain close links between the newly formed NCC and ITE.

In addition to his role as NCC Chief Advisory Officer, during the period 1974-1983, Norman was a Visiting Professor of Environmental Studies at Wye College, University of London and continued his studies on dragonflies at Woodwalton Fen. He prepared the NCC's policy paper on Nature Conservation and Agriculture (1977b) and helped to develop strategies for rural development that took account of both nature conservation and food production (1977a, 1977c &1978a). He also catalogued high levels of damage to SSSIs supposedly protected by the designation, notification and planning process. Many of his recommendations were incorporated into the 1981 Wildlife and Countryside Act.

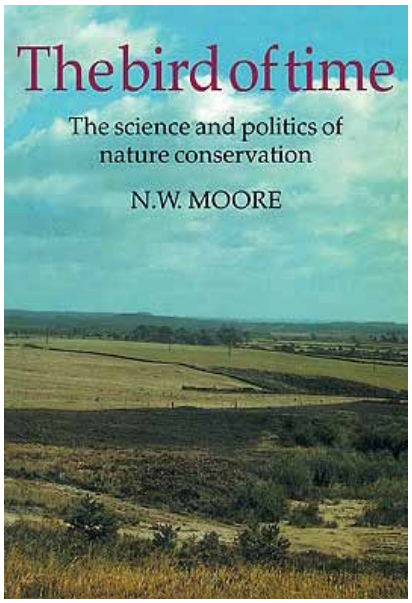
Norman Mooore in 2011. Photo credi: Caroline Moore.

In 1977 Norman gave evidence at the Amberley Wild Brooks Public Enquiry, the first British public enquiry into a land-drainage scheme. Amberley Wild Brooks was one of the last remaining grazing marshes in southern England that had not been subjected to a pump-drainage 'improvement' scheme. Southern Water Authority, then responsible for the land drainage function in addition to water supply and sewage treatment, had applied to MAFF in 1977 for permission and funds to pump-drain the Amberley grazing marshes to allow crop production. In 1978, the Amberley Wild Brooks Public Enquiry Inspector, a town planner and an engineer, recommended the scheme was not grant aided with public funds by MAFF. This was a landmark decision that decided the use of public money to destroy publicly enjoyed assets, in this case a wetland of high conservation value, for private gain was improper. Both the Sussex Wildlife Trust and the RSPB have acquired parcels of land at Amberley Wildbrooks which are now managed as nature reserves supporting rich populations of dragonflies, wetland birds and plants.

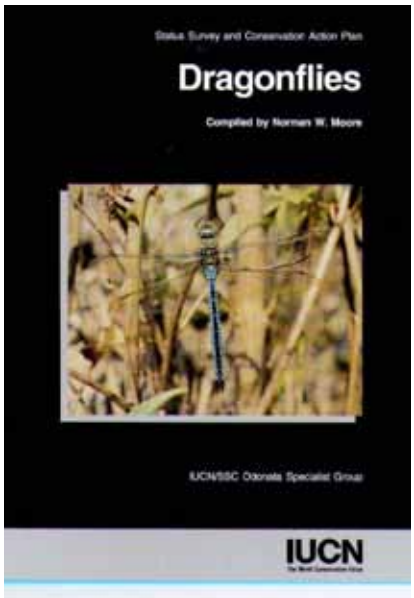
At the age of 60 Norman Moore retired from the NCC in 1983. In his retirement he wrote the book: '*Bird of Time*' (1987) which is a biography of his professional career, providing a personal account of the science and politics of nature conservation. The book argues for the wise use of land adopting 'sustainability' values and that conservation should be accepted as a major national and international objective of vital concern to everybody now and in the future. A retirement present from work his colleagues provided the means for the construction of a 40 m long pond that was built on land adjoining his garden in Swavesey, Cambridge, where he had already planted an acre of woodland. Within two years the pond had attracted 18 species of dragonfly. He wrote another book titled: '*Oaks, Dragonflies and People - creating a small nature reserve and relating its story to wider conservation issues*'(2002b), in which he describes how he acquired a neighbouring field some 40 years ago and transformed it into a private nature reserve, with a wood, a large pond and rough grassland, and the wildlife which has subsequently colonized it. In the second part of the book he relates his own local efforts to the wider conservation scene and outlines how the failures of democratic governments to carry out crucial long-term measures might be overcome**.** He says: '*many people wish to encourage wildlife on their land but do not know exactly what to do or what they can expect to achieve. On the wider scale most are still unaware of the fundamental importance of conservation of wildlife or its connection with our own survival. They are unaware of the urgency of the measures our generations must and can take*'.

Norman was the founder Chairman of the Odonata Specialist Group (OSG) of the IUCN Species Survival Commission in 1980 and he continued to serve as Chairman until 1999. He attended many of the international meetings and wrote or edited many of the OSG IUCN/SSC annual Reports (1991d, 1992a, 1993a, 1994a, 1996a & 1997a). In 2004 the WDA published an important global dragonfly assessment paper in IJO: '*Guardians of the watershed. Global status of dragonflies: critical species, threat and conservation*', editors: Viola Clausnitzer and Reinhard Jödicke, in a special issue of the IUCN Regional Reports. The much-cited 430 page volume was dedicated to Norman Moore by Philip Corbet with the words: '*It is with great pleasure, admiration and gratitude that the editors and contributors offer this Special Issue as a tribute to Norman Moore, recognising that, in the field of global dragonfly conservation, there is no more worthy recipient*'.

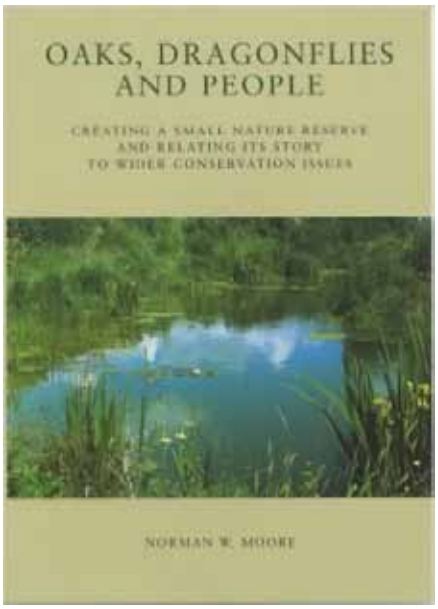
Norman was an Hon. Fellow of the Linnean Society and the British Dragonfly Society. He was awarded the Stamford Raffles Award for 2001 by the Zoological Society of London for his distinguished and outstanding contribution to conservation outside the scope of his professional activities. At the Annual General Meeting of the *Royal Entomological Society* in 2002, Norman was made an Honorary Fellow of the Society, a rare honour, and he also became the first recipient of the Marsh Entomology Award for Insect Conservation, which is awarded for an outstanding contribution to insect conservation, on the basis of lifetime achievement. In January 2003, *Odonatologica*, the journal of the *Societas Internationalis Odonatologica* for which Norman was a Member of Honour, published a Festschrift issue to honour him on his 80th birthday. In this issue of *Odonatologica* the dragonflies *Drepanosticta moorei* van Tol & Müller, 2003, *Neoneura moorei* Machado, 2003 and *Notogomphus moorei* Vick, 2003 were described and dedicated to Professor Norman Moore.



Norman's professional career biography published four years after his retirement in 1987, titled: '*The bird of time, science and politics of nature conservation.*'



In 1997 Norman edited the IUCN/SSC Odonata Specialist Group booklet titled: '*Dragonflies: status survey and conservation action plan.*'



Norman's last book titled: '*Oaks, dragonflies and people*', published in 2002.

Odonata and wildlife bibliography of Professor Norman W. Moore (1923-2015)

Compiled principally by Janet Moore, 30 September 2002*
*Many papers on pesticides and environment have been omitted

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2016 XXV
International Congress of Entomology
Orlando, Florida, USA - September 25-30

[http://ice2016orlando.org/]

Dear Odonate community,

We are pleased to announce that we will be hosting an odonate symposium at the International Congress of Entomology, from the 25th - 30th September 2016, in Orlando, Florida, USA.

The International Congress of Entomology (ICE2016) is the biggest congress of its kind, and will be attended by around 3,000 participants form all around the world. The congress will feature a large number of symposia ranging from applied ecology, to physiology, morphology and genomics across all insect taxa.

We (Maren Wellenreuther, Seth Bybee and Sebastian Büsse) will hold an odonate specific symposium to showcase the amazing research that can be done with this group. We would like to take this opportunity to kindly invite you all to our symposium: 'Next generation ecology, morphology and genomics: what can we learn about the evolution of Odonata?', at the ICE2016. This meeting will provide a fantastic opportunity to highlight the unique characteristics and fascinating ecology of odonates to the wider insect community. We are very much excited about this opportunity, and hope that some of you may attend the conference.

If you have any queries, please feel free to contact us via: Sebastian Büsse [sbuesse@zoologie.uni-kiel.de], Functional Morphology and Biomechanics Zoological Institute, Kiel University.

All our best,
Maren, Seth & Sebastian

Book Review

The naming of Australia's Dragonflies

Authors: Ian Endersby & Heinrich Fliedner
Busybird Publishing, Eltham, Victoria[1]
ISBN 9781925260625

Reviewed by Albert Orr [agorr@bigpond.com]

Formal zoological nomenclature follows the binomial system of genus and species originally established by the Swedish biologist Carl Linné, or Linnaeus, in his *Systemae Naturae* of 1758. In principle any animal can be uniquely identified in this way, with the genus invariably being a noun, and the species an adjective or another noun which qualifies the genus. The language chosen for this nomenclature was Latin, at that time the universal language of science, understood by all educated people. Equally important was Classical Greek in its Latinised form.

With changing educational practices, knowledge of even basic Latin has become comparatively rare, knowledge of Greek even more so, hence the scientific names of animals and plants learned by modern biology students have become totally divorced from any meaning, especially among native English speakers and speakers of non-European languages. Whereas Linnaeus' contemporaries would have recognised the gods, demi-gods and heroes of Classical mythology and literature, the modern Lepidopterist who cares to read Homer's *The Iliad* or *The Odyssey*, finds a *dramatis personae* consisting entirely of familiar Swallowtail and *Morpho* butterflies.

In recent times there has been a virtual plethora of books attempting to explain the meanings of Latin and Greek-based Latin names. Many, such as *Latin for Bird Lovers* (Lederer & Burr, 2014) or *The Naming of the Shrew* (Wright, 2014), attempt to entertain as much as to instruct, producing a final result which is somewhat frothy and short on detail. Fortunately odonatologists have been rather better served by scholarly articles explaining the meanings and origins of dragonfly and damselfly scientific names (e.g. Fliedner 1997, 2006, Endersby 2012) and now these two authors have joined forces to produce '*The Naming of Australian Dragonflies*'.

This volume, a substantial tome of xiii +278 pages in octavo format, gives us the most comprehensive account we might wish for on the origins and meanings of every available species-group or genus-group name for Australia's dragonflies. These include not only the ca 324 accepted species names and 106 genus names, as well as species such as *Rhinocypha tincta* and *Neurobasis australis* which are not reliably recorded from Australia and are retained in faunal lists out of sheer obstinacy, but also all available synonyms and homonyms, of which there are more than a few.

The book begins with a brief account of the history of the naming of the Australian Odonata, a brief introduction to Latin and Greek prefixes and suffixes and the declensions of the latter and a general discussion of where names come from (people, places, appearance; including colour, pattern, size etc.). There is a detailed tabular breakdown by taxon author of eponyms (named after people, real or legendary) and toponyms (named

1 This publisher does not sell or distribute its books and the book has no established retail price. Print copies may be obtained free of charge from Ian Endersby [endersby@mira.net] or from Heinrich Fliedner [h.fliedner@t-online.de] for European and UK residents. The book is also available as a free pdf download (contact Ian Endersby for further details).

after a place). The most valuable part of this chapter is the grammatical section. With the odd lapsus (e.g. the topographic suffix, -ensis should be declined: -ensis, -ensis, -ense) this section provides an admirable introduction to the Latin grammar and Greek orthography and the rules for transliteration from Greek to Roman script that are needed to understand how names are formed and modified under gender agreement requirements. I certainly learned a great deal from reading it and while readers unfamiliar with Latin or Greek might find it heavy going, a little effort taken to master these basic rules and to learn the Greek alphabet will be repaid with interest by affording a full understanding of the detailed etymologies which come later.

The next chapter provides engaging and interesting biographies of the 41 individuals who have authored or co-authored an Australian dragonfly genus or species name. These are admirable in their detail, and are generally accompanied by a thumbnail black and white portrait, allowing us to put a face to the name, and serve the very useful purpose of demystifying nomenclature. These names were bestowed by flesh and blood human beings who lived on average a respectable 71.5 $\pm$ 11 years, apart from the six who are still with us. Indeed even in cases where I have been long acquainted with the individuals concerned I learned several diverting facts. Quite a few of my own cohort can empathise directly with Gunther Theischinger whose first class education lead initially to employment on the railways.

The next and largest chapter deals with the individual etymologies of every available species-group or genus-group name ever given to an Australian dragonfly. It is well researched, erudite and complete. Where necessary, extracts from original descriptions in their original language are included (with English translations for non-English texts). For those of us attempting to construct generic names of odonates, this section has much information of relevance far beyond the Australian fauna. It has been a custom among odonatologists to use Greek roots when naming genera and Latin for species-group names. Generally Latin is fairly accessible using a good dictionary, but Greek is a completely different proposition. Even with the fattest Lexicon available a lot of background knowledge is needed to tease out the component roots and it is not difficult to completely misunderstand them. The etymologies in this book do the work for us. Anyone studying dragonfly nomenclature working in any region will find their knowledge vastly expanded and deepened by studying these examples. Of course as earlier authors rarely explained their sources there remain unresolved mysteries and educated guesses. Why did Fabricius write *Aeshna*, not *Aeschna* for example? The authors' explanation that this might have come from him adopting an English style of spelling is the most convincing argument I have heard yet. I was particularly taken by the conjectured meaning for *Aethriamanta* – loving the bright sky. I disagree that *Rhyothemis braganza* should be regarded as *incertae sedis* (see p. 11, 123, 268) but rather agree with Hämäläinen (2015) that is was named after a Brazilian monarch as a result of a comedy of errors. This however is the only point of difference I can find in the entire book. Some names simply defy decoding – the meanings of both generic and specific names of the common and widespread *Tholymis tillarga* remain unknown.

The book includes an extensive main bibliography of 274 entries, in addition to subsidiary reference lists totalling about 150 items in earlier sections. It is rounded off by five appendices, the first three giving comprehensive statistics on authorship and details of the categorisation of names. The most valuable are Appendix four, which establishes the gender of all generic names and Appendix five which gives the rules for transliteration from Greek to the Roman alphabet. I thought I knew these rules, but in fact several important gaps in my knowledge were exposed and have now been filled.

In summary, to anyone with a special interest in zoological etymology or anyone actively involved in zoological nomenclature (i.e. naming new species) I cannot recommend this book too highly. It is well researched, erudite and thorough, with a relevance well beyond Australian shores. Both authors are to be warmly congratulated for having produced such an impressive, informative and useful piece of scholarship.

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A Field Guide to the Dragonflies of Hainan

Authors: Graham Reels & Zhang Haomiao
[English & Chinese]

China Forestry Publishing House, Beijing
Paperback, September 2015, 463 pages
Available at nhbs.com or limited copies available from [gtreels@gmail.com]
ISBN-13: 9787503880186

Located in the South China Sea, the large Chinese island of Hainan contains numerous rivers, streams, lakes, marshes and coastal swamps. The diverse freshwater habitats nurture more than 165 species of dragonflies. Among them, 22 are endemic to the island. This photographic field guide includes chapters introducing dragonflies and damselflies, dragonfly conservation, dragonfly watching, Hainan and its odonates, species accounts and dragonfly related activities such as studying larvae and monitoring dragonflies. The book illustrates the Hainan species with more than 600 colour photographs and provides a glimpse of their fascinating behaviour.

A Guide to the Dragonflies and Damselflies of the Serra dos Orgaos, South-Eastern Brazil

Guia dos Anisoptera e Zygoptera da Serra dos Órgãos, Sudeste do Brasil

Author: Tom Kompier
English and Portuguese
Pub: REGUA
ISBN-13: 9780956829115
Paperback, 379 pages, >685 colour photos

First comprehensive field guide to the Odonata of the Reserva Ecologica de Guapiacu and the Serra dos Órgãos in south-eastern Brazil. With over 560 stunning colour photos and 125 additional illustrations of all 204 species known from this incredible biodiversity hotspot. Featuring illustratons of both males and females and with additional illustrations of different stages of maturity of many. Texts with full descriptions, identification features, behaviour, flight periods, abundance and notes on status and nomenclature.

To order in UK please send a cheque payable to the 'Brazilian Atlantic Rainforest Trust' with your name and address to Alan Martin, Alureds Oast, Northiam, East Sussex, TN31 6JJ. To order from outside the UK please contact Tom Kompier at [kompierintokyo@yahoo.com].

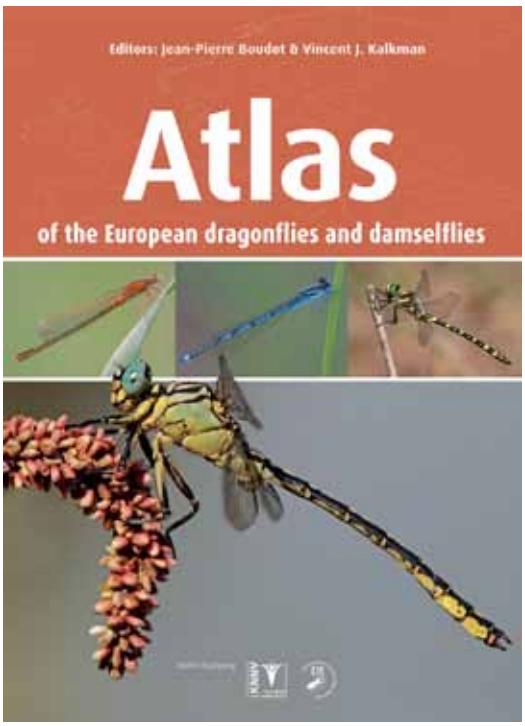
Reserva Ecológica de Guapiaçu (REGUA) is a Brazilian non-profit non-governmental organisation conserving the Atlantic Forest (Mata Atlântica) of Rio de Janeiro state's upper Guapiaçu river basin, through:-

- Protecting the Atlantic Forest by way of land acquisition and management agreements
- Integrating the protection of the Atlantic Forest with the needs of the local community
- Restoring damaged habitats using local resources
- Conducting bio-inventories of the fauna and flora present
- Encouraging and supporting scientific research
- Encouraging people to visit REGUA and support our work

Atlas of the European dragonflies and damselflies

Edited by Jean-Pierre Boudot & Vincent Kalkman
Illustrated by Fons Peel

KNNV Publishing, Boulevard 12, NL - 3707 BM Zeist
Postbus 310, NL - 3700 AH Zeist,
The Netherlands
ISBN-13: 9789050114806



This is the first detailed and complete overview of the distribution of the dragonflies and damselflies of Europe. An important reference work for professionals and amateurs alike.

Since 2005 European odonatologists have been cooperating to produce a distribution atlas of the European dragonflies and damselflies. Combining the field records of thousands of volunteers from over 40 different countries has been challenging and took longer than expected.

The book is the result of a collaboration among over 50 European dragonfly experts who over the past decade brought together all records of dragonflies and damselflies, from the Azores to the Urals and from the North Cape to Lampedusa. This endeavour was coordinated by Jean-Pierre Boudot and Vincent Kalkman.

The book covers the distribution and habitat selection of all 143 European species of dragonflies and damselflies. It also gives a complete description of their global and European distribution, illustrated using over 200 distribution maps. Species information is given on taxonomy, range, population trends, flights season-, and habitat. Extensive background information on taxonomy, conservation is provided and for each country an overview of the history of odonatological studies is given.

Unique photos and flight season diagrams for virtually all European dragonflies are also included.

Availability

The Atlas is due to be published in December 2015 and should be available from January 2016. To obtain a copy contact the publishers at their web site: [http://www.knnvuitgeverij.nl/EN/webwinkel/0/0/85084] or telephone: +31 (0) 30 233 35 44 or email [info@knnvuitgeverij.nl].

Field Guide to the dragonflies of New Guinea

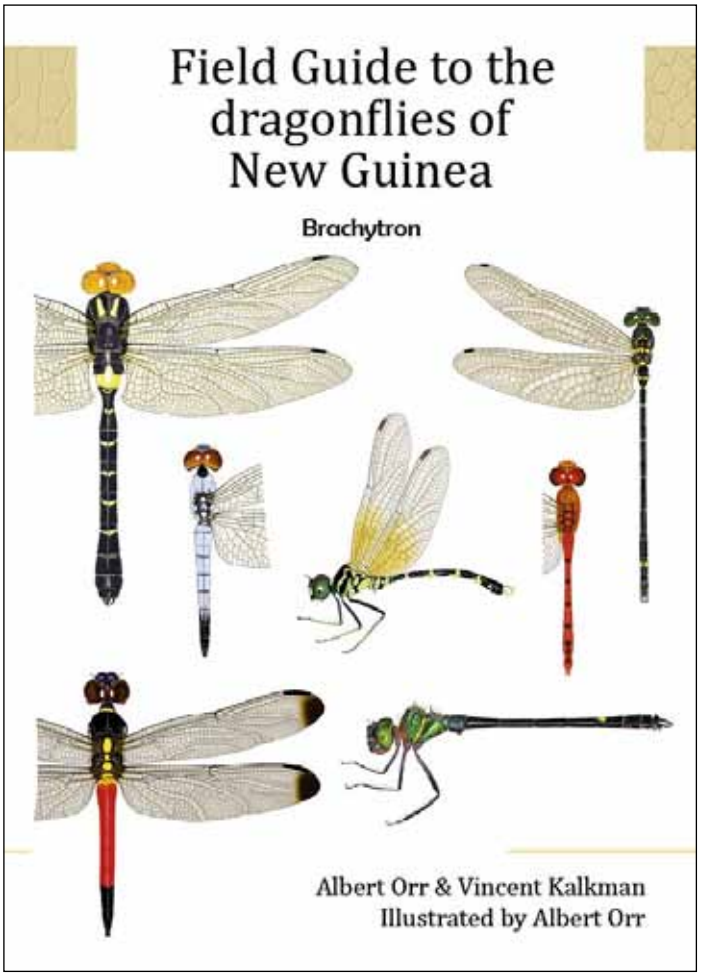
Albert Orr & Vincent Kalkman
Illustrated by Albert Orr

Publisher: *Brachytron*
Journal of the Dutch and Belgium dragonfly societies - Nederlandse Vereniging voor Libellenstudie (NVL) & Libellenvereniging Vlaanderen (LVV)

Volume 17 Supplement, December 2015

This book is a companion to the 'Field Guide to the damselflies of New Guinea' published in July, 2013 by the same authors. It covers the 'true' dragonflies, or Anisoptera. The book enables the reader to identify approximately 175 species presently known from New Guinea, its satellite islands and the Bismark Archipelago. It will doubtless stimulate people to explore the streams and standing waters of New Guinea and to appreciate the wonderful diversity of dragonflies and damselflies to be found there. Over 400 copies will be donated to universities throughout New Guinea. As well as introducing students and researchers to the beauty of dragonflies on their island, the guide provides a basis to study them and use them in biodiversity studies supporting the conservation of freshwater habitats. The guide contains nearly 250 colour drawings and over 300 line drawings by Albert Orr and 36 colour photographs taken in the field mostly by Stephen Richards. Many species included have never been depicted in colour before. This book is dedicated to the memory of Henk van Mastrigt (1946-2015) who passed away in August 2015 as he was beginning the work of translating the book.

To obtain a copy contact the Dutch *Brachytron* publishers at [http://www.brachytron.nl/Brachytron/Brachytron17supinhoud.html].



Calopterygoidea of the World: A synonymic list of extant damselfly species of the superfamily Calopterygoidea (*sensu lato*) (Odonata: Zygoptera)

(First edition - 1 January 2016)

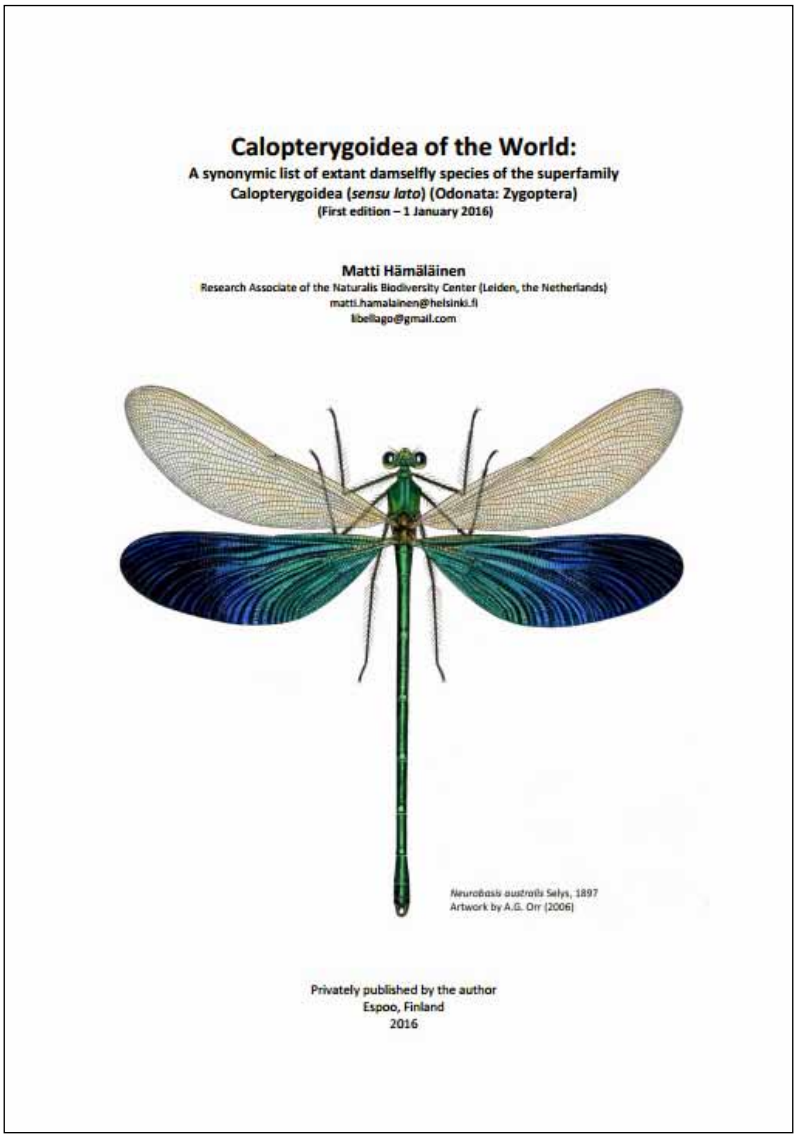
Author: Matti Hamalainen [matti.hamalainen@helsinki.fi]
[https://science.naturalis.nl/en/people/scientists/matti-haemaelaeinen/]

Matti Hamalainen has published this catalogue titled: '*Calopterygoidea of the World: A synonymic list of extant damselfly species of the superfamily Calopterygoidea (sensu lato) (Odonata: Zygoptera)*'.

It is available as a pdf-file (0.8 Mb) on the internet at [http://caloptera.com/catalogue.html].

The list covers all available genus- and species-group names of the extant Calopterygoidea (*sensu lato*) of the world, including all synonymic names and homonyms. Besides damselflies of the traditional calopterygoid families, the catalogue lists all damselflies formerly included in the family Megapodagrionidae (*sensu lato*). A total of 1147 available species-group names is listed, of which 265 are synonymic names (incl. homonyms). Altogether 831 taxa are listed as valid species and 51 taxa as subspecies. Various taxonomic issues are discussed in footnotes.

The list attempts to be a reliable and accurate source of the available names (with complete authorship citations) in this damselfly group, which covers ca 14 % of the presently recognized Odonata species. The list also aims to give the present taxonomic status of these damselflies. However, since many belong to still poorly understood genera, especially in the families Calopterygidae and Chlorocyphidae, many changes in the status of individual taxa and accepted combinations are expected in the near future. A separate file of additions, changes and corrections to this catalogue will be regularly available at the same website, with a new edition of the catalogue to be published within a year or two.



Here it is: Atlas of Odonata of Germany

Klaus-Jürgen Conze [kjc@loekplan.de] &
Dr. Mathias Lohr [m.lohr@hs-owl.de]

Since 2012, the first part of the German Atlas-Project, a complete bibliography of German literature on Odonates, has been available as Supplement 1 of *Libellula*, the journal of Gesellschaft deutschsprachiger Odonatologen (GdO e.V., [www.libellula.org]).

As announced, in *Agrion* 19(1) at the beginning of 2015 (Conze 2015), the second part would be published as Supplement 14 during 2015 and indeed Supplement 14, *Atlas of the Odonata of Germany*, has now been published. For the first time, we present a complete overview of the distribution of all dragonfly species occurring in Germany. The atlas is based on data compiled during 2007-2012, which was organized by the atlas-working group of Gesellschaft deutschsprachiger Odonatologen. The database comprises more than 1.16 million point locality data sets reported by more than 2,900 people from all 16 federal states. A few records date back as far as the year 1800 but most are more recent; dating from 2011, for some species and includes some dramatic distribution changes from 2013. While only 1% of the records are from the first 150 years, more than 63% are from later than 1995. Since 1995 data has been recorded for 79 of the 81 species occurring in Germany; *Coenagrion hylas* and *Onychogomphus uncatus* were only observed before 1995 and are now considered as extinct.

The atlas contains distribution maps for all 81 dragonfly species (see example in Figure 2). Each grid square on the map represents a 'Messtischblatt' (MTB), which has an area of ca 130 km^2. For each species the distribution status is depicted for three time periods: before 1980, 1980–1995 and after 1995. The atlas also includes species monographs with vertical and horizontal distributions in Germany (according to the database) as well as information on habitat, life cycle, population trends, and threats. Finally, an overview of exotic dragonflies recorded in Germany is presented.

Based on this atlas the Red List of Odonata of Germany is provided as well as an extensive presentation of fossil odonata records from Germany.

The atlas can be ordered at:-

Traute Fliedner
Louis Seegelkenstr. 106
D-28717 Bremen
Germany
E-Mail: gdo(at)libellula.org

The price is 21€ for GdO-members and 29€ for others (postage and packing extra).

GdO e.V. – Klaus-Jürgen Conze & Dr. Mathias Lohr

Figure 1. Cover of Supplement 14 of *Libellula*.

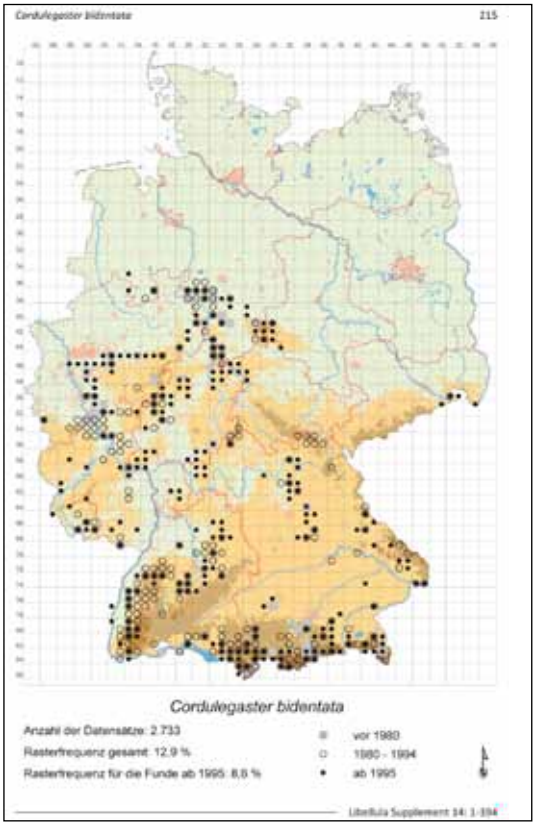


Figure 2. As one example the distribution map of *Cordulegaster bidentata*.

Reference

Conze, K.-J. (2015): The German Atlas of Dragonflies. *Agrion* 19(1): 15.