Bulletin of the Royal Entomological Society Spring 2013 Volume 37 (2)

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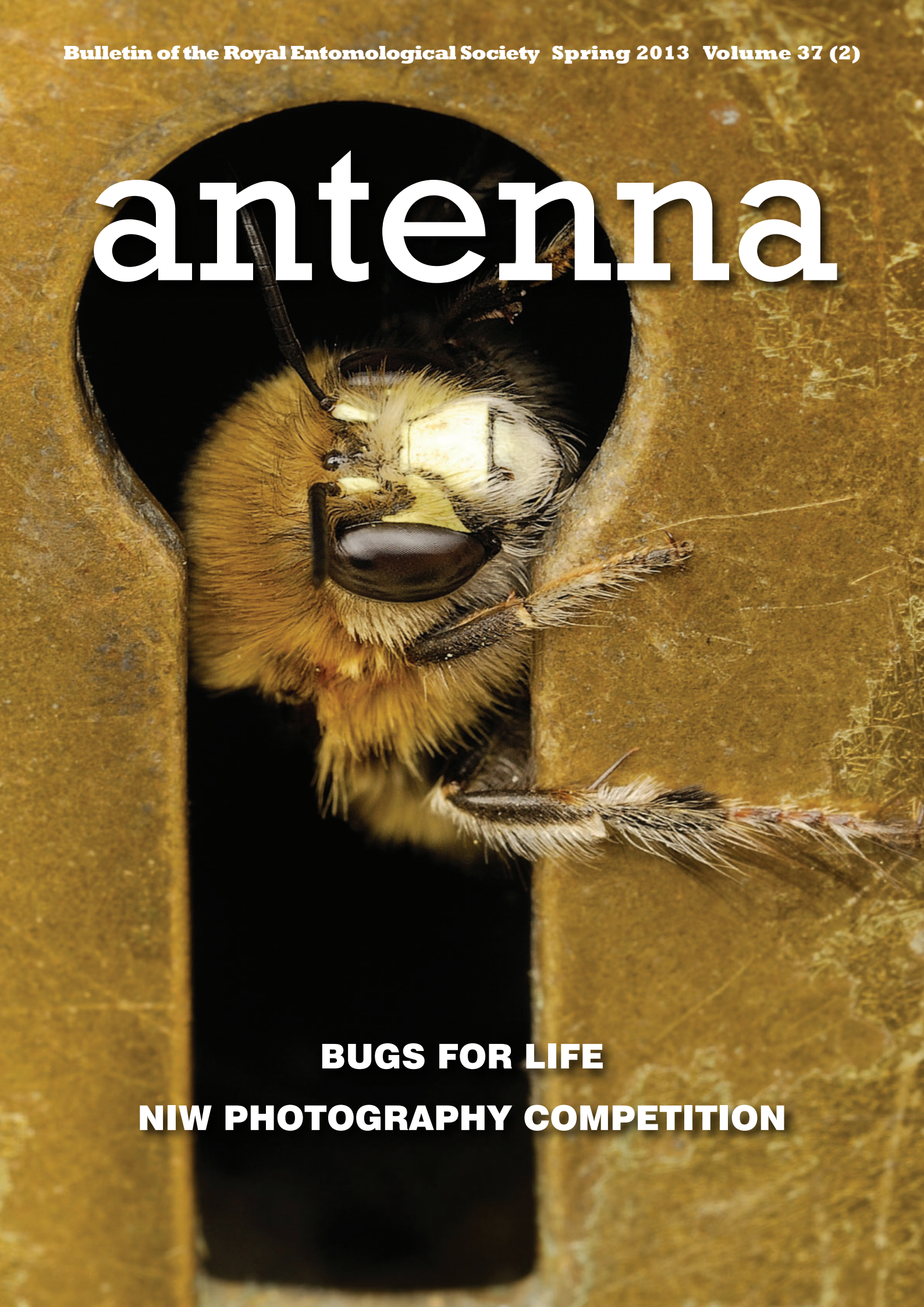

BUGS FOR LIFE

NIW PHOTOGRAPHY COMPETITION

meetings of the society

for more information on meetings and contact details see meetings page on www.royensoc.co.uk

2013

May 31 — **Infection and Immunity SIG**
Venue: Queen Mary University (Fogg Building) Convenor: Rob Knell

June 5 — **Society Annual General Meeting**
Venue: The Mansion House, Chiswell Green Lane, St. Albans

July 6 — **Westwood Lecture by Dr James S. Miller, part of the Evening of Entomology (c/o Insect Festival)**
Venue: Tempest Anderson Hall lecture theatre (Yorkshire Museum)

July 7 — **Insect Festival 2013**
Venue: Yorkshire Museum & Gardens, York

Sep 4-6 — **Ento'13 National Meeting and International Symposium**
The Evolution of Insect Mating System: 30 Years of Thornhill and Alcock
Venue: University of St. Andrews Convenors: David Shuker, Leigh Simmons, Graham Stone

Sep 11 — **Aphid Special Interest Group**
Venue: Christ Church, Priory Terrace, Leamington Spa Convenor: Rosemary Collier

Oct 16 — **Climate Change Special Interest Group**
Venue: Rothamsted Research, Harpenden Convenors: Richard Harrington, Howard Bell

Oct 23 — **Joint Aquatic Insect / Insects and Sustainable Agriculture Special Interest Groups**
Venue: Newcastle University
Convenors: Jenni Stockan, Craig McAdam, John Holland

Oct 24-25 — **Irish Regional Meeting (Thursday - Marsh Fritillary monitoring in the Republic of Ireland; Friday - Regional red listing and beyond for Irish invertebrates)**
Venue: Dublin Botanic Gardens, Glasnevin
Convenors: Eugenie Regan, Brian Nelson, Archie Murchie

Nov 6 — **Orthoptera Special Interest Group**
Venue: Natural History Museum Convenor: Bjorn Beckmann

Nov 14 — **South-East Regional and East Malling Centenary Meeting**
Venue: East Malling Research, Kent Convenors: John Badmin, Jerry Cross

Dec 5 — **Northern Regional Meeting joint with Medical Veterinary Entomology Special Interest Group**
Venue: (TBC) Northumbria University, Newcastle upon Tyne
Convenors: David George, Prof. Steve Torr

2014

Jun 23-29 — **National Insect Week**

Aug 2-8 — **European Congress of Entomology**
Venue: University of York, Heslington, York

2015

Sept 2-4 — **Ento' 15 Annual Science Meeting and International Symposium**
Insect Ecosystem Services
Venue: Trinity College Dublin
Convenors: Drs Jane Stout, Olaf Schmidt, Archie Murchie, Eugenie Regan, Stephen Jess, Brian Nelson

Special Interest Group meetings occupy either a whole day or an afternoon (check www.royensoc.co.uk for details).

CONTENTS

ERRATA

The editor of the previous edition would like to apologise to Alec Harmer for a number of errors that appeared in his article on the painting of John Harris.
Page 9. Fig 2. The words Sarah Banks' should be deleted.

Page 12. 3rd column. the reference to Fig. 3 should be to Fig. 4; the reference to Fig. 4 should read Fig. 3;

The caption to Fig. 3 should read: Detail from Plate 10 showing John Harris's signature. (The reason for showing this was to enable a comparison to be made with his signature on the Holy Bible illustration which has been omitted from the article and which should have been Fig. 6).

The caption to Fig. 4 should read: Detail from Plate 2 showing John Harris's monogram and date.

The reference to Plate 9 should read Plate 10.

There is no Fig. 6 between Figs. 5 and 7.

Page 14. 1st column. Reference to Plate 9 should read Plate 2.

Page 15. first column. Reference to Fig. 6. There is no Fig. 6.

Page 16. Fig. 8. The caption should read: Self-portrait of John Harris copied by John Harris, Junior (the rest is correct).

Page 19. Notes and References. Reference 26. Plate 3 should read Plate 2.; Reference 33 refers to the Holy Bible illustration which was omitted.

COVER PICTURE

'Hairy-footed flower bee – *Anthophora plumipes* – in back door keyhole' by Dr Anthony Cooper of Melton Mowbray: 1st Prize winner in the 18-plus category of the NIW Photography Competition 2012 (see page 83).

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Bulletin of the Royal Entomological Society

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The Royal Entomological Society is a scientific society founded in 1833 and incorporated by Royal Charter in 1885 for the improvement and diffusion of entomological science exclusively.

Library: Mrs Valerie McAtear, Librarian (lib@royensoc.co.uk)
The Library is open to Fellows and Members from 9.00am to 4.30pm Monday to Thursday and 9.00am to 3.30pm on Friday. The Library is not open on Saturdays and Sundays or public holidays, and such other times as may be notified in *Antenna.*

Subscription Rates 2013
The following are the subscription rates due on 1st March 2013: Fellows £54; Members £48; Students £25; Fellows and Members over 65 £32. The journals of the Society are available to individual Fellows and Members at preferential rates via the Subscriptions Department at The Mansion House. *Antenna* is supplied free of charge to Fellows and Members not in subscription arrears. **Cancellation of Journal subscriptions must be notified to Subscriptions Department before the 31st October in the year preceding cancellation.**

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EDITORIAL

Photo: Dr M. Wood, University of Gloucestershire

So what to say… sometimes an editorial just flows, sometimes, well… But the hardest editorial has to be the last one. My time has come and I am stepping down as Editor and am now asking myself… what to say?

The Society, our Society, has undergone a revolution during my term as Editor. It has become a lot more business-like and through it is able to support a lot more work, it is dealing with open access and the potential consequences for revenue, and it has moved from central London. National Insect Week and the Insect Festival have become established and are great successes.

One aspect of our Society's work, outreach, has gone from strength to strength. I think this is the most important role for the RES at present. And this has to include all age groups. Scientific outreach for members, through meetings, SIGS and *Antenna* has always been strong, but now there also needs to be equal focus on non-members, the public, the media and young people. Of course we have to provide services for Members and Fellows; that is the Society's job. But aren't the under 18s the members of the future? Entomology lends itself to catching the imagination of children and even their parents! Raising awareness of our science will lead to a heightened profile, and that can be only a good thing. Insects are fascinating, we know that. So let's tell the world. Then perhaps the image of insects will start changing from aliens that harm you to good guys, that are beautiful to look at (even if some body shapes are a bit weird!), provide essential services of which the biggest has to be pollination and don't deserve to be killed just for existing.

Enough of the rant – I think I have made my point.

I have enjoyed my time as Editor and I want to thank all of those who have contributed articles, letters, photos, comments (yes even the bad ones) and the regular sections from the Society. I would also like to thank Cravitz Printing, particularly Andrew Smith, for all their hard work, to tight deadlines most of the time and for the extra behind the scenes work that goes on. A very special thank you to Bill Blakemore for his support, enthusiasm and cajoling when necessary. Finally, Pete Smithers, a great guy to work with, far too much energy, far too little time and unbridled enthusiasm. Thank you.

It has been fun, it has been hard work, it has been frustrating, but it has been worth it.

Greg Masters

On behalf of the Society I would like to offer an enormous vote of thanks to Greg as retiring editor. Greg's energy and drive have carried the magazine through the difficult transition from the A5, mostly black and white newsletter to the lively, diverse, entertaining and informative, A4, full colour magazine that we have today: a publication that keeps our widely scattered membership connected, updated and informed. I would also like to take this opportunity to acknowledge the debt that the Society owes to Greg for his role in conceiving, implementing and overseeing the birth of the new *Antenna* plus the huge amount of time and energy that he has devoted to its continued success.

I came on board the *Antenna* team just as these changes took place, the new boy swept along by Greg's infectious enthusiasm and quiet humour. It has been a great pleasure to work with Greg; I have learnt a lot and will miss our editorial meetings and phone conversations where countless interesting ideas were thrown back and forth between us. However I am sure he will still maintain his links with *Antenna* and I look forward to receiving articles from him as champion of his great passion, inspiring the next generation of entomologists.

Greg, good luck and best wishes from us all.

Peter Smithers

Guidelines for submitting photographs

To maintain a high quality we suggest that submissions for *Antenna* be presented via e-mail or on CD. Files must be in a PC-compatible format preferably in MS Word.

Electronic images can be embedded in the Word document but we will also require separate electronic images. These images should be at least 300dpi at an image size that is either equal to, or greater than the expected final published size.

Please do not submit images that have been printed from a computer on a domestic inkjet or laser printer. Even if the camera is a good one and photo quality paper is used, the graininess is very hard to deal with. If plain paper is used, the prints are virtually unusable.

Photos taken on film should ideally be submitted as slides or as reasonable sized prints for us to scan or alternatively they can be scanned in by authors provided the scanner is capable of scanning at up to 1200dpi.

If an image is intended for the front cover then the photograph should be in portrait format (i.e. the shape of the final image) and will need to be quite a large file size (at least 5,000kb) or a good quality slide or print.

To give an idea as to what happens when the image is not of sufficient size, take a look at these two photographs. One is 300dpi and the other is 72dpi.

300dpi

72dpi

Bugs for Life 2013: Exploring the practices, perceptions and possibilities of edible insects in Northern Benin

Rudi Verspoor, Laura Riggi, Mariangela Veronesi and Craig MacFarlane

Why eat bugs?

Yuck, disgusting, interesting and mad are all words I have known people to use when talking about eating insects. It's true, they wriggle and creep, but really they are quite similar to the crustaceans which we consider a culinary delicacy. Indeed recently, entomophagy, the eating of insects, has grabbed the attention of researchers and the media alike for its potential role in ensuring global food security. As populations rise worldwide and with the average person consuming more meat, how will supply meet the growing demand? Can we produce sufficient food while minimizing environmental impacts? Putting insects on the menu certainly offers some tantalizing solutions to a number of current issues. Their efficiency in converting plant material to animal protein is enviable compared to our current domestic animals, and they produce only a fraction of the greenhouse gasses. Not to mention the fact that when developed you could farm insects in tower blocks, minimizing the need for land. Finally, in many nations where issues of food security are most serious, insects offer the potential for diversifying agricultural output through developing production of insects. However, in truth people have been indulging in insects for millennia, and examples of entomophagy today can be found in two thirds of nations worldwide. Perhaps the most striking examples being found in certain South East Asian countries where a huge range of insects and other invertebrates can be found on the market. Nonetheless, rapid changes in lifestyles and habits in many nations are threatening traditional cases of entomophagy. This concern is what brought about the project Bugs for Life; which, by documenting traditional entomophagy, hoped to both guard regional knowledge of these tasty critters, and provide a basis for using them further in food security programmes for Benin.

The Bugs for Life team comprised individuals from a range of areas; entomology (Rudi and Laura), international development (Mariangela) and public science communication (Craig). Our first motivations to explore the world of edible insects came from a combination of personal interest and inspiring blog videos[1]. This passion eventually lead to the development of the project in Benin, with a local contact, Sévérin Tchibozo, from the environmental NGO, CRBG[2]. Located between Nigeria and Togo in West Africa, Benin (the birthplace of Vodun), is a country rich in cultures, languages, and traditions, and for this reason is particularly interesting for discovering delicious insects. Although entomophagy is not widespread in Benin today, there are a number of ethnic groups in the country that each has their own very different traditions when it comes to eating insects.

[1] http://www.ted.com/talks/marcel_dicke_why_not_eat_insects.html
http://vimeo.com/35846172
[2] Centre de Recherche pour la Gestion de la Biodiversité

ARTICLE

Realising that little academic work had explored edible insects in Northern Benin, our project focussed on the Atakora region and the Wama group who traditionally eat insects. Our aim was to complete a comprehensive list of insects eaten in the region, document how they are traditionally collected and cooked, as well as to probe the potential and limitations for developing future projects on edible insects. With our plans formed and funding secured, we headed to Benin in October 2012, hoping to reach our study sites just in time for the harvest!

Our Journey

Our first stop was Cotonou, the economic capital of Benin, where we met our local contact Sévérin and without delay headed to our field sites in the North. After arriving at the sisters of Notre Dame Des Apôtres, our accommodation for the trip, we arranged our first expedition to the village of Kosso, a small and close-knit Wama community situated in scrub Savannah under the Atakora Mountains. A simple village of mainly subsistence agriculture, we learned that Kosso was likely to be where the strongest traditions of eating insects were still likely to be found. Upon first arrival we were formally introduced to the village members, with whom we would be working. After being welcomed according to customs, sharing palm wine with both the village delegate (an elected village representative) and the ancestors of the earth, we could begin to arrange our first collections over the coming weeks. We eagerly anticipated being able to fill our stomachs with some tasty treats soon. The following Saturday, we arrived bright and early to the house of the Kosso delegate, Gnissma Boto, in order to get catching insects before the sun was too hot. Here we were met by not only the children of the house, but seemingly most of the village from the surrounding houses too. We all trooped out to 'la brousse' (the wild grass around their fields) and joined the children creeping through the six foot grass looking for crickets and chafers still cold from the dew. Later, having been lucky enough to have caught enough tasty treats, we joined the children back at their houses to roast or fry up the different insects. The grilled cricket kebab is one I will definitely be trying at my next barbeque! From that day on we worked regularly with the village; collecting the different insects they eat while trying to understand how and why they do it. As our partnership changed into a friendship over the course of the six weeks we spent with the village, we joined in other activities from harvesting to walking with the women to market. These experiences offered an opportunity to understand how entomophagy could stay a part of the changing culture in Benin. When the time came time to head back home, the village invited us for our last day and we were treated to a surprise farewell from the whole village. The celebration saw us welcomed in by a chain of children of every age, and closed with an emotional and honest 'see you again'.

In addition to working in Kosso, we were fortunate enough to encounter a fantastic opportunity to explore edible insects, this time from the slightly different angle of working in a secondary school in the neighbouring village of Kotiakou. Although a slightly larger settlement (as indicated by the presence of a church and a school), Kotiakou residents still have a relatively simple life, compared to larger settlements in the area, lacking electricity or supermarkets. This made it a good bridge between small village

life and the more urban habits of larger towns, like Tanguieta. After being introduced to the teacher of the small school in Kotiakou, we immediately knew we had met a special individual: Mathieu Doko. He was an inspired advocate for the role of education in building Benin's future. Within what felt like minutes, we had arranged opportunities for the children to collect the insects they ate from wider areas around the village, while also giving classes in English, and discussing issues of nutrition and edible insects. The kids took like wildfire to the idea, and soon we had the classrooms crawling with everything from giant armoured crickets to plastic bottles full of chafers. When it was time to take our leave, we definitely left with a greater appreciation of the potential to use education to elevate the status of entomophagy across Benin. Later that month, we met with a member of the Peace Corps, who have hundreds of teachers spread across Schools in Benin, and after discussing our project they were very interested in the role of edible insects for providing food security and agricultural diversification in the region.

However much fun scrambling around in the grass and chasing after giant insects was, exploring issues of malnutrition in the region also formed a fundamental part of our project. Thinking the hospital Saint Jean de Dieu in Tanguieta would be a good place to start, we met with Dr Aouanou Guy Basile, head of paediatrics. He explained that despite increasing education and development, Northern Benin still suffers severe problems of malnutrition, particularly among children. Indeed, recent studies suggested that ten percent of children suffer from acute malnutrition. Most alarmingly, levels of chronic malnutrition were estimated to be as high as fifty percent among children under five. However, malnutrition is not a simple problem of food quantity, but a complex issue of quality, affordability, and nutritional knowledge. Later that month, we worked with Elizabeth Kassa, a nurse at the Centre for Nutrition, where we were able to discuss the potential for using insects to address nutritional problems. While the potential is definitely present and a variety of insects are locally available, encouraging people to use them, and creating affordable protein rich products

presented the greatest barriers. Nonetheless, we left with a positive feeling about the potential of entomophagy and the forward thinking of people dealing with food insecurity issues in the area.

What insects do they eat and why?

Throughout our period of working with the Wama villages of Kosso and Kotiakou we documented 11 new species of insects, bringing the total number to around 17 species that are eaten, with the most abundantly consumed being Coleoptera (52%) followed by the Orthoptera (29%). Particularly interesting were a species of beetle from the family Hydrophylidae, previously not recorded to be eaten in Western Africa, and the armoured ground cricket which was not only a new recording for species eaten in the region but was also the first record of this species in Western Africa, previously having only been recorded in East Africa. While there are some insects that are eaten across the whole year, despite a considerable dry season (December-April), the vast majority of insects were collected during the rainy season (May-November). It was particularly remarkable that insects were collected from such a range of habitats, including; wild grass, underground, still water, and even on cattle. Although this is perhaps not so surprising when you consider that insects are the most diverse animal group on earth! One thing that was notably different for the Wama group, compared to others who eat insects in Benin, was that they don't eat any larvae or caterpillars. They even found it surprising that we would ask it they did.

Focusing on collecting and cooking habits, we were surprised to find that it was predominantly children who did everything. Indeed, they consider it more like a game with a potentially tasty snack at the end, rather than a valuable source of nourishment. However, we learned that around forty years ago, during a famine, eating insects did become a necessity. Nowadays, the only insects that were collected on a large scale by adults were

termites during their sexual winged migration. These are then either sold or eaten by all members of the family. These traditions contrast with other studies in West Africa, where insect collection often can play a role in pest management and crop protection as well. In the region we were working, there was little evidence of large-scale pest problems, with the major crop loss being caused by parasitic plants. While completing work with the Wama groups, we also tried to gauge the general opinion of neighbouring groups and local institutions. When discussing insect consumption with people from other ethnic groups in Benin, the opinion that eating insects was a sign of poverty was fairly general, and therefore they were considered inferior to other foods. As a result, when people move to the towns and cities they would often stop eating insects, suggesting that traditions of entomophagy could quickly be lost with the transition to a more meat-rich western diet. When further discussing this with local doctors, the general consensus was that a change in education and attitude towards insects as a food source was fundamental to any expansion of entomophagy in the area. Nonetheless, with neighbouring Burkina Faso and Niger selling insects on the market and termites already being collected on a larger scale, the potential for expansion definitely exists.

Where to now?

Upon leaving Benin, all the group was left with the feeling of having scratched the surface of something, which given the right support and further work, has a role to play in tackling malnutrition and addressing food security in Benin. From the inventory of potential species already traditionally eaten, through to developing education classes and community nutrition groups about insects, our results have uncovered plenty of avenues for future work in the area. Indeed, while visiting the International Institute of Tropical Agriculture (IITA) and their extensive entomology museum, we were lucky enough to meet some health specialists and agronomists with whom we discussed our work and sowed some seeds in the hope that future work might emerge out. Targeting malnutrition sensitive groups such as children under five and pregnant women, IITA now hope to develop an international platform to develop entomophagy for nutritional purposes.

For certain, a multidisciplinary research programme would be required to address issues of how to expand entomophagy in Benin. Understanding the biology of different species to develop cultivation techniques, as well as investigating marketing and consumer preference are a few areas where headway is now being made. In addition, other avenues, such as the role insects could play in local economies and agricultural diversification remain to be explored. However, as well as sowing seeds for locally initiated projects to develop, the research served to show us the value in international partnerships and how organisations such as the Royal Entomological Society can play a role in flying the flag for insects in any part of the world. The next stop for us now we are back in the UK, will be supporting edible insects closer to home, and helping to put them back in the minds and menus of as many people we can!

Acknowledgements

Thanks to Séverin Tchibozo for help throughout. Thank you to Kosso Village, in particular: Gnisima Botto, Elizabeth Kassa, Yatto Dakou, Mathieu Doko and his students. Thanks to Dr Priuli G.B. Fr. Florent, Director Tanguieta Hospital and to Dr Aouanou Guy Basile, Director of paediatrics. Discussion from Dr Razack Adeoti, Dr Rousseau Djouaka and identification from Dr Georg Goergen at IITA was invaluable. Thanks to Dr Polycarpe Kayode and Dr Gbangboche Armand Bienvenu from the University of Abomey Calavi. Financial support and logistics were provided by Imperial College London and The Royal Entomological Society. Finally thank you to all of our generous public donors.

William Jones in Winchester

ARTICLE

R.I. Vane-Wright [1]

Martin R. Honey [2]

and Geoffrey Day [3]

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[2] Life Sciences Department, the Natural History Museum, Cromwell Road, London SW7 5BD, UK

[3] Fellows' Library, Winchester College, College Street, Winchester, Hampshire SO23 9NA, UK

Bankruptcy, death, the Lathams, and Jones

In 2010 Christine Jackson and Ann Datta came across a remarkable set of late 18th century butterfly paintings long held in the Fellows' Library at Winchester College (Jackson et al., 2013). How did these images, originally made in Dartford by the daughter of a famous ornithologist, come to be in Winchester? In 1817, her brother was declared bankrupt at Romsey, Hampshire. This singular fact, through a complex chain of events that included her brother's subsequent suicide, may have been responsible for the location of these paintings in Winchester – and for the presence, in the same library, of what appear to be previously unknown images made by William Jones of Chelsea.

From December 1763 until 1796, the surgeon, apothecary and zoologist John Latham (1740-1837), elected a Fellow of the Linnean Society in 1788, lived and practised at Spital Street, Dartford, Kent (M. Howard, pers. comm.). John Latham is celebrated for his major contributions to ornithology, notably on the Australian avifauna (Foote, 2004; Howard, 2012), but he was also interested in entomology. Latham and his insect cabinet were well known to the London entomological cognoscenti, including William Jones – one of the most famous Lepidoptera iconographers of the late 18th century. The numerous paintings that make up the celebrated *Jones' Icones*, now held by the Oxford University Museum of Natural History, were the basis on which Fabricius named some 200 new species of exotic butterflies (Poulton et al., 1934; Waterhouse, 1938; Vane-Wright, 2010). On at least one legendary occasion, Latham and Jones went together to the British Museum to expose the notorious fake *Papilio ecclipsis* Linnaeus (Vane-Wright & Whalley, 1985; Vane-Wright, 2011). The *Icones* include a number of paintings made from specimens in Latham's cabinet.

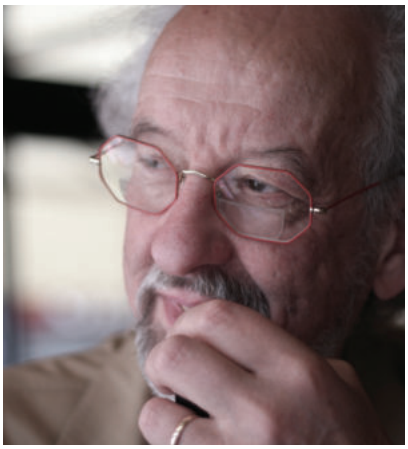
Ann Latham (1772-1835)

Ann was John Latham's third daughter, born three years after her ill-fated brother John – the Lathams' only son. From the late 1780s, Ann assisted her father by making watercolour paintings of birds, the originals of many of which are now in the Natural History Museum London. It was during research on Ann Latham and her contributions to ornithology, ex NHM

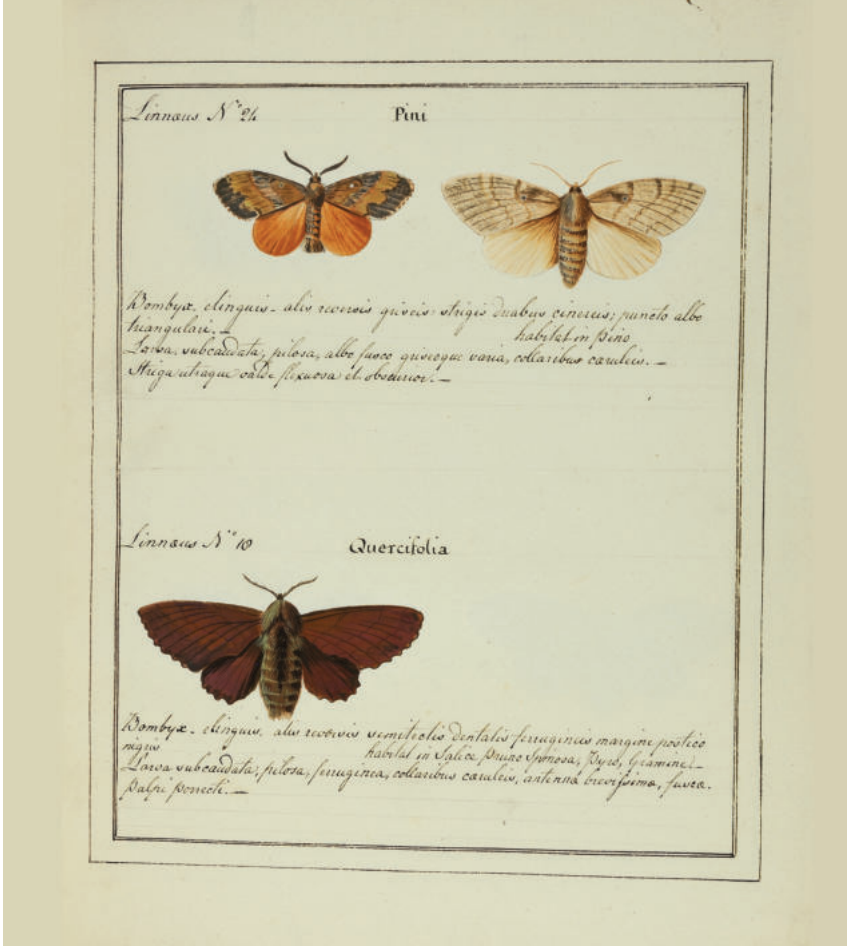
Dick Vane-Wright has a special interest in 18th century British watercolour paintings of exotic Lepidoptera, including the very important work of William Jones.

Martin Honey has been on the staff of the Natural History Museum since 1970, and has an outstanding knowledge of world macromoths and the British Lepidoptera.

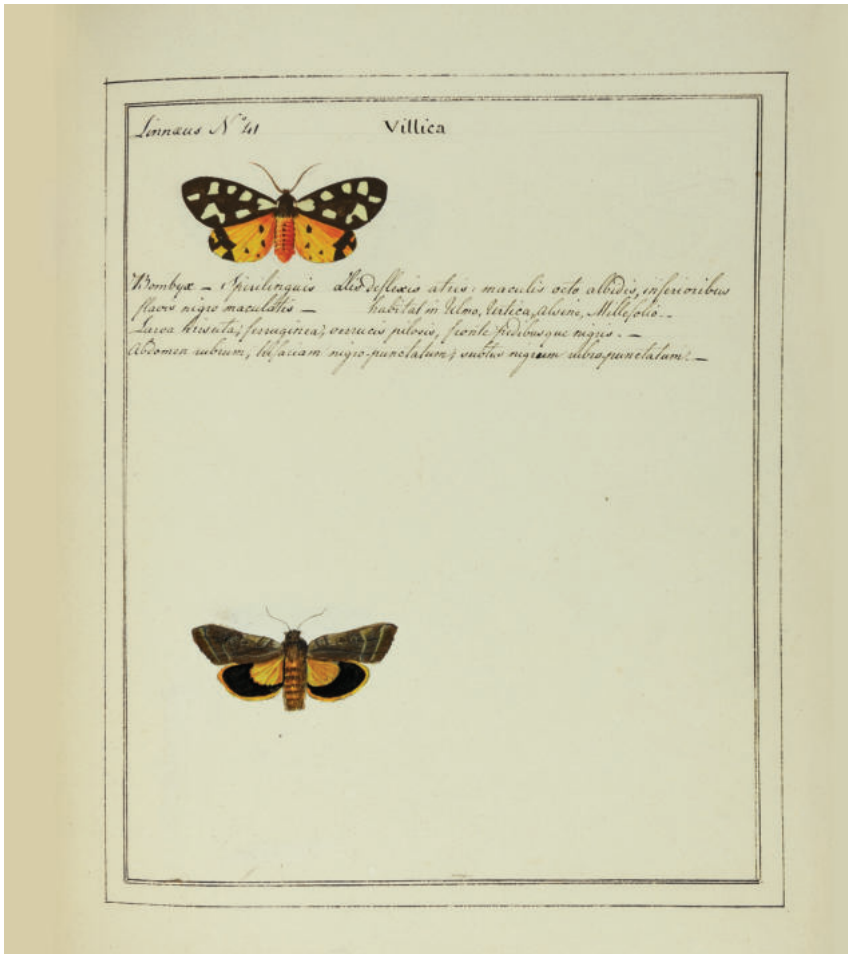
Geoffrey Day is Fellows' and Eccles Librarian at Winchester College. During 2011 he was deeply involved in the King James Bible quartercentennial exhibition, and is currently re-cataloguing the library.



"Latham Volume 3" page [9]. This depicts (upper) identifiable but rather poor representations of male and female *Endromis versicolora* (Linnaeus, 1758; Endromidae), and (lower) reasonable images of male and female *Macrothylacia rubi* (Linnaeus, 1758; Lasiocampidae)). From the style, including the double-ruled border within a single-line border and the different calligraphy for the species name, this must be by William Jones—unless someone went to extraordinary lengths to make the painting in his style (cf Vane-Wright, 2010: 16).



"Latham Volume 3" page [7]. Upper: *Dendrolimus pini* (Linnaeus, 1758; Lymantriidae). The hindwing of the male is far too orange. The supposed female is another species—perhaps a badly executed *Calliteara pudibunda* (Linnaeus, 1758) or even *Lymantria dispar* (Linnaeus, 1758). Lower: a fair image of female *Gastropacha quercifolia* (Linnaeus, 1758; Lasiocampidae).



"Latham Volume 3" page [11]. Upper: A fair image of *Epicallia villica* (Linnaeus, 1758; Arctiinae). Lower: A reasonable image of *Noctua fimbriata* (Schreber, 1759). The fact that the latter is not a Linnaean species could explain the lack of a name and description on the page.

library staff member Ann Datta and bird-painting scholar Christine Jackson realised she had made paintings of insects for her father as well.

Two volumes of Ann's butterfly images exist in the library at Winchester College. Both are dated 1793 but, from variations in their quality, it seems likely that the individual paintings were prepared over several years, the earliest being made when she was 16. Even by 1793, Ann would only have been 21. Two years later she married William Nicholas Wickham, a surgeon from Winchester, where they set up home together. She left Kent for Hampshire in May 1795, and it appears that after that she made no more bird or butterfly paintings (Jackson et al., 2013).

"Latham Volume 3"

There are, however, three, not two volumes of paintings linked with Ann Latham's name in Winchester College Library. All of the numerous Lepidoptera images that make up the first two (volumes 1 and 2) seem with little doubt to be the work of Ann Latham (Jackson et al., 2013). In contrast, the much slimmer third volume, unnumbered, with no title page, and simply labelled on the spine "Drawings Ann Latham", includes only a small number of Lepidoptera paintings. Moreover, none of these appears to be by Ann, while at least some seem almost certainly the work of William Jones. As such, to our knowledge they are the only Jones paintings known other than those held at Oxford. In addition, "Latham Volume 3" (a convenient misnomer) contains a painting of a spider and two 'portraits' – one is an engraving of Ann's father, John Latham (Jackson et al., 2013), while the second, in silhouette-like form, depicts a very distinctive-looking but unknown gentleman. Who was he? Certainly not Jones, if the well-known image is correctly attributed (see Salmon, 2000: fig. 46).

"Volume 3", in marbled boards 312 mm high x 245 mm wide, appears to have been bound in the 1970s to match the other two volumes which are in contemporary boards and were re-backed at that period. This slim book comprises just 16 unnumbered leaves of varying quality paper, which we notionally designate here as pages [1]–

From "Latham Volume 3" page [13]. Two tiger moths (Arctiinae). Upper: *Arctia caja* (Linnaeus, 1758). Lower: *Parasemia plantaginis* (Linnaeus, 1758). This page is otherwise completely blank. Note shadows (see text).

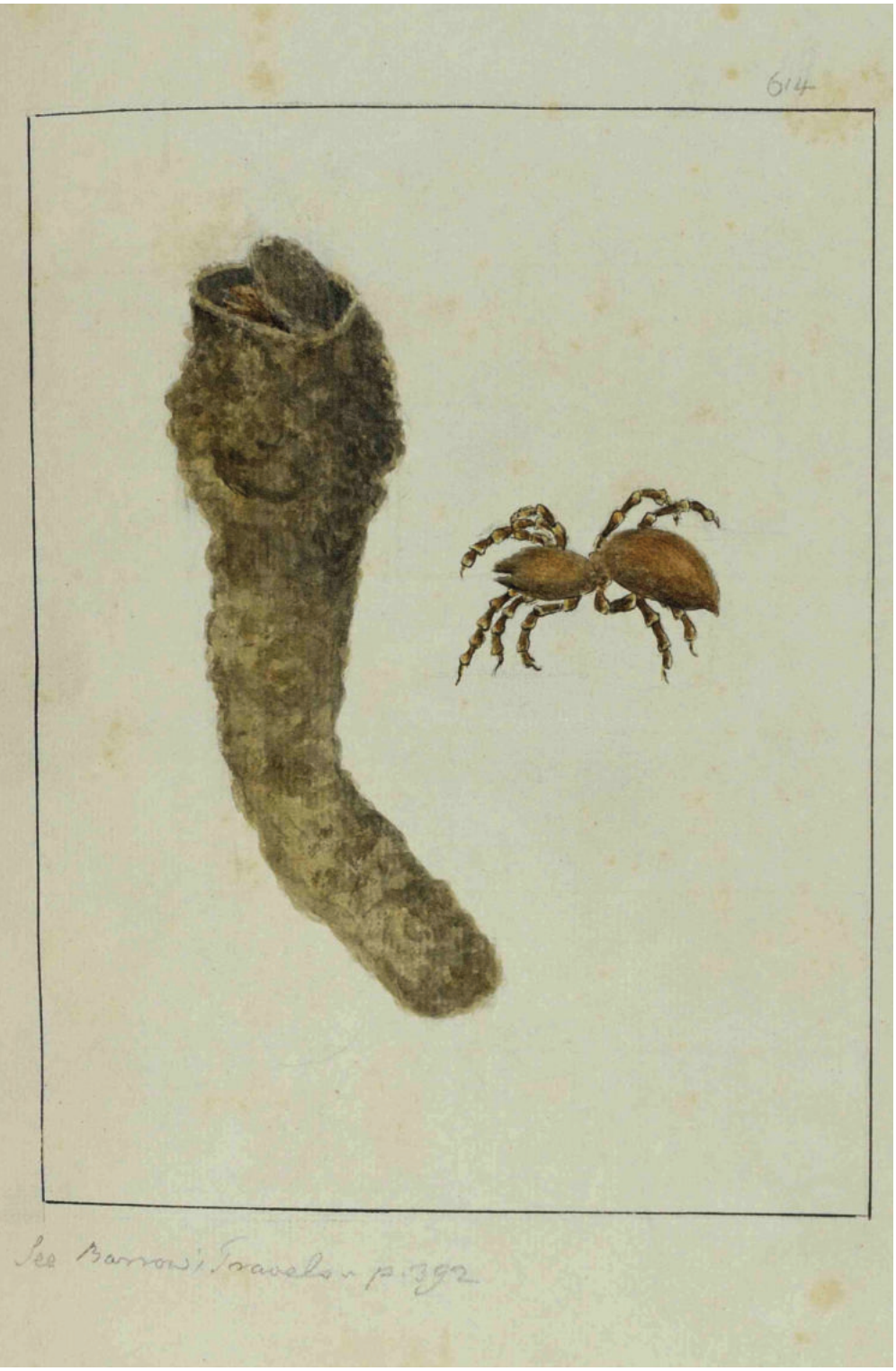
From "Latham Volume 3" page [17]. An apparently unfinished image of *Catocala pacta* (Linnaeus, 1758; Noctuidae) that appears on a page that otherwise has only three faintly ruled 'boxes'. Possibly this is an Ann Latham copy of a more complete image that appears in *Jones' Icones* (see text).

image-bearing, and in all cases only the recto side of the leaf is used. Pages [7, 9, 11, 13, 15, 17, 19] carry images of Lepidoptera, [21] is the spider, [23] is Latham, and [25] is the mystery silhouette. All other 22 pages and the end-papers are blank. The three preliminary blank leaves [1–6] and three terminal blank leaves [27–32] are modern paper with horizontal chain-lines, presumably added when the set was made up for binding. Although this volume is surely linked to the two volumes of paintings by Ann Latham, we have yet to find any provenance or direct information about how they came to be in Winchester College.

The leaves that carry images are of varying sizes and papers. All measurements given here are for the maximum height or depth. The first five leaves bearing images (pp [7, 9, 11, 13, 15]), three within ruled borders and two with the illustrations unframed, are on James Whatman wove paper (of which leaves 2 and 3 bear the 'J Whatman' mark). These leaves have been scored for guillotining on the outer edge and are of slightly varying sizes, but all are in the range 281–283 x 230–235 mm. There is then a slightly larger leaf, making pages [17, 18], also it appears on Whatman wove paper, measuring 299 x 237 mm with a single central image. The leaf forming pages [19, 20] is on similar paper, 301 x 240 mm, to which is tipped a small piece of much thinner paper with horizontal chain-lines 28 mm apart and the edge of a shield watermark, too limited to allow for identification; this thin sheet carries a venation diagram. The next leaf, pages [21, 22], is the

From "Latham Volume 3" page [15]. Fair images of male and female *Lasiocampa quercus* (Linnaeus, 1758; Lasiocampidae), presented on an otherwise wholly blank page.

"Latham Volume 3" page [19]. *Papilio homerus* Fabricius, 1793 (whole butterfly above, venation diagram below). The style of the venation diagram is similar to those of Jones (1794). Equally, this diagram could be a sketch for the lower image of *homerus* in the *Icones* (see Vane-Wright & Hughes, 2004: fig. 1).



"Latham Volume 3" page [21]. Trap-door spider (from page [21]), annotated in pencil "614" and "See Barrow's Travels p. 392". This cryptic reference, very plausibly in John Latham's hand, takes us to page 392 of Barrow (1801), where John (later Sir John) Barrow describes how the crushed body of an African trap door spider, when mixed with juices obtained from a particular plant bulb [*Boophone disticha*], furnished the Bosjesmans (bushmen) with a very powerful arrow poison (see also Schapera, 1923, 1930). This leaves us with several puzzles—other than one map, Barrow (1801) lacks illustrations, and the same is true of the second volume, which appeared in 1804. Can we be sure this image reliably relates to Barrow's account? Was it created to illustrate the book, but never published? If so, is this an original or a copy, and who is it by? And finally, what spider is this? Ansie Dippenaar-Schoeman (pers. comm.), author of the key work on trapdoor spiders of southern Africa (Dippenaar-Schoeman, 2002), has suggested to us that the image appears most like a species of Idiopidae—a family that includes six genera in southern Africa. Accurate identification from such a painting is probably impossible.

(linked to Barrow's *Travels*), and has chain-lines intersecting at right angles to form squares with sides of 28 mm. There is also a shield watermark, but unfortunately obscured by the watercolour. The 'spider' leaf is 243 x 201 mm. The print of John Latham (131 x 103 mm) is laid down on a wove paper leaf of lesser quality than the Whatman paper, and measures 278 x 218 mm (pp. [23, 24]). The unidentified silhouette (p. [25]) is on paper with horizontal chain-lines 27 mm apart, measuring 249 x 196 mm.

Initially we thought that more than one hand was responsible for the Lepidoptera images but, on comparison with *Jones' Icones*, it seems possible that most if not all are by him. Certainly, from both the style and layout it seems certain that pages [7, 9 and 11] are due to Jones, not least because of the very distinctive layout and writing style. Page [11] appears incomplete, and this is even more the case with the moths on pages [13, 15 and 17], which have no borders or writing, and have a different style of presentation. However, elements of these stylistic differences can all be seen on various plates included in the *Icones*, including a painting of a single underwing moth isolated on an otherwise blank page forming the penultimate sheet of volume 2 of the *Icones* under the name "*pacta*" (*Catocala pacta* (Linnaeus, 1758)), which is extremely similar to the moth similarly depicted but without a name on p. [17] of "Latham Volume 3" (where it appears in the middle of three ruled boxes, the other two being empty). Various images are also presented with shadows in the *Icones*, as with the two arctiines on p. [13], sharing the curious convention of both hind wings being shadowed together with the left forewing. Page [19], which shows the giant Jamaican swallowtail *Papilio homerus*, is a discovery of significance for the typification of this species, and is dealt with separately below.

Tragic events that altered the course of John Latham's life

In 1796 John Latham retired as a wealthy man and moved with his wife, Ann, to Romsey (about 8 miles south-west of Winchester) to be near their son. John jnr had moved to Romsey in the early 1790s. With a wife and eventually six children, John jnr had ambitions as a publican and brewer, and was also a local JP. However, it

seem that business acumen was largely lacking. He became hopelessly overextended and deep in debt after taking mortgages on various breweries and hostelries, and was only kept afloat by a series of gifts from his parents.

In 1817 John jnr was declared bankrupt—by which time his father had disposed of virtually all his assets, including most of his library and natural history collections, in attempts to keep his son solvent. Two years later Latham sold his Romsey house (in Middlebridge Street: Foote, 2004) and, in greatly reduced circumstances, moved to Winchester to live with his daughter Ann and her husband. Then came his son's suicide in 1822—but even that tragedy did not bring an end to Latham's financial losses on behalf of his now deceased child (Jackson et al., 2013).

John Latham died on 4 February 1837 in Winchester, at the age of 97, having outlived two wives and his daughter Ann, and was buried in Romsey Abbey Church (Jackson et al., 2013). And somewhere along the line, the two volumes of insect paintings that Ann had made long ago for her father, together with the images that make up "Latham Volume 3", came into the possession of the magnificent and eclectic Fellows' Library at Winchester College. It seems likely that Latham's relocation to Winchester in 1819, sometime after his son's bankruptcy, was a significant factor in how this all came about—but we have no direct evidence of that.

The entomological significance of the "Volume 3" Lepidoptera paintings

If some or even all of the Lepidoptera paintings in Latham "Volume 3" are attributable to Jones, what significance can we place on them? The quality by Jones' general standard is not particularly high—perhaps they were 'tests', part of a 'trial-run' for a never-completed project on moths. Perhaps they were 'roughs', given by Jones to the Lathams as examples for Ann to follow in her early attempts at butterfly iconography. Certainly, many of the plate layouts in Ann Latham's volumes 1 and 2 owe a lot to Jones's style. On the other hand, they alert us to the perhaps remote possibility that other Jones paintings exist, unrecognised, in the numerous libraries found in stately homes, colleges and institutes scattered

"Latham Volume 3" page [23]. John Latham M.D, by I.T. Lewis of Winton [1819]. "His engraved portrait, taken in Winchester, depicts a stoical man who has suffered a good deal" (Jackson et al., 2013).

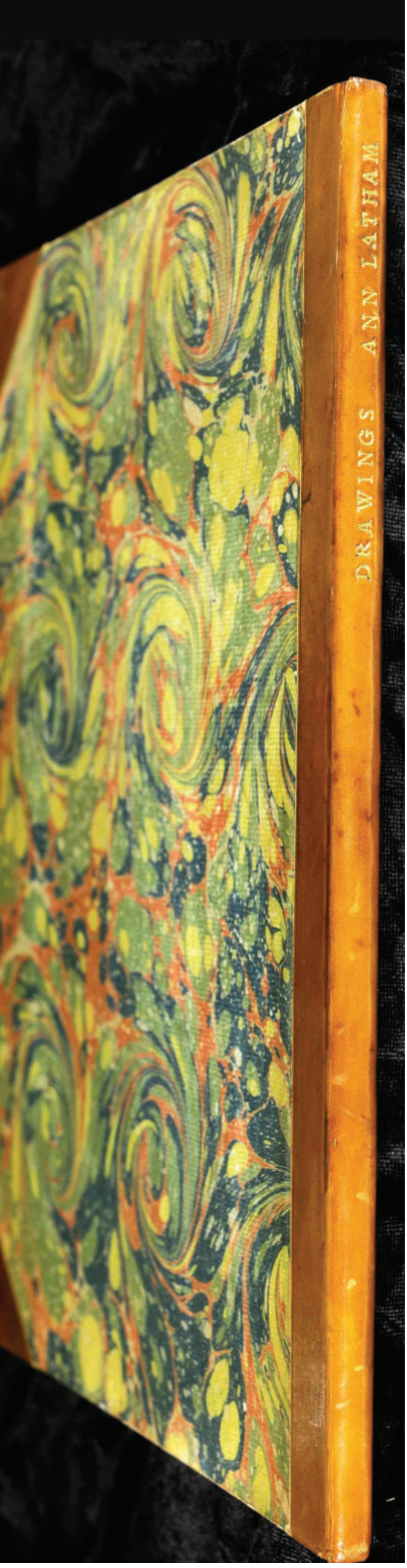
"Latham Volume 3" page [25]. Silhouette of unidentified gentleman. Any suggestions as to who this might be would be most welcome!

across the British Isles. However, with one exception, the images of William Jones in Winchester cannot be compared for importance with the Oxford *Icones*, as there is nothing to suggest that they were ever seen or used by Fabricius.

Papilio homerus Fabricius

Fabricius (1793: 181) described this iconic species, national butterfly of Jamaica and largest true swallowtail in the New World, from a specimen or specimens said to be in the Latham Collection ("Habitat in America Dom. Latham"), based on the images in *Jones' Icones*. Moreover, Latham's name appears as the source on Jones's 'Oxford' paintings (Vane-Wright & Hughes, 2004: fig. 1). Despite this, Edward Donovan (1834) claimed that the original material was in the Dru Drury Collection, not in that of Latham. The Winchester discovery suggests instead, however, and contrary to Donovan (and Vane-Wright & Hughes, 2004, who accepted Donovan's assertion), that the original material of this spectacular butterfly really was in Latham's collection after all. If so, then the Drury specimen of *Papilio homerus* referred to by Donovan, which supposedly passed first to Francillon and then to Macleay, and thus might now be in the Macleay Museum in Sydney (see discussion in Vane-Wright & Hughes, 2004) should not be regarded as type material—unless it can be demonstrated that Drury (who died in 1804) acquired Latham's material subsequently. This, however, seems very unlikely because it is evident that in 1805 Latham was still acquiring insect specimens, specifically from the sale of the Drury Collection (Hancock et al., 2008).

The Winchester *homerus* painting is unique in the whole 3-volume Latham iconography in that it is accompanied by a well-executed, tipped-in pencil sketch of the underside showing the insect's wing venation. Following Moses Harris (Harmer, 2013: 7), Jones (1794) was a pioneer in the use of wing venation rather than wing shape as a more secure basis for butterfly classification—strengthening the view that, at the very least, this sketch and the accompanying painting must be by Jones. This conclusion is supported still further by the fact that that in the *homerus* painting the main tail is not given its correct, unusual, asymmetrical outline, and this is also the case in the *Icones*. In contrast, Henry Seymer did realise the correct shape of the tail in both of the images included in his great work (Vane-Wright & Hughes, 2004, 2005). Jones's error is likely due to the tips of the tails of the Latham specimen having been broken off or otherwise damaged. Thus it is possible that the "Latham" painting of *homerus* is a second Jones iconotype of an original Latham specimen which, ultimately, was the material basis on which Fabricius's description rests. The minor differences between the two images suggest the further possibility that



(Left) "Latham Volume 3", Winchester College Fellows' Library. The spine carries the name of Ann Latham, but there is in fact no number, nor is there a title page.

Latham had at least two specimens (syntypes—but if so, presumably both with broken tails!). Thus the type material of *P. homerus* should be sought through the fate of the Latham collection and not that of Drury—although it is conceivable or even likely that Drury was the immediate source of Latham's material, in his capacity as a dealer.

The original provenance of this spectacular Jamaican swallowtail, unknown to Sir Hans Sloane despite his 15 month sojourn on the island during 1687–89, is a matter of continuing research. According to one of us (RIVW), circumstantial evidence currently favours the idea that the collector was Luke John Robins (1740–1782), who spent many years making wonderful paintings of the insects of Jamaica (Robins, 2009). As recorded in a letter to Joseph Banks at Soho Square dated 20th August 1784, from William Wright of Trelawny, Jamaica (the southern part of Trelawny Parish is a known *homerus* habitat: Brown & Heineman, 1972), Robins died in Jamaica as a result of accidental drowning. Luke Robins's connection with the London collectors was probably via Henry Seymer (Vane-Wright & Hughes, 2005) and, through him, Dru Drury—but all this is another story, still for the future.

Acknowledgements

The authors would like to thank Christine Jackson and Ann Datta for sharing their discoveries and scholarship, without which this article would never and could never have been written. All photographs of "Volume 3", kindly made by Andy Sollars, are reproduced here with permission from the Warden and Scholars of Winchester College. We have also received generous help from the staff of the General Library at the NHM, London, and Geoff Hancock (Glasgow). Dr Ansie Dippenaar-Schoeman (Queenswood, RSA) very helpfully commented on the spider, and Mary Howard likewise provided background information about Latham's home and medical practice in Dartford.

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PHOTO ESSAY

1

Butterflies of Iguazu National Park

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Last year, I was fortunate to visit Iguazú National Park, in Misiones Province in the north of Argentina, and spent five enjoyable days observing insects and birds. Although Iguazú NP covers an area of 550 km^2 (212 sq mi) most people only see a tiny part of it whilst visitng the Iguazu Falls National Park. The Iguazu Falls are spectacular waterfalls are hugely popular, with both the Argentinian and Brazilian sides of the Iguazu river having been designated as World Heritage Sites, in 1984 (Photo 1). The water cascades over a basalt rock layer to fall some 80 m into the Iguazú River below. The falls themselves are a series of cascades that span some 2,700 m, the most spectacular of which, in my opinion is the giant *Garganta del Diablo*, or Devil's throat falls (Photo 2). The falls themselves are magnificent and were in full flood when I visited, sending up vast clouds of spray and drenching visitors on some sections (Photo 3). The trails and broadwalks leading to the extensive waterfalls, are not suprisingly quite crowded, especially at the weekends, but it is possible to avoid the crush and find some quieter spots, particularly the three-kilometre Macuco trail which leads through the forest to the river.

The most prolific (i.e. butterfly rich) trail for butterflies when I visited in October 2012, was on a dirt road which runs alongside the trail beside the railway track of the so-called Rainforest Ecological Train (or Waterfalls Train) (Photo 4). These South African manufactured trains pull small, open-sided carridges, and trundle back and forth taking large numbers of passengers to the *Cataratas* (Waterfalls) Station to see the spectacular *Garganta del Diablo* waterfalls. The weather was hot and sunny, and the site is of course very humid as a result of the water-falls, with temperatures rising above 30°C on most days. There were huge numbers of butterflies present, which

aggregated in certain places (like outside the public loos)! In fact their numbers were so great that some people complained about being pestered or irritated by the butterflies, which were landing on them in some profusion, and feeding on sweaty bodies and even on the rails of the walkways where people had placed their sweaty hands (more on this below)! Most people however, were over-joyed to see so many beautiful butterflies, and were fascinated to see them so close as they landed on arms and legs to feed on their sweat.

There were also many aggregations of 'puddling' or 'mud-puddling' butterflies along the trails (Photos 5 and 6). There had been plenty of rain and the ground was wet in places; some patches were clearly highly desirable to a range of species which aggregated there. It is said that these aggregations consist largely of males, which are thought to be replenishing their sodium-reserves which have been lost (or will be lost) in the process of delivering a spermatophore to females during mating (R & K Preston-Mafham, 1999). It is not known however, if this behaviour by young males is as result of the scarcity of a nutrient (i.e. sodium) or whether it is because these particular individuals have been excluded from a richer alternative resource (e.g. flowers) by females or older, presumably more dominant males (see Boggs & Jackson, 1991). Nevertheless, the search for sodium, seemed to be relentless in the vast numbers of butterflies at Iguazu NP, and they were constantly landing on people, including me (Photo 7) and on anywhere and anything that our sweaty hands had touched (Photo 8). For example, they were particularly attracted to a discarded workman's glove which lay abandoned on the trail (Photo 9). The species feeding on this glove include the very common, but endearing Cramer's Eighty-eight (*Diaethria clymena janeira*) – it sometimes looks like eighty-nine! – and the Common Redring (*Pyrrhogyra otolais*) (Photo 10) A beautiful little species, and another one named for science by H. W. Bates in 1864. The six species in this genus all have lovely red eyes (why?) (Photo 11). A concrete base beside the railway track – which we were not supposed to walk over! – was also very attractive to a range of species (Photo 12), again presumably as a result of minerals precipitating out of the relatively fresh concrete. The gorgeous leaf mimic, the Stink Leafwing, *Historis odius* (Fabricius, 1775), was one of these species regularly seen 'feeding' on concrete (Photo 13). According to the excellent website Butterflies (www.learnabout butterflies.com): "the vernacular name Stinky Leafwing, and the species name *odius* are probably references to the odorous rotting fruits to which the butterfly is attracted". This species was one of the more active ones and difficult to get close to.

Photographing fast-moving insects such as butterflies can be challenging, and there is a school that recommends high shutter speeds in order to freeze them in perfect detail. This does however, in my opinion, detract somewhat from the fact that they are highly mobile, versatile, flexible, living creatures displaying all sorts of movements and behaviours. In some these pictures I try to show some of this movement, although it might be an excuse for not capturing them more accurately! Photo (top right) shows a Broad-banded or Astyalus Swallowtail (*Heraclides astyalus*) dropping down to join a group, all of this species, busily mud-puddling (Photo 14). The activity of these butterflies is difficult to capture, but (Photo 15) gives an idea of the alighting of these butterflies – in this case a White-angled sulphur (*Anteos clorinde*) – at a certain site. Many of these adult butterflies are relatively short-lived, with the swallow-tail imago reportedly living about a week, although there are continuous broods through out-the year.

Living butterflies are rarely perfect specimens! Like us they sometimes show signs of wear and tear! Photographs reveal that many active butterflies have variously-sized chunks missing from their wings, presumably as a result of encounter with bird predators! For example, Photo 16 shows a perfect specimen of the iridescent, blue Black-patched metalmark (*Lasaia agesilas*), whilst Photo 17 shows another individual with a large chunk of its left hind-wing missing. I never noticed this until I came to look at the images after I had photographed them. To my mind however, this is evidence of their resilience and ability to continue with their lives despite an 'injury'. Missing portions of their wings does not ground them! It is also evidence of selection pressure of course; the never-ceasing struggle for existence, to paraphrase Charles Darwin!

In trying to photograph butterflies in the field, it soon becomes apparent that some species are easier to photograph that others! They are less 'flighty' and allow the photographer to approach them closer. Others, take off at the slightest hint of an approaching mammal, and it is strange how often these seem to be more interesting ones! Others will let you approach, but then 'refuse' to open their wings properly and display their more colourful dorsal wing surfaces until you have backed off! The Periander swordtail, or Variable Beautymark, (*Rhetus periander eleusinus* Cramer, 1777) was one of these, but I did eventually manage to capture the gorgeous blue and black (plus pink and white!) colours of the ventral wing surfaces (Photos 18 and 19). Others are challenging on account of their small size, such as: the delicious Edged drop (*Dynamine agacles agacles*) (Photo 20); small white skippers which I cannot identify (Photo 21); and likewise these tiny yellow and black

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The clusters are often multi-specfic: for example there are four other species associated with these Claudinas (*Tegosa claudina*) and other butterflies (Photo 23).

Many of these butterflies have beautiful pale green proboscises. This is a characteristic of Emperor butterflies (Subfamily Apaturinae) such as the Turquoise (*Doxocapa agathina vacuna*) (Photo 24) and Felder's Sister *Adelpha malea* Felder and Felder 1961. It also appears that, what I assume to be the fore-legs (i.e. segmented structures running down the side of the thorax), are also bright-green (Photo 25). I wonder what the function of this colouration is, if any?

Some of the most interesting butterflies in this area are the 'crackers' such as the Epinome cracker (*Hamadryas epinome*) (Photo 26). So called because of the clacking sound produced by the males, it is now thought that these inter-specific communicative sounds are produced by Vogel's organ, which is located at the base of the forewing (Yack et al., 2000). To my ears the sound of the 'cracker' was quite lovely although they struck me as being quite aggressive to other males. The Epinome cracker appears to have an orangey-red proboscis (see in this Photo 27 in their characteristic up-side-down position) and spotted eyes.

There were large numbers of yellow, green and orange pierids congregating in mud-puddling huddles along the trails (Photos 28 and 29). These dynamic aggregations appear to be mixed species groups of (I think!) of White-angled sulphurs (*Anteos clorinde*), Cloudless sulphurs (*Phoebis sennae*) and Large orange sulphurs (*Phoebis agarithe*). There may be other species present.

These images were taken with a 70-200mm f2.8 zoom lens with a 1.7x teleconverter in a Nikon D7000. I could probably have done better with my macro lens (!) but there are only so many lens you can carry if you are trying to photograph both birds and insects.

Finally, it is interesting – to me at least – that many of these common species were first classified by Henry Walter Bates about 150 years ago, whilst he and Alfred Russell Wallace were exploring and prospecting for specimens in the Amazon (Bates, 1884). They include, for example, *Dynamine chryseis* (Bates. 1865) – which he called *Eubagis chryseis* (Bates, 1965) (Photo 30 of Plate XIV from Bates, 1865) and the Belladonna Cracker (*Hamadryas belladonna*) which he called *Ageronia belladonna* (Photo 31 of Plate XII from Bates, 1865). Are there any more species left to be discovered I wonder? These and other photographs of the Iguazu falls and the butterflies are posted on pBase (http://www.pbase.com/rcannon992).

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NIW Photography Competition 2012

The theme of National Insect Week's 2012 Photography Competition was 'Great British Insects', in keeping with the national focus in the year of the London Olympics and the Queen's Diamond Jubilee. Inevitably, this theme reduced the proportion of entries from outside the UK but the interest was strong, attracting over 400 entries (double the number received in the 2010 competition), although the number of submissions in the under-18 category was disappointingly low. An overall feature of the 2012 entries – possibly because of the poor summer weather in the UK – was that there were fewer images of the 'usual suspects' such as butterflies in the sunshine and dragonflies at rest, and a far greater variety of less commonly-photographed subjects, such as scorpion flies and bush crickets. As always, the standard of many of the entries was very high and the judges had the pleasurable challenge of choosing the prize-winning entries, as well as nominating many others for commendations.

The prizes of camera equipment and cash were generously sponsored by Olympus, the Royal Entomological Society and the Riverfly Partnership. One entrant achieved both 2nd prize in the 18-plus general competition and 1st prize in the riverfly competition, so there were five prize-winning images in the three categories and these are featured on these pages. On behalf of the NIW team, I congratulate the winners and also the runners-up whose photographs received the judges' commendations. I also wish to extend grateful thanks to my fellow-judges for giving up their time to provide their skilled and thoughtful adjudication: Sophie Stafford, editor of BBC Wildlife Magazine; Alastair Driver, National Conservation Manager of the Environment Agency; Peter Lapsley, renowned fly-fishing author and photographer; and Bridget Peacock, Director of the Riverfly Partnership.

Chris Haines
NIW Advisor

'Hairy-footed flower bee – *Anthophora plumipes* – in back door keyhole'
by Dr Anthony Cooper of Melton Mowbray: 1st Prize winner in the 18-plus category.

‘Spent spinners’ by Chris Avery of Oundle: 1st Prize winner in the Riverfly competition, and 2nd Prize winner in the 18-plus category.

‘Ladybird on flower’ by Katherine Rowlinson, age 15, of Peterborough: 1st Prize winner in the Under-18 category.

'Scorpion fly – Beaky' by Alicia Hayden, age 13, of Leyburn: 2nd Prize winner in the Under-18 category.

'Caddisfly spawn (newly laid egg mass on leaf overhanging water)' by Dr Danny Beath* of Shrewsbury: 2nd Prize winner in the Riverfly competition.

* The NIW organizers are very sad to report that Danny, one of the Competition's regular and successful competitors, died suddenly in early January 2013 before receiving his prize, which has therefore been donated to the Shropshire Photographic Society, of which he was an enthusiastic and inspiring member.

Student Essay Competition

Communication is at the core of any good science and the ability to do this at different levels is a key skill for any early career entomologist. Writing for the scientific press and one's peers is one thing, communicating your work and ideas to a wider audience is another and the annual essay competition provides an excellent opportunity to develop the latter.

Once again the judges had their work cut out trying to decide which of the many excellent essays that had been submitted should be awarded the prizes. The standard was very high and difficult decisions had to be made. Thank you to everyone who entered the competition and commiserations to those who did not receive a prize but good luck for next year.

The winning essays are appended below.

1st PRIZE

The trials and tribulations of a researcher – the case of the mysterious iron capsules

Ciarán Pollard

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Successful experiments are the products of good initial planning. I had *my* step-by-step methodology contrived for this specific piece of work from the beginning. The aim was simple: to obtain a better understanding of the effects of temperature on leaf-feeding blue willow beetle emerging from their winter slumber and to observe how quickly they would begin to lay their next generation eggs. But as Colonel Graff once said in the renowned novel *Ender's Game*, as he participated in saving the world from an alien insectoid species known as the Buggers, *"we can't plan for everything, you know"*. How right he was!

The beetles were collected during a wet, chilly week in February from a well-established willow plantation. In truth, they nearly weren't collected at all due to their sheer elusiveness. After checking in the surrounding old and weathered fence posts, thorny hedgerows and every other random location in the bare branched dormant crop, the chance to spend some quality time with these insects was dwindling. The only evidence that could be found of their existence were clusters of empty, hollowed out abdominal casings, the remnants of a previous damaging population perhaps. I thought nothing more of that but cursed their lack of living presence. Haunting words that I had heard from an older and wiser man than myself, that he in turn had heard from another older and wiser man echoed in my ears, *"it has been truly observed that one sure way for a researcher to cause a pest to disappear from their fields of observation is to launch a study of it"*.

But then, we hit the beetle jackpot. In a last-ditch effort to salvage something from the fruitless task that it had been (but later admitting it to be an understandable combined expression of anger, disappointment and exhaustion), my brother/indefatigable field-assistant kicked a solitary semi-rotten log and cracked it open to release a fondness of sleeping blue beetles. Late on an early spring evening, as the setting sun dipped below the cloud cover for the first time that day, our sought-after treasure glistened in the undergrowth as the light grazed their shiny elytra. We scoured the ground for the docile creatures with forceps in one hand, collection pots in the other and smiles on our faces.

Figure 1 (top). Adult *Phratora vulgatissima* with protruding tachinid capsule from abdomen.

Figure 2 (bottom). Adult *Medina luctuosa*.

Back in the laboratory, the insects were separated by sex, distinguishable from one another by structurally different leg segments. Mating pairs were placed in small transparent containers at different temperatures with fresh foliage to be used as a food source/egg laying substrate and replaced daily during observations. With the replications set up, the initial plan was back on track. However, the results only trickled in as the insects were not surviving long enough for reproduction to occur.

As the days progressed, more and more deaths were being recorded, sometimes one per tub, sometimes the pair. This wasn't making any sense. Why would insects enter diapause

during the cold winter months, only to wake up and die prior to procreation in the spring? But then, after another disappointing day of observations, I noticed it. It was another dead beetle but there was something protruding from its abdomen. A small iron coloured capsule. I was astonished at the size of the object compared to the compartment within the beetle from which it had emerged. I began to scan back through the other containers in which I had recorded mortality. A pattern began to emerge. Whenever there was a death recorded, there was always a capsule left behind, either within the insect or underneath an aggregate of frass at the bottom of the receptacle. Like a villain leaving a calling card at a crime scene, it became obvious that the deaths and the occurrence of the mysterious capsules were intrinsically linked.

With 120 replications placed at six different temperatures between 10°C and 27°C, 58 were abandoned due to early mortality. All of my planning had been about as useful as the dead insect carcasses lying on my laboratory workbench. However, undefeated, the capsules were gathered and monitored carefully. Like the fragile beetle exoskeletons, this case could still be cracked. Sure enough, as the days passed, the containers holding the mysterious capsules became populated with emerging flies, a tachinid to be exact. The murdering perpetrator was an ectoparasitoid, *Medina luctuosa*, known to invade Coleopteran species as larvae to complete their life-cycle. Then I remembered the disarticulated beetle fragments we had found back on that damp and dreary week in February. Perhaps this species was partially responsible. And so there I was, with a population of proactive killer flies, a bunch of dead blue beetles, a well laid plan gone astray but a new host record for a destructive tachinid species. My eyes were opened up to the brilliant but brutal world of naturally occurring bio-controls.

2nd PRIZE

The Chosen One

Kayla G. Barnes

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I stretched my new legs, marvelling at the length of them. I was shaky and stiff and it felt odd to be on top of the water but I was so relieved to be free of that claustrophobic case. As I looked around I caught sight of my sisters and cautiously glided over to them.

It seemed like just yesterday we were first instar larvae, breaking free from my cuticulous egg and dipping and diving for algae, bacteria, or whatever organic matter we could find. I had had an idyllic childhood growing to a healthy fourth instar larva in ten days, until I hit that awkward pupal phase where my body changed in ways that I didn't understand. My brothers were the first to hatch out of their cases and, as I looked around now, I saw many of them lifting off in flight with a strength and confidence I did not yet have. I heard one of my larger sisters, a plump aggressive eater, say they where off in search of sugar and women. I was embarrassed to ask what she meant . . . then I realized just how hungry I was.

After a few hours I fluttered my wings for the first time, slowly hopping on the water until I made an arc onto a nearby twig. Flying felt natural but I was by no means a competent pilot. I lifted off again and caught a little channel of warm air that sent me further from the water than I expected. After a deep breath I saw one of my brothers, his hairy antennae deep in a flower. As I bounced over he looked up with a satisfied smile and said "you must try this, it is delicious". I stuck my proboscis into the dark middle of the yellow flower and gracefully sucked up a bit of nectar and smiled with enjoyment.

After a few days of nectar and practice flights I was confident and strong but I still had a nagging feeling of dissatisfaction. That evening I heard melodic drums beating in the distance and with the bats still asleep, I followed the direction of the sound. As soon as I got close to the huts I caught a pungent tempting scent floating through the air. I didn't know what it was - but it was far spicier than any flower. I found a crack in a hatched roof and watched, what I assumed were people, rushing around a fire topped with metal pots.

"Wait until they go to sleep" a voice said as a hoary two week old grandmother crept out of the shadows.

"Oh hello! I didn't see you there. What are they doing?"

"Rushing around preparing dinner. When they go to sleep we can take our dinner; you can follow me in a few hours when it's safe to eat" the wizened female said.

"What is our dinner?" I asked and the old female laughed with a husky cackle and then crept back into the shadows – obviously finished with the conversation.

As I waited the sweaty odorous fragrance grew stronger and I felt my belly grumble. A few hours later the old woman came out of the shadows and told me to follow. We quietly flew through a room and landed on the lower part of a wall. As I surveyed the room I saw a ghastly sight. On the floor were dead bodies twisted in unnatural positions. A few were still alive, weak and paralyzed or missing legs and wings.

"What is this?" I gasped.

"It is the poison. You will smell it soon enough but you won't know if you are a chosen one until you touch it." With that the old woman flew toward a large blue net landed vertically and plunged her proboscis through it.

I was terrified by the death around me but frozen by the intoxicating smells. Just then the old female stopped drinking, reared her swollen red body and flew away. I tried to call out – but she was gone.

I flew over to the net and as I got closer a repulsive chemical smell hit me. I went back to the wall but the urgent draw of the clammy smell was enough to make me forget the chemical stench. I flew onto the net and glutinously plunging my proboscis through piercing the thin ankle skin of the human sleeping . . . Blood! This was the most divine thing I had ever tasted and I felt my body, my entire being rejuvenated as my belly swelled. I drank greedily filling my belly almost to the point of rupture. Just when I was about to finish I saw a large shadow from the corner of my eye. I quickly tried to yank my proboscis out but couldn't fast eno . . . SMACK!

3rd PRIZE

Parasitic Puppetry: Modification of Host Behaviour

Isobel Routledge

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Creatures, often microscopic, sometimes with little more than simple nervous systems for brains, are infiltrating the bodies of organisms, including those of you and I. Some can control how organisms behave, modifying their natural desires and fears from within.

Although this description may seem reserved for the pages of science fiction novels, biologists have found many examples of parasites doing just this. These puppet-masters can make you look and act like the opposite sex, or turn you into a living zombie (after bursting out of you, *Alien*-style). Insects are often parasitised or are parasites themselves, and entomologists play an important role in understanding how, why and to what extent parasites control the behaviour of their host.

The film *Alien* terrified audiences with gruesome images of aliens bursting out of their hosts. What many aren't aware of is the very real parasites that inspired the filmmakers. Parasitoid wasps inject their eggs into an insect host, where they hatch into larvae and consume their host from within, eventually bursting out of them in a similar fashion to the film. These wasps aren't even technically parasites but parasitoids because they take it a step further and actually kill their host rather than just causing damage. As if that wasn't gruesome enough, parasitoid wasps often inject more than just eggs into their hosts. The wasp *Ampulex compressa* injects its host's brain with a venom that causes the cockroach to crazily groom itself and then become very still. While the cockroach is frozen to the spot, *Ampulex* quickly and precisely injects venom into the brain a second time. This time the target is the exact site of the cockroach's escape reflex, causing the zombie-like host to lose it's desire to escape attack.

Parasites don't just turn their hosts into zombies they also – turn them into the opposite sex. When male mayflies are invaded by a type of worm called a meremithid nematode, they begin to resemble and act like females. The feminized males migrate to a different part of the river as if they were going to lay eggs. Consider if men suddenly grew pregnancy-like bumps, lost facial hair and spoke an octave higher than usual, all from a worm infection! But why? This isn't just a freak occurrence – these worms are capable of feminizing other insects such as blackflies, and there are also examples of non-insect parasites feminizing hosts. It is thought that this change in host behaviour is an adaptation to aid the dispersal and survival of parasite offspring. By tricking hosts into babysitting the offspring that are infecting them, parasites free up energy that they would otherwise need to spend on rearing offspring themselves. Pretty clever, eh?

Clever they may be, but are all of these modifications in host behaviour a deliberate adaptation? Or are they merely a side-effect of infection? There can certainly be cases where we have to be careful. Male fruitflies parasitised by mites seem to spend more time courting females. The greater the "parasite burden" – the number of mites infecting an individual fruitfly – the more time the males spend courting. This might seem like a great example of behaviour modification – it could be a way of increasing transmission of the mites via contact between courting or mating flies. The thing is, mites aren't transmitted between flies when mating! It actually appears that this behavioural change is an adaptation to maximise reproduction in fruitflies – a last-ditch attempt to reproduce as much as possible when death is imminent, as no energy or resources have to be saved for possible future reproduction.

Regardless of whether they are adaptive or not, these examples of behavioural modification really call into question who pulls the strings – the larger puppet who seems autonomous, or the smaller puppet-masters, hiding in the wings? The power of small, sometimes unnoticed creatures is surely something many entomologists can appreciate.

Further Reading

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Polak, M. & Starmer, W. T. (1998). Parasite–induced risk of mortality elevates reproductive effort in male *Drosophila*. *Proceedings of the Royal Society of London. Series B: Biological Sciences*, 265(1411), 2197-2201.

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Society News

Council Matters October 2012

The October Council meeting was chaired by the new President, Prof. Jeremy Thomas (Oxford University). As usual, Council considered the Schedules of Elections and Admissions. Prof. Mordue noted that a senior scientist of her acquaintance had resigned from the Society due to poor health and enquired about the practice of the Society writing to retiring eminent Fellows. It was considered that this should be done on a personal basis by those who know the Fellow and the President asked Prof. Mordue if she would be willing to draft a letter.

The Registrar reported on arrangements with the European Congress of Entomology (ECE), which will be held in York University 2-8 August 2014. He explained that all logistical arrangements were in place but expressed a desire to populate the scientific programme as soon as possible. The President concurred and explained the need to secure entries in peoples' diaries.

Dr Tilley circulated a report on National Insect Week 2012. Council endorsed Dr Tilley's opinion that the week had been a great success and the event was growing in scope and depth. Sixty three partner organisations had contributed to NIW, with 306 events. Although it is perhaps unfair to highlight one particular event, the Bioblitz at Clarence House with HRH Prince of Wales and Wolsey Junior School Croydon certainly raised the profile of NIW. It is gratifying that Prince Charles has invited the NIW team to organise another Bioblitz at Highgrove in 2014.

The President reported on Dr Tilley's appointment as Director of Outreach. Dr Tilley's duties in this role will include: National Insect Week, the Insect Festival, corporate membership, the Bug Club, editorial assistant for Ecological Entomology and publicity. The latter of these will include greater online presence of the Society via the internet, Facebook and Twitter. Dr Tilley's new role will facilitate the Society becoming more open and active in the multimedia arena.

The Hon. Secretary reported on Ento'12, which had been held at Anglia Ruskin University, Cambridge 18-20 July 2012. He felt the meeting had worked exceptionally well with parallel sessions in adjacent lecture rooms. The quality of presentations had been of a high quality. He drew attention to several aspects of the meeting. First was the Prof. Mike Majerus Memorial lecture delivered by Dr Helen Roy, which was an excellent tribute to an inspirational entomologist. The 'Silent Spring' sessions organised by the former President had generated much discussion and debate. Finally, he said that the delight of Dr Denis Rodgers as winner of best paper in Insect Conservation & Diversity highlighted the value of the journal awards and the esteem in which the Society is held. The President said he was happy to note the high proportion of student delegates at the conference. Council expressed their thanks to the convenors (Alvin Helden, Peter Brown, Alex Dittrich and Deborah Clements).

The Hon. Secretary gave a brief overview of arrangements for Ento'13, which will be held in St. Andrews University 4-6 September 2013 on the theme of 'The Evolution of Insect Mating System: 30 Years of Thornhill and Alcock'. The Registrar commented that he had visited St. Andrews and that the facilities were extremely good. Similar to the ECE, Council asked for more details of the scientific programme to be uploaded to the website.

Dr Tilley gave an overview of progress with the Insect Festival, which will be held in the Hospitium and grounds of Yorkshire museum on Sunday 7th July. Peter Smithers had joined the organising team and the theme of the festival will be 'Insects in Art'.

The Registrar, the Hon. Secretary and the Director of Science (Prof. Hardie) presented Council with an update regarding the Westwood Medal for excellence in taxonomy. The 2012 recipient (Dr James S. Miller) had been unable to receive the Westwood Medal at International Congress of Entomology 2012 and there was some confusion around arrangements for the presentation. Personnel had changed both in the Society and at the Natural History Museum since the award had been founded. Consequently, there was a need to revisit the schedule for assessing and presenting the Medal. Council also discussed the criteria for the award and whether this included molecular taxonomy. Prof. Hardie, as the Society's representative to the ICE Standing Committee, gave an overview of the 2012 congress in Daegu, South Korea. The President advised that his predecessor, Prof. Reynolds, had on his behalf, presented the Wigglesworth Award to Prof. S. Simpson. Prof. Reynolds had commented on the reassuringly high profile of the Society at the congress. Prof. Reynolds also mentioned a proposal for a 'World Council of Entomological Society Presidents', to help foster international cooperation. Prof. Hardie confirmed that ICE 2016 will be held in Orlando, Florida (25-30 September 2016).

The President advised that Prof. Claridge, Prof. Mordue and Dr Thomas had agreed to serve as Vice Presidents. Under 'any other business', Council discussed the impact of open access publishing on the Society's journals. The Registrar advised that the issue was much concerning the Publications Committee and our publishing partners.

Council Matters December 2012

The Registrar confirmed that the statutory Annual Returns had been made to the Charity Commission, two months before the due date. The report is available on the Charity Commission's website.

A written progress report for the Insect Festival 2013 by Dr Julie North was presented to Council. In light of the 'Insects in Art' theme, Dr Smithers is organising artists to exhibit their work at the festival. Invitations have been sent to over 60 exhibitors and the uptake has been very positive. The number of marquees has been increased to provide more out-door

space and a wide variety of activities are planned: 'crime scene insects', readings for children, 'insect question time', edible insects, etc. Dr David George, as Hon. Regional Secretary for the North, has also joined the organising committee.

The Hon. Secretary gave an update on arrangements for the Westwood Medal. The Medal is awarded jointly with the Division of Terrestrial Invertebrates at the Natural History Museum. The 2014 award is for a taxonomic work published between 1st January 2011 and 1st January 2013. Nominations need to be received by 30th September 2013 and the Medal will be presented at the European Congress of Entomology 2014 in York. Prof. Claridge, as one of the originators of the award, commented that he was keen that the Westwood Medal maintained its prestigious position in the world of insect taxonomy.

The Hon. Secretary reported on the October meeting of the Meetings Committee. The schedule of Special Interest Groups (SIGs) had been good for 2012 and was shaping up nicely for 2013. A new Genomics SIG had been convened in Cambridge by Dr Chris Jiggins and had been a very popular meeting. The possibility of an 'Insect Taxonomy' SIG was actively being considered by Dr Andrew Polaszek of the Natural History Museum. A Regional Meeting organised by Mr John Badmin with the Institute of Ecology and Environmental Management had been considerably oversubscribed. Arrangements for Ento'13 were in hand. Logistical arrangements were in place for the European Congress of Entomology in York 2014, and there was push on to attract high quality speakers. Ento'15 was scheduled for Trinity College Dublin September 2015. As 2013 is the centenary of Alfred Russel Wallace's death, the Society had been approached to support the Wallace 100 lecture series at the Natural History Museum. It was agreed that the Society would sponsor Dr Tom Fayle (past winner of the Society's Wallace Award) to speak.

Dr Clements circulated a report from the Library Committee, which he chairs. He explained that the Committee constantly review purchases and subscriptions. Book purchases tend to be aimed at the more expensive works that Fellows are unlikely or unable to purchase themselves. Due to limited requests, three expensive journals had been unsubscribed. The trial subscription to BioOne had been extended as this had proved popular, although the Committee acknowledged the risks with committing indefinitely to an external provider. Shelf space will become a problem in time but alternative storage facilities are available. The library has signed up to the AIM25 project, which plans to provide electronic access to collection level descriptions of the archives of over one hundred higher education institutions, learned societies and cultural organisations within the greater London area.

The Hon. Treasurer updated Council on the Finance Committee meeting. The finances were satisfactory with projected estimates for future spend affordable. Deposits of £50K, for hosting European Congress of Entomology, had been paid to the venue. As this is a major undertaking for the Society, there is a need to ensure good delegate attendance. Publications continue to provide the Society with an important source of income that underpins many other activities. At the Hon. Treasurer's invite, the Registrar commented on the potential impact of 'open access' publishing on the Society's income. Across our portfolio, currently 12% of articles are author funded for 'open access'. Due to the requirements of funding bodies, this will increase in coming years. As 'open access' articles become more prevalent, subscriptions are likely to decline, although it may take a few years for this effect to manifest. The implications for the Society are far from clear.

SCHEDULE OF NEW FELLOWS AND MEMBERS

as at 6th March 2013

New Honorary Fellows
None

New Fellows (1st Announcement)

Mr Adrian Hoskins	Mr Peter Robert Shirley
Dr N Arunachalam	Mr David James Dunbar MBE
Dr Suresh Nair	Dr Colin Andrew Michael Campbell

Upgrade to Fellowship (1st Announcement)
Associate Professor Nigel Andrew

New Fellows (2nd Announcement and Election)
Revd Dr Andrew Wakeham-Dawson
Dr Stefano Vanin

Upgrade to Fellowship (2nd Announcement and Election)
Mrs Jennifer Anne Stockan
Dr Luke Anthony Nigel Tilley (as at 5.12.12)

New Members Admitted

Dr Alison Jane Karley	Miss Charlotte Elston
Mr Louie Coscos	Mr Philip Arthur Ward
Miss Natalie Kay	Dr Apostolos Kapranas

New Student Members Admitted

Mr Gavin Rutledge	Mr Krzysztof Kozak
Mr Zigmunds Orlovskis	Miss Sally Luker
Mr Sylvester Paul Nzumbi	Mr Stuart Norris
Mr Jonathan Carruthers	Mr Daniel Thomas Reed
Mr Milton Barbosa Da Silva	Miss Clare Brand
Miss Araminta Lang	Mr Richard Kelly
Mr Christopher Thomas Jeffs	Miss Laura Anne Pearson
Mr William Hentley	Miss Sarah Facey
Mr Scott Wesley Mckenzie	Mr Paul Birbeck
Mr Rudi Verspoor	

Re-Instatements to Fellowship
Dr Sam William Heads

Re-Instatements to Membership
Ms Julie M Bristow

Re-Instatements to Student Membership
None

Deaths
Mr E G Philp, 1955, Kent
Mr C J Goddard, 1967, Surrey
Mr P F Entwistle, 1953, Llandovery
Mr G W Smith, 1980, Kent
Professor P F Beales, 1956, Thailand
Mr S W Carter, 1970, Hove
Mr R D Pope, 1957, West Sussex

Meeting Reports

XXIV International Congress of Entomology, Daegu, Korea, August 19-24, 2012

Jim Hardie and Stuart Reynolds

International Congresses of Entomology (ICE) take place every four years with venues being selected by the ICE Council from bids placed by potential organisers at the previous meeting. At the 2008 ICE in Durban, South Africa, South Korea was chosen to host the next Congress. The theme for the 2012 meeting, to be held in the inland city of Daegu, was a 'New Era in Entomology'.

The Congress was held in the EXCO conference centre, a fairly new construction that had been extended over the last year, providing an impressive and more than adequate setting. A single lecture theatre seated all delegates for the Opening and Closing Ceremonies whilst delegate accommodation comprised a wide variety of hotels around the city of Daegu, which is famed for its manufactured goods especially fabrics, as well as for its large markets selling traditional foods and herbal remedies (see picture).

The Congress began on Sunday, August 19, with Registration followed by the Opening Ceremony, which included honouring three eminent entomologists with Certificates of Distinction (plus cheques for US$5000). One of the RES's Honorary Fellows, Professor John Pickett (see Antenna Winter 2012, 36(1) p. 68), was a recipient. The Opening Ceremony also offered the stage to another RES Honorary Fellow, Professor Steve Simpson (University of Sydney, Australia), who presented the combined Opening and Wigglesworth Lecture. Both the Congress Organisers and the RES had selected Professor Simpson for this joint honour. Steve's lecture was titled 'From Individuals to Populations: a tale of swarms, cannibals, ageing and human obesity' and was well received. He was awarded the Wigglesworth Medal by Stuart Reynolds (immediate past President of RES; see picture) and the lecture was followed by a splendid reception.

"Bondegi" (pupae of the silkworm *Bombyx mori*) for sale in the Seomun market, Daegu City. A traditional delicacy, they are eaten boiled or steamed. (Image: Kiyoshi Hiruma)

The main part of the Congress took place over the following five days and was attended by some 2500 delegates from 97 countries, although it was disappointing, as indicated by Professor Bungjin Kim (President of the Local Organising Committee) in his welcome address, that there were no delegates from neighbouring North Korea. There was an excellent choice of topics with 133 sessions comprising 1262 papers and 940 posters and an early start was necessary to catch the plenary lectures, which were scheduled for 8.00 am each morning. Symposia and Oral sessions ran through to 5.30 pm but the working week was balanced by a Gala dinner on Wednesday, following a free afternoon for sightseeing, and a Farewell Dinner after the Closing Ceremony on Friday evening.

Naturally, the RES made a considerable effort to make its presence felt at this important international gathering of entomologists. Throughout the meeting, the Society maintained a stand in the impressively large exhibition hall, which offered relevant information, membership application forms, etc. The Society's journals were prominently displayed and the Wiley-Blackwell 'virtual' booth was immediately adjacent. On Monday evening the RES and Wiley-Blackwell together hosted a well-attended reception with drinks and canapés (see picture). The lack of any speeches during this event was particularly appreciated by the gathered delegates, who were nevertheless made well aware, by a large banner, of the sponsors' largesse.

Most people we spoke to considered the meeting in Korea to have been a very good one. The plenary speakers, Takema Fukatsu (Japan), Thomas W. Scott (USA), Ilkka Hanski, (Finland – another Honorary RES Fellow), Christian Borgemeister (ICIPE, Kenya) and Kongming Wu (China) all gave first-rate lectures. These were

Steve Simpson (right) receiving the Wigglesworth Medal from Stuart Reynolds at the Opening Ceremony (Image: Official ICE photograph)

Dr Debbie Wright (Journal Publishing Manager, Wiley-Blackwell) and Professor Henry Fadamiro (Auburn University, USA and co-editor of Physiological Entomology) at the RES/Wiley-Blackwell Reception. (Image: Kiyoshi Hiruma)

considerably enhanced by simultaneous giant-screen video displays so that everyone in the large audience had an excellent view of the speaker (what else would you expect in the home of Samsung, LG, which was one of the main sponsors?). The quality of most of the scientific sessions was excellent, undoubtedly due to the careful selection of competent and well-connected session organisers.

As one would expect at a large international meeting of this kind, an exceptionally wide range of entomological topics was covered, but equally inevitably some themes emerged as being of interest to many delegates (for example, chemical ecology and the importance of mutualisms between insects and microbes). It was notable to your correspondents that while "traditional" approaches to insect science continued to be important, DNA sequencing of genes and genomes are now centre-stage in a surprisingly wide range of entomological topics, from taxonomy through ecology to physiology and biochemistry. Perhaps this is indeed the emerging "New Era"?

A good number of RES Members and Fellows were present, with many receiving travel funds from the Society. One reason, perhaps, for being cautious about attending a summer meeting on the sub-tropical Eastern seaboard of a Northern Hemisphere landmass became evident during the meeting as rainfall and winds increased. This was due to the approach of a severe tropical cyclone ("Bolaven") which was instrumental in the cancellation of a post-congress trip to Jeju Island. Your correspondents were quite glad to escape on Saturday. The storm reached mainland Korea on Monday/Tuesday of the next week and a significant number of delegates who had tickets to travel on these days were prevented from returning home on schedule.

At the end of the meeting the ICE Council confirmed that the next Congress would take place in the USA in Orlando, Florida, September 25-30, 2016, under the auspices of the Entomological Society of America and with collaboration from other entomological societies in the region. This meeting will incorporate the ESA's annual national meeting for that year, and the current ESA President, Grayson Brown expects attendance to be in excess of 6000, which would make it the largest-ever ICE.

National Insect Week 2012 in the South West

Peter Smithers

The concept of National Insect week as an intense period of furious insect-related activity is wonderful, but a week is a short time in entomology, even more so once the time constraints associated with schools and other local organisations are taken into account. So here in the South West we have always considered NIW as a flag to plant on insect-related events that can be organised over June and July in any NIW year. 2012 was no exception, and the NIW months were packed with a wide range of entomological activities.

We began on the 17th June with a contribution to the Cheltenham Science Festival where myself and Jon May from Plymouth University contributed to an open discussion on insect phobias, which was followed by an introduction to entomophagy with the aid of local chef Lionel Black.

This was followed by a Bioblitz at Paignton Zoo on the 22nd June, where an aggregation of local entomologists scoured the zoo and associated grounds for insects and introduced members of the public to the smaller animals that the zoo had to offer but of which they were totally unaware.

We then had a rapid turn-around and were on Dartmoor the next day with a family group known as Wild About Plymouth. Here we introduced them to the range of fresh water insects that can be found living in the streams that feed the head waters of the river Plym. We had two hours of leaping in and out of the streams with nets and trays, discovering a range of river fly nymphs and larvae and getting just a little damp in the process. We then quartered the riverside bracken with sweep nets and captured some adult stoneflies and mayflies. The company returned to the city tired but illuminated.

The photographic exhibition Strange Neighbours opened quietly in the Shrewell gallery at Plymouth University. It is an excellent display of stunning images depicting the beauty and behaviour of insects from the across the SW. It then went on to tour the region over the following twelve months. This exhibition had been organised by Robin Wootton for the Devonshire Associations with generous financial support from the RES.

NIW was launched in a blaze of sunshine on the lawns of Mansion house on June 26th. The NIW team had invited representatives from a wide cross section of the organisations who were involved with NIW. There were fine speeches, excellent food and the convivial air of an English garden party during which connections were made and networks expanded. The following day I was working with Luke Tilley and Roger Key to run an event for local schools and the public at Fountains Abby in Yorkshire. The day was an enormous success and featured in the NIW film (see Luke Tilley's report of NIW in the next issue).

The next event (3rd July) was a hectic day of bug building at Pilgrim primary school in Plymouth. Here we

engaged in the basic insect morphology lesson that has proved so successful at past Insect Festivals in York. Anatomically correct insects are constructed from coffee cups and drinking straws, to the delight of the young entomologists and teachers involved. The school had decided to engage every class with this activity so I spent the day rushing from one class to another which resulted in an amazing diversity of insects appearing across the school campus.

On the Friday, the exhibition Beetlemania opened at Plymouth City museum. This was an exhibition that examined how beetles had been presented to the world and explored our attitude to this fascinating group of insects. This had been put together by myself, Jan Freedman (curator of natural history @ Plymouth City Museum), David Bilton (Plymouth University) and Andrew Whitehouse (Bug Life), with generous financial support from the RES. The exhibition will go on to tour the SW over the next two years (see Jan Freedman's article in *Antenna* 37 (1)).

To coincide with the opening of the exhibition, we had organised a beetle hunt in Ford Park Cemetery which is run as a city nature reserve. This was well attended despite the drizzly morning and a dozen local families discovered a wide range of beetle families in the wilder parts of the reserve.

Having packed up the beetle hunting equipment I had just enough time to return to the university in time to see Pupa Education's entomological parade, "The March of the Bees", as it left the campus and stormed the city centre. Organised by the irrepressible duo of Duncan Allen and Tarryn Castle, it was a riotous carnival of colourful costumes and exuberant musicians that took to the streets to raise the profile of the importance of pollinators. Local schools had spent the week making bee outfits and one family even had a bee costume on their dog. The parade was enjoyed immensely by all who took part, and shoppers in Plymouth were left in no doubt as to the importance of bees and other pollinators.

The following Monday, Robin Wootton and I had organised a schools workshop to coincide with his exhibition, Strange Neighbours (this was in conjunction with Peninsular Arts who had hosted the exhibition). Following a tour of the exhibition the schools attended workshops dealing with insect origami with Robin and a bug building session from myself.

The primary school at Manadon (Plymouth) had anticipated a sundrenched bug hunt on the following Friday, but the summer of 2012 intervened so another carnival of exotic insects were created in their build-a-bug session. The day ended with a torrent of challenging questions from this group of exuberant young entomologists.

The final activity was on Saturday 21st, which was a spider hunt for Wild About Plymouth in Devonport park, Plymouth. The sun shone on this occasion and we had an excellent turn out. Each family was provided with a plant mist sprayer and a tuning fork then dispatched to spray fences and bushes to reveal spider webs. Once located a vibrating tuning fork would entice the resident spider to make an appearance. This activity generated shrieks, screams and howls of delight as children and parents discovered the number and variety of spiders shared their local park with them.

Diary

Assistant Editor: Duncan Allen (e-mail: antennadiary@gmail.com)
Contributions please! Your support is needed to make this diary effective so please send any relevant items to the diary's compiler, Duncan Allen, E-mail: antennadiary@gmail.com. No charge is made for entries. To ensure that adequate notice of meetings, etc. is given, please allow at least 6 months' advance notice.

Details of the Meetings programme can be viewed on the RES website (www.royensoc.co.uk/meetings) and include a registration form, which usually must be completed in advance so that refreshments can be organised. Day meetings usually begin with registration and refreshments at 10 am for a 10.30 am start and finish by 5 pm. Every meeting can differ though, so please refer to the details below and also check the website, which is updated regularly.

Offers to convene meetings on an entomological topic are very welcome and can be discussed with the Honorary Secretary.

MEETINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY 2013

May 31 Infection and Immunity Special Interest Group
Venue: Queen Mary University (Fogg Building).
Convenors: Drs Rob Knell (r.knell@qmul.ac.uk) and Petros Ligoxygakis (petros.ligoxygakis@bioch.ox.ac.uk)
The meeting is an informal one-day conference with a series of twenty minute talks. We particularly encourage PhD students and Post Docs to speak, although more senior researchers are of course also welcome.
The total cost for the meeting is not yet finalised but is likely to be in the region of £10 or less, which will include lunch and coffee. Following the meeting there will be an opportunity to enjoy the scenic ambience and exciting flavours available in the East End of London.

June 5 Royal Entomological Society Annual General Meeting
Venue: Society Headquarters, The Mansion House, Chiswell Green Lane, St. Albans

July 6-7 INSECT FESTIVAL 2013 (July 7, 10.00 – 16.00)
Venue: Yorkshire Museum & Gardens, York
Convenors: Luke Tilley – luke@royensoc.co.uk (general enquiries and activities)
Julie North – julie@royensoc.co.uk (exhibitor enquiries)
Gordon Port – gordon.port@newcastle.ac.uk (press enquiries)
Peter Smithers – p.smithers@plymouth.ac.uk
The aim of Insect Festival is to raise public awareness of insects and entomology, a great opportunity for young and old to discover the fascinating world of insects.

Evening of Entomology (July 6) – The Westwood Lecture by Dr James S. Miller (American Museum of Natural History) will be held in the Tempest Anderson Hall lecture theatre (Yorkshire Museum) on the evening of Saturday 6th July. This will be followed by "Insect Question Time", where a panel of entomologists will take questions from the public audience.

Sep 4-6 Ento'13 National Meeting and International Symposium
The Evolution of Insect Mating System: 30 Years of Thornhill and Alcock
Venue: University of St. Andrews
Convenors: Dr David Shuker, Prof. Leigh Simmons and Dr Graham Stone
The International Symposium
The International Symposium will celebrate 30 years of Thornhill and Alcock's ground-breaking book *The Evolution of Insect Mating Systems.* The book has had an enormous impact on multiple generations of entomologists and behavioural ecologists, and we will celebrate that achievement and explore the progress we have made in understanding insect mating systems and reproductive behaviour since 1983. The original book covered many aspects of insect mating systems, from the evolution of sex and sexual systems, through to how ecology and sexual selection interact to shape the mating systems we see. Much has happened in the three decades since the book was published, including major advances in our understanding of the evolution of sex,

(especially mate choice and post-copulatory sexual selection), the mechanistic basis of reproductive behaviour, and of course sexual conflict. Insects have played a major role in all these developments, as the symposium and the accompanying volume will highlight.

Symposium speakers include:
Göran Arnqvist (Uppsala)
Boris Baer (University of Western Australia)
Roger Butlin (University of Sheffield)
Ben Normark (UMASS)
Leigh Simmons (University of Western Australia)
Nina Wedell (University of Exeter)

National Science Meeting

The National Meeting will comprise a series of themed sessions as well as general entomology sessions open to talks on any entomological topic. Depending on the presentations offered by delegates, sessions may be combined or delegates may be asked to present a poster instead of a talk (or vice versa)

Proposed Themed Sessions:
Pollinator Behaviour, Ecology and Evolution
Beneficial Insects: Biological Control and Beyond
Sexual Selection in Insects
Entomology for the Masses: Impact and Outreach
Insect Community Ecology
Insect Genomics

Sep 11 Aphid Special Interest Group

Venue: Christ Church, Priory Terrace, Leamington Spa
Convenor: Dr Rosemary Collier (rosemary.collier@warwick.ac.uk)

Oct 16 Climate Change Special Interest Group

Venue: Rothamsted Research, Harpenden
Convenors: Dr Richard Harrington (richard.harrington@rothamsted.ac.uk) and Dr Howard Bell
Offers of talks in all areas relating to the impacts of climate change on insects are welcomed, for example: invasive species, insect-borne diseases, pest management, ecosystem services, biodiversity, conservation and population dynamics.

Oct 23 Joint Aquatic Insect / Insects and Sustainable Agriculture Special Interest Groups

Venue: Newcastle University
Convenors: Ms Jenni Stockan (jenni.stockan@hutton.ac.uk)
Mr Craig McAdam (craig.macadam@buglife.org.uk)
Dr John Holland (jholland@gwct.org.uk)
Confirmed speakers:
Prof Steve Ormerod (Cardiff University),
Dr Chris Extence (Environment Agency),
Steve Hewitt (Cardiff Museum),
Dr Lorna Cole (SRUC)

Oct 24-25 Irish Regional Meeting (Thursday - Marsh Fritillary monitoring in the Republic of Ireland; Friday - Regional red listing and beyond for Irish invertebrates)

Venue: Dublin Botanic Gardens, Glasnevin
Convenors: Drs Eugenie Regan, Brian Nelson, Archie Murchie

Nov 6 Orthoptera Special Interest Group

Venue: Natural History Museum, London from 13:30-20:00
Convenor: Bjorn Beckmann (orthoptera@ceh.ac.uk)
The 34th annual Orthopterists' meeting will be held on Wednesday 6th November 2013 from 1:30-8:00pm in the Natural History Museum, London. Talks, posters and other contributions are welcomed on grasshoppers, crickets and related groups (cockroaches, earwigs, stick insects, mantids). Everyone is very welcome to attend, whether to present research or just to listen and meet fellow Orthopterists. Please email orthoptera@ceh.ac.uk if you would like to attend, present something or have a suggestion for a speaker. A draft programme will be published in due course.

Nov 14 South-East Regional and East Malling Centenary Meeting

Venue: East Malling Research, Kent
Convenor: Mr John Badmin (jbadmin@btinternet.com) and Prof. Jerry Cross (jerry.cross@emr.ac.uk)
Pests and natural enemies in fruit crops: a review celebrating 100 years at East Malling Research
Draft programme includes: Dr Michael Solomon, Dr Jean Fitzgerald, Prof. Jerry Cross, Dr Michelle Fountain, Csaba Nagy

Nov 15 The Importance of Being Small.
Joint meeting of the RES SW & the Peninsular Invertebrate Forum
Plymouth University, Devonport lecture theatre, 6.00pm.
Felicity Crotty, Food webs in the soil, whose eating who.
Jane Pickard, Water mites down under. Tales of Australian Hydracarine.
Nigel Marley the secret life of water bears, everything you wanted to know about Tardigrades but never thought to ask.
Convenor: Peter Smithers psmithers@plymouth.ac.uk

Dec 5 Northern Regional Meeting joint with Medical Veterinary Entomology Special Interest Group
Venue: (TBC) Northumbria University, Newcastle upon Tyne
Convenors: Dr David George (david.george@northumbria.ac.uk) and Prof. Steve Torr

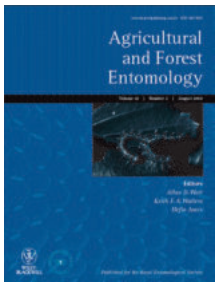
2014

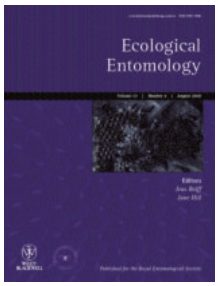
Jun
23-29 National Insect Week

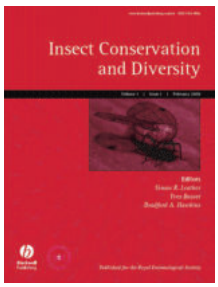
Aug 2-8 European Congress of Entomology
Venue: University of York, Heslington, York
Confirmed plenary speakers:
Bruno Lemaitre – Ecole Polytechnique Federale, Lausanne, Switzerland.
Nancy Moran – Yale University, New Haven, USA.
Vojtech Novotny – Czech Academy of Sciences, Ceske Budejovice, Czech Republic.
Janet Hemingway – Liverpool School of Tropical Medicine, UK
John Pickett – Rothamsted Research, UK
Chris Thomas – University of York, UK
Each session will comprise one keynote presentation (30 mins) followed by eight invited or contributed talks (15 mins each). The keynote speaker will receive a 50% reduction in registration fees only. To encourage international participation the committee encourages applications where joint organisers are based in different countries from one another.

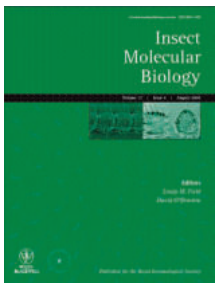
2015

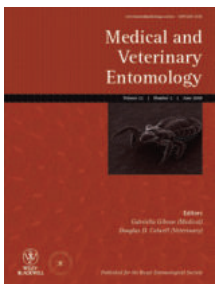
Sept 2-4 Ento' 15 Annual Science Meeting and International Symposium
Insect Ecosystem Services
Venue: Trinity College Dublin
Convenors: Drs Jane Stout, Olaf Schmidt, Archie K. Murchie, Eugenie Regan, Stephen Jess, Brian Nelson

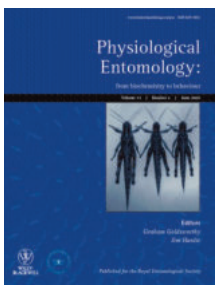


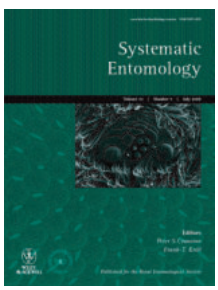












Publications of the Royal Entomological Society

Agricultural and Forest Entomology provides a multi-disciplinary and international forum in which researchers can present their work on all aspects of agricultural and forest entomology to other researchers, policy makers and professionals.
2013 print or online prices: UK £663, Euroland €845, USA $1,227, Rest of World $1,430
2013 print and online prices: UK £763, Euroland €971, USA $1,411, Rest of World $1,645

Ecological Entomology publishes top-quality original research on the ecology of terrestrial and aquatic insects and related invertebrate taxa. Our aim is to publish papers that will be of considerable interest to the wide community of ecologists.
2013 print or online prices: (with Insect Conservation and Diversity) UK £1,093, Euroland € 1,390, USA $2,023, Rest of World $2,359
2013 print and online prices: UK £1,258, Euroland € 1,599, USA $2,327, Rest of World $2,713

Insect Conservation and Diversity explicitly associates the two concepts of insect diversity and insect conservation for the benefit of invertebrate conservation. The journal places an emphasis on wild arthropods and specific relations between arthropod conservation and diversity.
2013 print or online prices: UK £663, Euroland €845, USA $1,227, Rest of World $1,430
2013 print and online prices: UK £763, Euroland €971, USA $1,411, Rest of World $1,645

Insect Molecular Biology has been dedicated to providing researchers with the opportunity to publish high quality original research on topics broadly related to insect molecular biology since 1992. *IMB* is particularly interested in publishing research in insect genomics/genes and proteomics/proteins.
2013 print or online prices: UK £1,106, Euroland €1,404, USA $2,044, Rest of World $2,383
2013 print and online prices: UK £1,271, Euroland €1,616, USA $2,351, Rest of World $2,741

Medical and Veterinary Entomology is the leading periodical in its field. The Journal covers all aspects of the biology and control of insects, ticks, mites and other artropods of medical and veterinary importance.
2013 print or online prices: UK £636, Euroland €811, USA $1,178, Rest of World $1,375
2013 print and online prices: UK £723, Euroland €933, USA $1,356, Rest of World $1,582

Physiological Entomology is designed primarily to serve the interests of experimentalists who work on the behaviour of insects and other arthropods. It thus has a bias towards physiological and experimental approaches, but retains the Royal Entomological Society's traditional interest in the general physiology of arthropods.
2013 print or online prices: UK £587, Euroland €747, USA $1,085, Rest of World $1,266
2013 print and online prices: UK £673, Euroland €859, USA $1,248, Rest of World $1,456

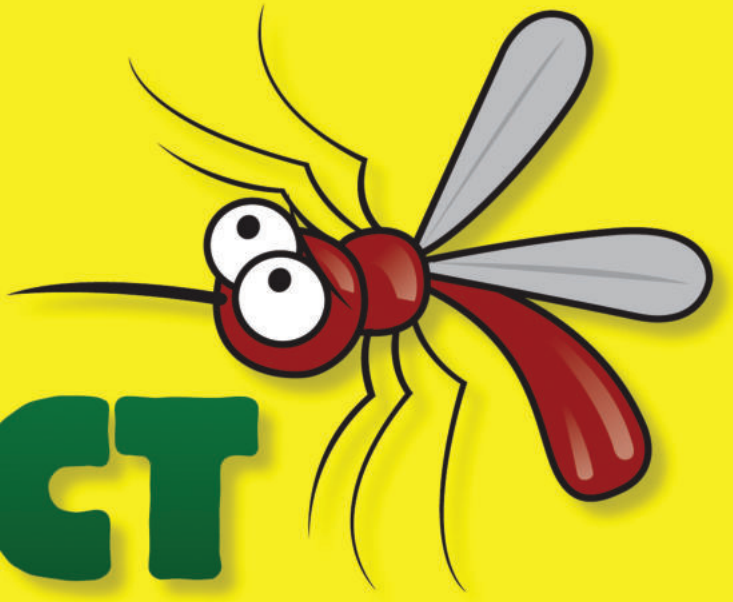
Systematic Entomology encourages the submission of taxonomic papers that contain information of interest to a wider audience, e.g. papers bearing on the theoretical, genetic, agricultural, medical and biodiversity issues. Emphasis is also placed on the selection of comprehensive, revisionary or integrated systematics studies of broader biological or zoogeographical relevance.
2013 print or online prices: UK £1,056, Euroland €1,344, USA $1,955, Rest of World $2,281
2013 print and online prices: UK £1,214, Euroland €1,546, USA $2,248, Rest of World $2,624

Subscriptions and correspondence concerning back numbers, off-prints and advertising for the seven principal journals of the Society should be sent to the publishers, Wiley-Blackwell Publishing Ltd, 9600 Garsington Road, Oxford OX4 2DQ. (customerservices@blackwellpublishing.com)

Antenna (Bulletin of the Society). Free to Members/Fellows. Published quarterly at an annual subscription rate of £40 (Europe), £42 (outside Europe), $70 (United States). This journal contains entomological news, comments, reports, reviews and notice of forthcoming meetings and other events. While emphasising the Society's affairs, *Antenna* aims at providing entomologists in general with a forum for their views and news of what is going on in entomology. Subscriptions and advertising enquiries should be sent to the Business Manager at The Mansion House, Chiswell Green Lane, Chiswell Green, St. Albans, Hertfordshire AL2 3NS and any other enquiries to the Editors.

Handbooks for the Identification of British Insects. This series now covers many families of various Orders. Each Handbook includes illustrated keys, together with concise morphological, bionomic and distributional information. A full list of Handbooks with order form is available. See website www.royensoc.co.uk

Symposia. Nos. 1-3 were published by the Society; Nos. 4-10 by Blackwell Scientific Publications: Nos. 11-17 by Academic Press and No. 18 by Chapman & Hall, No. 19 by Kluwer, No. 20, 21, 22 and 23 by CABI.



INSECT FESTIVAL 2013

ROYAL ENTOMOLOGICAL SOCIETY
FOUNDED 1833

Sunday 7 July 2013
10am - 4pm
Yorkshire Museum Gardens and Hospitium, York

Come and see:

- Live insect displays
- Demonstrations
- CSI (Crime Scene Insects)
- Award-winning photographic displays
- National and regional natural history societies
- Book sellers
- Entomologist's equipment
- Artwork

Take part in:

- Mini-beast hunts
- Face painting
- Naming your insect specimens with our team of IDENTomologists
- Making insect models

...and much, much more!!!
Entry: £1 per adult, FREE for under 16's
www.insectfestival.co.uk