FLY TIMES

ISSUE 50, April, 2013

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Welcome to the latest issue of *Fly Times*! I'm not sure whether to celebrate the 50th issue of the newsletter, or hold off until the next issue, which will represent 25 years of *Fly Times*! I choose to do both! (Celebration ensues...). I thank everyone for sending in such interesting articles, as always – I hope you all enjoy reading it as much as I enjoyed putting it together! Please let me encourage all of you to consider contributing articles that may be of interest to the Diptera community for the next issue. *Fly Times* offers a great forum to report on your research activities and to make requests for taxa being studied, as well as to report interesting observations about flies, to discuss new and improved methods, to advertise opportunities for dipterists, to report on or announce meetings relevant to the community, etc., with all the associated digital images you wish to provide. This is also a great place to report on your interesting (and hopefully fruitful) collecting activities! Really anything fly-related is considered. I also want to thank Chris Borkent for again assembling the list of Diptera citations since the last Fly Times, and to announce that Chris will be taking on this responsibility from here on, at least until he wants to stop!

The electronic version of the *Fly Times* continues to be hosted on the North American Dipterists Society website at http://www.nadsdiptera.org/News/FlyTimes/Flyhome.htm. For this issue, I want to again thank all the contributors for sending me so many great articles! Feel free to share your opinions or provide ideas on how to improve the newsletter. Also note, the *Directory of North American Dipterists* is constantly being updated. Please check your current entry and send all corrections (or new entries) to Jim O'Hara – see the form for this on the last page.

Issue No. 51 of the *Fly Times* will appear next October. Please send your contributions by email to the editor at stephen.gaimari@cdfa.ca.gov. All contributors for the next *Fly Times* should aim for 10 October 2013 – don't worry – I'll send a reminder! And articles after 10 October are OK too!

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Issue 50, available online 21 May 2013

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NEWS

Systema Dipterorum

The BioSystematic Database of World Diptera

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The idea of a catalog/database of the flies, their names and species, has had a long tortuous history. The idea was first proposed by Lloyd Knutson and myself at the International Congress of Entomology in Hamburg, Germany (1984). Since then numerous attempts were made to get funding for this project, but success was only partial. USDA did provide funds for a pilot test project to explore digital taxonomy using fruit flies (Tephritidae). From this effort, the Diptera website (www.diptera.org) was launched in April 1998 which included the first online version of the Biosystematic Database of World Diptera (BDWD). The Schlinger Foundation for a number of years (2000-2006) provided support for a Postdoctoral Fellow at the Smithsonian who contributed in part to the database. Later the database was moved to Copenhagen and the name changed to Systema Dipterorum, in hopes that European Union funding would be found. Today, the hope is that Neal Evenhuis, working with Rich Pyle, the author of ZooBank, will be able to get funding from NSF to convert Systema Dipterorum into an open community resource. Shortly I will be posting to this site my last version of the data.

Along with the online resource, as data were reviewed by specialists, definite versions were published in traditional book format. The first was the Systematic Database of *Musca* Names (Thompson & Pont 1993), later the fruit flies (Tephritidae; Norrbom et alia 1999, MYIA 9), family-group names (Sabrosky 1999, MYIA 10), and most recently various other families in MYIA 12 (2011). Two more family treatment are now in the works (Acroceridae and Therevidae) for future volumes of MYIA.

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Authors of Fly Names. Second edition

Neal L. Evenhuis

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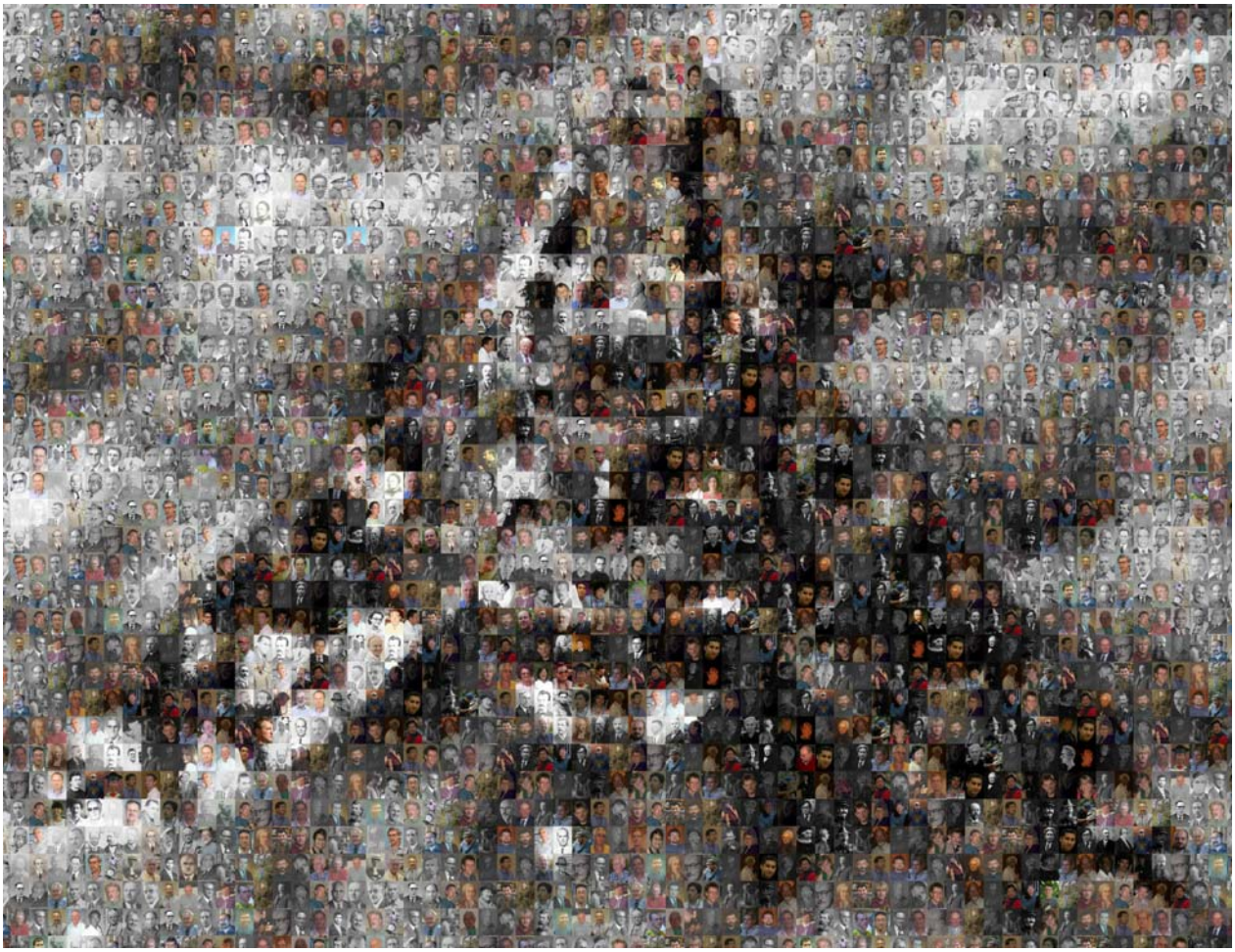
The second edition of this list of authors or co-authors of new taxa of Diptera is now available at the link below. It comprises 5,701 full names and their dates of birth and/or death, and country in which they lived or worked.

The first edition of this list was launched at the 7th International Congress of Dipterology in Costa Rica in 2010 and contained 5,375 names. This second edition shows a rather dramatic increase in the number of Diptera taxonomy authors (326 in just two years), which is heartening considering there is

much work to be done and so few to do it. Two of the countries that have seen the largest increases in numbers of new Diptera taxonomists since the original 2010 list include China (719; an increase of 93) and Brazil (407; an increase of 43). But, surprisingly, the country in the top 20 of workers seeing the most dramatic increase percentagewise is Colombia (53 authors; a 32.5% increase since 2010). The third edition will be launched in time for the 8th International Congress of Dipterology in Potsdam, Germany in August 2014.

Corrections and additions are welcome, especially adding dates of birth where this data is missing. If adding authors to the list, please also send a pdf of the work or at a minimum its full citation to allow verification of authorship.

Evenhuis, N.L. (2013) Authors of Fly names. A list of all authors who have proposed Diptera names at the family-level or below. Second edition. *Bishop Museum Technical Report* 61, 271 pp. [Available at: http://hbs.bishopmuseum.org/publications/pdf/tr61.pdf]



Montage clipped from the cover of Evenhuis (2013). Find your favorite Dipterist!

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Progress of the Costa Rican ZADBI Project

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Many of you are familiar with the Zurquí All Diptera Biodiversity Inventory, or ZADBI. An introduction to the project, which is led by Brian V. Brown (PI), and Art Borkent (Co-PI), can be found in *Fly Times* issue 49. Our own website has been fleshed out and is available at http://phorid.net/zadbi/ (see below). Here, we briefly summarize the project and provide many exciting updates.

Summary
Scientists from the Entomology Department at the Natural History Museum of Los Angeles County (LACM), the Royal British Columbia Museum, and world-wide collaborators are currently working on a project called the "Zurquí All Diptera Biology Inventory" (or ZADBI). Scientists often conduct biological inventories, or record how many different kinds of organisms they find in a specific habitat. Identification of new species provides a measure of biodiversity, creating a baseline of organisms for future comparisons. ZADBI is the first effort to comprehensively survey all species of a large, mega-diverse group of invertebrates (flies) of a tropical forest location; it is potentially a landmark research project in tropical biology and will make a very important contribution to understanding the species diversity of a highly diverse but restricted tropical fauna.

The main sampling site is Zurquí de Moravia, a tropical cloud forest at 1600 meters in eastern Costa Rica. Previous research has shown that middle elevation sites, like this one, are the most diverse in the world and have the most potential for high diversity and number of species new to science. Currently, no one really knows how many species are actually present in a single location, anywhere in the tropics, which has been a huge gap in our understanding of biodiversity and how best to study and manage terrestrial ecosystems.

Zurquí

ZADBI is unique among recent inventories, as it will sample only a small area. This is because the number of species presently unknown to science is overwhelming. Most previous inventories for complete surveys became mired by trying to do too much and resulting in a backlog of unidentified

specimens, whereas ZADBI is restricted to a small site that, with the help of many experts, will give us a complete list of species.

Updates

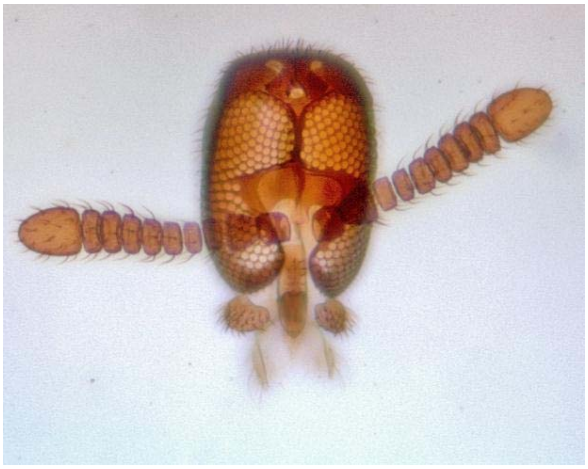
The ZADBI website launch!

We have been diligently working on a ZADBI website and it is finally ready for the public. This website is a means for team members to connect and stay in the loop as ZADBI progresses. It is also a site for teachers, families, and other fly enthusiasts. Please visit http://phorid.net/zadbi/ for updates on identifications, field work, and outreach education. Because we are always looking for submissions to the ZADBI website blog, please contact Anna Holden if you would like to contribute anything ZADBI-related, such as a new identification or a story from the field.

New discoveries:

Some of our world-wide collaborators recently received specimens and have already reported new finds:

- Art Borkent examined an initial batch of 217 slides of Ceratopogonidae and found 65 species present. Of these 65 species, 41 were represented by single specimens, suggesting that many more ceratopogonid species are yet to be found at Zurqui. The majority of the species were restricted to three genera: *Forcipomyia*, *Atrichopogon*, and *Culicoides* and includes numbers of unnamed species.
- Dr. Dalton de Souza Amorim from the Universidade de São Paulo discovered that out of eight scatopsid species that he received…***eight*** species are new to science! Please visit his blog entry on the ZADBI website at http://phorid.net/zadbi/?page_id=118.



Anapausis sp. (Scatopsidae), female, head. (photo Dalton de Souza Amorim)

Podiomitra sp. (Sphaeroceridae). (photo by Inna Strazhnik)

- Dr. Brian V. Brown identified three specimens of the genus *Podiomitra*, a member of the family Sphaeroceridae and subfamily Homalomitrinae. Check out a very cool picture and Brian's blog entry at http://phorid.net/zadbi/?page_id=118.
- Dr. Peter Adler from Clemson University identified *Simulium metallicum* sibling species 'J' - a new country record, known previously only from next door in Panama, and a new *Simulium metallicum* sibling species.

- From INBio: The parataxonomist team recently identified scathophagids, raising the total number of collected families to 63.
- From the field: Associated Researcher and Field Work lead, Wendy Porras, observed asilids flying over water and touching it with their legs, very near water insects, which she suspects they are hunting. She will attempt to photograph this behavior.

We used our initial loans to establish any necessary tweaks to the preparation protocols used by parataxonomists. Everyone who received material attested to the amazing abilities of Wendy Porras, Marco Moraga, Annia Picado, Elena Ulate, and Carolina Avila. We are grateful for their work, which serves as the backbone to this project.

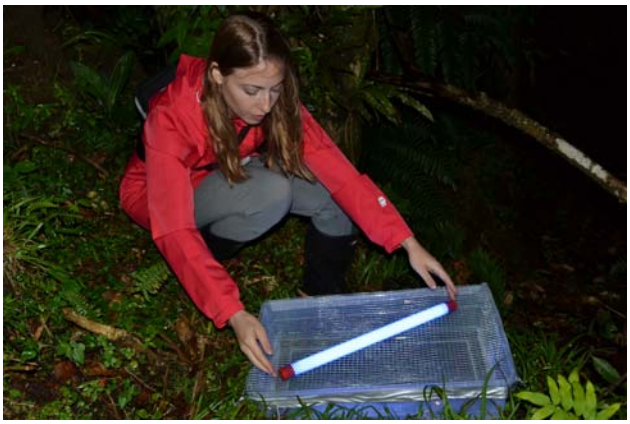
Wendy's updates from the field

Wendy Porras leads field collection with parataxonomist, Marco Moraga. Aside from picking up malaise samples every week, they stay at Zurquí for 4 days each month to conduct additional collecting.

Wendy Porras setting up a bucket light trap

After more than 6 months of collecting, Wendy Porras has an update on the overall effectiveness of traps at Zurquí. According to Wendy, traps that are hardly capturing any specimens include tree trunk traps and the Corethrellidae frog call trap. Traps that are mediocre include the Malaise canopy trap, dry Malaise trap, and bait traps. The rest of traps, which include various blacklight traps, pan traps, hand collecting and flight intercept traps, are very effective. Trap efficiency may very well be affected by the constant and heavy rain. As Wendy explains, most of the winter experienced heavy rainfall.

Carolina Avila setting up a tree trunk trap



Anna Holden setting up a black light pan trap

Art's visit to INBio and Zurquí

Art Borkent was in Costa Rica Feb. 22nd to March 9th to provide oversight for our project and to help improve the quality of some specimen preparation. In particular, the slide mounting for some groups presented some real challenges to the very skilled parataxonomists.

Every family has a different protocol and adjusting to the needs of each of our collaborators means learning how to handle different preparation and dissection methods. As it stands now, the slides being prepared by Annia Picado and Elena Ulate are outstanding!

Annia Picado, Art Borkent and Elena Ulate in the lab

On February 28th a large group of us spent the day at Zurquí, collecting, setting up traps, and exploring. Present were Art Borkent, our five parataxonomists Wendy Porras, Annia Picado, Marco Moraga, Elena Ulate and Carolina Avila, Manuel Zumbado (INBio), Carlos Viquez (INBio), Braulio Hernández (INBio), Monty and Grace Wood (looking for Tachinidae and other larger Diptera), Paul Hanson from the University of Costa Rica and four of his students: Alejandro Vargas, Steve Zamora, Darha Solano and Josué Corrales. Steve is a Master's student interested in cecidomyiid galls on Piperaceae and Alejandro, a first year student is keen on mosquitoes and empidids. Darha Solano and Josué Corrales are undergraduates who wanted to see what a biodiversity project in action looked like.

Carolina Avila, Wendy Porras and Braulio Hernandez at the cabin at Zurquí

Monty and Grace Wood arriving at Zurquí to collect

Carlos Viquez and Annia Picado preparing to collect at Zurquí

Alejandro Vargas setting up an imitation bromeliad / tree hole (plastic cup with water and some leaves) to attract ovipositing female Culicidae

Manuel Zumbado and Marco Moraga collecting in the cloudforest at Zurquí

Art spent a further three days on his own at a cabin at Zurquí, sampling and exploring. Black fly larvae were preserved in Carnoy's (for chromosome study by Peter Adler), drosophilids sampled from bracket fungi, swarming Sciaridae collected, and many more Diptera swept and preserved.

Zurquí had a mudslide in December, which reached the edge of the permanent stream, clearly affecting the aquatic insects downstream. For example, Simuliidae larvae which were previously abundant are now found only upstream from the muddied area. The evening of March 1st saw a very blustery storm move in and the temperature dropped to 9 degrees overnight. The following morning, with horizontal rain and trees being lashed by the wind, it seemed like a good time to return to Santo Domingo and further lab work at INBio!

Outreach education update and partnerships:
We are offering fly resources to families, schools, and other fly enthusiast groups on the ZADBI website. These audiences can replicate ZADBI collecting at almost any site after downloading our ZADBI collecting curriculum, PowerPoint, DIY fly trap video (in the making) and a common fly family ID guide. In addition to making ZADBI accessible from our website, we are also promoting ZADBI-based programming and content through other partners:

- Encyclopedia of Life (EOL)

We have a reciprocal relationship with EOL: We will provide ZADBI genus/species pages and images to EOL. EOL offers images and content for our website for the general public interested in learning more about common fly families. We are working with Marie Studer, Learning and Education Director, and Tracy Barbaro, Project Coordinator, to create special ZADBI webpages on EOL for our curriculum, intro PowerPoint, DIY fly trap video, fly mapping with Google maps, and much more.

- The National Park Service, Santa Monica Mountains (SAMO)

The SAMO will use the concept and collecting techniques of ZADBI in their programming. We are working with Lena Lee, Data Manager of Mediterranean Coast Network Inventory and Monitoring Program, and Barbara Applebaum, Supervisory Park Ranger, Education. Anna Holden will be attending a consortium of informal science educators at SAMO on May 15 to present our resources to other educators and organizations.

- The Education Department at the Natural History Museum of Los Angeles County (NHM)

The ZADBI curriculum, Intro PowerPoint, DIY fly trap video will also be available for the Education Department to use in any of their programming, school visits or teacher training. We are using ZADBI content in at least 5 programs this year, which will reach the Museum's wide audience. For example, we will replicate ZADBI collecting techniques in the Museum's native garden and create a "fly zoo" to highlight the ecological importance of flies for "Sustainable Sunday" programming.

Student projects

ZADBI can and should support faculty teaching and inspire student projects. We are fortunate that Dr. Paul Hanson is coordinating two ZADBI-based, student research projects at the Universidad de Costa Rica. It's a plus that our project is actively supporting an institution local to our main sampling site. Hopefully, more students will take an interest in ZADBI-based research and contribute to our project! The students who are contributing to ZADBI research are:

Steven Zamora:

His project is to inventory all species of *Piper* (Piperaceae) growing at Zurquí for presence of galls (the vast majority of which are induced by Cecidomyiidae). Emphasis will be on leaf and stem galls (root galls have been observed but will not be included). Steven will prepare slide mounts of larvae, especially of the sternal spatula of the third instar, in order to separate morpho-species and determine the degree of host-specificity, i.e. whether the same cecidomyiid species occurs on different species of *Piper*. He will also document the internal gall morphology, phenology, and parasitoids of each species of cecidomyiid on *Piper*. Steven will study in greater detail the most common *Piper* gall at Zurqui, i.e. a cecidomyiid species that induces a swelling of the leaf veins.

Alejandro Vargas:

Alejandro placed artificial phytolemata (plastic cups) and artificial ponds (small tubs of water) at Zurquí. He examines these artificial bodies of water every two weeks for presence of mosquito (and other dipteran) larvae. He then rears these larvae in the laboratory to obtain the adult stages. He has already found two genera of Culicidae.

Diptera Blitz 2013:

Collaborators and staff from the Natural History Museum of Los Angeles County will convene August 5-9th, 2013 for a Diptera Blitz of Zurquí. We will collect day and night, hold talks on collecting techniques, and have a few field trips.

Our partnership with INBio and the participation of 49 collaborators worldwide ensures that we have constant and exciting ZADBI updates for future issues of the *Fly Times* and on our website. Please feel free to contact Brian Brown or Art Borkent if you have any suggestions or thoughts regarding our project.

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Rob Cannings Retires
Curator of Entomology, Royal British Columbia Museum, 1980-2012

Stephen D. Gaimari

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Rob Cannings has retired as Curator of Entomology at the Royal British Columbia Museum in Victoria, BC. Rob joined the RBCM on 2 January 1980 and retired exactly 33 years later. From 1987 to 1996 he also managed the Natural History Section at the Museum. He has been named a Curator Emeritus and will continue his research projects there.

Rob grew up in the grasslands of the Okanagan Valley in southern British Columbia and his early fascination with these habitats and their associated ponds and lakes led to his later interest in robber flies (Asilidae) and dragonflies (Odonata), which were diverse there. His undergraduate and MSc studies examined chironomid midge assemblages in grassland saline lakes. Although for years he has focused on the systematics and faunistics of dragonflies and robber flies, he publishes widely on many insect groups, from mantidflies and moths to lampyrid beetles and bumble bees. In retirement, Rob says he'll concentrate more on the Asilidae than he has in the past. His main focus in robber fly research has been the systematics of *Lasiopogon*, diverse in North Temperate regions, which was the subject of his doctorate, although he has a fondness for *Efferia*, too. Studying the diversity of the asilid fauna of Canada, especially, will be a priority.

Rob has a strong interest in popularizing insects and insect identification through handbooks, keys and the internet. He is the author or co-author of several books, including *The Dragonflies of British Columbia* (1977), *Birds of the Okanagan Valley, British Columbia* (1987), *The World of Fresh Water* (1998), *Introducing the Dragonflies of British Columbia and the Yukon* (2002), and *The Systematics of Lasiopogon (Diptera: Asilidae)* (2002).

Rob has served on the Scientific Committee of the Biological Survey of Canada (Terrestrial Arthropods), the Invertebrate Subcommittee of COSEWIC (Committee on the Status of Endangered

Wildlife in Canada) and the British Columbia Invertebrate Recovery Team. Active in the Entomological Society of BC, Rob was President (1986, 2001) and Regional Director to the Entomological Society of Canada (1983-86). He started the ESBC newsletter *Boreus* in 1981 and was editor until 1991; he is an associate editor of the ESBC Journal. He has served as the chair of the Entomological Society of Canada's Endangered Species Committee.

In former lives, Rob worked as a biologist and nature interpreter for British Columbia Parks and the Canadian Wildlife Service and was a lecturer and museum curator at the University of British Columbia. He earned a BSc and MSc from the University of BC; his PhD comes from the University of Guelph.

In 2008 Rob and his two brothers, Richard and Syd, were made Fellows of Okanagan College for "bringing British Columbians and Canadians a richer appreciation of the natural world through their writings, professional activities and dedication". Rob was presented the 2009 Bruce Naylor Award, a national honour that recognizes "exceptional contributions to the study of museum-based natural history in Canada".

After taking a break for a couple of months, Rob says he'll pick up his projects where he left off, working at home and visiting the RBCM collection a day or so a week. He still can be reached at his RBCM email address -- rcannings@royalbcmuseum.bc.ca. Although at the moment there is a hiring freeze in the BC government that will likely last until the provincial election in May, Rob is confident that a new curator will be hired before long. In the meantime, for inquiries or other communication with RBCM Entomology, contact the Collections Manager, Claudia Copley at ccopley@royalbcmuseum.bc.ca (250-952-0696).

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Book Review:
Biology of *Deuterophlebia nipponica*.
by Noritaka NISHIO, 2013
Private publication by the author (1-5-33 Chuou-nishi, Ueda, Japan 386-0023; Tel & Fax: 81-268-22-4848; e-mail: nishiomoth@ezweb.ne.jp, Price ¥16,000)

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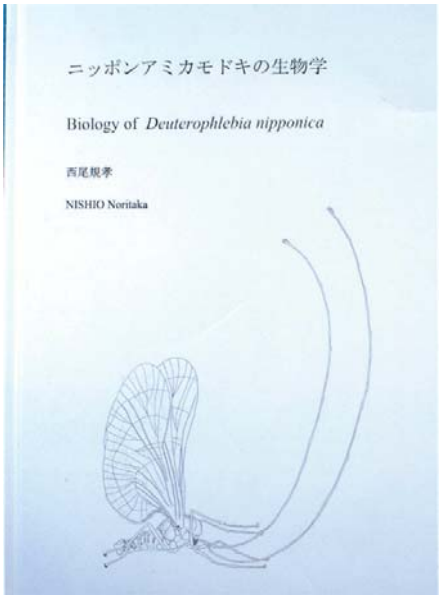
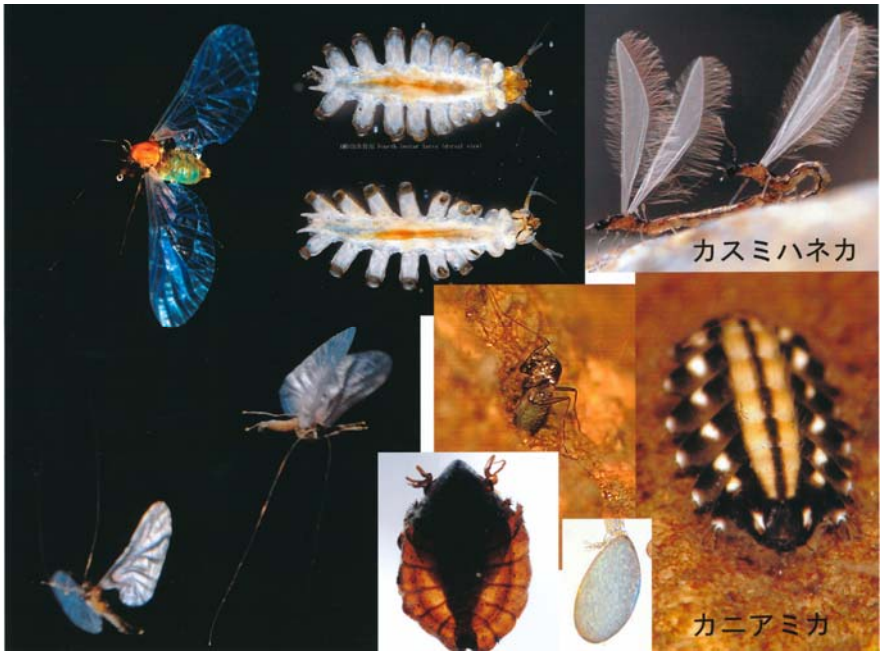
The author of the book is a semi- professional entomologist engaging in environmental assessment, and a researcher on rare dipterous insects and the noctuid moth genus *Catocala*, as well as an expert nature photographer. He has been very interested in the biology of *Deuterophlebia* and *Nymphomyia* for the past 15 years, and published several papers on these rare flies. This book consists of three chapters: The first chapter treats the biology of *Deuterophlebia nipponica*, and contains the following sections: historical, habitat and distribution, study sites, larva, pupa, adult (emergence, swarming and mating behaviors), sex ratio, oviposition, and natural enemies. This chapter includes many interesting photographs of all life stages, such as an egg-laying female, adults in flight, an emerging adult, numerous adult males caught in a spider web, etc. and important biological data. The second and third chapters treat the biology of two species of *Nymphomyia* and of a blephariceridae *Neohapalothrix kanii*, respectively. There are also excellent photos of mating pairs for the two species of *Nymphomyia*, magnificent photos of swarming *Nymphomyia*, colorful larvae and pupae of *Neohapalothrix kanii*, etc. The text is written in Japanese, whereas figure captions of photographs and titles of charts and tables are also given in English. An English translation pamphlet of the text will soon be prepared and will be sold as an attachment to the book. The price of the book is rather expensive, but the photographs are of top quality and would prove to be a valuable addition to libraries of entomological departments of museums and universities.





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Borrowing and Lending Etiquette

Fenja Brodo

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It is always with great anticipation that I open a box of returned specimens that I had sent out on loan. I want to know how good my determinations have been, whether my unknowns are now identified, and I am especially interested in learning of any name changes because of synonymies or changes in taxonomic status. There is also a certain amount of trepidation involved with opening a returned box of crane flies. Have the specimens been properly anchored in the pinning box? What damage has occurred?

Too many times I have been disappointed.

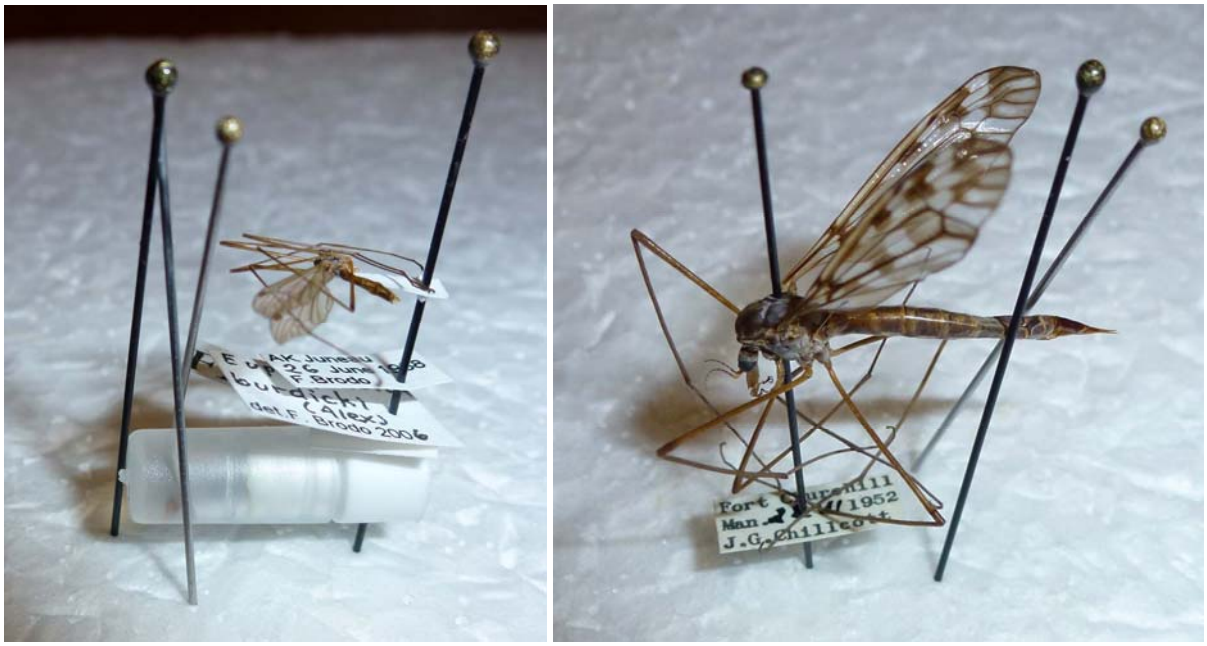
It is very unsettling to open a box of returned specimens and not see a single determination label placed on any specimen by the borrower. (It is not much better when just a scant few such labels are placed on a few lucky pins). One is left wondering whether these specimens have actually been looked at. Was information from these specimens incorporated in the monograph or research paper? Perhaps the specimens were just shipped back because of lack of time? One would think that each borrower would like to leave a legacy on the specimens themselves of the work that was done. Subsequent workers, even the authors/borrowers themselves, might find it useful to see what the taxonomic thinking was at the time the work was done. Concepts change as more techniques and specimens become available. Novice borrowers may feel inhibited about affixing their determination labels to already correctly identified specimens, but these labels indicate the specimen has been studied, the concept of the taxon in question has been verified, and the information was incorporated into the resulting published work. Another option is to affix a label indicating that the specimen in question was seen by the borrower and the year this happened (e.g., “vide Brodo 2013”).

Printing labels these days is an inexpensive and easy procedure. Common courtesy suggests that each specimen returned gets its own label. A label on a lead specimen of a group is inadequate because it is too easy to make mistakes as the specimens are removed from the mailing box and placed back into a collection. Often the transfer of specimens is made by someone not familiar with the group and without the relevant paper at hand.

Taxonomic changes should be clear from the new labels pinned below each specimen. As we all know, labels should not be removed, but incorrect determination labels may be turned upside down and the emended label then placed below. New subgenera should be in parentheses and follow the genus name on the label. Similarly, new subspecies should clearly indicate the nominal species to which it is related. Determination labels should include the name of the person who identified the material and the year in which this was done.

There is an art to shipping fragile specimens properly. The box has to be firm but with the pinning bottom yielding enough to hold the pins in place. Pins that hold genitalia vials below the specimens, or even on separate pins, need to be especially well anchored. It takes three additional pins (one pushed

up at the end of the vial and two crossing over at either side of the vial) to prevent the entire specimen from spinning around because of its additional weight, and eventually pulling free (Fig. 1). Once loose, such a pin with its cargo becomes a destroyer of other material in the box and self-destructs as well. Crane flies, as well as other long-bodied and fragile specimens, benefit from having additional two pins cradling the abdomens on each side (Fig. 2).



Figures 1 (left) and 2 (right). The correct way to stabilize crane fly specimens for shipping.

It is a good idea to put a small wad of cotton, stabilized with a pin, in each corner of the box. This traps legs, antennae or other small parts which could get loose during shipping. Next a piece of cardboard, cut to fit comfortably but tightly in the box, should be placed resting on the tops of the pins. This cardboard needs a loop of tape for easy lifting. If space remains between the top of the cardboard and the box lid, this should be filled with some soft material such as thin bubble wrap or even folded paper towel. Label this box with receiver and sender's address and place it in the middle of a much larger and sturdy cardboard box, surrounded by Styrofoam popcorn, bubble wrap or even lots of balled up newspapers. The specimen box needs to remain securely in place in the middle of the larger box. Cover the box with brown wrapping paper, add the address label of the recipient (including telephone number) and address and telephone of sender, affix the appropriate customs forms and a label indicating fragile insects of no commercial value and then the box is ready for the post office. Holotypes should be returned separately by registered airmail.

I must admit that once in my early years I was guilty of shipping a box of inadequately packaged specimens and suffered the consequences – bad reputation and the need to select a neotype. Someone had to tell me how all this should be done.

From now on, even before I gather specimens for a loan, I shall send out instructions and secure a promise in writing that all specimens returned that were part of the study will have appropriate identification labels, and that these specimens will be carefully packaged, as described above, to withstand the trauma of the postal service or commercial courier.

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An Opomyzid Fly on the Snow

Fenja Brodo

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I was fooled on April Fool's Day, 2013!

Snow was still blanketing the ground and was quite deep in places, and because of the milder weather we had been having, there were also some deep pools to negotiate as I slogged along a rather bumpy trail in the Stony Swamp area of western Ottawa. The temperature hovered around zero, so the conditions were good for finding my favorite insects crawling on the snow: the snow crane fly (*Chionea valga* Harris) and the snow scorpionflies (*Boreus brumalis* Fitch and *Boreus nivoriundus* Fitch). I was also on the lookout for snow springtails, *Hypogastrura nivicola* (Fitch) and hoped to see early stoneflies (*Allocapnia* spp.).

Something moved on the snow and I was pretty sure that it was an *Allocapnia* – just about the right size and shape, but not particularly close to water. Imagine my surprise when closer inspection revealed what looked like a picture-winged fly – crawling on the snow, out in the open beneath hydro lines! Thanks to the trusty Diptera Manual, I keyed it down to *Geomyza* in the family Opomyzidae, a family that I have never picked up before in the Ottawa District.

Owen Lonsdale not only confirmed my identification, he suggested that I had found *Geomyza tripunctata* Fallén, an introduced, Palaearctic species that is becoming increasingly more common in southern Ontario. My specimen compared well with specimens collected in Ottawa, mostly in May and June by the incomparable collector, Dick Vockeroth. (His legacy lives on at the CNC.) I photographed one of Dick's flies because it more clearly shows the three spots on the wing that are so distinctive for this species.

This is a fly to look out for because it is apparently spreading and is a potential threat to grasses. Its presence in the Ottawa District was documented by Wheeler, Vockeroth & Boucher. 1999, in the Proceedings of the Entomological Society of Ontario, Vol. 130, pp. 15-20.

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HISTORICAL DIPTEROLOGY

Charles Henry Tyler Townsend (1863–1944): man of wanderlust and mystery

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In the process of researching material for a biography of C.H.T. Townsend (to appear elsewhere), I've been able to gather a number of interesting and little-known non-Diptera taxonomy tidbits about the fellow, probably better known in Diptera taxonomy circles for his proposal of over 1500 genus-group names in (mostly) muscoid and oestroid Diptera ... and usually genus-group names that were rarely fewer than 5 syllables long.

Townsend in 1914. from 2 July issue of *The West Coast Leader* (Lima).

Townsend had an extremely quizzical personality—obviously a workaholic (publishing some 640 papers and notes in his 55 years of work), with some evidence of possibly being either bipolar or having Asperger syndrome, but definitely being an egotist and an overall stubborn man with few social cues. He was a difficult man to work with and this no doubt led to his virtually isolating himself collegially and creating his own "universe" of how the higher flies should be classified. Despite his fervor for work and reading incredible amounts of scientific literature to be able to write authoritatively (or so he thought) on such far flung disciplines as entomology, mammalogy, biogeography, anthropology, physics, horticulture, aeronautical engineering, geology, paleontology, physiology, gravity, and astronomy, he was able to also take the time to attend scientific and community social gatherings and was the father of seven children via two wives (his first wife died in 1901, at a relatively young age, of an illness that had plagued her for many years).

Even Townsend's name has a rather "bipolar" history. In scientific correspondence and publications, he was known as C.H. Tyler Townsend up until shortly after his wife died (the "Tyler" is from his mother's maiden name; his mother died in 1893). From 1906 on, virtually all his correspondence and articles have him signed as "C.H.T. Townsend" or "Charles H.T. Townsend". It is unknown why he made the change.

The two different signatures of Townsend

Charles Henry Tyler Townsend was born on 5 December 1863 in the college town of Oberlin, Ohio where his father was employed as a traveling book sales agent. He got his interest in insects at the age of ten while with his parents in Lawrence, Kansas staying with his critically ill sister, who was married to Joseph Bartlett, a professor of music at the University of Kansas. While in the area, Townsend met a KU graduate student, George Gaumer, who showed him how to collect and study insects and he was hooked.

Charles graduated from Constantine High School in Constantine, Michigan in 1882 and published his first paper (on Coleoptera) in 1884 in *The Canadian Entomologist*. His first job in 1888 was a very short stint (perhaps no more than two months) as a clerk in the War Department in Washington, D.C. and from there he was hired on as a clerical assistant to entomologist C.V. Riley in the U.S. Department of Agriculture's Bureau of Entomology. During this time at the Bureau he also took medical classes at Columbia College at George Washington University. His clerical duties did not see him work much on fly taxonomy, but he excelled at experimentation and finding control methods for various pestiferous insects, made required reports, and many were then noted by C.V. Riley, who characteristically penned them under his own name (Howard, 1930).

Then in February 1891, with less than three years' experience working in entomology, he was hired by New Mexico College of Agriculture and Mechanic Arts in Las Cruces (now New Mexico State University) as a professor of zoology. His hiring was based on extremely favorable reviews by his supervisor Riley. [Note: this could be evidence that, although he was a hard and excellent worker, he was difficult to work with and Riley wanted him out of D.C.] Although he was rather a "new" hire at the Bureau, he had by 1891 already published 32 papers on Coleoptera, Heteroptera, and Diptera, mainly faunistic and biological notes. The importance of his hiring was printed in a local New Mexico newspaper:

> "No authority on this subject can carry greater weight. It is expected that Prof. Townsend will enter on his work at once, in time to what the insects pests of New Mexico need for their further advancement— to some other country." (*Santa Fe Daily New Mexican*, 17 February 1891: 5).

His primary job outside of teaching was to help with identification and control of agricultural insect pests. He continued to be extraordinarily successful in this line of work and he continued at it as his paid job for the majority of his professional life.

After one year of work at the College, he decided to go on a biological expedition to the Grand Canyon. In the summer of 1892, he and a fellow biology professor and two students packed their mule and horse-drawn wagon with half a ton of food and supplies and headed to the canyon where they would meet up with some Arizona biologists. The trip there and back took over two months but resulted in

some excellent biological collections and observations, and the group even engaged in some sophomoric activity while entertaining themselves at the rim of the canyon:

> "When we reached the base of the cap rock again, our attention was attracted to a huge boulder which lay very close to the edge of the ridge. [...] ... we estimated it would weigh fully 2,800 pounds or nearly a ton and a half. Its position on the edge of the sloping shelf was such that we believed our combined efforts would be able to set it off. There was a clear drop of a hundred feet below it; then the ground sloped away rapidly for a long distance. We had set off many rocks already at several places along the edges of the Cañon; but we estimated that if this one could be induced to go, its effect would outshine that of all the others put together. [...] ... so we lay down on our backs, all three of us, grasped some shrubs behind us with our hands, and placed our feet flat against the side of the rock. At a given signal we braced ourselves, and the great rock gradually slid off the shelf. It went down a hundred feet before striking, then with a rebound it struck a large live pine-tree and snapped it in two like a straw. After transforming the huge log into kindling-wood, it went on a short distance, struck a rock, and bounded forty or fifty feet across a small chasm, which it cleared in one mighty parabola. Striking on a ledge of rock on the opposite side, it did not break but only raised an immense cloud of fine dust like smoke and went crashing on. It continued without a doubt for a mile before it came to a standstill, and its course could be marked down the gorge by the cloud of dust that it raised. It was without any doubt the grandest spectacle of the kind that we ever witnessed." (Townsend, 1895: 58–59).

Townsend apparently could not stay in one place for too long, and after just two years in New Mexico he made arrangements with T.D.A. Cockerell to switch jobs and Townsend and his family headed to Kingston, Jamaica where he would take over Cockerell's position as curator of the Museum at the Institute of Jamaica. In Jamaica his main duty was to inform farmers and the public about various pests in their midst and ways to control them. He was very resourceful and used the local newspapers to reproduce a series of notes on pestiferous species as a method to get to a wide local audience.

But Jamaica could not hold him either and he was back in New Mexico in little over a year and looking for work. It was not long before he was hired on contract by his former employer in Washington, D.C., the Bureau of Entomology, to go to southern Texas and investigate a recent outbreak of a new pest, the cotton boll weevil. In November 1894, he began his work and traveled to northern Mexico to interview farmers there and survey for the beetle and, upon his return he made a report with recommendation on control, all in less than a month after being hired.

In January 1895 he went to Washington, D.C. to meet with his supervisor, L.O. Howard, but upon returning he discovered his library of entomological literature was destroyed by fire in the warehouse in Las Cruces where it was being stored. This was no doubt a setback to his work on fly taxonomy, but when he took on a short-term contract with the Bureau to stay in Texas (this time in Brownsville) to do further research on the boll weevil, notices of his new job in *Psyche* and the *Entomological News* were appended with pleas for colleagues to send him literature in order to build his library back up.

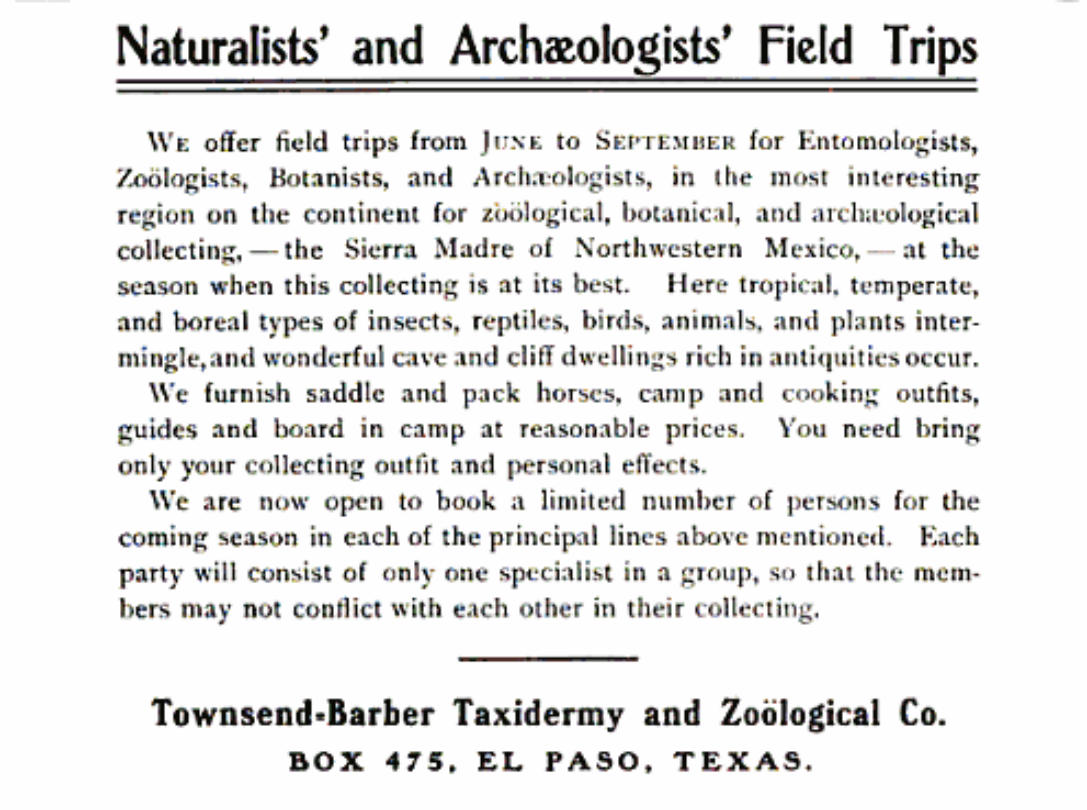
His Texas boll weevil contract with the Bureau ended in October 1895, but he was sent out again on another contract, this time to tropical Mexico, to further investigate the boll weevil and any possible predators or parasites that could be used as biological control agents. He was in Veracruz and Yucatan for more than a year and obviously enjoyed the tropical climate as seen in a winter letter to T.D.A. Cockerell:

> Don't have to stamp my feet now to keep them warm. I would not spend winters in N.M. for any money again!" (*Letter from C.H.T. Townsend to T.D.A. Cockerell, 15 February 1897, ex T.D.A. Cockerell Collection, Box 18, Folder 21, University of Colorado Boulder Library Archives*).

The trip with regard to boll weevil research turned out to be a failure, but he was successful in collecting a wide array of flies for his own research and coccids for Cockerell's research. The failure of the trip might have been the reason Townsend could not procure an extension of his contract or get another from the Bureau. He returned to his family in New Mexico and needed to find cash to support them. Not securing immediate work, he ended up borrowing money from and selling parts of his library to Cockerell to make ends meet:

> "I have roughly gone over the dipterological books, and their value comes nearer $175 than $150, but if you can take them soon, I will sell them for $150 - you can keep out the $65 I owe you (or whatever it is), and this will leave a balance of $85 coming to me." (*Letter from C.H.T. Townsend to T.D.A. Cockerell, 3 October 1899, ex T.D.A. Cockerell Collection, Box 18, Folder 21, University of Colorado Boulder Library Archives*).

He was eventually able to get a job at the New Mexico Agricultural Experimental Station in Las Cruces for a short time but in 1899 moved his family to El Paso, Texas where he got jobs, successively, as a customs cashier, natural history editor of the *El Paso Daily Herald* newspaper, and finally was co-owner of and field guide for the Townsend-Barber Taxidermy and Zoological Company.



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Advertisement from volume 37 of *The American Naturalist* (1903).

This last place of employment saw Townsend traveling again into the mountains of northern Mexico where he led hunting safaris and sold large game and smaller vertebrates to museums ands zoos. He

even wrote a short article in *Field & Stream* (Townsend, 1903) on how great hunting was in Mexico in hopes of getting more business and promised to write further articles, but this was not to be.

Camping in the Mexican Sierra Madre. From volume 7 of *Field & Stream* (1903).

Townsend's first wife, Caroline, died, no doubt from the lingering illness about which he wrote to Cockerell a few years earlier. The death left him devastated and having to raise two children (one son had died earlier in infancy). Family responsibilities were apparently not among his better suits and he decided instead to head to the Philippines in February 1904 for a two-year stint as a biology professor at Batangas Provincial School on the island of Luzon near Manila. He left his children with relatives in New England. This was one of the oddest times in his life as he apparently did not collect any flies while in the Philippines (he did collect coccids for Cockerell) and also did not publish during the time away. Quite possibly he simply needed some time away was dealing with the loss of his wife in his own fashion.

Not long after his return back to the U.S. in the summer of 1906, Townsend was hired by his old friend at the Bureau of Entomology, L.O. Howard, now the chief, and he was put to work on gypsy moth parasites at their new laboratory in Melrose Highlands, Massachusetts. His mixed his work with studies and obtained his B.Sc. degree from Columbia College in 1908 and immediately enrolled as a doctoral candidate there.

Then, only a few years after being employed in Melrose Highlands and marrying for the second time, he was selected by the Bureau to answer the pleas of farmers in Peru who were plagued by cotton pests. Townsend was sent down on a two-year contract to assess the situation, make identifications, and take whatever measures were required to try and control the pests. Townsend packed up his belongs and, with his new wife and newborn son and the youngest child of his first marriage, Helen, sailed to Peru. He set up his laboratory in the Peruvian cotton center of Piura for the next two years and successfully verified the cotton pest (the cotton square weevil) and found a successful biological control for it.

His success got him a two-year extension, but instead of doing more agricultural work, he used it to investigate the vector for the verruga disease which had been plaguing the citizens of various mountain

areas in Peru for hundreds of years— just before he arrived in Peru in 1909, thousands of rail workers had perished from the disease. Townsend's medical training at Columbia College came in handy and he was again successful in not only discovering the vector, a psychodid, but also that the causal organism was responsible for both phases of the disease, which previously was thought to be two separate diseases (Oruya fever and verruga). Medical scholars at Harvard University who had also been studying the causal organism and believed that there were two separate diseases, scoffed at Townsend's conclusions, mainly because he was not a trained medical doctor. A little over 10 years later, Townsend was vindicated by the research of Hideo Noguchi and colleagues (Noguchi *et al*. 1928), who performed experiments that ultimately proved Townsend was right after all. Townsend's success is discovering the vector and mode of the disease garnered him the first honorary membership in medical fraternity of Alpha Mu Pi by its New York chapter.

Townsend and his family returned to the U.S. in July of 1914 and, with his successes no doubt giving him some well-needed cachet, Townsend was immediately employed by the Bureau as their specialist on parasitic higher flies and he was appointed as "honorary" [= unpaid] custodian of muscoid Diptera at the U.S. National Museum. Not long after his arrival, Townsend obtained his doctorate from George Washington University. His dissertation (Townsend, 1914) was on the female reproductive tract and immature stages of muscoid Diptera as possible indicators of phylogenetic relationships. The members of his committee were fellow Bureau entomologists L.O. Howard, C.L. Marlatt, and A.H. Hopkins; and his major professor, zoologist Paul Bartsch from George Washington University.

Townsend, now 51 years of age, finally got the position he had been waiting for. His annual salary of $1800 (roughly equal to $41,000 in 2013 dollars accounting for inflation) was not necessarily high but enough to support his family. He began in earnest to synthesize all his notes over the years into a forthcoming monograph of higher flies (ultimately to become his *Manual of Myiology*). But a falling out with colleagues as a result of publishing personal attacks on colleagues in his rebuttals of their complaints of his methods of taxonomy and classification (Townsend was a notorious and admitted splitter of genera — many monobasic and even some based on just one specimen) ultimately caused irreparable damage to his plans for a quick publication of the monograph. In 1919, one of his major critics, John Merton Aldrich, took over as chief of the Bureau. Townsend no doubt felt that he could not work with him and was off again to South America. This time never to return to the U.S. [Note: he remained on the staff rosters as honorary custodian at the USNM until 1925 when this title was taken away, no doubt after he published a scathing attack on Aldrich (Townsend, 1925a) that resulted in a letter to the editor of the *Journal of the New York Entomological Society* signed by 23 dipterists who deplored Townsend's attack and offered their support of Aldrich.]

In April 1919, he sailed to Brazil with his family and upon arrival purchased a plot of land in Itaquaquecetuba outside of central São Paulo (today it is well within the sprawling metropolis). He was employed by the State of São Paulo as their entomologist to investigate agricultural pests and offer recommendations for control or eradication and also had a short job with American Cyanamid Corporation in Brazil to control leaf-cutting ants. He again had much success in these jobs and was sent to Peru in 1923 to do further work there on agricultural pests. He began work in his old stomping grounds of Piura but a few years later moved to Lima where from 1927–1929 he was director of the Institute of Agriculture and Parasitology working out of the Entomological Experimental Station there.

Apparently not all of his time in the early 1920s was working on agricultural pests in Brazil or Peru. In a little-known but detailed serialized travelogue entitled "South America under the Equator", Townsend (1924a–f), gave an account of a trip in late 1923 navigating up the Amazon river starting in

Belém on the Atlantic side and traveling along its length and up and over the Andes to eventually end in the Pacific seashore town of Pacasmayo, Peru. He said that the entire trip took 76 days, of which 53 were actual traveling and 23 were waiting for various modes of transportation. Townsend displayed a comfortable style in writing descriptive stories, although not as much on biology as on descriptions of surroundings, people, and history. Here is just a glimpse of a description he gave a of a "typical" day for an entomologist in the village of Teffé in the heart of the Amazon (the favorite village of Henry Bates when he spent 11 years in Brazil in the mid 1800s).

> "Rising early, after a bath in the lake and coffee with a cigarette, you get into the forest where you explore and work away for hours. Returning at noon, dripping from hat to shoes with perspiration, sopping wet as if you had fallen into the Amazon, ye gods how a shot of booze does hit the spot—a cocktail or a long glass of cool water with a stick in it. Then a cigarette, after which you stand under a shower, while the cool water cleanses both your skin and your clothing until you are tired of the sensation. You then strip these wet clothes and lay them in the sun. They will be dry in a couple of hours and clean to put on the next morning for another round in the forest." (Townsend, 1924a).

It was around this time that some readings done by Townsend had an influence on his thinking with regard to the ancient peopling of the planet. For example, in a letter to T.D.A. Cockerell in the summer of 1924 when he was in Lima, Townsend informed his colleague that he was going to attend the Pan-American Scientific Congress in Lima later that year and one of the papers was going to be on the submergence of the continent of Atlantis in 2350 B.C., which resulted in the "great deluge" in the Mediterranean. In somewhat the same vein, in one of his "South America under the Equator" parts, Townsend wrote with regard to the Amazon River:

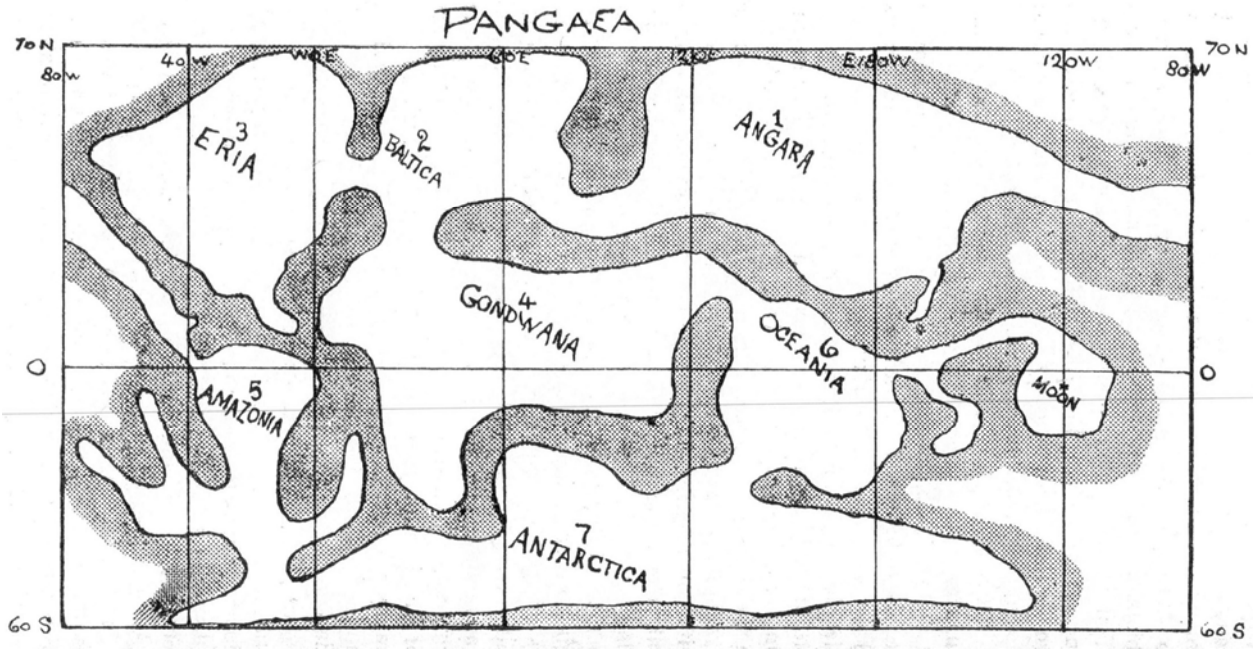
> "It is not out of place to note further that the fleets of the Phoenician and Hebrew kings Hiram and Solomon quite certainly navigated this river some 3,000 years ago, but of this matter and of still earlier navigation of the Amazon by peoples of the Old World I shall treat in a separate article." (Townsend, 1924a).

That last paper was presented by Townsend at the Third Pan-American Scientific Congress and he later published it in the *Brazilian American* (Townsend, 1925b). He was using this theory of ancient navigation of the Amazon in attempting to explain the existence of cultivated plants in both hemispheres in Pre-Columbian times but he also used that medium to explain his theory that the peoples of Atlantis were the original navigators of the Amazon and builders of its civilizations and placed the now submerged continent as west of the Straits of Gibraltar and about equal in size to Great Britain and Ireland.

In 1929, at 66 years of age, he ended his work in Peru and returned to his home in Itaquaquecetuba, a large adobe house, the Fazenda Casa Grande Velha, originally built in the 1600s by Jesuits. However, like a shark that has to keep moving or it dies, Townsend did not (or possibly could not) stop his work. In 1932 he took on a job to help with agricultural entomological investigations in Fordlandia, an ultimately failed social experiment of Henry Ford. Ford created a rubber planation and a small town in eastern Brazil and transported Americans from Dearborn, Michigan to the tropics to live and work with Brazilians to help them manage the rubber plantation while concurrently ensuring a constant supply of rubber for his automobile industry back home. Townsend was contracted to survey the insects of the plantation and his report "Insect census of Fordlandia" was submitted in March 1935 but was not published. As was typical for Townsend, while conducting the survey, he had another applied entomological success when he found a fungus on one of the plantation pests that turned out to be an effective control. Townsend ended his work after 1935 but two of his sons (Charles, Jr. and Edward,

who had moved there with their families) continued on with the agricultural entomology business in Fordlandia, and it was in that colony that Charles Henry Townsend III was born in 1938.

Back in Itaquaquecetuba, Townsend now focused on his business venture, Townsend & Filhos. It was not, as some believed, a publishing firm, but instead was a more diverse array of sales opportunities including honey, moss, and roofing tiles. The revenues from his business were much needed. Having failed to find an American publisher for his life-long monographic work on higher flies, Townsend decided to use his own funds to pay for a local printer and, almost 20 years after its conception, his *Manual of Myiology* was finally published. It appeared in seven parts from 1934 to 1942, and is essentially a synthesis of virtually everything he jotted down in notes on every genus of muscoid and oestroid flies. The first part contains general chapters on genetics, morphology, physiology, and general investigation techniques. The second through sixth parts are the corpus of the *Manual* and deal with the taxonomy and classification of the genera. However, it is the seventh and last part that has some of the more eyebrow-raising sections including chapters on the origin of the moon, the origin of man, a geological history of the Earth, gravity, a 17-page explanation of the aerodynamic forces on a fly that he claimed could travel at 800 m.p.h., and a map of Pangea showing where the moon used to be.



Map of Pangea showing ancient landforms and position of moon.
From *Manual of Myiology*, vol. 7 (1942).

Only a few more papers were published by Townsend after the final part of the *Manual* appeared. Townsend died peacefully in his sleep on 17 March 1944, a little over three months after his 80th birthday.

Acknowledgments
Thanks to Virginia Scott and Caitlin Kelly at the University of Colorado at Boulder for help in obtaining the Townsend correspondence in the T.D.A. Cockerell archives. Steve Gaimari is thanked for kindly assisting in tracking down issues of the *Brazilian American* and making PDF copies available to me. Gerardo Lamas, Museo de Historia Natural, Universidad Mayor de San Marcos, Lima,

helped with citations of obscure Peruvian articles, which led to the discovery of the Amazon travelogue in the *Brazilian American*. Kraig Adler at Cornell University is thanked for his help with the high-quality scanning of the images in the 1903 *Field & Stream* article. Jim O'Hara is thanked for his patient responses to my numerous queries concerning Townsend and his various works, and kindly reviewed an early draft of the larger biography from which information was gleaned for this article.

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Further Reading

Much of the biographical information in this article derives from personal research but also is based on some biographical information published by others and travelogues and other publications by Townsend himself. As some of these sources are rather obscure, I here present a list of some of the more useful and interesting ones that can be further consulted for more details on his life and travels.

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DRB Meeting, Edmonton, May 1967 — a visual flashback

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For about 3 decades following its formation in 1947, the Defence Research Board of Canada (DRB) was a major player in biting-fly research in Canada, funding both in-house and external research. Many Canadian researchers benefitted hugely from DRB grants — for me, DRB support was key in getting my laboratory established at the University of Waterloo.

A special highlight for biting-fly researchers was the annual DRB meeting, at which one could experience and enjoy an assembly of almost all the biting-fly researchers in the country, along with a good smattering of US researchers and, occasionally, a scientist or two from overseas. Here are a few photographs from the DRB meeting in Edmonton in May 1967. At the time I was a new doctoral student at the University of Manitoba, studying low-arctic blackflies and mosquitoes, under the supervision of Reiny Brust. I recall this having been, as usual for the DRB meetings, an exciting and informative time.

I share these photos from nearly half a century ago before my photo archive dies along with me!

12 May 1967. In a lab in the entomology building at the University of Alberta, Edmonton. From the left: Peter Graham (then a doctoral student at Edmonton), Reiny Brust (Entomology, University of Manitoba), Phil Corbet (then at Agriculture Canada) and an unidentified student.

13 May 1967. From the left: Peter Graham, A. Murray Fallis (then head of Parasitology at the Ontario Research Foundation), Phil Corbet and George Holland (Agriculture Canada) outside the women's (!) residence at the University of Alberta.

13 May 1967. A field trip to the George Lake field site of the Entomology Department, University of Alberta, Edmonton. From the left: Phil Corbet, Murray Fallis, Robin Leech (University of Alberta, Edmonton), Murray Maw (Agriculture Canada, Belleville), Peter Belton (then at Agriculture Canada, Belleville, later at the Pestology Centre, Simon Fraser University), George Holland and Col. Geary of the US.

13 May 1967. On the George Lake field trip. From the left: Phil Corbet, Brian Hocking (Chairman, Entomology Department, University of Alberta, Edmonton), George Holland, Peter Graham and Murray Fallis.

13 May 1967. Lunch time during the George Lake field trip. From the left: Reiny Brust (partly obscured), Phil Corbet, Peter Belton and Murray Maw.

Post-lunch break on the George Lake field trip. From the left: 2 unknown individuals, George Holland (enjoying a trademark cigar) and Robin Leech (University of Alberta).

13 May 1967. George Lake, Alberta. Reiny Brust and Brian Hocking.

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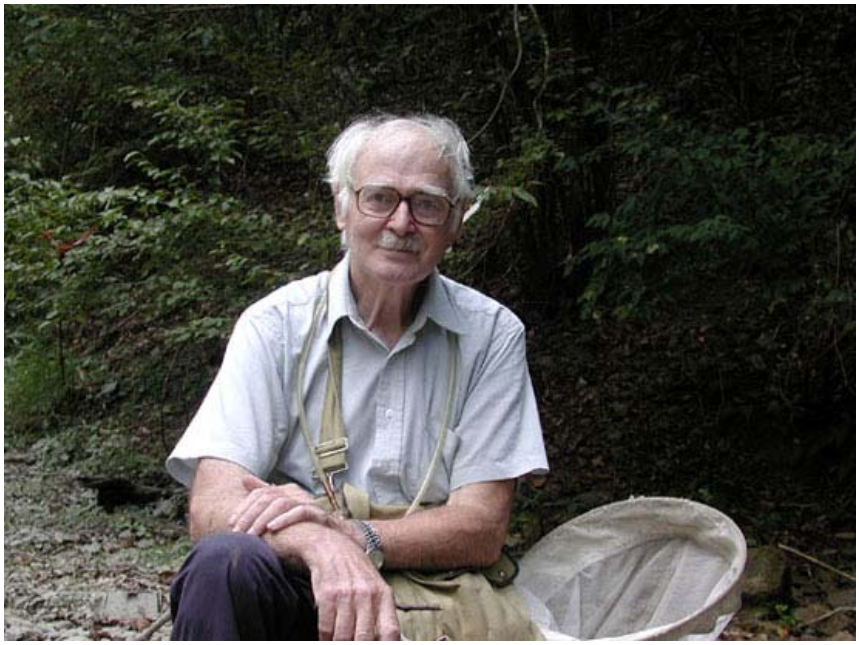
Richard (Dick) Vockeroth
2 May 1928 to 16 November 2012

Jeff H. Skevington[1] & Jeff M. Cumming[2]

Canadian National Collection of Insects, Arachnids and Nematodes,
Agriculture and Agri-Food Canada, 960 Carling Avenue, Ottawa, ON K1A 0C6, Canada
[1] jeffrey.skevington@agr.gc.ca, [2] jeff.cumming@agr.gc.ca



Dick Vockeroth in Kyushu, Japan in 2006 (photo by T. Saigusa)

The Diptera community suffered a great loss. Dick Vockeroth passed away on the morning of November 16th 2012, at the age of 84. Almost everyone who studies flies knew Dick, and most of us have some hilarious Vockeroth stories that will undoubtedly continue on for several generations. His breadth of knowledge was unsurpassed and many of us owe him considerably as a mentor. He always amazed us by seeming to know something about virtually every fly species put in front of him. Of course, putting a fly in front of Dick was just the excuse to open the floodgates. For those who could concentrate for long enough, his stories always had a point. They could continue for a long time, but they always wound back to where they started, completing another lesson for those willing to listen. If only we had a way to save all of his immense knowledge. Fortunately, he was always willing to share. He published 120 papers on 27 families of flies over his career. His unpublished manuscripts and keys also fill many boxes in our collection. Copies of many of these are spread around the world with Dick's colleagues and will ultimately be incorporated and published as parts of new studies. In addition to giving freely of his scientific knowledge, Dick was a true philanthropist. He seemed to donate virtually every penny that he had to anyone who stopped at his door or called. He was incredibly frugal with his own purchases and we all benefitted/endured from his purchases of cheap (or free) produce and bread that often had seen better days. His immune system seemed to enjoy these nutritional challenges although ours were perhaps not always up to it. We recall a few years ago when Dick had the first cold that he could remember having since he was a child, as well as the first headache in his life a year or two later. Diabetes was his primary health challenge and it was a significant one in his later life. It was likely a contributing factor to the Alzheimer'sthat eroded his mind over the last three years.

The following is excerpted from: Cumming, J.M., Sinclair, B.J., Brooks, S.E., O'Hara, J.E. and Skevington, J.H. 2012. The history of dipterology at the Canadian National Collection of Insects, with special reference to the Manual of Nearctic Diptera. *The Canadian Entomologist* 143: 539-577. This

paper is the introduction to a three volume Festschrift in *The Canadian Entomologist* honouring Dick and the other coordinators of the Manual of Nearctic Diptera. Picking through these papers, you will find some classic stories about Dick and expand your impression of the impact that he played in the Diptera community over the last 60 plus years.

Dick was born on May 2nd 1928 in Broderick, Saskatchewan. He received his B.A. and M.A. from the University of Saskatchewan in Saskatoon in 1948 and 1949, respectively, and his D.Phil. on the genera of Scathophagidae from Oxford University in 1954. He officially joined the Canadian National Collection of Insects (CNC) Diptera Unit in 1949. Dick retired in 1991, but contributed broadly to Diptera activities at the CNC as an Honorary Research Associate until 2009. He became a world expert on several families, particularly Mycetophilidae s.l., Dolichopodidae, Syrphidae, Scathophagidae, and Muscidae. He was an avid collector and contributed over 220,000 pinned Diptera to the CNC. Dick authored or co-authored 120 scientific publications, including 12 chapters in the Manual of Nearctic Diptera. He has published 173 new Diptera taxa (1 family group name, 42 genus-group names, and 130 species-group names). Dick was awarded the C.P. Alexander Award in 1997 by the North American Dipterists' Society. This lifetime award, which can only be held by a single dipterist at a time, publicly acknowledges the most important and influential member of the North American Dipterists' Society. The Award reads, ''John Richard Vockeroth is recognized as our most knowledgeable dipterist, and for his critical and unique contributions in expanding our knowledge of flies, especially flower flies, educating and encouraging a cadre of world leaders for Systematic Dipterology''. Sadly, as of today, this award is now available to be given to someone else.

Evidence of the respect for Dick's scientific achievements can be seen in the ninety-one patronyms that have been attributed to him by the entomological community (http://www.canacoll.org/Diptera/Staff/Vockeroth/Vockeroth_Patronyms.pdf). This list will no doubt continue to grow as his collections live on and support new research on the flies that Dick was so passionate about. We have all missed his antics and contributions in the lab since he left in 2009. Let's hope that we can all leave even a fraction of the lasting legacy and legends that Dick has left behind.

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EDITOR'S NOTE. Many of us have had excellent and interesting interactions with Dick over the years. I thought it might be nice to do a special article summarizing some of these reminsecences in the next issue of *Fly Times*. Anyone who wants to send me (Steve Gaimari) a short contribution, I'll pull them all together for posterity, as many of these things are usually just told around the table over beers at meetings. I'll start with a memory from my early days as an entomologist:

As a fledging Master's student, I attended the 1990 Entomological Society of America meeting in New Orleans. My parents, Frank and Adele, decided to vacation in that city to coincide with a short visit with me. Well, in the conference hotel, we got in an elevator to go down to the lobby. Dick was staying on the same floor, and he and Don Webb got into the elevator with us. In my short time working with flies at that time, I already knew who both of them were. I don't recall who initiated conversation, but Dick and my dad started to chat. In a very short time, they both realized they were at the University of Saskatchewan within a decade of each other (my dad went to Medical School there in the 1950's). Well, that was the first few moments of the several hours that Dick and my dad spent together, having moved the conversation to the bar, and talking about who knows what – but surely ranging from stories about flies and fly collecting (from Dick) to delivering babies on the Blackfoot Indian reserve in the 1950's (my dad was an OB/GYN, and delivered a couple thousand babies there!). Although at the time I had only just met Dick, I am pleased that such was my introduction! — Steve Gaimari

MEETING NEWS

8th International Congress of Dipterology

10-15 August, 2014, Potsdam, Germany

Marion Kotrba, ICD8 chair

Sektion Diptera, SNSB Zoologische Staatssammlung München
Münchhausenstr. 21, 81247 München, Germany

Preparations for the ICD8 are proceeding as planned. More than 100 dipterists have already registered their interest. Relevant dates and other information are posted on our website at www.icd8.org. At this point we would like to share with you some details about the scientific program and plans for post-Congress tours. Registering your interest can help us plan ahead and shape the Congress to everybody's needs. We look forward to meeting you all in Potsdam 2014!

SCIENTIFIC PROGRAM

The following is a preliminary list of plenary talks and symposia that are currently planned for the ICD8. Additional symposia are now in planning and will be added to the program pending sufficient interest from potential speakers. If you want to contribute to a specific symposium, please contact the relevant symposium organizer or Netta Dorchin (ndorchin@post.tau.ac.il). Contributed talks are most welcome! You can submit talks on topics that are not represented in the following list or to suggest additional symposia. Contributed talks will be allocated to appropriate symposia by the scientific committee.

Plenary talks

Steve Marshall (Canada)	Diptera photography
Rudolf Meier (Singapore)	Using genomics, morphology, and behavior to reveal the creative power of sexual selection in Sepsidae
Maureen Coetzee (RSA)	Mosquitoes and the prospects for malaria elimination
Thomas Pape (Denmark)	Europe as a frontier in fly diversity research

Symposia

Advances in Neotropical Dipterology
: Claudio Carvalho (cjbcarva@ufpr.br), Marcia Couri (courimarcia@gmail.com), Marta Wolff (marta_wolff@yahoo.com)

Behavioral ecology
: Wolf Blanckenhorn (wolf.blanckenhorn@uzh.ch)

Bibionomorpha
: Chris Borkent (chris.borkent@gmail.com)

Biodiversity surveys
Marc Pollet (mpollet.doli@gmail.com)
Calyptrata
Daniel Whitmore (whitmore_d@yahoo.it)
Ceratopogonidae
Art Borkent (artborkent@telus.net)
Diptera anatomy and morphology
Rolf Beutel (Rolf.Beutel@uni-jena.de)
Diptera biogeography – patterns and processes
Ashley Kirk-Spriggs (ashley.kirk-spriggs@nasmus.co.za)
Empidoidea
Marc Pollet (mpollet.doli@gmail.com)
Evolution and ecology of parasitoid Diptera
John Stireman (john.stireman@wright.edu)
Fossil Diptera
Dan Bickel (Dan.Bickel@austmus.gov.au), Christel Hoffeins (chw.hoffeins@googlemail.com)
Global Dipterology
Torsten Dikow (dikowt@si.edu), Thomas Pape (tpape@snm.ku.dk)
Higher phylogeny
Brian Wiegmann (brian_wiegmann@ncsu.edu)
Lower Brachycera Phylogeny
Torsten Dikow (dikowt@si.edu)
Psychodidae
Rüdiger Wagner (Ruediger.Wagner@uni-kassel.de)
Sciomyzidae
Mike Gormalli (mike.gormally@nuigalway.ie)
Simuliidae
Doreen Werner (Doreen.Werner@zalf.de)
Stalk-eyed flies
Philip Johns (philip.m.johns@gmail.com), Richard Baker (rbaker@amnh.org)
Syrphoidea
Ximo Mengual (X.Mengual@zfmk.de)
Tephritoidea
Marc de Meyer (marc.de.meyer@africamuseum.be)
Traps, attractants and collection techniques for dipterans
Andreas Rose (andreas.rose@biogents.com)

POST CONGRESS TOURS

Three post congress tours will leave on Saturday morning and end on Monday evening. Additional information will be posted on the congress webpage soon. The tours can be booked through our registration site, and respective collecting permits will be organized. The tours are:

1) Gdańsk (Poland) – the city of Baltic amber (amber museum, amber factory, sightseeing)
http://en.wikipedia.org/wiki/Gdansk
2) collecting trip to Hainich National Park in Thuringia
http://en.wikipedia.org/wiki/Hainich_National_Park
3) collecting trip to Saxon Switzerland National Park
http://en.wikipedia.org/wiki/Saxon_Switzerland

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Announcement and call for papers:
Informal Annual North American Dipterists Society Meeting
Entomological Society of America

Austin, Texas, November 10-13, 2013

Keith Bayless
Department of Entomology, North Carolina State University,
Raleigh, NC 27695, USA; kmbayles@ncsu.edu

This year's Entomological Society of America meeting in Austin will host a symposium for the North American Dipterists Society. This is a yearly opportunity for Dipterists to share any aspect of the study of flies in a more casual setting, usually on Tuesday evening of the ESA meeting. NADS will be held as a member symposium. This means that along with a chance to discuss Society business, talks and presenters can be included in the official program. If any Dipterists attending ESA would like to give a talk, please send me an email. The length of the presentations can vary to suit your needs. If you would like your talk to be listed in the official program, please send me an email with the title and authors by May 20th. I welcome submissions after that date, up until the symposium starts, but they may not make it into the official ESA program. If you want to show a poster, send me an email and we might work it out.

Last year's North American Dipterists Society at the Entomological Society of America 2012 meeting in Knoxvillle turned out very well. The well attended symposium had seven interesting 20 minute talks on a range of topics. We had project updates, and presentations on social media, ecology, morphology, taxonomy, and phylogenetics.

Last year's program is available at this link:
http://esa.confex.com/esa/2012/webprogram/Session18395.html.

Dr. Terry Wheeler gave an update on the Arctic Diptera project, from logistics to ecology and new species. I discussed the progress of our rapidly increasing understanding of the systematics of horse flies and relatives due to the Tabanidae PEET, and Dr. J. Kevin Moulton gave an update about research on many non-Brachyceran flies through MIDGEPEET. Dr. Matthew Bertone offered us a taste of the incredible diversity of of crane flies (TIpulidae s.l.). Meaghan Pimsler showed a thorough comparative morphological examination of eggs laid by species of Sarcophagidae that were previously mainly considered to bear larvae. Dr. Torsten Dikow gave us a tour of his collecting experiences in Australia and Namibia hunting for robber flies and relatives. Later, Morgan Jackson gave a tour of his experiences on social media platforms, from blogs to twitter to videos. This is a crucial topic as the Diptera community could always use a bigger footprint (tarsal-print?) on the internet. Unfortunately there were no talks on Empididae, as the end of our symposium was serenaded by 'Gangnam Style' being blasted at a student mixer outside.

Hope to see you all in Mississippi, then in Austin!

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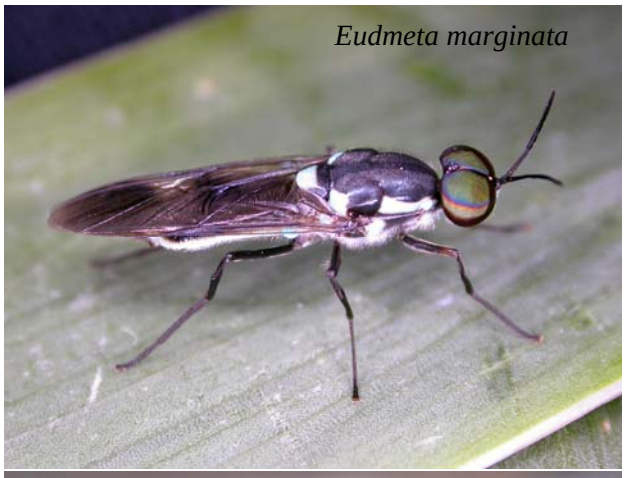
DIPTERA ARE AMAZING!

Thank you very much (again) to Shaun Winterton for sending in this series of excellent fly photographs, for your viewing pleasure! Although "sending" isn't quite the right word, since I just walked down the hall with a memory stick and got them! I encourage others to send their Diptera photographs!



Stratiomyidae

Mydidae

Apsilocephalidae

Nemestrinidae

Acroceridae

Lauxaniidae

I also have a few other photographs that will surely be of interest! The one to the right – *Poeciloanthrax californicus* (Cole) – by Jim Hogue (California State University, Northridge), is particularly special in that it is the very first fly photograph Jim has ever taken using a digital camera setup! His insect photography dates back to the 1970's, but when his film of choice (Kodachrome 25 or 64) ceased production, and few places would even develop it, he quit, also citing the thought that the new digital cameras could never match the quality of high resolution, slow speed film. But finally making the leap to digital, despite not having a cell phone, has rekindled his love for photography! Hope to see many more!

The next ones are special in the rarity of the subject matter. Ctenostylidae are rarely collected, to say the least. And even more rarely photographed alive! The following photos are among the couple dozen I took (to make sure I got at least a couple of good ones!) of this male of *Ramuliseta thaica* Korneyev, which fortunately came to the mercury vapor lights at Kipandi Butterfly Park, in the Crocker Range of Sabah, Malaysia (northern Borneo), with a good series collected by Martin Hauser and myself.

BOOKS AND PUBLICATIONS

Note from the editor: First, I want to thank (profusely!) Chris Borkent for accumulating the various citations listed below. I also thank Chris for agreeing to take this on as a regular contribution to *Fly Times*, at least for the foreseeable future! The various citations listed here were brought together by scanning through the Zoological Record, Web of Science, and other resources – since they are often 1 or 2 months behind, some recent papers were surely missed. By inclusion, we do not attest to quality (of course we haven't read all of them)! In any case, please feel free to send me or Chris (chris.borkent@gmail.com) citations for papers (your own or those of others) that you would like to see here. I am happy to include them! As a generality, we try to keep the focus either broad-based (e.g., large treatises) or of general interest. Of course there are many many more Diptera papers if you include developmental biology in *Drosophila*, issues surrounding malaria and other diseases and mosquitoes, and numerous other topics. Also, you authors out there - please don't be offended if we missed diacritics in your names! Zootaxa has them correctly, but Zoological Record removes them!

Another six months have passed since the last issue and along with it the production of many more papers on our favorite group of insects! Below is a summary of the Diptera literature produced during this time for your perusal. Along with a number of great systematics and phlyogeny papers (including several from recently completed graduate degrees!) there are papers on: flies as the models for miniature flying robots; housefly fevers; several interesting examples of myiasis; the use of solar panel technology to produce a better tabanid trap; the role of symbiosis in driving species diversification and the evaluation of several trapping and sorting techniques.

As usual we have done our best to include as much literature as possible and we apologize if we have missed your favorite paper. Using online database searches does have its limits! Please don't hesitate to send any papers we have missed, that you think should be included, and we will happily add them to the next issue.

Abu-Shall, A.M.H. 2012. Effect of laboratory preservation of *Phytomyza orobanchia* (Diptera: Agromyzidae) pupae in Broomrape shoots on emergence and viability of resultant adults. Egyptian Journal of Biological Pest Control **22(2)**: 121-126.

Adaime, R., Strikis, P.C., de Souza-Filho, M.F., Lima, C.R. and Lasa, R. 2012. First report of Lonchaeidae (Diptera) infesting fruits of *Byrsonima crassifolia* in Brazil. Revista Colombiana De Entomologia **38(2)**: 363-364.

Akbarzadeh, K., Rafinejad, J., Nozari, J., Rassi, Y., Sedaghat, M.M. and Hosseini, M. 2012. A modified trap for adult sampling of medically important flies (Insecta: Diptera). Journal of Arthropod-Borne Diseases **6(2)**: 119-128.

Akhoundi, M., Bakhtiari, R., Guillard, T., Baghaei, A., Tolouei, R., Sereno, D., Toubas, D., Depaquit, J. and Abyaneh, M.R. 2012. Diversity of the bacterial and fungal microflora from the midgut and cuticle of Phlebotomine sand flies collected in north-western Iran. Plos One **7(11)**.

Ali, W., Ahmad, R., Nor, Z.M., Ismail, Z., Ibrahim, M.N., Hadi, A.A., Hassan, R. and Lim, L.H. 2012. Environmental variables associated with immature stage habitats of Culicidae collected in aboriginal villages in Pahang, Malaysia. Southeast Asian Journal of Tropical Medicine and Public Health **43(6)**: 1387-1399.

Alto, B.W., Malicoate, J., Elliott, S.M. and Taylor, J. 2012. Demographic consequences of predators on prey: Trait and density mediated effects on mosquito larvae in containers. Plos One **7(11)**.

Anders, K.L. and Hay, S.I. 2012. Lessons from malaria control to help meet the rising challenge of dengue. Lancet Infectious Diseases **12(12)**: 977-984.

Anderson, A.M. and Ferrington, L.C. 2013. Resistance and resilience of winter-emerging Chironomidae (Diptera) to a flood event: implications for Minnesota trout streams. Hydrobiologia **707(1)**: 59-71.

Anderson, J.R. 2012. Host specific *Cephenemyia* of deer repelled by non-host odors. Journal of Insect Behavior **25(6)**: 620-630.

Anderson, R.D., Blanford, S. and Thomas, M.B. 2013. House flies delay fungal infection by fevering: at a cost. Ecological Entomology **38(1)**: 1-10.

Andreadis, T.G., Shepard, J.J. and Thomas, M.C. 2012. Field observations on the overwintering ecology of *Culiseta melanura* in the northeastern USA. Journal of the American Mosquito Control Association **28(4)**: 286-291.

Araujo, M.X. and Bravo, F. 2012. Taxonomy of Neotropical *Trichomyia (Septemtrichomyia)* Bravo (Diptera, Psychodidae, Trichomyiinae) with descriptions of five new species. Zootaxa**(3547)**: 24-34.

Armistead, J.S., Nishimura, N., Arias, J.R. and Lounibos, L.P. 2012. Community ecology of container mosquitoes (Diptera: Culicidae) in Virginia following invasion by *Aedes japonicus*. Journal of Medical Entomology **49(6)**: 1318-1327.

Armitage, P.D., Hawczak, A. and Blackburn, J.H. 2012. Tyre track pools and puddles - Anthropogenic contributors to aquatic biodiversity. Limnologica **42(4)**: 254-263.

Aybar, C.A.V., Juri, M.J.D., Santana, M., de Grosso, M.S.L. and Spinelli, G.R. 2012a. The spatio-temporal distribution patterns of biting midges of the genus *Culicoides* in Salta province, Argentina. Journal of Insect Science **12**: 1-10.

Aybar, C.A.V., Juri, M.J.D., Stein, M., Oria, G., Ramirez, P., De Grosso, M.S.L. and Spinelli, G.R. 2012b. New records of biting midges fo the genus *Culicoides* (Diptera: Ceratopogonidae) from the Yungas, Paranaense rainforest and Chaco ecoregions of Argentina. Florida Entomologist **95(3)**: 798-799.

Azwandi, A. and Omar, B. 2012. The colonization of carrion by soldier fly, *Ptecticus melanurus* (Walker) (Diptera: Stratiomyidae) in a tropical forest in Malaysia: A new potential species for minimum PMI estimation. Tropical Biomedicine **29(4)**: 638-641.

Badrawy, H.B.M. 2013. A review of the genera *Acathrito* Lyneborg, *Phycus* Walker and *Salentia* Costa (Diptera: Therevidae: Phycinae) from Egypt. Zootaxa **3635(4)**: 491-497.

Baek, M.J., Yoon, T.J. and Bae, Y.J. 2012. Development of *Glyptotendipes tokunagai* (Diptera: Chironomidae) Under Different Temperature Conditions. Environmental Entomology **41(4)**: 950-958.

Baldacchino, F., Carier, J., Porciani, A., Buatois, B., Dormont, L. and Jay-Robert, P. 2013. Behavioural and electrophysiological responses of females of two species of tabanid to volatiles in urine of different mammals. Medical and Veterinary Entomology **27(1)**: 77-85.

Barabas-Hajdu, E., Satan, E. and Mihaly, A. 2012. Urogenital myiasis: A human case report. Acta Microbiologica Et Immunologica Hungarica **59(4)**: 469-473.

Barbosa, L.S. and Couri, M.S. 2013. New species and redescriptions of the New Zealand genus *Exsul* Hutton (Diptera: Muscidae: Coenosiinae). Zootaxa **3647(2)**: 382–389.

Barkalov, A.V. and Nielsen, T.R. 2012. A new *Platycheirus* species of the *manicatus* Meigen subgroup from the arctic Russia (Diptera: Syrphidae). Entomologica Fennica **23(3)**: 165-168.

Barnes J. K. 2013. The genus *Stichopogon* Loew (Diptera: Asilidae) in America north of Mexico. Proceedings of the Entomological Society of Washington **115(1)**: 9-36.

Barták, M. and Kubik, S. 2012. A review of the Palaearctic species of *Rhamphomyia* subgenus *Holoclera* (Diptera: Empididae) with description of 5 new species. Revue Suisse De Zoologie **119(3)**: 385-407.

Barták, M. and Kubík, Š. 2013. Species of *Bicellaria* Macquart (Diptera: Hybotidae) of Europe, with descriptions of four new species. Zootaxa **3647(2)**: 251–278.

Basset, Y. et al. 2012. Athropod diversity in a tropical forest. Science **338**: 1481-1484.

Bath, E., Tatarnic, N. and Bonduriansky, R. 2012. Asymmetric reproductive isolation and interference in neriid flies: the roles of genital morphology and behaviour. Animal Behaviour **84(6)**: 1331-1339.

Beattie, R.G. and Avery, S. 2012. Palaeoecology and palaeoenvironment of the Jurassic Talbragar Fossil Fish Bed, Gulgong, New South Wales, Australia. Alcheringa **36(4)**: 451-465.

Becker, N., Jost, A. and Weitzel, T. 2012. The *Culex pipiens* complex in Europe. Journal of the American Mosquito Control Association **28(4)**: 53-67.

Beckers, O.M. and Wagner, W.E. 2012. Eavesdropping parasitoids do not cause the evolution of less conspicuous signalling behaviour in a field cricket. Animal Behaviour **84(6)**: 1457-1462.

Bellis, G. and Dyce, A. 2012. Redescription of the adults of *Culicoides bancrofti* Lee and Reye and *C. hornsbyensis* Lee and Reye (Diptera: Ceratopogonidae). Zootaxa **3566**: 51-60.

Benbow, M.E., Lewis, A.J., Tomberlin, J.K. and Pechal, J.L. 2013. Seasonal necrophagous insect community assembly during vertebrate carrion decomposition. Journal of Medical Entomology **50(2)**: 440-450.

Bennett, G.M., Pantoja, N.A. and O'Grady, P.M. 2012. Diversity and phylogenetic relationships of *Wolbachia* in *Drosophila* and other native Hawaiian insects. Fly **6(4)**: 273-283.

Bernotiene, R. and Bartkeviciene, G. 2013. The relationship between water temperature and the development cycle beginning and duration in three black fly species. Journal of Insect Science **13**.

Bertazo, K., Hamada, N. and Salles, F.F. 2013. Fauna of Simuliidae (Diptera) from the state of Espirito Santo, Brazil: Distribution, new records and list of species. Revista Brasileira De Entomologia **57(1)**: 91-99.

Bischoff, M., Campbell, D.R., Lord, J.M. and Robertson, A.W. 2013. The relative importance of solitary bees and syrphid flies as pollinators of two outcrossing plant species in the New Zealand alpine. Austral Ecology **38(2)**: 169-176.

Blaho, M., Egri, A., Barta, A., Antoni, G., Kriska, G. and Horvath, G. 2012. How can horseflies be captured by solar panels? A new concept of tabanid traps using light polarization and electricity produced by photovoltaics. Veterinary Parasitology **189(2-4)**: 353-365.

Bockmann, E.A., Kersting, T. and Vogt, H. 2012. Enabling computer based video observation analyses of insect behavior, using only freeware programs: A study on *Rhagoletis cerasi* (Diptera: Tephritidae). Entomologia Generalis **34(1-2)**: 23-29.

Bogan, M.T. and Boersma, K.S. 2012. Aerial dispersal of aquatic invertebrates along and away from arid-land streams. Freshwater Science **31(4)**: 1131-1144.

Bolduc, E., Casajus, N., Legagneux, P., McKinnon, L., Gilchrist, H.G., Leung, M., Morrison, R.I.G., Reid, D., Smith, P.A., Buddle, C.M. and Bêty, J. 2013. Terrestrial arthropod abundance and phenology in the Canadian Arctic: modelling resource availability for Arctic-nesting insectivorous birds. Canadian Entomologist **145(2)**: 155-170.

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