



FLY TIMES

ISSUE 46, April, 2011

Stephen D. Gaimari, editor
Plant Pest Diagnostics Branch
California Department of Food & Agriculture
3294 Meadowview Road
Sacramento, California 95832, USA
Tel: (916) 262-1131
FAX: (916) 262-1190
Email: sgaimari@cdfa.ca.gov

Welcome to the latest issue of *Fly Times*! Let me first thank everyone for sending in such interesting articles – 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. *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, and to report on or announce meetings relevant to the community. This is also a great place to report on your interesting (and hopefully fruitful) collecting activities!

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>. The Diptera community would greatly appreciate your independent contributions to this newsletter. For this issue, I want to again thank all the contributors for sending me so many great articles! That said, we need even more reports on trips, collections, methods, updates, etc., with all the associated digital images you wish to provide. Feel free to share your opinions or provide ideas on how to improve the newsletter.

The *Directory of North American Dipterists* is constantly being updated and is currently available at the above website. Please check your current entry and send all corrections to [Jeff Cumming](#) or [Jim O'Hara](#). There is a form for this on the last page of the newsletter.

Issue No. 47 of the *Fly Times* will appear next October. If possible, please send your contributions by email, or disc, to the editor at stephen.gaimari@cdfa.ca.gov. All contributions for the next *Fly Times* should be in by 10 October 2011 – don't worry – I'll send a reminder!

NEWS

Following is a much appreciated reply to the article "A Society for all Dipterists!?" by Pape, Kotrba & Gaimari in the last issue of Fly Times (issue 45, October 2010). Of course comments continue to be welcome! See the last issue for details. I suspect more details will be forthcoming in the next issue!

An International Society for Dipterists

submitted by Martin Drake on behalf of
The Dipterists Forum Committee
April 2011

Here is a response from Britain's Dipterists Forum to your suggestion for an international society of dipterology. It is a synthesis of views of our Forum's committee but we have raised your idea in our recent Bulletin so you may receive more replies from our membership which is now close to 400.

We welcome the idea and fully endorse it. The British have a fondness for societies and a long history of natural history groups that cater for professionals and non-professionals, so we appreciated and understand their value to communities of like-minded people. Below we set out some points based upon our own experience, and which may be relevant to an international society's functions.

The Dipterists Forum was set up in 1995 to act as a formal focus for the thriving non-professional community of dipterists which had existed for many years before - witness our latest Bulletin number of 70, representing 35 years of activity. Alan Stubbs and Judy Webb (2010) summarise the Forum's history. Our non-professionals outnumber and in some ways out-contribute professionals, although the distinction is often blurred and people in both groups are fully involved in running the Dipterists Forum. We like to think that the formation of our society has provided a vehicle for integrating professionals and non-professionals into one enthusiastic group. An international society should have such an over-arching aim. It gets the best out of a large army of enthusiasts, whatever their profession.

The bulk of Dipterists Forum activities centre on field meetings (2-3 per year, the main one lasting 6-7 days), an annual indoor meeting and training courses. In a small country such as Britain these meetings are easy to get to, and we are not convinced that these activities that are essential to us can be transferred to an international platform. Very few British non-professional dipterists attend international dipterological meetings, so if meetings become an important feature of the proposed dipterological society it would restrict interest to those whose organisations will fund their travel. This does not move dipterology forward much since academics are already capable of organising themselves.

Training courses are becoming an increasingly important part of our activity as we realise that we need to maintain membership but more importantly that we have created a juggernaut that needs constant fuelling. We welcome this task as we can see that it is making a real impact on dipterology in Britain. We fulfil a role that has long gone out of fashion in academic courses but which is essential if species conservation is to be taken forward. Our entirely not-for-profit courses include those for complete beginners and for competent dipterists wanting to tackle more difficult families. Recently we are

finding that taking the courses to the people, rather than expecting attendees to travel a long way for a course, has worked well at engendering local interest. An international society may wish to take note that you cannot rely solely on the already-converted, and an educational element may make a difference to the long-term viability of the proposed society.

Species conservation is one of the key drivers behind the Dipterists Forum, since the instigator and his immediate helpers in the early days worked for the government's conservation organisation (and most of us are still here). Thanks largely to action by members of the Dipterists Forum, Britain now has 35 flies on its list for priority action. An international society could play a useful role in supporting activities that help to identify species at risk, although making the case to individual governments for the need for action is probably a political step too far.

A strength of Dipterists Forum to the British dipterological community is the continuity it provides for just about every activity it has been involved with. For instance, we have several very active recording schemes (for families or groups of related flies), some of which have run for several decades. Yet they do not rely on one keen enthusiast. When one begins to wane, the society can often find a replacement.

While we recognise that there are usually only a few movers and shakers, key activities are far less likely to disappear when supported by a well organised group. An international society could organise itself with this type of continuity in mind, whatever its activities.

Sponsorship is always a headache. With grant aid, Dipterists Forum has recently bought some useful kit to help with training courses. Making the case that flies are important would be helped by the kudos associated with an international society, especially if that society can be demonstrated to have clout. This is an instance where individual countries may benefit more from such a society than the other way around.

We are less sure about the value of another specialist journal. Europe already has three [more?] journals dealing exclusively with Diptera: our own *Dipterists Digest*, *Studia Dipterologica* and *Volucella*. Non-professional subscribers may not wish to pay for yet another potentially expensive journal. We are not concerned about losing contributions to *Dipterists Digest* since it is essentially for and by the British, but the editors of the more internationally flavoured *Studia Dipterologica* and *Volucella* may well be concerned at loss of copy and subscribers.

We see no problem with the proposed society adopting *Fly News* as its main vehicle of communication. Existing websites such as Dipterists Forum's could be linked.

Reference

Stubbs, A.E. & Webb, J.A. 2010. The history of the Dipterists Forum. *In*: Chandler, P. (ed.). *A Dipterist's Handbook*. The Amateur Entomologist 15: 60-69.

Taxonomist as Sherlock Holmes.

Doug Craig

Department of Biological Sciences, University of Alberta, Edmonton
Canada T6G 2E9; d.craig@ualberta.ca

Types of various kinds hold special place in the hearts of taxonomists and for all the right reasons. So, here is a story to gladden us all - material that had been AWOL for 22 years, or more, has finally, again, seen the light of day.

I am deep into a taxonomic revision of New Zealand *Austrosimulium* (Black Flies to North Americans and the dreaded Sandflies to New Zealanders). Part of this revision is to be a cladistic analysis of morphological characters. What to use for the outgroup? Well, it was established in 1925 by André Tonnoir that New Zealand simuliids were related to a segregate of Australian simuliids. Edwards in 1931 noted that there was a relationship between these Australasian simuliids and some in South America. This has been well confirmed since by both morphological and molecular evidence. So, it seemed clear that I would use *Paraustrosimulium anthracinum* from South America as part of an out group. Still, there were other species that I thought I should consider and these were two Australian simuliids described by Doug Davies and Helen Györkös in 1988. Namely *Austrosimulium colboi* and *Cnephia pilfreyi*, both given provisional generic placement only. Davies was good at descriptions and these are usually, even now, adequate for character extraction. Still, there are characters that we would like currently that were not well dealt with then.

Of particular interest was *A. colboi*. This species has many characters in common with the South American *P. anthracinum* and I really did want to have a closer look at it. I mean, as out-group material it would be hard to beat. So, where was the material deposited? Davies and Györkös stated that it was all in the Australian National Insect Collection, CSIR, Canberra, Australia, as one might expect. A query to Chris Manchester of CSIRO, was quickly answered - nope, that stuff is not here. Indeed, the types are listed in Bugledich (1999) as officially missing. Hmm, so, is the material in the Canadian National Collection of Insects, Ottawa? I knew that other of Davies' material was there. Another check, this time with Jeff Cumming gave the same answer - nope! No simuliids from Davies at all.

Darn. Well, that would not be the first time material had gone missing. Doug Davies, who had retired in 1984, died in 2008, so there was no asking him where the material might be and Helen Györkös' whereabouts is unknown. But luckily Kevin Moulton (2003) had done molecular work on these simuliids and collected other material of *A. colboi*. He kindly let me have a small, but complete, sample of all stages - nice stuff too! A quick look at the previously undescribed male showed that there was a well developed paramere, otherwise essentially absent in *Austrosimulium*. So, now it is even more apparent that *A. colboi* is probably the Australian exemplar of *Paraustrosimulium* and no doubt of Gondwanan provenance. Great, except that *A. colboi* will need redescription and reassignment of genus - more work. *Cnephia pilfreyi* is another story, yet to be told. But all grist for the mill.

Now a bit of serendipity - you know, a pleasant unexpected happening. I have no idea what I was doing on the internet; maybe searching for digital versions of Doug Davies' papers, but I ran across a history of the Department of Biology, McMaster University by Bayley (2008). There was a mention (p. 118) of a Davies Collection of simuliids and other insects. Hmm, again. Was it possible that the types were there? A few e-mails and contacts and I was chatting with Marvin Gunderman, Technical Coordinator,

Insect Taxonomist and Instructor, who was in charge of the collection. Another bit of e-mailing to my first Ph.D. student, Robert Lee, who is now the senior Professor in the Department of Anesthesiology at McMaster and he agreed to have a look. Double serendipity? His report pretty much confirmed that at least some Australian material was there! The real McCoy? Not immediately clear.

But, how to get at it. Quite obvious from Marvin was that there was sufficient material in the simuliid collection that bundling it up and sending it to me was not an immediate option. So, after a foiled attempt in October last year, my wife Ruth and I went to Hamilton in February and had a look at the collection. My goodness, what do I say? Firstly that some of the types I wanted were right on top of a small metal cabinet! No kidding, the red holotype label stood out like a sore thumb. In good condition too apparently; microvials with material in glycerine, on pins and well labeled!!! "Bingo" is one word that could be used. I also thought of "Elementary my dear Watson". Whoa back here though, that was too easy - it was not as good as all

initially appeared. There were hundreds of small glass vials with orange stoppers and literally piles of Petri dishes with a single depression slide in each one (Fig. 1). More of the dishes later.

The vials were in pretty good shape, most still with alcohol. Generally there was a locality label and, more often than not, an identity label. We went through them all and tossed out those with no alcohol and/or no locality label. Not many actually. The vials retained constitute a major collection of Ontario simuliids involved in Davies' research, and with numbers of overseas simuliids to boot. Fairly valuable.

Other vials, some of which I uplifted, were small stout glass things with an aluminum screw cap and rubber washer. Eschew these if you can! The rubber had gone liquid and constituted a major problem getting material out without contamination from the incredibly sticky black stuff. I am still finding it on tools on my work bench. Oh, I should mention I needed to cut the caps off. Green stoppers are not that much better either after 20+ years. Orange ones are superior and look as if they will last until doomsday; pink ones are passable. This material has been re-curated into homeopathic glass vials with orange stoppers. So, one part of this exercise was real-life exposure to long term storage of alcohol material. Something many of us face all the time.



Fig. 1. Petri dish and depression slide from Davies Collection of simuliids. "Sp. II", aka *Austrosimulium colboi*. Head of larva in glycerine. Circa 1987.

Of more concern were the depression slides in the Petri dishes. There were piles of these on cafeteria trays. I actually wondered what the cafeteria did? The trays largely filled the cabinet and were stacked on top. Each dish had a filter paper in the bottom and this was labeled in cryptic fashion (Fig. 1). At best there might be a species name with a mention of what part of the insect was on the slide. Many of them though were with merely a code, and none of this we managed to associate with anything else. Specimens on the slides were either in glycerine originally, or just dry. Most had a small piece of filter paper in the depression. Often with a small hole poked in it. Any specimen (and not all had such) was arrayed in the hole where the fibres of paper held the material in orientation. Not a bad technique all-said-and-done, but not to leave lying around for 20+ years. Glycerine creeps all over the place in that time. Be-that-as-it-may, it appears as if the illustrations done by Davies and Györkös were made from such mounts. Luckily the Australian material was labeled, so there was a fair chance that material could be recovered. I uplifted those Petri dishes and more on that below. But, disturbingly, the majority of the dishes and their contents we discarded - there was just no way to associate the material with anything else. A great waste? We will never know.

Also disturbing was loan material from other institutions mixed in with this all. Empty pins for some and I'd bet my socks that some of the cryptic notations were about those. Again, we'll never know. So, what have we done with this pile of material remaining? Well, Doug Currie of the Royal Ontario Museum has agreed to look it all over, return any long-lost loans that can be substantiated and then eventually get the balance of specimens to the Canadian National Collection of Insects in Ottawa. I have retained the South American and Australian material and will return it to the correct institutions. Indeed, things have moved faster than I could have thought. Tam Nguyen, American Museum of Natural History has already identified some of the material as belonging to that museum and, as you read this, those specimens are back in their home institution.

One nice find that I thought was of historical bent was a series of microscope slides apparently made by Rubtsov of Soviet Union simuliid fame. These were typical 1 x 3 inch glass. They had, however, been cut by hand from window glass and were dangerously sharp along the edges. Specimens were mounted under the smallest possible pieces of cracked cover slip. Utilitarian almost to a fault. Still, one



Fig. 2. Female *Lutzsimulium hirticosta*. Mount by Sixto Coscarón. 1957. Ex-Davies Collection.

can sympathize since commercially-made glass slides and cover slips were probably not readily available. Peter Adler has pointed out to me these slides were very likely made by Rubtsov's assistant Anna Ilyin (Adler and Crosskey 1998)

Another lovely find was a slide (Fig. 2) by Sixto Coscarón made in 1957. He had mounted pieces of a whole female simuliid under a single cover slip. The legs were in perfect array and all necessary bits beautifully displayed. Galling in the extreme - I have been doing that sort of thing for decades and can come nowhere near that level of skill. And, never will.

So, all-in-all a very satisfactory recovery expedition to the vasty darkness of the lower levels of the Life Sciences building at McMaster. Well, some of that is a load of nonsense, but there was a great sense of satisfaction in finding Doug Davies' material and knowing, that in time, it would be housed where others could access it, if need be.

So now - back in my lab with a pile of Petri dishes, some slides and a few small bottles. What did I actually have? Hmmm, ends up the types in microvials that I was so excited about were only of *Cnephia pilfreyi*. Not only that, but the contents of those vials did not fully agree with the published account by Davies and Györkös!!! So what to do? From the depression slides I have managed to find a little of the material mentioned in the description and have re-associated some the bits. But, there is much missing. This is a real shame because this is the only material known of the later stages of this species. So now it is all in new microvials on pins and some of the bits are mounted on slides. This was hard material to work with. Collected in 1964 by Ronald Pilfery and originally in alcohol, it was badly bleached. But Chlorozoal Black, my favourite stain for cuticle came to the fore as usual and material is now visible. So far, so good.

Luckily the two species involved here have markedly distinct pupal gills and so the only notation on some of the Petri dishes, for example, "Australia, Sp. II" was easily identified as referring to *A. colboi*. Phew! But, again, the material available did not constitute all that Davies and Györkös mentioned in the description. For example, we never did find a "Bottle #21" (see Fig. 1). Still, I have been able to re-associate some of the holotype pieces and those of paratypes. Again, this is now in microvials on pins and properly labeled as to what went on. That material, collected by Ian Mackerras in 1958, was bleached almost to invisibility, but Chlorozoal Black, again, saved the day.

And yes, I will be sending this material back to the Australian National Insect Collection, CSIRO, Canberra. Along with other material that was never returned. I will! I will! I promise.

But, finally, on a more sobering note - don't ever make temporary slides without full labeling. Yeah, yeah, we all know we will associated the bits and pieces later, **but can somebody else????** That is the serious question. Give it a bit of thought and clean up your act. I certainly will mine after this experience. Oh, and return your outstanding loans - now.

References

- Adler, P. H and Crosskey, R. W. 1998. The Simuliid Collection in the Zoological Institute, St. Petersburg, Russia. *British Simuliid Group Bulletin* No. 11: 4-5.
- Bayley, Stanley T. 2008. Biology at McMaster University: 1890 to 1990. *Biology Publications*. Paper 1. <http://digitalcommons.mcmaster.ca/biology_coll/1>
- Bugledich, E. -M. A. 1999. Diptera: Nematocera. In Wells, A. & Houston W. W. K. (eds.) *Zoological Catalogue of Australia*. Vol. 30.1. Melbourne: CSIRO Publishing, Australia. 627 pp.
- Davies, D. M. and Györkos, H. 1988: Two new Australian species of Simuliidae (Diptera). *Journal of the Australian Entomological Society* 27: 105-115.
- Edwards, F. W. 1931: Simuliidae, Ceratopogonidae. *Diptera of Patagonia and Southern Chile: based mainly on material in the British Museum (Natural History)*. Part 2 Fascicle 4: 121-232.
- Moulton, J. K. 2003: Can the current molecular arsenal adequately track rapid divergence events within Simuliidae (Diptera)? *Molecular Phylogenetics and Evolution* 27: 45-57.
- Tonnoir, A. L. 1925: Australasian Simuliidae. *Bulletin of Entomological Research* 15: 213-255.

Apioceridae, Asilidae, and Mydidae specimen occurrence data online

Torsten Dikow

Biodiversity Synthesis Center, Field Museum of Natural History,
1400 S. Lake Shore Dr., Chicago, Illinois 60605, USA; torsten@tdvia.de

In FlyTimes 44 (pages 7–8), I announced that I had received funding for an the NSF REVSYS grant entitled, “Phylogeny, revisionary taxonomy & the fossil record of asiloid flies (Diptera: Apioceridae, Asilidae, Mydidae).” While the study is still in progress and I presented some preliminary faunistic (Mydidae in the Afrotropical Region) and phylogenetic (Mydidae morphological phylogeny) results at the ICD in Costa Rica last year, one project part providing access to specimen occurrence data of taxa important for this grant has been progressing very well. In fact, two web-sites provide access to up-to-date, interactive distribution maps with specimen occurrence data and I invite you to explore the distribution of these flies on the Apioceridae & Mydidae web-site ([Apioceridae](#), [Afrotropical Mydidae](#)) and on my BioSynC research web-site ([Apioceridae](#), [Mydidae world-wide](#), [Asilidae: Bathypogoninae](#), [Phellinae](#), [Tillobromatinae](#), and [Willistoninae](#)). To date, some 4837 specimens are online representing the following genera/species: Apioceridae: all four sub-genera and 64 of the 138 described species (748 specimens); Mydidae: 62 of the 66 genera, 354 of the 469 described species (3543 specimens); above mentioned Asilidae taxa: all 14 genera, 57 species (546 specimens). There are many more specimens still to be databased or geo-referenced that I currently have on loan and several museum collections to be visited to get all species included with at least the type specimens. However, it’s a start and new records are added regularly.

The specimen records originate from numerous insect collections around the world and are based primarily on records I entered. In a few instances, specimen records are taken from recently published taxonomic revisions and other records were provided by fellow dipterists (these sources are acknowledged). The data can be visualized both in a map format (see, e.g., this map of [Afroleptomydas](#) records) and in a table format (see, e.g., the table with the same [Afroleptomydas](#) records) and further explored or filtered by using the search boxes above the map/table. For example, if you would like to know whether I included records from the collection in your care, you may enter the collection code (*sensu* [Abbreviations for Insect and Spider Collections of the World](#) by Neal Evenhuis) and search the database. One can combine several search fields in order to only show records from, e.g., [Chile in the subfamily Apiophorinae](#) to explore particular regions/taxa. When one clicks on a blue pin, a brief summary with the species name, the geographic co-ordinates, country, and locality is shown while one can view the full information for the specimen(s) from the particular collecting event by clicking on the species name. I would like to offer differently colored pins for different species, but I haven’t figured out how to do it.

Both web-sites use technology of the open-source content management system [Drupal](#) and implement the [GMap module](#) that provides an interface to Google Maps. The specimen occurrence data are entered initially in a FileMaker Pro database and the core fields are exported in csv-format. These data can now be imported through a Drupal module into the MySQL database on the server from where they are accessed by web-users. The set-up of such a Drupal web-site is not rocket science, however, it is helpful to have a local IT person at hand in setting up the system initially.

Although populating the specimen database is a lot of work, I very much like this approach to make biodiversity data available to a wide audience and present the distribution of taxa based on actual

specimen records. Ultimately, it would be great if the specimen records can also be shown on the [GBIF](#) site as the primary access point for biodiversity data such as these, but the export of data to GBIF is not straightforward. The Therevidae group using [Mandala](#) show their specimen records through [Discover Life](#) (e.g., map for [Ruppellia](#)), which allows for a sophisticated exploration of records. Discover Life also further exports the data to GBIF so that they are available on that platform, which would be one way to get data originating from numerous independent collections to GBIF.

For those of you interested in Asilidae: Leptogastrinae, I serve also specimen occurrence data for all 17 genera and some 203 species (3972 specimens) on my BioSynC research web-site ([Leptogastrinae](#)). Additional information for species of Leptogastrinae, including images, drawings of male terminalia, descriptions etc., can be found on the [Leptogastrinae LifeDesk](#), from where generic as well as species maps can also be accessed directly.



Map with specimen occurrence data for Mydidae in the southern Palearctic, northern Afrotropical, and western Oriental regions.

Phylogenetic Revision of *Ablautus* Loew (Diptera: Asilidae),
A Preliminary Results Analysis

Eric J. Galbraith

Department of Entomology, Michigan State University,
East Lansing MI 48823; galbra31@msu.edu

One of the most diverse taxa within the Diptera is the Asilidae. Since the publication of *Biologia Centrali-Americana* (Osten Sacken, 1887), a multitude of genus and species level studies have laid the foundation for taxonomic research on the Nearctic Asilidae. J. Wilcox and C. Martin published many revisions of the Nearctic genera in the mid-20th century. The *Manual of Nearctic Diptera* (Wood, 1981) and many papers by Artigas and Papavero (1988-1997) filled in the genus-level gaps to produce a strong basis for taxonomic studies. More recently, Fisher provides a comprehensive look at Central American Asilidae in the *Manual of Central American Diptera Vol. 1* (2009). Although much is known about the Nearctic genera, it is difficult to make species level identifications for the majority of these genera. Identification of species is of utmost importance for the interpretation of evolutionary history. If we are to better understand the evolutionary relationships of the Asilidae, research must be done to classify and revise its species.

I am currently working under the guidance of Dr. Anthony Cognato at Michigan State University, and Dr. Torsten Dikow at the Field Museum of Natural History. After careful studies of the local genera and collaboration with my advisors and Dr. Eric Fisher, I decided to revise the Nearctic genus *Ablautus* Loew, 1866 through a phylogenetic analysis of its species. With a relatively small number of recorded species and a habitat range within the western United States, it is a suitable choice for a Masters project. Following is an introduction to this genus and the preliminary results of my research.

The Nearctic genus *Ablautus* is comprised of 13 described species. Ecologically, they are important predators of other arthropods in the sandy habitats of the Western US and Mexico. These flies are small, ranging from about 4 - 12mm in length. They range approximately from Baja California Sur, Mexico (Sonora and Chihuahua also) north to Washington and east to Texas. Loew (1866) described this genus because of their lack of pulvilli, a trait shared by other Willistoninae genera, but also the Leptogastrinae, for example. Wilcox (1966) published the last taxonomic revision of *Ablautus*. A current hypothesis of the higher-level classification of the Asilidae (Dikow, 2009) places *Ablautus* in the subfamily Willistoninae.

Willistoninae (http://www.asilidaedata.tdvia.de/classification/willistoninae_dikow2009.html) is recognized here as a higher level taxon and is currently comprised of the Afrotropical genera *Acnephalomyia* Macquart, 1838, *Ammodaimon* Londt, 1985, *Sporadothrix* Hermann, 1908, and *Trichoura* Londt, 1994, the Afrotropical and Palaearctic genus *Sisyrondytes* Loew, 1856, and the Nearctic genera *Willistonina* Back, 1909 and *Ablautus*. *Ablautus* is shown as sister group to the clade formed by *Willistonina* and *Trichoura* in Dikow (2009a). Specifically, my research will (1) conduct a modern taxonomic revision of *Ablautus* and (2) propose phylogenetic relationships of its species based on molecular data and adult morphological characters.

Methods

Since beginning my research I have requested loans of all determined and undetermined *Ablautus* specimens from many key museums, collections and institutions. Throughout the fall semester 2010 I

received over 1100 specimens and databased the specimen label data. I also began recording morphological characters for a phylogenetic analysis of the species. *Omninablautus nigronotum*, *Sisyrnodytes curtus*, *Acnephalomyia dorsale*, and *Willistonina bilineata* (type species of the subfamily taxon) have been included as outgroups. All previously recognized taxonomic characters (Wilcox, 1935; Wilcox, 1966) have been re-analyzed and approximately 25 new characters will be included in the study. Following is a sample of some of these characters with my initial analysis.

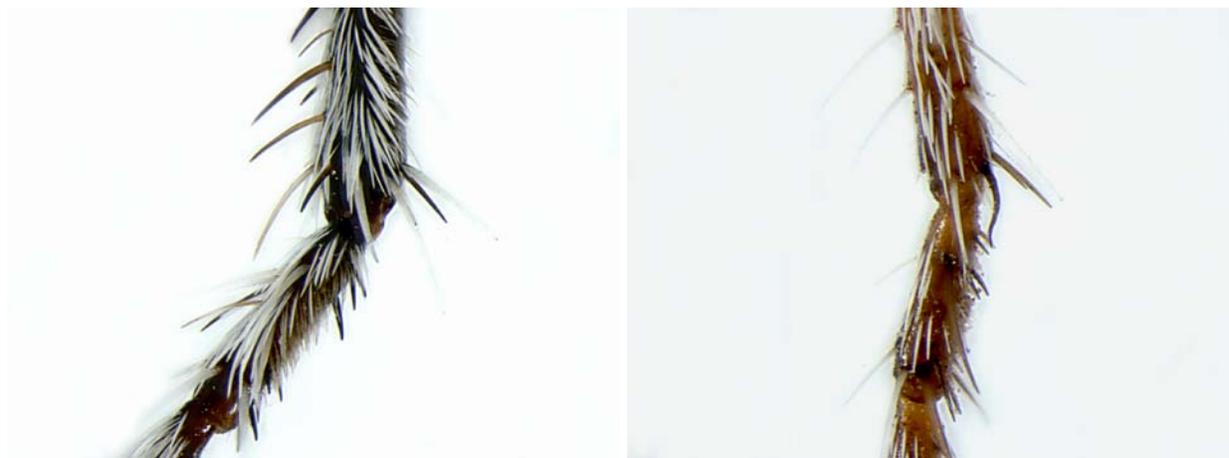


Fig. 1 (right). Foretibia of *Ablautus californicus* with spine absent.
 Fig. 2 (left). Foretibia of *Omninablautus nigronotum* with spine present.

There has been question as to the relationship between *Ablautus* and *Omninablautus* Pritchard, 1935. *Omninablautus* was placed within the Dasyopogoninae based on the presence of a fore-tibial spine by Hull (1962) and Papavero (1973), but should most probably be transferred to Brachyrhopalinae, a group elevated by Dikow (2009) and in which all three species with a small sigmoid fore-tibial spine that were included in the phylogenetic analysis at the time are currently placed. *Ablautus* does not possess this foretibial spine, thus separating it from *Omninablautus* (see Fig. 1, and Fig. 2). Aside from this distinct character state difference, the two genera are very similar in overall appearance and share many character states. A re-evaluation of the position of this unique character will help determine the relationship between these two genera. Furthermore, potential molecular data from field collections of *Omninablautus* could provide additional clarification.

One clear morphological character that species of *Ablautus* seem to share is an obvious silver or gold coloration. When viewed under a microscope it is revealed that this coloration is actually a thin layer of pubescence that coats various areas of the cuticle. Located on the frons, just above the antennae of some *Ablautus* species is a dark horizontal patch that is apubescent. At first glance, the patch appeared to be an area where the pubescence was accidentally rubbed off. However, after a thorough look at the character among specimens it became clear that this character state stands out in particular species and is consistent among them. The horizontal patch is also seen to be consistent in its relative size, position and shape. On the species that lack this patch, there may be a small apubescent spot, but it is easily distinguishable from the larger horizontal patch (see Fig. 3, and Fig. 4).

Many of the previously recognized characters of *Ablautus* by Wilcox can be observed by studying the legs of specimens. The legs of species tend to vary greatly in both coloration and setal composition; therefore they have proved to be useful locations of study for taxonomic revision. There are 2 types of setae found on the legs of *Ablautus*. Small, usually white setae cover most of the surface area, and



Fig. 3 (left). Frons of *Ablautus californicus* with large, horizontal apubescent patch.
 Fig. 4 (right). Frons of *Ablautus arnaudi* with small, round apubescent spot.

larger, thicker spine-like setae protrude from some locations. These thicker, distinctive setae were not included in previous analyses by Wilcox. I believe these setae are important to study and have noted that they can be white (like the surrounding setae), or yellowish-brown (see Fig. 5, and Fig. 6).

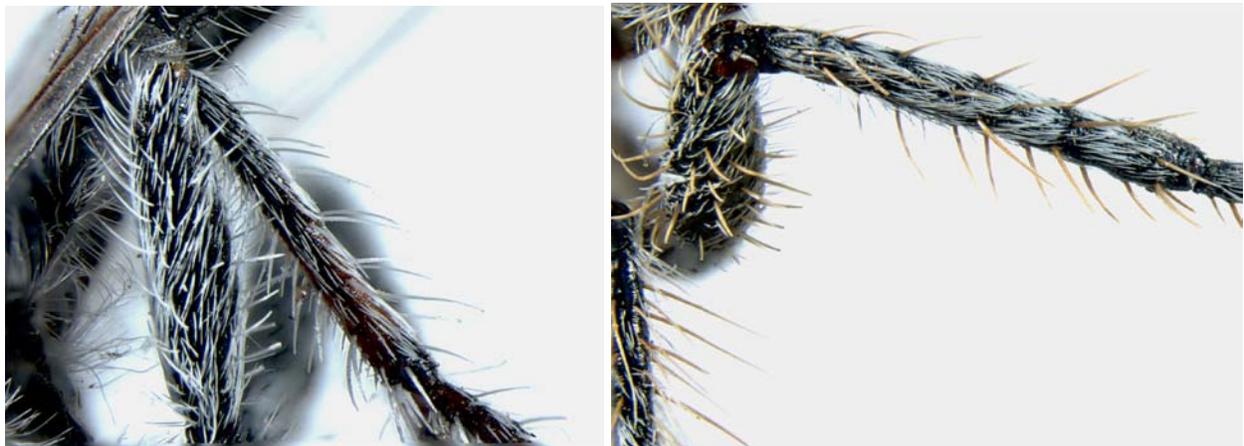


Fig. 5 (left). Leg of *Ablautus coachellus* with white, thick setae.
 Fig. 6 (right). Leg of *Ablautus vanduzeei* with yellowish-brown, thick setae.

These are only a few examples of the morphological differences within *Ablautus*. Many other taxonomic characters are currently under analysis. I have included photographs (taken from specimens in good physical condition, most non-type specimens) of each of the 13 described species to depict their morphological diversity (see Figs. 8 - 20). Some characters can be readily seen from these images (ex: mystax coloration, leg coloration, types of setae and pubescence, etc.).

I have geo-referenced all 1180 databased specimens and plotted initial distribution maps. These maps are incredibly important because they allow me to track the patterns of species distribution across geographical areas. Most importantly, these maps will make it easier for me to locate the specific species of *Ablautus* during fieldwork. Furthermore, these maps indicate large collection gaps in suitable habitat, for example there has been only one collection event in both Utah and Wyoming (see Fig. 7). As for molecular data, I plan to include partial DNA sequences of mitochondrial cytochrome

oxidase I, as well as gene sequences used in a recent phylogenetic study of Asilidae (Dikow, 2009b). I will use primers developed in the Diptera AToL project (<http://www.inhs.illinois.edu/research/FLYTREE/>), as well as primers used by (Dikow, 2009b).

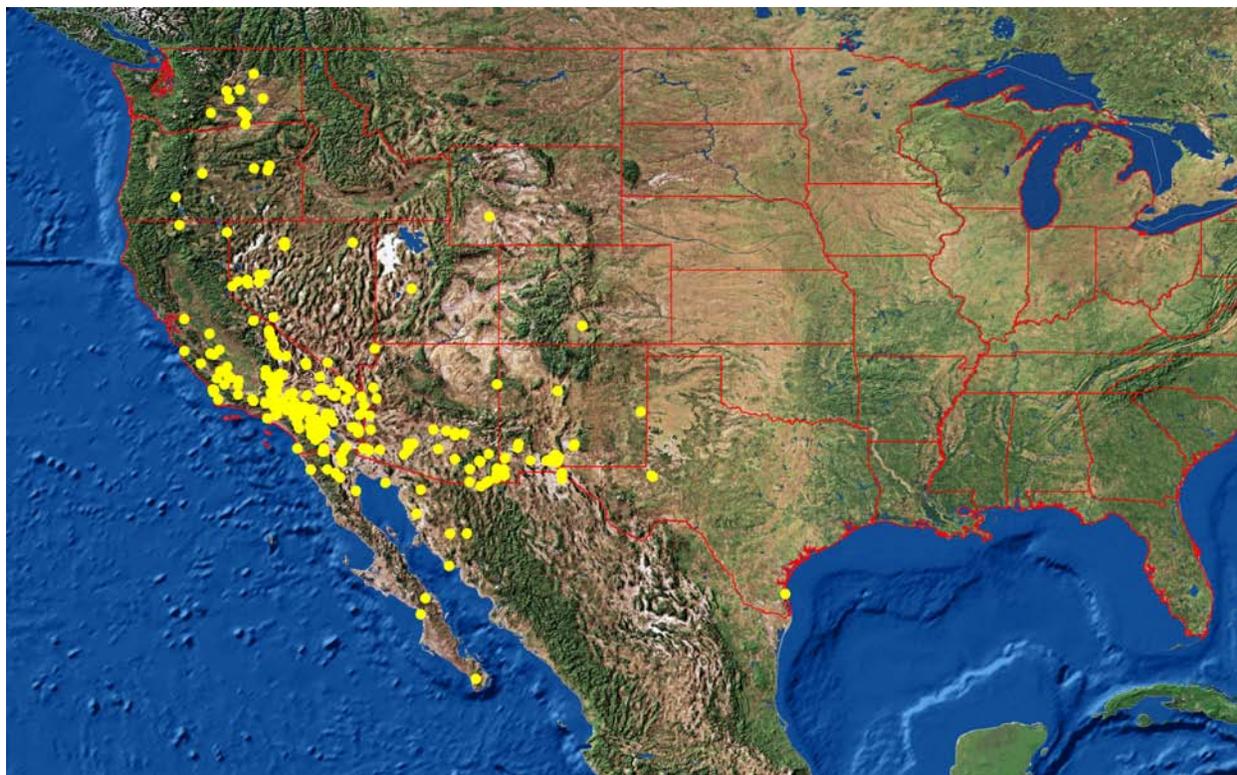


Fig. 7. Map of the United States and Mexico with collecting localities of *Ablautus* included in the present study marked with yellow circles.

In order to enhance my phylogeny of *Ablautus*, I will augment my existing collection with specimens preserved for DNA analyses via a collecting trip to southwestern US. In the spring of 2012 I will fly to California and travel a formulated route that covers some of the habitat range of *Ablautus*. This route maximizes the potential to collect diversity of species from within their current range and from unexplored habitat. I will also search for specimens in western Arizona, which is a habitat that has not been sufficiently explored for *Ablautus*. Additional collection trips are currently in the planning stage. I will hand collect, placing specimens directly into 100% EtOH to preserve them for DNA extraction and sequencing. Voucher specimens will be pinned and/or frozen at MSU. Three species of *Ablautus* have been collected in recent years for morphological study and DNA extraction by my co-advisor Dr. Torsten Dikow. All type specimens of *Ablautus* will be studied for the verification of identifications by previous authors. I will also explore the male terminalia in order to find more species specific characters that can be used to unambiguously identify species.

Comments

Any assistance from other insect collections would be greatly appreciated. If you or your institution has any specimens of *Ablautus*, they would be of great use in this research study to fill in collection gaps, update distributional maps and provide additional taxonomic characters for morphological study. My appreciation goes out to all the collections and individuals who have loaned specimens for use in my study. Also, many thanks in advance for any assistance given to this research project in the future.

Current Described Species of *Ablautus*Fig. 8 (left). Lateral view of *Ablautus arnaudi* (San Diego Co. CA, USA).Fig. 9 (right). Lateral view of *Ablautus basini* (Paratype: San Bernardino Co. CA, USA).Fig. 10 (left). Lateral view of *Ablautus californicus* (San Bernardino Co. CA, USA).Fig. 11 (right). Lateral view of *Ablautus coachellus* (Allotype: Riverside Co. CA, USA).Fig. 12 (left). Lateral view of *Ablautus colei* (Paratype: Grant Co. WA, USA).Fig. 13 (right). Lateral view of *Ablautus coquilletti* (Maricopa Co. AZ, USA).



Fig. 14 (left). Lateral view of *Ablautus flavipes* (San Diego Co. CA, USA).
 Fig. 15 (right). Lateral view of *Ablautus linsleyi* (Paratype: Kern Co. CA, USA).



Fig. 16 (left). Lateral view of *Ablautus mimus* (Kern Co. CA, USA).
 Fig. 17 (right). Lateral view of *Ablautus rufotibialis* (Grant Co. NM, USA).



Fig. 18 (left). Lateral view of *Ablautus schlingeri* (Topotype: San Luis Obispo Co. CA, USA).
 Fig. 19 (right). Lateral view of *Ablautus squamipes* (Grant Co. NM, USA).



Fig. 20. Lateral view of *Ablautus vanduzeei* (San Luis Obispo Co. CA, USA).

References

- Dikow, T. (2009a) Phylogeny of Asilidae Inferred from Morphological Characters of Imagines (Insecta: Diptera: Brachycera: Asiloidea). *Bulletin of the American Museum of Natural History*. Number 319.
- Dikow, T. (2009b) A phylogenetic hypothesis for Asilidae based on a total evidence analysis of morphological and DNA sequence data (Insecta: Diptera: Brachycera: Asiloidea). *Organisms, Diversity & Evolution* 9: 165–188.
- Fisher, E. (2009) Asilidae. In: Manual of Central American Diptera. Edited by B.V. Brown, A. Borkent, J.M. Cumming, D.M. Wood, N.E. Woodley, and M. Zumbado. Vol. 1: 585-632.
- Hull, F.M. (1962) Robber flies of the world. The genera of the family Asilidae. *United States National Museum Bulletin*. 224: 1-907.
- Loew, H. (1866) Diptera Americae septentrionalis indigena. *Berliner entomologische Zeitschrift*. 10: 15-37.
- Papavero, N. (1973b) Studies of Asilidae (Diptera) systematics and evolution. II. The Tribes of Dasypogoninae. *Arquivos de Zoologia*. 23: 275-294.
- Wilcox, J. (1966) New Species and Keys to the Species of *Ablautus* Loew and *Omninablautus* Pritchard (Diptera: Asilidae). *The Canadian Entomologist*. Vol. 98 No. 7: 673-682.
- Wilcox, J. (1935) New Asilid Flies of the genus *Ablautus* with a Key to the Species. *The Canadian Entomologist*. 67: 222-227.



F. Christian Thompson¹ & Thomas Pape²

¹ Department of Entomology, National Museum of Natural History, Smithsonian Institution,
PO Box 37012, Washington, D.C 20013-7012, USA; thompsonf@si.edu

² Natural History Museum of Denmark, Universitetsparken 15,
DK-2100 Copenhagen, Denmark; tpape@snm.ku.dk

Progress on the Systema Dipterorum remains slow due to the lack of significant funding. Consider the recent completed WoRMS project, a census of marine organisms but in terms of number of species just slightly more than the number of Diptera species, ran more than a decade and cost some \$650 million dollars (see the article in the New York Times last April: <http://nyti.ms/jjg5hS>). Yes, we are slow, but very cheap as less than a half million USD has been invested in our efforts over the last two decades!

Today, we have basic nomenclatural and taxonomic information for over 160,000 species and some 225,000 scientific names. Our classification and names information are used by all major community projects, such as Encyclopedia of Life (EoL), Global Biodiversity Information Facility (GBIF) and Species2000. Earlier this year, we provided a major update to the Annual Checklist, which will soon be implemented by these global efforts.

Thanks to the continued support from the Schlinger Foundation and some additional support from the Species2000 rotating funds, we will survive another year. We, due to limited prospects of future funding, have decided to devote our limited resources to producing some traditional publications. We have brought onboard Irina Brake of the Natural History Museum, London, to accelerate the production of MYIA volumes, which will include world catalog treatments of a number of families. We have a new agreement with Pensoft, the publishers of ZooKeys, to print our series. Three new volumes are underway and we hope they will be published by the time the next issue of Fly Times is out.

We will be seeking out the help of specialists to review our Systema Dipterorum and, hopefully, to contribute to published versions of subsets of that data. So, please watch our online site (www.diptera.org), as new revisions will be posted soon. We hope to have a new family classification posted, which will incorporate the most recent revisions, such as those published by the Diptera Tree of Life group, and to be published in a special issue of Zootaxa soon.

Diptera Other Than Culicidae Captured in the BG Sentinel™ Mosquito Trap

Lawrence J. Hribar

Florida Keys Mosquito Control District, 503 107th Street,
Marathon, Florida 33050 USA; lhribar@keysmosquito.org

The BG Sentinel Trap™ (BioGents, Regensburg, Germany) is a relatively new piece of equipment developed for mosquito surveillance. The trap uses visual cues (contrasting black and white color pattern) and chemical lures (ammonia, caproic acid, lactic acid, 1-octen-3-ol) to attract mosquitoes. Trap catch can be further enhanced by use of carbon dioxide. Farajollahi et al. (2009) evaluated this trap and found it to be superior to other traps for collection of *Aedes albopictus* Skuse. References therein document the attractiveness of the aforementioned chemicals to mosquitoes. Since 1 December 2009 I have kept one of these traps running in my back yard on Vaca Key in the Florida Keys. Prior to February 2011 no carbon dioxide was used, but the previously mentioned chemical baits were used. In February I began using dry ice along with the other chemical lures.

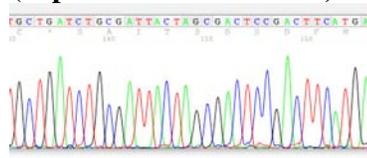
Two species of mosquito (Diptera: Culicidae) are collected routinely: *Ae. aegypti* (L.) and *Culex quinquefasciatus* Say. This is no surprise; it is the reason for deployment of the trap. However, the bycatch is interesting in its own right. To date I have removed specimens of 11 dipteran families other than Culicidae: Cecidomyiidae, Ceratopogonidae, Chironomidae, Dolichopodidae, Drosophilidae, Empididae, Mycetophilidae (*sensu lato*), Phoridae, Psychodidae, Scatopsidae, and Sciaridae. Most families are represented by more than one species. Oftentimes there are a few specimens of any one family; occasionally as many as a dozen or more specimens may turn up. Whether it is the contrasting color pattern or one or more of the chemical lures that attracts these non-culicid flies is unknown. *Drosophila* spp. can detect ammonia, caproic acid, carbon dioxide, and 1-octen-3-ol, but in some instances these odors elicit a small response or even can be repellent (Higa & Fuyama 1993, Dobritsa et al. 2003, Kwon et al. 2007, Turner & Ray 2009). I have also found small Coleoptera, Homoptera, Hymenoptera, Lepidoptera, and terrestrial amphipods (lawn shrimp) (Fasulo 2010) within the trap.

References

- Dobritsa, A.A., van der Goes van Naters, W., Warr, C.G., Steinbrecht, R.A., & Carlson, J.R. 2003. Integrating the molecular and cellular basis of odor coding in the *Drosophila* antenna. *Neuron* **37**: 827-841.
- Farajollahi, A., Kesavaraju, B., Price, D.C., Williams, G.M., Healy, S.P., Gaugler, R., & Nelder, M.P. 2009. Field efficacy of BG-Sentinel and industry standard traps for *Aedes albopictus* (Diptera: Culicidae) and West Nile virus surveillance. *Journal of Medical Entomology* **46**: 919-925.
- Fasulo, T. 2010. Amphipods, Lawn Shrimp. University of Florida Featured Creatures EENY-220.
- Higa, I., & Fuyama, Y. 1993. Genetics of food preference in *Drosophila sechellia*. *Genetica* **88**: 129-136.
- Kwon, J.Y., Dahanukar, A., Weiss, L.A., & Carlson, J.R. 2007. The molecular basis of CO₂ detection in *Drosophila*. *Proceedings of the National Academy of Sciences* **104**: 3574-3578.
- Turner, S.L. & Ray, A. 2009. Modification of CO₂ avoidance behavior in *Drosophila* by inhibitory odorants. *Nature* **461**: 277-282.

**Graduate Research Assistantship (Ph.D.) available in Entomology
at the University of Tennessee-Knoxville**

Revisionary Studies of Nearctic Seepage Midges (Diptera: Thaumaleidae)



John K. Moulton¹, Bradley Sinclair²

¹ Dept. Entomology & Plant Pathology, 2431 Joe Johnson Dr., 205 Ellington Plant Sciences Bldg.,
The University of Tennessee, Knoxville, Tennessee 37996-4560, USA; jmoulton@utk.edu

² Canadian National Collection of Insects, Ottawa Plant Laboratory – Entomology, CFIA,
K.W. Neatby Bldg., C.E.F., 960 Carling Ave., Ottawa, Ontario KIA OC6, Canada;
bradley.sinclair@inspection.gc.ca

Project Description: Historically, the Thaumaleidae have been understudied and taxonomically difficult. This project is a collaborative research and training project between the entomology laboratories of the University of Tennessee and Canadian National Collection of Insects, funded by an NSF grant, MidgePeet: A Collaborative Effort to Increase Taxonomic Expertise in Understudied Families of Nematoceros Diptera. The project will provide new information on the biology, diversity, and ecology of North American seepage flies, with extensive fieldwork in the western Cordillera. Research will involve the description of new species, species redefinition and re-evaluation of generic concepts using collection-based specimens, rearing of immature stages, molecular analyses, implement DNA-based fingerprinting to discriminate all 21 known species of western Nearctic *Androprosopa*; and development of a standard polytene chromosome map for the genus *Androprosopa*.

Start Date: August 2011 or when suitable candidate found. Screening applicants began 15 April, 2011.

Stipend: \$19,000+ per year for 3 years, with both in- and out-of-state tuition waived and health insurance included.

Qualifications: The successful Ph.D. candidate will have a M.S. in biology or a related science. Applicants will be evaluated on the basis of grades, letters of recommendation, GRE scores, resume, and letter of intent. The University of Tennessee is an EEO/AA/Title IX/Section 504/ADA employer.

Environment: The Department of Entomology and Plant Pathology is located on the Agricultural Campus of UT. The PI is housed in the new Plant Biotechnology Building that is equipped with modern equipment for biotechnology research. Knoxville, a city of 180,000, is the economic and cultural center of eastern Tennessee and is consistently ranked as one of the ten most livable cities in the USA. It lies just 40 miles west of The Great Smoky Mountains National Park.

Interested persons should contact one of the authors.

M.S. (or Ph.D.) opportunity in biology and systematics of Neotropical Tachinidae

John O. Stireman III

Department of Biological Sciences, 3640 Colonel Glenn Hwy, Wright State University
Dayton, Ohio 45435, USA; email john.stireman@wright.edu

I continue to seek students to pursue M.S. degrees in Biological Science at Wright State University in Dayton, Ohio, focused on systematics and biology of tachinid flies. This position is associated with a larger, collaborative, NSF funded Biological Surveys and Inventories project to document the diversity of Lepidoptera and parasitoid taxa and their interactions in the montane rainforest of Ecuador (see <http://caterpillars.unr.edu/lscat/ecuador/index.htm> and <http://www.insectscience.org/9.26/>).

We have collected and reared (from Lepidoptera) an impressive diversity of tachinids from Ecuador (over 200 morphospecies so far), the majority of which appear to be undescribed. The student will work with me to select a manageable taxon of interest, which is well represented in rearings, to revise taxonomically and analyze phylogenetically. The student will also help to develop web resources, and contribute to the analysis of ecological associations and patterns of diversity of Ecuadorian tachinids. Applicants from Latin American students are particularly encouraged.



The project will involve travel to and collecting in Ecuador and travel to the CNC, USNM, and perhaps other museums. Funds are available to support travel and research and summer stipends. Support (including tuition) will be provided during the academic year through teaching assistantships biology courses at Wright State University (e.g., General Entomology) and the applicant must be academically competitive to obtain these assistantships. Stipend and teaching assistantship support are ca. \$4500/quarter with a full tuition scholarship. See <http://www.wright.edu/sogs/index.html> for information on graduate admissions).

This position may also be filled by a Ph.D. seeking student via WSU's interdepartmental program in Environmental Science. Only partial funding for such a position is currently be available, however additional funding is being actively pursued.

If interested, please send a curriculum vitae and a statement of interest to me via e-mail or regular mail.

Announcement of the Sciaroidea_L listserv

Chris Borkent (list administrator)¹, Vladimir Blagoderov², Björn Rulik³

¹ Dept Natural Resource Sciences, McGill University, Macdonald campus, 21,111 Lakeshore Road, Sainte-Anne-de-Bellevue, Québec H9X 3V9, Canada; chris.borkent@mail.mcgill.ca

² Department of Entomology, The Natural History Museum, Cromwell Road, London SW7 5BD, United Kingdom

³ Senckenberg Naturhistorische Sammlungen Dresden, Museum für Tierkunde, Sektion Diptera, Königsbrücker Landstraße 159, D-01109 Dresden, Germany; bjoern.rulik@senckenberg.de

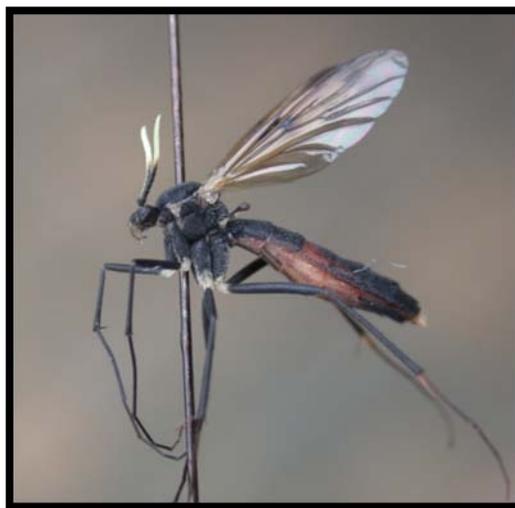
A new resource, the Sciaroidea_L listserv, has just been created in order to increase communication between all those interested in any aspect of the Sciaroidea (i.e. Mycetophilidae *s.l.*, Sciaridae and Cecidomyiidae). This is an email listserv which forwards any messages sent to the listserv address (Sciaroidea_L@lists.mcgill.ca) to all registered members of the listserv.

The Sciaroidea_L listserv was started as an addition to Fungus Gnats Online (www.sciaroidea.info) in order to promote discussion and communication about all things sciaroid. This includes everything from systematics to natural history, field trips to behavioural observations, and questions to stories. It will also help in the exchange of specimens within the community, so if you reside in a collection with many undetermined Sciaroidea I urge you to join the list.

If you are interested in joining the list send an email to listserv@lists.mcgill.ca with SUBSCRIBE SCIAROIDEA_L <your name> in the body of the email (where <your name> is replaced with the subscriber's first and last name, no brackets). If you have any trouble please contact Chris Borkent.

Do be aware that when you hit reply to an email sent from Sciaroidea_L your reply will go to the entire list not just the person who wrote the initial email.

Please consider joining the list and using it to ask questions, make comments, share papers, request input, start collaborations, or tell interesting tales, as we work together to explore and unravel the wonderful world of our favourite insects!



**Announcing the publication of Volume 2
Manual of Central American Diptera**

Stephen Gaimari

Plant Pest Diagnostics Branch, California Department of Food & Agriculture,
3294 Meadowview Rd., Sacramento, California 95832, USA; sgaimari@cdfa.ca.gov

It gives me great pleasure to announce something you all probably already know! The Manual of Central American Diptera project is now complete, with the late 2010 publication of the following:

Brown, B.V., A. Borkent, J.M. Cumming, D.M. Wood, N.E. Woodley & M. Zumbado (eds.). 2010. Manual of Central American Diptera, Volume 2. National Research Council Press, Ottawa. Pp. i-xv, 715-1442.

This book, and Volume 2, can be purchased from the publisher at their website - <http://www.nrcresearchpress.com/page/nrc-books/ordering/orderinginfo> - or through any of their authorized distributors - <http://www.nrcresearchpress.com/page/nrc-books/ordering/distributors> - or from anywhere else you might find it! From the publishers catalog, following is the entry describing this two volume work, which we all know is so much more!

True flies, or Diptera, are an exceedingly diverse and tremendously important group of animals not only because of their impact on human health, but also because of their varied roles as decomposers, herbivores, predators and parasites of other animals. This two volume book, a collaboration of over 70 experts on Diptera, is the first-ever resource for the identification and understanding of Central American flies. Together, the two volumes treat all 106 families of flies found in the region, including discussions of biology, economic importance, classification, identification to the genus level as well as a synopsis of each genus. While Volume 1 includes several introductory chapters and treats 42 families of flies in the Lower Diptera, Volume 2 covers the remaining 64 families of flies that make up the Higher Diptera (or Cyclorrhapha). The text is accompanied by over 1660 line drawings and photographs.

Congratulations to all the editors, to all the authors, and to everyone else who saw this through, for producing such a fine piece of work!

Request for just a few more Chamaemyiidae!

Stephen Gaimari

Plant Pest Diagnostics Branch, California Department of Food & Agriculture,
3294 Meadowview Rd., Sacramento, California 95832, USA; sgaimari@cdfa.ca.gov

In Fly Times issues 42 and 44, I made a request for adelgid feeding chamaemyiids to help with a joint project I have with Nathan Havill (USDA Forest Service). The project is proceeding very well, but in the process we decided we should tackle the whole family, since I had accumulated in my own collections so many of the critical taxa. To date, the genera we most critically need are the following - please contact me if you want any information about how to collect them if you are in places where they might occur! I am very happy to provide any insight you might need! (I wish I could just go and get

them all myself!!). Especially for those on mealybugs in grasses, I have found sweeping to be an excellent method for getting them! Here they are:

- Chaetoleucopis* [Australia - on *Dactylopius* scales and related]
- Leucopis (Indioleucopis)* [India - on soft scales]
- Leucopis (Leucopella)* [Neotropical/Afrotropical - on soft scales and mealybugs on grasses/dicots]
- Leucopis (Metaleucopis)* [Russia - rare - on aphids]
- Leucochthiphila* [Australia - rare - probably on mealybugs in grasses]
- Leucopomyia* [Holarctic - on soft scales, like *Pulvinaria*]
- Melametopia* [Palearctic - rare - probably on mealybugs in grasses]
- Melanochthiphila* [Canary Islands only - probably on mealybugs in grasses]

There is one new genus that attacks *Ceroplastes* scales in Brazil - but since it isn't described, the only way to alert you of the possibility you've collected it is to say it is all black. It is easily distinguished from the other genus that would be collected on *Ceroplastes* there, which is *Echinoleucopis*.

I can probably collect the following, but have not yet put any in alcohol, so would appreciate any (particularly from outside the Nearctic) specimens of either of these subgenera:

- Parochthiphila (Euestelia)* [Holarctic - on mealybugs in grasses]
- Parochthiphila (Parochthiphila)* [Holarctic - on mealybugs in grasses]

I have one specimen collected into alcohol of the following genus, but would greatly appreciate more specimens, as the position of this genus is one of the more contentious questions in the study.

- Cremifania* [Holarctic - on adelgids]

For other genera, including multiple species would allow a more robust look at the family. So please feel free to send along ANY chamaemyiids you might think will be an interesting addition! Following are the taxa I have included so far (most with multiple specimens). I would be thrilled with other species in any of these genera, and very happy to include more specimens of any of these species!

- | | |
|---|--|
| <i>Acrometopia reicherti</i> (Enderlein) | <i>Leucopis ninae</i> Tanasijtshuk |
| <i>Anchioleucopis geniculata</i> (Zetterstedt) | <i>Leucopis piniperda</i> Malloch |
| <i>Anochthiphila nigra</i> Tanasijtshuk | <i>Lipoleucopis praecox</i> Meijere |
| <i>Chamaemyia geniculata</i> (Zetterstedt) | <i>Melaleucopis simmondsi</i> Sabrosky |
| <i>Chamaemyia polystigma</i> (Meigen) | <i>Neoleucopis kartliana</i> Tanasijtshuk |
| <i>Cremifania nigrocellulata</i> Czerny | <i>Neoleucopis obscura</i> (Haliday) |
| <i>Echinoleucopis ceroplastophaga</i> (Blanchard) | <i>Neoleucopis orbiseta</i> (McAlpine) |
| <i>Echinoleucopis grioti</i> Gaimari | <i>Neoleucopis pinicola</i> (Malloch) |
| <i>Leucopina bella</i> (Loew) | <i>Neoleucopis tapiae</i> (Blanchard) |
| <i>Leucopina bellula</i> (Williston) | <i>Notochthiphila fasciventris</i> (Malloch) |
| <i>Leucopis ankophalla</i> Tanasijtshuk | <i>Ortalidina caribbea</i> (Cogan) |
| <i>Leucopis argenticollis</i> Zetterstedt | <i>Plunomia transversa</i> Malloch |
| <i>Leucopis atrifacies</i> Aldrich | <i>Pseudodinia occidentalis</i> Barber |
| <i>Leucopis decipiens</i> Tanasijtshuk | <i>Pseudoleucopis flavitarsis</i> Malloch |
| <i>Leucopis formosana</i> Hennig | |
| <i>Leucopis hennigrata</i> McAlpine | |

So, I am asking if any of you collectors out there might keep an eye out for chamaemyiids - it would be a great help to this project! If you take them off a particular host, feel free to include specimens of the host, which I can get identified and vouchered. I would greatly appreciate any specimens (from anywhere in the world) of such chamaemyiids in ethanol. The project is both morphological (my part, of course) and molecular (Nathan's part). I have pinned specimens for many species of course, but access to fresh and ethanol-preserved specimens will be greatly appreciated! ... of course, I am always happy with any chamaemyiids or other lauxanioids any time!

The Proceedings of the XV International Symposium on Chironomidae

Leonard C. Ferrington Jr.

Department of Entomology, University of Minnesota, 219 Hodson Hall, 1980 Folwell Avenue,
Saint Paul, Minnesota, 55108-6125, United States; ferri016@umn.edu

The Proceedings of the XV International Symposium on Chironomidae is now published and available for purchase through the University of Minnesota Extension Store.

Description: The Proceedings of the XV International Symposium on Chironomidae, Edited by Leonard C. Ferrington Jr. 385 pp. Publication Date: 1 October 2010. ISBN # 978-0-615-41254-2.

This symposium proceeding consists of thirty-six papers that were presented during the XV International Symposium on Chironomidae held at the University of Minnesota. It includes the full, unabridged text of the Thienemann Honorary Lecture. The remaining papers have been organized into four general categories by subject: Distribution, Life Histories and Ecology (20 papers), Cytogenetics and Molecular Biology (four papers), Taxonomy (eight papers) and Special Featured Contributions (three papers). Titles of all papers, with names of contributing authors, can be reviewed on-line at: <http://www.entomology.umn.edu/midge/XVSymposium/Proceedings.html>

All manuscripts accepted for publication received technical suggestions by at least two anonymous reviewers, along with some text editing and formatting to standardize page size and font. Authors were asked to conform to formatting instructions for the Journal of the Kansas Entomological Society, however final punctuation and style for text citations and references were dictated by the preferences of individual authors.

The URL to purchase the Proceedings is:

<https://shop-secure.extension.umn.edu/PublicationDetail.aspx?ID=2057>

Purchase price is US \$ 64.95, Plus shipping and handling (additional).

NOTE: International orders will receive an e-mail to contact the Extension Store regarding additional shipping charges. Please note that on international orders you will be required to contact the Extension Store via phone to provide additional credit card payment prior to shipment to cover costs associated with international shipping (international shipping charges are not automatically included on the online store as price may vary). Please also note that any additional charges (duties, import fees, etc) and paperwork from the purchaser's government is the purchaser's responsibility and is not included in the price.

Biogeography of South America: Patterns and Processes

Claudio José Barros de Carvalho

Universidade Federal do Paraná, Departamento de Zoologia
C.P. 19020, Curitiba, 81.531-980, Brazil; cjbcarva@ufpr.br

The new book titled "Biogeography of South America: Patterns and Processes" (in Portuguese) was published last January. The book has 17 chapters written by 26 authors, mostly from Brazil, but also from Argentina (Paula Posadas), Mexico (Juan Morrone), Spain (Miguel Araújo) and the USA (John Grehan). Four chapters were written by dipterists: chapter 3 (Areas of Endemism) by me, chapter 6 (Cladistic Biogeography) by Sílvio Nihei, chapter 10 (Conservation Biogeography) by Peter Lowenberg-Neto and chapter 17 (Biogeography of South American Muscidae) by Marcia Couri and me. The Preface was also written by a Dipterist, Nelson Papavero. This book is available at: <http://www.editoraroca.com.br/biogeografia-da-america-sul-padroes-process-291110.aspx>.

TRAVEL NEWS AND TIPS

Rediscovery of *Mormotomyia hirsuta*, the “Terrible, Hairy Fly”

Robert Copeland¹, Ashley H. Kirk-Spriggs²

¹ International Centre of Insect Physiology and Ecology, P.O. Box 30772, Nairobi 00100, Kenya; rcopeland@icipe.org

² Head of Entomology, National Museum, P.O. Box 266, Bloemfontein, 9300 South Africa; ashley.kirk-spriggs@nasmus.co.za

Mormotomyia hirsuta, the “Terrible, Hairy Fly” was described by Major E.E. Austen from two specimens collected by H.B. Sharpe in 1933 from a large, split, cave-like boulder at Ukasi Hill in eastern Kenya. At the time, Sharpe was the District Commissioner of Garissa District in the expansive, dry eastern region of the country. Like many of his colleagues, he was also a naturalist. Since then, the species has been collected only once; in 1948 by the famous Kenyan naturalists V.G.L. van Someren and his son G.R. Cunningham-van Someren. The latter collectors are responsible for the substantial number of specimens available in international museums. Besides its rather bizarre appearance (it has non-functional, strap-like wings, eyes greatly reduced in size, long, spider-like legs and a dense covering of yellowish hairs, more pronounced in the males), the fly is of great importance as its phylogenetic position within the higher Diptera remains a mystery. The old material collected in 1948 does not have DNA of high-enough quality to use in the molecular methods required to answer this question; thus, the interest in re-collecting this species. The van Someren collection was made during or just after heavy rains that washed bat guano, including viable fly eggs, out of *Mormotomyia*'s cave-like home, where larvae develop on the guano. Some years ago, after making inquiries about the location of the site, we were fortunate to contact Quentin Luke, the noted Kenyan botanist, who not only had heard of the site, but also provided us with GPS co-ordinates for it.

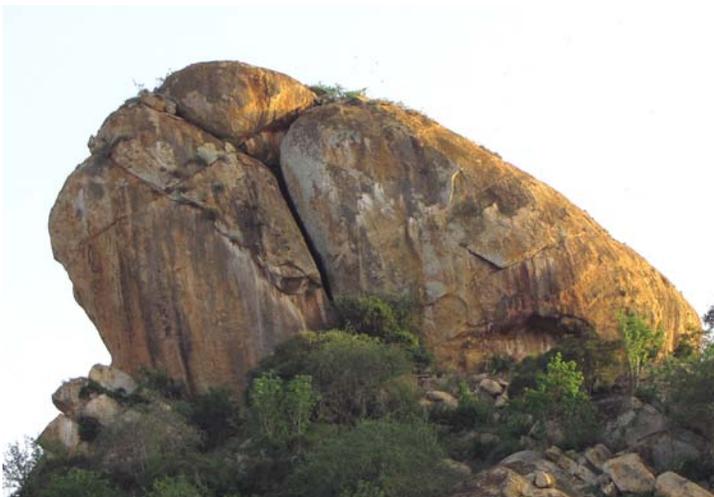


Ukasi Hill, with the cleft rock in the upper right.

At the end of November 2010 we led a small expedition to Ukasi Hill in eastern Kenya. Copeland had previously looked for the fly at Ukasi in July 2008 with Matt Buffington and Shelah Morita of the US

National Museum of Natural History. They had no luck at that time, probably because their visit came after the rainy season had ended, but on this later expedition flies were found in one of the places they had searched during the previous trip.

Briefly, we climbed up to the summit of the hill where there sits a very large *kopje* (boulder), perhaps 20–25 m in height. This boulder is cleft straight through from top to bottom, north to south, with a narrower fissure on the north side. At the time of our visit the Sun was far to the south, so that the site where we found the flies at the base of the northern fissure was continuously in the shade, probably the second-most important factor in making the microhabitat so favorable (the first being the presence of substantial amounts of bat guano). Inside the cleft, which is cave-like and where the bats roost, guano accumulates on the floor of the cave, perhaps also on rock



Cleft rock on Ukasi Hill - the home of *Mormotomyia hirsuta*

shelves, arranged like a “stairway”, which have fallen from above, wedged inside the cave. Heavy rains about two weeks before our visit had washed the topmost layers of guano right out the fissure and into the open at the base of the large rock. For the first 2–3 m outside the cave the ground is nearly flat, so much of the guano is not washed down the hill, but remains at the base of the rock. There, on the day we arrived we found the first specimens in the late afternoon. Actually it was blazing hot and we had all stopped in a lovely shaded area on the eastern side of the hill to enjoy the cool air. From there we continued around to the north side of the rock, where we saw a few large, hairy arthropods walking on guano and the outer wall of the rock. At first we didn’t want to be disappointed and refused to conclude immediately that they really were *Mormotomyia*. When they move they look like they could be small Sun spiders (solfugids). However, a quick count of legs dispelled any doubts and we were immediately overtaken by what can only be described as a euphoric moment. Soon, all of us (including Bruno Leru, his technician Leonard Ngala Mmasava, his student Christophe Plantamp [the last three all from ICIPE], Juliet Muriuki, and 4 water carriers) were rooting around in the guano. Many adults of both sexes were running over the guano and some on the rock face. Larvae and puparia were also found in abundance.

We had hired the four porters to carry 20 L water containers up the hill, anticipating the need to wash out the flies if our visit wasn’t favored with an afternoon torrent. In the event, it wasn’t, but we didn’t need the water after all. The guano itself was somewhat dry, but not desiccated, and in places occurred in thick layers, conditions obviously favorable to larval development. We had to scamper down because the Sun was setting, planning to climb again the following day. Juliet arranged for the purchase of two chickens that were butchered and cooked up by her. A local person prepared *ugali* (maize meal) for us and we had a nice celebratory meal. The next day we arrived at the site at around 10 am. The day was overcast until about 11 am. On arrival we found hundreds of adults in the same place. Many of the adults were climbing the rock face, apparently heading off to the mother load of guano in the cave. Most of these were teneral and had clearly just emerged from the accumulated guano. Later that day, Ash went round to the other side of the rock where the cleft has a wider opening and found a few adults

there. Being on the sunny side of the rock at this time of the year and not having a substantial flat area where washed out guano could accumulate, this spot appeared much less favorable for the flies. Perhaps better in the long rains (May) when the Sun would be on the northern side and this second spot would be in the shade.

In short, there was plenty of material to save specimens in 95% ethanol for the molecular taxonomists to sort out where this species (and family) fits in the Diptera Tree of Life and how much genetic variation there is in the Ukasi population, and for Kirk-Spriggs to undertake scanning electron microscopy on the puparia and larval material. Another plus was to photograph living examples of both sexes for use in the chapter on Mormotomyiidae for the forthcoming *Manual of Afrotropical Diptera*, as the species had never before been photographed in life.



Mormotomyia hirsuta, male (left) and female (right)

Plans now are to develop a grant to examine the many other similar looking rocky outcrops of small hills in Kitui and Mwingi Districts to determine just how specific the type locality is for the distribution of *Mormotomyia hirsuta*, whether there are other sites, perhaps with their own *Mormotomyia* species, to characterize the larval microhabitat, and to determine the Chiropteran species associated with the fly. Plans are also afoot to gazette the site as a protected area and to encourage ecotourism involving the local Ukasi population.

The discovery of *Mormotomyia hirsuta* received an enormous amount of global media coverage, especially after *Reuters* got hold of the story, which created something of a media frenzy and the rediscovery has done much to put dipterology into the public eye. It can't be very often that the humble fly finds a place in the pages of the *Washington Post* for example!

Four dipterists into the Amazon: a report

Danilo Cordeiro¹, Diana Grisales¹, Kirstern Lica Follmann Haseyama¹,
Mário Luis Pessoa Guedes²

Programa de Pós Graduação em Entomologia (¹Laboratório de Biogeografia e Biodiversidade de Díptera; ²Laboratório de Entomologia Médica e Veterinária)
Universidade Federal do Paraná, Curitiba, Paraná, Brazil; d.pacheco.c@gmail.com

In mid September last year, we took off from Curitiba, located in the South of Brazil, and traveled 2,720 km in direction to Manaus, Amazonas State, Brazil. Our goal was to revise the entomological collection (Culicidae, Fanniidae, Muscidae and Psychodidae) of the “Instituto Nacional de Pesquisas Amazônicas – INPA” and also to perform fieldwork research and obviously, explore a little of this interesting biome and its regional culture, which is much different from the rest of Brazil.

This trip was made possible thanks to the “Programa Nacional de Cooperação Acadêmica – PROCAD”. Since 2005, PROCAD is a program that has built a network for scientific internships throughout Brazil, along with the **fundings branch** “Coordenação de Aperfeiçoamento de Pessoal de Nível Superior – CAPES”. The program aims to support projects and researches that utilize human resources and the available infrastructure of various national institutions of higher education (<http://www.capes.gov.br/bolsas/programas-especiais/procad>).

The samples we collected were taken from four different places in the Amazonas State, using traps like: Malaise, Van Someren-Rydon with decomposed organic material, Shannon and CDC; and also through active collecting. Our first two excursions were to areas of biological conservation of INPA, both having excellent accommodations and good administrative assistance. For our other two excursions, we went to places without any specific infrastructure.

Our first outing to the field, also our first contact with the Amazon forest, was on the 16 September, at the “Reserva Florestal Adolpho Ducke – RFAD” (02°57’06,5” S - 59°57’30,9” W) (Fig.1). This area covers 100 km² of humid tropical forest at the south of Manaus and is the development site of the project Permanent Plots

(<http://ppbio.inpa.gov.br/Port/inventarios/ducke/>). The technician there, Francisco Felipe Xavier Filho, showed us the main hike which is widely open, easy to access and well-known. He also gave us a few tips about what we could potentially find on our path in the forest, such as the bullet ant, *Paraponera clavata* (Fabricius, 1775), the white-lipped peccary, *Tayassu pecari* Link, 1795, the jaguar, *Panthera onca* (Linnaeus, 1758) and the cougar *Puma concolor* (Linnaeus, 1771), amongst others. It’s worth mentioning as well, that for four students who had just arrived in one of the largest forests of the world, stories and warnings did not go unsaid. In regards to the famous jaguars of the area, we only noticed footprints... and until this day, we are uncertain if that would be considered luck or misfortune!



Figure 1. Six meter long Malaise trap in “Reserva Florestal Adolpho Ducke”.

The climate conditions we faced on our trip to the Amazon region was of intense drought, comparable to the 2005 drought (Lewis *et al.* 2011), which was considered to be one of the worst of the century. Throughout the day, the sun beat down on our accommodations, cooking and preparing it slowly for one of the hottest nights of our lives, further amplified by the thick wall of mosquito nets we regrettably opted to use (despite the locals' advice that it would be unnecessary for that the air was too dry for mosquitoes).

The majority of this region consists of tall and extensive forest with abundant water resources. The rainfall pattern alternates between dry and heavy rain seasons. Intense droughts naturally occur periodically but the rising frequency of this phenomenon is alarming. During these periods the forest stops acting as a carbon deposit and instead, becomes a carbon dioxide emitter (Lewis *et al.* 2011). We witnessed such an occurrence when we went to visit a popular freshwater beach in Manaus, called "Praia da Lua". To access the boat that brought us there, we had to walk a few dozen meters on the stream bed, passing an array of



Figure 2. View of Stream bed of Negro river

stranded boats still stuck in the sand banks (Fig. 2). The tributary River, that flows down on the right side and then into the Amazonas River, reached in 2010 its lowest level, 13,63 m. In comparison, the highest registered level it has already attained was at 29,77 m in 2009, the average being 23,37 m (<http://www.cprm.gov.br/publique/cgi/cgilua.exe/sys/start.htm?infoid=213&sid=34>).

We traveled back to Manaus on the 20th and left again on the 22nd, making our way to the second sampling site; "Reserva Biológica de Cuieiras-ZF2" (02°35'36,2" S -60°12'42,1" W), located at about



Figure 3. View of Amazon forest from the top of the observation tower, in "Reserva Biológica de Cuieiras-ZF2"

60 km northwest of Manaus. This conservation site is a study location of the Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA) that is devoted to the collection of data on the mechanisms of interaction between the forest and the atmosphere, as well as focuses on the measurement of the carbon emissions of the Amazonia,

(<http://lba.inpa.gov.br/lba/>). These accommodations, in the middle of the forest, were secure and comfortable (it was much more pleasant at night - in the lighter temperatures). The trek we did there was through closed forest, yet the sampling ensued the same model as the previous. We walked through the many trails and

climbed-up to an observation tower (Fig. 3). At this conservation site we sampled a few more interesting specimens, like a Psychodidae more than 5 mm long, found walking on the leaves at 11 a.m., as well as the very elegant *Sabethes* mosquitoes.



Figure 4. Cruz family's house: our accommodation site at municipality of Presidente Figueiredo

For our third sample, we went to the municipality of Presidente Figueiredo, approximately 107 km north of Manaus. It is an immense area that covers circa to 270,000 km² and is recognized for its gorgeous waterfalls and natural baths. We were warmly welcomed and hosted by Valdir Bernardo Cruz, by his sister Maria Augusta and his niece, Fátima (Fig. 4).

The trails were quite difficult for those of us new to the area, but the sites, mainly along the waterfalls, are fascinating for sampling. We had a full day of walking around in the forest, installing traps,

sampling whatever type of Diptera venturing out on such a hot and dry day, all the while listening to the stories of Mr. Valdir and admiring the intimacy he shares with the forest. This was one of the greatest moments of the trip. At night, with the light trap set up in the in front of the house, we tried hard to pay more attention to the insects flying to the cloth rather than to the forest stories that were being told; a task that proved harder than it seemed.

The municipality of Itapiranga (an indigenous term that means *red rock*) (02°43'28,7'' S - 58°08'03,4'' W) was the last place we went to, at 356 km east of Manaus. There, we joined a group collecting samples for the Laboratory of Diptera, under the supervision of Dr. José Albertino Rafael of the INPA. Their project used a methodology of light traps (white cloth) with one suspended at canopy level and another at ground level, seeking to stratify the insect fauna that occurs in this gradient (Fig. 5). This might have been the sample gathering that tired us the most because we had to wake up at intervals of three hours throughout the night to take samples of the insects caught in the traps. Between intervals, we tried to catch up on sleep in the hammocks that were hung in this noisy forest, and at the break of dawn we made our way back to the hotel in the sleepy town of Itapiranga. We slept for a few hours before going through our samples from the night before, selecting a few insects and preparing material for the next night.

Due to the extremely dry temperatures, the insect samples we took were not as numerous as usual for the Amazon region, yet very interesting material was collected. In Culicidae, for example, we collected approximately 200 adults, comprising mainly of the genera *Sabethes*, *Haemagogus*, *Anopheles*, *Aedes*, *Toxorhynchites*, *Culex*, *Wyeomyia*, *Mansonia* and *Coquillettidia*. Within the Muscidae that was collected, over 200 specimens were identified and already some genera recognized: *Cyrtoneuropsis*, *Neivamyia*, *Neomyia*, *Limnophora* and *Neomuscina*. The Fanniidae collection was not as we expected, with few individuals of the *Fannia* genera and mostly females, and the amount of Psychodidae specimens in the CDC-trap was also very low, compared to what is usually found in Amazon. These

specimens, along with the vast material of the Entomological Collection of INPA that has been lent to us will be used for our doctoral theses.

We commend this exchange program for its strong contribution in providing academic, scientific and personal development to the benefit of the students that can then help to create a new critical view of scientific reality in which we all operate. Through the promoted integration of the students with the researchers, the program enables an exchange of information and knowledge.

We must first thank PROCAD and the teachers directly involved: Gabriel Melo, José Albertino Rafael, Rosaly Ale-Rocha, and the many others who made this trip possible, like Edgar Alvin, Raimundo Nonato Costa, Rodrigo Vieira, Cinthia Chagas Lisiane Wendt, Veracilda Alves, Francisco Xavier Filho (Chiquinho), Mr. Valdir, Mrs. Fatima and Maria Augusta, also the curator of the Entomological Collection of INPA, Augusto Henriques Loureiro. It is important to add that much of the material from the collections of the INPA that was made available for screening and loan has without a doubt greatly increased the success of our exchange, as well as the results of our doctorate projects.



Figure 5. Suspended light trap during field work in Itapiranga

Reference

Lewis, S.L.; Brando, P.M.; Phillips, O.L.; van der Heijden, G.M.F. & Nepstad, D. (2011): The 2010 Amazon drought. *Science* 331: 554.

HISTORICAL DIPTEROLOGY

Francis Walker: taxonomic mercenary or taxonomic narcissist?

Neal L. Evenhuis

J. Linsley Gressitt Center for Research in Entomology, Bishop Museum, 1525 Bernice Street, Honolulu, Hawaii 96817-2704, USA; email: NealE@bishopmuseum.org

In researching material for a biography of Francis Walker, I have come across some interesting items that I thought I might share here. Walker is well-known in entomological circles as having possibly caused more grief than good with his often detailed descriptions that some have ironically labeled as simply “useless”. [Walker produced over 23,000 of those “useless” descriptions for new species he proposed.] An anonymous obituary in the *Entomologist’s Monthly Magazine* printed shortly after Walker’s death in October 1874 said outwardly what many at the time felt inwardly:

“More than twenty years too late for his reputation, and after having done an amount of injury to entomology almost inconceivable in its immensity, Francis Walker has passed from among us.” (Anonymous, 1874: 140).

Not speaking ill of the dead seems to have not been a major concern of the writer of this obituary, and it was antipodal to the norm at that time —having been printed in an era where politeness and etiquette were first and foremost on the minds of the social and scientific elite. After all, it was Queen Victoria of that period in British history who decided forks go on the left and knives go on the right; and that all “refined” persons should eat with their left hand (she was left-handed). And when someone wanted to visit another, they sent calling cards first to announce their intended arrival. Nowadays, if you’re lucky, you might get a text message after your visitor has already arrived at the door. So, the incongruence of that eulogy to that extremely polite period in time got me to wondering just who was this awful, awful man who was so hated by others?

Walker did not leave an autobiography or diary or any biographical notes so piecing together his life would have to be done from his published writings, the writings of others, and the letters that can be found in various archives. Despite this paucity of background material, I was able to find enough in my research to paint a more accurate picture of the man who was vilified by some for his poor taxonomy, yet praised by others for his extremely generous and kind nature.



Francis Walker was born on 31 October 1809 at Arno’s Grove, Southgate, Middlesex, a hundred-acre country estate of the Walker family approximately 8 km north of London in the woods and pastures of the Enfield area. He was the last-born of his siblings, which included 6 brothers and 3 sisters. His father John Walker was a member of the Royal Society, the Royal Horticultural Society, the Royal Society

of Arts, and the Linnean Society, the last of which he was at one time was vice president; and his mother was a patron (subscriber) of many natural history works including John Curtis's *British entomology*.

The Walkers were a well-to-do family with Quaker backgrounds. Francis Walker's grandfather Isaac Walker (1725–1804) was a wealthy wholesale exporter of foreign linens (especially German) printed in England and a member of the Society of Friends at Winchmore Hill in Enfield. Francis Walker's father John Walker, who had lived in Upper Gower Street in London after his marriage to Sarah Chorley in 1793, succeeded to the ownership of Arno's Grove in 1804 upon the death of his father Isaac. While at Arno's Grove, John also kept a residence in London at 49 Bedford Square, the latter of which was frequently used by Francis from the 1830s to 1860s when he was in London working on the insects at the nearby British Museum or those belonging to William Wilson Saunders. The Bedford Square residence was also, for many years, the home of the collections belonging to the Entomological Club, of which Walker was curator (South 1892, 1899).

Having been firmly bitten by the entomological "bug" on an extended family trip to Switzerland from 1816–1820, young Francis soon became interested in collecting and (according to specimens recorded in Curtis's *British Entomology*), with his brothers Henry and Edwin, were making collections at the Southgate estate as early as 1823. Eventually, Francis started to specialize in parasitic Hymenoptera and in 1829 was a subscriber to Gravenhorst's *Ichneumonologia Europaea*.

Walker's first interest was parasitic Hymenoptera, but he also had an initial interest in Diptera, and these two became the primary subjects of his studies in the 1830s and 1840s. In 1839 he published 7 papers, all on Hymenoptera, including the finale to his *Monographia Chalciditum* series by completing a two-volume monograph of more than 400 pages devoted to a synopsis of the group that started his career in 1832. Some 603 new species were described by Walker on those pages. This incredible industriousness of descriptions was to be a portent of things to come.

After a brief break in activities to get married in the summer of 1840 and tend to family matters for a few years, Walker was back at his normal publishing volume again in 1844. Then, a few years later, in a letter to J.C. Dale in 1847, he confides:

"I find that my income and my young family will not allow me to work at natural history for nothing, and I must endeavour to turn my publications to account, & make a profit by describing insects with their relation to plants, & also find a situation such as Curator to some Museum. If you should hear of any vacancy in any such institution, I shall be much obliged if you if you will inform me of it." (*F. Walker letter to J.C. Dale, 10 March 1847, Oxford Museum Archives, Dale MS 9, Entomological letter Book, Vol. 2, L–Z*)

The letter is odd mainly from the standpoint that Walker was in the least destitute (the result from Walker's probate showed his possessions to be valued at "no less than" £45,000 (which is equal to over \$3 million in today's U.S. currency). The fact remains, however, that Walker was indeed seeking employment, as a letter in December 1849 to J.C. Dale proves. A few days before Walker wrote the letter, lepidopterist Edward Doubleday died from a spinal tumor leaving that position vacant at the British Museum.

"Having been informed that I should not delay if I wish to renew my application for the office now vacant in the Brit. Mus.^m I shall be much obliged to you for your testimonial in case you think me a fit person for that situation." (*F. Walker letter to J.C. Dale, 25 December 1849, Oxford museum Archives, Dale MS 9, Entomological letter Book Vol. 2, L–Z*).

Walker dutifully applied and waited a couple of months for word. However, he did not get the position, it having been filled instead by Frederick Smith, who ended up working primarily on Hymenoptera.

But it was around that same time that Walker was to begin a life-long task that would forever link his name with the ignominious: the cataloging of the insect collections of the British Museum. Spanning the years 1846–1873, Walker’s catalogues of virtually every order (except the Coleoptera and much of the Hymenoptera) comprise 67 tiny duodecimo-sized, blue-wrapped, volumes of almost 17,000 pages containing listings, descriptions, and diagnoses of more than 46,000 species, of which over 10,000 species were described as new. Walker was not an employee of the Museum as some of indicated (the Trustees made it clear they did not want to employ any more persons to assist Keeper John E. Gray); he was a contract employee.

A rumor was started decades ago that an arrangement of payment was made with Walker to be 1 shilling for each new species and 1£ for each new genus he described. This method of payment was mentioned by Graham (1979) and even the usually reliable historian Stearn (1998). It seems to have originated from a slightly different statement by John Bernard Smith, which was mentioned by Walker’s fervent critic, A.R. Grote in 1895:

“... according to Smith, Walker received a shilling a piece for his descriptions, the Latin thrown in, but the synonyms paid for in specie as good as species.” (Grote, 1895: 54; footnote).

This rumor of Walker’s payment scheme is false, but has unfortunately persisted for decades and has been the subject of many misinformed unpublished anecdotes regarding Walker, implying he was after money at any cost. The evidence for this assumption included his describing many specimens as new when they were later found to be merely variants of one species, sometimes described by him; sometimes described previously by someone else.

Baker (1996: 396) gave a detailed account of the actual payment arrangement with Walker based on the Museum Trustees’ *Minute Books* and the *Zoological Department Bill Book*. While Walker was working on the second part of the Hymenoptera catalogue (on “Chalcidites”) Gray, having noticed Walker’s industriousness, approached him to see if he would be interested in producing catalogues of the Diptera collections. Walker responded that he could and thought it would take him approximately 18 months. In June 1847, Gray gave a report to the Trustees that Walker was interested in the work and requested that he be paid at the same rate as the Assistants (10 shillings per day). The Trustees explained that they did not wish to employ any further staff and requested of Gray whether Walker would instead take a fixed sum as payment for producing the Diptera catalogues. Gray later confirmed to the Trustees that after conferring with Walker, he agreed he could produce the work for a sum of £150.

While waiting for word from the Trustees on the agreement to do just the Diptera, Walker had expressed hope early on that he would be doing the remaining cataloguing as well:

“If my engagement with the Mus.^m should continue I shall hope that [I] see the time when catalogues will be published of all the insects therein.” (*F. Walker letter to J.C. Dale, 27 December 1847, Oxford Museum Archives, Dale MS 9, Entomological letter Book, Vol. 2, L–Z*).

The Trustees approved payment at the meeting of 10 June 1848. The *Bill Book* recorded that at some point between 1849 and 1851 Walker was paid a sum of £150 for the first four parts of the Diptera catalogue. The same rate (£37-10-0 per published part) was continued for succeeding catalogues. Walker worked on with a slight increase in later years to £40 per part.

Walker was indeed, as some said of him, a describing machine. Evenhuis (2008) implied that Walker might have been afflicted with the “mihi-itch”, although no one had ever given him that label. The volume of his work is incredible and the amount of research that went into synthesizing the literature associated with every described species in the collections and putting all that knowledge into one single work is an incredible feat in and of itself. His reviewers recognized this and lauded him for those efforts. His life-long friend Edward Newman, in his presidential address to the Entomological Society of London in 1856 gave the following accolades early on in Walker’s cataloguing efforts:

“Mr. Walker, with a laborious assiduity which I have never known surpassed, has produced four Parts of the Museum Catalogue.” (Newman, 1856: 61)

But whatever the benefits of his industriousness in producing these catalogues, he was lambasted by many colleagues for the carelessness and multitude of descriptions of new taxa. Shortly after the last part of the Lepidoptera catalogues appeared, Achille Guenée (1868) wrote the following footnote to a paper on New Zealand Lepidoptera:

“The British Museum Catalogues indicate many species proper to New Zealand... I have not been able to recognize many of them from the too often little precise descriptions by Mr. Walker.” (Guenée, 1868: 1).

Günther’s history of the British Museum collections summarized the problems of Walker’s taxonomy that led to his being vilified by colleagues worldwide:

“Walker’s work has been severely criticised by many competent specialists, and it must be admitted that some of it is not creditable to the institution. He worked in a purely mechanical fashion, without grasp of the subject or principles of classification; he noted the most superficial characters, using some of them for specific, and the more conspicuous of generic distinctions; the obvious consequence of this method of work was that he not rarely described the same insect under two or more different names.” (Günther, 1916: 8).

In reviewing some muscid types of Walker, Austen (1907) cut to the quick:

“As proving that Walker described the *specimen*, and not the species, the characters of which he was generally incapable of grasping, it may be mentioned that he is responsible for no fewer than eleven synonyms of the well-known *Eutachina rustica*, Mg., the description in every case being based on a single specimen.” (Austen, 1907: 326).

Cockerell (1941) gave a rare defense of Walker in balancing whatever shortcomings there might have been in his taxonomy with the conditions under which he was working as well as the state of taxonomy at that time:

“It will be readily understood that this work had to be done in a more or less superficial manner to cover so much ground, and later generations have condemned Walker because they could not make out his species from the brief descriptions ... Yet it is only fair to recognize that nearly a hundred years ago taxonomic methods were poorly developed in comparison with those of to-day, and even in quite modern times very many species (especially Lepidoptera) have been described in a manner which would hardly permit their recognition without specimens or illustrations.” (Cockerell, 1941: 92).

At the height of complaints of Walker’s taxonomy and nomenclature, the editor of the journal *Natural Science* in 1894 coined a term for describing numerous names for one species as a “Walkerism” (Anonymous, 1894). He referred the activity to a short note by Butler (1894) that recorded six different names that Walker had described for the same species of moth (four of which were named in the same part). Butler simply summarized the situation by saying “This kind of work needs no comment—it sufficiently condemns itself.” (Butler, 1894: 392).

The pitiful thing about his alleged taxonomic fallibility was that Walker himself gave evidence before he began the cataloguing efforts that he was not up to the task. Graham (1979) quoted a portion of a letter written from Walker to A.H. Haliday on 13 January 1837:

“It has often occurred to me that I am unequal to the task of describing these minute insects (Chalcidites & Oxyuri) with sufficient clearness, but from vanity & the pleasure of examining them I have been unable to desist.” (Graham, 1979: 7)

Unabashedly admitting that vanity and personal pleasure were the primary reasons for describing as new these minute and otherwise difficult to distinguish specimens is an illuminating one that gives a glimpse into the personality of this man. Perhaps his social station gave him no reason to think that such an excuse was not problematic?

Additional deprecating evidence and an example of his style of apparently quickly executed descriptions is found in a letter of 10 December 1843 from Walker to Charles Darwin concerning Walker’s examination of the specimens of Chalcidoidea collected by Darwin:

“I am glad that your Chalcidites are safely deposited in the British Museum, & I hope to soon to be also examine their structure more closely than I did when I described them.” (Burkhardt & Smith, 1987).

This implies that the initial descriptions of some of these parasitic Hymenoptera published by Walker were superficial and done in haste. The possible reasons for this are many but might have been either to meet a deadline of a loan of specimens or that he had much more “on his plate” of projects to get done and still maintain his family responsibilities. An initial cursory diagnosis and publication, then a more detailed analysis upon subsequent review might well have been Walker’s actual descriptive methodology in the cataloguing efforts for some groups as well as is evidenced by the number of corrections and synonymizations (including many for his own species) that Walker made in the supplements, additions, and errata to his catalogues.

Another scenario that led to the publication of more than one name for the same specimen was hypothesized by his room-mate at the British Museum in the late 1860s and early 1870s, lepidopterist, A.G. Butler:

“Mr. Walker comes in one day and describes a new species; but, owing to the lateness of the hour, or some other cause, omits to label it as a type; the next time he comes to the collection he continues his MS., and, finding this species without a label, forthwith redescribes it. This will, I think account for the several instances which I have noticed of evidently the same species described twice over in consecutive pages of Walker’s catalogues.” (Butler, 1876: 402).

This shifting of species was corroborated by Grote (1890) who, in a face-face meeting with Walker mentioned to him that he may have created a number of names for the same species:

“Between my first visit, during Walker’s life time, and my last, fifteen years later, there seems to have been, in some instances, a shifting of specimens under one label. And since I drew Mr. Walker’s personal attention to the fact, that certain of his specific categories contained examples belonging to different species, which he then and there, standing over the drawers admitted as probably true, it may well be, that, after my visit, these changes were made since additions were made also.” (Grote, 1890: 17).

In a few instances Walker would correct his mistakes in the addenda to his catalogues. Most of these corrections were straightforward, but in some cases the correction does not give much helpful associated information. Take the following example of one of his corrections:

“Page 329. *Tortrix conclusana*. This name must be annulled, as the species is described elsewhere, and is not one of the Tortricidae.” (Walker, 1864: 985).

Unfortunately in this case, Walker gives no clue as to what species this name is synonymous with or to what family it belongs if not the Tortricidae.

As pointed out by Gunther (1975), many unpublished complaints were made of Gray, who had contracted Walker for the job. However, the complaints did not affect Gray whatsoever and he continued to use Walker not only for the rest of the Lepidoptera parts, but subsequent orders of insects in the collection as well. According to Günther (1916) Gray was more interested in the productive capacity of Walker as opposed to whatever taxonomic problems might have resided in his work.

“Although Dr. Gray had become aware of the imperfections of Walker’s work, he continued to employ him during the whole time of his Keepership, as the mass of materials were reduced at least to some sort of order, Walker being an indefatigable worker, who, in fact, could not be replaced.” (Günther, 1916: 8).

Walker was indeed the most productive of all the specialists contracted by Gray and, especially when most had left their contractual obligations by 1860, Walker continued to publish part after part thereby improving Gray’s goal of increasingly enhancing the collection through exchanges and donations.

After initially hoping to get permission from Museum authorities to continue cataloguing efforts with various proposals of additional parts or supplements to previous works and ultimately not getting this approval, the tone of Walker’s letters to Frederic McCoy changed. Walker seemed resigned to the fact that he would not be doing cataloguing any longer and said to his Australian correspondent in one letter:

“I am just about to print the 8th & last part of my Cat.^{sup} of Hemiptera & hope to have more leisure for other insects when this task is finished.” (*F. Walker letter to F. McCoy, 2 March 1873, Museum of Victoria*).

The criticism of his catalogues may have been the reason Museum authorities stopped the publications by Walker, but there is no evidence of that. In the same letter above, Walker indicates some trace of desperation to McCoy, that he is looking for other work, even if it is outside of entomology.

“I have enquired about comparing the Crustacea & Radiata of Australia with the B.M., & am told that a new position to that effect must be made to Dr. Gray (Zool. Departm.^l B.M.)— & that it may possibly be agreed to if the B.M. collection of those classes be thereby increased.” (*F. Walker letter to F. McCoy, 2 March 1873, Museum of Victoria*).

However, a position for this work did not become open at the British Museum and Walker never worked on these groups of animals.

Walker, in the last few months of his life, indicated to his Australian correspondent, Frederick McCoy, that he was going to be using “*The Entomologist*”, edited by his long-time friends Edward Newman, as his venue for publishing:

“My publications are mostly in Newman’s periodical, *The Entomologist* in which there are figures of many genera of Hymenopt.” (*F. Walker letter to F. McCoy, 20 September 1873, Museum of Victoria*).

An anonymous obituary (1874) mentions Walker’s being restricted in where he could publish:

“To their honor, be it said, the Linnean and Entomological Societies long ago declined to publish some of his papers, so that the evil was somewhat mitigated, and of late his publications were few outside the Catalogues.” (Anonymous, 1874: 141).

His last papers show that he either published in only those few journals where the editor was a personal friend (such as Newman) or he published booklets that were printed by friends (such as Newman) or clients and friendly colleagues (such as Janson). Six parts of *Notes on Chalcidiae* came out through the auspices of coleopterist/bookseller E. W. Janson, and it these could well have been one of the groups that Walker had hoped he could work on as part of a resurrected or supplemental set of Hymenoptera parts for the Museum catalogue series.

At some point in his later years, Walker's eyesight began to fail (Günther, 1916). It is not known when this began but examination of his correspondence in this study showed that the appearance of his handwriting changed somewhat in 1873. Ironically, poor eyesight apparently did not stop him from working on the tiny parasitic *Chalcidiae* (which were and hard to distinguish even with a hand lens) and were the subject of one of his last taxonomic papers (Walker, 1875), published posthumously.

Newman (1874b) mentioned that Walker was traveling in Ireland in 1874 when he suddenly fell ill. He returned home to Elm Hall in Wanstead where he passed away on 5 October 1874. The first news of this was by Newman (1874a) who gave a short notice (in his journal *The Entomologist*) at the end of an installment of a translation of oak-galls to which Walker would usually provide annotation to the species listed.

“I was expecting Mr. Walker's notes on the parasites of *Cynips Lignicola*, when the mournful intelligence reached me that his labours were ended, and his observations had ceased forever. I have lost the most able of coadjutors.” (Newman, 1874a: 251).

At the time of his death, there were still a number of papers in the queue in various journals that appeared posthumously. His last paper came out in 1876.

The criticisms by contemporary colleagues of Walker's taxonomic ability notwithstanding, in some respects Walker was no worse than other entomologists of his time. Stone (1980) made a comparison of dipterists who worked on Nearctic species, and Walker's percent valid species for Nearctic Diptera was estimated at 64% (i.e., out of every 100 species described as new, 36 of them were found to be junior synonyms). This seems high for today's standards, but many other dipterists who have proposed names for Nearctic Diptera had similar or lower percentages including Harrison Gray Dyar (50%); Charles Henry Tyler Townsend (58%); Pierre-Justin-Marie Macquart (59%); Jacques-Marie-Frangille Bigot (64%); Paul Stein (65%); Camillo Rondani (66%); William George Dietz (66%); Friedrich Moritz Brauer (67%).

The vilification of Francis Walker by his colleagues needs some investigation. Why was he singled out when other contemporary workers with similar rates of synonymy were lauded for their efforts? It seems that the major sources of complaints, even if true, do not explain why he was vilified while others of his contemporary colleagues who were guilty of the same actions were not.

The reasons for him being singled out are further muddled when one notices that Walker was almost universally and genuinely held in high esteem for his kindness, generosity, and friendliness. Even the scathing anonymous obituary (1874) balances criticism of Walker's taxonomy with praise of his personal carriage:

“In his social relations he was amiability itself, and probably there are few men who have lived to the age of 65 (his age at the time of his death), and made so few enemies. Even those who felt most keenly the disrepute into which he brought the entomological section of our great Natural History Museum, will miss with regret his courteous salutation and simplicity of manner.” (Anonymous, 1874: 141).

A description of the going's on at a typical meeting of the Entomological Society typify how his colleagues viewed Walker personally:

“That is Mr. Francis Walker, a perfect ambulatory encyclopaedia of entomological knowledge; you will find him very agreeable, and always ready to impart information...” (Stainton, 1856: 106).

Without more personal accounts than what I have been able to find and relate here, it is indeed difficult to provide an accurate assessment of Walker, the man. His correspondence give evidence that he had an extreme obsession with describing and naming new species and was most generous in his help of others whenever they required identifications or descriptions of species in their collections. Whether his penchant for naming new species was vanity or simply a genuine love of the aesthetics of taxonomy and nomenclature will have to be left to future research.

Acknowledgments

Ken Walker, Museum of Victoria, is thanked for kindly providing copies of correspondence between Francis Walker and Frederick McCoy. Darren Mann, Oxford University Museum, is thanked for his generosity in providing copies of Walker correspondence in the Oxford University Museum archives.

References

- Anonymous (1874) Obituary. Francis Walker. *The Entomologist's Monthly Magazine*, 11, 140–141.
- Anonymous (1894) [An amusing case of Walkerism.] *Natural Science*, 5, 463.
- Austen, E.E. (1907) The synonymy and generic position of certain species of Muscidae (sens. lat.) in the collection of the British Museum, described by the late Francis Walker. *Annals and Magazine of Natural History*, (7) 19, 326–347.
- Baker, D.B. (1996) Two little-known nineteenth century collectors: Dr Thomas Dowler and John Keast Lord, Esq., F.Z.S. *Archives of Natural History*, 23, 385–398.
- Burkhardt, F. & Smith, S. (eds.) 1987. *The correspondence of Charles Darwin*. Volume 2, 1837–1843. Cambridge University Press, Cambridge, UK. 646 pp.
- Butler, A.G. (1876) Notes on Lepidoptera of the family Zygaenidae, with descriptions of new genera and species. *Journal of the Linnean Society (Zoology)*, 12, 342–407, .
- Butler, A.G. (1894) Note on a species of *Eubolina* six times described by Walker. *Annals and Magazine of Natural History*, (6) 14, 392.
- Cockerell, T.D.A. (1941) Scientific Books. Recent publications of the British Museum (Natural History). *Science*, 94, 91–92.
- Evenhuis, N.L. (2008) The “mihi itch”—a brief history. *Zootaxa*, 1890, 59–68.
- Graham, M.W.R. de V. (1979) “Ambulator”: Francis Walker, English entomologist (1809–1874). *Entomologist's Gazette*, 30, 7–20.
- Grote, A.R. (1890) *North American Lepidoptera. Revised check list of the North American Noctuidae*. Part I. Thyatirinae — Noctuinae. Homeyer & Meyer, Bremen. [iv] + 52 pp.
- Grote, A.R. (1895) List of North American Eupterotidae, Ptilodontidae, Thyatiridae, Apatelidae and Agrotidae. *Abhandlungen des Naturwissenschaftlichen Vereins zu Bremen*, 14(1), 43–127.
- Guenée, A. (1868) New species, &c., of heterocerous Lepidoptera from Canterbury, New Zealand, collected by Mr. R.W. Fereday. *The Entomologist's Monthly Magazine*, 5, 1–6.
- Günther, A. (1916) *The history of the collections contained in the natural history departments of the British Museum*. Vol. II.—Appendix. General history of the Department of Zoology from 1856 to 1895. British Museum, London. ix + 109 pp.

- Gunther, A.E. (1975) *A century of zoology at the British Museum through the lives of two keepers 1815–1914*. Dawsons, London. 533 pp.
- Newman, E. (1856) The President's address. *Transactions of the Entomological Society of London*, 3, 48–71.
- Newman, E. (1874a) [Note on Walker's passing]. *The Entomologist*, 7, 251.
- Newman, E. (1874b) Death of Mr. Walker. *Entomologist*, 7, 260–264.
- South, R. (1892) The Entomological Club of London. *The Entomologist*, 25, 4–9.
- South, R. (1899) The Entomological Club. *The Entomologist*, 32, 160–164; 224–226.
- Stearn, W.T. (1998) *The Natural History Museum at South Kensington. A history of the museum 1753–1980*. The Natural History Museum, London. xxiii + 414 pp.
- Stone, A. (1980) History of Nearctic dipterology. *Flies of the Nearctic Region*, 1(1), 1–62.
- Stainton, H.T. (1856) The Entomological Society. *The Entomologist's Weekly Intelligencer*, 14, 105–106.
- Walker, F. (1864) *List of the specimens of lepidopterous insects in the collection of the British Museum*. Part XXX. Tineites. British Museum, London. Pp. 838–1096.
- Walker, F. (1875) Descriptions of new genera and species of parasites, belonging to the families Proctotrupidae and Chalcididae, which attack insects destructive to the fig in India. *The Entomologist*, 8, 15–18.

MEETING NEWS

Field Meeting of the North American Dipterists' Society

**7-10 June 2011
Mount Timpanogos, Utah**

Dr. C. Riley Nelson

Department of Biology, WIDB 401, Brigham Young University
Provo, Utah 84602 USA; 801-422-1345 (tel.), 801-422-0090 (fax), rileynelson@byu.edu

Just a reminder, the 2011 field meeting of the North American Dipterists' Society will be held 7-10 June 2011 on the eastern slopes of Mount Timpanogos in the Wasatch Mountains of scenic northern Utah. Our accommodations will be in the historic Timp Lodge of Brigham Young University. About 25 people have signed up to come and at least that number have indicated they need to hear about government funding, but are optimistic they will come. I haven't heard from a few of you one way or another. The weather is looking great for excellent collecting, plenty of water and snow melting on schedule. See the photograph of Mount



Timpanogos, 25 March 2011, from Brigham Young University, Provo Utah. Join us for a great time. See the full announcement and details in last Fall's Fly Times (Issue 45). See you soon!

Report on the Informal Conference of the North American Dipterists Society

**Entomological Society of America Annual Meeting
San Diego, California – 12-15 December, 2010**

Julia J. Mlynarek

Department of Biology, Carleton University,
Ottawa, Ontario, CANADA; jmlynare@connect.carleton.ca

The 2010 North American Dipterists' Society meeting was held during an evening of the Entomological Society of America annual meeting in San Diego. About twenty dipterists and Diptera enthusiasts attended. Terry Wheeler gave a stimulating presentation on the topic of the Chloropidae and their inordinate fondness for everything. This was followed by Keith Bayless' high quality presentation reporting the adventures and presentations of the 7th International Congress of

Dipterology held in Costa Rica. I would like to formally thank the speakers for their awesome presentations. We continued all Diptera related discussions, including reports on the Diptera Tree of Life and the 2011 North American Dipterists' Society field meeting to be held at Mount Timpanagos, Utah, at a more appropriate venue. Overall, this was a successful and entertaining meeting, following the great tradition of these gatherings!

8th International Congress of Dipterology
Potsdam, Germany
10-15 August, 2014

The Organizing Committee

The 8th International Congress of Dipterology will be held in Potsdam, Germany, on 10-15 August 2014. The Congress venue is the beautiful Congresshotel Potsdam (see their website at <http://www.kongresshotel-potsdam.com/en/home.html>), right by Templiner Lake, and about a 30-minute train-ride from Berlin. The hotel offers modern and spacious facilities, including a plenary lecture hall, smaller lecture and seminar rooms, exhibition spaces, two restaurants and a bar, as well as accommodation for all participants at special double- and single-room prices.

The Organizing Committee currently includes Netta Dorchin, Marion Kotrba, Frank Menzel and Joachim Ziegler. We have already secured generous support for the Congress from the Senckenberg Society for Natural History Research, and anticipate additional support from the German Research Foundation (DFG).

The social functions are now being planned and will include a welcome reception, Congress banquet, pre- and post-congress tours, and an accompanying persons program. Attractions close to the Congress venue are Potsdam's parks and palaces of Sanssouci (the largest World Heritage Site in Germany), the Dutch Quarter, the Russian village, and of course the vibrant city of Berlin. Congress participants will have the opportunity to visit the numerous important Diptera collections in Germany.

A possible venue for the congress banquet is the Museum of Natural History in Berlin, where we hope to host the fly exhibition "Mouches", on loan from the Museum of Natural History in Neuchâtel (<http://www.museum-neuchatel.ch/new/navigation.php?cat=5&subcat=25>).

We look forward to seeing you in Potsdam in 2014!

DIPTERA ARE AMAZING!

To continue this new feature, I was happy to receive a couple of photos of Nycteribiidae (the top two) from Gary Steck (Florida State Collection of Arthropods, Gainesville, Florida, USA) and a couple of Costa Rican Richardiidae (middle two) from Martin Hauser (CDFA). Not having received any other submissions, I had to delve into my own photos again (bottom two), but I am hoping some of you will be interested to participate by sending me your photos, just to display how cool flies are! And they are cool! Continuation of this feature depends upon whether you readers want to contribute – ideas include either pictures of a certain group, or pictures from a certain trip – as long as they are flies!



Basilia boardmanni Rozeboom



Cyclopodia horsfieldi Meijere



Beebeomyia sp. (Costa Rica)



Richardia sp. (Costa Rica)



Grallipeza sp. (Saint Lucia)



Anorostoma maculatum (CA - north coast)

BOOKS AND PUBLICATIONS

As another update from Zootaxa statistics, in the section “Most accessed papers” – found at <http://www.mapress.com/zootaxa/collections/mostaccess/index.html> – Diptera continues to be a major force. Besides October 2010 and April 2011, Diptera papers have been in the top 10 in terms of “hits” for each month since the last Fly Times. For every one besides February there were two Diptera papers in this top 10! It is also noteworthy that for December and January, the following Diptera paper claimed the top spot of most accessed paper (going to fourth for February), with nearly 12,000 hits in December!

Hippa, H., P. Vilkamaa & K. Heller. 2010. Review of the Holarctic *Corynoptera* Winnertz, 1867, s. str. (Diptera, Sciaridae). *Zootaxa* 2695: 1–197. [open acces at <http://mapress.com/zootaxa/2010/f/zt02695p197.pdf>]

The following papers round out the top 10's for these last months:

November

4th – Whitworth, T. 2010. Keys to the genera and species of blow flies (Diptera: Calliphoridae) of the West Indies and description of a new species of *Lucilia* Robineau-Desvoidy. *Zootaxa* 2663: 1–35. [open acces at <http://mapress.com/zootaxa/2010/f/zt02663p035.pdf>]

5th – O'Hara, J.E., Shima, H. and Zhang, C.-t. 2009. Annotated catalogue of the Tachinidae (Insecta: Diptera) of China. *Zootaxa* 2190: 1-236. [open acces at <http://www.mapress.com/zootaxa/2009/f/zt02190p236.pdf>]

7th – Evenhuis, N.L., J.E. O'Hara, T. Pape & A.C. Pont. 2010. Nomenclatural Studies Toward a World List of Diptera Genus-Group Names. Part I: André-Jean-Baptiste Robineau-Desvoidy. *Zootaxa* 2373: 1–265 [open acces at <http://www.mapress.com/zootaxa/2010/f/zt02373p265.pdf>].

December

1st – Hippa, H., P. Vilkamaa & K. Heller (2010)

9th – Takaoka, H. & S. Shrestha. 2010. New species of black flies (Diptera: Simuliidae) from Nepal. *Zootaxa* 2731: 1–62. [open acces at <http://mapress.com/zootaxa/2010/f/zt02731p062.pdf>]

January

1st – Hippa, H., P. Vilkamaa & K. Heller (2010)

7th – Norrbom, A.L. & C.A. Korytkowski. 2011. New species of and taxonomic notes on *Anastrepha* (Diptera: Tephritidae). *Zootaxa* 2740: 1–23. [open acces at <http://mapress.com/zootaxa/2011/f/zt02740p023.pdf>]

February

4th – Hippa, H., P. Vilkamaa & K. Heller (2010)

March

4th – O'Hara, J.E., Shima, H. and Zhang, C.-t. (2009)

10th – Schneider, M.A. 2010. A taxonomic revision of Australian Conopidae (Insecta: Diptera). *Zootaxa* 2581: 1–246. [open acces at <http://www.mapress.com/zootaxa/2010/f/zt02581p246.pdf>]

In terms of longer term statistics, in Zootaxa's list of their most highly-cited papers according to Science Citation Index Expanded – <http://www.mapress.com/zootaxa/collections/citation/index.html>, the two papers on Diptera reported in the last Fly Times remain in the top 10 list, again with Diptera being the only animal Order with two papers in the list! The two papers are certainly worth repeating!

Carvalho, C.J.B. de, M.S. Couri, A.C. Pont, D. Pamplona & S.M. Lopes. 2005. A Catalogue of the Muscidae of the Neotropical Region. *Zootaxa* 860: 1-282.

Sinclair, B.J., & J.M. Cumming. 2006. The morphology, higher-level phylogeny and classification of the Empidoidea (Diptera). *Zootaxa* 1180: 1-172. [open access at <http://www.mapress.com/zootaxa/2006f/zt01180p140.pdf> (part A) and <http://www.mapress.com/zootaxa/2006f/zt01180p172.pdf> (part B)]

Note from the editor: I usually accumulate the various citations to list here by scanning through the Zoological Record – since they are often 1 or 2 months behind, I surely missed many recent papers (especially March and April publications), but they will be included in the next Fly Times! Note, many of the papers in the list are from *Zootaxa* (these are up to date) – this is reflection of the fact that the majority of papers on Diptera seem to be published in *Zootaxa* – not due to my own biases! Also, by inclusion, I am not attesting to quality (of course I haven't read all of them)! In any case, I am bound to miss some of the things you might want to see, so by all means, please send me 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, I 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. For this time, with discussion of expanding the scope of Fly Times to the international community of dipterists, I have started including Old World papers, so you will see the list is considerably longer than usual (and took considerably longer for me to format!). Also, you authors out there - please don't be offended if I missed diacritics in your names! *Zootaxa* has them correctly, but Zoological Record removes them!

Adler, P.H., R.A. Cheke & R.J. Post. 2010. Evolution, epidemiology, and population genetics of black flies (Diptera: Simuliidae). *Infection Genetics and Evolution* 10(7): 846-865.

Almeida, J.C. & R. Ale-Rocha. 2011. Comparative morphology of the male terminalia of the subtribe Rhinotorina (Diptera, Heleomyzidae, Rhinotorini). *Zootaxa* 2736: 44–56.

Andersen, T., H.F. Mendes & L.C. Pinho. 2010. Four new species of *Saetherocladius* Andersen et Mendes from Mata Atlantica, Brazil (Diptera: Chironomidae: Orthoclaadiinae). *Zootaxa* 2608: 45-56.

Angulo-Valadez, C.E., P.J. Scholl, R. Cepeda-Palacios, P. Jacquet & P. Dorchies. 2010. Nasal bots. a fascinating world! *Veterinary Parasitology* 174(1-2): 19-25.

Ayabe, Y. 2010. Specific mining pattern as a result of selective feeding within a leaf by the dipteran leafminer *Ophiomyia maura* (Diptera: Agromyzidae). *Annals of the Entomological Society of America* 103(5): 806-812.

Barracough, D. & R. Slotow. 2010. The South African keystone pollinator *Moegistorhynchus longirostris* (Wiedemann, 1819) (Diptera: Nemestrinidae): notes on biology, biogeography and proboscis length variation. *African Invertebrates* 51(2): 397-403.

Bechev, D. & P. Chandler. 2011. Catalogue of the Bolitophilidae and Diadocidiidae of the World (Insecta: Diptera). *Zootaxa* 2741: 38–58

Belqat, B., P.H. Adler & R.W. Crosskey. 2011. Faunistic and bibliographical inventory of the blackflies (Diptera: Simuliidae) of Morocco. *Zootaxa* 2829: 46–58.

- Blacket, M.J. & M.B. Malipatil. 2010. Redescription of the Australian metallic-green tomato fly, *Lamprolonchaea brouniana* (Bezzi) (Diptera: Lonchaeidae), with notes on the Australian *Lamprolonchaea* fauna. *Zootaxa* 2670: 3 1–51.
- Blyth, J.E. & A.S. Gilburn. 2011. The function of female behaviours adopted during premating struggles in the seaweed fly, *Coelopa frigida*. *Animal Behaviour* 81(1): 77-82.
- Bravo, F., I. Souza, C. B. dos Santos & A.L. Ferreira. 2011. Three new species of *Telmatoscopus* Eaton, 1904 (Diptera, Psychodidae) from Brazil. *Zootaxa* 2802: 34–40.
- Bravo, F., L. de S. Rocha & C. Biral dos Santos. 2010. A new species of *Sycorax* (Diptera: Psychodidae: Sycoracinae) from the Brazilian Atlantic Forest. *Zoologia* 27(5): 834-836.
- Briceno, R.D., D. Wegrzynek, E. Chinea-Cano, W.G. Eberhard & T. dos S. Rolo. 2010. Movements and morphology under sexual selection: tsetse fly genitalia. *Ethology Ecology & Evolution* 22(4): 385-391.
- Brown, B.V. & G.-A. Kung. 2010. Revision of the New World *Dohrniphora* Dahl species lacking large hind tibial setae (Diptera:Phoridae). *Zootaxa* 2699: 1–142.
- Brown, B.V. & P.T. Smith. 2010. The bee-killing flies, genus *Melaloncha* Brues (Diptera: Phoridae): a combined molecular and morphological phylogeny. *Systematic Entomology* 35(4): 649-657.
- Campos, R.E. & T.J. Zavortink. 2010. Description of the larva and pupa and redescription of the adults of *Isostomyia paranensis* (Brèthes) (Diptera: Culicidae). *Zootaxa* 2689: 27–36.
- Carvalho, C.J.B. de. 2011. Book Review: Rediscovering the New World. *Revista Brasileira de Entomologia* 55(1): 145–145
- Cazorla, C.G. & G.R. Spinelli. 2010. Four new Neotropical species of *Stilobezzia* (*Acanthohelea*) Kieffer (Diptera: Ceratopogonidae). *Zootaxa* 2669: 45–56.
- Chichirico, G. 2010. Infestation of *Narcissus poeticus* by a scathophagid fly, *Norellia melaleuca* (Diptera: Scathophagidae). *European Journal of Entomology* 107(4): 677-680.
- Chua, T.H. 2010. Fruit flies (Diptera: Tephritidae) from Malaysia and Brunei Darussalam: new species and records. *Florida Entomologist* 93(4): 483-488
- Clemons, L. 2011. *Chetostoma curvinerve* (Rondani) (Diptera, Tephritidae) in Britain. *Dipterists Digest Second Series* 17(2): 83-98.
- Contreras-Ramos, A. 2010. Book review: Manual of Central American Diptera, Volume 1. B. V. Brown, A. Borkent, J. M. Cumming, D. M. Wood, N. E. Woodley, and M. Zumbado (Eds) (2009) National Research Council of Canada, Ottawa, 714 pp. *ZooKeys* 52: 65-67. [open access at <http://www.pensoft.net/journals/zookeys/article/541/book-review-manual-of-central-american-diptera-volume-1>]
- Cranston, P.S., N.B. Hardy, G.E. Morse, L. Puslednik & S.R. McCluen. 2010. When molecules and morphology concur: the 'Gondwanan' midges (Diptera: Chironomidae). *Systematic Entomology* 35(4): 636-648.
- Cross, F.R. & R.R. Jackson. 2010. Mosquito-specialist spiders. *Current Biology* 20(15): R622-R624.
- Cui, W. & D. Yang. 2010. Two new species and two new synonyms of *Systropus* Wiedemann, 1820 from Palaeartic China (Diptera: Bombyliidae). *Zootaxa* 2619: 14-26.
- Curler, G.R. 2011. Records of phlebotomine sand flies (Diptera, Psychodidae, Phlebotominae) with a description of a new species of *Sergentomyia* França & Parrot from Khao Yai National Park, Thailand. *Zootaxa* 2806: 60–68.
- Cywinska, A., M.A. Hannan, P.G. Kevan, R.E. Roughley, M. Iranpour & F.F. Hunter. 2010. Evaluation of DNA barcoding and identification of new haplomorphs in Canadian deerflies and horseflies. *Medical and Veterinary Entomology* 24(4): 382-410.
- da Silva, F.L. 2010. Chironomidae types (Insecta: Diptera) at The Academy of Natural Sciences of Philadelphia. *Proceedings of the Academy of Natural Sciences of Philadelphia* 159: 213-227.

- da Silva, F.L., S. Trivinho Strixino, O. Neves & R. Heliana. 2010. New species of *Cryptochironomus* Kieffer, 1918 (Diptera: Chironomidae: Chironominae) from Brazil. *Zootaxa* 2614: 18-32.
- da Trindade, R.L., M.L. Felipe-Bauer. 2011. Two new biting midges from Para, Brazil (Diptera: Ceratopogonidae). *Memorias do Instituto Oswaldo Cruz* 106(1): 61-64.
- Daugeron, C., A. Plant, I. Winkler, A. Stark & M. Baylac. 2011. Extreme male leg polymorphic asymmetry in a new empidine dance fly (Diptera: Empididae). *Biology Letters* 7(1): 11-14.
- Davies, K.A., W. Ye, R.M. Giblin-Davis, G.S. Taylor, S. Scheffer & W.K. Thomas. 2010. The nematode genus *Fergusobia* (Nematoda: Neotylenchidae): molecular phylogeny, descriptions of clades and associated galls, host plants and *Fergusonina* fly larvae. *Zootaxa* 2633: 1-66.
- De Groot, M., R. Lustrik, T. Faasen & D. Fekonja. 2010. Additions and omissions to the list of hoverfly fauna (Diptera: Syrphidae) of Slovenia. *Acta Entomologica Slovenica* 18(2): 77-86.
- Di Iorio, O. & P. Turienzo. 2011. A preliminary bibliographic survey of the insects found in poultry houses from the Neotropical Region, with remarks on selected taxa shared with native birds' nests. *Zootaxa* 2858: 1-60.
- Dia, A. 2010. Distribution and autecology of blackflies in Lebanon (Diptera, Simuliidae). *Ephemera* 11(1): 27-47.
- Disney, R.H.L. 2011. Three new species and a new key to the *Diplonevra* Lioy (Diptera: Phoridae) from Australia. *Zootaxa* 2792: 41-50.
- Disney, R.H.L., M. Akam, P. Simpson & U. Schmidt-Ott. 2010. Case 3521. *Megaselia abdita* Schmitz, 1959 (Diptera, PHORIDAE): proposed precedence over *Aphiochaeta griseipennis* Santos Abreu, 1921 (currently *Megaselia griseipennis*). *Bulletin of Zoological Nomenclature* 67(3): 238-242.
- Donato, M. 2011. A new species of the genus *Mesosmittia* Brundin, 1956 (Diptera: Chironomidae) from the Neotropics with a cladistic analysis of the genus using quantitative characters. *Zootaxa* 2836: 51-61.
- Dousti, A.F. 2010. Annotated list of Agromyzidae (Diptera) from Iran, with four new records. *Journal of the Entomological Research Society* 12(3): 1-6.
- Du, J., X.-H. Wang & O. Sæther. 2011. Redescriptions of species of *Bryophaenocladus* Thienemann, 1934 (Diptera: Chironomidae) described by Brundin (1947). *Zootaxa* 2743: 40-48.
- Dukas, R. 2010. Causes and consequences of male-male courtship in fruit flies. *Animal Behaviour* 80(5): 913-919.
- Ekrem, T., E. Willassen & E. Stur. 2010. Phylogenetic utility of five genes for dipteran phylogeny: A test case in the Chironomidae leads to generic synonymies. *Molecular Phylogenetics and Evolution* 57(2): 561-571.
- Faruque, I. & J.S. Humbert. 2010. Dipteran insect flight dynamics. Part 2: Lateral-directional motion about hover. *Journal of Theoretical Biology* 265(3): 306-313.
- Felipe-Bauer, M.L., T. do N. Da Silva, E.S. Ribeiro & A. Borkent. 2011. A new species of *Downeshelea* Wirth & Grogan and a redescription of the male of *Downeshelea cebacoi* (Lane & Wirth) (Diptera: Ceratopogonidae). *Zootaxa* 2780: 20-28.
- Ferrington, L.C., Jr. & O.A. Sæther. 2011. A revision of the genera *Pseudosmittia* Edwards, 1932, *Allocladius* Kieffer, 1913, and *Hydrosmittia* gen. n. (Diptera: Chironomidae, Orthoclaadiinae). *Zootaxa* 2849: 1-314.
- Filho, F. da S.C. & M.C. Esposito. 2010. A New Species of *Bricelochlorops* Paganelli and the First Record of *Urubambina rufa* (Duda) (Diptera: Chloropidae) from Brazil. *Neotropical Entomology* 39(5): 742-745.
- Filho, F. da S.C. & M.C. Esposito. 2011. *Panava* a senior synonym of *Wulpisca*, and description of new species of *Panava* and *Dexosarcophaga* (*Bezzisca*) from the Brazilian Amazon (Diptera, Sarcophagidae). *Zootaxa* 2808: 49-56.

- Friedrich, F. & R.G. Beutel. 2010. Goodbye Halteria? The thoracic morphology of Endopterygota (Insecta) and its phylogenetic implications. *Cladistics* 26(6): 579-612.
- Gao, J.-J. 2011. Description of a new species of the *Hirtodrosophila limbicostata* species complex (Diptera, Drosophilidae) breeding on *Impatiens* L. flowers. *Acta Zootaxonomica Sinica* 36(1): 74-79.
- Gilasian, E. & V.S. Sorokina. 2011. The genus *Paragus* Latreille (Diptera: Syrphidae) in Iran, with the description of a new species. *Zootaxa* 2764: 49-60.
- Gil-Azevedo, L.H. 2010. Review and phylogeny of *Lutzsimulium* (Diptera: Simuliidae). *Zoologia* 27(5): 761-788.
- Gil-Ortiz, R., M. Martinez & R. Jimenez-Peydro. 2010. New contributions to *Pseudonapomyza* (Diptera: Agromyzidae) from Spain: Addition of three new species. *Journal of Insect Science (Tucson)* 10 Article 169: 1-10.
- Grichanov, I.Y. 2010. A new species of *Condylostylus* Bigot, 1859 (Diptera: Dolichopodidae) from Tanzania with notes on generic synonymy. *Far Eastern Entomologist* 216: 1-10.
- Grichanov, I.Y. 2010. *Aphasmaphleps*, a new genus of long-legged flies from Senegal, with a key to the genera of Afrotropical Diaphorinae (Diptera: Dolichopodidae). *African Invertebrates* 51(2): 405-412.
- Grichanov, I.Y. 2010. Discovery of *Griphophanes* Grootaert & Meuffels and *Nepalomyia* Hollis in the Afrotropical Region with a key to Afrotropical genera of Peloroideainae (Diptera: Dolichopodidae). *Zootaxa* 2668: 1-20.
- Grichanov, I.Y. 2010. West-Palaearctic species of the genus *Neurigona* Rondani (Diptera: Dolichopodidae). *Russian Entomological Journal* 19(3): 249-256.
- Grogan, W.L., Jr., L.J. Hribar, C.S. Murphree & J.E. Cilek. 2010. New records of biting and predaceous midges from Florida, including species new to the fauna of the United States (Diptera: Ceratopogonidae). *Insecta Mundi* 0147: 1-60.
- Grootaert, P. & I. Shamshev. 2010. A new *Chersodromia* Walker (Diptera: Hybotidae) from shore of the Sea of Azov (Russia). *Zootaxa* 2645: 64-68.
- Grootaert, P., I. Shamshev & Andrade. 2010. Notes on *Chersodromia* from Portugal, Spain and France with the description of a new brachypterous species (Diptera, Hybotidae, Tachydromiinae). *Bulletin de la Societe Royale Belge d'Entomologie* 146(9-12): 203-206.
- Grzywacz, A. & T. Pape. 2010. Egg morphology of *Mydaea lateritia* (Rondani, 1866) (Diptera: Muscidae). *Entomologica Fennica* 21(3): 187-192.
- Hagenlund, L.K., T. Andersen & H.F. Mendes. 2010. New species of *Lopescladius* (*Cordiella*) Coffman et Roback (Chironomidae: Orthocladiinae) from Brazil. *Zootaxa* 2728: 39-49.
- Han, H.-Y. 2011. *Acidiella longipennis* Hendel, the type species of *Acidiella* Hendel (Diptera: Tephritidae: Trypetini), with recognition of two new allied species from Myanmar. *Zootaxa* 2810: 15-25.
- He, J., Z.-J. Liu, R.-T. Liu & Z. Zhang. 2011. Study on female terminalia's subgenital plates of Tabanidae (Insecta, Diptera). *Acta Zootaxonomica Sinica* 36(1): 144-150.
- Heath, J.J. & J.O. Stireman III. 2010. Dissecting the association between a gall midge, *Asteromyia carbonifera*, and its symbiotic fungus, *Botryosphaeria dothidea*. *Entomologia Experimentalis et Applicata* 137(1): 36-49.
- Hippa, H. 2010. Review of the genus *Paramanota* Tuomikoski (Diptera, Mycetophilidae), with the description of new fossil and recent species. *Zootaxa* 2618: 47-60.
- Hippa, H. 2011. New species and new records of *Manota* Williston (Diptera, Mycetophilidae) from Thailand, with a key to the Oriental and Palaearctic species. *Zootaxa* 2763: 39-60.
- Hippa, H., P. Vilkkamaa & K. Heller. 2010. Review of the Holarctic *Corynoptera* Winnertz, 1867, s. str. (Diptera, Sciaridae). *Zootaxa* 2695: 1-197.

- Hirao, M. & T. Hayashi. 2010. The genus *Opalimosina* Rohacek (Diptera, Sphaeroceridae) from Japan. *Medical Entomology and Zoology* 61(3): 309-319.
- Hirao, M., H. Takaoka & W. Srisuka. 2010. Description of a new species of *Simulium* (*Montisimulium*) (Diptera: Simuliidae) from Thailand. *Medical Entomology and Zoology* 61(3): 261-264.
- Hirao, M., H. Takaoka & W. Srisuka. 2010. *Simulium* (*Gomphostilbia*) *chayamaritae*, a new species of black fly (Diptera: Simuliidae) from northern Thailand. *Medical Entomology and Zoology* 61(3): 265-271.
- Hirao, M., H. Takaoka & W. Srisuka. 2010. *Simulium* (*Nevermannia*) *wichaii*, a new black fly species (Diptera: Simuliidae) from northern Thailand. *Medical Entomology and Zoology* 61(3): 273-279.
- Hirao, M., T. Toma, I. Miyagi, T. Okazawa, Y. Higa & M.U. Leh. 2010. Redescriptions of five species of the genus *Armigeres*, subgenus *Armigeres* (Diptera: Culicidae) collected from fallen coconut fruits at the coastal plains of Sarawak, East Malaysia. *Medical Entomology and Zoology* 61(3): 281-308.
- Hoi, H., J. Kristofik, A. Darolova & C. Hoi. 2010. Are parasite intensity and related costs of the milichiid fly *Carnus hemapterus* related to host sociality?. *Journal of Ornithology* 151(4): 907-913.
- Huo, S. & D. Yang. 2010. Two new species of *Eudorylas* from Palaeartic China (Diptera, Pipunculidae). *Transactions of the American Entomological Society (Philadelphia)* 136(3-4): 241-245.
- Huo, S., J. Zhang & D. Yang. 2010. Two new species of *Hybos* from Hubei, China (Diptera: Empididae). *Transactions of the American Entomological Society (Philadelphia)* 136(3-4): 251-254.
- Huo, S., J. Zhang & D. Yang. 2010. Two new species of *Platypalpus* from Oriental China (Diptera: Empididae). *Transactions of the American Entomological Society (Philadelphia)* 136(3-4): 259-262.
- ICZN Opinion 2262. 2010. (Case 3468). *Clusiodes* Coquillett, 1904 (Insecta Diptera, Clusiidae): usage conserved by designation of *Heteroneura albimana* Meigen, 1830 as the type species. *Bulletin of Zoological Nomenclature* 67(4): 344-345.
- Jaeger, J. 2010. Comment on the proposed precedence of *Megaselia abdita* Schmitz, 1959 over *Aphiochaeta griseipennis* Santos Abreu, 1921 (currently *Megaselia griseipennis*, Diptera, PHORIDAE. (Case 3521). *Bulletin of Zoological Nomenclature* 67(4): 314.
- Janoskova, V., I. Orszagh, J. Jamriska & M. Kopani. 2010. Pre-imaginal stages of the blowfly *Protocalliphora falcozi* in nests of the tree sparrow (*Passer montanus*). *Entomologica Fennica* 21(2): 107-116.
- Jiang, Y.-W. & X.-H. Wang. 2011. The subgenus *Chironomus* of *Camptochironomus* Kieffer from China (Diptera, Chironomidae). *Acta Zootaxonomica Sinica* 36(1): 56-62.
- Jiao, K. & W. Bu. 2010. Notes on the genus *Procystiphora* Felt, 1915 (Diptera: Cecidomyiidae) with description of one new species inducing galls in branchlets of a bamboo in China. *Zootaxa* 2717: 53-61.
- Joesch, M., B. Schnell, S.V. Raghu, D.F. Reiff & A. Borst. 2010. On and off pathways in *Drosophila* motion vision. *Nature (London)* 468(7321): 300-304.
- Katano, R., I. Miyagi & T. Toma. 2010. *Topomyia* (*Suaymyia*) *kelabitense* (Diptera: Culicidae), a new species from Sarawak, Malaysia. *Medical Entomology and Zoology* 61(4): 353-361.
- Kobayashi, T. 2010. A systematic review of the genus *Tanypus* Meigen from Japan, with a description of *T. nakazatoi* sp. nov. (Diptera: Chironomidae: Tanypodinae). *Zootaxa* 2644: 25-46.

- Kondo, T., Brake, I., López, K.I., Korytkowski, C.A. 2010. Report of *Milichiella lacteipennis* Loew (Diptera: Milichiidae), attracted to various crushed bugs (Hemiptera: Coreidae & Pentatomidae). Boletín del Museo de Entomología de la Universidad del Valle 11(1): 16-20. [open acces at <http://entomologia.univalle.edu.co/boletin/3Kondo.pdf>]
- Kong, F. & X. Wang. 2011. *Heterotrissocladius* Spärck from China (Diptera: Chironomidae). Zootaxa 2733: 63–68.
- Korneyev, S.V. & S.V. Konovalov. 2010. A review of the fruit-flies (Diptera: Tephritidae) of Lugansk Region (Ukraine). Ukrainska Entomofaunistika 1(2): 35-38.
- Kravtsova, L.S., O.V. Mayer & D.Y. Sherbakov. 2010. Phylogenetic relationships of endemic *Paratanytarsus baicalensis* (Tshern.) to some species of *Paratanytarsus* Thien. et Bause and *Micropsectra* Kieff. (Diptera, Chironomidae). Vestnik Moskovskogo Universiteta Seriya XVI Biologiya 4: 54-57.
- Krivosheina, M.G. & N.P. Krivosheina. 2010. New data on morphology and ecology of limoniid fly larvae of the genus *Metalimnobia* (Diptera, Limoniidae) breded in fungal substrata. Zoologicheskii Zhurnal 89(9): 1098-1117.
- Kurahashi, H. 2010. Two new species of *Goniophyto* from Honshu, Japan (Diptera: Sarcophagidae). Medical Entomology and Zoology 61(4): 375-382.
- Kurina, O. & J. Ševčík. 2011. Three new species of *Docosia* Winnertz from central and southern Europe (Diptera: Mycetophilidae). Zootaxa 2810: 26–36.
- Kurina, O., K. Hedmark, M. Karstrom & J. Kjaerandsen. 2011. Review of the European *Greenomyia* Brunetti (Diptera, Mycetophilidae) with new descriptions of females. ZooKeys 77: 31-50. [open access at <http://www.pensoft.net/journals/zookeys/article/936/abstract/review-of-the-european-greenomyia-brunetti-diptera-mycetophilidae-with-new-descriptions-of-females>]
- Kutty, S.N., T. Pape, B.M. Wiegmann & R. Meier. 2010. Molecular phylogeny of the Calypratae (Diptera: Cyclorrhapha) with an emphasis on the superfamily Oestroidea and the position of Mystacinobiidae and McAlpine's fly. Systematic Entomology 35(4): 614-635.
- Kvifte, G.M. 2010. *Pericoma nielseni* nom. nov., a replacement name for *Pericoma formosa* Nielsen, 1964, preoccupied by *Pericoma formosa* Meunier, 1905 (Diptera: Psychodidae). Zootaxa 2726: 68.
- Lane, R.P., R.L. Blackman, B.H. Cogan, C. Cogan, P.S. Cranston, R.W. Crosskey, P.M. Hammond, D. Hollis, A.M. Hutson, L.A. Mound, A.C. Pont, K. Sattler, W.G. Tremewan & R.I. Vane-Wright. 2011. An appreciation of Paul Freeman DSc, ARCS, Hon FRES. (26.v.1916-31.vii.2010). Antenna 35(1): 5-11.
- Langton, P.H. & P.D. Armitage. 2011. A new species of *Chaetocladius* Kieffer (Diptera, Chironomidae) from the Dorset coast. Dipterists Digest Second Series 17(2): 103-108.
- Langton, P.H. & S.F. McBean. 2011. *Cladotanytarsus donmcbeari* sp. nov. (Diptera, Chironomidae) from Loch Leven, Kinross-shire, Scotland. Dipterists Digest Second Series 17(2): 109-114.
- Lapoint, R.T., A. Gidaya & P.M. O'Grady. 2011. Phylogenetic relationships in the spoon tarsus subgroup of Hawaiian *drosophila*: Conflict and concordance between gene trees. Molecular Phylogenetics and Evolution 58(3): 492-501.
- Laurito, M., W.R. Almirón & G.C. Rossi. 2011. Description of the immature stages of *Culex* (*Culex*) *ameliae* Casal and *Culex* (*Culex*) *articularis* Philippi (Diptera: Culicidae). Zootaxa 2778: 58–68.
- Lee, H.-S. & H.-Y. Han. 2010. A systematic revision of the genus *Gonia* Meigen (Diptera: Tachinidae) in Korea. Animal Cells and Systems 14(3): 175-195.

- Leger, N., J. Depaquit & Gay. 2010. *Chinius eunicegalatae* n. sp (Diptera, Psychodidae), a cavernicolous sandfly from Laos. *Annals of Tropical Medicine & Parasitology* 104(7): 595-600.
- Li, Y., Z. Li & D. Yang. 2011. Five new species of *Actina* from China (Diptera, Stratiomyidae). *Acta Zootaxonomica Sinica* 36(1): 52-55.
- Li, Z., T.-T. Zhang & D. Yang. 2011. Two new species of *Beris* from China (Diptera, Stratiomyidae). *Acta Zootaxonomica Sinica* 36(1): 49-51.
- Liu, Q. & D. Yang. 2010. Two new species of the genus *Angarotipula* Savchenko, with a key to world species (Diptera, Tipulidae). *Zootaxa* 2653: 60-68.
- Liu, Q. & D. Yang. 2011. Four new species of the subgenus *Sinoropeza* Alexander, with a key to world species (Diptera, Tipulidae, *Dolichozepe*). *Zootaxa* 2784: 20-32.
- Liu, Q. & D. Yang. 2011. Three new species of the genus *Macgregoromyia* Alexander, with a key to world species (Diptera, Tipulidae). *Zootaxa* 2802: 41-50.
- Liu, Q.-f., Z. Li & D. Yang. 2010. New Species of *Hilara* (Diptera: Empididae) from Hubei, China. *Entomotaxonomia* 32(3): 195-200.
- Liu, Q.-f., Z. Li & D. Yang. 2010. Six new species of *Hilara* (Diptera: Empididae) from Shennongjia, Hubei. *Entomotaxonomia* 32 (Suppl): 61-70.
- Liu, X., D. Zhou & D. Yang. 2010. Note on Palaearctic and Oriental species of *Oreogeton* (Diptera: Empididae). *Transactions of the American Entomological Society (Philadelphia)* 136(3-4): 255-257.
- Londt, J.G.H. 2010. A review of Afrotropical *Acnephalum* Macquart, 1838, including the reinstatement of *Sporadothrix* Hermann, 1907 and descriptions of two new genera (Diptera: Asilidae: Stenopogoninae). *African Invertebrates* 51(2): 431-482.
- Londt, J.G.H. 2010. A taxonomic analysis of Gambian Asilidae (Diptera) based chiefly on a collection assembled by W.F. Snow between 1974 and 1977. *African Entomology* 18(2): 328-353.
- Lonsdale, O. & S.A. Marshall. 2011. Revision of the New World *Hendelia* (Diptera: Clusiidae: Clusiodinae). *Zootaxa* 2748: 1-17.
- Lonsdale, O. 2011. The *Liriomyza* (Agromyzidae: Schizophora: Diptera) of California. *Zootaxa* 2850: 1-123.
- Lu, J.-M., T. Li & H.-W. Chen. 2011. Molecular phylogenetic analysis of the *Stegana ornatipes* species group (Diptera: Drosophilidae) in China, with description of a new species. *Journal of Insect Science (Tucson)* 11 (Article 20): 1-12. [open access at <http://www.insectscience.org/11.20/i1536-2442-11-20.pdf>]
- Lyubvina, I.V. 2011. On the fauna of robber-flies (Diptera, Asilidae) of Samara Region. *Izvestiya Samarskogo Nauchnogo Centra Rossiskaya Akademii Nauk* 13(1) (No 39): 135-138.
- Marino, P.I., A. Tóthová & G.R. Spinelli. 2011. Two new Patagonian species of *Atrichopogon* (*Melohelea*) (Diptera: Ceratopogonidae). *Zootaxa* 2777: 61-68.
- Marshall, S.A. 2011. A review of the genus *Hoplocheiloma* Cresson (Diptera: Micropezidae). *Zootaxa* 2806: 1-23.
- Marshall, S.A., T. Whitworth & L. Roscoe. 2011. Blow flies (Diptera: Calliphoridae) of eastern Canada with a key to Calliphoridae subfamilies and genera of eastern North America, and a key to the eastern Canadian species of Calliphorinae, Luciliinae and Chrysomyiinae. *Canadian Journal of Arthropod Identification* 11: 1-93. [open access at http://www.biology.ualberta.ca/bsc/ejournal/mwr_11/mwr_11.pdf]
- Martin, J., J.E. Sublette & B.A. Caldwell. 2010. Description of *Chironomus quinnitukut*, n. sp., closely related to the *C. decorus* group in North America, with characterization of an additional larval form from halobiontic habitats. *Zootaxa* 2716: 29-41. [Erratum: 2011, *Zootaxa* 2743: 68]

- Martinez-Falcon, A.P., M.A. Marcos-Garcia, C. Diaz-Castelazo & V. Rico-Gray. 2010. Seasonal changes in a cactus-hoverfly (Diptera: Syrphidae) network. *Ecological Entomology* 35(6): 754-759.
- Martin-Vega, D., A. Baz & V. Michelsen. 2010. Back from the dead: *Thyreophora cynophila* (Panzer, 1798) (Diptera: Piophilidae) 'globally extinct' fugitive in Spain. *Systematic Entomology* 35(4): 607-613.
- Masunaga, K. & T. Saigusa. 2010. A revision of the Hawaiian and Wake Island species of the genus *Conchopus* Takagi (Diptera, Dolichopodidae). *Zootaxa* 2729: 1-35.
- Mathis, W.N. & L. Marinoni. 2010. A review of *Diphuia* (Diptera: Ephydriidae) with description of two new species from southern Brazil. *Zoologia* 27(5): 803-812.
- Matos, M. 2010. Playing Darwin. Part A. Experimental Evolution in *Drosophila*. *Theory in Biosciences* 129(2-3): 89-96.
- Mazumdar, A., N.C. Saha & P.K. Chaudhuri. 2010. Blood sucking midges of *Leptoconops* (*Holoconops* Kieffer) (Diptera: Ceratopogonidae) from India. *Zootaxa* 2619: 49-55.
- Mc Donnell, R.J., C.D. Williams, O. Shine, L. Knutson & M.J. Gormally. 2010. Faunistics data for Sciomyzidae (Diptera) in the west of Ireland with distribution maps, species accounts and comments on community structure. *Irish Biogeographical Society Bulletin* 34: 150-218.
- Merritt, D.J. & A.K. Clarke. 2011. Synchronized circadian bioluminescence in cave-dwelling *Arachnocampa tasmaniensis* (glowworms). *Journal of Biological Rhythms* 26(1): 34-43.
- Mohammad, S.K., H.B.M. Badrawy & G.M.M. Abu El-Hassan. 2010. A new species and a new record of *Neavella* Oldroyd, 1954 from Egypt (Diptera, Tabanidae). *Entomofauna* 31(28): 429-436.
- Mulieri, P.R. & J.C. Mariluis. 2011. Description of a new species of *Macronychia* Rondani (Diptera: Sarcophagidae: Miltogramminae), with a key to the New World species of the genus. *Zootaxa* 2832: 51-55.
- Mulieri, P.R., J.C. Mariluis & L.D. Patitucci. 2010. Review of the Sarcophaginae (Diptera: Sarcophagidae) of Buenos Aires Province (Argentina), with a key and description of a new species. *Zootaxa* 2575: 1-37.
- Murray, D.A. 2010. Records of Chironomidae (Diptera) in Ireland - twenty additions and notes on four morphotypes. *Irish Biogeographical Society Bulletin* 34: 85-96.
- Naglis, S.M. 2011. Revision of the genus *Oedematopus* (Diptera, Dolichopodidae) with the description of a new genus and a key to the Neotropical genera of Hydrophorinae. *Zootaxa* 2756: 40-52.
- Namin, S.M., J. Nozari & A. Najarpour. 2011. A new species of *Terellia* (Diptera: Tephritidae) from Iran with a key to the species of the *tarbinskiorum* group. *Zootaxa* 2750: 65-68.
- Negrobov, O.P. & M.O. Kechev. 2010. A new species of the genus *Dolichopus* Latreille, 1796 (Dolichopodidae: Diptera) from Pirin Mountain, Bulgaria. *Journal of the Entomological Research Society* 12(3): 71-73.
- Nihei, S.S. & R. Pavarini. 2011. Taxonomic redescription and biological notes on *Diaugia angusta* (Diptera, Tachinidae): parasitoid of the palm boring weevils *Metamasius ensirostris* and *M. hemipterus* (Coleoptera, Dryophthoridae). *ZooKeys* 84 2011: 23-38. [open access at <http://www.pensoft.net/journals/zookeys/article/756/taxonomic-redescription-and-biological-notes-on-diaugia-angusta-diptera-tachinidae-parasitoid-of-the-palm-boring-weevils>]
- Niitsuma, H., R. Suzuki & H. Kato. 2011. Review of the Japanese species of *Paramerina* (Diptera: Chironomidae: Tanypodinae), with a key to the known males. *Zootaxa* 2821: 1-18.
- Norrbom, A.L. & C.A. Korytkowski. 2011. New species of and taxonomic notes on *Anastrepha* (Diptera: Tephritidae). *Zootaxa* 2740: 1-23.
- Norrbom, A.L. & M.A. Uchôa. 2011. New species and records of *Anastrepha* (Diptera: Tephritidae) from Brazil. *Zootaxa* 2835: 61-67.

- Oliveira, C.S.N. de & F.L. da Silva. 2011. Two new species of *Larsia* Fittkau, 1962 (Diptera: Chironomidae: Tanypodinae) from Neotropical Region, with a checklist of *Larsia* species of the world. *Zootaxa* 2786: 27–41.
- Pan, Z., B. Wang & K. Huo. 2010. A new species of genus *Dasysyrphus* Enderlein (Diptera, Syrphidae) from China. *Journal of Northeast Forestry University* 38(11): 133-134.
- Patitucci, L.D., J.C. Mariluis & F.H. Aballay. 2011. A new species of the South American genus *Arthurella* Albuquerque (Diptera: Muscidae), with a key to species and new records. *Zootaxa* 2810: 56–62.
- Patterson, G., P. Grey & E. Grey. 2010. A fungus, a gnat and an orchid - the Helmet Orchid's strategy of deception. *Victorian Naturalist (Blackburn)* 127(5): 205-206.
- Pinto, I.S., C.B. dos Santos, A. L. Ferreira & A. Falqueto. 2010. Richness and diversity of sand flies (Diptera, Psychodidae) in an Atlantic rainforest reserve in southeastern Brazil. *Journal of Vector Ecology* 35(2): 325-332.
- Pinto, I.S., C.B. Santos, A.L. Ferreira & A. Falqueto. 2010. Variations in the gonostyle of *Nyssomyia intermedia* (Lutz & Neiva) (Diptera: Psychodidae). *Neotropical Entomology* 39(5): 732-735.
- Pires, A.C. & L. Marinoni. 2010. Historical relationships among Neotropical endemic areas based on *Sepedonea* (Diptera: Sciomyzidae) phylogenetic and distribution data. *Zoologia* 27(5): 681-690.
- Podeniene, V. & J.K. Gelhaus. 2010. The last instar larvae and pupae of Mongolian Limnophilinae crane flies from genera *Eloeophila*, *Limnophila* and *Phylidorea* (Diptera, Limoniidae). *Proceedings of the Academy of Natural Sciences of Philadelphia* 159: 185-204.
- Pont, A.C. 2011. The Muscidae described by J. W. Zetterstedt (Insecta: Diptera). *Zootaxa* 2852: 1–83. [Appendix by Bergström, C. & A.C. Pont]
- Poulding, R.H. 2011. Plastron respiration in the larvae of the intertidal fly *Aphrosylus celtiber* Haliday (Diptera, Dolichopodidae). *Dipterists Digest Second Series* 17(2): 117-122.
- Primante, C. & S. Doetterl. 2010. A syrphid fly uses olfactory cues to find a non-yellow flower. *Journal of Chemical Ecology* 36(11): 1207-1210.
- Przhiboro, A.A. & O.A. Sæther. 2010. *Tvetenia vitracies* (Sæther, 1969), a synonym of *Tvetenia tshernovskii* (Pankratova, 1968), comb. n. (Diptera: Chironomidae). *Zootaxa* 2675: 57–64.
- Puniamoorthy, N., M. Kotrba & R. Meier. 2010. Unlocking the Black box: internal female genitalia in Sepsidae (Diptera) evolve fast and are species-specific. *BMC Evolutionary Biology* 10 (Article No 275): 1-20. [open access at <http://www.biomedcentral.com/content/pdf/1471-2148-10-275.pdf>]
- Radenković, S., A. Vujić, G. Ståhls, C. Pérez-Bañón, S. Rojo, T. Petanidou & S. Šimić. 2011. Three new cryptic species of the genus *Merodon* Meigen (Diptera: Syrphidae) from the island of Lesbos (Greece). *Zootaxa* 2735: 35–56.
- Raymond, R.W., C.P. McHugh & S.F. Kerr. 2010. Sand flies of Nicaragua: a checklist and reports of new collections. *Memorias do Instituto Oswaldo Cruz* 105(7): 889-894.
- Ree, H.-I., K.Y. Jeong, S.H. Nam & T.-S. Yong. 2010. Nine *Polypedilum* species (Diptera, Chironomidae) new to Korea collected near Namdae-stream, Muju. *Korean Journal of Systematic Zoology* 26(3): 203-216.
- Renganathan, S. & J. Purushothaman. 2010. Description of *Sergentomyia (Parrotomyia) rectangulata* sp. nov. (Diptera: Psychodidae: Phlebotominae) from southern India. *Memorias do Instituto Oswaldo Cruz* 105(6): 792-795.
- Ribeiro, J.M.C., B.J. Mans & B. Arca. 2010. An insight into the sialome of blood-feeding Nematocera. *Insect Biochemistry and Molecular Biology* 40(11): 767-784.

- Ricarte, A., Z. Nedeljkovic, J. Quinto & M.A. Marcos-Garcia. 2010. The genus *Ferdinandea* Rondani, 1844 (Diptera, Syrphidae) in the Iberian Peninsula: first records and new breeding sites. *Journal of the Entomological Research Society* 12(3): 57-69.
- Riedel, J., M. Schindler & A. Ssymank. 2010. Bees (Hymenoptera, Apidae) and hoverflies (Diptera, Syrphidae) of nutrient poor meadows in the Natural Park Hohes Venn-Nordeifel. *Decheniana* 163: 137-144.
- Rindal, E. & G. Soli. 2010. *Ristocordyla* nom. nov. (Diptera: Mycetophilidae) a replacement name for the subgenus *Paracordyla* Tuomikoski, 1966, nec Hallmann, 1912. *Zootaxa* 2602: 67-68.
- Robe, L.J., E.L.S. Loreto & V.L.S. Valente. 2010. Radiation of the *Drosophila* subgenus (Drosophilidae, Diptera) in the Neotropics. *Journal of Zoological Systematics and Evolutionary Research* 48(4): 310-321.
- Roelfstra, L., M. Vlimant, B. Betschart, K. Pfister & P.-A. Diehl. 2010. Light and electron microscopy studies of the midgut and salivary glands of second and third instars of the horse stomach bot, *Gasterophilus intestinalis*. *Medical and Veterinary Entomology* 24(3): 236-249.
- Rognes, K. 2011. Revision of the *Bengalia spinifemorata* species-group (Diptera, Calliphoridae). *Zootaxa* 2835: 1-29.
- Rognes, K. 2011. The identity of the frog fly *Caiusa coomani* Séguy, 1948 (Diptera, Calliphoridae). *Zootaxa* 2735: 28-30.
- Ronderos, M.M., C.G. Cazorla & G.R. Spinelli. 2010. The immature stages of the biting midge *Culicoides debilipalpis* Lutz (Diptera: Ceratopogonidae). *Zootaxa* 2716: 42-52.
- Sæther, O.A. 2010. *Procladius* Skuse from Lake Winnipeg, Manitoba, Canada, with keys to some females and immature stages of the genus (Diptera: Chironomidae). *Zootaxa* 2726: 34-58.
- Saether, O.A. 2010. *Tavastia pilipecta* sp. n. from Manitoba, Canada (Diptera: Chironomidae). *Aquatic Insects* 32(3): 167-190.
- Sæther, O.A. 2011. *Glyptotendipes* Kieffer and *Demeijerea* Kruseman from Lake Winnipeg, Manitoba, Canada, with the description of four new species (Diptera: Chironomidae). *Zootaxa* 2760: 39-52.
- Santos, M., I. Fragata, J. Santos, P. Simoes, A. Marques, M. Lima & M. Matos. 2010. Playing Darwin. Part B. 20 years of domestication in *Drosophila subobscura*. *Theory in Biosciences* 129(2-3): 97-102.
- Schacht, W. & P. Heuck. 2010. [Diptera from Bavaria XXVI with supplements (Acartophthalmidae, Odiniidae, Opomyzidae, Anthomyzidae, Aulacigastridae, Perisclididae, Asteiidae, Braulidae).]. *Entomofauna* 31(29): 437-451.
- Service, M.W. 2010. Sequel to Kitzmiller's Anopheline Names: Their Derivations and Histories. *Journal of Vector Ecology* 35(2): 213-266.
- Shi, L., J.-C. Wang & D. Yang. 2011. Six homonymous species of three genera - *Homoneura*, *Minettia* and *Sapromyza* (Diptera, Lauxaniidae). *Acta Zootaxonomica Sinica* 36(1): 80-83.
- Shinomiya, K., Matsuda, T. Oishi, H. Otsuna & K. Ito. 2011. Flybrain Neuron Database: A Comprehensive Database System of the *Drosophila* Brain Neurons. *Journal of Comparative Neurology* 519(5): 807-833.
- Silva, J.G., V.S. Dutra, M.S. Santos, N.M.O. Silva, D.B. Vidal, R.A. Nink, J.A. Guimaraes & E.L. Araujo. 2010. Diversity of *Anastrepha* spp. (Diptera: Tephritidae) and associated braconid parasitoids from native and exotic hosts in southeastern Bahia, Brazil. *Environmental Entomology* 39(5): 1457-1465.
- Sinclair, B.J. & H. Huerta. 2010. A new species of *Androprosopa* from Mexico (Diptera: Thaumaleidae). *Canadian Entomologist* 142(5): 443-447.

- Singh, N.S. & D. Phillips-Singh. 2010. A study on genitalia of Phlebotominae sand flies (Phlebotomidae: Diptera) in Northern India: a new tool for detection of species. *Journal of Entomology* 7(4): 235-239.
- Siri, A., M. Donato, G. Orpella & J. Massaferrò. 2011. *Alotanypus vittigera* (Edwards) comb. nov.: adult redescription, immature description and a phylogenetic analysis of the genus (Diptera: Chironomidae: Tanypodinae). *Zootaxa* 2795: 46–64.
- Somboon, P., A. Rory, Y. Tsuda, M. Takagi & R.E. Harbach. 2010. Systematics of *Anopheles* (*Cellia*) *yaeyamaensis* sp. n., alias species E of the *An. minimus* complex in southeastern Asia (Diptera: Culicidae). *Zootaxa* 2651: 43-51.
- Somboon, P., D. Thongwat & R.E. Harbach. 2011. *Anopheles* (*Cellia*) *rampae* n. sp., alias chromosomal form K of the Oriental *Maculatus* Group (Diptera: Culicidae) in Southeast Asia. *Zootaxa* 2810: 47–55.
- Stary, J. 2011. *Gonomyia* (*Gonomyia*) *lucidula* de Meijere and allies (Diptera: Limoniidae). *Entomologica Fennica* 21(4): 232-242.
- Straw, A.D., K. Branson, T.R. Neumann, & M.H. Dickinson. 2011. Multi-camera real-time three-dimensional tracking of multiple flying animals. *Journal of the Royal Society Interface* 8(56): 395-409.
- Stur, E. & M. Spies. 2011. Description of *Chaetocladius longivirgatus* sp. n., with a review of *C. suecicus* (Kieffer) (Diptera: Chironomidae). *Zootaxa* 2762: 37–48.
- Stur, E. & T. Ekrem. 2011. Exploring unknown life stages of Arctic Tanytarsini (Diptera: Chironomidae) with DNA barcoding. *Zootaxa* 2743: 27–39.
- Sueyoshi, M. & H.-Y. Han. 2011. *Prochetostoma expandens* (Diptera: Tephritidae) sp. n., a fruit parasite of *Ilex integra* Thunberg (Aquifoliaceae) in Japan. *Zootaxa* 2784: 39–50.
- Sueyoshi, M.. 2010. New records and localities of tephritid flies from Japan. *Makunagi* 23: 9-19.
- Suwito, A. & H. Watabe. 2010. Discovery of the *Drosophila* (*Drosophila*) *robusta* species group (Diptera, Drosophilidae) from Southeast Asian tropics, with the descriptions of six new species. *Entomological Science* 13(4): 381-391.
- Szpila, K., J.G. Voss & T. Pape. 2010. A new dipteran forensic indicator in buried bodies. *Medical and Veterinary Entomology* 24(3): 278-283.
- Taber, S.W. 2010. A new species of *Dixella* Dyar & Shannon meniscus midge (Diptera Dixidae). *Southwestern Entomologist* 35(3): 295-307.
- Takaoka, H. & S. Shrestha. 2010. New species of black flies (Diptera: Simuliidae) from Nepal. *Zootaxa* 2731: 1–62.
- Takaoka, H., S. Thapa & W. Henry. 2011. A new species of black fly (Diptera: Simuliidae) with an entirely yellow thorax from Darjeeling, India. *Zootaxa* 2824: 62–68.
- Takaoka, H., W. Srisuka, A. Saeung, Y. Otsuka, C. Aoki & W. Choohote. 2010. Taxonomic notes on *Simulium* (*Montisimulium*) *laoleense* and a closely related new species (Diptera: Simuliidae) from Thailand. *Medical Entomology and Zoology* 61(4): 363-374.
- Thomas, A.W. 2011. Tabanidae of Canada, east of the Rocky Mountains 2: a photographic key to the genera and species of Tabaninae (Diptera: Tabanidae). *Canadian Journal of Arthropod Identification* 13: 1-503. [open access at http://www.biology.ualberta.ca/bsc/ejournal/t_13/t_13.pdf]
- Thompson, F.C. & R.I. Vane-Wright. 2011. Bibliography: the entomological publications of Paul Freeman. *Antenna* 35(1): 11-14.
- Trautwein, M.D., B.M. Wiegmann & D.K. Yeates. 2010. A multigene phylogeny of the fly superfamily Asiloidea (Insecta): taxon sampling and additional genes reveal the sister-group to all higher flies (Cyclorhapha). *Molecular Phylogenetics and Evolution* 56(3): 918-930.

- Trivinho-Strixino, S. 2010. Two new species of *Paratanytarsus* (Diptera: Chironomidae) from southeast of Brazil. *Zootaxa* 2726: 59–67.
- Trivinho-Strixino, S., F.L. da Silva & F.O. Roque. 2010. A new species of *Parachironomus* Lenz, 1921 (Diptera: Chironomidae: Chironominae), and description of immature stages of two other species from the Neotropical Region. *Zootaxa* 2689: 1–14.
- Uchoa, M.A. & J. Nicacio. 2010. New records of Neotropical fruit flies (Tephritidae), lance flies (Lonchaeidae) (Diptera: Tephritoidea), and their host plants in the South Pantanal and adjacent areas, Brazil. *Annals of the Entomological Society of America* 103(5): 723-733.
- Urru, I., J. Stoekl, J. Linz, T. Kruegel, M.C. Stensmyr & B.S. Hansson. 2010. Pollination strategies in Cretan Arum lilies. *Biological Journal of the Linnean Society* 101(4): 991-1001.
- Velasquez, Y., C. Magana, A. Martinez-Sanchez & S. Rojo. 2010. Diptera of forensic importance in the Iberian Peninsula: larval identification key. *Medical and Veterinary Entomology* 24(3): 293-308.
- Vigoder, F.M., N.A. Souza & A.A. Peixoto. 2010. Copulatory courtship song in *Lutzomyia migonei* (Diptera: Psychodidae). *Memorias do Instituto Oswaldo Cruz* 105(8): 1065-1067.
- Vikhrev, N.. 2011. Review of the Palaearctic members of the *Lispe tentaculata* species-group (Diptera, Muscidae): revised key, synonymy and notes on ecology. *ZooKeys* 84 2011: 59-70. [open access at <http://www.pensoft.net/journals/zookeys/article/819/review-of-the-palaearctic-members-of-the-lispe-tentaculata-species-group-diptera-muscidae-revised-key-synonymy-and-notes>]
- Vilkamaa, P. & H. Hippa. 2011. Phylogeny of *Pnyxiopalpus* Vilkamaa & Hippa, with the description of *P. persimplex* sp. n. (Diptera, Sciaridae). *Zootaxa* 2743: 56–62.
- Vilkamaa, P., H. Hippa & W. Mohrig. 2011. The genus *Keilbachia* Mohrig (Diptera, Sciaridae) in New Caledonia, with the description of five new species. *Zootaxa* 2771: 53–61.
- Wagner, R., B.A. Richardson & M.J. Richardson. 2010. A new psychodid species from Saban tank bromeliads. *Studies on Neotropical Fauna and Environment* 45(3): 121-127.
- Walker, M.D. & I.D. Rotherham. 2010. The common swift louse fly, *Crataerina pallida*: An ideal species for studying host-parasite interactions. *Journal of Insect Science (Tucson)* 10 (Article 193): 1-15.
- Walker, M.D. 2011. Previously unreported mate guarding and 'clustering' by a nest ectoparasite (Diptera, Hippoboscidae). *Dipterists Digest Second Series* 17(2): 115-116.
- Wang, J.-Q., J.-J. Gao & H.-W. Chen. 2011. *Stegana castanea* species group (Diptera, Drosophilidae) from the Oriental region. *Journal of Natural History* 45(9-10) 2011: 505-519.
- Wang, M.-Q., H.-Y. Chen & D. Yang. 2010. Swarming of Diptera insects. *Kunchong Zhishi* 47(6): 1280-1286.
- Webb, D.W. & M. Hauser. 2011. Revision of the genus *Stenogephyra* Lyneborg (Diptera: Therevidae: Phycinae). *Zootaxa* 2837: 67–85.
- Wei, L. & L. Zhang. 2010. A taxonomic study on *Chrysotus* Meigen (Diptera: Dolichopodidae) from southwest China: descriptions of eleven new species belonging to the redefined *C. laesus*-group. *Zootaxa* 2683: 1–22.
- Wendt, L.D. 2010. New species and new records of *Fannia* Robineau-Desvoidy (Diptera, Fanniidae) from the Brazilian Amazon region. *Zootaxa* 2575: 38-48.
- Wessels, F.J., R. Kristal, F. Netter, J.D. Hatle & D.A. Hahn. 2011. Does it pay to delay? Flesh flies show adaptive plasticity in reproductive timing. *Oecologia (Berlin)* 165(2): 311-320.
- Whitmore, D. 2011. New taxonomic and nomenclatural data on *Sarcophaga (Heteronychia)* (Diptera: Sarcophagidae), with description of six new species. *Zootaxa* 2778: 1–57.
- Whitworth, T. 2010. Keys to the genera and species of blow flies (Diptera: Calliphoridae) of the West Indies and description of a new species of *Lucilia* Robineau-Desvoidy. *Zootaxa* 2663: 1–35.

- Wiedenbrug, S. & S. Trivinho-Strixino. 2011. New species of the genus *Corynoneura* Winnertz (Diptera, Chironomidae) from Brazil. *Zootaxa* 2822: 1–40.
- Williams, C.D., M.J. Gormally & L.V. Knutson. 2010. Very high population estimates and limited movement of snail-killing flies (Diptera: Sciomyzidae) on an Irish turlough (temporary lake). *Biology and Environment* 110B(2): 81-94.
- Winkler, I.S., C.C. Labandeira, T. Wappler & P. Wilf. 2010. Distinguishing Agromyzidae (Diptera) leaf mines in the fossil record: new taxa from the Paleogene of North America and Germany and their evolutionary implications. *Journal of Paleontology* 84(5): 935-954.
- Winterton, S.L. & S.D. Gaimari. 2011. Revision of the South American window fly genus *Heteromphrale* Kroeber, 1937 (Diptera, Scenopinidae). *ZooKeys* 84 2011: 39-57. [open access at <http://www.pensoft.net/journals/zookeys/article/774/abstract/revision-of-the-south-american-window-fly-genus-heteromphrale-kr>]
- Witek, M., D. Patricelli, L.P. Casacci, F. Barbero, E. Balletto & S. Bonelli. 2011. Notes on the biology and host ant specificity of the myrmecophilous syrphid fly *Microdon major* (Diptera: Syrphidae), a social parasite of *Formica* ants (Hymenoptera: Formicidae). *Sociobiology* 57(2) 2011: 261-269.
- Withers, P. 2011. An annotated list of Heleomyzidae and allied families (Diptera) of Sweden. *Dipterists Digest Second Series* 17(2): 171-179.
- Woodley, N.E. 2011. *Vitilevumyia*, an enigmatic new genus of Stratiomyidae from Fiji (Diptera). *Zootaxa* 2821: 62–68.
- Woznica, A.J. & C. Bystrowski. 2010. Report of the XXIX Symposium of the Dipterological Section of the Polish Entomological Society, Bialowieza, 28-30 May 2010. *Dipteron - Wroclaw* 26: 46-48. [open access at http://pte.au.poznan.pl/dipteron/biuletyn/vol26/Dipteron_vol_26.pdf]
- Wu, H., S.-J. Zhang, J. Huang. 2010. The genus *Ctenosciara* Tuomikoski in China, with descriptions of three new species (Diptera, Sciaridae). *Zootaxa* 2560: 42-50.
- Wu, J., Y.-J. Ma & Y. Ma. 2010. Phylogenetic relationship among the species of *Anopheles* subgenus *Cellia* (Diptera: Culicidae) in China: inferred by mitochondrial and ribosomal DNA sequences. *Acta Entomologica Sinica* 53(9): 1030-1038.
- Wu, L., J.-J. Gao & H.-W. Chen. 2010. The *Stegana* (*Steganina*) *biprotrusa* species group from the Oriental Region (Diptera: Drosophilidae). *Zootaxa* 2721: 47–54.
- Xue, W.-q. & X.-d. Fei. 2011. Tow [Two] new genus of Calliphoridae (Diptera: Calliphoridae). *Shenyang Shifan Daxue Xuebao Ziran Kexue Ban* 29(1) Sum 91: 1-5.
- Yamauchi, T., M. Obara & S. Yuasa. 2010. A new host record for *Nycteribia pleuralis* (Diptera: Nycteribiidae). *Biogeography* 12: 141-142.
- Yao, Z.-p. & W.-q. Xue. 2011. Study on the group of genus *Pegomya* from China. *Shenyang Shifan Daxue Xuebao Ziran Kexue Ban* 29(1) Sum 91: 104-106.
- Yassin, A., T.A. Markow, A. Narechania, P.M. O'Grady & R. DeSalle. 2010. The genus *Drosophila* as a model for testing tree- and character-based methods of species identification using DNA barcoding. *Molecular Phylogenetics and Evolution* 57(2): 509-517.
- Zarghani, E., S. Khaghaninia, R.F.P. Abad & B. Gharali. 2010. Synopsis of the genus *Tephritis* Latreille (Diptera: Tephritidae) in Iran. *Munis Entomology & Zoology* 5 (Supplement): 1176-1181.
- Zatwarnicki, T. & W.N. Mathis. 2010. A revision of the *nivea* Group of the Shore-fly Genus *Ditrichophora* Cresson (Diptera: Ephydriidae). *Transactions of the American Entomological Society (Philadelphia)* 136(3-4): 199-215.

- Zhang, B., Y.H. Liu, W.X. Wu & Z.L. Wang. 2010. Molecular phylogeny of *Bactrocera* species (Diptera: Tephritidae: Dacini) inferred from mitochondrial sequences of 16s rDNA and COI sequences. *Florida Entomologist* 93(3): 369-377.
- Zhang, C.-T., H. Shima & X.-L. Chen. 2010. A review of the genus *Dexia* Meigen in the Palearctic and Oriental Regions (Diptera: Tachinidae). *Zootaxa* 2705: 1–81.
- Zhang, C.-T., Z. Zhao & Q. Wang. 2011. New species and new records of Tachinidae from Liaoning Laotudingzi National Nature Reserve of China (Insecta, Diptera). *Acta Zootaxonomica Sinica* 36(1): 63-73.
- Zhang, D., J. Wang, M.-F. Wang & K. Li. 2011. Taxonomic review of the *lepida*-group of *Fannia* R.-D. (Diptera: Fanniidae). *Zootaxa* 2803: 57–62.
- Zhang, J. 2011. Three distinct but rare kovalevisargid flies from the Jurassic Daohugou biota, China (Insecta, Diptera, Brachycera, Kovalevisargidae). *Palaeontology (Oxford)* 54(1): 163-170.
- Zhou, D., J. Zhang & D. Yang. 2010. Notes on the species of the genus *Hyadina* from China (Diptera: Ephydriidae). *Zootaxa* 2675: 47–56.

SUBMISSION FORM DIRECTORY OF NORTH AMERICAN DIPTERISTS

For those who have not yet sent in a synopsis of their interests for the *Directory of North America Dipterists*, the following form is provided. Please restrict yourselves to no more than 20 words when listing the titles of your major projects and the animals you work with. Should any of you like to expand or modify your entries from the last list, use the form to indicate the changes.

The information can be emailed, or the form completed and faxed or sent to the following address:

Dr. Jeff Cumming OR Dr. James O'Hara
Invertebrate Biodiversity
Agriculture & Agri-Food Canada,
K.W. Neatby Building, C.E.F.
Ottawa, Ontario, CANADA, K1A 0C6

FAX: (613) 759-1927

Email: cummingjm@agr.gc.ca OR James.OHara@agr.gc.ca

Full name: _____

Address: _____

_____ **Telephone:** _____

FAX: _____ **Email:** _____

Projects and taxa studied: _____
