FLY TIMES

ISSUE 58, April, 2017

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: stephen.gaimari@cdfa.ca.gov

Welcome to the latest issue of *Fly Times*! As usual, I 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 for the next issue. *Fly Times* offers a great forum to report on your research activities and to make requests for taxa being studied, as well as to report interesting observations about flies, to discuss new and improved methods, to advertise opportunities for dipterists, to report on or announce meetings relevant to the community, etc., with all the associated digital images you wish to provide. This is also a great place to report on your interesting (and hopefully fruitful) collecting activities! Really anything fly-related is considered. And of course, thanks very much to Chris Borkent for again assembling the list of Diptera citations since the last *Fly Times*!

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

Issue No. 59 of the *Fly Times* will appear next October. Please send your contributions by email to the editor at stephen.gaimari@cdfa.ca.gov. All contributors for the next *Fly Times* should aim for 10 October 2017 (maybe then I'll get an issue out actually on time!) – but don't worry – I'll send a reminder. And articles after 10 October are OK too!

****

Issue 58, available online 14 May 2017

CONTENTS

****

NEWS

C.P. Alexander Award

Stephen D. Gaimari[1] & Jim O'Hara[2]

[1] Plant Pest Diagnostics Branch, California Department of Food & Agriculture,
3294 Meadowview Road, Sacramento, California 95832, USA; stephen.gaimari@cdfa.ca.gov

[2] Canadian National Collection of Insects, Agriculture and Agri-Food Canada,
960 Carling Ave., Ottawa, Ontario, K1A 0C6, Canada; james.ohara@agr.gc.ca

The C.P. Alexander Award was conceived "to recognize the greatest living American dipterist" and "to publicly acknowledge the most important and influential member of NADS" (*Fly Times* 14: 5, 1995). Charles P. Alexander (photo right) was an American dipterist of legendary status (having published over 1000 papers and described over 10,000 species of flies, mostly Tipulidae), and hence the award was named in his honor. The award is for life and can be held by only one person at a time.

C.P. Alexander. Photo, YouMass wiki

This lifetime achievement award (http://www.nadsdiptera.org/Award/Awardhome.htm) has had only two recipients in its 23-year history, Willis ("Bill") W. Wirth (1994) and J. Richard ("Dick") Vockeroth (1997). There has been a vacancy for this honor since the passing of Dick Vockeroth in 2012.

We would like to set in motion a process by which the next recipient of the C.P. Alexander Award can be selected. The Society has no formal rules about how to proceed, so we suggest a course of action below that can be discussed and refined at the upcoming NADS field meeting in western Montana (http://www.nadsdiptera.org/Field/Fieldhome.htm). But before we get into that, a brief review of the C.P. Alexander Award may be in order for those readers who are not familiar with it.

Willis (Bill) Wirth (photo left) was unanimously chosen as the first recipient of the C.P. Alexander Award during a special meeting of NADS held during the Third International Congress of Dipterology in Guelph, Canada, in 1994. Bill's many accomplishments were reviewed in the memorial volume entitled *Contributions on Diptera dedicated to Willis W. Wirth* (edited by W.N. Mathis & W.L. Grogan, 1996, *Memoirs of the Entomological Society of Washington* 18, 297 pp.). He was described by one author in this

volume as the "Wizard of Ceratopogonidology". Bill is credited with over 400 papers, the description of more than 1000 species, and the collection of over 1,000,000 specimens.

Richard ("Dick") Vockeroth (photo right) received the C.P. Alexander Award during a NADS field meeting in Georgia in 1997, almost 3 years after the passing Willis Wirth. His award reads: "John Richard Vockeroth is recognized as our most knowledgable dipterist, and for his critical and unique contributions in expanding our knowledge of flies, especially flower flies, educating and encouraging a cadre of world leaders for Systematic Dipterology" (*Fly Times* 19: 4, 1997). Dick is best remembered for his prodigious knowledge of Diptera and uncanny abilities as a collector. He contributed about 220,000 pinned specimens to the Canadian National Collection of Insects and a Festschrift commemorating the coordinators of the *Manual of Nearctic Diptera* lists a staggering 80 patronyms named in his honor (*Canadian Entomologist* 143: 575–577, 2011).

Given that NADS has no elected officials and no constitution, things like election of the C.P. Alexander Award recipient are done informally. There is no formal set of rules to govern this selection, or even what are the criteria beyond "The purpose of the Award is to recognize the contributions to North American dipterology by the greatest living North American dipterist". So the proposal below is meant to stimulate discussion at the 2017 NADS field meeting on a process by which our Society will select the next recipient of this award, and possibly recipients into the future. Specifics can be tweaked at the meeting, but the proposal follows.

At the NADS field meeting this year, a chairperson will be selected, who will then select a broadly-representative committee of up to 10 additional members. The chairperson should be in attendance and agree to take on this task. However, the committee members do not have to be in attendance at the field meeting, but rather are asked to participate by the chairperson post-meeting. These committee members would be responsible for three main things – 1) as a group, to come up with a small slate of nominees, 2) to accept people's comments and opinions to inform their ultimate decision, and 3) to choose a recipient by discussion and vote. For each nominee, the committee would be responsible for developing a one-page write-up regarding their contributions and impacts on North American Dipterology. This list and each write-up will then go into issue 59 (October 2017) of the *Fly Times*, along with the names and email addresses of the committee members who would be available to receive comments from the membership. Ultimately, the committee members would make their final decision in consideration of the member input they have received. The committee will arrange for an engraved plaque to be prepared, which will be presented at the next NADS meeting (Annual or Field), with a write up in the following *Fly Times*.

If this method (or the tweaked version agreed to at the field meeting) is deemed to have been successful, it could be the de facto "method" for this award into the future, so the next time it has to be done it won't be a group of people wondering how to do it! There would at least be an informal set of guidelines to work from.

****

Rare micro Diptera (Cecidomyiidae: Heteropezini) from North America

John D. Plakidas

111 Emerson Avenue, Pittsburgh, PA. 15215; johnplakidas@verizon.net

A very little known group of paedogenetic gall midges (Cecidomyiidae: Heteropezini) (Gagné & Jaschhof 2014) was recently brought to the forefront with the description of an extremely rare fly, *Neostenoptera appalachiensis* Plakidas & Ferro 2016 (Fig. 1). These minute and fragile looking micro dipterans have previously been unknown in North America. There are presently eight genera of Heteropezini reported from North America in various publications (Pritchard 1960, Plakidas 1999, Selby 2005, Plakidas & Ferro 2016) and a redescription of *Nikandria* (Jaschhof & Jaschhof 2017). These flies are typically less than 1 mm in length and most likely go undetected in collection samples by virtue of their extremely small size. In addition to size disparity, all Heteropezini adults must be slide mounted for viewing of microscopic anatomical features. I have found that dehydrating adults in 91% isopropyl alcohol and slide mounting in a drop of euparal compressed under a cover glass gives best results. In the Key to the genera, one can readily see that the number of tarsomeres and the wing veination are central to accurately identifying adults.

Simplified key to North American Genera of Heteropezini.

1. Tarsus 2–3 segmented; R_5 vein absent (Fig. 7)..... ***Heteropeza*** (Fig. 2)
– Tarsus 4–5 segmented.....2

2. Tarsus 4 segmented; palpi present or absent; R_5 vein present or absent.....3
– Tarsus 5 segmented.....5

3. Palpus 1 segmented; R_5 vein reaching the wing apex (Fig. 6); female with 2 sclerotized spermathecae at the level of tergite 7 ..... ***Miastor*** (Fig. 3)
– Palpus absent; R_5 vein absent.....4

4. Male with 10 flagellomeres; R_5 absent (Fig. 8) ..... ***Neostenoptera*** (Fig. 1)
– Male unknown, female with 9 flagellomeres..... ***Heteropezula***

5. Palpus 1 segmented.....6
– Palpus 2–4 segmented.....7

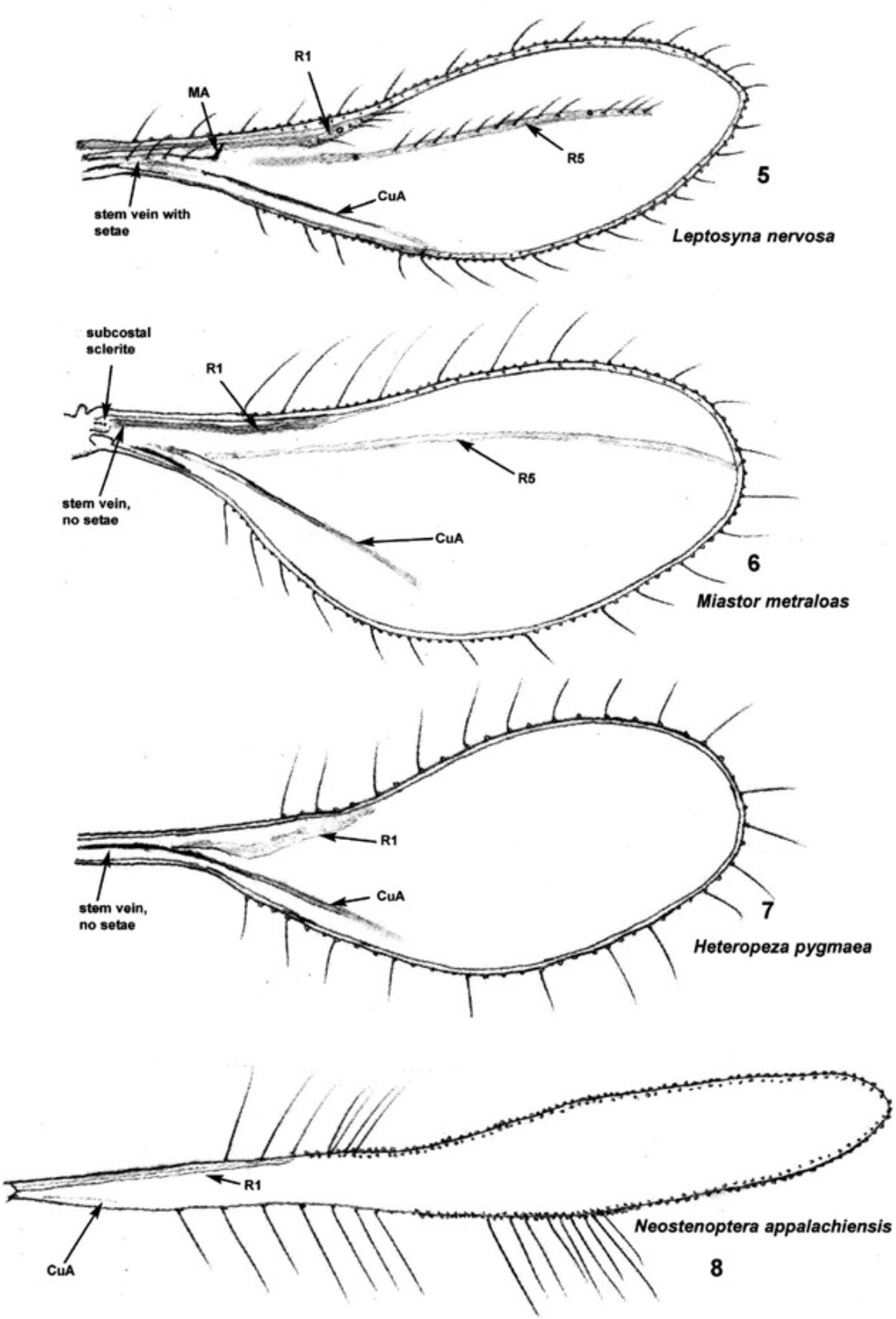
6. Second tarsomere twice length of first tarsomere; R_5 vein not reaching wing margin (Fig. 5)..... ..... ***Leptosyna*** (Fig. 4)
– Second tarsomere 3–4 times the length of the first tarsomere ..... ***Henria***

7. Palpus 4 segmented; R_5 vein reaching wing margin..... ***Brittenia***
– Palpus 1–3 segmented; R_5 vein not reaching the wing margin.....8

8. Eye bridge 0–1 facets at vertex..... ***Nikandria***
– Eye bridge 3–4 facets at vertex..... ***Frirenia***

Fig. 1 (left). *Neostenoptera appalachiensis* Plakidas & Ferro, female (1.7mm).
Fig. 2 (right). *Heteropeza pygmaea* Winnertz, female (1.0mm).

Fig. 3 (left). *Miastor metraloas* Meinert, male (1.0mm).
Fig. 4 (right). *Leptosyna nervosa* (Winnertz), female (0.9mm).


R1
MA
R5
CuA
stem vein with setae
5
Leptosyna nervosa
subcostal sclerite
R1
R5
stem vein, no setae
CuA
6
Miastor metraloas
R1
CuA
stem vein, no setae
7
Heteropeza pygmaea
R1
CuA
Neostenoptera appalachiensis
8

It is my hope that this communication may be of assistance for museum specialists and systematic entomologists in collecting and preparing Heteropezini for identification and adding these rare flies to their collections.

References cited

Gagné, R. J. & M. Jaschhof. 2014. A catalog of the Cecidomyiidae (Diptera) of the world. 3rd edition. Digital version 2.

Jaschhof, M. & C. Jaschhof. 2017. Mycophagous gall midges (Diptera, Cecidomyiidae: Lestremiinae, Micromyinae, Winnertziinae, Porricondylinae): first records in Sweden and descriptions of closely related new species from elsewhere. Zootaxa 4226 (4): 546-570.

Plakidas, J. D. 1999. Identification of the North American Porricondyline larvae (Diptera: Cecidomyiidae). Loyalfield Publishing, Pittsburgh, Pennsylvania, [2-unnumbered] 129 pps.

Plakidas, J. D. & M. L. Ferro. 2016. A new species of *Neostenoptera* (Diptera: Cecidomyiidae: Winnertziinae) from eastern North America. Insecta Mundi 0510: 1-9.

Pritchard, A. E. 1960. A new classification of the paedogenic gall midges formerly assigned to the subfamily Heteropezinae (Diptera: Cecidomyiidae). Annals of the Entomological Society of America 53: 305-316.

Selby, R. D. 2005. Diversity of saproxylic Cecidomyiidae (Diptera) in a Quebec hardwood forest. Master of Science Thesis McGill University, Montreal, Canada. xii and 93 pps.

****

Publishing opportunities on Mitaraka Diptera

Marc Pollet[1] & Julien Touroult[2]

[1] Royal Belgian Institute of Natural Sciences (RBINS), Vautierstraat 29, B-1000 Brussels;
Research Group Terrestrial Ecology (TEREC), University of Ghent,
K.L. Ledeganckstraat 35, B-9000 Ghent; and
Research Team Species Diversity, Research Institute for Nature and Forest (INBO),
Kliniekstraat 25, B-1070 Brussels (all Belgium); mpollet.doli@gmail.com, marc.pollet@inbo.be

[2] Muséum national d'Histoire naturelle (MNHN),
Service du Patrimoine Naturel, CP41, 36 rue Geoffroy Saint Hilaire
75005 Paris (France); touroult@mnhn.fr

Over two years ago (end of 2014 – early 2015), more than 40 of you (my colleague Diptera workers) expressed interest to study samples that were collected during the "Our Planet Reviewed - French Guiana 2015" expedition in Mitaraka. Agreements were signed and in early 2016 samples were ultimately disseminated to most of you, including some giant species (Fig. 1). According to the agreement between the MNHN and the researcher, results of the identification process were expected to be submitted one year after the receipt of the samples at latest. Thus far I only received 6 datasets, 5 from colleagues from Brazil and one from a Dutch colleague (congratulations, you set an example!).

Fig. 1. Pantophtalmid species from Mitaraka (photo Rémy Pignoux)

Not only do I want to gently remind the others of their commitment, but at the same time, I very much like to offer every dipteran collaborator to this project a unique opportunity to publish the research results in a MNHN journal. See the translated message by Dr Julien Touroult (MNHN) I received about two weeks ago:

Dear collaborators,

Two years after the Mitaraka expedition, I invite you to contribute to a special issue of the journal Zoosystema that will be dedicated specifically to the results of this expedition. If you might be unfamiliar with Zoosystema, it is a journal with an Impact Factor, Open Access, and is edited by the MNHN. In the past, two special issues have encompassed the results of two previous surveys, i.e., Espiritu Santo and ATBI Mercantour. For examples, see:
http://sciencepress.mnhn.fr/fr/periodiques/zoosystema/37/1
http://sciencepress.mnhn.fr/fr/periodiques/zoosystema/31/3

The contributions, in English (or possibly also in French), deal exclusively with the fauna (with apologies to our botanist friends …), invertebrates and vertebrates. For this issue, the papers should include results, at least in part, retrieved from material collected during the Mitaraka expedition, and,

if possible, reflect on the French Guianan fauna.

Possible subjects are:

- *Revisions of groups with species descriptions (but try to avoid single species descriptional papers).*
- *Identification keys.*
- *Notes on the ecology, behaviour, etc.*
- *Biogeographical analyses, faunistic lists and/or first species records for French Guiana in a systematic treatment of the taxonomic group (in this respect, it is expected that reference material has been or will be deposited in the MNHN collection).*
- *Analyses on the sampling methodologies.*

To have an idea about the nature of the current papers, see http://sciencepress.mnhn.fr/en/periodiques/zoosystema. Instructions to authors (in English) are available at: http://sciencepress.mnhn.fr/sites/default/files/periodiques/pdf/ia-zoosystema-2018-flux-continu-en.pdf.

Note that voluminous contributions will also be taken into account and also annexes, including video and sound recordings, can be included.

I will personally take care of the general coordination and the receipt/first lecture of the manuscripts before they enter the normal review process of Zoosystema.

A collective paper will also be included, presenting the expedition, the sampling techniques and strategies, and the first published results.

Timing is as follows:

- **As soon as possible**: inform me and Julien Touroult (julien.touroult@mnhn.fr) if you seriously consider to contribute and also tell us on which topic.
- **End of October 2017**: deadline for the submission of manuscripts.
- **March 2018**: deadline for final versions (i.e., reviewed and reworked manuscripts).
- **June 2018**: effective publication of the special issues of Zoosystema.

Of course, to all of you who would like to contribute, I offer my help in analysing your data (with respect of trap attractiveness, habitat affinity, etc.), and I can also provide pictures of habitats and sampling methods. I still contemplate on writing up a contribution specifically dealing with the dipteran sampling strategy and methods. Each of you could then refer to this paper and as such, shorten your Material and Methods section.

Thus far, 19 papers have already been published based on invertebrate material collected during the Mitaraka expedition. Most of them deal with Coleoptera or Lepidoptera, but also Hemiptera, Orthoptera and Scorpiones have been treated. No Diptera thus far!

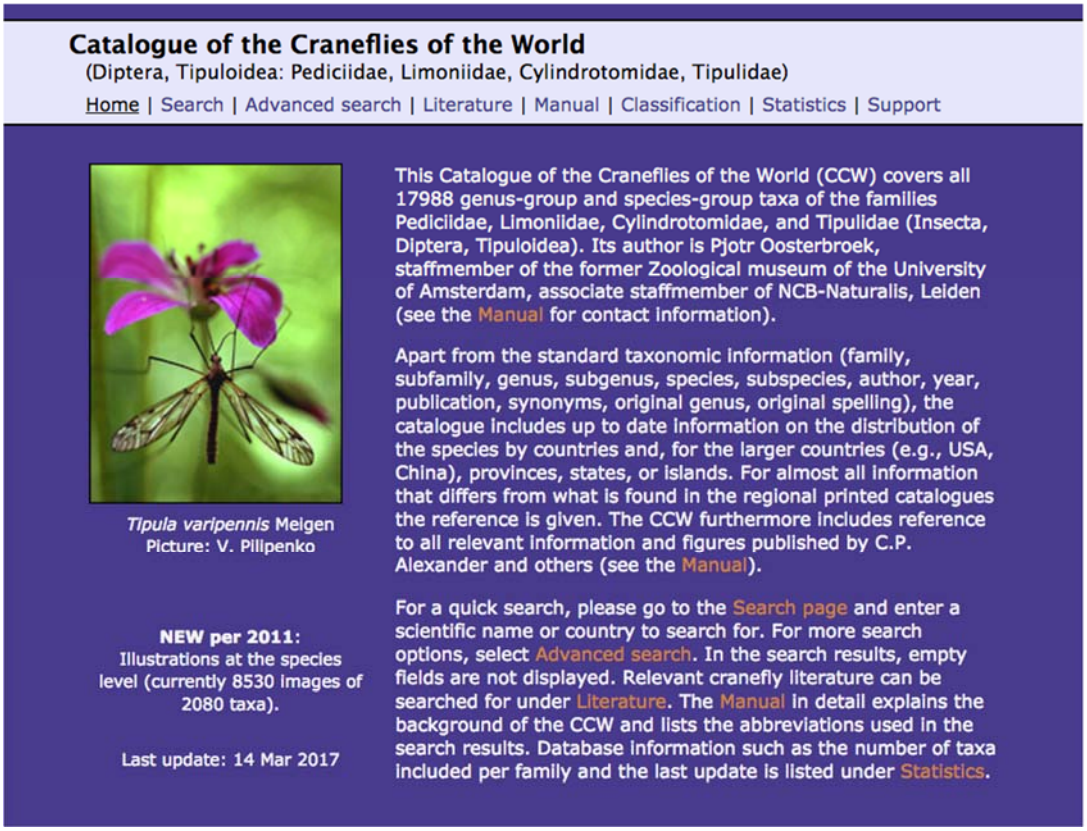
Final remark: since early 2016, a number of files on the Mitaraka expedition are available on a Gdrive to all of you who collaborate to this project. To those, please, remember that a citation to the expedition should be included in Acknowledgements (also to be found in Gdrive).

****

Illustrated Catalogue of the Craneflies of the World (CCW)
Online at: CCW.naturalis.nl

Pjotr Oosterbroek

NCB-Naturalis, Leiden, Netherlands; p.oosterbroek@chello.nl



The CCW is an up-to-date online catalogue of all crane flies of the World (http://CCW.naturalis.nl). Currently 15,457 recognized valid species. The CCW covers all genera, subgenera, species, subspecies and synonyms for the families Cylindrotomidae, Limoniidae, Pediciidae, and Tipulidae (Insecta, Diptera, Nematocera, Tipuloidea). In total there are 18,352 records, 11,774 of which are by the well-known North American crane fly specialist Charles P. Alexander.

For all species and subspecies the CCW includes:

- The usual taxonomic information (genus, subgenus, author, publication, synonyms, etc.).
- The distribution, specified by country, and for the larger countries by states, provinces, and/or islands.
- An overview of almost all relevant citations from the literature from the year 2000 onward, currently at some 33,000 citations. The citations appears automatically below the information for the species, separated into sections for biology, taxonomy, distribution, period of flight, and altitude. In the biology section very frequently a summary of the original article is presented (see e.g. *Tanyptera atrata atrata*, under biology, for Great Britain the extensive citation of Stubbs, 2003).
- Illustrations at the species level, currently with 8,530 illustrations for 2,080 taxa.

Searching the CCW is very easy. Fill in a name or country, or go to Advanced Search for more specified searching (e.g. islands, biogeographical regions, authors, etc.). Searching '*Limonia*' gives 251 records worldwide. Searching 'Great Britain' gives 339 records for the four Tipuloid families combined. All these records can be consulted individually, or scrolled through one after the other. All of these records can also be exported to Excel with a single click of the mouse. So, a species list for Great Britain (or any other part of the world) can be generated within a few seconds.

The CCW furthermore includes:

- A reference database for some 6,600 titles of which about 2,800 are available as PDF. These PDF's include the complete set of the 1,055 crane fly papers published by Charles P. Alexander.
- A reference citation for most of the important details in which the CCW differs from the printed regional catalogues.
- A reference citation for all figures and relevant information published by C.P. Alexander, F.W. Edwards (West Palaearctic excepted), G. Theischinger, and as published in recent papers.
- A manual (on classification, distribution, abbreviations, gender, spelling of names, references).

For the most recent update (14 March 2017) the figures are:

Number of records: 18,352
Genera and subgenera: 689
Recognized species: 15,457
Synonyms: 1,659
Doubtful taxa: 98
Number of recognized (sub)species per family
    Cylindrotomidae: 70 (plus 15 synonyms)
    Limoniidae: 10,598 (plus 812 synonyms)
    Pediciidae: 495 (plus 50 synonyms)
    Tipulidae: 4,294 (plus 605 synonyms)
    Non Tipuloidea: 248 (plus 0 synonyms)
Number of recognized (sub)species per region
    Holarctic: 4,801
    Nearctic: 1,640
    Palaearctic: 3,259
    West Palaearctic: 1,490
    East Palaearctic: 2,048
    Neotropical: 3,556
    Afrotropical: 1,394
    Oriental: 3,505
    Australasian/Oceanic: 2,525

The CCW has been developed by ETI BioInformatics. Financial support was received from GBIF, NLBIF, SBNO, UES. The CCW was initated and is kept up-to-date by Pjotr Oosterbroek, Honorary Staff member, Naturalis Biodiversity Center, Leiden, The Netherlands.

Please use the CCW as much as you like and send me comments so that it can be improved further.

****

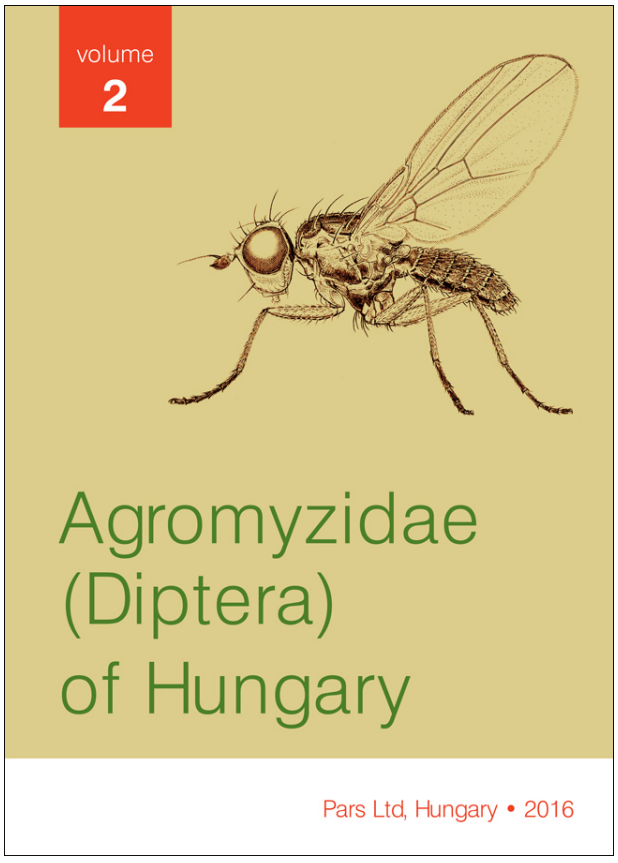
Agromyzidae of Hungary (by László Papp and Miloš Černý): a comprehensive monographic book series on leaf-miner flies

Mihály Földvári

Department of Evolutionary Zoology and Human Biology,
University of Debrecen, 1, Egyetem tér, 4032 Debrecen, Hungary; mfoldvari@gmx.net

The leaf-miner fly family has been problematic for many specialists and has created confusion even though it is one of the economically very important groups and as such they would require high precision in species recognition for reasons of better food quality and high performance agriculture. In case of these flies all information connected to the wrong name can cause big confusion and chaos for future generations. As it is important, many people try to tackle it, a lot of information (papers, names) is created and any glitch potentially induces a wave of problematic cases, unrecognizable species concepts and most of all frustration. To prevent this these books provide a plethora of useful information on the species, preparation methods and drawings, and how they can be best identified.

The scope of the monograph is the Pannonian Biogeographical Region, but not only the region's present species are treated, but all species that are expected to occur here. This gives a much broader field of reference to the work and the detail the authors give on all species (methodical description, 7-14 drawings per species) and the sophisticated identification keys (with many original characters) designate it as a solid basis for all future European Agromyzidae studies.



An annotated species list (check-list) is given for three countries (Hungary, Slovakia and Czech Republic) together with all the references used. Since plant names involved in the flies' development are equally important, the index of Diptera names and plant names are both available.

Many details are uploaded to the book series' web site (http://agromyzidae.hu). Besides the abstract and content of each volume the list of species described as new to science is given with the pdf file of the relevant book pages. The lists of the book are also available: the check-list, references, indices of plants and Diptera names.

Two volumes have so far been published that include Agromyzinae (155 species) and Phytomyzinae I. (127 species), and the third (Phytomyzinae II.) is expected by the end of 2017, the fourth (Phytomyzinae III.) by the end of 2018.

****

Revision of An Introduction to the Aquatic Insects of North America (5th edition) (2018)

Rich Merritt

Michigan State University, East Lansing, Michigan, USA

This is a note to let Dipterists know that our book, *An Introduction to the Aquatic Insects of North America*, by Merritt, Cummins and Berg, is currently in preparation for the 5th revised edition. Based on discussions with our publisher, Kendall/Hunt Publishing Company (Dubuque, IA), we have concluded that 2018 will be an appropriate time for a new edition to be published, when the current one will be 10 years old. There are definitely some new taxonomic developments that need to be incorporated, updates on introductory chapters, and additional literature has appeared on the functional feeding ecology of aquatic insects requiring revision of the ecological tables. There also will be a chapter containing superior color photographs of aquatic insects by G. W. Courtney and S. A. Marshall that will be new to the book. There are several chapters covering the Aquatic Diptera (family keys to larvae, pupae and adults) and more detailed coverage of the Tipulidae, Simuliidae, Culicidae, and Chironomidae that will again be part of the book. Some of the authors have changed either due to their passing, retirement, or for other reasons.

****

A note from a native bee project

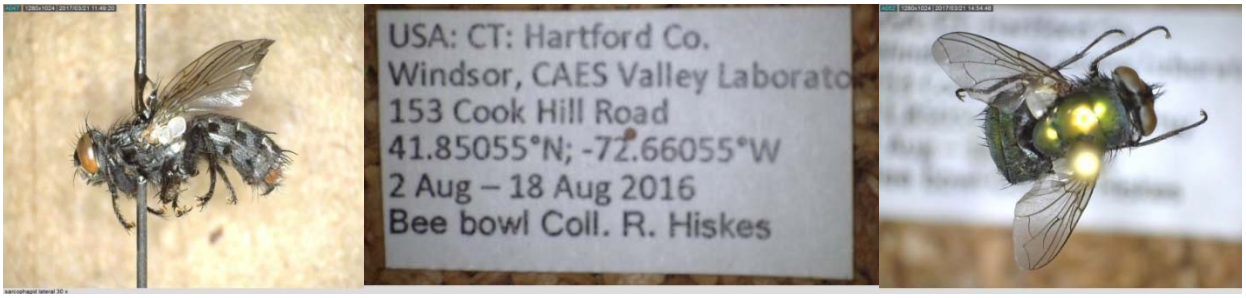
Rose Hiskes

Diagnostician, Horticulturist
The Connecticut Agricultural Experiment Station
153 Cook Hill Rd., Windsor, CT 06095; Rose.Hiskes@ct.gov; 860-683-4977

My name is Rose Hiskes. I am a diagnostician at The Connecticut Agricultural Experiment Station, Valley Laboratory in Windsor, Connecticut. One of the research projects I am helping out with is a native bee project. We use colored bee bowls, filled with a mixture of propylene glycol and detergent, which are harvested every two weeks during the growing season. I am trying to identify the flies that also end up in these bee bowls. We would like a good reference fly collection in case anyone in the future wants to study flies and pollination in this system.

Would anyone in NADS be willing to help me identify some brachyceran flies, gratis? I've been processing most of the flies out of alcohol, through ethyl acetate, per Dr. O'Hara's method. I have plenty of pinned samples with complete collection data to share if anyone would like material from CT. I could ship four specimens of each species and the identifier could keep two. I can pay for return shipping. Please contact me if you are willing to help.

I have included pictures of some of my specimens below, as well as how they are labelled. Not all specimens look as good as these and some look better.



So far the families I've identified are:
- Muscidae
- Dolichopodidae
- Syrphidae
- Calliphoridae
- Sarcophagidae

Families I believe I have, but am not 100% sure of are:
- Bibionidae
- Scatopsidae
- Sepsidae
- Sphaeroceridae
- Tachinidae

****

HISTORICAL DIPTEROLOGY

Daniel William Coquillett (1856–1911): a life of trials (both court and experimental) and tribulations

Neal L. Evenhuis

J. Linsley Gressitt Center for Entomological Research, Bishop Museum,
1525 Bernice Street, Honolulu, Hawaii 96817, USA; neale@bishopmuseum.org

"Personally Mr. Coquillett was an ascetic. Rarely did he speak of his past, or home life, and only occasionally would he discuss with his associates matters of scientific interest".
— Banks, N., Currie, R.P., & Walton, W.R., 1911

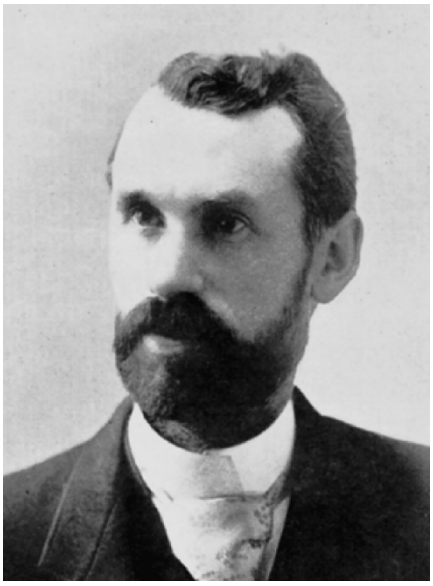


Fig. 1. Daniel William Coquillett (1956–1911). Date of photo estimated ca. 1896.

I have tried to find relatively unknown to little-known dipterists and write about them for *Fly Times*, or if putting better-known dipterists onto the stage, to write about little-known facts concerning them. The subject of this paper is a fairly well-known dipterist by name (at least to North American workers) but a great deal is not known about him beyond that, most likely due to his quiet and private nature as described above by his colleagues. He was tall and lanky, and census registers describe him with gray eyes and brown hair. Banks *et al*. (1911) indicated that his natural diffidence kept him from public speaking. Although he was President of the Entomological Society of Washington in 1904, he generally avoided attending meetings of the societies of which he was a member, and instead sent papers to be read by others [even his Presidential Address for the Entomological Society of Washington (Coquillett, 1904) was read by the Recording Secretary due to his absence]. Some of those papers that were read and noticed in the minutes of some societies were never published and it could have been that his meekness caused him to fail to follow up with questions posed to him in order to get them into print. That shyness seems evident in the only known photo of him with fellow entomological staff of the U.S. National Museum (Fig. 4). Rather than show himself, he preferred to remain partially hidden in the back where only the top of his head is visible. He was a night-owl, often working at odd hours, and Banks *et al*. (1911) further said he was punctual, arriving at the office on time in the morning, working steadily till the closing hour, and "then was lost to his associates".

After conducting research on him for this piece, it became apparent that trouble seemed to follow Coquillett wherever he went. That private personality might well have been partly responsible for the trials and tribulations he endured in his professional and private life. From contracting a disease as a youth that caused his family to move across country, to feuds with colleagues (almost always

precipitated by others who were more aggressive than him), and finally a bitter divorce and lawsuit for alimony (both played out publicly in the local newspapers), Coquillett was beset with a stressful life; the stress of which has been conjectured as the possible reason for failing health in his last two years and ultimate death in 1911 from heart failure at the relatively young age of 55 (his parents and most of his 8 siblings lived into their 80s).

Coquillett's name is found in most economic entomology textbooks having been involved in helping save the citrus industry in California through his and Albert Koebele's work with the predatory Vedalia beetle. The beetle was purposefully introduced from Australia to control the scale insect that was damaging many orange and other orchard crops. But, although his name may be well known in that context and with regard to his interest of Diptera taxonomy, little else about him has been published. The few biographies are short and pertain primarily to his entomological exploits.[1] The family history mentioned here derives primarily from one done by Daniel Coquillett's brother, Benjamin Franklin Coquillette (Coquillette, 1894). The digital copy online was scanned from the personal copy of Daniel Coquillett, in which he wrote on the flyleaf "Presented to Daniel W. Coquillette by his Parents". It also contains a bookplate of the Boston Public library with a notation that it was given to them by "E.G. Mitchell" [= Evelyn Groesbeck Mitchell] (see below for more on her and Coquillett)[2].

Early years

Daniel William Coquillett (born as "Coquillette" but he dropped the final "e" in his published works although documents show his legal name was still spelled as "Coquillette" at the time of his death) was born on 23 January 1856 in Franklinville, a small community outside of Woodstock, Illinois (Coquillett's early publications have the byline as Woodstock when the family lived in Dorr Township). His father, a farmer, was Francis Marquis Lafayette Coquillette and his mother was a distant cousin of his father, Sarah Anne Cokelet (relatives spelled the surname either as "Coquillette", "Cocalet", or "Cokelet"). His great-great grandfather was François Marquis Lafayette Capet, a half-brother to King Louis XIV of France. The Capet family were well-to-do Huguenot's living on their estate in La Rochelle on the coast in western France, but eventually had to flee the country in the late 1600s to avoid the Roman Catholic persecution at the time. The family changed their surname to Coquillette when they arrived in New Rochelle, New York and settled in New City near Rockland, New York. Our Coquillett's father, Francis, was a blacksmith, operating the vocation with his brother, Daniel. After many years in New City, Francis moved to Illinois in 1851 where he and his family engaged in agriculture in Franklinville for a few years before moving to Dorr Township in late 1856 and operated a farm there until the Fall of 1882.

Daniel William Coquillett (Figs. 1, 2) was the seventh of nine siblings (six brothers and two sisters). All were either home-schooled or attended rural district schools. Coquillett was a quick learn and his schooling and self-education was enough to allow him to teach a few terms in the district schools of McHenry County in 1876.

During his childhood years helping his father on the Dorr farm, Coquillett expressed an early interest in entomology, collecting and rearing various insects, especially moths and butterflies. He used his lunch hours to rush to the nearby woods and collect caterpillars and kept them in boxes. He saved his money

1. The information provided here derives in part from biographies by Banks *et al*. (1911) and Cresson (1911) as well as newspaper articles, and archival and genealogical research conducted by me. The information on the Dyar and Mitchell episode derives in large part from Epstein (2016).
2. The accession number (4339.172) was searched online and the book was found to have been donated by E.G. Mitchell to the Boston Public library in 1926. Mitchell was in Boston at that time working in hospitals.

to buy books on entomology, but when he could not identify his creatures, he would send the reared insects to Augustus Radcliffe Grote (1841–1903) in Buffalo or George Henry Horn (1840–1897) in Philadelphia, who helped provide identifications. In 1880, he published his first paper in the *Canadian Entomologist* "On the early stages of some moths" (Coquillett, 1880: 43–46). His enthusiasm for entomology led to publishing many short notes in the weekly newspaper out of Philadelphia published every Saturday, the *Germantown Telegraph*.

His papers caught the attention of Illinois State entomologist Cyrus Thomas, whose encouragement and collaboration led Coquillett to become Assistant State Entomologist in Illinois and to publish more detailed articles on various insects for the tenth annual report of noxious and beneficial insects of Illinois (Thomas, 1881). In conducting the research for this series of reports, Coquillett was at times assisted by his brother George Alonzo Coquillette, who helped with rearing of some insects and supplying hibernating broods of others. Coquillett also wrote much of the Eleventh Report of the [Illinois] State Entomologist for Thomas published the following year (see Coquillett, 1882).

Fig. 2. Daniel William Coquillett (standing) and his brother Abraham Cole Coquillette. Photo taken 1873, when Daniel was aged 17. Photo from Coquillette, B.F., 1894. *History of the Coquillette family*. (D.W. Coquillett personal copy now in Boston Public Library). NB: It was incredibly serendipitous that, after researching the contested will of Coquillett and finding that his estate would go to Evelyn Mitchell, that the copy of the Coquillette family history I found online would be the copy she obtained from his estate and subsequently donated to the Boston Public Library.

Unfortunately, in 1882 Coquillett became seriously ill and was possibly thought to have incipient tuberculosis. There was no cure for tuberculosis at the time and physicians in the East were telling patients to go west and get fresh air and plenty of sunshine, thinking that would cure them. So, to bring Daniel to warmer, drier, sunnier climes to help improve his health, his father sold their farm and moved the whole family to Anaheim in southern California, where they continued the farming they had done in Illinois.

The Anaheim region was founded in the 1850s by Germans who, by the 1870s, had turned the fertile southern California soil into what became at the time the state's largest wine producing region (Fig. 3) with at its height some fifty wineries and 5,000 hectares of vineyards. The completion of the Southern Pacific Railroad connecting the other more eastern rails had just been completed allowing ease of travel from the East Coast and a resulting large influx of new residents to southern California. Unfortunately, Pierce's disease in 1885 and 1886 wiped

out the grape vines and farmers quickly changed crops to oranges and walnuts[3]. According to the Coquillette family history (Coquillette, 1894), the Coquillette family were fruit farmers in California, but exactly what crop they maintained and harvested is unknown.

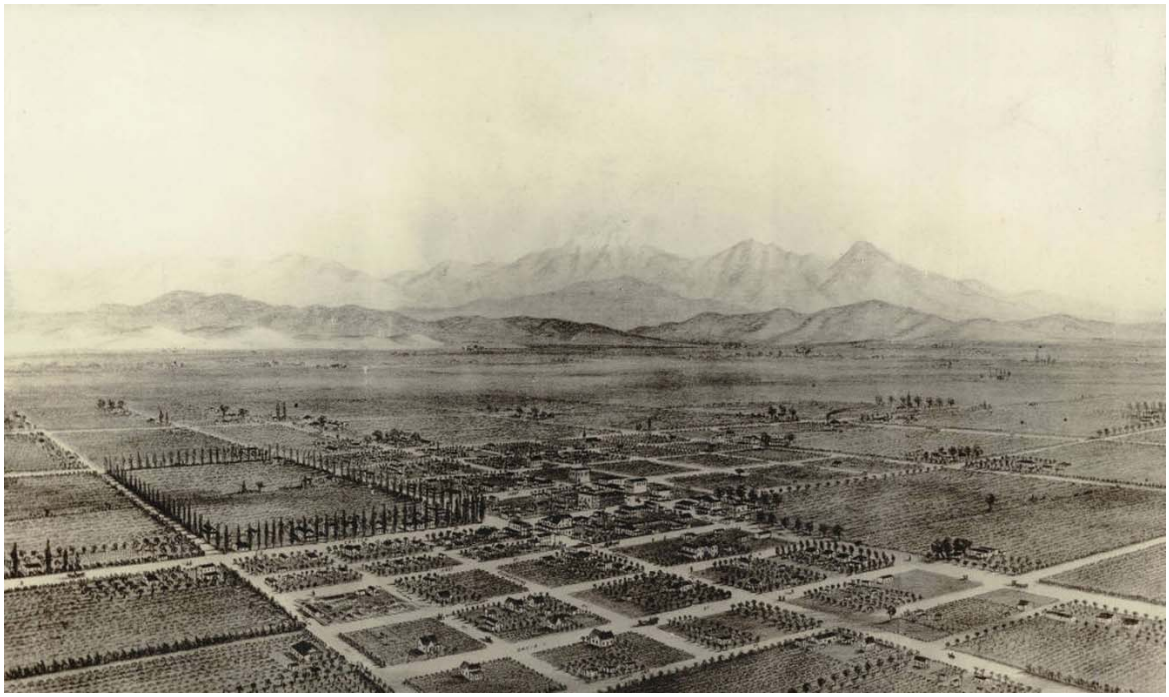


Fig. 3. Anaheim aerial view. Circa 1876. Photo: Wikimedia Commons.

Life in California

Daniel's health quickly improved soon after the move to southern California and when not working in the orchards, he began to collect insects, specializing in Diptera, especially Bombyliidae. It is possible that because of the remarkably quick improvement in his health—he and his family arrived in southern California in the Fall of 1882 and by the Spring of the following year he was busy at work in northern California—that he may not have had tuberculosis, but instead something not nearly as serious. In any case, his health having improved and having secured employment, Daniel eventually stayed on in California; while the family remained there only until June 1886 when they moved back to Illinois, this time to Marengo, a town not far from their previous farm.

In California, Coquillett had an extensive entomological library and continued correspondence with colleagues that he had begun while in Illinois. His many papers on economic insects and control methods over the years had attracted the attention of many. After starting work on Diptera taxonomy, he soon was sent specimens from many people for identification. There were really only two active American-born workers on Diptera residing in the United States during the 1880s: Samuel Wendell Williston (1851–1918) and Coquillett. While preparing notes for his upcoming synopsis of the Diptera families and genera of North America (Williston, 1888), Williston sent Coquillett some bee flies he had collected in Arizona, which Coquillett's was able to append to his *Anthrax* "monograph" (Coquillett, 1887). Williston had obtained his PhD in paleontology at Yale College in 1885 and conducted post-doctoral studies there for a few years thereafter. The two were apparently exchanging

3 As a personal coincidental note, these were the two trees that populated our farmland in Ontario, California as I was growing up.—NLE.

specimens as Williston (1892) thanked "his friend" D.W. Coquillett for sending him a specimens of a species of the syrphid *Criorhina*, which Williston described as new and named it after Coquillett. Coquillett was also grateful for specimens given to him or for help that he received from correspondents, and would express his thanks by naming species after them. A quick scan of the names he gave to Diptera species show that most were named after fellow dipterist, Charles Willison Johnson (1863–1932) of the Boston Society of Natural History and the next most were named for Annie Trumbell Slosson (1836–1926), botanist, entomologist, author, and first woman member of the New York Entomological Society.

Away from the many institutions, libraries, and many entomological colleagues of the mid-western and eastern United States, Coquillett was forced to make do with what he could. He therefore networked with many local naturalists while residing in southern California. Many were agricultural contacts assisting his economic work, but others were companions on his various collecting trips throughout the southern parts of the state. One of these traveling companions was Charles Russell Orcutt (1864–1929) of San Diego. Orcutt was a botanist who edited his own journal, the *West American Scientist*, which was to be the medium for a number of Coquillett's taxonomic papers in the first couple of years of the 1890s before he was called back to Washington, D.C. Coquillett also sent collected insects to colleagues, including Abbé Léon Provancher (1820–1892) in Quebec, John LeConte (1818–1891) at Berkeley, California, and G.H. Horn in Philadelphia. Horn even traveled to meet Coquillett in 1893 to examine his collections.

Locusts

In April 1883, through the recommendation of Cyrus Thomas (who was by that time now working for the U.S. Department of Agriculture), Coquillett began as association with the State of California in economic entomology, staying as a guest of California State economic entomologist Matthew Cooke (1829–1887) in Sacramento, where he was said to be "stationed" for two or three months (Anonymous, 1883)—it turned out to be four or more. During this time he helped Cooke work on two books: (1) a textbook of beneficial and injurious insects that was introduced into schools in the State (Cooke, 1883a)—the work was popular enough to have gone to three editions within five years; and (2) a much larger book published the same year that was based just on injurious insects and their remedies (Cooke, 1883b).

In early 1885, Charles Valentine Riley (1843–1895), entomologist at the U.S. Department of Agriculture in Washington, D.C., received word that there was a grasshopper outbreak in the Central Valley of California that was plaguing crops. Riley needed someone there and Coquillett was his choice. Rather than spend funds to send out someone, he made Coquillett a field agent of the U.S.D.A. and Riley became Coquillett's new supervisor. Coquillett's first mission was to investigate the grasshopper outbreak and report back to Riley. After receiving a telegram from Riley on 1 June 1885 to head to Merced County to start his investigations, newspaper reports have Coquillett on the job on 5 June 1885 where he began his work in Atwater. His report, made just three months later and published in Coquillett (1886), gives a summary of his study of the problem at one ranch in Atwater that had significant locust damage to trees and alfalfa. In the typical attention to detail that characterized Coquillett's subsequent economic reports, he gives life histories and observations on all species encountered and details on remedies he witnessed and recommended. His recommendation of a poison mash to kill the locusts turned out to be extremely successful. This report was his first as a federal entomologist and set him on a course to become one of the renowned economic entomologists in the State of California.

Vedalia Beetles, Cyanide, and Troubles with Koebele and California Officials

Back in Washington, Coquillett's supervisor C.V. Riley, was constantly "putting out fires" of complaints of farmers, vintners, dairymen, etc. nationwide with regard to injurious insects causing damage to crops, trees, vines, and domestic animals. One particular set of complaints was coming from [no surprise] California (and had been for a few years). Riley was obviously impressed (or at least satisfied) enough with Coquillett's locust report to send him on a new mission. Orange groves were being subjected to damage by the introduced cottony-cushion scale. Coquillett was to join forces with exploratory entomologist Albert Koebele and find a solution to the problem. Riley had theorized that going to the home of the scale (Australia, where it was not causing the unchecked damage that it was in California) might prove successful in finding what insect or other organism was keeping populations of the scale in check or possibly could help eradicate it. In late 1885, the two began work. But trouble soon ensued. Koebele discredited Coquillett's work and the two feuded over who was in charge. Coincidentally or not, funds for Coquillett's position ran out in the summer of 1886 and his employment with the U.S. Department of Agriculture was terminated. He was re-employed the next year, but the short time in between federal paychecks proved a useful period for Coquillett.

Loss of employment with the federal government seemed not to deter the fervor Coquillett had for his work and, after meeting with two California entomologists who had begun the process, he began experiments with hydrocyanic-acid gas treatments for trees to rid them of scale insects. The gas was released under a tent covering a tree by mixing potassium cyanide with sulfuric acid[4]. The previous methodology using this gas took many hours for each tree. By conducting trials with different dosages and tent designs, Coquillett was able to reduce the treatment to 15 minutes per tree. However, while experimenting with this gas treatment, Coquillett almost met an unfortunate fate. California State Quarantine Officer Alexander Craw (1899) related the story of he and Mr. Wolfskill (the latter the owner of the groves where Coquillett was working) going out into the groves to see how he was doing and saw evidence that he had left in a hurry. They finally tracked him down and found out he had come into contact with the gas and feared for his life. He vowed never to work with the gas again. They finally convinced him to wear a suit while using the gas for safety and he reluctantly went back to work. Coquillett's work on the gas treatment was a tremendous success and was publicized throughout the world as the method for getting rid of pestiferous insects, especially scales, in orchards. Riley was disappointed that the U.S.D.A. would not get credit for this but that did not stop him from publicizing it in many reports and newspaper articles, which made it seem as though the gas treatment discovery was the result of the U.S.D.A.

Back in the employ of Riley, Coquillett returned to work with Koebele to solve the scale problem. Koebele went to Australia to find insects that might control the scale, and Coquillett would be the experimenter who received the shipments, and reared them in cages to see which worked best. Various parasites and predators were shipped and tested in cages and in the field, but one in particular became world famous. The Vedalia beetle, *Rodolia cardinalis*, a ladybird beetle as conspicuous as the cottony-cushion scale on which it readily fed. The beetles multiplied rapidly, were easily transferred from grove to grove, and were voracious feeders. Within a year, the scale was virtually eliminated from the region and California's citrus industry was saved.

And, thus, more trouble ensued for Coquillett. Friction between state and federal officials over credit for the success resulted in a number of attacks on Coquillett that were printed in the local papers. Coquillett remained quiet and did not respond to most of the disparaging remarks and personal attacks. In 1893, Riley had endured enough of the bad press the U.S.D.A. was getting in California and, after

4 This of course is the same concoction of chemicals prisons use for executing prisoners by lethal gas.

communicating the situation to the Secretary of Agriculture, the latter recalled both Koebele and Coquillett to Washington to separate them from California officials. Coquillett wrote to the *Pacific Rural Press* and they posted the letter from the Secretary of Agriculture. In that newspaper piece, Coquillett much lamented his having to go:

> "I regret very much the necessity that bids me leave this interesting field of labor where the principal work of my life thus far has been wrought, and where many pleasant friendships have been formed. My relations with the honest soil-tillers have been of the most agreeable kind, and I need hardly assure them that in whatever field I may be called upon to labor in the future, I carry with me the most pleasant remembrances of them and the good people of this peerless State—California." (Anonymous, 1893: 264).

The two field agents were diametrically opposed in their reaction to the recall. Koebele had had enough of Riley and Washington and took a job in Hawaii working as exploratory entomologist for the new provisional government there and eventually for R.C.L. Perkins and the Hawaii Sugar Planters' Association; and Coquillett, unsure of his future, moved to Washington to continue his employment with the U.S.D.A.

Only after he was "safely" back in D.C. did Coquillett respond to the newspaper attacks on him (Coquillett, 1893). Coquillett never returned to California, but during his stay there he had purchased land, which he kept until his death. While working for the U.S.D.A., he resided at 236 Winston Street (a building of small apartments), a few blocks away from the main rail station near downtown Los Angeles that no doubt allowed him a convenient hub of operations when he needed to travel to the various places that Riley would send him. But his listing in Los Angeles city directories ends in 1893, so this apartment was probably not owned by him or was sold when he left.

Marriage, Life, and Work in Washington

After the recall to Washington, Coquillett continued his work on economic entomology as Assistant Entomologist, initially under the supervision of Riley and then, after Riley's resignation in 1894, under Leland Ossian Howard (1857–1950). During his first few years, his publications on economic subjects were mixed with taxonomic work on Diptera. After three years in Washington, D.C., Howard in 1896 appointed Coquillett as Honorary Custodian of Diptera at the United States National Museum. The year 1896 was an eventful one for Coquillett. Not only was he given the custodial post at the U.S. National Museum, but he also got married. On 18 February 1896 Coquillett was betrothed to Anne Chew Dorsey, the daughter of Maryland judge, Thomas Graham Dorsey. Anne was distantly related to General Robert E. Lee and was a life-long member of the United Daughters of the Confederacy, publishing poems in their journals and writing a little-known work entitled "The Old Gray Coat". The Coquilletts had no children and the marriage was apparently a turbulent one.

With his new custodial posting, Coquillett's agriculturally-related papers became fewer (to be replaced with medically important Diptera) while his taxonomic papers increased. He still published on Bombyliidae (his first interest), but his Diptera work now spanned many different families. In all, Coquillett described more almost 1,220 species of Diptera in 77 families during his lifetime, or about 51 species per year of work. There were complaints by some workers that his descriptions were sometimes too short or vague. The possible reason for this was pointed out by Cresson (1911), who conjectured that Coquillett's attention to helping others with their identifications caused him to neglect his own work and, in order to do both, he resorted to writing short descriptions. There were hundreds of new species coming in to the museum that Coquillett possibly felt compelled to describe; and juggling the time needed to do both the describing of all the new species and providing identifications for

everyone resulted in him having to shorten his descriptions. A quick check of descriptions in the 1880s and 1890s compared with those made in the 1900s does indeed show more condensed descriptions in those later years and many more species described per paper than in the earlier years. Table 1 gives a summary of the numbers of new taxa described by Coquillett by year; Table 2 gives a summary of the numbers of new taxa per family. In 26 years of publishing, he only failed to describe a new taxon in two years (1888 and 1911; the latter year he was in failing health). His proclivity in describing can be seen in Table 1 as clearly increasing shortly after his arrival in Washington, D.C. with the only anomaly being the year 1896, which was when he got married. He definitely tapered off in his descriptions and numbers of pages published after 1905 and this could also have been due to his health, but I could find no corroboration of that during this research.

Table 1. **Number of new species proposed by Coquillett by year**. Data updated from *Systema Dipterorum* (accessed 26 February 2017).

Year	Species	Papers	Pages	Spp./Paper	Spp./Page
1886	9	3	12	3.0	0.8
1887	47	3	29	15.7	1.6
1888	–	–	–	–	–
1889	1	1	2	1.0	0.5
1890	1	1	6	1.0	0.2
1891	19	4	22	4.8	0.9
1892	27	5	34	5.4	0.8
1893	29	8	28	3.6	1.0
1894	55	7	40	7.9	1.4
1895	137	12	113	11.4	1.2
1896	6	3	6	2.0	1.0
1897	95	1	156	95.0	0.6
1898	106	10	72	10.6	1.5
1899	41	7	30	5.9	1.4
1900	108	8	120	13.5	0.9
1901	101	9	57	11.2	1.8
1902	166	7	81	23.7	2.0
1903	27	6	38	4.5	0.7
1904	125	9	61	13.9	2.0
1905	50	5	27	10.0	1.9
1906	13	3	5	4.3	2.6
1907	8	4	9	2.0	0.9
1908	9	1	4	9.0	2.3
1909	5	4	5	1.3	1.0
1910	30	2	16	15.0	1.9
1911	–	–	–	–	–
1924	1	1	3	1.0	0.3
totals	**1216**	**124**	**976**	**9.8**	**1.2**

Table 2. Number of new species proposed by Coquillett by family. Data updated from *Systema Dipterorum* (accessed 26 February 2017).

Family	New Spp.		Family	New Spp.		Family	New Spp.
Acroceridae	1		Dolichopodidae	15		Phoridae	7
Agromyizidae	14		Drosophilidae	10		Platystomatidae	6
Anthomyiidae	11		Dryomyzidae	2		Psilidae	3
Anthomyzidae	1		Empididae	89		Psychodidae	3
Asilidae	49		Ephydridae	26		Pyrgotidae	1
Asteiidae	1		Fanniidae	1		Rhagionidae	11
Atelestidae	1		Heleomyzidae	11		Richardiidae	1
Bibionidae	6		Hippobosdcidae	7		Sarcophagidae	27
Bolbomyiidae	1		Hybotidae	17		Scathophagidae	21
Bolitophilidae	1		Iteaphila group	3		Scatopsidae	1
Bombyliidae	149		Keroplatidae	11		Scenopinidae	4
Brachystomatidae	1		Lauxaniidae	30		Sciaridae	5
Calliphoridae	4		Limoniidae	14		Sciomyzidae	5
Canacidae	1		Lonchaeidae	1		Sepsidae	1
Carnidae	1		Micropezidae	2		Simuliidae	6
Cecidomyiidae	7		Milichiidae	5		Sphaeroceridae	1
Ceratopogonidae	70		Muscidae	12		Stratiomyidae	9
Chamaemyiidae	2		Mycetophilidae	32		Syrphidae	28
Chaoboridae	1		Mythicomyiidae	4		Tabanidae	9
Chironomidae	40		Mydidae	3		Tachinidae	201
Chloropidae	24		Neriidae	2		Tephritidae	57
Clusiidae	1		Odiniidae	1		Therevidae	26
Conopidae	8		Oestridae	7		Tipulidae	8
Corethrellidae	1		Opomyzidae	1		Ulidiidae	16
Culicidae	48		Oreogetonidae	1		Vermileonidae	1
Cylindrotomidae	1		Pediciidae	3			

At the time Coquillett was working at the U.S. National Museum, the entomology collection was housed in the Arts and Industries Building on the opposite site of the mall where the current natural history museum is located. The Diptera collection Coquillett was responsible for was in dire need of improvement and curation when he became Honorary Custodian in 1896. The only type material in it consisted primarily of material from Williston. At various times during his tenure in Washington, D.C., he donated portions of his personal collection, including numerous type specimens. But his collecting expeditions in the West were over and Coquillett rarely ventured out further than his office except on his way to and from home and work. He did not visit other collections, so the building of the collection was to be based on his personal collections consisting of specimens he collected previously and those that were given to him or he obtained through exchange; plus the continuous receipt of specimens from outside that were sent to the museum for identification. When Coquillett first started there were no other dipterists working with him and this was probably fine with him as he rarely “talked shop” with

anyone and just diligently worked in his office describing new taxa and revising various groups. A photo taken of the staff about 1905 (Fig. 4) shows the staff there 10 years after his first year of employment and with H.G. Dyar and R.C. Shannon at that time as fellow (Dyar) and future (Shannon) dipterists.

Fig. 4. Entomology staff of the United States National Museum (ca. 1905): (left to right) unidentified, C.V. Locke, A.N. Caudell, J.C. Crawford, D.W. Coquillett, O. Heidemann, W. Ashmead, H.G. Dyar, E.A. Schwartz, R.C. Shannon. Courtesy Smithsonian Archives, Record Unit 7323, Box 16, Folder: 4.

Trouble with Townsend

After arriving in Washington, D.C., Coquillett initially published a number of small papers on various Diptera families, but his first major work was his revision of the Tachinidae (Coquillett, 1897). The 154-page revision capped almost a dozen years of work on the family, in which he described his first new taxon in 1889. And with that publication, the pattern continued: any success for Coquillett would soon be followed by trouble.

In this case, Coquillett's work with tachinids caused him to run afoul of the temperamental and quixotic C.H.T. Townsend. Seeing phantom enemies around every corner, Townsend attacked Coquillett, but only after the latter had been deceased for more than ten years (Townsend, 1925). His almost delusional ranting on his deceased colleague included false claims that Coquillett had "[a]t the first opportunity secured a transfer" to Washington, D.C.; and that he was "unsparing of his contempt of Townsend and his work, throwing into synonymy every genus and species that Townsend had described up to that time ..." (Townsend, 1925). In fact, as we have seen, Coquillett did not secure the transfer at the first opportunity, but was instead recalled to Washington by Riley because of the bad blood that had festered between the California State Agriculture officials and U.S. Department of Agriculture field agents and supervisors. Coquillett's working with tachinids may have been his own decision, but it could also have been his supervisor, L.O. Howard, who suggested the group since Townsend had not done anything on the group for some years after announcing in 1893 he was working on a revision of them. A more detailed account of Townsend's aversion to Coquillett can be found in Evenhuis *et al*. (2015).

Trouble with Dyar

Coquillett was generally not one to pick a fight and rarely defended himself (but see below when he defended someone else); he instead had champions at times to do that honor. With regard to Townsend, his champion was fellow entomologist William Randolph Walton (1873–1952), who was also attacked by Townsend (1913) with regard to a difference of opinion on tachinid taxonomy. Walton (1914) picked up the sword for Coquillett many years before the Townsend (1925) paper, defending the Coquillett's views on classification and taxonomy of tachinids and turned the tables on Townsend by

publicizing the deficiencies in Townsend's own work. With regard to Coquillett's mosquito works, Coquillett did defend himself against some criticisms by Dyar (Coquillett, 1907), but it was a young woman, Evelyn G. Mitchell, who also defended him against Dyar's criticisms (and he would return the favor by defending her against Dyar's attacks on her work).

Entomologist Harrison Gray Dyar (1866–1929) was apparently thin-skinned and, according to his biographer "best known for his feuds with colleagues and harsh critiques of their work" (Epstein, 2016). For whatever reason, Dyar had some ongoing problems with Coquillett, enough so to remove him from the project before they ever published their first monograph. As part of the original team on the Carnegie Institution-supported Central American mosquito project, which began in 1903, Coquillett was charged with associating larvae with bred adults. Dyar apparently wanted to quickly publish on his larval classification and demanded Coquillett turn over his material and identifications at once. Coquillett was not yet finished and had question marks for some of his identifications, but turned the material in to Dyar. Dyar published his paper with Coquillett's identifications (Dyar & Knab, 1906) but took the question marks off and then disparaged Coquillett's identifications in print. Coquillett's (1906) criticism of Dyar's paper, "Dr. Dyar's square dealings", explained what had actually transpired and essentially exposed the difficult working relationship he had with Dyar.

Evelyn [born "Evelenia"] Groesbeeck Mitchell (1879–1964) (Fig. 5) was employed from 1904 to 1912 as an illustrator during the production of the Central American mosquito project, all parts eventually authored by Harrison Gray Dyar (1866–1929) and Frederick Knab (1865–1918) [see Epstein (2016) for more details on Dyar, the project, and his relations with colleagues]. Mitchell had previously been a field assistant and artist to Louisiana Surgeon General and mosquito worker Dr. James William Dupree and, after his death, attended George Washington University in Washington where she received her Master's Degree in 1906. After her contract illustrating and working with mosquitoes in Washington, D.C. was over, Mitchell went back to school and received a medical degree from Howard University. She was an advocate of women's rights and a suffragette, but her career after the National Museum work was as a physician, surgeon, and psychiatrist in Washington, D.C., Philadelphia and Boston, eventually becoming a medical director at the Ring Sanitarium in the last city. She remained in the Boston area and died in Mattapan, Massachusetts in 1964.

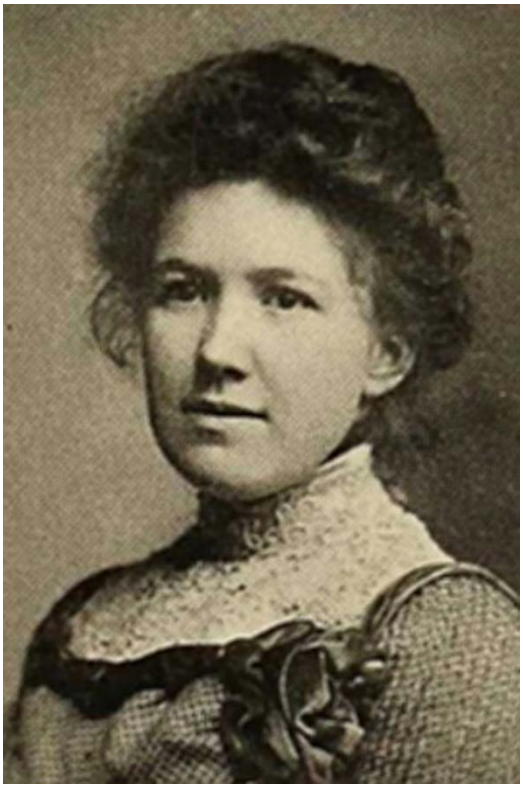


Fig. 5. Evelyn Groesbeeck Mitchell (1879–1964). Image from Cornell University Yearbook 1903.

While working as an illustrator in Washington, D.C. during the week, she would go home to her parents in New Jersey for the weekends and do her writing there. While illustrating for the Central American mosquito project, she was also writing her popular book "Mosquito Life" (Mitchell, 1907), which contained her illustrations and notes from her and Dupree's work. In working as an illustrator in Washington, D.C., she was stationed in Coquillett's office and worked closely with him on the illustrations for the Central American mosquitoes. Coquillett was initially part

of the project along with H.G. Dyar and F. Knab. However, after Dyar removed him from the project, he continued to publish on Culicidae and still helped Mitchell with her illustrations.

Dyar was quick to provide a review of Mitchell's book (Dyar, 1908) which at first seemed full of praise, but then he started alleging that material belonged to others, including the illustrations, which he contended belonged to the Central American mosquito project and the staff in Washington, D.C. However, it was his sarcastic remark that she was a "feminine *Psorophora* among the scientific *Aedids* of Washington" that got him into hot water. No shrinking violet (she had earlier responded harshly to S.W. Williston's criticism of Coquillett's mosquito classification in 19065), Mitchell sued Dyar for libel, asking for $35,000 in damages. In the meantime, Coquillett came to her defense with a rare editorial (Coquillett, 1908) in which he told how Mitchell had been assigned to Dyar but after a few weeks she complained of intolerable working conditions and threatened to quit. Coquillett arranged for her to continue her illustrating by making room for her in his office. He then explained that the material she wrote was genuinely hers and that the illustrations were made from sketches she had made while in the employ of Dr. Dupree. He finished with a defense of Mitchell's honesty: "The author's well-known scientific probity should have precluded the possibility of any personal attack."

In Mitchell's (1908) reply to Dyar's critical remarks, she defended Coquillett in saying he had no knowledge of her writings (they were written when she was in New Jersey) until they were ready to be sent to the publisher (despite Dyar's allegation that Coquillett was probably the author) and took the high road in saying she was flattered he would think of her as a *Psorophora* since they are "large, beautiful, not a frequent nuisance, but an exterminator of common and pestiferous Aedids." Mitchell eventually decided not to prosecute the lawsuit and it was dismissed.

It is apparent that Mitchell much preferred working with Coquillett than Dyar and, as Epstein (2016) indicated, by the time of her lawsuit, she and Coquillett had developed a good working relationship. However, Miss Mitchell (she remained unmarried throughout her life) may have played another role in Coquillett's life.

Trouble in Marriage

The *Los Angeles Herald* of 15 April 1910 printed a short one-line sentence in its daily notices on legal proceedings in the town. Under "Divorce Suits Field" it reads: "D.W. Coquillett vs. Anne C.D. Coquillett." This was the culmination of five years of separation.

In February 1909, Coquillett's wife Anne sued him for maintenance claiming he deserted her. Her suit (see Anonymous, 1909) alleged that Coquillett had separated from her on 3 October 1905 because "he had irreparably injured a young lady" and desired to make the amends honorable. She claimed he said to her that he initiated a divorce in 1905 because of "certain complications arising from his acquaintance with a young woman". However, that initial divorce was never finalized (but see below). Coquillett had given Anne $500 but she had run through that in nine months and then appealed to the Secretary of Agriculture, who made an arrangement with Coquillett to give her $50 a month from Coquillett's paycheck (NB: that may not seem like much, but his salary at the time was $150 a month). In her suit, she also claimed he was a man of great wealth [she assumed him to be worth $160,000 = ca. $1.2 million in 2016 dollars] stating that had property of great value in Los Angeles as well as property in Washington, D.C. and Marengo, Illinois, plus numerous investments and bank holdings. Local Washington, D.C. papers were immediately filled with headlines such as "Mrs. D.W. Coquillett Sues Entomologist", "Desertion is Charged", "Says Husband Gave as His Reason for Leaving Her That 'He

5 Mitchell, E.G. 1906. The classification of the Culicidae. *The Canadian Entomologist* 38: 198–201.

Had Irreparably Injured a Young Lady'", and "Coquillett Suit to be Sensation" while labeling Coquillett as "a wealthy Governmental entomologist". Coquillett's counter to the court said that, in fact, his wife deserted him in October 1905 and he did had not heard from her until the current court proceedings. He claimed she had persistently nagged and harassed him in their marriage. No further news accounts of the court proceedings were found and the matter was settled the next year when the divorce was finalized in Los Angeles. It was never made known if there actually was an "injured" young lady or who she may have been.

Later Years, Death, and More Troubles

Coquillett's final major publications were in 1910. The *magnum opus* of that year was his catalog of types of North American Diptera, in which numerous subsequent type designations were proposed (Coquillett, 1910). It is still to this day a major reference work for dipterists. The only difficulty with that work is that Coquillett followed the minority of dipterists at the time in treating Meigen 1800 names having priority over those in Meigen (1803). This confusion of two schools of name usage arose after Hendel (1908) published his re-discovery of the Meigen (1800) pamphlet and urged dipterists to follow priority and use those names instead of the more commonly used Meigen (1803) names. Coquillett believed the earlier names to be *nomina nuda* but when the ICZN Commission ruled the Meigen (1800) pamphlet as published in the sense of the Code, Coquillett followed that ruling in his 1910 types of Diptera genera paper and treated the 1800 names as having priority. In 1911, published a few months before his death, Coquillett published a short note in *The Canadian Entomologist* on the Meigen 1800 names (Coquillett, 1911) where he lamented the ICZN ruling, expressing frustration that the Commission failed to rule on the names but could only rule on the work itself. This 1911 paper was to be the last he personally submitted for publication6 and it is somehow harmonious that his first and last entomological paper he submitted to an entomological journal should be in *The Canadian Entomologist*.

In the Fall of 1910, Coquillett's health began to suffer. After a few months of steady decline, he was concerned enough that he drafted a will on 25 June 1911. He decided to go to Atlantic City, which was well-known as a health resort, hoping that venue might help improve his situation. The sea spray and drier climes near the beach were touted as being rejuvenating and calming. It is not known exactly where Coquillett stayed while there, but a witness to his will, C. Hilliard Gale, resided at 208 Melrose Avenue in Atlantic City and he may well have gone there (T. Carpenter, person. comm. 2017). On Saturday 8 July he passed away. One newspaper notice of his death said he had died of "heart disease brought on by prolonged anxiety" (Anonymous, 1911). Possibly the tribulations of the lawsuits by his wife for desertion and alimony were too much for his heart to handle. Daniel William Coquillett was interred next to his parents at the Coquillette family plot in Marengo, Illinois. His gravestone (Fig. 6) reads "Daniel W. Coquilett" "Jan. 23, 1856 July 8, 1911" "1st Asst. U.S. Entomologist 1896 – 1911".

But his passing is not the end to this story. Trouble ensued even after his death. His will was entered into probate only a few days after his death and the court the following day designated Evelyn Groesbeeck Mitchell (labeled by the court as a "friend of the deceased") as executrix of his estate and, after the few personal bequests specified in the will were taken care of, the court ordered the remainder of his estate to be devised to her.

6 A paper was published posthumously, 1924, in the *Proceedings of the Entomological Society of Washington* (Coquillett, 1924), but was submitted by J.M. Aldrich based on a manuscript Coquillett sent abroad in 1909 but was never published.

That action was soon discovered by Anne, who contested the will, alleging that Coquillett was not of sound mind when drafting the will or may have been unduly influenced when writing it. The court case dragged on for more than 2 years, with the original attorney for Coquillett's estate eventually being accused by Anne of bribery and having to remove himself from the defense [his bribery case was the subject of a congressional hearing a few years later at which Anne Coquillett testified against him]; claims by Anne that their divorce was not legal (it was proven to indeed be legal); and other baseless claims and numerous and fruitless minor court motions desperately trying to get any funds and/or assets, however small, from his various land holdings and accounts. In the Spring of 1914, the court found for the estate and Evelyn was allowed to keep the Coquillett estate and Anne was forced to pay Evelyn's legal fees. His estate was finally estimated by the court to have been worth $25,000 and not the $160,000 alleged by his widow.

Fig. 6. Coquillett's gravestone in the Coquillette family plot, Marengo, Illinois. Photo: Phyllis Wallington.

Epilogue

Despite the turmoil he endured from his few attackers in life, Coquillett was praised by his colleagues in death. Banks *et al*. (1911: 199) said:

> "Quiet and unassuming, he sought no help from others, but always worked out everything for himself, and abided by that result. Among the younger entomologists and collectors he was popular from the fact that he was prompt in describing new species in the collections made by them and referred to him for determination, thus encouraging them in making further collections and kind to others, he willingly neglected his own work to help them in the identification of Diptera, and his loss in this respect leaves a serious gap in American Entomology".

Cresson (1911) summed up his obituary of Coquillett by saying: "That he was one of the greatest American Dipterists there is no doubt."

Acknowledgments

I am indebted to the late Jack C. Hall, with whom I enjoyed many excursions into the southern California deserts and hills and mountains in search of Bombyliidae, while hearing his stories of Coquillett that had been passed down to him via A.L. Melander via J.M. Aldrich. We endeavored to re-collect at the very few exact localities Coquillett was known to have collected and were often rewarded with a bounteous booty of bee flies (if we weren't rained out!). Newspaper notices researched in this study were found thanks to two websites: the Library of Congress's Chronicling America (http://chroniclingamerica. loc.gov.) and the California Digital Newspaper Collection (https://cdnc.ucr.edu). Frank Howarth, Marc Epstein, and Terry Carpenter kindly read drafts and helped improve the accuracy of some items.

References

Anonymous. 1883. [Social and Personal]. *Sacramento Daily Union* 17(55) (25 April): [unpaginated].

Anonymous. 1893. Department of Agriculture withdraws Coquillett and Koebele. *Pacific Rural Press* 1893(14 October): 264.

Anonymous. 1909. Mrs. D.W. Coquillett sues entomologist. *Washington Times* 1904(4 February): 4.

Anonymous. 1911. D.W. Coquillett's death felt by friends here. Assistant Entomologist of Department of Agriculture dies in Atlantic City. *Evening Star* (Washington, D.C.) (15 July): 10.

Banks, N., Currie, R.P. & Walton, W.R. 1911. Daniel William Coquillette. *Proceedings of the Entomological Society of Washington* 13: 196–210.

[Although no author is signed to this paper, authorship is deduced from the minutes of the special meeting held by the Entomological Society of Washington at hearing of Coquillett's death, which was printed on the page preceding the biography.]

Cooke, M. 1883a. *Insects. Injurious and beneficial, their natural history and classification for the use of fruit growers, farmers, gardeners and schools.* H.S. Crocker & Co., Sacramento. 156 pp.

Cooke, M. 1883b.. *Injurious insects of orchard, vineyard, field, garden, conservatory, household, storehouse, domestic animals, etc., with remedies for their extermination.* . H.S. Crocker & Co., Sacramento. 472 pp.

Coquillett, D.W. 1880. On the early stages of some moths. *The Canadian Entomologist* 12: 43–46.

Coquillett, D.W. 1882. Report of D.W. Coquillett, pp. 5–64. *In*: Thomas, C., *Eleventh Annual Report of the State Entomologist of Illinois*. H.W. Rokker, Springfield, Illinois. 104 + ii pp.

Coquillett, D.W. 1886. Report on the locusts of the San Joaquin Valley, California, pp. 289–303. *In*: Riley, C.V., Report of the Entomologist, pp. 207–343, *In*: Colman, N.J., *Report of the Commissioner of Agriculture. 1885*. Government Printing Office, Washington, D.C. 640 pp..

Coquillett, D.W. 1887. Monograph of the species belonging to the genus *Anthrax* from America north of Mexico. *Transactions of the American Entomological Society* 14: 159–182.

Coquillett, D.W. 1893. That bug controversy. Prof. Coquillett makes a long-distance reply. *Los Angeles Herald* 1893(14 November): 5.

Coquillett, D.W. 1897. Revision of the Tachinidae of America north of Mexico. A family of parasitic two-winged insects. *United States Department of Agriculture, Bureau of Entomology, Technical Series Bulletin* 7: 1–154.

Coquillett, D.W. 1904. A brief history of North American dipterology. *Proceedings of the Entomological Society of Washington* 6: 53–58.

Coquillett, D.W. 1906. [Letters]: Dr. Dyar's square dealings. *Entomological News* 17: 224.

Coquillett, D.W. 1908. Dr. Dyar's criticism of "Mosquito Life". *The Canadian Entomologist* 40: 81–83.

Coquillett, D.W. 1910. The type species of the North American genera of Diptera. *Proceedings of the Entomological Society of Washington* 37: 499–647.

Coquillett, D.W. 1911. A decision on Meigen's paper. *The Canadian Entomologist* 43: 66.

Coquillett, D.W. 1924. A new genus and species of Trypetidae infesting asparagus in South Africa (Diptera). *Proceedings of the Entomological Society of Washington* 26: 64–66.

Coquillette, B.F. 1894. *History of the Coquillette family, compiled and written in the year 1894.* S.P. Stansbury & Co., Chicago. 35 pp.

Craw, A. 1899. Inspection of nursery stock and orchards. *Pacific Rural Press* 1899(29 July): 68–69.

Cresson, E.T., Jr. 1911. Daniel William Coquillett. *Entomological News* 22: 337–338.

Dyar, H.G. 1908. Book Notice. Mosquito life. By Evelyn Groesbeck Mitchell, A.B., M.S., G.P. Putnam's Sons, New York and London. The Knickerbocker Press. 1907. *The Canadian Entomologist* 40: 75–76.

Dyar, H.G. & Knab, F. 1906. The larvae of Culicidae as independent organisms. *Journal of the New York Entomological Society* 14(4): 169–230.

Epstein, M.E. 2016. *Moths, myths, and mosquitoes. The eccentric life of Harrison G. Dyar, Jr.* Oxford University Press, New York. xxvi + [6] + 325 pp.

Evenhuis, N.L., Pont, A.C. & Whitmore, D. 2015. Nomenclatural studies toward a world list of Diptera genus-group names. Part IV: Charles Henry Tyler Townsend. *Zootaxa* 3978(1): 1–362.

Hendel, F. 1908. Nouvelle classification des mouches a deux ailes (Diptera L.). D'après un plan tout nouveau par J.G. Meigen, Paris, an VIII (1800 v.s.). Mit Kommentar herausgegeben von Friedrich Hendel. *Verhandlungen der K.-k. Zoologisch-Botanischen Gesellschaft in Wien*, 58, 43–69.

Meigen, J.W. 1800. *Nouvelle classification des mouches à deux ailes (Diptera L.) d'après un plan tout nouveau*. *Par J.G. Meigen.* "An VIII (1800 v.s.)". J.J. Fuchs, Paris. 40 pp.

Meigen, J.W. 1803. Versuch einer neuen Gattungs-Eintheilung der europäischen zweiflügligen Insekten. *Magazin für Insektenkunde* 2: 259–281.

Mitchell, E.G. 1907. *Mosquito life: the habits and life cycles of the known ‚mosquitoes of the United States; methods for their control; and keys for easy identification of the species in their various stages. An account based on the investigations of the late James William Dupree, M.D., Surgeon-General of Louisiana and upon original observations of the writer*. G.P. Putnam's Sons, New York and London. 281 pp.

Mitchell, E.G. 1908. A reply to Mr. Dyar. *The Canadian Entomologist* 40: 93–98.

Thomas, C. 1881. *Tenth report of the State Entomologist on the noxious and beneficial insects of the State of Illinois*. H.W. Rokker, Springfield, Illinois. 238 + vi pp.

Townsend, C.H.T. 1913. Criticism and muscoid taxonomy. *Insecutor Inscitiae Menstruus*, 1(9), 115–117.

Townsend, C.H.T. 1925. The inside history of North American myiology. *Journal of the New York Entomological Society*, 33, 1–10

Walton, W.R. 1914. On the work of the late Daniel W. Coquillett and others. *Journal of the New York Entomological Society*, 22, 159–164.

Williston, S.W. 1888. *A synopsis of the families and genera of North American Diptera, exclusive of the genera of the Nematocera and Muscidae, with bibliography and new species, 1878–88*. J.T. Hathaway, New Haven, Connecticut. 84 pp.

Williston, S.W. 1892. A new species of *Criorhina* and notes on synonymy. *Entomological News* **3**: 145–146.

Williston, S.W. 1906. The classification of the Culicidae. *The Canadian Entomologist* 38: 384–388.

****

Obituary for Michael Chidozie Dike (1954–2015)

Ashley H. Kirk-Spriggs

Entomology Department, National Museum, P.O. Box 266, Bloemfontein 9300
and Department of Zoology & Entomology, University of Fort Hare, Ring Road, Alice, 5700,
South Africa; ashley.kirk-spriggs@nasmus.co.za

It is with great sadness that we learnt of the death of Michael Chidozie Dike, who was tragically killed in a car accident in northern Nigeria in 2015. Michael was born on 7th November 1954 to the family of Chief Michael Chukwukere Dike at Ubaha – Orodo, Owerri in Imo State, Nigeria. He schooled at Trinity High School, Oguta, where he obtained WASC (grade one) certification and a General Certificate of Education (as an external candidate of the University of London) in 1971. He then enrolled at the University of Nigeria, Nsukka, where he obtained a BSc degree in Zoology in 1978, going on to obtain an MSc degree in Plant Protection from Ahmadu Bello University, Nigeria in 1983. It was around this time that he developed an active interest in the taxonomy of *Atherigona* Rondani (Muscidae) shootflies of economic importance.

He travelled overseas and studied for a PhD at the University of Wales College, Cardiff, United Kingdom, under the tutelage of John Christopher Deeming (1939–living), being awarded his degree in 1987, for a thesis entitled "Taxonomic studies on Afrotropical shootflies of the genus *Atherigona* Rondani (Diptera: Muscidae)". He also obtained a certificate in Insect Taxonomy from the Commonwealth Institute of Entomology, London, United Kingdom in 1981. Upon his return to Nigeria he held two brief positions as Tutor, School of Health Technology, Kaduna (1978–1979) and Senior Biology Master, Abbot Boys Secondary School, Ihiala (July–September 1979), before being appointed as Graduate Assistant at Ahmadu Bello University in 1979.

Dr. Dike then rose through the ranks to become Professor of Entomology and Insect Taxonomy in 1997, a position he held until his death in 2015. He taught several courses at undergraduate and graduate levels in the Department of Crop Protection and supervised numerous postgraduate students. He further served as Head of Department of Crop Protection (2000–2004), Deputy Dean (2005–2007) and later Dean of the Faculty of Agriculture (2009–2011). He was also responsible for the Diptera collection of the Institute for Agricultural Research Samaru, which is administered through Ahmadu Bello University. He published over 100 works on diverse topics in applied entomology, but his most significant contribution to dipterology was his published research on *Atherigona*. In 1989 he published a key to the males of Afrotropical species of the subgenus *Atherigona sensu stricto* and included the descriptions of new species. He published a key to males of Nigerian species in 1990 and an identification key to males of the subgenus *Acritochaeta* Grimshaw in the same year. He also published on ultrastructure of the male trifoliate process in 1992, intraspecific variability in *A. lineata* Adams in 1994 and morphometric discrimination between two populations of *A. tomentigera* van Emden in 1996. Mike was one of very few practicing Diptera taxonomists in Africa based outside of South Africa.

I knew Michael in the mid-1980s when he was studying in Cardiff and I was employed at the National Museum of Wales. He was a quiet, but engaging man. Michael is survived by a wife and five children. Photograph courtesy O. Banwo.

****

Other Dipterists' Necrology

Prof. Syusiro Ito: July 28, 1920 – December 3, 2016

See Makunagi / Acta Dipterologica No.28 (31 March 2017) for three articles that make up Prof. Ito's obituary. The first paper (by Masahiro Sueyoshi) is in English, giving a short biography and a list of some of Prof. Ito's Diptera papers. The second and third papers are in Japanese, both with rememberances from former students.

****

In Remembrance of Stuart Edmund Neff
3 October 1926–29 October 2016

Lloyd V. Knutson

Systematic Entomology Laboratory, US Department of Agriculture, Washington, DC, USA (Emeritus); current address: Salita degli Albito 29, 04024 Gaeta, (LT), Italy; lvknutson@tiscali.it

Dr. Stuart E. Neff, of Bala Cynwyd, PA, died at age 90 on Saturday, October 29, 2016, following a prolonged illness. Born in Louisville, Kentucky, Stu, as his friends called him, received a B.S. degree in 1954 from the University of Louisville. He served in the U.S. Navy in the Pacific 1945–1949 and 1950–1952, receiving many awards for his service in both WWII and the Korean War. He later enrolled at Cornell University, where he was Dr. Clifford O. Berg's first graduate student on Sciomyzidae (Diptera). After completing his Ph.D. degree at Cornell in 1960, he was appointed Professor of Biology at Virginia Polytechnic University and later Professor of Biology and Director of the Water Resources Laboratory at the University of Louisville. From 1985 until his retirement in 2011, he was a Biology Professor at Temple University in Philadelphia, finishing his career at age 85 doing what he most loved: teaching the next generation of biologists. His library was donated to the Philadelphia Academy of Science.

Stu pulling in a net of fish with two of his graduate students.

Stu was widely published in scientific journals in limnology and entomology and is much honored by the large number of undergraduate and doctoral students he mentored. He published papers on the biology of several families of Diptera as well as on freshwater biology and limnology. Regarding Sciomyzidae, he contributed outstanding papers on the biology and immature stages of *Protodictya*

(1961), *Hoplodictya* (1962), and *Sepedon* (1966), with Berg as junior author; on *Atrichomelina pubera* (1960) with the late Benjamin A. Foote and Berg; and on Afrotropical *Sepedon* (1967) with Lloyd Knutson and Berg. Notably, Neff was lead researcher on the early studies of the morphology of immature stages of Sciomyzidae, and he established the basis for this aspect of study and for predation studies as well as relating the early research on life cycles to systematics and ecology (Neff & Berg 1966). His 1964 publication on trials of 10 species of aquatic predators against 13 species of snails of medical importance provided the first extensive quantitative information on prey consumption by and prey preference of Sciomyzidae.

Stu was widely read in many fields, an expert on the Civil War, a devotee of W. H. Auden and A. E. Housman poetry, knew Wagner's Ring cycle from *Das Rheingold to Siegfrieds Tod*, and was a committed movie buff. He leaves behind his beloved wife and fellow biologist of 40 years, Lois; children: Stuart (Alice), Dr. Peter Cronholm (Jennifer McClintock), and Judith Tindall (Douglas Tindall); 10 grandchildren, and a number of great grandchildren.

At a memorial in his honor in April, a number of his former graduate students, traveling across the country to honor this man who, in the words of former student (Prof. Vince Resh, Berkeley), "left a legacy that any academic would be proud of". The students noted that before there was a Google, if you wanted to know anything you went to "Dr. Google," a.k.a. Dr. Neff, and you had better be prepared to listen.

In lieu of flowers, donations may be made to the Stuart E. Neff Award for the Outstanding Senior in Environmental Studies, University of Louisville, Department of Biology, Louisville, KY 40292.

****

MEETING NEWS

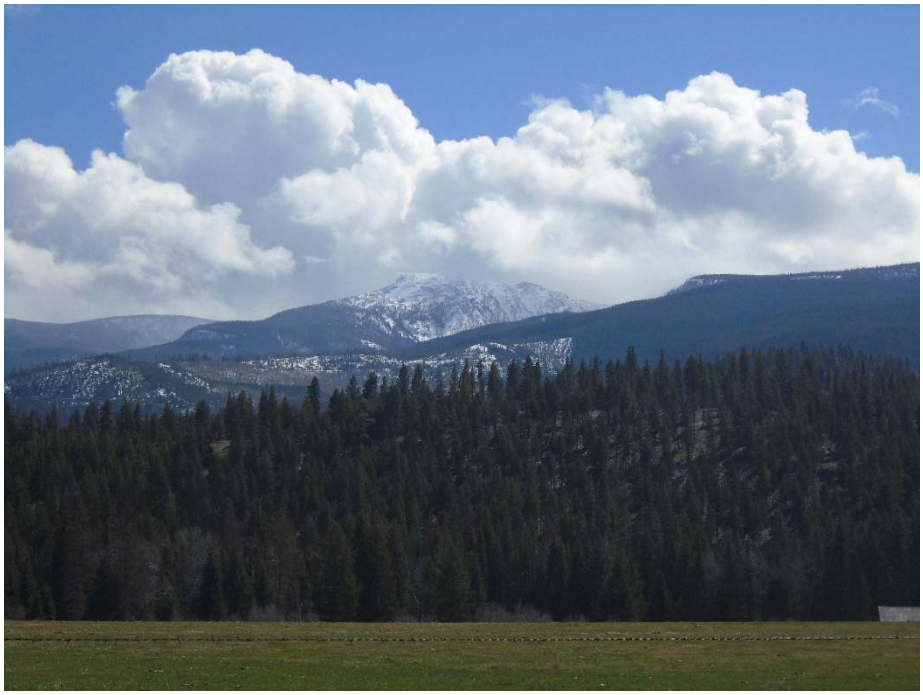
North American Dipterists Society 2017 Field Meeting: June 26-30, 2017, at Lubrecht Experimental Forest (Western Montana) Final Announcment

Andrew Fasbender

Rhithron Associates Inc., 33 Fort Missoula Rd.,
Missoula Montana 59804, USA; afasbender@rhithron.com

Spring is arriving western Montana, with the snowpack receding up the peaks and the valleys beginning to green up. A wet winter means that early summer should be lush, and I expect that collecting at the 2017 Field Meeting will be very productive. The conference will be held at Lubrecht Experimental Forest, approximately 30 miles east of Missoula on MT200 from June 26th-30th.

If you are interested in attending please call or email Devi Zdziebko (406-244-5524 ext. 2; lubrecht.facilities@cfc.umt.edu) to book accommodations (http://www.cfc.umt.edu/lubrecht/lodging/default.php). Also, please send me an email so I can put you to the attendee email list; if you are interested in giving a presentation let me know so I can add you to the schedule. There will be a conference fee of $45 for the shared facilities, payable in cash when you arrive at Lubrecht (receipts can be provided). Further information about Lubrecht and western Montana can be found in the previous announcements in the April 2016 and October 2016 issues of *Fly Times*. Note that Lubrecht recently stopped offering meal plans; instead I am suggesting that participants bring groceries so attendees can prepare their own meals on Lubrecht's grills and a pair of ranges. If you have any questions don't hesitate to send me an email!



Clouds above the northwest face of Lolo Peak, Bitterroot Mountains 2.iv.2017.

****

NADS Annual Meeting announcement:
ESA Annual Meeting, Denver, Colorado, USA; 5-8 November 2017,
Call for Papers

Torsten Dikow

Department of Entomology, National Museum of Natural History, Smithsonian Institution
PO Box 37012, MRC 169, Washington, DC 20013-7012, USA; DikowT@si.edu

The 2017 NADS Annual Meeting will take place during the ESA meeting being held in Denver, Colorado, on Tuesday, November 7th at 8:00 p.m.

As organizer of the meeting, I would like to invite you to submit presentation titles to me by Thursday, May 18th so that I can upload them to the conference web-site for inclusion in the conference program.

The last NADS annual meeting during the International Congress of Entomology featured five 10-minute presentations on Diptera collections (AMNH, ANIC, CNC, USNM, ZMUC) and I believe these presentations were very well-received. If you would like to present on your Diptera collection, please consider giving a short presentation.

****

IX International Symposium on Syrphidae
Curitiba, Paraná, Brazil; August 28 – September 1, 2017

Mírian Nunes Morales[1], Luciane Marinoni[2] & Gil Felipe Gonçalves Miranda[3]

[1] Federal University of Lavras, Lavras, Brazil; mirianmorales@gmail.com

[2] Federal University of Paraná, Curitiba, Brazil; lmarinoni@ufpr.br

[3] Independent researcher, Manaus, Brazil; gilfgm@gmail.com

The "International Symposium on Syrphidae" occurs every two years and brings together researchers on the family Syrphidae from all over the world, including specialists, undergraduate/graduate students, and amateur enthusiasts.

The main objectives of the event are to establish new research networks, promote new studies, involve new researchers, discuss the most recent advances and, above all, to encourage the collaboration among scientists from the different fields of research on the family.



The International Symposium on Syrphidae gathers around 100 people. It is the main event of this global network and a crucial venue to maintain contact among collaborators, to obtain a firsthand view on the new results on Syrphidae research, and to discuss the future on the study of this group. Previous symposia were held in Europe: 1) Stuttgart, Germany (2001); 2) Alicante, Spain (2003); 3) Leiden, Netherlands (2005); 4) Helsinki (Siikaranta), Finland (2007); 5) Novi Sad (Fruška Gora), Serbia (2009); 6) Glasgow, Scotland (2011); 7) Novosibirsk, Russia (2013); and 8) Monschau, Germany (2015). This ninth symposium will be held for the first time in the Americas and the Neotropical region, in the city of Curitiba, Paraná State, Brazil, from August 28 through September 1, 2017.

Come and meet colleagues from all over the world, exchange ideas, develop collaborations and enjoy the sights! More details on: http://syrphidaesymposium.wixsite.com/iss9-curitibabrazil

****

OUT-OF-PLACE DIPTERA

Not going to get very much honey I'm afraid!

Stephen Gaimari

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

****

DIPTERA ARE AMAZING!

Robert Parks submitted the following two excellent photographs of *Efferia* species. In the first, the unusual size difference is commonly encountered in this species. This pair was photographed in 2008 early spring, about 10 miles northeast of Tucson, Arizona. Bob plan's on hunting for them again this spring. The second photo is *Efferia mortensoni* with its prey, an Orange Sulphur Butterfly.

****

BOOKS AND PUBLICATIONS

Below we are happy to offer a roundup of recent publications on Diptera in all their interesting facets. We hope these provide you with some interesting summer reading to go along with your fieldwork. Happy hunting!

As usual if we have not included a paper that you think should have been here please feel free to pass it along to Chris (chris.borkent@gmail.com) and we will include it in the next issue. Unfortunately the online resources do not always catch everything and are a couple of months behind. We also apologize for the missing diacritics in some author's names, unfortunately this is a product of searching in Zoological Record and Web of Science, where they are removed.

Abu El-Hassan, G.M.M., Badrawy, H.B.M., Allah, S.M.G., Soliman, A.M., Salama, M.S. and Mohammad, S.K. 2017. Review of robber flies of the genus *Stichopogon* Loew (Diptera: Asilidae: Stichopogoninae) from Egypt. Zootaxa **4242(1)**: 142-160. doi:10.11646/zootaxa.4242.1.7.

Ajamma, Y.U., Villinger, J., Omondi, D., Salifu, D., Onchuru, T.O., Njoroge, L., Muigai, A.W.T. and Masiga, D.K. 2016. Composition and genetic diversity of mosquitoes (Diptera: Culicidae) on islands and mainland shores of Kenya's lakes Victoria and Baringo. Journal of Medical Entomology **53(6)**: 1348-1363. doi:10.1093/jme/tjw102.

Alvarez, J.D.V., Lit, I.L., Jr., Alviola, P.A., Cosico, E.A. and Eres, E.G. 2016. A contribution to the ectoparasite fauna of bats (Mammalia: Chiroptera) in Mindoro Island, Philippines: I. Blood sucking Diptera (Nycteribiidae, Streblidae) and Siphonaptera (Ischnopsyllidae). International Journal of Tropical Insect Science **36(4)**: 188-194. doi:http://dx.doi.org/10.1017/S1742758416000187.

Amorim, D.D. and Schuhli, G.S.E. 2017. A new species of *Euricrium* Enderlein from southern Brazil, new records for *E. varians* (Lane), a new combination, and a key for the Neotropical species of the genus. Zootaxa **4231(3)**: 327-340. doi:10.11646/zootaxa.4231.3.2.

Anbalagan, S., Kannan, M., Dinakaran, S. and Krishnan, M. 2017. Species diversity of black flies (Diptera: Simuliidae) in Oriental region and molecular phylogeny of the subgenus *Gomphostilbia* members. Journal of Vector Borne Diseases **54(1)**: 80-86.

Andersen, T., Hagenlund, L.K. and Pinho, L.C. 2016. New species and records of Neotropical *Cardiocladius* Kieffer, 1912 (Diptera: Chironomidae, Orthocladiinae). Aquatic Insects **37(4)**: 273-286. doi:10.1080/01650424.2016.1253850.

Anderson, E.P. and Smith, D.M. 2017. The same picture through different lenses: quantifying the effects of two preservation pathways on Green River Formation insects. Paleobiology **43(2)**: 224-247. doi:http://dx.doi.org/10.1017/pab.2016.29.

Aranda, R. and Olivier, R.d.S. 2017. Preliminary study of species-area, isolation and impact of environmental heterogeneity on insect communities in natural patches in the natural patches in the Brazilian Pantanal 1. Entomological News **126(4)**: 312-327.

Armstrong, A.J. and Blackmore, A. 2017. Tsetse flies should remain in protected areas in KwaZulu-Natal. Koedoe **59(1)**: 12. doi:10.4102/koedoe.v59i1.1432.

Arva, D., Toth, M., Mozsar, A. and Specziar, A. 2017. The roles of environment, site position, and seasonality in taxonomic and functional organization of chironomid assemblages in a heterogeneous wetland, Kis-Balaton (Hungary). Hydrobiologia **787(1)**: 353-373. doi:10.1007/s10750-016-2980-7.

Balmes, V. and Mouttet, R. 2017. Development and validation of a simplified morphological identification key for larvae of tephritid species most commonly intercepted at import in Europe. EPPO Bulletin **47(1)**: 91-99. doi:http://dx.doi.org/10.1111/epp.12369.

Barnes, J.K. 2016. Revised annotated checklist of robber flies (Diptera: Asilidae) of Arkansas U.S.A. 1. Entomological News **126(3)**: 216-230.

Basoren, O. and Kazanci, N. 2016. A checklist of Simuliidae (Insecta, Diptera) species of Turkey. Review of Hydrobiology **9(2)**: 153-164.

Basoren, O. and Kazanci, N. 2016. Identification key to the Simuliidae (Insecta, Diptera) pupae in running waters of the Eastern Black Sea Region (Turkey). Review of Hydrobiology **9(2)**: 123-134.

Bewick, A.J., Vogel, K.J., Moore, A.J. and Schmitz, R.J. 2017. Evolution of DNA Methylation across Insects. Molecular Biology and Evolution **34(3)**: 654-665. doi:10.1093/molbev/msw264.

Blackmon, H., Ross, L. and Bachtrog, D. 2017. Sex Determination, Sex Chromosomes, and Karyotype Evolution in Insects. Journal of Heredity **108(1)**: 78-93. doi:10.1093/jhered/esw047.

Bownes, A. and Deeming, J. 2016. A new species of *Hydrellia* (Diptera: Ephydridae) mining *Hydrilla verticillata* (Hydrocharitaceae) leaves in Singapore. Austral Entomology **55(4)**: 353-359. doi:10.1111/aen.12193.

Braganca, M.A.L., Arruda, F.V., Souza, L.R.R., Martins, H.C. and Della Lucia, T.M.C. 2016. Phorid flies parasitizing leaf-cutting ants: Their occurrence, parasitism rates, biology and the first account of multiparasitism. Sociobiology **63(4)**: 1015-1021. doi:10.13102/sociobiology.v63i4.1077.

Bramuzzo, S. and Nel, A. 2017. Youngest representative of the extinct genus *Microphorites* in the Eocene amber of France (Diptera: Dolichopodidae: Microphorinae). Zootaxa **4231(4)**: 590-594.

Brauer, P., Neinhuis, C. and Voigt, D. 2017. Attachment of honeybees and greenbottle flies to petal surfaces. Arthropod-Plant Interactions **11(2)**: 171-192. doi:10.1007/s11829-016-9478-0.

Briscoe, A.G., Sivell, D. and Harbach, R.E. 2017. The complete mitochondrial genome of *Dixella aestivalis* (Diptera: Nematocera: Dixidae). Mitochondrial DNA Part A **28(1-2)**: 83-84. doi:10.3109/19401736.2015.1110809.

Brown, B.V. 2017. Fossil evidence of social insect commensalism in the Phoridae (Insecta: Diptera). Journal of Systematic Palaeontology **15(4)**: 275-285. doi:10.1080/14772019.2016.1172676.

Buenaventura, E. and Pape, T. 2017. Multilocus and multiregional phylogeny reconstruction of the genus *Sarcophaga* (Diptera, Sarcophagidae). Molecular Phylogenetics and Evolution **107**: 619-629. doi:10.1016/j.ympev.2016.12.028.

Buenaventura, E., Whitmore, D. and Pape, T. 2017. Molecular phylogeny of the hyperdiverse genus *Sarcophaga* (Diptera: Sarcophagidae), and comparison between algorithms for identification of rogue taxa. Cladistics **33(2)**: 109-133. doi:10.1111/cla.12161.

Byern, J.v., Dorrer, V., Merritt, D.J., Chandler, P., Stringer, I., Marchetti-Deschmann, M., McNaughton, A., Cyran, N., Thiel, K., Noeske, M. and others. 2016. Characterization of the fishing lines in Titiwai (=*Arachnocampa luminosa* Skuse, 1890) from New Zealand and Australia. PLoS ONE **11(12)**. doi:10.1371/journal.pone.0162687 http://dx.doi.org/10.1371/journal.pone.0162687.

Canedo-Arguelles, M., Bogan, M.T., Lytle, D.A. and Prat, N. 2016. Are Chironomidae (Diptera) good indicators of water scarcity? Dryland streams as a case study. Ecological Indicators **71**: 155-162. doi:10.1016/j.ecolind.2016.07.002.

Chandra, R. 2016. A new species of the genus *Karshomyia* (Cecidomyiidae: Diptera) from India. Flora and Fauna - Jhansi **22(2)**: 159-162.

Chayanit, H., Thippawan, Y., Adulsak, W., Taai, K., Watcharatip, D., Srisuka, W., Sorawat, T., Otsuka, Y., Takaoka, H. and Saeung, A. 2017. Scanning electron microscopy of antennal sensilla of the eight *Anopheles* species of the Hyrcanus Group (Diptera: Culicidae) in Thailand. Parasitology Research **116(1)**: 143-153.

Chesters, D. 2017. Construction of a species-level tree of life for the insects and utility in taxonomic profiling. Systematic Biology **66(3)**: 426-439. doi:10.1093/sysbio/syw099.

Chintapalli, R.T.V. and Hillyer, J.F. 2016. Hemolymph circulation in insect flight appendages: physiology of the wing heart and circulatory flow in the wings of the mosquito *Anopheles gambiae*. Journal of Experimental Biology **219(24)**: 3945-3951. doi:10.1242/jeb.148254.

Christe, R.D., Wilke, A.B.B., Vidal, P.O. and Marrelli, M.T. 2016. Wing sexual dimorphism in *Aedes fluviatilis* (Diptera: Culicidae). Infection Genetics and Evolution **45**: 434-436. doi:10.1016/j.meegid.2016.10.007.

Chroni, A., Djan, M., Vidakovic, D.O., Petanidou, T. and Vujic, A. 2017. Molecular species delimitation in the genus *Eumerus* (Diptera: Syrphidae). Bulletin of Entomological Research **107(1)**: 126-138. doi:10.1017/s0007485316000729.

Chuncai, Y., Song, C., Liu, T., Zhao, G., Hou, Z., Cao, W. and Wang, X. 2017. Two new and one newly recorded species of *Polypedilum* Kieffer 1912 with DNA barcodes from Oriental China (Chironomidae: Diptera). Zootaxa **4238(1)**: 109-118.

Cloonan, K.R., Andreadis, S.S., Chen, H., Jenkins, N.E. and Baker, T.C. 2016. Attraction, oviposition and larval survival of the fungus gnat, *Lycoriella ingenua*, on fungal species isolated from adults, larvae, and mushroom compost. PLoS ONE **11(12)**. doi:http://dx.doi.org/10.1371/journal.pone.0167074.

Clusella-Trullas, S. and Garcia, R.A. 2017. Impacts of invasive plants on animal diversity in South Africa: A synthesis. Bothalia **47(2)**.

Couri, M. and Pont, A. 2017. Afrotropical *Limnophora* Robineau-Desvoidy (Diptera, Muscidae) with the description of four new species. Zootaxa **4216(6)**: 501-536. doi:10.11646/zootaxa.4216.6.1.

da Silva, F.L. 2016. *Alotanypus wilhelmensis* sp nov., a new Tanypodinae (Diptera: Chironomidae) from high mountain lakes in Papua New Guinea. Austral Entomology **55(4)**: 360-365. doi:10.1111/aen.12194.

Daniels, G. 2017. Australian species of *Ommatius* Wiedemann (Diptera: Asilidae) with an anepimeral bristle. Zootaxa **4231(4)**: 535-563. doi:10.11646/zootaxa.4231.4.3.

Dantas, G.P.S. and Hamada, N. 2017. Two new Neotropical species of *Djalmabatista* Fittkau (Diptera: Chironomidae). Zootaxa **4250(4)**. doi:http://dx.doi.org/10.11646/zootaxa.4250.4.7.

David, K.J. and Hancock, D.L. 2017. A new species of *Gastrozona* Bezzi (Diptera: Tephritidae: Dacinae: Gastrozonini) with an updated key to species from India. Zootaxa **4216(1)**: 55-64. doi:10.11646/zootaxa.4216.1.3.

De Sousa, V.R. and Couri, M.S. 2016. New *Agromyza* Fallen (Diptera, Agromyzidae) from Brazil and a key for the Neotropical species. Anais Da Academia Brasileira De Ciencias **88(3)**: 2017-2028. doi:10.1590/0001-3765201620160210.

de Souza, C.R. and Von Zuben, C.J. 2016. Synanthropy of Sarcophagidae (Diptera) in southeastern Brazil. Neotropical Entomology **45(6)**: 637-641. doi:10.1007/s13744-016-0411-0.

Demirözer, O., Üstüner, T., Hayat, R. and Uzun, A. 2017. Contribution to the knowledge of the Stratiomyidae (Diptera) fauna of Turkey 1. Entomological News **126(4)**: 252-273.

Denes, A.L., Kolcsar, L.P., Torok, E. and Keresztes, L. 2016. Phylogeography of the micro-endemic *Pedicia staryi* group (Insecta: Diptera): evidence of relict biodiversity in the Carpathians. Biological Journal of the Linnean Society **119(3)**: 719-731. doi:10.1111/bij.12667.

Deviatiiarov, R., Kikawada, T. and Gusev, O. 2017. The complete mitochondrial genome of an anhydrobiotic midge *Polypedilum vanderplanki* (Chironomidae, Diptera). Mitochondrial DNA Part A **28(1-2)**: 218-220. doi:10.3109/19401736.2015.1115849.

Dikow, R.B., Frandsen, P.B., Turcatel, M. and Dikow, T. 2017. Genomic and transcriptomic resources for assassin flies including the complete genome sequence of *Proctacanthus coquilletti* (Insecta: Diptera: Asilidae) and 16 representative transcriptomes. Peerj **5**: 20. doi:10.7717/peerj.2951.

Drake, C.M. & Pollet, M.A.A. 2016. *Dolichopus calinotus* Loew (Diptera, Dolichopodidae) new to Britain and Belgium. Dipterists Digest **23**: 231-236.

Drew, R.A.I. and Hancock, D.L. 2016. A review of the subgenus *Bulladacus* Drew & Hancock of *Bactrocera* Macquart (Diptera: Tephritidae: Dacinae), with description of two new species from Papua New Guinea. Australian Entomologist **43(4)**: 189-210.

Ebejer, M.J. 2016. The Moroccan species of Chyromyidae (Diptera) with descriptions of five new species of *Aphaniosoma* Becker. Zootaxa **4208(3)**. doi:http://dx.doi.org/10.11646/zootaxa.4208.3.2.

Epler, J.H. 2016. A new species of *Dicrotendipes* (Diptera: Chironomidae) from Florida. Zootaxa **4208(1)**: 77-83. doi:10.11646/zootaxa.4208.1.4.

Evenhuis, N.L. and Gang, Y. 2016. Review of the Oriental and Palaearctic bee fly genus *Euchariomyia* Bigot (Diptera: Bombyliidae: Bombyliinae). Zootaxa **4205(3)**: 211-225. doi:10.11646/zootaxa.4205.3.2.

Fedotova, Z.A. and Perkovsky, E.E. 2016. First gall midges (Diptera, Cecidomyioidea) from late Cretaceous amber of the Taimyr peninsula. Paleontological Journal **50(9)**: 1001-1026.

Fedotova, Z.A. and Perkovsky, E.E. 2016. A new genus and species of gall midges of the supertribe Heteropezidi (Diptera, Cecidomyiidae) found in Eocene amber from Sakhalin. Paleontological Journal **50(9)**: 1033-1037.

Fedotova, Z.A. and Perkovsky, E.E. 2017. New genus and species of gall midges (Diptera, Cecidomyiidae, Porricondylinae, Holoneurini) from the late Eocene amber of Olevsk (Zhitomir Region, Ukraine). Vestnik Zoologii **51(1)**: 23-30. doi:http://dx.doi.org/10.1515/vzoo-2017-0004.

Figueiredo, J.V.A., Perondini, A.L.P. and Selivon, D. 2017. Patterns of inner chorion structure in *Anastrepha* (Diptera: Tephritidae) eggs. Arthropod Structure & Development **46(2)**: 236-245. doi:10.1016/j.asd.2016.11.004.

Fiesler, E. and Drake, T. 2016. Macro-invertebrate Biodiversity of a Coastal Prairie with Vernal Pool Habitat Biodiversity Data Journal **4**: e6732. doi: 10.3897/BDJ.4.e6732.

Fitzgerald, S.J. 2017. *Phthinia* Winnertz (Diptera: Mycetophilidae): new species and records from the Neotropical and Oriental regions. Zootaxa **4231(1)**: 107-113. doi:10.11646/zootaxa.4231.1.7.

Forster, M., Beutel, R.G. and Schneeberg, K. 2016. Catching prey with the antennae The larval head of *Corethrella appendiculata* (Diptera: Corethrellidae). Arthropod Structure & Development **45(6)**: 594-610. doi:10.1016/j.asd.2016.09.003.

Fusari, L.M., Pinho, L.C. and Lamas, C.J.E. 2017. New species and records of *Zavreliella* Kieffer, 1920 from Neotropical region (Diptera: Chironomidae). Zootaxa **4221(4)**: 486-490. doi:10.11646/zootaxa.4221.4.5.

Galinskaya, T.V. and Shatalkin, A.I. 2017. New species of *Nothybus* Rondani, 1875 (Diptera: Nothybidae) from Thailand. Oriental Insects **51(1)**: 6-10. doi:10.1080/00305316.2016.1242437.

Gillung, J.P. and Borkent, C.J. 2017. Death comes on two wings: a review of dipteran natural enemies of arachnids. Journal of Arachnology **45**: 1-19.

Gracielle, I.M.S., Tidon, R. and Bao, S.N. 2016. Structure and ultrastructure of spermatozoon in six species of Drosophilidae (Diptera). Tissue & Cell **48(6)**: 596-604.

Grzywacz, A., Hall, M.J.R., Pape, T. and Szpila, K. 2017. Muscidae (Diptera) of forensic importance-an identification key to third instar larvae of the western Palaearctic region and a catalogue of the muscid carrion community. International Journal of Legal Medicine **131(3)**: 855-866. doi:10.1007/s00414-016-1495-0.

Harbach, R.E., Culverwell, C.L. and Kitching, I.J. 2017. Phylogeny of the nominotypical subgenus of *Culex* (Diptera: Culicidae): insights from analyses of anatomical data into interspecific relationships and species groups in an unresolved tree. Systematics and Biodiversity **15(4)**: 296-306. doi:10.1080/14772000.2016.1252439.

Harbach, R.E., Rattanarithikul, R. and Harrison, B.A. 2017. *Anopheles prachongae*, a new species of the Gigas Complex of subgenus *Anopheles* (Diptera: Culicidae) in Thailand, contrasted with known forms of the complex. Zootaxa **4236(1)**: 65-81. doi:10.11646/zootaxa.4236.1.3.

Harterreiten-Souza, E.S., Pujol-Luz, J.R. and Sujii, E.R. 2016. Influence of various farmland habitats on abundance of *Taeniaptera* (Diptera: Micropezidae). Florida Entomologist **99(4)**: 740-743.

Hash, J.M., Millar, J.G., Heraty, J.M., Harwood, J.F. and Brown, B.V. 2017. Millipede defensive compounds are a double-edged sword: Natural history of the millipede-parasitic genus *Myriophora* Brown (Diptera: Phoridae). Journal of Chemical Ecology **43(2)**: 198-206. doi:10.1007/s10886-016-0815-7.

Hernandez-Triana, L.M., Brugman, V.A., Prosser, S.W.J., Weland, C., Nikolova, N., Thorne, L., De Marco, M.F., Fooks, A.R. and Johnson, N. 2017. Molecular approaches for blood meal analysis and species identification of mosquitoes (Insecta: Diptera: Culicidae) in rural locations in southern England, United Kingdom. Zootaxa **4250(1)**. doi:http://dx.doi.org/10.11646/zootaxa.4250.1.5.

Hernández-Triana, L.M., De Oca, F.M., Prosser, S.W.J., Hebert, P.D.N., Gregory, T.R. and McMurtrie, S. 2017. DNA barcoding as an aid for species identification in austral black flies (Insecta: Diptera: Simuliidae). Genome **60(4)**: 348.

Hippa, H., Kurina, O. and Saaksjarvi, I.E. 2017. The genus *Manota* Williston (Diptera: Mycetophilidae) in Peruvian Amazonia, with description of sixteen new species and notes on local species richness. Zootaxa **4236(1)**: 1-40. doi:10.11646/zootaxa.4236.1.1.

Hoffmann, C., Stockhausen, M., Merkel, K., Calvignac-Spencer, S. and Leendertz, F.H. 2016. Assessing the feasibility of fly based surveillance of wildlife infectious diseases. Scientific Reports **6**: 37952.

Hopken, M.W., Ryan, B.M., Huyvaert, K.P. and Piaggio, A.J. 2017. Picky eaters are rare: DNA-based blood meal analysis of *Culicoides* (Diptera: Ceratopogonidae) species from the United States. Parasites & Vectors **10**: 9. doi:10.1186/s13071-017-2099-3.

Horák, J. 2017. Insect ecology and veteran trees. Journal of Insect Conservation **21(1)**: 1-5. doi:http://dx.doi.org/10.1007/s10841-017-9953-7.

Huang, J., Su, Y.R. and Chen, H.W. 2017. The genus *Leucophenga* (Diptera, Drosophilidae), part VII: the *subpollinosa* species group from China, with morphological and molecular evidence. Zootaxa **4247(3)**: 201-245. doi:10.11646/zootaxa.4247.3.1.

Huang, Y.M. and Rueda, L.M. 2017. Pictorial keys to the sections, groups, and species of the *Aedes* (*Finlaya*) in the Afrotropical Region (Diptera: Culicidae). Zootaxa **4221(1)**: 131-141. doi:10.11646/zootaxa.4221.1.7.

Humala, A.E., Kruidhof, M. and Woelke Jozef, B. 2017. New species of *Megastylus* (Hymenoptera: Ichneumonidae: Orthocentrinae) reared from larvae of Keroplatidae fungus gnats (Diptera) in a Dutch orchid greenhouse. Journal of Natural History **51(1-2)**: 83-95.

JaeIck, J. 2017. Description of larval and pupal stages of *Tipula* (*Nippotipula*) *sinica* (Diptera, Tipulidae) from South Korea with ecological notes. Animal Systematics, Evolution and Diversity **33(1)**: 56-59. doi:http://dx.doi.org/10.5635/ASED.2017.33.1.036.

Jaschhof, M. 2017. Catochini, Strobliellini and Acoenoniini revisited: a taxonomic review of the small tribes of the Micromyinae (Diptera: Cecidomyiidae). Zootaxa **4250(3)**: 275-295. doi:10.11646/zootaxa.4250.3.5.

Jaschhof, M. and Jaschhof, C. 2017. Mycophagous gall midges (Diptera, Cecidomyiidae: Lestremiinae, Micromyinae, Winnertziinae, Porricondylinae): first records in Sweden and descriptions of closely related new species from elsewhere. Zootaxa **4226(4)**. doi:http://dx.doi.org/10.11646/zootaxa.4226.4.6.

Jiao, K.L., Mu, Y.R. and Bu, W.J. 2017. Notes on the genus *Brachyneurina* Mamaev (Diptera: Cecidomyiidae) with description of two new species from China. Zoological Studies **56**: 7. doi:10.6620/zs.2017.56-04.

Jiao, K.-L., Han, P.-J., Yang, M.-L., Xiong, R.-C., Wang, Y.-H. and Bu, W.-J. 2017. A new species of gall midge (Diptera: Cecidomyiidae) attacking jujube, *Ziziphusjujuba* in China. Zootaxa **4247(4)**. doi:http://dx.doi.org/10.11646/zootaxa.4247.4.10.

Jovicic, S., Burgio, G., Diti, I., Krasic, D., Markov, Z., Radenkovic, S. and Vujic, A. 2017. Influence of landscape structure and land use on *Merodon* and *Cheilosia* (Diptera: Syrphidae): contrasting responses of two genera. Journal of Insect Conservation **21(1)**: 53-64. doi:10.1007/s10841-016-9951-1.

Kang, Z.H., Zhang, X., Ding, S.M., Tang, C.F., Wang, Y.Y., de Jong, H., Cameron, S.L., Wang, M.Q. and Yang, D. 2017. Transcriptomes of three species of Tipuloidea (Diptera, Tipulomorpha) and implications for phylogeny of Tipulomorpha. PLoS ONE **12(3)**: 20. doi:10.1371/journal.pone.0173207.

Katoh, T., Izumitani, H.F., Yamashita, S. and Watada, M. 2017. Multiple origins of Hawaiian drosophilids: Phylogeography of *Scaptomyza* Hardy (Diptera: Drosophilidae). Entomological Science **20(1)**: 33-44. doi:10.1111/ens.12222.

Katz, N., Subach, A., Pruitt, J.N. and Scharf, I. 2016. Habitat preference of wormlions and their behavioural repeatability under illumination/shade conditions. Ecological Entomology **41(6)**: 716-726.

Kazerani, F., Khaghaninia, S., Talebi, A.A., Persson, M. and Pollet, M. 2017. Eight new species of Dolichopodinae (Diptera: Dolichopodidae) from northern Iran. Zootaxa **4242(1)**: 111-141. doi:10.11646/zootaxa.4242.1.6.

Khaled Mahmoud, A. 2017. The genus *Clunio* Haliday, 1855 from Egypt (Hurghada, Red Sea) with a description of the larva of *Clunio* sp.1 (Diptera, Chironomidae, Orthocladiinae). Polish Journal of Entomology **86(1)**: 39-47. doi:http://dx.doi.org/10.1515/pjen-2017-0003.

Kolesik, P. and Gagne, R.J. 2016. Revision of early taxa of Australian gall midges (Diptera: Cecidomyiidae). Zootaxa **4205(4)**: 301-338. doi:10.11646/zootaxa.4205.4.1.

Korneyev Severyn, V. and Korneyev, V.A. 2017. The fruit flies (Diptera: Tephritidae) described by Theodor Becker from Iran and Western China revisited in the collections of the Zoological Institute, Saint-Petersburg and Museum fur Naturkunde, Berlin. Zootaxa **4227(1)**: 89-105.

Kownacki, A., Woznicka, O., Szarek-Gwiazda, E., Michailova, P. and Czaplicka, A. 2017. Morphology of the adult male and pupal exuviae of *Glyptotendipes* (*Glyptotendipes*) *glaucus* (Meigen 1818) (Diptera, Chironomidae) using scanning electron microscope (SEM). Zootaxa **4237(2)**: 383-392. doi:10.11646/zootaxa.4237.2.11.

Kurina, O., Hippa, H. and Amorim, D.D. 2017. New species and new records of *Manota* Williston from Colombia, Brazilian Amazonia, and Costa Rica (Diptera, Mycetophilidae). ZooKeys**(668)**: 83-105. doi:10.3897/zookeys.668.11350.

Lavigne, R. 2016. Comments on status of *Asilus exilus* Macquart 1838 (Diptera: Asilidae). Entomological News **126(3)**: 241-244.

Leung, T.L.F. 2017. Fossils of parasites: what can the fossil record tell us about the evolution of parasitism? Biological Reviews **92(1)**: 410-430. doi:10.1111/brv.12238.

Li, J.H., Gopurenko, D., Cai, D.C., Yang, Y.M., Hu, R., Thepparat, A., Wardhana, A.H., Kim, H.C., Klein, T.A., Kim, M.S. and others. 2017. *Culicoides* Latreille biting midges (Diptera: Ceratopogonidae) of the Dongzhaigang mangrove forest, Hainan Province, China. Zootaxa **4227(1)**: 49-60. doi:10.11646/zootaxa.4227.1.2.

Li, Z. and Yang, D. 2017. *Sepedon* (Diptera: Sciomyzidae) species from China, with notes on taxonomy and distribution. Zootaxa **4254(3)**: 301-321. doi:10.11646/zootaxa.4254.3.1.

Liu, G.C. and Yang, M. 2016. A taxonomic revision of the genus *Diplonevra* Lioy (Diptera: Phoridae) from China. Zootaxa **4205(1)**: 31-51. doi:10.11646/zootaxa.4205.1.3.

Liu, J. and Tang, H. 2017. *Djalmabatista* Fittkau, 1968 (Diptera: Chironomidae: Tanypodinae) from Oriental China, with the description of a new species. Pan-Pacific Entomologist **93(1)**: 14-21.

Liu, R.S., Wang, N. and Yang, D. 2016. *Chrysotus* Meigen (Diptera: Dolichopodidae) from Inner Mongolia with descriptions of two new species. Transactions of the American Entomological Society **142(2)**: 155-165.

Liu, Y.M., Cai, C.Y. and Huang, D.Y. 2017. First soldier fly from the mid-Cretaceous Burmese amber (Diptera, Stratiomyidae). Cretaceous Research **70**: 142-146. doi:10.1016/j.cretres.2016.10.007.

Lonsdale, O. 2017. The *Liriomyza* (Diptera: Schizophora: Agromyzidae) of Canada & Alaska. Zootaxa **4234(1)**: 1-156. doi:10.11646/zootaxa.4234.1.1.

Lourenco, E.C., Almeida, J.C. and Famadas, K.M. 2016. Richness of ectoparasitic flies (Diptera: Streblidae) of bats (Chiroptera)-a systematic review and meta-analysis of studies in Brazil. Parasitology Research **115(11)**: 4379-4388. doi:10.1007/s00436-016-5223-y.

MacGowan, I. 2017. A new genus and species within the tribe Earomyiini (Diptera, Lonchaeidae). Zootaxa **4216(3)**: 201-224. doi:10.11646/zootaxa.4216.3.1.

Maia, V.C., Catian, G. and Leme, F.M. 2017. *Neolasioptera pantaneira*, a new species of Cecidomyiidae (Diptera) associated with Aeschynomene denticulata (Fabaceae) from Brazil. Brazilian Journal of Biology **77(1)**: 170-175. doi:http://dx.doi.org/10.1590/1519-6984.13415.

Maity, A., Naskar, A., Hazra, S., Sengupta, J., Parui, P. and Banerjee, D. 2017. Taxonomic mapping of Tabanidae (Diptera: Tabanidae) from Darjeeling Himalaya, a part of Indo-Burmese biodiversity hotspot. Oriental Insects **51(1)**: 11-45. doi:10.1080/00305316.2016.1246265.

Makarchenko, E.A., Makarchenko, M.A. and Semenchenko, A.A. 2017. New or little-known species of *Chaetocladius* s. str. Kieffer, 1911 (Diptera: Chironomidae: Orthocladiinae) from the Amur River basin (Russian Far East). Zootaxa **4247(3)**: 313-330. doi:10.11646/zootaxa.4247.3.5.

Marinho, M.A.T., Wolff, M., Ramos-Pastrana, Y., de Azeredo-Espin, A.M.L. and Amorim, D.D. 2017. The first phylogenetic study of Mesembrinellidae (Diptera: Oestroidea) based on molecular data: clades and congruence with morphological characters. Cladistics **33(2)**: 134-152. doi:10.1111/cla.12157.

Martin-Vega, D., Ebejer, M.J. and Whitmore, D. 2017. Out of the South? The first Afrotropical record of *Prochyliza* Walker (Diptera: Piophilidae), with description of a new species. Zootaxa **4232(1)**: 144-150. doi:10.11646/zootaxa.4232.1.12.

Martin-Vega, D., Simonsen, T.J. and Hall, M.J.R. 2017. Looking into the puparium: Micro-CT visualization of the internal morphological changes during metamorphosis of the blow fly, *Calliphora vicina*, with the first quantitative analysis of organ development in cyclorrhaphous dipterans. Journal of Morphology (1931) **278(5)**: 629-651. doi:http://dx.doi.org/10.1002/jmor.20660.

McCravy, K.W. 2017. An analysis of Malaise-trap effectiveness in assessing robber fly (Diptera: Asilidae) species richness. Northeastern Naturalist **24(1)**: 15-24.

Meier, R. 2017. Citation of taxonomic publications: the why, when, what and what not. Systematic Entomology **42(2)**: 301-304. doi:10.1111/syen.12215.

Mello Ramon, L., Mahlmann, T. and Silva, V.C. 2017. Redescription and first record in South America of *Neogriphoneura timida* Curran (Diptera, Lauxaniidae). Revista Brasileira de Entomologia **61(1)**: 1-5.

Men, Q.L., Young, C.W., Starkevich, P., Yu, Y.F. and Lei, X.P. 2017. Two new species of *Tipula* (*Vestiplex*) from Southern China based on morphological and molecular data, with redescription of *Tipula* (*Vestiplex*) *bicalcarata* (Diptera, Tipulidae, Tipulinae). ZooKeys**(658)**: 63-80. doi:10.3897/zookeys.658.9738.

Mengual, X. 2016. A taxonomic revision of the genus *Asiobaccha* Violovitsh (Diptera: Syrphidae). Journal of Natural History **50(41-42)**: 2585-2645. doi:10.1080/00222933.2016.1206634.

Miranda, G.F.G. 2017. Identification key for the genera of Syrphidae (Diptera) from the Brazilian Amazon and new taxon records. Acta Amazonica **47(1)**: 53-62. doi:10.1590/1809-4392201601022.

Miranda, G.F.G. and Moran, K. 2017. The female abdomen and genitalia of Syrphidae (Diptera). Insect Systematics & Evolution **48(2)**: 157-201. doi:10.1163/1876312x-48022153.

Missagia Caio, C.C. and Alves Maria Alice, S. 2017. Florivory and floral larceny by fly larvae decrease nectar availability and hummingbird foraging visits at *Heliconia* (Heliconiaceae) flowers. Biotropica **49(1)**: 13-17.

Mitterboeck, T.F., Fu, J.Z. and Adamowicz, S.J. 2016. Rates and patterns of molecular evolution in freshwater versus terrestrial insects. Genome **59(11)**: 968-980. doi:10.1139/gen-2016-0030.

Mohamed, A.H., Ali, A.M., Harbach, R.E., Reeves, R.G., Ibrahimd, K.M., AhmedMohmed, M.A. and Azrag, R.S. 2017. *Aedes* mosquitoes in the Republic of the Sudan, with dichotomous keys for the adult and larval stages. Journal of Natural History **51(9-10)**: 513-529. doi:10.1080/00222933.2017.1285069.

Montoya, A.L., Ricarte, A. and Wolff, M. 2017. Two new species of *Quichuana* Knab (Diptera: Syrphidae) from the paramo ecosystems in Colombia. Zootaxa **4244(3)**: 390-402. doi:10.11646/zootaxa.4244.3.7.

Moophayak, K., Sangob, S., Chaiwong, T., Kom, S., Kurahashi, H., Sukontason, K.L., Vogtsberger, R.C. and Bunchu, N. 2017. Morphological characteristics of terminalia of the wasp-mimicking fly, *Stomorhina discolor* (Fabricius). Insects **8(1)**: 11. doi:http://dx.doi.org/10.3390/insects8010011.

Moreira Chaves Leonardo, S., Rodrigues de Sa Ivy, L., Bergamaschi, D.P. and Mureb Sallum Maria, A. 2016. *Kerteszia* Theobald (Diptera: Culicidae) mosquitoes and bromeliads: A landscape ecology approach regarding two species in the Atlantic rainforest. Acta Tropica **164**: 303-313.

Motamedinia, B., Kehlmaier, C., Mokhtari, A., Rakhshani, E. and Gilasian, E. 2017. Discovery of the genus *Claraeola* Aczel in Iran with the description of two new species (Diptera: Pipunculidae). Zootaxa **4227(4)**: 563-572. doi:10.11646/zootaxa.4227.4.6.

Motta Rodrigues Paula, F., McAlister, E. and Einicker Lamas Carlos, J. 2017. Review of *Marmasoma* White with lectotype designation of *M. sumptuosum* White and an identification key to the Australasian/Oceanian genera of Ecliminae (Diptera, Bombyliidae). Zootaxa **4232(2)**: 185-196.

Moubayed-Breil, J. 2016. On the genus *Cricotopus* v. d. Wulp, 1874 (*tremulus*-group) from continental France and Corsica with description of *C. mantetanus* sp. n. and *C. royanus* sp. n. (Diptera, Chironomidae, Orthocladiinae). Ephemera **17(2)**: 71-104.

Moubayed-Breil, J. and Lods-Crozet, B. 2016. *Heleniella helvetica* sp n., a cold stenothermic species inhabiting the upper Rhone catchment in central Switzerland (Diptera, Chironomidae, Orthocladiinae). Journal of Entomological and Acarological Research **48(3)**: 339-344.

Moulton, J.K. 2017. The true identity of *Dixa modesta* Johannsen (Diptera: Dixidae) resolved: synonymy of *Dixa similis* Johannsen, designation of the *Dixa ubiquita* species group, and description of three new eastern Nearctic species. Zootaxa **4216(3)**: 247-260. doi:10.11646/zootaxa.4216.3.3.

Mulieri, P.R., Mello-Patiu, C.A. and Aballay, F.H. 2017. Taxonomic revision of *Lipoptilocnema* (Diptera: Sarcophagidae), with notes on natural history and forensic importance of its species. Journal of Medical Entomology **54(1)**: 50-75. doi:10.1093/jme/tjw099.

Mze, H.I., Raveloson-Ravaomanarivo, L.H., Delatte, H., Chiroleu, F., Allibert, A., Nouhou, S., Quilici, S. and Duyck, P.F. 2016. Invasion by *Bactrocera dorsalis* and niche partitioning among tephritid species in Comoros. Bulletin of Entomological Research **106(6)**: 749-758.

Natarajan, R., Rajavel, A.R. and Jambulingam, P. 2017. Descriptions of three new species of *Uranotaenia* (*Pseudoficalbia*) (Diptera: Culicidae) from India. Zootaxa **4227(2)**: 251-265. doi:10.11646/zootaxa.4227.2.6.

Nayduch, D. and Burrus, R.G. 2017. Flourishing in Filth: House Fly-Microbe Interactions Across Life History. Annals of the Entomological Society of America **110(1)**: 6-18. doi:10.1093/aesa/saw083.

Negrobov, O.P., Manko, P., Hrivniak, L. and Obona, J. 2017. New records of long-legged flies (Diptera: Dolichopodidae) from Armenia, with description of *Campsicnemus armeniacus* sp. n. Biologia **72(1)**: 70-75. doi:http://dx.doi.org/10.1515/biolog-2017-0005.

Nel, A., Garrouste, R. and Daugeron, C. 2017. Two new long-legged flies in the Santonian amber of France (Diptera: Dolichopodidae). Cretaceous Research **69**: 1-5.

Niitsuma, H. and Tang, H. 2017. Notes on the genus *Conchapelopia* Fittkau (Diptera: Chironomidae: Tanypodinae) from southern China, with description of a new species. Zootaxa **4236(2)**: 327-334.

Omelkova, M. and Jezek, J. 2017. Two new species of *Jungiella* (Diptera: Psychodidae: Psychodinae) from the Palaearctic Region. Zootaxa **4250(6)**: 560-576. doi:10.11646/zootaxa.4250.6.4.

Ottens, K., Winkler, I.S., Lewis, M.L., Scheffer, S.J., Gomes-Costa, G.A., Condon, M.A. and Forbes, A.A. 2017. Genetic differentiation associated with host plants and geography among six widespread species of South American *Blepharoneura* fruit flies (Tephritidae). Journal of Evolutionary Biology **30(4)**: 696-710. doi:10.1111/jeb.13043.

Ovtshinnikova Olga, G. and Galinskaya Tatiana, V. 2016. Musculature of the abdomen and male genitalia of a member of Celyphidae (Diptera, Cyclorrhapha). Oriental Insects **50(4)**: 178-186.

Ozkan, N. and Akiska, S. 2017. A new larval record of *Demicryptochironomus* Lenz, 1941 (Diptera, Chironomidae) for the Turkish fauna. Turkish Journal of Zoology **41(1)**: 181-184. doi:10.3906/zoo-1511-38.

Pangjanda, S. and Pramual, P. 2017. Tests of conspecificity for closely related black fly (Diptera: Simuliidae) species of the *Simulium striatum* group in Thailand. Zootaxa **4231(3)**: 421-430. doi:10.11646/zootaxa.4231.3.8.

Pape, T., Piwczynski, M., Wyborska, D., Akbarzadeh, K. and Szpila, K. 2017. A new genus and species of hypodermatine bot flies (Diptera: Oestridae). Systematic Entomology **42(2)**: 387-398. doi:10.1111/syen.12220.

Peach Daniel, A.H. and Gries, G. 2016. Nectar thieves or invited pollinators? A case study of tansy flowers and common house mosquitoes. Arthropod-Plant Interactions **10(6)**: 497-506.

Perez-Lachaud, G., Jahyny, B.J.B., Stahls, G., Rotheray, G., Delabie, J.H.C. and Lachaud, J.P. 2017. Rediscovery and reclassification of the dipteran taxon *Nothomicrodon* Wheeler, an exclusive endoparasitoid of gyne ant larvae. Scientific Reports **7**: 9. doi:10.1038/srep45530.

Perkovsky, E.E. and Fedotova, Z.A. 2016. *Rovnodiplosis eduardi* gen. et sp. nov., the first record of a fossil gall midge of the supertribe Mycodiplosidi (Diptera, Cecidomyioidea, Cecidomyiidae) in the late Eocene of the Rovno amber. Paleontological Journal **50(9)**: 1027-1032.

Perkovsky, E.E. and Sukhomlin, E.B. 2016. The first record of late cretaceous Blackflies (Diptera: Simuliidae) in Asia (Yantardakh, Taimyr). Paleontological Journal **50(9)**: 997-1000.

Pfister, S.C., Sutter, L., Albrecht, M., Marini, S., Schirmel, J. and Entling, M.H. 2017. Positive effects of local and landscape features on predatory flies in European agricultural landscapes. Agriculture Ecosystems & Environment **239**: 283-292. doi:10.1016/j.agee.2017.01.032.

Plant, A.R., Jonassen, T., Grootaert, P., Meyer, H., Pollet, M. & Drake, M. 2017. The arrow points north - endemic areas and post-Devensian assembly of the British Empidoidea fauna (Insecta: Diptera). Biological Journal of the Linnean Society **XX**: 1-17.

Podenas, S. and Podeniene, V. 2017. *Limonia* crane flies (Diptera: Limoniidae) of Korea. Zootaxa **4231(1)**: 1-37. doi:10.11646/zootaxa.4231.1.1.

Pollet, M. 2017. *Dolichopus nimbatus* Parent, 1927 revisited, with two new synonyms (Diptera: Dolichopodidae). Zootaxa **4238(1)**: 143-150. doi:10.11646/zootaxa.4238.1.12.

Pollet, M. 2017. Slankpootvliegen (Dolichopodidae). Nieuwsbrief EIS **64**: 3-5.

Pollet, M., De Braekeleer, A., Drake, C.M. and Van de Meutter, F. 2017. The rediscovery of *Orthoceratium lacustre* (Scopoli, 1763) (Diptera: Dolichopodidae) in Belgium, with data on its ecology and distribution in the Palaearctic region. Biologia **72(1)**: 62-+. doi:10.1515/biolog-2017-0007.

Pollet, M. and Meuffels, H. 2016. SLANKPOOTVLIEGEN (Dolichopodidae). In: Jacobusse, C., van Steenis, W., Dek, N.-J. & Calle, L. (Eds.). Vliegen en Muggen in Zeeland. Fauna Zeelandica deel VII: pp. 61-67. Het Zeeuwse Landschap, Wilhelminadorp.

Prigent, S.R., Suwalski, A. and Veuille, M. 2017. Connecting systematic and ecological studies using DNA barcoding in a population survey of Drosophilidae (Diptera) from Mt Oku (Cameroon). European Journal of Taxonomy **287**: 1-20. doi:10.5852/ejt.2017.287.

Pu, D.Q., Liu, H.L., Gong, Y.Y., Ji, P.C., Li, Y.J., Mou, F.S. and Wei, S.J. 2017. Mitochondrial genomes of the hoverflies *Episyrphus balteatus* and *Eupeodes corollae* (Diptera: Syrphidae), with a phylogenetic analysis of Muscomorpha. Scientific Reports **7**: 10. doi:10.1038/srep44300.

Puchalski, M. and Gilka, W. 2017. *Cladotanytarsus* Kieffer (Diptera: Chironomidae): several distinctive species reviewed on the basis of records from Canada and USA. Zootaxa **4242(2)**: 344-358. doi:10.11646/zootaxa.4242.2.7.

Pujol-Luz, J.R., De Godoi, F.S.P. and Barros-Cordeiro, K.B. 2016. Description of the puparium of *Hermetia pulchra* (Diptera: Stratiomyidae) from Brazil. Zootaxa **4205(4)**: 357-364. doi:10.11646/zootaxa.4205.4.4.

Purcell, M.F., Wallenius, T.C., Yeates, D.K. and Rowell, D.M. 2016. Larval dorsal shield morphology is highly correlated with gall type in the enigmatic gall-forming fly, *Fergusonina* Malloch (Diptera : Fergusoninidae). Australian Journal of Zoology **64(4)**: 233-248. doi:http://dx.doi.org/10.1071/ZO16037.

Qi, X., Wang, X.H., Andersen, T. and Lin, X.L. 2017. A new species of *Manoa* Fittkau (Diptera: Chironomidae), with DNA barcodes from Xianju National Park, Oriental China. Zootaxa **4231(3)**: 398-408. doi:10.11646/zootaxa.4231.3.6.

Rajemison, F.I., Lalarivoniaina, O.S.N. and Goodman, S.M. 2017. Bat flies (Diptera: Nycteribiidae, Streblidae) parasitising *Rousettus madagascariensis* (Chiroptera: Pteropodidae) in the Parc National d'Ankarana, Madagascar: species diversity, rates of parasitism and sex ratios. African Entomology **25(1)**: 72-85. doi:10.4001/003.025.0072.

Ramage, T., Martins-Simoes, P., Mialdea, G., Allemand, R., Duplouy, A., Rousse, P., Davies, N., Roderick, G.K. and Charlat, S. 2017. A DNA barcode-based survey of terrestrial arthropods in the Society Islands of French Polynesia: host diversity within the SymbioCode Project. European Journal of Taxonomy **272**: 1-13. doi:10.5852/ejt.2017.272.

Raspi, A. and Benelli, G. 2016. On the identity of *Leucopis* (Diptera Chamaemyiidae) described by Camillo Rondani: a revision of eight silver fly species. Bulletin of Insectology **69(2)**: 199-219.

Ricarte, A. and Marcos-Garcia, M.A. 2017. A checklist of the Syrphidae (Diptera) of Spain, Andorra and Gibraltar. Zootaxa **4216(5)**: 401-440. doi:10.11646/zootaxa.4216.5.1.

Rivera-GarcÃA, K.D., Sandoval-Ruiz, C.A., SaldaÑA-VÃZquez, R.A. and Schondube, J.E. 2017. The effects of seasonality on host-bat fly ecological networks in a temperate mountain cave. Parasitology **144(5)**: 692-697. doi:http://dx.doi.org/10.1017/S0031182016002390.

Rodrigues, J.P.V., Pereira-Colavite, A. and Mello, R.L. 2016. Catalogue of the Teratomyzidae (Diptera, Opomyzoidea) of the World. Zootaxa **4205(3)**: 275-285. doi:10.11646/zootaxa.4205.3.7.

Rodrigues, P.F.M., McAlister, E. and Lamas, C.J.E. 2017. Review of *Marmasoma* White with lectotype designation of M-sumptuosum White and an identification key to the Australasian/Oceanian genera of Ecliminae (Diptera, Bombyliidae). Zootaxa **4232(2)**: 185-196. doi:10.11646/zootaxa.4232.2.3.

Ronderos, M.M., Spinelli, G.R., Marino, P.I. and Ferreira-Keppler, R.L. 2017. Description of unknown or poorly known pupae and adult males of Neotropical *Heteromyia* Say (Culicomorpha: Ceratopogonidae), with a specific key to pupae. Zoologischer Anzeiger **266**: 177-188. doi:10.1016/j.jcz.2016.12.001.

Rozkosny, R. and Vanhara, J. 2017. A revision of the species of *Evaza* Walker described by JCH de Meijere (Diptera, Stratiomyidae, Pachygastrinae). Zootaxa **4231(2)**: 219-237.

Safonkin, A.F., Triseleva, T.A., Yatsuk, A.A. and Akent'eva, N.A. 2016. Evolution of postgonites in frit flies (Diptera: Chloropida, *Meromyza*). Zoologichesky Zhurnal **95(11)**: 1334-1342. doi:10.7868/s0044513416090099.

Sarswat, M., Fartyal Rajendra, S., Sati, P.C., Kandpal, M. and Singh, B.K. 2016. Diversity and distribution pattern of drosophilids (Diptera, Drosophilidae) along an altitudinal transect in Uttarakhand and its implication in cytogenetics & molecular systematics study. Journal of Entomological Research (New Delhi) **39(4)**: 311-322.

Sarswat, M., Sati, P.C., Dewan, S. and Fartyal, R.S. 2016. Implying quantitative ecology of Drosophilid fauna as a tool for biodiversity assessment - A case study along an altitudinal transect in the Garhwal region of Central Himalaya. Tropical Ecology **57(4)**: 637-647.

Schutze, M.K., Virgilio, M., Norrbom, A. and Clarke, A.R. 2017. Tephritid integrative taxonomy: Where we are now, with a focus on the resolution of three tropical fruit fly species complexes. *In* Annual Review of Entomology, Vol 62. *Edited by*M. R. Berenbaum. Annual Reviews, Palo Alto. pp. 147-164.

Seitz, G. and Adler, P.H. 2017. A new species in the *Simulium vernum* group from the Alps of southern Germany: *Simulium arminii* (Diptera: Simuliidae). Zootaxa **4226(3)**. doi:http://dx.doi.org/10.11646/zootaxa.4226.3.4.

Shi, L., Gaimari, S.D. and Yang, D. 2017. Five new species of the genus *Tetroxyrhina* Hendel from China (Diptera, Lauxaniidae). Zootaxa **4247(3)**: 246-280. doi:10.11646/zootaxa.4247.3.2.

Shimabukuro, P.H.F., de Andrade, A.J. and Galati, E.A.B. 2017. Checklist of American sand flies (Diptera, Psychodidae, Phlebotominae): genera, species, and their distribution. ZooKeys**(660)**: 67-106. doi:10.3897/zookeys.660.10508.

Sikora, T., Jaschhof, M. and Sevcik, J. 2017. *Glossostyles perspicua* gen. et sp nov and other fungivorous Cecidomyiidae (Diptera) new to the Czech and Slovak Republics. European Journal of Taxonomy **303**: 1-29. doi:10.5852/ejt.2017.303.

Skartveit, J. and Nel, A. 2017. Revision of fossil Bibionidae (Insecta: Diptera) from French Oligocene deposits. Zootaxa **4225(1)**: 1-83. doi:10.11646/zootaxa.4225.1.1.

Smit, J., Raemakers, I. and Runt, A. 2016. The conopid fly *Leopoldius calceatus* recorded in the Netherlands (Diptera: Conopidae). Nederlandse Faunistische Mededelingen **47**: 39-42.

Song, B., Stocklin, J., Yong-Qian, G., De-Li, P. and Sun, H. 2017. Host specificity of two pollinating seed-consuming fly species is not related to soil moisture of host plant in the high Himalayas. Ecology and Evolution **7(2)**: 780-789.

Stahls, G. and Barkalov, A.V. 2017. Taxonomic review of the Palaearctic species of the *Cheilosia caerulescens*-group (Diptera, Syrphidae). ZooKeys**(662)**: 137-171. doi:10.3897/zookeys.662.11267.

Stebner, F., Szadziewski, R., Singh, H., Gunkel, S. and Rust, J. 2017. Biting midges (Diptera: Ceratopogonidae) from Cambay amber indicate that the Eocene fauna of the Indian subcontinent was not isolated. PLoS ONE **12(1)**. doi:10.1371/journal.pone.0169144
http://dx.doi.org/10.1371/journal.pone.0169144.

Szentivanyi, T., Estok, P. and Foldvari, M. 2016. Checklist of host associations of European bat flies (Diptera: Nycteribiidae, Streblidae). Zootaxa **4205(2)**: 148-150. doi:http://dx.doi.org/10.11646/zootaxa.4205.2.1.

Szpila, K., Akbarzadeh, K. and Pape, T. 2017. First description of the first instar larva of *Sphecapatoclea* and *Sphecapatodes* (Diptera: Sarcophagidae). Zoologischer Anzeiger **266**: 129-135. doi:10.1016/j.jcz.2016.11.004.

Taber Stephen, W. 2016. Two new Nearctic species of *Erioptera* Meigen crane flies. Southwestern Entomologist **41(4)**: 1021-1029.

Tait, C., Batra, S., Ramaswamy, S.S., Feder, J.L. and Olsson, S.B. 2016. Sensory specificity and speciation: a potential neuronal pathway for host fruit odour discrimination in *Rhagoletis pomonella*. Proceedings of the Royal Society of London, Series B: Biological Sciences **283(1845)**: 20162101. doi:http://dx.doi.org/10.1098/rspb.2016.2101.

Takaoka, H., Sofian-Azirun, M., Chen, C.D., Lau, K.W., Halim, M.R.A., Low, V.L., Ya'Cob, Z., Abdullah, N.A. and Suana, W. 2017. *Simulium* (*Gomphostilbia*) *lemborense*, a new black fly species (Diptera: Simuliidae) from Flores, Indonesia. Zootaxa **4236(1)**: 149-156. doi:10.11646/zootaxa.4236.1.8.

Takaoka, H., Sofian-Azirun, M., Ya'cob, Z., Chen, C.D., Lau, K.W., Low, V.L. and Suana, I.W. 2017. The black flies (Diptera: Simuliidae) of the Lesser Sunda Archipelago, Indonesia. Acta Tropica **169**: 170-186. doi:10.1016/j.actatropica.2017.01.016.

Talaga, S., Leroy, C., Cereghino, R. and Dejean, A. 2016. Convergent evolution of intraguild predation in phytotelm-inhabiting mosquitoes. Evolutionary Ecology **30(6)**: 1133-1147. doi:10.1007/s10682-016-9862-3.

Tang, H.Q. 2016. *Paralauterborniella* from Oriental China (Diptera: Chironomidae). Oriental Insects **50(4)**: 160-170. doi:10.1080/00305316.2016.1217799.

Tantawi, T.I., Whitworth, T.L. and Sinclair, B.J. 2017. Revision of the Nearctic *Calliphora* Robineau-Desvoidy (Diptera: Calliphoridae). Zootaxa **4226(3)**: 301-347. doi:10.11646/zootaxa.4226.3.1.

Thapa, S., Adler, P.H., Chhetri, S., Varma, R. and Henry, W. 2017. Chromosomal evidence for a new cryptic species of black fly in the *Simulium praelargum* complex (Diptera: Simuliidae) from West Bengal, India. Zootaxa **4244(1)**. doi:http://dx.doi.org/10.11646/zootaxa.4244.1.8.

Tonguc, A., Grootaert, P. and Barlas, M. 2016. A new species of *Hercostomus* Loew, 1857 (Diptera: Dolichopodidae) from Turkey. Zoology in the Middle East **62(4)**: 363-366.

Uechi, N., Yukawa, J., Tokuda, M., Maryana, N., Ganaha-Kikumura, T. and Kim, W. 2017. Description of the Asian chili pod gall midge, *Asphondylia capsicicola* sp n., with comparative notes on *Asphondylia gennadii* (Diptera: Cecidomyiidae) that induces the same sort of pod gall on the same host plant species in the Mediterranean region. Applied Entomology and Zoology **52(1)**: 113-123. doi:10.1007/s13355-016-0461-0.

Van de Meutter, F., Gyselings, R. and Van den Bergh, E. 2016. The occurrence and ecological requirements of the horse-flies (Tabanidae) of brackish marshes in Belgium. Journal of Insect Conservation **20(6)**: 989-997. doi:10.1007/s10841-016-9931-5.

Van Steenis, J., Ricarte, A., Vujic, A., Birtele, D. and Speight, M.C.D. 2016. Revision of the West-Palaearctic species of the tribe Cerioidini (Diptera, Syrphidae). Zootaxa **4196(2)**: 151-209. doi:10.11646/zootaxa.4196.2.1.

Verves, Y.G. and Radchenko, V.G. 2017. Redescription of male *Sarcophaga disputata* (Diptera: Sarcophagidae) using light and electron microscopy. Biologia **72(1)**: 76-83. doi:10.1515/biolog-2017-0009.

Veselic, S., Vujic, A. and Radenkovic, S. 2017. Three new Eastern-Mediterranean endemic species of the *Merodon aureus* group (Diptera: Syrphidae). Zootaxa **4254(4)**: 401-434. doi:10.11646/zootaxa.4254.4.1.

Vieira, R., Landa, J.M.A. and Rafael, J.A. 2017. *Ctenodontina* Enderlein, 1914 (Diptera, Asilidae, Asilinae): new combinations, synonyms, new species and new records for Argentina. Zootaxa **4216(3)**: 279-291. doi:10.11646/zootaxa.4216.3.5.

Vieira, R. and Rafael, J.A. 2016. Revision of *Diplosynapsis* Enderlein, 1914 (Diptera, Asilidae, Asilinae) with description of four new species. Zootaxa **4208(2)**: 127-148. doi:10.11646/zootaxa.4208.2.2.

Wang, F.Y., Shih, C.K., Ren, D. and Wang, Y.J. 2017. Quantitative assessments and taxonomic revision of the genus *Archirhagio* with a new species from Daohugou, China (Diptera: Archisargidae). Systematic Entomology **42(1)**: 230-239. doi:10.1111/syen.12204.

Wang, M., Zhang, D. and Li, X. 2017. A phylogeny of Chinese Fanniidae (Insecta, Diptera) based on the morphological characters. Shenyang Shifan Daxue Xuebao Ziran Kexue Ban **35(1)**: 1-13.

Wang, M.F., Li, W., Zhao, Y.W., Wu, J. and Zhang, D. 2017. Descriptions of three new *carbonaria*-group species of *Fannia* Robineau- Desvoidy from China, with a key to the *carbonaria*-group species (Diptera, Fanniidae). ZooKeys**(657)**: 93-107. doi:10.3897/zookeys.657.9153.

Wolff, M., Ramos-Pastrana, Y., Marinho, M.A.T. and Amorim, D.D. 2017. Two new species of *Huascaromusca* Townsend from Colombia, and a new combination for *Giovanella carvalhoi* (Diptera: Mesembrinellidae). Zootaxa **4231(2)**: 251-263. doi:10.11646/zootaxa.4231.2.7.

Xiao, W.M. and Yang, D. 2016. *Hilara* newly recorded from Shaanxi with seven new species (Diptera: Empididae). Transactions of the American Entomological Society **142(2)**: 131-153.

Ya'cob, Z., Takaoka, H., Low, V.L. and Sofian-Azirun, M. 2017. First description of a new cryptic species, *Simulium vanluni* from Peninsular Malaysia: An integrated morpho-taxonomical and genetic approach for naming cryptic species in the family Simuliidae. Acta Tropica **167**: 31-39. doi:10.1016/j.actatropica.2016.12.009.

Yan, C.C., Zhao, G.J., Liu, T., Guo, Q., Hou, Z.Y., Wang, X.H. and Pan, B.P. 2016. A new record and two new species of *Cryptochironomus* Kieffer, 1918 from China (Diptera, Chironomidae). Zootaxa **4208(5)**: 485-493. doi:10.11646/zootaxa.4208.5.6.

Yang, J.H., Toda, M.J., Suwito, A., Hashim, R. and Gao, J.J. 2017. A new species group in the genus *Dichaetophora*, with descriptions of six new species from the Oriental region (Diptera, Drosophilidae). ZooKeys**(665)**: 121-146. doi:10.3897/zookeys.665.11609.

Yang, S., Li, Y., Mai, Y.-N., Ruan, R.-T., Song, A.-D., Wang, F.-Q. and Chen, H.-G. 2017. Isolation and identification of egg-associated bacteria of *Hermetia illucens*(Diptera:Stratiomyidae) and their effects on its adult oviposition behavior. Acta Entomologica Sinica **60(2)**: 163-172. doi:http://dx.doi.org/10.16380/j.kcxb.2017.02.005.

Zaitzev, A. 2017. Two new species of fungus gnats (Diptera: Mycetophilidae) from Kunashir Island, Kuril Islands. Zootaxa **4250(3)**: 296-300. doi:10.11646/zootaxa.4250.3.6.

Zarghani, E., Khaghaninia, S., Namin, S.M. and Korneyev, V.A. 2017. Revision of *Terellia amberboae* group of species (Diptera: Tephritidae). Zootaxa **4221(1)**: 142-150. doi:10.11646/zootaxa.4221.1.8.

Zhang, D., Zhang, M., Wang, C. and Pape, T. 2016. Catalog of the Paramacronychiinae of China (Diptera: Sarcophagidae). Zootaxa **4208(4)**: 301-324. doi:10.11646/zootaxa.4208.4.1.

Zhang, Q., Zhang, J. and Wang, B. 2016. A remarkable brachyceran fly (Diptera: Tabanomorpha) from Late Cretaceous Burmese amber. Cretaceous Research **67**: 1-7. doi:http://dx.doi.org/10.1016/j.cretres.2016.06.012.

Zhang, T.T., Liu, F., Macgowan, I. and Xue, M. 2017. A new species of *Chaetolonchaea* Czerny (Diptera: Lonchaeidae) from China, a larval pest on chives. Zootaxa **4250(4)**: 358-366. doi:10.11646/zootaxa.4250.4.6.

Zhang, X.S., Liu, G.C., Zhang, D.X. and Shi, C.M. 2017. Novel trophic interaction: the scuttle fly *Megaselia scalaris* (Diptera: Phoridae) is a facultative parasitoid of the desert scorpion Mesobuthus eupeus mongolicus (Scorpiones: Buthidae). Journal of Natural History **51(1-2)**: 1-15. doi:10.1080/00222933.2016.1236222.

Zhu, L., Qin, T. and Chen, H.W. 2017. Three new species of the subgenus *Ashima* (Diptera: Drosophildae: Phortica) from south-western China, with DNA barcoding information. Journal of Natural History **51(1-2)**: 71-82. doi:10.1080/00222933.2016.1247480.

Zou, D., Coudron, T.A., Xu, W., Gu, X. and Wu, H. 2017. Development of immature tiger-fly *Coenosia attenuata* (Stein) reared on larvae of the fungus gnat *Bradysia impatiens* (Johannsen) in coir substrate. Phytoparasitica **45(1)**: 75-84. doi:http://dx.doi.org/10.1007/s12600-017-0564-3.

****

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 mailed to the following address:

Dr. James O'Hara
Canadian National Collection of Insects
Agriculture & Agri-Food Canada
K.W. Neatby Building, C.E.F.
Ottawa, Ontario, CANADA, K1A 0C6

Tel.: (613) 759-1795
FAX: (613) 759-1927
Email: James.OHara@agr.gc.ca

****

Full name: _____

Address: _____

_____

_____ **Telephone**: _____

FAX: _____ **Email**: _____

Projects and taxa studied: _____

_____

_____

_____