FLY TIMES

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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. As usual, its being late has allowed the issue to be larger than it would have been on time. And this is not even a large issue! 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. 58 of the *Fly Times* will appear next April. 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 April 2017 (maybe then I'll get an issue out on time!) – but don't worry – I'll send a reminder. And articles after 10 April are OK too!

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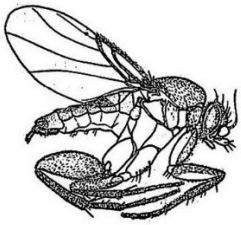
NEWS



FLY SCHOOL

A course for Dipterists

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If you are a student, early career professional, or newcomer to the fly world, Fly School is for you!

Fly School is an intensive two week course on family level (or below) identification of Diptera, with additional lectures on topics ranging from biogeography to phylogenetics. The course will stress lecture and laboratory components supplemented with time in the field.

Fly School Instructors (in alphabetical order):
- Dalton Amorim, Universidade de São Paulo, Ribeirão Preto
- Brian Brown, Natural History Museum of Los Angeles County
- Eliana Buenaventura, Smithsonian Institution, National Museum of Natural History
- Torsten Dikow, Smithsonian Institution, National Museum of Natural History
- David Grimaldi, American Museum of Natural History
- Jeff Skevington, Canadian National Collection of Insects, Arachnids and Nematodes, Agriculture and Agri-Food Canada

Additional special guests and sessions to be announced at a later date.

When: 4-17 June, 2017
Where: Wrightwood, California, USA
Cost: Tuition $1000USD, Food & Lodging approximately $700USD, Travel to be organized and paid by students independently.

REGISTRATION WILL OPEN 1 FEBRUARY 2017 ON www.dipteracourse.com.
SPACE WILL BE LIMITED.
Inquiries: dipteracourse@gmail.com

The Williston Diptera Research Fund (https://asiloidflies.si.edu/williston-diptera-research-fund) has generously set aside money to cover the tuition of a limited number of Fly School students. Interested applicants should send contact information and a 1-2 page essay outlining the applicant's interest in Fly School and need for funds to Torsten Dikow (DikowT@si.edu) by 31 January 2017. Awards will be announced by 15 February 2017 and will be directly applied to Fly School tuition for recipients. *Preference will be given to those demonstrating clear need for tuition assistance.*

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Diptera Workshop in Thailand

Dan Bickel

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I led a training workshop, "The Identification of pest Diptera (true or two-winged flies) of agricultural importance" from 6–10 June 2016 for ASEAN students at the Queen Sirikit Botanical Gardens, Chiang Mai, Thailand.

The workshop was sponsored by the Australian Department of Agriculture and Water Resources, as part of their technical capacity building program for ASEAN countries. Most of these workshops are related to problems that affect the entire Australasian region such as agricultural and veterinary pests, some of which are of major quarantine significance for Australia. These workshops facilitate capability building in these countries, both to recognize potential pest species in their own countries and to ensure high quality exports.

The course focussed on the identification and morphology of major families in the order Diptera. The workshop also covered basic techniques for collecting and preserving Diptera, their life history and ecological strategies, as well as noting the commonly encountered agricultural pests and quarantine threats in Southeast Asia.

Participants in the ASEAN Diptera identification workshop, held 6-10 June 2016 at the Queen Sirikit Botanical Gardens, Chiang Mai, Thailand.

Located in the forested mountains near Chiang Mai, Thailand, the Queen Sirikit Botanical Gardens (QSBG) is an ideal place to hold such a biodiversity workshop. The Garden has modern lecture rooms and laboratories, and within ten minutes you can be collecting in rich Oriental rainforest. (The QSBG is also the repository for samples from the TIGER Malaise trapping program in Thailand, a NSF sponsored program coordinated by Brian Brown & Mike Sharkey.)

The participants were mostly technicians and quarantine entomologists from all the ASEAN countries: Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam. Most of students were quite capable in English, and I was happy with the general outcome of the workshop. We were able to cover a lot of information, and most of the participants felt confident to identify at least some Diptera families using the standard keys. The students were mostly mature aged and had a range of work experience with quarantine and insect pests. As a farewell gift, each participant received a copy of Steve Marshall's book "Flies: the Natural History and Diversity of Diptera".

Resources:

- Printed course book and supplementary materials. This included a modified key from MND (I could not find a pdf of the MCAD with sharp images), with a supplementary family key for Acalyptrate from "*The families of Diptera of the Malay Archipelago*, by Pjotr Oosterbroek (Fauna Malesiana Handbook 1, Brill) – it is in the Acalyptratae that the tropical Oriental fauna is most distinct from the Holarctic fauna, and this had to be included.
- PowerPoint presentations providing overview of morphology, classification and identification of Diptera.
- USB/flash stick with *Manual of Nearctic Diptera* Volumes 1–3 from http://www.esc-sec.ca/aafcmono.php, plus all keys and supplementary materials (Diptera pest species, life histories, ecology, etc.)
- Specimens. Before the course we collected reference specimens from some 25 major families in the surrounding Botanical Gardens, and these specimens were used for keying. Some trainees brought specimens for identification during the workshop

Logistics and Problems

Time was limited and some of the participants were not able to key all the representative families. If I ran the course again, I would modify and condense the keys, and quarantine difficult couplets and/ or obscure families. Students need to see the morphological characters and key dichotomies associated with major families, and then they can fill in with the obscure families.

A major concern for the tropics: Some of the microscopes we used had fungal hyphae growing on the prisms, causing blurring of the image. Microscopes in the humid tropics must be stored routinely in a de-humidified room or light cupboard. Otherwise there will be fungal hyphae growing on the prisms, and the scopes become unusable.

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Zurquí All Diptera Biodiversity Inventory (ZADBI)

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Tropical regions are home to the majority of the world's biodiversity, and merit special consideration by all systematists. Thus, in spite of distractions, diversions, and the need to have a life outside of dipterology, we continue to press on with the ZADBI project. Our goal is to inventory all species of Diptera at a single cloud forest site in Costa Rica. A full year's worth of sampling took place, specimens were prepared, and now most of the loose ends are all that is left.

The past few months have been busy ensuring that identifications were submitted for all of the 58 coathors/ collaborators and dealing with some misdirected material. We are presently compiling and interpreting the information and have started the writing of two manuscripts, one shorter and to the point for a high-end science journal and one longer and more detailed for a more general journal. It appears that we will have over 4,000 species at our site at Zurquí de Moravia, Costa Rica, a fairly impressive count by any standard.

We are also presently examining a format (or at least a general outline) for chapters on individual families that we hope will be submitted and published as a unit, reporting on the remarkable diversity at Zurquí.

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On the distribution of *Liancalus virens* (Scopoli, 1763) (Diptera: Dolichopodidae)

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Liancalus Loew, 1857 is a genus in the subfamily Hydrophorinae with 21 described species from the Palaearctic, Nearctic, Afrotropical, and Oriental regions (Grichanov, 2014). Adults are commonly found resting on vertical wet rock surfaces and seeps since mid-summer till spring. Overwintering flies can be found in caves. Species are relatively large (body length usually more than 6 mm) with elongate legs. The West Palaearctic fauna comprises *L. glaucus* Becker, 1908, endemic of Madeira archipelago in the northern Atlantic Ocean, and *L. virens* (Scopoli, 1763) (Fig. 1), widely distributed from Scandinavia across Europe to North Africa. Stackelberg (1962) and Negrobov (1991) mentioned also mountains of the Caucasus, Crimea and Middle Asia along with North-European territory of Russia for this species. Later, the species was reported from Cyprus, Israel (Grichanov, 2007) and Turkey (Tonguç et al., 2016). Nevertheless, the only habitat between Finland and Caucasus, where the *L. virens* was met, was the Sablinsky Nature Reserve in the Leningrad Region of Russia. The species was not reported from the most part of the East European Plain including the other regions of European Russia, Baltic countries, Belorussia, Moldova and Ukraine. It was not recorded from Iran as well.

Figure 1. Habitus of *Liancalus virens* collected at the Sablinsky Nature Reserve.

The Sablinsky Nature Reserve is located near the village Ulyanovka (the railway station Sablino) in the Tosnensky District, 40 km from St. Petersburg southward. The reserved zone is located in the territory of 328.8 hectares and includes two waterfalls, low canyons of the rivers Sablinka and Tosna with exposures of Cambrian and Ordovician bedrocks, and several caves of artificial origin. The place was visited many times by the well-known Russian insect collector V.Yu. Fridolin (an active participant of 1905-1917 Russian revolutions) and by the famous Russian dipterist A.A. Stackelberg in 1921-1925 (Stackelberg, 1925). They collected 82 ♂♂ and 17 ♀♀ of *L. virens* since 17 July till 3 September at the

Sablinsky Waterfall, on sandstone walls along the Tosna River bank, at springs and rivulets. In addition, 2 ♂♂ and 3 ♀♀ were taken in caves along the Tosna River bank on 28 July 1924 and 2 February 1925. Stackelberg (1962) listed again the same specimens. No new material was collected later as follows from the latest literature and from the collections of the Zoological Institute of the Russian Academy of Sciences (ZIN). Therefore, the question on existence of the species local population nowadays seems to be interesting.

On 28 August 2016, the authors of this paper visited four points in the Sablinsky Nature Reserve, including one of the wet caves, the Sablinsky (59°39′40″ N, 30°47′06″ E) and the Tosnensky (59°38′40″ N, 30°48′31″ E) waterfalls, and the Tosna River bank downstream of the latter, in the Mga District, Leningrad Region, North-West of Russia. A series of 4 ♂♂ and 1 ♀ *L. virens* was caught only at a small waterfall (Fig. 2) at several dozens metres downstream of the large Tosnensky Waterfall, which is 2 m high and about 20 m wide. That small waterfall was formed by one of unnamed rivulets right on a steep bank of the River. It seems that such kind of waterfalls were rather numerous in the Tosna canyon, following the rainy 2016 summer season, with precipitation rate about two times higher than annual average. Thus, *L. virens* was rediscovered in north-western Russia, more than 90 years since it was last found, and the species population survival conditions were probably favourable within at least the Nature Reserve borders. The material will be deposited in ZIN collections later.

Figure 2. Small waterfall at the Tosna River bank with fossil rock exposures – a resting place for *Liancalus virens.*

In addition, the senior author of this paper identified recently an Iranian collection of pinned dolichopodids in the Zoological Museum of Moscow State University, Moscow, Russia. *Liancalus virens* was found in old Zhenzhurist's collection, being here recorded from Iran for the first time (5 ♂♂, 1 ♀, Iran: [Tehran,] Shimran, 5.XII.1936). The flies were brought by the Russian diplomat and Diptera collector N.N. Filippov (under the pseudonym Zhenzhurist) 80 years ago, but must be common in the country and be re-found following excursions to specific habitats of the species mentioned above. It is worth noting here that an East Palaearctic *L. zhenzhuristi* Negrobov, 1979, was collected also by Filippov in 1938 in Seoul and named after his pseudonym.

Acknowledgements
We are grateful to Dr. Yurii Li (St. Petersburg University, Russia) for the organizing our field trip and making a waterfall photo. The work of IYG is partly supported by the Russian Foundation for Basic Research grant N 14–04–00264-a.

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Aedes aegypti (Culicidae) and Aquatic *Megaselia* spp. (Phoridae): The Species Association That Wasn't … Or Was It?

Lawrence J. Hribar

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In the course of regular mosquito control activities, the inspectors employed by the Florida Keys Mosquito Control District collect representative samples of mosquito larvae that they encounter in natural and artificial containers, swamps, swales, and other mosquito larval habitats. Often other aquatic biota are collected and sometimes they are very interesting; a number of new county, state and national records have been recorded, and a few new species discovered. Over a period of almost 18 years, thousands of such samples have been collected and examined. Among the non-culicid organisms encountered were larvae of aquatic Phoridae, determined to be either *Megaselia hansonix* Disney or *Megaselia imitatrix* Borgmeier (Hribar et al. 2004, 2011).

During all that time, I got the impression that the phorid larvae were more commonly associated with *Aedes aegypti* larvae than with larvae of any other mosquito species. After about four years of collections in which I documented what samples contained phorid larvae I was sure that there was a definite association. It was time to test my idea.

I went through the records for 2011 & 2012, and classified each collection into one of four categories: 1, both *Aedes* and *Megaselia* larvae present; 2, only *Aedes* present; 3, only *Megaselia* present; and 4, neither present. To maintain some consistency of reportage I included only samples for which I did the identifications. I decided to use Cole's index of interspecific association because it is easily calculated and the significance of any association can be easily tested by a chi-square test. I examined records for 759 collections made between September 2011 and September 2012. The results were as follows:

	Aedes aegypti	
Megaselia spp.	Present	Absent
Present	32	8
Absent	622	97

Sadly for me and my pet hypothesis, the index was very low, only -0.072 ± 0.06; the calculated chi-square value was 0.8561, less than the critical value of 3.841. Not only that, but the calculated index was negative.

A couple of days later I came across more papers (Janson & Vegelius 1981, Hubálek 1982, Jackson et al. 1989) that mentioned some other indices (Jaccard 1901, 1912; Dice 1945; Ochiai 1957). I calculated those indices and found slight positive associations. Interestingly enough, the Ochiai index (0.198) was about twice the Dice index (0.092), which was about twice the Jaccard index (0.048). Cole's coefficient uses the "d" term, which is the number of samples containing neither species. None of the other three coefficients use that term, so a difference is to be expected. There were many more indices that I could have chosen and according to Hubálek (1982) and Jackson et al. (1989) it looks like an association can be demonstrated or not depending on what index one chooses. Moreover, Dice (1945)

points out that the two species may not really be associated with each other but rather be found together due to some characteristic of their habitat that is attractive or essential to both species.

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Look through the eye of a fly

Marion Kotrba

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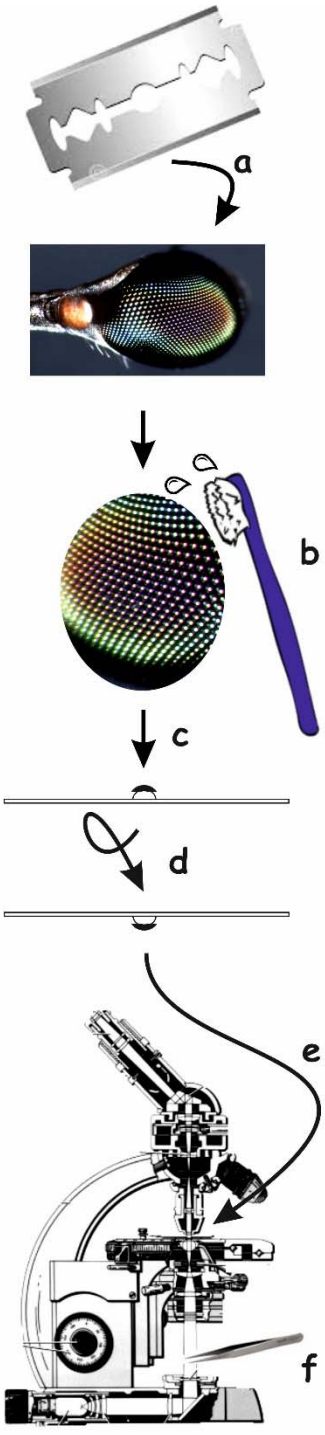
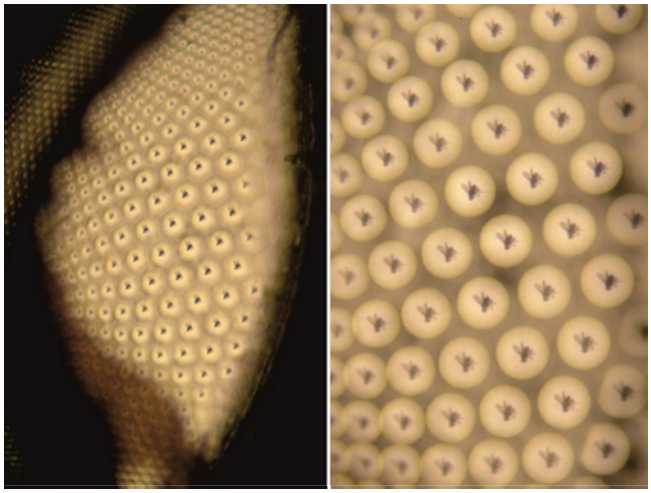
This is a fun dissection that always provides for a great show effect:

a. sever a section of the fly eye with a razor blade
b. drop the section in water and carefully clean out the inside with a small paint brush until completely translucent
c. apply a small droplet of water to a microscope slide and place the eye section on the surface of the droplet inside out
d. turn over the slide
e. place it under a compound microscope with the droplet on the downside and center the eye section in the middle of your field of view
f. move an object (e.g. the tip of your forceps) between the light sauce and the condenser and, looking through the microscope, gently move the object side to side to find it and focus on it



The result is a multiple image of the object, seen through many separate lenses of the previous compound eye. The example shows a fly looking at another fly.

Of course this is NOT as the real fly sees it, as in real life each lens has only 7+1 rhabdomeres behind it and the image is computed by combining the information from the rhabdomeres of neighboring ommatidia. But it is still a nice demonstration.



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HISTORICAL DIPTEROLOGY

Will the real Jacques Bigot please stand up?

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For many years, we dipterists have become accustomed to the image of the bust of a large, corpulent, undoubtedly gastrophilic Jacques Bigot as originally portrayed in Pam Gilbert's (1977) *Bibliography of Deceased Entomologists*. That portrait (Fig. 1) has been reproduced in a number of subsequent publications, all saying it was the dipterist Jacques Marie Frangile Bigot (1818–1893).

Fig. 1. Just Bigot (1841–1879). Portrait given to H. du Buysson in Jan 1879. Photo courtesy Senckenberg Deutsches Entomologisches Institut.

Forty years later it has become apparent that this particular photograph was not of the dipterist Jacques Bigot of Paris, but instead of a lesser-known coleopterist, Just Bigot (1841–1879), also of Paris.

This mix-up of identities became apparent as I was updating my gallery of dipterists and checked the Senckenberg Deutsches Entomologisches Institut (SDEI) image database online (http://sdei.senckenberg.de/photothek/) to see what portraits they had of Jacques Bigot. To my surprise, when searching "Bigot", two different sets of photos and associated names came up. The portrait we are familiar with was of Just Bigot. The back of the photo says it was donated by his friend H. du Buysson in 1880 and depicted Just Bigot in 1879 at 38 years of age. It turned out that 1879 was also the year Just Bigot passed away. Just Bigot was secretary to a Dr. Marmottan, was a member of the Société Entomologique de France, attended their meetings (although infrequently), and presented at least one note and was mentioned and thanked in a number of other notes, mostly dealing with observations on beetle larvae and how to rear beetles from twigs and bark. In 1925, a short remembrance of Just Bigot appeared in *Miscellanea Entomologica*, authored by his friend and fellow coleopterist, H. du Buysson (Buysson 1925). In this note, Buysson relates how the two met in 1878 and exchanged beetles and Bigot gave him pointers on how to rear beetles. One species, *Balaninus elaphus* Gyllenhal, for which Bigot had a particular talent in insect husbandry, became the subject of an article in the *Bullétin Bimensuel de la Société Entomologique de France*

(Bigot 1874). Buysson and Bigot soon became good friends and exchanged photographs in January 1879 (the one of Bigot is shown in Fig. 1). The friendship did not last long, because Just Bigot died suddenly seven months later.

A bit of research on Just Bigot using French civil archives showed another surprise. Just Bigot was the nephew of dipterist Jacques Bigot! Just Bigot (the younger) was the son of Just Bigot (the elder), who was born in 1800. The birth certificate of the younger Just Bigot has Jacques Bigot's typical "J. Bigot" signature attached to the section for witnesses, complete with the flourish under the "t".

The second "Bigot" on the SDEI image site is of our dipterist Jacques Bigot and there are two images associated with him. Figure 2 shows a middle-aged man (date of the photo is unknown) of somewhat short stature, and rather thin, standing upright, with an almost Napoleonic pose, with right hand in pocket. The other image (Fig. 3) is a portrait of a gentle-looking soul, almost looking apologetic, as if he was saying "I'm terribly sorry for my Diptera names."

Fig. 2-3. Jacques-Marie-Frangile Bigot (1818–1893). **Fig. 2** (left). Bigot standing. **Fig. 3** (right). Portrait. Photos courtesy Senckenberg Deutsches Entomologisches Institut.

It will take quite some time to get used to the "new" (and correct) image of Bigot and to force myself to change the visual that had always been in mind when Osten Sacken visited Bigot (most likely in April 1881 [the other time he was in Paris was 1873—a bit too early for what he said to Bigot] and boldly stated to him "If *all* your publications could be suppressed, it would be *a gain* for science!" and Bigot

winced a little but responded "*Eh bien, cela m'amuse*" (Osten Sacken 1903: 232). I had always envisioned the two sitting at dinner and Bigot's plate was full of steaming hot meats and breads with at least two bottles of wine and full goblets—and he was mumbling his response to Osten Sacken in between mouthfuls; or perhaps during a mouthful. Now with seeing the "real Bigot", it seems more likely that the two might have been sitting at a polite tea service.

Acknowledgments
Many thanks to Eckhard Groll, Senckenberg Deutsches Entomologisches Institut, Müncheberg, for sending the images of both Bigots. Jim O'Hara, CNC, Ottawa, kindly supplied the Buysson article in *Miscellanea Entomologica*.

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MEETING NEWS

North American Dipterists Society 2017 Field Meeting: June 26-30, 2017, at Lubrecht Experimental Forest, Montana, USA

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As detailed in the Spring 2016 *Fly Times*, the 2017 NADS Field Meeting is being held at Lubrecht Experimental Forest; located northeast of Missoula, Montana. Monday, June 26th will open the meeting with check-in throughout the afternoon and and opening presentation in the evening. There are a number of areas worth collecting on and around Lubrecht, so don't be afraid to arrive early. Tuesday the 27th through Thursday the 29th will consist of daily field trips giving a sampling of regional habitats, followed by evening presentations by meeting participants. 12-15 minute presentations of current research are encouraged, as we have access to a conference room with an A/V setup, just email me the title of your talk and a short abstract when you book your lodging. Friday the 30th will be checkout day.

Accommodations can be booked by emailing or calling Linda Nitz, lubrecht.facilities@cfc.umt.edu (406) 244-5524 (extension 2); please email me (afasbender@rhithron.com) to let me know you are coming! Lodging and meal plans were detailed in the Spring 2016 announcement, and also at http://www.cfc.umt.edu/lubrecht/lodging/default.php.

Figure 1. View northeast from Garnet Range Road across the Elk Creek drainage (3.ix.2016).

There are large tracts of publicly accessible land around Lubrecht, giving a wide variety of collecting opportunities across different habitats and EPA Level III Ecoregions (Woods et *al*, 2002). Much of western Montana is dominated by forest, which changes in composition based on elevation. Lower elevations are dominated by Ponderosa Pine and Douglas Fir, while the mid-elevations see these species replaced by Western Larch and Lodgepole Pine. There is a transition from these species to a forest primarily consisting of Subalpine Fir and Englemann Spruce in the subalpine zone. All elevations are effected by fire, with some burn incidents covering tens of square kilometers, resulting in a variety of stages of succession from early herbaceous colonists to mature climax communities. Valleys between ranges tend to be more heavily impacted by human activity, with much grassland in an agricultural grazing regimen, though with some protected areas remaining closer to a natural state.

In broad terms, the area immediately around Lubrecht and lands to the south and east fall into the "Middle Rockies" Ecoregion. This region has limited climatic influence from the Pacific Ocean and is somewhat dryer than the areas to the north and west, with few lakes (although streams are prevalent) (Woods et *al.* 2002). Lubrecht itself covers 28,000 acres of the north slope of the Garnet Range, with easy access to adjacent BLM lands (Figure 1). Though much of the area is in different stages of succession from experimental logging, there are a number of high-gradient low order streams (Figure 2) in the higher elevations with undisturbed riparian zones where I have found a diverse community of chironomids.

South of the Garnet Range and Lubrecht are the Sapphire Mountains, bisected by Rock Creek (a ~30m wide stream) from north to south. The Sapphires are characterized by a relatively flat high country dissected by numerous steep walled drainages, often with extensive rock slides (Figure 3). The lower portion of the Rock Creek valley is relatively wide, with extensive deciduous riparian zones and side channels. Further upstream the valley narrows, in parts narrowing to a canyon, with numerous tributary drainages containing low order streams (Figure 4). The Rock Creek area is about 45 minutes drive from Lubrecht, reached by taking MT200 to the west and connecting with eastbound I90, then getting off on the Rock Creek Road Exit at mile marker 126.

A ten minute drive east of Lubrecht on MT200 is Clearwater Junction, where MT83 branches to the north. If one continues east along MT200 beyond Clearwater Junction they will skirt the south edge of the Blackfoot Clearwater Game Range (BFCW). Established to provide winter habitat for local megafauna, the core of BFCW is a ridge covered in typical lowland forest, but the eastern portion of the reserve is grassland interspersed with lowland forest and riparian habitat. There are several glacial pothole ponds and spring creeks on BFCW, which I have found to have a different chironomid fauna from nearby mountain streams. North of BFCW is the southern margin of the Swan Range, which is penetrated by several drainages with relatively low gradient (Figure 5), two of having access roads extending a fair distance up them. As one travels further up the drainages the gradient increases, and torrential tributaries start to become frequent. There is a mix of mature forest and burned areas in different stages of succession across this area.

Taking MT83 north from Clearwater Junction leads into the Swan Valley: a lush, densely forested flatland walled to the west and east the impressive Mission and Swan ranges, respectively. Much of this area is classified as Ecoregion 41, the "Canadian Rockies", characterized by higher rainfall, many lakes, and extensive alpine and subalpine areas (Woods *et al*. 2002). The valley floor is heavily forested with larches and Douglas Fir, and many low gradient streams meander into the Clearwater and Swan rivers. In the center of the southern portion of the valley are a chain of large lakes fed by the Clearwater river, and other lakes form at the outlets for some of the larger streams emptying from the flanking mountains. As one ascends on either side of the valley the streams turn to high gradient

cascades, with a number of easily accessible waterfalls (Figure 6). Multiple subalpine lakes are also readily accessible (Figure 7), though they require some travel on winding gravel roads. The adventurous (and physically fit), can also hike above tree line to sample alpine tundra.

Figure 2. "Midge-eye view" of a first order tributary to Elk Creek, Garnet Range (3.ix.2016).

Figure 3. Rock slide in Butte Cabin Creek drainage (1.vi.2016). Sapphire Mountains.

Figure 4. Cascade on Butte Cabin Creek (1.vi.2016). Sapphire Mountains

Figure 5. Monture Creek south of trailhead, Swan Range (3.ix.2016).

Two more Level III Ecoregions can be found an hour to an hour and a half's drive west of Lubrechtin the Bitterroot Mountains, the "Northern Rockies" (Ecoregion 15) and "Idaho Batholith" (Ecoregion 16). The northern part of the Bitterroot Range (roughly defined as the portion north of Lolo Creek and Highway 12) is considered part of Ecoregion 15, having moderate elevation (peaks of ~2300m) with limited glaciation and a significant climatic influence from the Pacific Ocean (Woods *et al.* 2002). The area has also been suggested as a glacial refugium for aquatic insects, with endemic species of Ephemeroptera and Trichoptera (Stagliano *et al*. 2007). This northern part of Bitterroots is very wet, with numerous high gradient first order streams and seepages, and extensive subalpine meadows at the higher elevations.

The southern part of the Bitterroot Range (Figure 8) is part of Ecoregion 16, with much higher peaks (some reaching 3000m), significant glaciation, thin granitic soils and limited climatic and floral influence from the Pacific Ocean (Woods *et al.* 2002). An escarpment forms the eastern face of the range, deeply penetrated by glacial canyons. These canyons are rather humid and lush, while the slopes tend to be drier, with large exposed rock formations. Alpine tundra can be found in the higher portions of the southern part of the range.

I believe western Montana will turn out to be a gem for dipterists, awith interesting collecting for everyone. If there is a particular habitat you are interested in, let me know when you sign up and I will try to scout out localities.

Figure 6. Holland Falls, Swan Range (12.viii.2016).

Figure 7. Glacier Lake, Mission Mountains (12.viii.2016).

Figure 8. Sweeney Creek Drainage from Sweeney Ridge, Bitterroot Mountains (7.v.2016).

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Annual NADS meeting during the International Congress of Entomology (ICE), Orlando, Florida, USA; 25-30 September 2016

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The *Entomological Society of America* hosted the ***XXV International Congress of Entomology*** in Orlando, Florida in September. As always during ESA meetings, the annual NADS meeting took place on Tuesday night of the week. With the increased participation of dipterists during ICE, many of whom came from far flung places, the NADS meeting was much larger than usual.

The program included five short 10-minute presentations on the Diptera collections by David Grimaldi (AMNH, New York, NY), David Yeates (ANIC, Canberra, ACT, Australia), Thomas Pape (ZMUC, Copenhagen, Denmark), Jeff Skevington (CNC, Ottawa, ON), and Torsten Dikow (USNM, Washington, DC). In addition, Dalton Amorim (Universidade de São Paulo, Ribeirão Preto, Brazil) presented a short overview of an ongoing project to share Malaise Trap samples among Brazilian dipterists.

The format of short presentations on collections was, I think, well received and something we might want to continue at future meetings. Social media coverage during the meeting can be read here: https://storify.com/TDikow/annual-nads-meeting-tweets.

As an example, I gave a presentation on and handed out a flyer about the USNM Diptera collection during the annual NADS meeting. If you are interested, you can download both of these PDFs here:

USNM Diptera presentation: http://dx.doi.org/10.6084/m9.figshare.3858357
USMM Diptera flyer: https://dx.doi.org/10.6084/m9.figshare.3858354

If you are interested in organizing the next NADS meeting at ESA 2017 in Denver, CO (http://www.entsoc.org/events/annual-meeting) or present a collection please let me know.

See the next page for a full sized photograph of the attendees at annual NADS meeting during ICE.
Photo taken by Betty Thompson on equipment provided by Riley Nelson.

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XIII International Meeting of the European Association for Forensic Entomology
Budapest, Hungary; 25–28. May 2016

Mihaly Foldvari

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For me, this was previously an unknown meeting of entomologists, most of whom are dipterists by the nature of the field – forensics. This year the congress was organized by a Hungarian team in Budapest. The location of the congress was close to the insect collections of the Hungarian Natural History Museum, so many people who were interested could easily organize a short visit to study the pinned material. The final workshop took place at the exhibition building of the same museum, where the public displays were accessible.

The program contained great talks with general and unifying topics, as well as detailed reports on specific studies that included developmental issues of flies under the influence of various environmental factors, to species compositions in different situations, or even morphological curiosities in identifying the correct species.

Some of the posters aimed at intriguing questions such as how blowfly larvae could be used to detect the presence of semen at a crime scene, and studies of larval development affecting substances such as a synthetic cannabinoid (on *Calliphora vicina*) or various concentrations of alcohol (on *Megaselia scalaris*). A mobile app for on-site forensic data collection was presented as well (iFly).

The final event of the gathering was a workshop sponsored by Hirox, a 3D camera system maker. During these few hours Laszlo Papp and Zoltan Soltesz presented an introduction to identification of dipteran families with forensic importance, and showing a few tricks on important morphological characters for the less experienced, and demonstrated how dry and wet adult flies as well as larvae can be treated.

Besides science activities, the meeting included a dinner in a nice restaurant, a trip on the Danube in a restaurant boat, city sightseeing and folk dance performance. As a nice gesture, the organizers presented every participant with a fly-catching net (supplied with the congress logo) to encourage future collections. In all, the organizers did a great job, and it was a nice experience to be at this congress. All the participants seemed like a very supportive group of entomologists. I would recommend this series of meetings to any dipterist! It is not too late to register for the upcoming event: the next EAFE meeting will be in Treviso, Italy in 2017.

The web site of the congress (http://forensicplaces.eu/) gives access to the program schedule, the abstract book, and photos of all posters.

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OPPORTUNITIES

Fly School funds

Torsten Dikow, & S.W. Williston Fund committee

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[repeated from article on page 1, but worth repeating as an Opportunity]

The Williston Diptera Research Fund (https://asiloidflies.si.edu/williston-diptera-research-fund) has generously set aside money to cover the tuition of a limited number of Fly School students. Interested applicants should send contact information and a 1-2 page essay outlining the applicant's interest in Fly School and need for funds to Torsten Dikow (DikowT@si.edu) by 31 January 2017. Awards will be announced by 15 February 2017 and will be directly applied to Fly School tuition for recipients. *Preference will be given to those demonstrating clear need for tuition assistance.*

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Free lodging in southern France for Dipterists

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Dr. Michel Martinez (papimouche@wanadoo.fr), a French dipterist with a broad range of entomological experience and with many publications on Diptera, especially Agromyzidae, has asked me to let American dipterists know that he would be happy to host them at his home in Grabels, near Montpellier, at no cost. The house and the area are convenient, interesting, and safe. The bedroom and bathroom are by themselves on the lower level, so there is complete privacy. Michel has lots of entomological equipment, a large collection of Diptera, and even a second car to loan out. Habitats within an easy drive from his house range from Mediterranean beach to unspoiled high mountains. Michel speaks better English than he thinks he does, so communication with him is easy. Michel also would be very interested in exchanging European specimens of flies for North American specimens.

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OUT-OF-PLACE DIPTERA

Delicious syrphid honey!

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The story of the common mosquito

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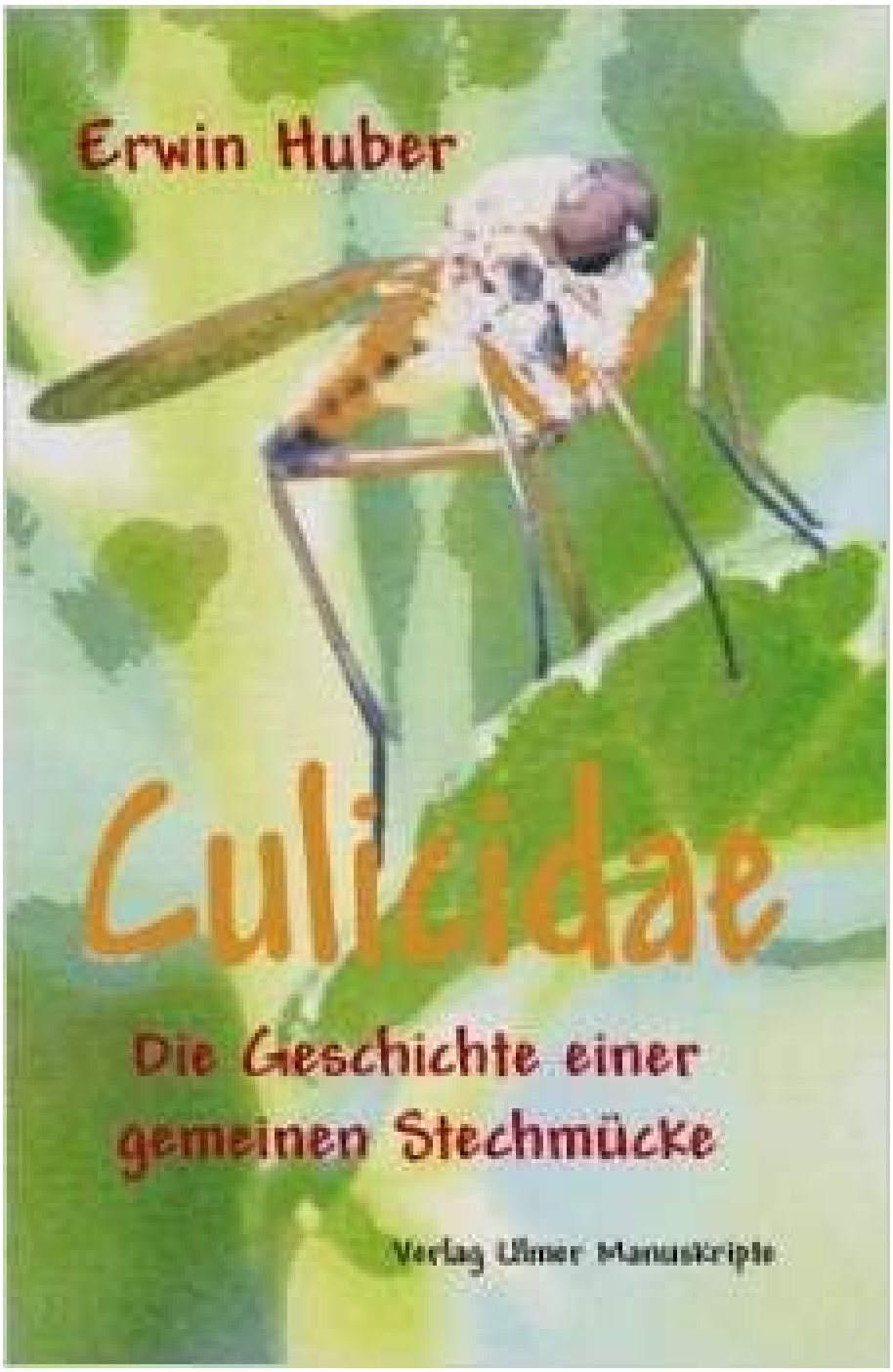

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A Canadian postcard

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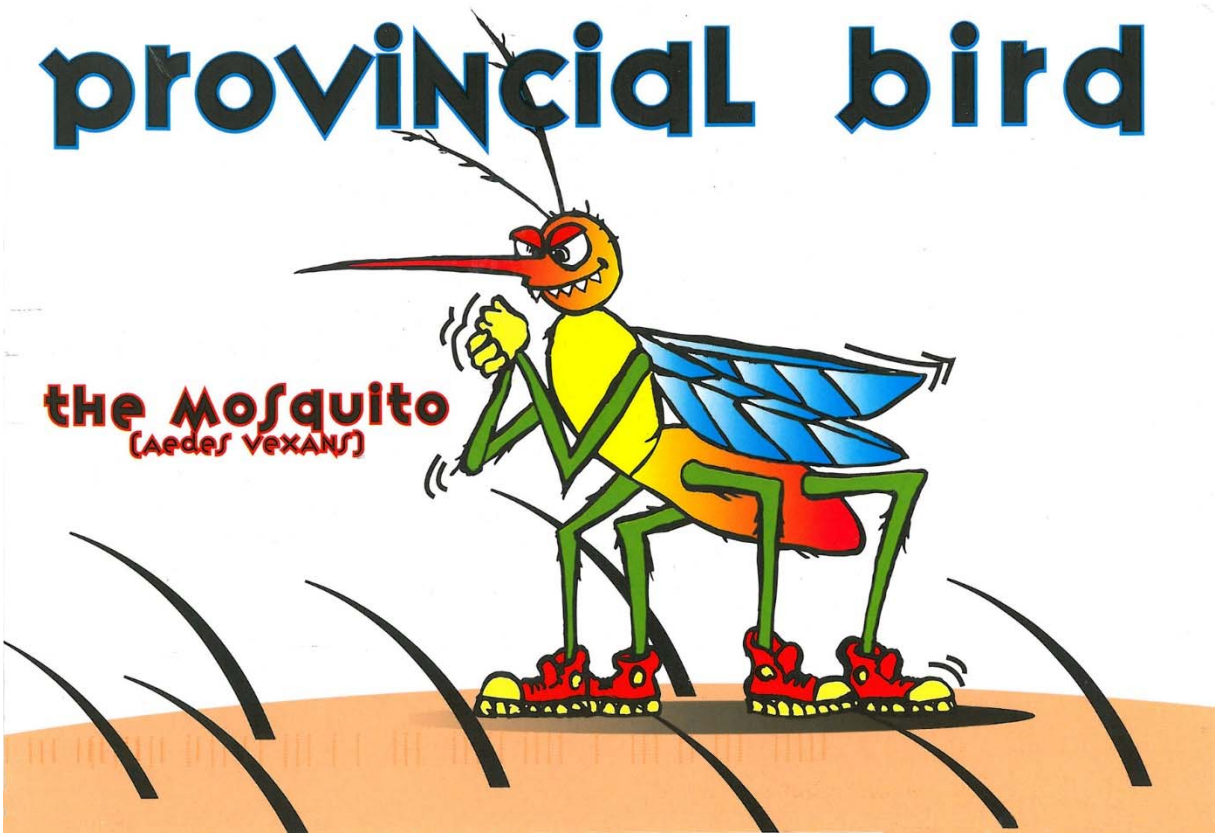
Not out of place, but still amusing. I guess this could be any Canadian province!



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DIPTERA ARE AMAZING!

Model and mimic in South Africa. *Xylocopa caffra* (L.) (Hymenoptera: Apidae) [left] and a species of *Hyperechia* (Diptera: Asilidae) [right]. Photo submitted by Gary Steck (from a recent donation to FSCA), insects identified by Charles Whitehill. Besides the adult robber fly looking like and hunting carpenter bees, the larvae are also predators in carpenter bee nests.

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BOOKS AND PUBLICATIONS

Below you will find another inspiring assortment of Diptera related publications. This volume's offerings include new phylogenetic hypotheses of relationships within the Tipulomorpha, Tephritoidea, Syrphidae, Bibionomorpha and lower Brachycera; the use of syrphids to delimit conservation areas; the supremacy of Diptera diversity over all other orders (see Hebert 2016); a flower fly that steals its meals from sundews; zebra stripes and biting flies; a catalogue of Colombian Diptera; and of course a whole host of interesting new species! We hope you enjoy them.

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.

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