



# ***FLY TIMES***

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This is the first *Fly Times* of the new millennium. Hope everyone is as excited as we are? Seriously, we as editors are looking forward to continued development of our Dipterological community. More publications, more cooperative ventures, more NADS meetings and the continued production of the *Fly Times*!

This issue contains numerous articles and our regular reports. Please pay special attention to the proposed Dipterists gathering in Montreal this coming December, as well as a proposed NADS meeting in 2001.

As indicated in other issues, this newsletter is also available through the ECORC web site as follows:  
<http://res.agr.ca/ecorc/program2/entomology/flytimes/flytime.htm>

The *Directory of North American Dipterists* is on the web and can be accessed at the following address:  
<http://res.agr.ca/ecorc/program2/entomology/diptera/dipteras.htm>

Issue No. 25 of the *Fly Times* will appear next October as both hard copy (for those of you without Internet access) and on the Web. If possible, please send either editor your contributions by email, or on disc; electronic contributions make putting the *Fly Times* together much faster. Those of you with hard copy contributions (last possible choice) may fax, or mail your message to Art Borkent at the above listed address. All contributions for Issue No. 25 should be sent by the end of September, 2000.

## NEWS

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### North American Dipterists Society Informal Conference 2000

by Scott E. Brooks & Jade Savage

Preparations are currently underway for the annual Informal NADS Conference to be held in conjunction with the joint Entomological Society of Canada and Entomological Society of America meeting during December 3<sup>rd</sup> -7<sup>th</sup> in Montreal, Quebec. This year's meeting is shaping up to be very interesting and will feature a systematics session as well as a mini-symposium on the use of Diptera in biotic surveys. In the systematics session, Miranda Smith will discuss her work on the phylogeny of *Simulium* (sensu stricto) using molecular techniques and Jeff Cumming will present his and Brad Sinclair's new phylogenetic classification of the Empidoidea. The "Diptera in Biotic Surveys" mini-symposium will feature talks by Brian Brown, Fiona Hunter, Steve Marshall and Brian Wiegmann, as well as reports on various ongoing Diptera surveys. If anyone has any items they wish to report on or discuss following the symposium talks or at the Business Meeting please contact us at [sbrook2@po-box.mcgill.ca](mailto:sbrook2@po-box.mcgill.ca) or [jsavag1@hotmail.com](mailto:jsavag1@hotmail.com) or use our regular mail, phone or FAX (given below), so that we can include this information in the program which will appear in the next issue of *Fly Times*. In order to ensure the post-meeting merriment of all Dipterists in attendance and to locate a suitable venue for further discussion and interaction, we have launched an intensive sampling campaign of all the local watering holes within stumbling distance of the Conference site. All in all, this year's meeting promises to be a great time. We look forward to seeing you in Montreal!

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### NADS Meeting for May, 2001

by Frank E. French

Dear Fly Folks:

Here is some information on a proposed site for a Spring/ Summer field meeting to be held in 2001. We need your feedback to put things in motion. PLEASE indicate your preferences and get them back to me NOW. I'll consolidate for presentation to the NADS and the Biting Fly Workshop leaderships. Please indicate your preference below either with "P" = preferred; "A" = acceptable; or "X" if not acceptable.

Is this area a desirable venue? Y/N \_\_\_\_\_ ; 2001 \_\_\_\_\_ ; or other \_\_\_\_\_  
 Preference for Length of the Meeting: 3 days \_\_\_\_\_ ; or 4 days \_\_\_\_\_ ; or other \_\_\_\_\_  
 Preference for timing of meeting: between May 14 - 27 \_\_\_\_\_ ; or other \_\_\_\_\_  
 Best time of the Week: Mid-week \_\_\_\_\_ ; or over a weekend \_\_\_\_\_  
 Bunk at Sul Ross State University campus in Alpine \_\_\_\_\_ ; bunk at a motel at Ft Davis \_\_\_\_\_

Discussion: Foremost, are you willing to take the trouble to get to this region of Texas? It is 150-200 miles of desert driving from the Odessa-Midland or El Paso airports. You will have to arrange for a rental vehicle to transport you to the venue.

The timing suggested is an attempt to pick a good time to collect a mixture of late spring and early summer species before the hot dry weather. This area, especially the Davis Mountains, is under collected. I can apply for a State Park group collecting permit (with a year's notice). There is a possibility that we can get access to the vast, former domain of the "Republic of Texas" which was confiscated and turned over to The Nature Conservancy. There are a variety of habitats in this Chihuahuan Desert region, from hilltops to flatlands. See the web page of Sul Ross [[www.sulross.edu/~biology/](http://www.sulross.edu/~biology/)] and your handy west Texas road map. Dr. Diane Wood is in her first year at Sul Ross and has been most cooperative. She has interest in aquatic insects, particularly the Trichoptera. The State Park is in the edge of the Davis Mts.

May is tourist season. At a motel, we would have to rent a meeting/work room. Cost of a room is \$57 at the Ft. Davis Motor Inn. On the Sul Ross Campus the housing would be dormitory style at \$10/night for shared room, \$20 private, either case bring your own bedding and linens. The meeting and work space would be cheap. Their insect collections would be near and with, perhaps, some support from the university. State schools have anti-alcohol rules. For food we could go off campus. This is a "dry" area; the nearest legal beer/wine is many miles away. After all this is the new wild, wild, West. I grew up under such conditions, and look what it did to me! For further info contact me at the address below (in short order!)

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### **Macroinvertebrate Taxonomic Workshop on Diptera**

from Jeffrey W. Adams

The 2000 Macroinvertebrate Taxonomic Workshop - Diptera will again be held at Central Washington University in Ellensburg Washington, thanks to the good graces of Skip Smith and the school, on April

28, 29, and 30, 2000. Dr. Jon Gelhaus from Academy of Natural Sciences will give us the skinny on Tipulidae and Dr. William Turner from Washington State University will provide his general Diptera larvae expertise. The workshop and manual are developed with taxonomists in mind, so experience in family and genus level identification is very helpful. The fee is \$75 (payable to The Xerces Society at the address below) for which the workshop and a proceedings manual will be provided. Space is limited to 50 so please contact me and reserve your spot. A list of those I've heard from is posted on the web site <http://www.xerces.org/diptera.htm> (this is a new address as of 1/19). This website will serve as the location for useful information and updates, but feel free to contact me (info below) with any questions or comments.

If you're interested in assisting with the manual, please contact Jeff Adams or Bob Wisseman ([wisseman@aquaticbio.com](mailto:wisseman@aquaticbio.com)). Let us know the family or families for which you would like to gather literature and figures. Please spread the word, as I'm sure I've missed somebody. The names on my contact list can be viewed at the workshop website. If you scan through it and see that I've missed an appropriate recipient please let me know. I look forward to seeing you there!

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### International Congress of Entomology Diptera Symposium

from Claudio Carvalho  
 Universidade Federal do Paraná, Departamento de Zoologia, Curitiba, Brazil

A symposium on the *Systematics and Phylogeny of Diptera* organized by C.J.B. de Carvalho, M. S. Couri and J.M. Cumming is planned for August at the International Congress of Entomology in Brazil. The following symposium presentations are confirmed:

1. Taxonomic aspects of basal Diptera phylogeny. **D. de S. Amorim.**
2. An overview on the systematics of the Neotropical Culicidae. **R.L. de Oliveira.**
3. Recent advances on the systematics of the Crociidiinae (Diptera: Bombyliidae). **C.J.E. Lamas,**  
N. L. Evenhuis & M. S. Couri.
4. A new phylogenetic classification of the Empidoidea (Diptera: Eremoneura). **J.M. Cumming &**  
B.J. Sinclair.
5. Circumpolar distribution of *Hilara* (Empididae). **M. Chvála.**
6. Phylogenetic studies in the Ephydriidae (Diptera). **W. Mathis.**
7. Recent advances of the phylogeny and biogeography of Muscidae. **M.S. Couri & C.J.B. de**  
Carvalho.

8. Native New World Rhinophoridae and their transantarctic ties. **T. Pape.**  
 9. Phylogenetic relationships among the Polideini (Diptera: Tachinidae). **J.E. O'Hara.**

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**North American Dipterological Society Informal Conference,  
 Entomological Society of America, Atlanta, Georgia, December 1999**

by Scott Fitzgerald

The NADS meeting went well overall, but the low attendance was a bit disappointing. Alessandra Baptista, University of Maryland gave an interesting paper on her preliminary results of a cladistic analysis of the family Aulacigastridae (sensu lato) and Dan Hagan gave an interesting co-authored paper on the Ceratopogonidae of Norway. After the talks Kevin Holston, University of Illinois gave a progress report on the therevid PEET project. Darlene Judd, Oregon State University and Chris Thompson, National Museum of Natural History, gave an update on the Costa Rica ATBI, and Chris and Will Reeves, Clemson University gave an update on the Great Smoky Mountain ATBI. There was also some talk about the next NADS field meeting taking place in Alpine, Texas, but no decisions were made. As for the organizers of next years NADS informal conference the torch has been passed to Jade Savage and Scott Brooks of McGill University (see above for their invitation to the meetings).

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**Diptera of Grand Staircase Escalante National Monument**

by Riley Nelson

I will be working on a survey of the invertebrates for the next five years on the Grand Staircase Escalante National Monument just north of the Grand Canyon. I expect to pay particular attention to the Diptera. In addition to hand collecting, I will be using yellow pans, malaise traps, and pitfall traps. I would appreciate any volunteers for identifications! Also, if anyone is in the vicinity and would like to join me for extended field trips there, let me know. It is a fantastic spot, with elevation running from about 4000 to 10000 feet. Sites range from wet aspen meadows and tumbling mountain streams to slickrock and sand. I will be writing yearly reports on the taxa found to the managing agency, the Bureau of Land Management. I am considering a way to offer to host the North American Dipterists' in this area. Contact me, Riley Nelson at:

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## Colombian Insect Survey project

by Brian Brown

Mike Sharkey and Brian Brown have secured a three-year National Science Foundation grant to survey insects in Colombia. Under this project, which will be operated with the collaboration of the Humboldt Institute in Colombia, we will place Malaise traps in 8 national parks in Colombia (we already are sampling in 4 parks), spanning a wide variety of habitats, elevations and climates. The results will be large collections of insects for the Humboldt Institute and cooperating taxonomic experts, species lists and species accumulation curves for focal taxa. Opportunities for collaboration exist; please contact Brian Brown if interested.

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### Fly by Night Operations

The editors (i.e. Art and Jeff) would like to invite contributions discussing the relative merits of light traps which work best for trapping Diptera (and especially YOUR Diptera). What are the relative merits of inflorescent, UV, and mercury? What are the best arrangements for these (e.g. intensity, position, on sheets, or are there good automatic systems)? Please write and tell what your experience has been. Remember, contributions don't have to be long!

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### Flies and Inventories - a Personal Perspective

by Steve Marshall

This past December I attended two meetings dealing with arthropod inventories - the annual meeting of "Discover Life in America" (the Great Smoky Mountain National Park ATBI), and the annual Entomology Collections Network Meeting where I reported on the Diptera TWIG of the INBio Costa Rican species inventory. Both meetings gave me occasion to consider the viability, and desirability, of involvement with different kinds of inventory projects, ranging from these major international projects through to local efforts such as the Bruce Peninsula Arthropod Inventory (a project that has soaked up much of my summer research time in recent years). Here are some of my thoughts on the matter.

It is clear that every major arthropod inventory depends on the participation of a relatively small group of insect systematists, and on access to appropriate reference collections. Without help from most of a dozen key dipterists (I don't need to name them!), for example, large chunks of any region's biodiversity are likely to remain unidentified. It is less clear just what the systematics community can expect to get out of involvement with big survey projects, or what survey projects should expect from the systematics community. At this December's meeting of the Great Smoky Mountains National Park All Taxon Biological Inventory (GSMNP ATBI), opinions on these matters ranged from "we should expect the taxonomists to do it for free" through to "we need the full commitment of the taxonomic community, and this project should not proceed till we have the funds to support their work". There is currently inadequate support for the latter approach, and the former approach has unfortunately alienated some groups of systematists. It has also been a factor in the resignation of some former taxonomic working group leaders initially recruited to that particular project with the promise that it would be a true ATBI, and the expectation that it would be a real "shot in the arm" for systematics. The dipterological component of the GSMNP, lead by Peter Adler, got a great "kick-start" with last spring's "fly quest" following the NADS meeting, so things are happening with this project. But, is the GSMNP project really an ATBI, or just a laudable effort to involve the taxonomic community in the sort of opportunistic biodiversity stock-taking that every park should be involved with? More importantly, from the point of view of our community, what is in it for us? These questions are intertwined, and more complicated than they seem at first, so let's step back and examine the different ways some other inventory projects seem to be proceeding.

#### **Costa Rican Dipteran diversity projects:**

The main biodiversity inventory project currently running in Costa Rica is a scaled-down reincarnation of Dan Janzen's grand vision of a Costa Rican all taxon biological inventory (ATBI). Selected taxa of selected regions in Costa Rica are to be intensively studied for a 7-year period, 2 years of which have already passed. Obviously, Diptera is one of those selected taxa. The project is well-funded, mostly by the World Bank Global Environment Fund, and the lion's share of the funding will stay with INBio and will be spent in Costa Rica. Twelve (wow!) people - two technicians, two curators, and eight parataxonomists - are employed full-time to work on Diptera in Costa Rica, and a large slice of our international community is committed to helping with the project by revising major groups for Costa Rica, writing chapters for the manual of Costa Rican Diptera etc. This is probably the most ambitious inventory project in the world today, but it is still an opportunistic, some-taxon inventory, with goals driven by available and willing systematic expertise. It is well-organised, and well-managed, largely due to the dedication and ability of individuals, like the Diptera working group coordinator Manuel Zumbado, who work on the project full time. The organization of the Diptera component of this project has also been enhanced by the dedication of international Diptera taxonomists including co-coordinator Monty Wood, newsletter editor Art Borkent, and Manual editor-in-chief Brian Brown. Brian is also coordinating the Diptera part of another major Costa Rican inventory project, the Arthropods of La Selva project. Each person involved with these projects would probably answer the question "what is in it for me" in different ways. Most of the committed individuals are hooked on Costa Rican fieldwork, have active research programs on Neotropical Diptera and benefit from the flow of well-prepared specimens collected during this project. They will also enhance their publication records by publishing novel findings during the project, and will benefit from the opportunity to publish their summary findings in fairly high-profile, paid-for publications towards the end of the project. There are, of course, many other benefits in being part of a successful large project, including opportunities for joint research with other

dipterists, and there seems to me to be many good reasons for involvement with this project. Still, it is not an "ATBI".

### **The GSMNP "ATBI"**

When the GSMNP ATBI (recently incorporated as Discover Life in America) was first announced, it was touted as the first large-scale, yet feasible, ATBI. The flora and fauna of the Great Smoky Mountains National Park is much less diverse and much better known than that of Costa Rica, but it is still estimated to be a respectable 100 thousand species or so. The argument for a GSMNP ATBI had (and still has!) everything going for it - it was a timely project that was crying out to be done. There was every reason it should have been viewed on par with other "moonshot" scale science, and every expectation it would receive major funding. Here at last we were going to see taxonomy treated like Big Science - no more running inventories as sideline labours-of-love, supported by retired colleagues and volunteers working in their basements. At last, we were going to see some serious investment in the continent's crumbling taxonomic infrastructure.

As I understood it, the original vision of the GSMNP ATBI was "go big or stay home". TWIG leaders were asked to lend their names to the projects with the understanding that once things were up and running the working groups would have the resources to make things happen - to support technical assistants, new positions, graduates and postdoctoral students, etc. etc. In fact, that has not happened. Nonetheless, the GSMNP ATBI is currently working, in as much as it is working at all, for the same reasons that dozens of other park surveys are proceeding at various paces. The GSMNP is a great place to work and the fact that there is an ongoing inventory project there provides a great incentive to focus research in the Park (if that was not already the case). Even for those of us from too far away to make regular visits to the Park, the promise of hassle-free permits, logistical support, and a congenial atmosphere for collecting is pretty attractive. Lots of taxonomy will get done in support of the Park inventory, much of it at little or no cost to the GSMNP "ATBI". I certainly intend to maintain my involvement with this interesting project, but this is not an ATBI (yet) and not fundamentally different from ongoing work at a dozen other parks, many much closer to my home than GSMNP. Things will change when Discover Life in America is really in a position to shore up that aforementioned taxonomic infrastructure, but till then it has to compete on an equal footing with the other projects most of us are working on.

What is going to happen to the GSMNP ATBI? My guess is that it will continue as yet another Park survey, generating partial lists which will be built upon in the future. There is nothing wrong with that. Still, it would be great if this project was re-kindled to the degree that a couple of full-time insect systematists could be hired to manage parts of the inventory, and if indeed it could generate the funding to pay the lab and labour costs involved with thoroughly documenting this fascinating fauna.

### **Other arthropod inventories:**

Although the GSMNP and Costa Rican inventories are getting much of the attention, the batches of flies I have been getting for identification suggest that there are dozens of other significant inventories quietly ticking along, and there seems to be a real movement towards "taking stock" in our parks and other natural areas. As that movement gains momentum, and every park finally recognises the need to document its fauna (or explicitly recognises the limits to such documentation), the linkage and co-development of various parks inventory databases will play a major role in the documentation of North American biodiversity. In the meantime, even a small inventory of a few taxa can help parks recognise

faunal change, threatened species, unique faunal elements etc. I am involved with ongoing inventory efforts in a number of parks in my home province of Ontario, with my major focus being the Bruce Peninsula National Park. The Bruce Survey ran for several years without any funding, but as of fall 1999 Parks Canada has provided enough funding to pay a M.Sc. student (Cathy Onodera) to work full-time on the survey. Obviously, there are many taxa that none of the Guelph-based entomologists can competently identify, and we look forward to the kind of support from the taxonomic community that my students and I have enjoyed for previous inventory projects. All we can offer in return are reciprocal identification services, good specimens, and a welcome to actively participate in work on the beautiful Bruce Peninsula. This, however, is as much as is being offered to systematists supporting better funded, high-profile projects. Can this time-honoured model continue to work as the number of professional systematists (at least professional systematists who still actually identify things) shrinks and the need for survey work increases exponentially?

Somewhere along the line, the trend towards diminishing numbers of permanent professional positions for (morphological) systematists is going to have to be reversed. I am extremely appreciative of the help I get from my friends and colleagues who help me out with identifications, but realise that many of them are retired, not employed as systematists, or otherwise are helping out because of their dedication to the discipline, not because "it is their job". This is not a sustainable situation!

#### **Long-term parks inventories:**

So far I have commented on two major approaches to inventory projects - the high-input, high-profile megaproject approach, and the more modest "grassroots" regional survey. In fact, neither approach would be necessary if we had a combination of well-maintained, securely funded collections, and parks management policies that encouraged entomological research. In the past, some parks behaved like walled fortresses, keeping insect collectors out with almost impenetrable paperwork barriers. What those parks failed to realise was that every specimen collected by a representative of a permanent insect collection is likely to end up pinned and labeled in the collection. In the fullness of time, every such specimen is likely to be databased and slowly climb up the ladder of curatorial levels until it comprises an authoritatively identified, species-level record for the park. It might take 5, 10, or even 50 years, but the important point is that, *once the specimen is accessed, it is very likely to ultimately represent a species record in a database*. It thus would show considerable foresight for parks to realise that by far the most cost-effective way to address the inevitable need for arthropod inventory is to encourage professional entomologists to collect within the parks boundaries. As a case in point, let me mention our incipient survey of the insects of Canada's most southerly piece of land, Point Pelee National Park. Because of its interesting fauna, University of Guelph entomologists have long collected there, and the park has been great about granting permits and helping out. Over the 30 years or so that we have been collecting there for various purposes, thousands of specimens have accumulated and been subject to the usual curatorial efforts put into the collection by students, faculty, visiting systematists, colleagues borrowing material from the collection for revisions, etc. For the price of a couple of months of student salary, this last summer we were able to enter all our accumulated Pelee specimens in the Guelph Collection into a BIOTA database. That database includes about 1000 identified taxa, and represents a good start to a Pelee insect survey at minimal cost to the National Park. The take-home message here is that, for all the noise being made about ATBIs and high profile biodiversity projects, the most cost-effective and sure-fire way to move towards the documentation of biodiversity is to do what most of us have already spent much of our lives doing - keep on collecting, keep on building up collections, and keep doing those revisions!

**An Illustrated Account of a Collecting Trip  
to the Mountains of Southern Arizona and New Mexico, USA**

by Jim O'Hara

Persons wishing to read this account and view the associated pictures may do so by visiting Issue 13 of *The Tachinid Times* at <http://res.agr.ca/brd/tachinid/times/tach13.htm>. The account focuses on three of the more noteworthy mountain ranges I visited in August 1999, namely the Huachuca Mountains southeast of Tucson, the Animas Mountains in southwestern New Mexico, and the Gila National Forest north of Silver City, New Mexico. Access, habitats, and tachinid diversity are discussed.

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**New Diptera Web Products from Ottawa**

by Jeff Cumming

Three new internet products on Diptera are now available on the ECORC web site. Like our other Diptera web products they can all be accessed by visiting the Diptera homepage of the Canadian National Collection of Insects (CNC) Web Site at <http://res.agr.ca/ecorc/cnc/diptera.htm> or by connecting to each document directly.

*Diptera types in CNC:*

*Part 3. Schizophora (exclusive of Tachinidae):* <http://res.agr.ca/brd/tachinid/titlp3htm.htm>

Based on the hardcopy publication by Bruce Cooper and myself this catalogue documents the primary types of 1376 nominal species of Schizophora (exclusive of Tachinidae) housed in the CNC. Entries can be searched by taxon (including family), author, keyword, etc.

*Supplement:* <http://res.agr.ca/brd/tachinid/suptitl.htm>

This catalogue by Bruce Cooper, Jim O'Hara and myself updates Parts 1-4 of this series by documenting the primary types of over 200 nominal species (in 29 families) of Diptera recently added to the CNC or somehow overlooked during the preparation of the original four Parts. As with the previous Parts entries can be searched by taxon (including family), author, keyword, etc. No hardcopy publication of the Supplement is planned since this web document will be continually updated as types are deposited in the collection. Users are advised to first search the appropriate Part and then the Supplement to obtain information on the type holdings in the CNC for a particular group.

*Key to Diptera associated with cow dung:* <http://res.agr.ca/ecorc/apss/dungfly/dungfly.htm>

This online illustrated key allows easy identification of the 29 families of Diptera occurring in North America whose larvae live in cow dung or liquid manure.

## Chicago's Field Museum New Diptera Web Site

by Dr. Bill Ballard & Matt Dean

Chicago's Field Museum would like to announce a useful new website from which our Diptera collection can be searched. Combining the volunteer efforts of 7<sup>th</sup>, 8<sup>th</sup>, and 9<sup>th</sup> grade students (and two teachers) involved in the museum's *BugCamp*, we have created a species-level database of over 47,000 specimens that includes information on geography and type holdings. The address for the website starts at <http://www.fieldmuseum.org/bugcamp>. Go to <http://www.fieldmuseum.org/bugcamp/dipsearch.htm> to search the Diptera collection.

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## Updates from Washington

by Steve Gaimari & Chris Thompson

### A new URL for Diptera

The domain name 'diptera.org' has been reserved for the North American Dipterists' Society (NADS). This means that the URL (WWW address) '<http://www.diptera.org>' will connect you directly to the Washington Diptera WWW site. However, in the future, NADS could use this address to connect users to their own site. Also, we have created a general e-mail address ([diptera@sel.barc.usda.gov](mailto:diptera@sel.barc.usda.gov)) for messages to be sent to us about our WWW site or any of its included databases, such as the Dipterists' Resource Directory or the BioSystematic Database of World Diptera.

### Dipterists' Resource Directory

Kyle Apigian has up-dated and revised this comprehensive world-wide directory to Diptera workers. And with the help of George Venable this directory is finally online at our Washington Diptera WWW site (the specific URL is <http://www.sel.barc.usda.gov/Diptera/worlddip.htm>). This directory is a searchable FileMakerPro database, not a simple HTML list of names as are many of the other directories. Hence, one may search for dipterists under their last name, city, state/province, country or Diptera family or any combination of those fields. Also, truncated searches are also possible. Hence, searching under 'Wood' will also bring up 'Woodley'.

As this directory is very large, containing more than 2,000 people, searches for specialists on specific taxon can be confusing to general users. For example, currently if one entered the family 'Syrphidae', the database would respond with the names of 182 people listed as interested in flower flies. So, to help the general user find an EXPERT willing to provide advice, especially identifications, we will be adding the designation of EXPERT to selected individual records. The requirements for being listed as an expert are: 1) significant publications on the taxon or related ones; 2) endorsement of fellow experts and colleagues; and 3) willingness to provide advice to others. A mailing has been made to select colleagues asking whether they would like to have their listings up-dated to reflect their EXPERTISE. However, if you have not heard from us, please feel free to write us to volunteer your expertise!

Please check the directory out and send corrections, revisions, etc., to us at '[diptera@sel.barc.usda.gov](mailto:diptera@sel.barc.usda.gov)'. For security reasons, we had decided not to allow web-based revision of user's data records.

### **Diptera Data Dissemination Disk**

While volume 1 was issued about a year ago, volume 2 has been delayed. Sorry! We have delayed the volume a few months to ensure a larger, more diverse issue. Volume 2 will include more WWW sites (the therevid site of Mike Irwin's PEET group in Illinois and Jim O'Hara's tachnid site from Ottawa); new books (Norm Woodley's World Catalog of Stratiomyidae, Kelvin Holston's therevid names) and new databases (Gail Kampmeier's Mandala (the Irwin PEET biodiversity management system) & Al Norrbom's fruit fly hosts). And as noted elsewhere the Dipterists' Directory and BioSystematic Database of World Diptera will have been greatly expanded and revised. And best of all, Jill Mullet (of the Irwin PEET group) has prepared a new full color cover and CD. Look for this volume around about early summer!

Plans are also underway to use this new publication medium for rapid validation of new taxa. One of the key challenges of various biodiversity programs, such as the Selective Taxa Biodiversity Inventory (STBI) project of Costa Rica, is how to efficiently and effectively as well as rapidly make available new taxonomic information and validate new taxa nomenclaturally. Thousands of new flies will have to be named in the next few years if INBIO is to successfully complete its STBI. The use of World-Wide-Web pages to treat taxa has been recognized as the most efficient, effective and universal method of getting taxonomic information to all. See sample pages at our Diptera WWW site under Syrphidae, genus Ornidia. Unfortunately, publication on the WWW does not fulfill the requirements of the International Code of Zoological Nomenclature as the WWW does not constitute published work within the meaning of the 4th edition of the Code (see Article 9.8). However, publication of those same pages in the Diptera Data Dissemination Disk does. Hence, the editor will accept new taxon descriptions in the form of taxonomic WWW pages for publication in future issues of the DDDD. Obviously all scientific contributions to the DDDD will go through the normal peer-review and editorial process.

### **BioSystematic Database of World Diptera**

Through the generous support of the Schlinger Foundation, the BioSystematic Database of World Diptera will post significant improvements this coming year. First, we have been able to retain Steve Gaimari as a post-Doctoral fellow to work on the Lauxanoidea (Lauxaniidae, Chamaemyiidae, Eurychoromyiidae & Celyphidae). Second, we will be able to put the database online. Third, we have purchased all new species names from the Zoological Record, volume 115 (1978 ) to 136 (1999) in digital format. These records (some 25,000) will essentially up-date most of the regional Diptera catalogs. And, our data entry worker, Elaine Jamison, is almost finished keyboarding the Afrotropical Diptera catalog. This will mean that only the Oriental and Palaeartic Diptera catalogs need to be entered into the database. Altogether this year's version of the database should include some 4,300 family-group names (essentially the same as version 1), 21,000 genus-group names (about 5% increase over version 1), 100,000 species-group names (about 25% increase), and about 5,000 references (about 66% increase).

The family-group names remain largely unchanged from the data records taken from Sabrosky (1999), just a couple of new ones have been added. The genus-group names have now been checked against Neave and the current literature for homonyms. The bad news is that some 1,164 junior homonyms were

identified of which 188 junior homonyms are in current use. The good news is that is 188 new genera for Neal to name! The area which needs the most work now is the references. We plan to have the bibliographies from the Nearctic, Afrotropical and Australasian and Oceanian catalogs incorporated this coming year. The major problem with this effort is eliminating duplicates and reconciling the differences among the bibliographies. A mailing has gone out to specialists seeking assistance in preparing species-level catalogs for various family units. The basic plan is to provide assistance to specialist to prepare family-level treatments such as Tom Pape did for the Sarcophagidae, Wayne Mathis for Ephydriidae, etc. We will provide a traditional paper-printed outlet in our series *Myia* with the incorporation of the revised records in the BioSystematic Database of World Diptera. Last year, we did the Tephritidae, this year the Stratiomyidae by Norm Woodley will be out. And for 2001 we have promises for many more families. If you are interested in preparing family-level treatments or in helping review such treatments, please get in contact with us.

### **USNM Diptera Collection Moves and Improves**

This past June the whole downtown Diptera collection moved from the 6th floor of the West Wing of the National Museum of Natural History to new quarters on the 6th floor in the East Court. For the first time the Diptera collection has lots of expansion space. The collection is housed in new compactors in a single linear phylogenetic arrangement. So, with this new space we are adding new collections. The personal collection of Paul Arnaud of California will be coming to Washington this summer. The collection is very rich in western flies, especially in the Tachinidae and Empidoidea. Also, over past year we have had a number of specialists in to review and up-grade various families (Jon Gelhaus, ANSP, Philadelphia, Sigita Podenas, Vilnius Univ., & Chen Young, CMNH, Pittsburg, for Tipuloidea; Andrew Ozerov, ZMMU, Moscow, for Sepsidae and Graham Griffiths, Edmonton on Anthomyiidae, as well as Steve Gaimari, our post-Doc, for the Lauxaniioidea). And Emilia Nartshuk, ZISP, St. Petersburg, will be coming this Fall to work on Chloropidae. [Remember visitor grants are always available either from the Smithsonian short-term visitor program (contact, Wayne Mathis) or the Diptera Unit itself, through the S. W. Williston Diptera Research Fund or the C. W. Sabrosky Fund (contact, Chris Thompson)].

Finally, we have new leadership in Washington, from a new Secretary for the Smithsonian Institution, Larry Small, to new chair of the Department of Entomology, Scott Miller, and new Research Leader for the Systematic Entomology Laboratory, Mike Schauff.

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### **Rob Cannings, New Combination, New Status**

Rob Cannings, Curator of Entomology at the Royal British Columbia Museum in Victoria, Canada, has completed his PhD program at the University of Guelph, Ontario studying in Steve Marshall's lab. Rob took a two-year leave of absence from his museum job from August 1991 to August 1993 to take course work, then complete his thesis back in Victoria. He defended his research on the systematics of the asilid genus *Lasiopogon* in October 1999; the examining committee included Monty Wood and Eric Fisher. An abstract of the thesis is included below:

### The Systematics of *Lasiopogon* Loew (Diptera: Asilidae):

This thesis is an investigation of the phylogenetic relationships in the robber fly (Diptera: Asilidae) genus *Lasiopogon* Loew. Although 118 species -- 49 of them undescribed -- are recognized, only the derived *L. opaculus* section is revised. It consists of 29 species, 14 of which are newly described: *L. apache*, *L. appalachensis*, *L. chrysotus*, *L. coconino*, *L. flammeus*, *L. lavignei*, *L. lehri*, *L. leleji*, *L. marshalli*, *L. phaeothysanotus*, *L. piestolophus*, *L. qinghaiensis*, *L. schizopygus* and *L. woodorum*. Three names are synonymized: *L. aridus* Cole & Wilcox = *L. quadrivittatus* (Jones); *L. atripennis* Cole & Wilcox = *L. cinereus* Cole; *L. carolinensis* Cole & Wilcox = *L. opaculus* Loew. All species in the *opaculus* section are described and illustrated and each has its geographical distribution mapped. Identification keys are provided for all Nearctic and East Palaearctic species.

The morphology of *Lasiopogon* is detailed; special attention is paid to the male and female genitalia, which have been little used in previous taxonomic works. For the first time, the gonostylus, phallus, subepandrial sclerite, basal epandrial sclerite and spermathecae are considered important structures in the taxonomy of the genus.

The placement of *Lasiopogon* in the Stichopogoninae is upheld; it is considered the sister group to the remainder of the subfamily. The possibility that the Stichopogoninae is linked to the Stenopogoninae through the Australasian genus *Bathypogon* is explored. *Lasiopogon* consists of two main clades: the *cinctus* clade is predominantly West Palaearctic; the *bivittatus* clade is mainly Nearctic. The *opaculus* section, the main object of this study, is a monophyletic, derived lineage in the *bivittatus* clade. The younger clades of the *opaculus* section live in the East Palaearctic.

A biogeographic hypothesis of the history of *Lasiopogon* suggests that *Lasiopogon* may have originated in Laurasia as early as the late Jurassic, although the phylogeny of the modern fauna correlates best with geographical events beginning in the Tertiary. The *cinctus* and *bivittatus* clades perhaps diverged at the onset of Oligocene climatic cooling. In the Miocene, populations of the *opaculus* section were continuous across Beringia and into Asia. Almost all the extant East Asian species groups originated at that time. One species, *L. hinei*, recolonized North America in the Pleistocene.

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#### **Peter Cranston, Dispersal or Vicariance?**

Peter Cranston has moved from Australia to Davis, California to take up the Evert and Marion Schlinger Chair of Systematic Entomology and leaving CSIRO Entomology permanently. He'll continue to work on Chironomidae, especially life histories, biodiversity and phylogeny, retaining his past interest in gondwanan taxa and moving more into some molecular systematics of targetted groups. For the Californian fauna, an interactive LucID key with Automontage manipulated images is a likely early project. Here's how to get hold of him:

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## Books and Publications

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Aluja, M. and A. L. Norrbom, eds. 1999. Fruit Flies (Tephritidae) Phylogeny and Evolution of Behavior. CRC Press, Boca Raton. 968 pp. Catalog Number: 1275, ISBN: 0849312752, Price: \$US 149.95.

SECTION 1: General Framework Phylogenetic Relationships Among the Families of the Superfamily Tephritoidea - Valery A. Korneyev. Breeding Habits and Sex in Families Closely Related to the Tephritidae: Opportunities for Comparative Studies on the Evolution of Fruit Fly Behavior - John Sivinski. Behavior of Tephritid Flies: A Historical Perspective - Francisco Diaz-Fleischer and Martin Aluja.

SECTION 2: Higher Relationships of Tephritidae Phylogenetic Relationships Among Higher Groups of Tephritidae - Valery A. Korneyev. Nucleotide Sequence Data as a Tool to Test Phylogenetic Relationships Among Higher Groups of Tephritidae: A Case Study Using Mitochondrial Ribosomal DNA - Ho-Yeon Han and Bruce A. McPheron.

SECTION 3: Subfamilies Blepharoneurinae and Phytalmiinae Phylogeny of the Subfamily Blepharoneurinae - Allen L. Norrbom and Martha A. Condon. Behavior of Flies in the Genus *Blepharoneura* (Blepharoneurinae) - Martha A. Condon and Allen Norrbom. The Evolution of Antlers in Tephritid Flies - Gary N. Dodson.

SECTION 4: Subfamily Trypetinae Phylogeny of the Subtribe Carpomyina (Trypetinae), Emphasizing Relationships of the Genus *Rhagoletis* - James J. Smith and Guy L. Bush. Behavior of Flies of the Genera *Rhagoletis*, *Zonosemata* and *Carpomya* (Trypetinae: Carpomyina) - Ronald J. Prokopy and Daniel R. Papaj. Phylogeny and Behavior of Flies in the Tribe Trypetini (Trypetinae) - Ho-Yeon Han. Phylogeny of the Genera *Anastrepha* and *Toxotrypana* (Trypetinae: Toxotrypanini) based on morphology - Allen L. Norrbom, Roberto A. Zucchi, and Vicente Hernandez-Ortiz. Phylogeny of the Genera *Anastrepha* and *Toxotrypana* (Trypetinae: Toxotrypanini) based upon 16SrRNA Mitochondrial DNA - Bruce A. McPheron, Ho-Yeon Han, Janisete G. Silva, and Allen L. Norrbom. Behavior of Flies in the Genus *Toxotrypana* (Trypetinae: Toxotrypanini) - Peter J. Landolt. Behavior of Flies in the Genus *Anastrepha* (Trypetinae: Toxotrypanini) - Martin Aluja, Jaime Pinero, Isabel Jacome, Francisco Diaz-Fleischer, and John Sivinski.

SECTION 5: Subfamily Dacinae. Phylogeny of the Genus *Ceratitis* (Dacinae: Ceratitidini) - Marc de Meyer. Behavior of Flies in the Genus *Ceratitis* (Dacinae: Ceratitidini) - Boaz Yuval and Jorge Hendrichs. Sexual Behavior and Sexual Selection in the Mediterranean Fruit Fly, *Ceratitis capitata* (Dacinae: Ceratitidini) - William G. Eberhard. Phylogeny of the Tribe Dacini (Dacinae) Based on Morphological, Distributional and Biological Data - Richard A.I. Drew and

David L. Hancock. Morphological Features of the Dacini (Dacinae): Their Significance to Behavior and Classification - Ian M. White. The Biology and Behavior of Flies in the Tribe Dacini (Dacinae) - Richard A.I. Drew and Meredith C. Romig.

SECTION 6: Subfamily Tephritinae Phylogeny of the Subfamily Tephritinae: Relationships of the Tribes and Subtribes - Valery A. Korneyev. A Generic Reclassification and Phylogeny of the Tribe Myopitini (Tephritinae) - Amnon Freidberg and Allen L. Norrbom. Phylogeny of the Palearctic and Afrotropical Genera of the *Tephritis* Group (Tephritinae: Tephritini) - Bernhard Merz. Behavior of Flies in the Subfamily Tephritinae - David H. Headrick and Richard D. Goeden.

SECTION 7: Evolution of Behavior Genetic Population Structure in the Tephritidae - Stewart H. Berlocher. The Evolution of Fruit Fly Feeding Behavior - Richard A.I. Drew and Boaz Yuval. Topics in the Evolution of Sexual Behavior in the Tephritidae - John Sivinski, Martin Aluja, Gary N. Dodson, Amnon Freidberg, David H. Headrick, Kenneth Y. Kaneshiro, and Peter J. Landolt. Sexual Pheromones of Tephritid Flies: Clues to Unravel Phylogeny and Behavior - Robert R. Heath, Peter J. Landolt, David C. Robacker, Barbara D. Dueben, and Nancy D. Epsky. Evolution of Fruit Fly Oviposition Behavior - Francisco Diaz-Fleischer, Daniel R. Papaj, Ronald J. Prokopy, Allen L. Norrbom, and Martin Aluja. Changes in Sexual Behavior and Life History Traits of Tephritid Species Caused by Mass-rearing Processes - Jean-Pierre Cayol. Sexual Selection and Speciation in Hawaiian *Drosophila* (Drosophilidae): A Model System for Research in Tephritidae - Kenneth Y. Kaneshiro.

SECTION 8: Glossary - Ian M. White, David H. Headrick, and Allen L. Norrbom.

Cooper, B.E. and J.M. Cumming. 2000. Diptera types in the Canadian National Collection of Insects. Part 3. Schizophora (exclusive of Tachinidae). Research Branch Agriculture and Agri-Food Canada Publication. 134 pp. [Available from the authors; also published electronically at <http://res.agr.ca/brd/tachinid/titlp3htm.htm>].

Deonier, D.L. 2000. North American ephydrid habitat types and probable ephydrid inhabitants (Diptera: Ephydridae). 12 pp. Privately published by author, P.O.Box 1625, Pittsburg, KS 66762. [Available free of charge from the author].

Evenhuis, N.L. and D.J. Greathead. 1999. World catalog of bee flies (Diptera: Bombyliidae). Backhuys Publishers, Leiden. xlviii + 756 pp, 2 colour plates. ISBN: 90-5782-039-0. Price: NLG 286 (approx. \$US 118.00). [*The following book review provided by Jeff Cumming*]

This work represents another fine Diptera cataloguing effort by Neal Evenhuis, in collaboration with David Greathead. The authors, both recognized authorities on the Bombyliidae, provide us with a world treatment of one of the largest families of Diptera with more than 4,500 valid species currently known worldwide. This work builds on Evenhuis' 1991 world catalogue of the bombyliid genus-group names (Bishop Mus. Bull. Entomol. 5: 1-105) and treats all 5,934 species-group names in the family, including 48 new replacement names, 273 synonyms, 214 new combinations, 40 names raised to species or subspecies level, 172 lectotype and 3 neotype designations, and 2 new species descriptions.

The contents are as follows: Introduction; Acknowledgments; Classification; Explanatory Information; Nomenclatural Summary (including lists of new replacement names, new

synonymies, new combinations, names with new status, and new species); Catalog (arranged by subfamily and tribe, including chapters on Unplaced Genera of Bombyliidae, Taxa Questionably Placed in Bombyliidae, and Taxa Removed from Bombyliidae); Collection Notes and Nomenclatural Notes; Phylogenetic Considerations; Literature Cited; Periodicals Referred to in this Catalog; Appendix 1. Lectotype and Neotype Designations, and Notes on Other Species; Appendix 2. Notes on the *Geron gibbosus* Olivier and *G. halteralis* Wiedemann species groups; Appendix 3. Synonymy of the *Exhyalanthrax afer* Fabricius species group in Europe and Africa; Appendix 4. Collectors of Bombyliidae Type Specimens; Index (plus an additional quick reference index to genus-group names attached to the inside book cover); and Plates (6 excellent colour photographs of bee flies, plus 2 cover photographs, that demonstrate their remarkable range of sizes and shapes).

The entries in the Catalog chapters are arranged within each subfamily or tribe alphabetically by genus-group name and then species-group name. Each species-group name clearly lists all synonymies, original combinations, type localities, and type depositories, followed by the distribution given by country or state. The additional chapters or appendices on collections, collectors, nomenclatural notes, phylogeny, literature and periodicals give a tremendous amount of information that is of use to dipterists working outside of the Bombyliidae. It is here in the Phylogenetic Considerations chapter that I discovered my only criticism of the catalogue, the basis for exclusion of the Mythicomyiinae. Even though the authors generally follow the 1994 phylogenetic classification of David Yeates (Bull. Am. Mus. Nat. Hist. 219: 1-191) who recognizes the mythicomyiines as the sister group to all other bombyliids and includes them as a subfamily within the family, they elect to follow Evenhuis' 1994 treatment (Catalogue of the Fossil Flies of the World) where in my opinion he needlessly elevates the group to family status based entirely on their presence in Jurassic deposits. Thus this work omits approximately 320 species that most users would expect to find included in this catalogue.

Errors within the body of the text are seemingly non-existent. The only error or omission I discovered was one undefined museum acronym (MNNC, mentioned in regards to the Philippi collection under Collection and Nomenclatural Notes) which was not included in the list of museums found in introductory Explanatory Information chapter. The authors should be congratulated on the production of a very useful and complete world catalogue on a major group of Diptera. I highly recommend this work to anyone studying bee flies and for those systematists studying other groups of orthorrhaphous Brachycera.

- Kristensen, N.P. 1999. Phylogeny of endopterygote insects, the most successful lineage of living organisms. *European Journal of Entomology* 96: 237-253.
- Rokas, A., J. Kathirithamby and P.W.H. Holland. 1999. Intron insertion as a phylogenetic character: the engrailed homeobox of Strepsiptera does not indicate affinity with Diptera. *Insect Molecular Biology* 8:527-530.
- Rotheray, G. and F. Gilbert. 1999. Phylogeny of Palaearctic Syrphidae (Diptera): evidence from larval stages. *Zoological Journal of the Linnean Society* 127:1-112.

- Simpson, P. 1999. The development and evolution of bristle patterns in Diptera. *Development* Cambridge 126:1349-1364.
- Thompson, F.C. 1999. A key to the genera of the flower flies (Diptera: Syrphidae) of the Neotropical Region including descriptions of new genera and species and a glossary of taxonomic terms. *Contributions on Entomology, International* 3(3):321-378.
- Xue Wanqi and Chao Chienming, editors, 1996. *Flies of China*. 2 vols. Liaoning Science and Technology Press, Shenyang. 2424 pp. 653 white and black figure plates and 32 color plates. [In Chinese with English translations to each family chapter.] ISBN 7-5381-1980-9. Price: US\$150.00. Published in December 1996. [*The following book review provided by Neal Evenhuis*]

This prodigious work is really a misnomer as it only deals with Diptera of the "Cyclorrhapha" (from the Aschiza through Calyptrata). Nematocera and orthorrhaphous Brachycera are not dealt with (for reasons not elucidated in the introduction). It is almost entirely in Chinese save for small English summaries of keys and new taxa described -- placed at the end of each family chapter. There is no summary of new taxa in the entire two-volume work, so one has to search through the Chinese text or the brief translations at the end of each chapter to enumerate the new taxa.

Dr. Hiromu Kurahashi starts things off with a page of prefatory remarks (in English and Chinese versions) -- signed by him in August 1994, soon after learning of the plan of the work from Professor Xue Wanqi at the 3rd International Congress of Dipterology in Guelph. Extraordinarily, Dr. Kurahashi was able to foretell in 1994 the total number of taxa dealt with in the final 1996 product and gives the following totals in his preface: 30 families; 660 genera; 4209 species; 5 new genera; 268 new species; 4 new subspecies; and 135 new records for China. As Dr. Kurahashi points out: "These findings are pleasantly surprising".

Fifty-four Chinese authors contributed to the work with Michael Ackland responsible for checking the English abstracts. The contents are as follows:

Vol. 1: Introduction; Lonchopteridae; Phoridae; Pipunculidae; Syrphidae; Cryptochetidae; Celyphidae; Chamaemyiidae; Drosophilidae; Megamerinidae; Psilidae; Strongylophthalmyiidae; Diopsidae; Opomyzidae; Teratomyzidae; Asteiidae; Agromyzidae; Chloropidae; Pyrgotidae; Conopidae; Scathophagidae; Anthomyiidae; Fanniidae; Muscidae.

Vol. 2: Calliphoridae; Sarcophagidae; Tachinidae; Gasterophilidae; Oestridae; Hypodermatidae; Hippoboscidae; Addenda (for *Cephalispa* Malloch, *Parvisquama* Malloch, and *Sinophorbia* Xue, n. gen.); and Indexes.

A table of suborders, infraorders, suprafamilies, etc. on p. 2 of volume 1 indicates that the editors chose to follow a classification system that is essentially an amalgamation of "Rohdendorf-Hennig-Griffiths-Steyskal", hence the use of Aschiza, Calyptrata, Schizophora, and Cyclorrhapha, etc. throughout the work.

Overall the work is well produced and the numerous illustrations are well drafted and printed. The English translations are inconsistent as some translate both keys and new taxa descriptions, but most only give translations of the new taxa. If I would have to limit my criticisms to one major point, it would have to be that it would have made the work more useful to the many non-Chinese reading scientists of the world if the keys for all the family chapters were also translated into English. If I could offer another suggestion, it would be to have included the Tephritidae (a noticeable absence of a substantially large and economically important "cyclorrhaphous" family). One wonders what happened to the Ephydriidae too.

Though the price may seem expensive for the whole two-volumed work, I think that the price per page is hard to beat (roughly 6 cents per page) and I recommend this work for anyone that is or will be studying Asian "cyclorrhaphous" Diptera. If the rumors are true that the new wave of alien pests into North America seem to be originating from Asian countries, this work will quickly become an indispensable reference for identification of Asian Diptera.

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This is NOT an advertisement! Steve Gaimari passed this on to the editors to point you all to a couple of books of interest that have been remaindered by their publishers and purchased by Hamilton Bookseller, who is selling them very cheaply. Steve has no idea how many copies of each of these are still available, but here they are.

A Catalog of the Diptera of America North of Mexico. A. Stone et al. (1983 Smithsonian reprinted edition). Item # 319686. \$US 14.95

The Type-Material of Diptera (Insecta) Described by G.H. Verrall and J.E. Collin. A.C. Pont (1995). Item #878847. \$US 6.95

This bookseller does not accept credit cards, but does take personal checks. Shipping and handling is only \$3, regardless of the number of books purchased. To order either of these, simply mail your order to: Edward R. Hamilton, Bookseller, Falls Village, CT 06031-5000, or download a blank order form from: [http://hamiltonbook.com/cgi-bin/printable\\_order\\_form.cgi](http://hamiltonbook.com/cgi-bin/printable_order_form.cgi)

## Submission Form for Directory of North American Dipterists

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

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

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Projects and taxa studied: \_\_\_\_\_

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