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Containers full of caterpillars being reared for their *Glyptapanteles* (and other, perhaps less interesting wasps). Photo by Andy Deans.

The Neotropics is teeming with little parasitoid wasps: *Glyptapanteles*

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I began my exploration of *Glyptapanteles* Ashmead 1904 in the fall of 2010. I decided to concentrate my PhD on this group of insect for three reasons. First, basic descriptive systematics in this group is currently the important gap in knowledge that needs addressing; second, the astonishing diversity of the genus lies mainly in the Neotropics and finally, because it is one of the most important natural enemies of Lepidoptera that exclusively attack their larvae.

Glyptapanteles are diminutive parasitoid wasps which are free-living organisms as adults, but as immatures attack exclusively larvae of Lepidoptera as a food resource for their developing larvae. The females lay one (solitary development) or more (gregarious) eggs inside the host

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and feed only on the hemolymph and fat body of their hosts (Shaw & Huddleston 1991), which eventually die. These wasps show a remarkable association with viruses (Bracoviruses), which play a crucial role in the survival of the developing egg (Lapointe *et al.* 2007) by suppressing or misdirecting the host's immune system. In brief, these minute *Glyptapanteles* play a preponderant role in regulating their lepidopteran host populations and maintaining high biological diversity in terrestrial ecosystems (LaSalle & Gauld 1992).

The group is one of the larger genera that was segregated after several attempts to subdivide the gigantic genus *Apanteles* Foerster 1862. To date, 122 species have been described worldwide, of which only seven are Neotropical (Blanchard 1936, Muesebeck 1958, Mason 1981, Whitfield

et al. 2002), despite unpublished evidence that this genus is one of the largest in the Neotropics. A reliable revision for the Neotropics has not yet been attempted, so many *Glyptapanteles* species remain undescribed. Another factor that possibly contributed to the fact that this genus has eluded taxonomic study for a long time resides in the body size of its specimens (2-3 mm long). Taxonomic groups with small body sizes tend to be described much later than taxa with large body sizes.

12,022 preserved in alcohol) that represent 217 putative species. All the material has associated mtDNA (CO1) sequences generated partly by collaborators in the Biodiversity Institute of Ontario, University of Guelph, Canada and partly by the Keck Center, UIUC. The majority of the parasitoid samples are endowed with information about their herbivore hosts as well as host plants, making information across three trophic levels available. Thus, three different sets of data (morphology, host records and DNA

barcoding) were integrated in order to generate accurate boundaries between species.

The samples from these two Neotropical countries suggest that *Glyptapanteles* is perhaps the third most diverse genus within Microgastrinae, and undoubtedly is one of the largest contributors of species richness within the subfamily in that region. Currently, my morphological image library for the 217 putative species consists of about 2,500 high-resolution images obtained by both scanning electron microscope (SEM) and Z-stacked images merging different focus positions. These digital images (Figs. 1-2) are a fundamental piece

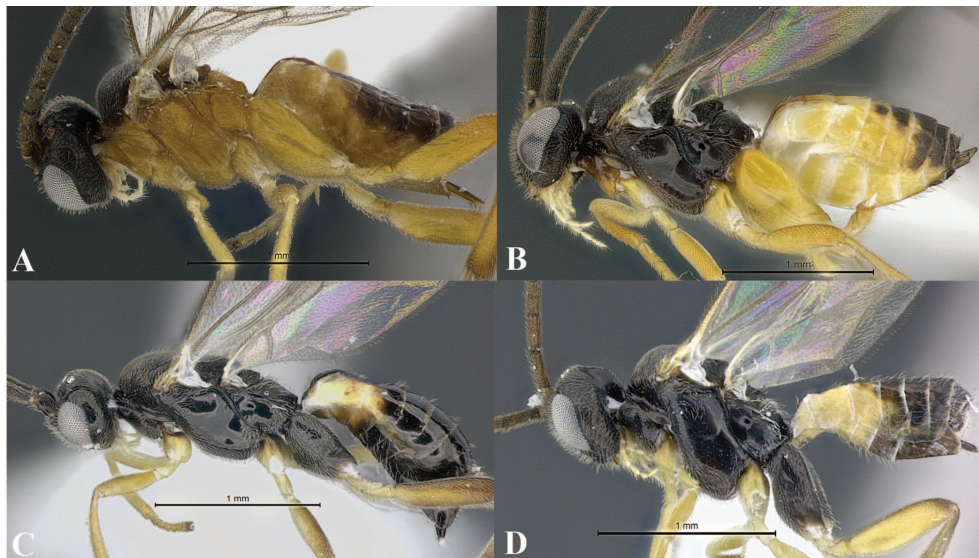


Figure 1. Habitus *Glyptapanteles* putative species. A Female, Sp.147 B Male, Sp.152 C Female, Sp.211 D Female, Sp.223

The scarcity of both taxon sampling and biological information is no longer standard for some Neotropical groups of insects. In the case of *Glyptapanteles*, the increasing accumulation of information during the last four decades derives from two independent long-term rearing projects: the caterpillar and parasitoid inventory of the Área de Conservación en Guanacaste (ACG) in Northwestern Costa Rica and the project Caterpillars and Parasitoids of the Eastern Andes (CAPEA) in Ecuador. At the moment, 2,131 *Glyptapanteles* samples from both projects are available at Dr. James Whitfield's lab at the University of Illinois, Urbana-Champaign (UIUC). To date, my *Glyptapanteles* collection consists of 15,339 specimens (3,517 pinned and

for the interactive key, the conventional key and species description that are being generated with LucID software (www.lucidcentral.com). Previously, only four lepidopteran families had been documented as *Glyptapanteles* hosts in the Neotropics; currently the record has been expanded to sixteen more families. As for the plants which these herbivore hosts consume, currently 65 families are reported. Herbivore insect and host plant records are constantly increasing with the ongoing inventories. Lastly, a phylogeny based on molecular data from fragments of three genes, one mitochondrial DNA (COI) and two nuclear DNA [wg (wingless), and alpha spectrin (ASpec)] for 150 putative species of *Glyptapanteles* was performed. All

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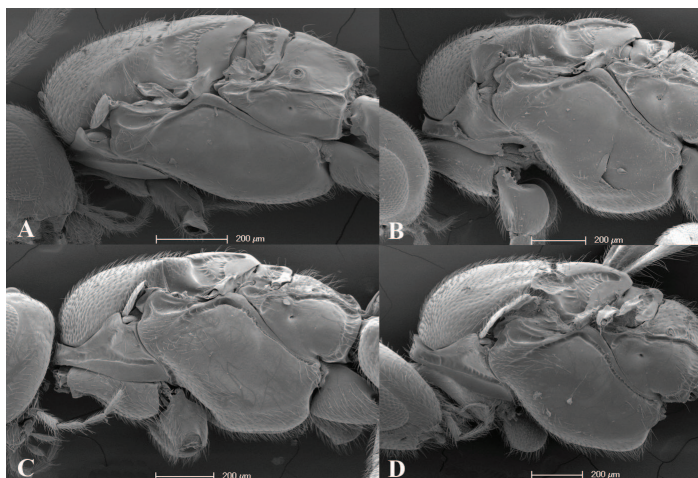


Figure 2. Mesosoma, lateral view, females *Glyptapanteles* putative species. A, Sp.1 B, Sp.4 C, Sp.9 D, Female, Sp.11

nuclear sequences were obtained at the facilities of UIUC. Concatenated data set of three genes produced three main clades; although posterior probability of Bayesian analysis supporting the node at the base of the largest clade is still low. Overlaying natural history data on the phylogeny did not reveal a striking repeating pattern of entire clades of *Glyptapanteles* restricted to parasitizing caterpillars from a specific lepidopteran family, as has happened with some other groups. I hope in the not too distant future these results will be published! ♦

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Limacodid larva in Ecuador. Is there a *Glyptapanteles* within? Photo by: Geoff Gallice (CC BY 2.0) <http://flic.kr/p/8Ux9tw>

Secretary's report

By: Lars Krogmann, Stuttgart State Museum of Natural History, Germany

Just a quick note on membership numbers: In 2013 the membership of ISH has developed positively (see table from 6 Nov 2013). Currently (30 Jan 2014), we even have 267 active members in our database. However, our society can only benefit from those members that pay their membership fees and so far only very few of you have renewed for 2014. So please, before you continue to read this issue of *Hamuli*, it only takes a few seconds to renew your membership here: <http://hymenopterists.org/purchase.php> ♦

# members	2013	2012
total	253	210
regular	185	156
student	53	43
life	12	11
family	3	0

The aging of hymenopterists

By: Mark Shaw, *National Museums of Scotland, Edinburgh U.K.*

I was honoured to be invited to talk at the small symposium on Braconidae held in Leiden on 28 May 2013 to celebrate Kees van Achterberg's immense contribution, on the occasion of his retirement. My talk was mostly about the biology of some European genera of Rogadinae, but it included the images here (right) to make the point that I felt almost a brotherly bond with Kees—and also as a platform from which to tell a few stories resulting from our close phenotype (DNA, however, would tell a different story). The first photo (top) was taken in our Edinburgh garden on Kees's first visit (1984), and we had some fun in those years of strong physical similarity. Highlight memories include: the shock on the face of an 11-year old friend of our daughter when Kees, visiting us in Edinburgh, was in one room and I was in another, and my wife Francesca told the child, as she passed in awe from one to the other, that she liked to keep a spare; the remonstrance I suffered at the hands of museum colleagues [I was supposed to be a manager/administrator by then] when "I" was seen to have spent the whole week looking down a microscope during one of Kees's visits to Edinburgh; the many occasions at Silwood Park for the annual Parasitic Hymenoptera Course on which we both taught when I, arriving for breakfast on the first teaching day fresh from the sleeper train down from Edinburgh, was enjoined most enthusiastically in a continuation of a conversation Kees had been having the night before in the bar. I used this slide—a photo of us—in my talk on that course every year, to emphasise that taxonomy was difficult, and was always rewarded by a few rueful faces (it was a bit oblique: my real point was that specimens needed to be prepared in such a way that they were easy to examine and manipulate, or they would not last). But perhaps the best stemmed from that excellent symposium of Hymenopterists in Kőszeg in 2001, when Lubomír Masner (whom I had never met) ran the length of a room to throw his arms around me in greeting; and, immediately after that conference, the photo of Anatoly Kotenko and Kees that Anatoly kindly sent to me with the fond inscription on the reverse "Anatoly Kotenko and Mark Shaw, Kőszeg v. 2001".

Alas, we have aged apart a little since then. The second photo, taken at my Edinburgh home in March 2013, might also have also been useful for my talk at the Silwood course, had the course endured, to show that with a little care specimens can survive. For those interested in buildings, the greenhouse in the first photo fell down in the



meantime, and the conservatory that replaced it looks like following suit, but I sincerely hope that Kees and I can survive together for a good time yet, and that maybe the next photo can feature a bottle of champagne for the day that we finally complete our long-awaited revision of western Palaearctic *Aleiodes*. The good news is that the first part of it is now in late draft. ♦

Preserving our hymenopterist heritage

By :Jim Whitfield, University of Illinois, Urbana-Champaign, IL, USA

As I look forward to beginning my stint as ISH President, one thing I've had in mind to encourage is enhanced knowledge of our hymenopterological heritage. After all, we are the International Society of Hymenopterists—so we should celebrate our history of those great people who are fascinated with ants, bees, wasps and sawflies (including ourselves)! As one of the increasingly Old Farts of the Society, I know I have photographs of hymenopterists now no longer with us, as well as shots in their younger years of those still with us. Just as an example I show below two shots of my own mentor Bill Mason that I took some years ago (one you might recognize as having appeared in the first issue of *JHR*). As a student of Microgastrinae I was lucky enough to have overlapped with and met Bill, Carl Muesebeck, and Gilbert Nixon before they left the scene (although I could now kick myself for not having had my picture taken with either Carl or Gilbert). On the other hand, I went many years not knowing what Jenő Papp and Max Fischer look(ed) like. It would have been nice to have been able to put a face to those names I saw as authors of oft-read papers.

What I have in my own stash of photos must pale in comparison to what some of the most senior members of the Society have to document our heritage, to reflect Hymenopterists of the past and to show those now retired

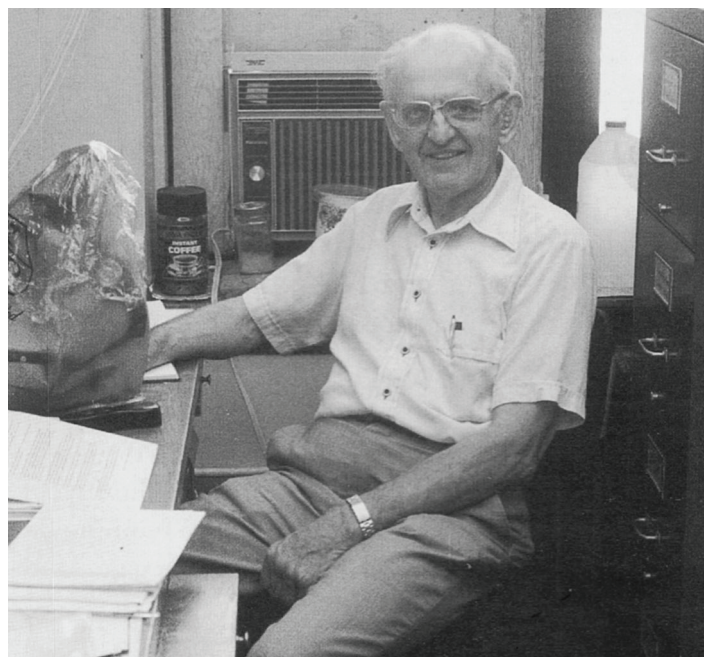
at their working prime. I am sure you can all think of folks in your own taxon you'd love to see photos of. What I'd like to suggest is that we set up a site at which all of us can contribute our own photos for all to share, beyond the history of the Society already available. Some of you might have already seen the wonderful gallery of entomologists at the KU Snow Museum site—something like that is what I have in mind but more open-access and representing all periods. Katja Seltmann has kindly offered to help set up such a site accessible from the ISH main page (more information coming once we get it set up!). For *all* to be able to contribute, I for one would be willing to help scan and/or upload photos that anyone has but is not able to scan or upload themselves.

Photos of yourself and current colleagues in the lab or field would be welcome as well! My main concern at this point is that we do this soon enough so that we do not lose images of a generation or two of past or senior Hymenopterists simply because we never asked for them. But imagine being able to go to this site to get a view of nearly every recent Hymenopterist you can think of. I don't know about you, but I'd love that, and also think it would really enhance the sense of community in our Society.

Speaking of which, President Heraty mentioned in "ISH and That" that it's been kind of quiet year in the Society, leading up to the Cusco Conference and settling in with a new journal publishing model. In large part that's been because the leadership the last year has been simply outstanding, and will be a hard act to follow. But I look forward to the attempt! ♦



Bill and Edith Mason at their summer cottage at Mississippi Lake, Ontario, 1981.



Bill Mason in his office at the Canadian National Insect Collection, 1990.

Alan William Hook, 1953 – 2013

By: John L. Neff, Central Texas Melittological Institute, Austin, TX, USA

Allan W. Hook, more commonly known as Al or simply Hook, went prematurely to the Great Wasp Farm in the Sky a few weeks before his 60th birthday on September 3, 2013 following a year long battle with pancreatic cancer. Al, a devotee of all things sphecoid, was born on November 17, 1953 in Quincy, Massachusetts. His initial stay in New England was brief and most of his early years were spent in Fair Haven, New Jersey, where, in contrast to the bad boy image he later liked to cultivate, he was an Eagle Scout who spent his summers as a life guard on the Jersey shore. His interest in the natural world began there as he roamed the woods and participated in science fairs.

His college years were spent first at the University of Maine where he earned a B. S. in Biology (1976), followed by a M. S. in Entomology with Robert Matthews at the University of Georgia (1978). His Ph.D. was with Howard Evans at Colorado State University (1985) where he focused on wasp behavior, particularly communal nesting in *Sphecius* and *Cerceris*. A trip to Australia to work on wasp biology with Evans was a major influence on his development as a scientist and an inspiration for a much anticipated sabbatical year in Australia that was cruelly cancelled by his illness.

Following a short stint as a Biological Technician with the Forest Service in Colorado, and a year as a Research Associate at Colorado State, he went to Austin, Texas where he was a Lecturer in Biology at the University of Texas at Austin from 1985 to 1988. In 1988, somewhat to the bewilderment of his friends, he took a position as an Assistant Professor of Biology at St. Edward's University in Austin. The perceived mismatch of the decidedly non-religious Hook and the conservative Catholic school proved to be illusory and the two adjusted well to one another. Al taught a wide array of biology courses at St. Edwards and became a beloved figure on campus. His academic uniform of casual, dun-colored field pants and shirts led him to be nicknamed the "Orkin Man" by one of the deans. He was promoted to Associate Professor in 1992 and full Professor in 2003. He served various stints as department chair and from 2005 to 2010 he was the Lucian Blersch Professor of Natural Sciences at St. Edward's. He was elected a fellow of the Texas Academy of Science in 2001. Hundreds attended the memorial service held in his honor on campus.



Allan Hook in Trinidad, 2004. Photo by John Abbott

Al's academic interests focused primarily on the nesting behavior of sphecoid wasps, primarily species of *Cerceris* and *Trypoxylon* but being a true, old-style field naturalist, his interests ranged widely. Despite a heavy teaching load at St. Edward's, he published 39 papers with additional papers in press at the time of his death along with many unfinished manuscripts. Many of his long-term projects from the latter part of his career appeared as presentations at meetings rather than as formal papers. A long running study of the biology of *Bembecinus neglectus* which he conducted with a series St. Edward's students as part of a field biology class was emblematic of those types of endeavors. Other subjects of his academic interests include the behavior of mantispids, pseudoscorpions, and mutilids.

Much of Al's fieldwork was centered in Texas but in the early 1990s he visited Trinidad and was smitten with the place. He returned often, making many friends among both the local naturalists and country folk. As part of his support of the wildlife of Trinidad he became a lifetime member of the Trinidad and Tobago Field Naturalists' Club.

Although he did not keep a personal collection, Al was an avid insect collector. Most of his material is in the University of Texas Insect Collection (UTIC). The collection is housed at the Brackenridge Field Laboratory of the University of Texas where Al maintained an office. The office dated back to when he was a lecturer at UT and

was both a refuge from his St. Edward's students and a place for his collection of bawdy post cards. He regularly exchanged material with specialists around the world and was always willing to hunt for oddities for the projects of others. For this generosity, he was honored with a number of patronyms (*Solierella hooki* Bohart, 1990, *Psammaletes hooki* Bohart, 2000; and *Neomydas hooki* Welch & Kondratieff, 2000).

Having met Al shortly after he arrived in Austin, I went on many "bugging" expeditions with Al over the years. My specialty is bees, so there was considerable overlap in our collecting interests, although his entomological interests were much broader than mine. While Al's extensive knowledge of the natural world never extended to plants, a point of irritation to someone like me with a primary interest in bee floral host relationships, he had a true collector's eye and his wasp hunting skills made him an expert at finding parasitic bees, many of them rare, and some new to science. He also became a highly skilled insect photographer and his annual Christmas card featuring one of his pictures of some exotic insect was always highly anticipated.

Although he had a curmudgeonly side that could be triggered by stupid behavior, Al was generally a very outgoing fellow with a twinkle in his eye. He enjoyed off-color jokes and songs with dubious lyrics, especially oldies with lyrical alterations of his own invention. While Al enjoyed female company, long term relationships did not seem to be his forte and it seemed ever more likely that he would be a lifelong bachelor. Somewhat miraculously, in his 50's he had the good fortune to meet Rosemary Guzman whom he wooed and eventually wed on 7 June 2009. They remained devotedly together, she, a non-biologist, having survived a first date walking the trails of the field station and a honeymoon wandering the rainforests of Chiapas.

In keeping with his love of nature, one of Al's most cherished jobs was serving on the board of directors of the Wild Basin Nature Preserve (currently the St. Edward's University Wild Basin Creative Research Center), a 92 hectare site in the Balcones Canyonlands near Austin. Al had been instrumental in having St. Edwards take over management of the preserve. Consistent with his belief that "one can learn more from the natural world than the human-made world" Al and Rosemary began the endowment of the Dr. Allan W. Hook Endowed Wild Basin Creative Research Fund, a fund open to any for the creative use of the resources of Wild Basin, not just biologists. Information on the Fellowships is available at <http://think.ly/1gK4hCH>. Those interested in contributing to the endowment of the fund in memory of the good Dr. Hook may do so at <http://bit.ly/drahook>. ❖

Flat wasp, a common name for the bethylids

By: Celso O. Azevedo, UFES-Biology, Vitória - Brazil

I have been worked on bethylid wasps since 1988. When I try to explain people what I do I always tell them that I work on the systematics of Bethyidae (Fig. 1), a group of small wasps. Afterwards, an embarrassing question comes up: What? Beth...what? What kind of bug they are? Don't they have any normal name? And the answer is: they don't have any.

As most of them are small, they don't have popular name just because "normal" people don't know them. Even those people who like gardening usually don't realize they exist because they are rare in urban environments.



Figure 1: *Sierola* Cameron (undescribed species from Australia). Photo by Geoff Thompson.

Here I propose the name flat wasp for bethylids. It expresses their general body structure. Bethyids are morphological adapted for exploring cryptic places where their hosts lives, mainly wood borer beetles. The body is elongate and depressed, the head is prognathous, and the fore femora are thick to dig galleries. Thus flat wasp seems to be adequate for them. ❖



Outback Australia

By: Jim Carpenter, American Museum of Natural History, New York, USA

I spent the month of November 2013 in Australia, on fieldwork for a project on coevolution of pollen wasps (Vespidae: Masarinae) and their plant hosts. The plan was to collect masarines with their hosts, and to that end, I was accompanied by Dennis Stevenson of the New York Botanical Garden. The itinerary was to drive from Adelaide to Brisbane, via the River Murray in South Australia then up the Darling, to Broken Hill then over to Bourke, then Cunnamulla and east to Brisbane. We'd received information and assistance from John Jennings and Peter Hudson in Adelaide, and Chris Burwell in Bris (as well as botanist colleagues), and at both the start and endpoint of the itinerary there was rain, so late spring flowers were good. But that is where things didn't go quite according to plan, because in between, the Outback was in deep drought – in Cunnamulla, a police officer told us it had been more than year since there was rain! The ground cover in most places was generally non-existent, and the emus and kangaroos were coming into the towns to browse in parks, yards, etc. (see above). The genus *Metaparagia* is associated particularly with Goodeniaceae, and we found exactly one flower. The genus *Paragia*, which is associated with eucalypts, presented less of a problem, because gum trees are pretty tough, and were in bloom all over—but have pretty tall crowns, which presented a different problem. Fortunately, the expedition was saved by the fact that solitary vespids don't collect mud to make their nests, rather they collect water, and make their own mud, and so in dry conditions, if you can find the water source, the wasps actually con-

centrate. So in fact the collecting was quite successful: we got four species of *Paragia* and one *Metaparagia* (if that doesn't sound like much, you've never collected masarines in Australia; anyway, that total is about a sixth of the described fauna). One of the *Paragia* is an undescribed species, and there were seven new locality records. Host associations remain to be confirmed by pollen analysis (that's what the botanist is for). We also found a nesting site of one species, *Paragia decipiens*, at Broken Hill, with more than dozen turreted nests spotted. Interestingly, the nests of this species described from Fowler's Gap, about 100 km away, by Naumann and Cardale, were stated to lack turrets ...



Of course, far more abundant were eumenines, and polistines (*Polistes*) too, around towns and rivers. We collected quite a diversity of eumenines, especially *Paralastor* (no surprise). Perhaps the most interesting observation regarding potter wasps was of a nesting aggregation under a bridge at Nyngan. A species of *Paralastor* was making funnels at the entrance to its plastered mud cells (see photos), like those reported by Smith for nests in burrows in the ground. One thing not reported before is that the cells are evidently re-used, and funnels may have funnels (see photo)! ❖

Bee of the year

By: Lars Krogmann, State Museum of Natural History Stuttgart, Germany

In an effort to raise awareness about bee conservation in Germany, a committee of hymenopterists annually elects the “native bee of the year”. On 15 January, the wool carder bee *Anthidium manicatum* (Linnaeus, 1758) (Megachilidae) was presented as the “native bee of the year 2014” at the State Museum of Natural History Stuttgart. Heiko Bellmann and Martin Klatt explained in their presentations why *A. manicatum* was selected and provided interesting aspects of the unique biology of this species. Males of *A. manicatum* show highly aggressive behavior and defend flowers in their territory against other visitors. Females scrape the hairs from the leaves of hairy plants (e.g., *Stachys germanica*) and use them for stuffing their nest cavities. A promotional leaflet with more information about *A. manicatum* and the “native bee of the year initiative” can be found as PDF (in German) at <http://www.wildbienen-kataster.de/> ♦



Anthidium manicatum. Photo by Rainer Prosi.

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Not so tiny hymys

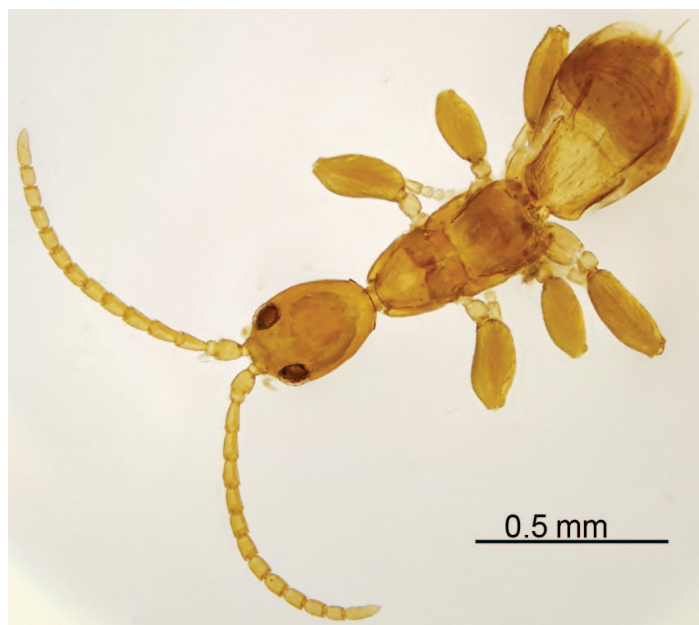
By: Mark Shaw, National Museums of Scotland, Edinburgh U.K.

Mike Sharkey (2013, *Hamuli* 4(2):16-17) was correct, as was Dicky Yu in providing the information, that the sizes given for the phaeogenine ichneumonids *Tycherus blanki* Diller, 2003 and *Colpognathus heinzelleri* Diller, 2003 in the original descriptions (Diller & Schönitzer, 2003a, b) were respectively 0.5 mm and 0.6 mm. However, this seemed to me so unlikely to be the case that I checked with Erich Diller, who has confirmed (pers. comm.) that these measurements were accidentally given as mm when they should have read cm; *i.e.* the holotype of *Tycherus blanki* is 5 mm in length, and that of *Colpognathus heinzelleri* is 6 mm.

It may seem overwhelmingly pedantic to point this out in print, but I do so on the advice of Dicky Yu who tells me that he cannot correct the measurement in Taxapad until it is published as “new information”, and that this note will suffice. ♦

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From the editors: This is the smallest braconid we could find in our collection. Can you guess where it's from? Photo by István Mikó.

ISH and that

By: John Heraty, University of California, Riverside, USA

2013 was a quiet year for the Society. We have had a full year of an on-line only journal and we had our annual meeting at the Entomological Society of America meetings in November in Austin, Texas. At our meeting, we honored Bob Wharton upon his retirement with a great venue of speakers including Jim Whitfield, Molly Hunter, Mike Strand, Andy Austin, Andy Bennett, Elijah Talamas, and Jim Woolley, with remote presentations by Matt Buffington, Bob Kula and John Sivinski. Not only did this symposium cover the diversity of Bob Wharton's expertise, it also covered the diversity and strengths of our Society.

Plans are well under way for our meeting in Cusco, Peru from July 20-25. Frank Asorza has developed an exciting venue (distributed as a first circular) and now a website (<http://www.cebioperu.org/courses/hymenopterameeting.php>). The hotels are accepting registrations online (very easy to do), and with no down payment it is a good time to book your rooms. The ISH executive decided to have a new award competition for students and postdocs attending the congress as announced in this issue. I want to emphasize that income to the Society is limited to our member-

ship dues and our donations to the endowment. The more members we have, the more awards we can pass along to our younger members. So far we have received promises of meeting sponsorships from publishers (Pensoft), societies (the Entomological Society of America), and individuals (Matt Buffington). We are still working on industry sponsors. It is these sponsorships that allow us to make more and larger awards to our young professionals (students and postdocs) to attend this important meeting. How can you help? First – renew your memberships for 2014. Second, find another hymenopterist and get them to join. Third, please download the sponsor form (<http://www.hymenopterists.org/sponsorship.php>) and coerce friends or businesses to sponsor the meeting, or even consider a personal tax deductible sponsorship to help out. If you would like to be a fundraiser for the Society and students and postdocs that we support, please let us know, we would be glad to have your help. ♦



Symposium honoring Bob Wharton's career. Left to right: Matt Yoder, Elijah Talamas, Andy Austin, Jim Woolley, Molly Hunter, Bob Wharton (the man himself!), John Heraty (kneeling), Andy Bennett, Mike Strand, Jim Whitfield. Entomological Society of America annual meeting, 2013.

Wasps, ants, and...bikinis? Recap of ISH Student Lunch in Austin, Texas

By: Miles Zhang, University of Manitoba, Winnipeg, Manitoba, Canada

As a budding hymenopterist attending his first ESA meeting, Austin has provided many memorable experiences. That said my highlight of the conference was undoubtedly the ISH student member lunch, organized by the ISH student rep Rebecca. A few generous regular ISH members sponsored a lunch for the students at the business meeting on Sunday, an offer that no starving student would say no to. About a dozen of us met up around noon on Sunday and began wandering around on 6th street in search of a good locale. It was a challenge to find a place that could accommodate so many people during the lunch time rush and we were all ecstatic to find a relatively empty spot.

It only took a few seconds to realize why the place wasn't all that popular for the conference crowd: out of all the places in downtown Austin, we ended up in a Bikinis Sports Bar & Grill. The wait staff, the decor, even the ketchup bottles consisted of bikini-clad women. While the food was not terrible (the vegetarians might disagree), I doubt anyone will ever sponsor us for another lunch. Restaurant choice aside it was a great opportunity to network with other hymenopterists-in-training from around the world, share our excitement for the upcoming ICH meeting in Cusco, Peru, and geek-out over our favorite group of insects. ♦



California museums visit

By: Mike Sharkey, University of Kentucky, Lexington, KY, USA

In mid-February I will be making a tour of a handful of Californian museums pulling Agathidinae (Braconidae). I hope to be going through some Malaise trap material as well as sorted and unsorted Braconidae. If anyone is actively revising a taxon that they would like me to pull for them let me know. Higher-level taxa like families would be too much to pull from Malaise samples unless they are rare. If your taxon is outside of the Braconidae I would probably need a few images to help me. Contact me at msharkey@uky.edu. ♦



Kosñipata Valley, Peru. Photo by Jo Potts (CC BY 2.0)
<http://flic.kr/p/rWahn>

Hymenoptera workshop in the Kosñipata Valley, Peru

By: Mike Sharkey, University of Kentucky, Lexington, KY, USA

After the ISH meeting, the second Hymenoptera course will be at Villa Carmen in the Kosñipata Valley (Peru) from July 27 to August 6. If you are interested in taking this course you will need to send your application to: http://www.cebioperu.org/courses/ii_neotropical_hymenoptera.php. There is room for 50 people at the Villa Carmen Research Station. Students and teachers will be a maximum of 25 people so there is room for more. A bus will leave from the congress directly to the station, and can include 25 more congress attendees. For info on Villa Carmen see http://www.amazonconservation.org/ourwork/research_villa-carmen.html

For additional information about the course contact Mike Sharkey msharkey@uky.edu or Frank Azorsa: frankazorsa@gmail.com ♦




Keep up to date on the Cusco meeting!

By: Katja Selmann, American Museum of Natural History, NY, USA

You can easily keep up to date as the Cusco meeting schedule, submission and registration progresses. The hymenopterists.org website has information about the meeting now in the menu (see below), including a handy link to the beautiful new Hymenoptera Congress website developed by organizer Frank Azorsa (at right):

<http://bit.ly/ICH2014> ❖

 **International Soc**



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Welcome

Welcome to the homepage of the International Society of Hymenopterists. We promote the diffusion of scientific research and promote the diffusion of information to all persons with an interest in hymenoptera, support our journals and our meetings, and support our members, as well as the discounted page for researchers, as well as the discounted page for members.

ISH also has a [sponsored member request form](#).

ISH publishes the *Journal of Hymenoptera Research*, *Hamuli*, our Society newsletter. Please visit our [publications page](#). Here you can find the Hamuli editor, Andy Deans (adeans@hymenopterists.org).

ISH constitution: [ISH Constitution](#) (Google Docs)

Please come join our [Facebook Group](#) to meet future members of the International Society of Hymenopterists. We are welcome to join us.

The current Executive Officers of the Society are:

- President John Heraty: john.heraty@hymenopterists.org
- President-Elect Jim Whitfield: jwhitfie@hymenopterists.org
- Past President Mike Sharkey: mshark@hymenopterists.org
- Editor Stefan Schmidt: Hymenoptera@hymenopterists.org
- Secretary Lars Krodmann: lars.krodmann@hymenopterists.org



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8th International Congress of Hymenopterists

CUSCO, PERU
July 20-25, 2014



The International Society of Hymenopterists gladly invites hymenopterists from all over the world to the 8th International Congress of Hymenopterists. The meeting will be held in Cusco, Peru, 20-25 July 2014. This will be a forum for the dynamic exchange of information and ideas relevant to those interested in Hymenoptera. Your input is needed to make this event a success; suggestions for symposia, special sessions and/or keynote speakers will be particularly welcomed.

Location for the Congress

This event will be held in the convention center of the **Hotel San Antonio**. The Center counts with a main room with 200 person seating capacity. The convention center has access to Wi-Fi Internet, wireless and analog microphones. The Hotel is located 10 minutes away from the Alejandro Velasco Astete International Airport of Cusco and near the Cusco historic center.

<http://www.hotelesjoseantonio.com/en/cusco/evntos/>

<http://bit.ly/ICH2014>

Planning your ISH Machu Picchu trip

By: John Heraty, University of California at Riverside, USA

The Thursday day trip during the congress will likely be to local archaeological sites around Cusco. The 5-day post-congress Machu Picchu package includes collecting and permits. Alternately, you could book through the hotel for a day trip to MP on the Thursday, or a shorter two day trip after the congress. For the best MP experience, it is best to take the train out on one day, spend the night in Aguas Calientes, and then get up at 3:30-4 AM (yes, that early) to line up for the first buses up to Machu Picchu. Some people start hiking up at 2AM to be there for sunrise. The early arrival lets you take in the sites without the press of too many tourists. If on your own, you should purchase your entry and bus tickets into MP in Aguas Calientes as soon as you get there. If you want to hike to the top of Huayna Picchu, it is best to arrive on the first buses and then go directly to the HP entry gate. There are limitations to the number of people that go up HP each day. Bring insect repellent for the ceratopogonids and you need your passport for entry into MP. ❖

ISH travel awards to 8th ICH in Cusco, Peru, July 20-25, 2014: Call for proposals

The International Society of Hymenopterists invites student and postgraduate researchers (recently graduated or postdoctoral researchers) to submit applications for travel awards to the 8th congress in Peru from July 20-25, 2014. Funding for awards is limited, with a maximum award of \$1500 plus a registration waiver (\$240). Proposals will be competitively judged based on a consideration of the following factors: a) presentation of a poster or oral presentation (abstract and title included); b) one page resume; c) one page letter from supervisor, d) indication of any other potential funding source.

Proposals are due: February 27, 2014!

Travel Award Program Details:

1. Eligibility: current graduate and postgraduate students; must be members in good standing of the International Hymenopterists Society; eligible applicants may not have received a previous ISH travel award (*e.g.*, to ICE in Korea).
2. Provide a brief budget for the trip. Are other funding sources available?
3. Awards: Typical award amounts will range from \$500 to \$1500 plus a waiver of registration fees.
4. Applications: in single spaced 12 point Times, 1 inch (2.54 cm) margins:
 - A. 1 page that includes the title and abstract of the presentation (indicate if you plan a poster or oral presentation), a brief outline of the overall research being conducted, and a brief budget (<\$1500). Please be realistic about what you will need. Also, please state if you can still attend with a lesser award (\$500-1000 plus a registration waiver).
 - B. 1-2 page detailed biography with publications and presentations.
 - C. 1 page statement from your Major Professor (or advisor) that indicates your status and a recommendation for this award.

Please email applications as a single pdf file to Jim Whitfield (jwhitfie@life.illinois.edu) on or before **February 27, 2014**. Successful applicants will be notified around mid-March. ❖

Treasurer's Treatise

By: Craig Brabant, University of Wisconsin, Madison, WI, USA

As mentioned earlier in this issue, 2013 marked the Society's transition to an online-only journal. However, the last bulk mailing to subscribers of the print copy of the 2012 *Journal of Hymenoptera Research* volumes occurred in January 2013. The two additional volumes of the *JHR* published in 2012 resulted in significantly higher printing and shipping charges for the 2012 volumes than those of 2011. Although this seriously depleted our working account funds in 2013, these were the last printing/shipping invoices we will receive and therefore our financial situation looking forward is quite positive.

Our primary source of income is membership dues; each renewal or new member payment allows the Society to offer greater travel grant opportunities. Also, authors currently pay page charges for articles in the *JHR*; these page charges are calculated to just cover the cost of making each volume freely accessible online. As we rebuild our working accounts to higher levels, we have the potential to perhaps offer reduced or waived author's page charges in the future. So, I'll echo our Secretary's and President's sentiments—renew early and recruit new members! The slides from the Treasurer's report presented at the ESA meetings in Austin are below and on the next page. ❖

Income	2013 (05 Nov.)	2012
Reg. members	\$6,178.00	\$8,550.00
Students	\$525.00	\$675.00
Institutions	\$0.00	\$4,092.00
Life members	\$0.00	\$0.00
Page charges	\$9,328.91*	\$11,507.93
Misc. pubs	\$0.00	\$30.00
Back issues	\$0.00	\$55.00
Taxapad	\$2,850.00	\$2,720.00
Interest	\$1.27	\$16.44
Donations	\$210.00	\$347.00
Totals:	\$19,093.18	\$27,993.37

*There is currently a total of \$2,541.90 in outstanding page charges.

continued—

—continued

Expenses	2013 (05 Nov.)	2012
JHR	\$12,750.56	\$27,803.23
Travel awards	\$0.00	\$4,025.00
CC processing	\$682.73	\$947.23
Bank fees	\$60.00	\$140.00
PayPal fees	\$237.09	\$267.50
JHR refunds	\$192.00	\$0.00
Misc. expenses	\$196.05	\$0.00
Business mtgs.	\$338.97	\$907.86
Taxapad	\$2,565.00	\$2,448.00
To endowment:	\$210.00	\$382.00
Totals:	\$17,232.40	\$36,920.82

Current balances, working accounts	
UWCU - checking	\$1,941.83
UWCU - Money Market checking	\$2,000.00
UWCU - savings	\$5.00
PayPal	\$2.16
Total:	\$3,948.99*

*There is currently a total of \$2,541.90 in outstanding page charges; year end total should thus be ~\$6,500.00.



Call for Distinguished Researcher and Service Award nominations.

Details for nomination and previous recipients are available at <http://www.hymenopterists.org/award.php>

Please send nominations packages as a single pdf document to Norman Johnson (johnson.2@osu.edu) before March 31. ❖

The steps of sectioning

By: Sal Anzaldo, Arizona State University, Tempe, AZ, USA

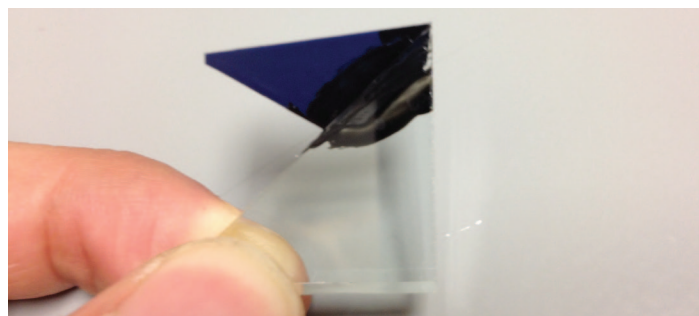
Do you ever look at an insect part and think, “Wow, I wonder what 1.5 micrometer thick slices of it would look like in series from one end to the other, stained to maximize contrast between different tissues?” No? Well you should. You really should.

Sectioning is a fairly time consuming process, but none of the individual steps are particularly complicated. They are as follows:

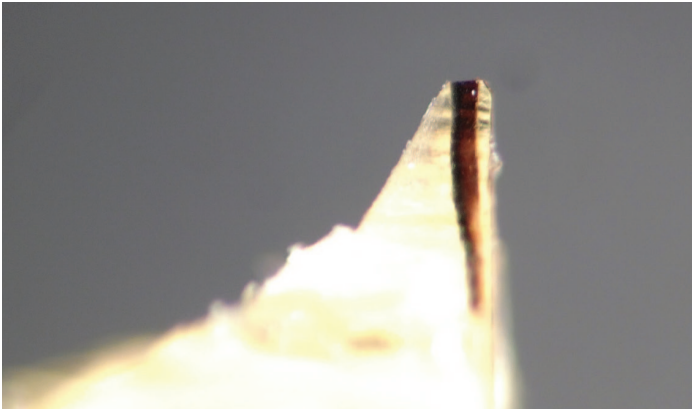
1. Go catch something. Make sure it's awesome. Then kill it (with Karnovsky's fixative). Examples of awesome things: gasteruptiid metatibiae, evaniid metatibiae, aulacid metatibiae, peleciniid metatibiae, and trigonalid metatibiae. There are probably other things. Actually, everything.
2. After ~48 hours in the fixative, rinse it off with sodium cacodylate buffer. Then rinse that off with water.
3. The alcohol series: the water needs to be removed from the specimen slowly in increasing concentrations of ethanol. Remove the structure you will section (how about... the metatibia of a trigonalid? This trigonalid.). Then move the sample to acetone.
4. Embedding: leave the specimen in a 1:1 mixture of acetone and eponate resin overnight. Then just eponate. Then put the sample in a special mold with fresh eponate, and put it in an oven so it hardens. When you take it out, it will look like this:



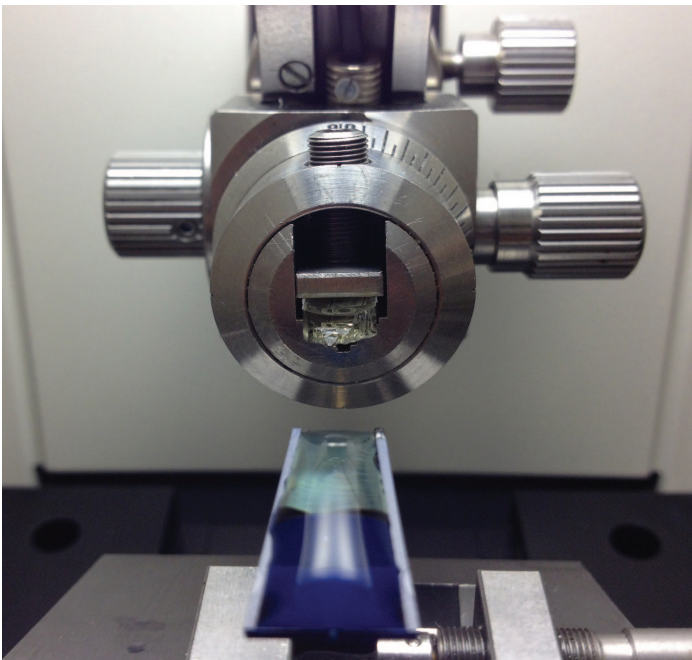
5. Make a glass knife. Glue a little boat to it that can hold water.



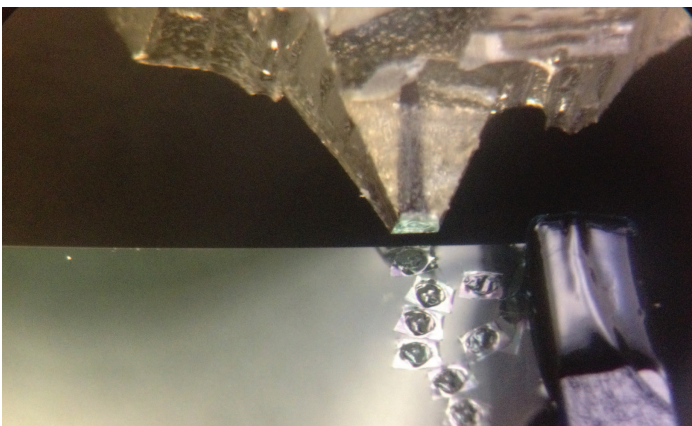
6. Shape the block. The cutting surface needs to be as small as possible, or your knife won't last long.



7. Put your sample and glass knife in the microtome. Line everything up perfectly.



8. Start making sections!



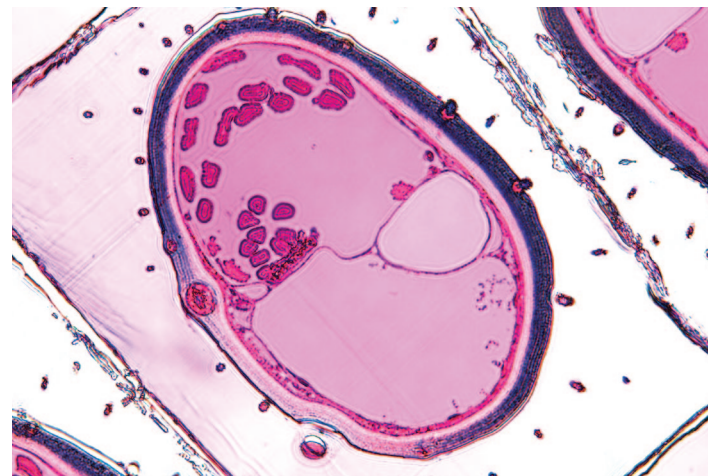
9. Corral sections away from the blade with an eyelash tool (an eyelash glued to a stick) and scoop them up with a loop tool (a loop of wire glued to a stick). Deposit sections on a slide.



10. Heat the slide so water evaporates, adhering sections to the glass.
11. Stain them. Toluidine blue and safranin works nicely.
12. Examine the end product:



13. Now look at all of your pretty sections!



Taking into account the annoying human behaviors of eating and sleeping, the whole process takes me about a week from specimen acquisition to section viewing. Time consuming, but well worth it. (All photos by me, Sal Anzaldo, and they're available via this link as (CC BY 2.0): <http://flic.kr/s/aHsjRRv4a4>) ♦



ANT COURSE 2014 Borneo - Maliau Basin (July 21–31, 2014)

<http://research.calacademy.org/ent/courses/ant>

IMPORTANT DATES

April 1, 2014 APPLICATION DEADLINE

July 20 participants arrive in Kota Kinabalu

July 21 Depart Kota Kinabalu: 6-8 hour bus ride to Maliau Basin

July 31 Depart Maliau Basin to Kota Kinabalu

COURSE OBJECTIVES.—ANT COURSE is designed for systematists, ecologists, behaviorists, conservation biologists, and other biologists whose research requires a greater understanding of ant taxonomy and field techniques. In 2014, emphasis is on the identification of the ant genera and species occurring in the Asian tropics. Lectures will include background information on the ecology, life histories and evolution of ants. Field trips emphasize collecting and sampling techniques, and associated lab work focuses specimen preparation, sorting and labeling. Information on equipment, literature, and myrmecological contacts are also presented.

COURSE SIGNIFICANCE.—Ant Course is a unique opportunity to acquire training that is unavailable else-

where. This course will provide students with 1) the confidence and skills to identify Southeast Asian tropical ant genera; 2) an understanding of modern specimen processing and curation techniques; 3) an appreciation for the biological diversity of ants; and 4) experience keying to the species level.

Application link: <http://bit.ly/AntCourse2014>

SPONSORED BY.—California Academy of Sciences and The Arthur Lawrence Green Memorial Fund, Museum of Comparative Zoology, Harvard University.

LOCATION.—ANT COURSE will be based at the Maliau Basin Studies Centre in Sabah, Malaysia. The Centre is part of the Maliau Basin Conservation Area that includes 12 forest types, comprising mainly lower montane forest dominated by *Agathis* trees, montane heath forest and lowland, and hill dipterocarp forest.

PARTICIPANT ACCEPTANCE CRITERIA.—ANT COURSE is open to all interested individuals, including students, professors and motivated amateurs (citizen scientists). Priority will be given to those students for whom the course will have a significant impact on their research with ants. We aim to include students with a diverse interest in biology, including ant systematics, ecology, behavioral biology, genetics, and conservation. An entomological background is not required. The high instructor to student ratio will allow students to receive individual attention. ANT COURSE is presented in English and limited to 30 participants.

COSTS.—Course fees for the 10-day COURSE are \$975 for current students (undergraduate and graduate) and \$1275 for non-students (postdocs and professionals). Transportation costs between home and Kota Kinabalu, and hotel fees in Kota Kinabalu are to be borne by all participants. Pay course fees by July 1 at: https://www.calacademy.org/tickets/ant_course/.

FELLOWSHIPS.—Those interested in attending the course should seek all possible avenues to secure funding on their own for the course. Each year we strive to raise funds to support a few students by offering discounted tuition fees. You should only apply for the Ant Course fellowship if you cannot find other support and it is essential for your participation in the course. Please notify the course if your funding request status changes before the

application due date.

COURSE APPLICATION.—Application and course information at <http://www.antweb.org>. The first step is to fill out a form at: <http://bit.ly/AntCourse2014> Note this form requires a short statement of your research interests and future plans and a statement of your reasons for wishing to participate in the course. Also requires is one letter of reference from a professor or colleague familiar with your work to be submitted by the referee at: <http://bit.ly/AntCourseLetters>

ANT COURSE is limited to 30 participants. Selection of participants will be carried out by committee, based on your reasons for wishing to take the course at this time. Priority will be given to those students for whom the course will have a significant impact on their research with ants. Because the Course is offered yearly, and because many well-qualified candidates are not accepted because of limited capacity, we urge applicants not selected for this session to apply again the following year.

2014 INSTRUCTORS

Brian Fisher (Coordinator)
 LeeAnne Alsonso
 Himender Bharti
 Katsuyuki Eguchi
 Flavia Esteves
 Brian Fisher
 Benoit Guénard
 Roberto Keller
 Laurent Keller
 Jack Longino
 Corrie Moreau
 Chrstian Peeters
 Simon Robson
 Eli Sarnat
 Steve Shattuck
 Andy Suarez
 Phil Ward



Malaysian Collaborators.—Dr. Charles Varaiappan, Director & Dr. Bakhtiar Yahya, Institute for Tropical Biology & Conservation, University of Malaysia, Sabah; Dr. Arthur Y. C. Chung, Forest Research Centre, Sabah Forestry Department.

All questions should be directed to the ANT COURSE website: <http://research.calacademy.org/ent/courses/ant> ❖

Hymenoptera at the Frost Entomological Museum

By: Angela Hoover & Andy Deans, Frost Entomological Museum, Pennsylvania State University, University Park, PA, USA

The Frost Entomological Museum, located on The Pennsylvania State University, is home to roughly a million and a half (two million if you include the five densely packed vials of hypogastrurid collembolans, but that's another story) pinned, slide-mounted, and ethanol preserved insect specimens. Of these, there are 28,863 pinned insects in the Hymenoptera cabinets (see figure below).

One of the issues that the Frost has had in regards to the Hymenoptera collection in recent years is the almost total lack of input from hymenopterists. The museum has suffered in silent obscurity, and its store of insect information has remained largely locked away and out of sight for years. While a fair number of our hymns are identified to the species level, there remains a number of taxa that are only determined as far as family. Some of these identifications are a shade dubious as well (*e.g.*, one box of green lacewings (Chrysopidae) labeled “Hymenoptera”). Woefully, there is an entire cabinet of hymenopterans that remain labeled as merely “Unidentified Hymenoptera”. Among the ranks of the unidentified, formicids and ichneumonoids are the most numerous, perhaps because of their ease of capture and abundance in sampling.

However, new and exciting things are on the horizon for the Frost Museum's hymenopterans! The museum is making a push to both expand the Hymenoptera collection, and digitize the collection. We're aggressively loaning specimens to experts who can help us determine them to species, and we've already grown the Evaniidae and Ceraphronoidea substantially. Watch for great things! ❖



Andrenidae	Anthophoridae	Apidae	Braconidae	Cynipidae
Formicidae	Megachilidae	Tenthredinidae	Ichneumonidae	Pompilidae
Pteromalidae	Sphecidae	Vespidae	"Hymenoptera"	



Grad student opportunities!

By: Andy Deans, Frost Entomological Museum, Pennsylvania State University, University Park, PA, USA

Multiple grad student opportunities are available in my lab for students interested in Ceraphronoidea systematics, biodiversity informatics, and advanced morphological approaches. Mini-grants are available for small, student-driven projects, and there will be extensive travel to foreign countries, both for museum visits and for collecting. Inquiries should be sent to me: adeans@psu.edu ❖

Authors' Instructions

Have an article, note, opinion piece, news item, story, photo, poem, joke, or other item you'd like to publish in *Hamuli*? **Current members** of the International Society of Hymenopterists are welcome to submit materials for publication at **no cost**. Just send your text to the editor (adeans@gmail.com) as .rtf or .doc files, and please send include images as separate .jpg or .tif files (*i.e.*, not embedded in the word processing file). Make sure images are of a reasonable resolution: larger than 500 x 375 pixels, with a resolution of 72 pixels per inch (or 28 pixels per cm).

Not a member of ISH? No problem! You can use the form below to become a member, or you can visit our web-site (<http://hymenopterists.org>) to join / pay dues electronically.

Don't want to become a member, but you still want to publish in *Hamuli*? Or perhaps you want to advertise in *Hamuli*? Still not a problem! Just send an email to the editor (adeans@gmail.com) for an estimate.

2014 Membership Information (visit *hymenopterists.org* for more options!)

- [] \$15 Student (requires signature of advisor: _____)
 [] \$45 Regular
 [] \$5 Family member (requires association with another member: _____)
 [] \$750 Life

Fees listed in US\$. Checks should be made out to *International Society of Hymenopterists*. For payment by credit card please add \$2.00 processing fee.

Name: _____

Address: _____

Phone: _____

Email: _____

Interests: _____

credit card #: _____

credit card type: [] Visa [] Mastercard

security code: _____ expiration date: _____

signature: _____

name on card: _____

send payment to:

Craig M. Brabant, Treasurer ISH

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