



Cornell University
College of Agriculture and Life Sciences
Department of Entomology

Greetings From Cornell Entomology Department!

Despite the tough economic times (and low funding rates at national science agencies) our department continues to excel. In 2011 our faculty obtained new grants totaling more than \$10,000,000. We continue to train outstanding graduate and undergraduate students (page 7), and once again held the premier science outreach event (Insectapalooza) on campus. Our talented faculty, staff and students conduct important research, including work on new invasive insects that threaten the livelihood of growers in our state (pages 4-5).

Sadly, 2011 saw the departure of Rick Hoebeke and the retirement of Ward Tingey (page 7). Rick and Ward were tremendous long time contributors to the department. We wish them well in their new lives in Georgia and North Carolina, respectively.

We are very happy to have Dr. Katja Poveda (Assistant Professor) and Jason Dombroskie (Senior Extension Associate) join us (in January, page 9) and we look forward to having them here for many years. It has been another productive year in the department, as you will see throughout the pages of the newsletter. Our graduate and undergraduate programs remain very strong, and our faculty staff, students and alumni continue to bring in numerous awards and honors.

This year's newsletter is brought to you through the hard work of the Extension and Outreach Committee (page 7). We hope you will enjoy reading about our activities for the last year. As always, we hope to see you at the Cornell mixer at this year's ESA meeting in Knoxville (November 11-14). Also, we would love to hear from you and learn what new and exciting things you are doing. Finally, please remember to stop by and visit us on either campus the next time you have an opportunity. We appreciate the generous support that our alumni have provided in the past and encourage you to consider the opportunities to help that are listed on page 11.

Jeff Scott, Department Chair

Read about the invasive insects pictured to the right on page 4 "Invaders at the Gate"

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Undergraduate Publications - 2011

(Undergraduate co-authors are indicated in bold)

Adio A.M., Casteel, C.L., De Vos, M., Kim, J.H., Joshi, V., Li, B., **Juéry, C., Daron, J.**, Kliebenstein, D.J. and Jander, G. 2011. Biosynthesis and defensive function of N⁶-acetylornithine, a jasmonate-induced Arabidopsis metabolite. *Plant Cell* 23: 3303-3318.

Auletta, A. and Rayor, L.S. 2011. Preferential prey sharing among kin not found in the social huntsman spider, *Delena cancerides* (Sparassidae). *Journal of Arachnology* 39: 258-262.

Finkbeiner, S.D., Reed, R.D., Dirig, R. and Losey, J.E. 2011. The role of environmental factors in the Northeastern range expansion of *Papilio cressphontes* Cramer (Papilionidae). *Journal of the Lepidopterists' Society* 65: 119-125.

Girard, M.B., Mattila, H.R. and Seeley, T.D. 2011. Recruitment-dance signals draw larger audiences when honey bee colonies have multiple patrines. *Insectes Sociaux* 58: 77-86.

López-Urbe, M. M., **Green, A.N.**, Ramírez, S.R., Bodganowicz, S.M. and Danforth, B.N. 2011. Isolation and cross-species characterization of polymorphic microsatellites for the orchid bee *Eulaema meriana* (Hymenoptera: Apidae: Euglossini). *Conservation Genetic Resources* 3: 21-23.

Seeley, T.D. and **Griffin, S.R.** 2011. Small-cell comb does not control *Varroa* mites in colonies of honey bees of European origin. *Apidologie* 42: 526-532.

Insectapalooza 2011

Insectapalooza only keeps getting better! This year, Insectapalooza's theme was "The Good, the Bad, and the Bugly", to emphasize how arthropods can be beneficial, pestiferous, invasive, or simply amazing. Displays in each room were coordinated to emphasize these themes with rooms highlighting pollination, natural enemies, plant-insect interactions, evolution and diversity, invasive insects, bug innards, and, of course, the ever popular Arthropod Zoo, Butterfly Room, and Pondering Insects. Along with 30 interactive displays from members of the Department of Entomology, we had guest displays from the State Museum in Albany, Museum of the Earth, Ithaca Children's Garden, and 4H. Over 2,000 people attended.

Insectapalooza was organized by Drs. Linda Rayor and John Sanderson, with lots of assistance from many people, but undergraduates Mike Garvey and Ryan Reynolds did an exceptional amount of work. Susan Villarreal drew the catchy "good, bad, and bugly" poster, as well as designed and printed the t-shirts. Over 120 people volunteered to make Insectapalooza happen. As always, one of the best things about Insectapalooza is that a surprising number of our alumni come back to help year after year, including Jeff Petracca for the Butterfly Room and Anthony Auletta, who brought over a dozen scorpions for the Zoo. In addition, every year Insectapalooza has become a draw for students who are considering coming to Cornell as entomology majors. To date, ~10 of our current majors visited Cornell during Insectapalooza, and they decided that this was where they wanted to go to school. We assume that some proportion of the kids who are bringing their parents from the entire Northeastern US will eventually join our department. Insectapalooza was generously supported by JP McHale Pest Management, First-Year Parents' Weekend, and, for the first time, we charged the nominal entrance fee of \$1. Since Insectapalooza is one of the largest science outreach events at Cornell, we will coordinate with the First-Year Parents' Weekend for the near future.

We look forward to seeing you on 20 October 2012 for the next Insectapalooza!

Author: Linda Rayor





Top: Fans swarm into the Arthropod Zoo to look at the over 80 different cages of insects, spiders, centipedes, scorpions and millipedes), credit: Chris Kitchen

Bottom Left: Ryan Reynolds, one of the undergraduate organizers, talks about butterfly biology, credit: Chris Kitchen

Bottom Right: "Good/Bad/Bugly" poster graphic by Susan Villareal



With names like the European corn borer, the Asian longhorned beetle and the imported cabbageworm, it is easy to see that many of our damaging insect pests did not originate in the US. With the global movement of plants and plant products, entomologists are constantly dealing with new invasive species. To provide an overview of the importance of invasive species, Dr. Ann Hajek and Dr. Jan Nyrop have developed Entomology 2020, which is simply called "Invasions". The class attracts students from a number of disciplines who learn about the biology and ecology of invasive plants, animals and microbes and to learn important fundamental concepts in biology. The students are challenged with such questions as: can we predict what species will become invasive; what are the social implications of invasives, and is this just the cost of doing business in a world market? This class and the examples of programs dealing with invasive insects attest to the challenges of providing food security in the 21st century. Past newsletters have spotlighted some of the invasive insect species in New York; here is an update highlighting a few of greatest concern.

Swede midge (*Contarinia nasturtii* Kieffer), a pest of the crucifer family (cabbage, broccoli, cauliflower, canola, etc.) is endemic to Europe and Southeast Asia. It was first identified in North America in Ontario, Canada, in 2000 and in the United States in 2004, in Niagara County, NY. Swede midge is now found throughout Ontario and Quebec, Canada and in many counties in NY, and in a few counties in surrounding states. Prior to its arrival in the US, Dr. Tony Shelton led a proactive research and extension program to help monitor and manage swede midge. These efforts have slowed the spread of this pest. In areas where swede midge has become established, research has indicated it can be controlled with crop rotations and judicious use of insecticides in most situations. Working with Cornell extension educators, Shelton established the website, Swede Midge Information Center for the US, which provides comprehensive information on this pest and won the 2011 Outstanding New Extension Publication Award from the NY Association of Agricultural Agents (<http://web.entomology.cornell.edu/shelton/swede-midge/index.html>).



Swede midge adult, K. Schrameyer, ALLB, Hellbronn

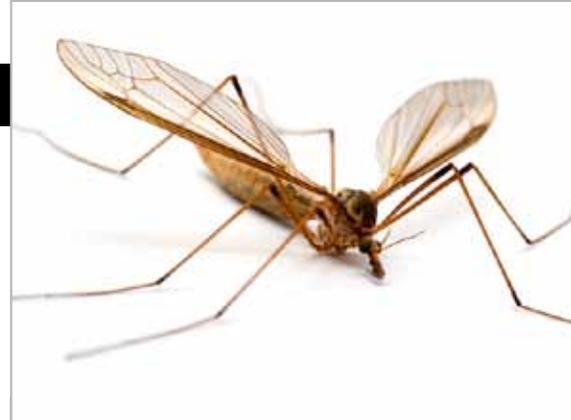


Leek Moth Adult, Dan Olmstead, Entomology, Cornell

Like the swede midge, the **leek moth** (*Acrolepiopsis assectella* Zeller) is not native to North America but was first confirmed in Ontario, Canada, in 1993. It was first discovered in the US in 2009 in Plattsburgh, NY (Clinton County) and has now spread to at least one other county in Northern NY as well as to Vermont. Leek moth is restricted to the Allium family (onions, leeks, garlic, etc.) and is a severe threat to the \$50M onion industry in NY, as well as to the many smaller plantings of other Allium crops. Dr. Shelton's research program began working on this pest by establishing a colony at Geneva to study its behavior and ecology and what management practices could be utilized. Working with Amy Ivy, an extension educator in the North Country, they established the website, Leek Moth Information Center for the US, which provides comprehensive information on this pest and focuses on using this knowledge to reduce its spread and manage it where it has become established (<http://web.entomology.cornell.edu/shelton/leek-moth/index.html>).

The **European crane fly** (*Tipula paludosa* Meigen) and "**marsh**" or "**common**" **crane fly** (*Tipula oleracea* L.), collectively known as leatherjackets or invasive crane flies, continue to expand their range of impact across eastern North America. Both species are native to Europe but have established broad North American distributions along western (British Columbia, Canada south to California) and eastern (Newfoundland, Canada south to New York) coasts. Both species are most prominently pests of grasses grown as turf (home lawns, parks and athletic fields) where the soil-dwelling larvae cause strong reductions in turf quality and health. Additionally, they are considered a nuisance when swarms of large adult flies emerge during the spring and fall. Work by Dr. Matt Petersen has focused

on determining the potential distribution of these species, and detailing what their range of impact will be across susceptible commodities. Survey work aided by citizen scientists and region collaborators has found considerable range extensions from known upstate New York State distributions (Buffalo, Rochester), southwest through Chautauqua Co. (both species) and into Ohio (*T. oleracea*), and southeast through Broome Co, NY (*T. oleracea*). As distributions expand, so does the potential for impact. Recent studies have found that across these regions, damage caused by *T. paludosa* is becoming evident in pasture and forage grass production. When detected, it was found to be the dominant insect species in these systems. The potential for expanded impact to perennial grasses grown for biofuel production is now under investigation. To lessen this threat, current work is aimed at examining the environmental factors that determine whether invasive crane flies will be found in potential habitats, and then studying targeted chemical and cultural integrated pest management methods aimed at reducing their impact across these areas.



European Crane Fly, Dan Olmstead, Entomology, Cornell



BMSB, Peter Jentsch, Entomology, Cornell

The **brown marmorated stink bug (BMSB)**, *Halyomorpha halys* (Stål), is a recent addition to the urban and agricultural landscape in the Hudson Valley and much of the rest of the state. Native to Asia, it was first observed invading NY homes in 2008, and populations have been steadily on the rise over the past three years, primarily in southern parts of the region. The BMSB does not bite or sting people, pets or livestock. However, it inserts its mouthparts into plants and feeds on the juices found in stems, leaves and seeds. The insect has shown a wide host range including vegetables, field crops, fruits and some ornamental trees and shrubs. In some mid-Atlantic states, this pest has caused severe damage to crops and home gardens, while in NY it has become a residential nuisance as adults congregate on and in houses during the fall while seeking winter shelter. New York is part of a large regional USDA-funded project focused on all aspects of its biology, development, behavior, and potential management. In 2011, Peter Jentsch and Dr. Art Agnello coordinated a statewide trapping and monitoring effort to document its occurrence and distribution, and to determine whether it was causing any economic injury to crops. So far, very few have been found in NY doing any damage in agronomic settings, but this insect will likely be of greater concern in the coming years. Informational and data-gathering websites have been set up by the NE IPM Center (<http://www.northeastipm.org/bmsb.cfm>) and the Hudson Valley Regional Fruit Program (<http://hudsonvf.cce.cornell.edu/bmsb1.html>).

This past summer an invasive fruit pest, the **spotted wing drosophila (SWD)** *Drosophila suzukii* (Matsumura), was discovered in NY by Cornell entomologists. Originally from Asia, SWD was first reported in California in 2008. Since then, it has spread throughout much of North America. Similar in overall appearance to *Drosophila melanogaster* of genetics fame, SWD is a particularly serious threat to soft-skinned fruit such as raspberries, blueberries, sweet cherries and strawberries. Using its robust ovipositor, SWD females are capable of laying eggs in ripening, marketable fruit, whereas most other *Drosophila* species oviposit in overripe fruit. Even though SWD appeared late in the 2011 field season in NY, some raspberry growers had to shut down due to fruit contamination. In other areas where it has been present longer, huge populations have been observed. The only established remedy for SWD is frequent insecticide applications once the flies have been detected. Dr. Greg Loeb and other Cornell entomologists are joining forces with collaborating universities to initiate multifaceted research on the ecology and management of SWD, with the hopes of identifying key risk factors and development of control alternatives. Additional information can be found on a fact sheet from Michigan State University, where SWD has been present since 2010 (<http://www.ipm.msu.edu/SWD/E-3140.pdf>).



Spotted wing Drosophila, M. Hauser, Cdfa

Authors: Tony Shelton, Matt Petersen, Art Agnello, and Greg Loeb

Course Focus

A new course about microbes associated with invertebrates is being taught in spring 2012: *Microbe/Invertebrate Associations: Diversity, Ecology and Evolution* (Entomology 4630) by Ann Hajek. The *Invertebrate Pathology* lecture+lab course Ann has taught for many years was mainly directed toward graduate students. Now, there are fewer graduate students in our department, they are taking fewer classes and there are fewer teaching assistants (a requirement for lab classes). Therefore, to attract more undergraduate students, the course has been broadened to cover microbial pathogens and symbionts as well as microbes vectored by invertebrates, with 3 one-hour lecture periods per week.

One aspect of the previous class that was very popular with students was the lab, viewing different microbes, infected hosts, learning methods and conducting experiments each week. To maintain this experiential aspect of the class, some lectures have become demonstration laboratories, with Dr. Louela Castrillo of the USDA ARS assisting. The students are also going on local field trips to the USDA ARS fungal culture collection (11,400 isolates from around the world) and the Vet School Diagnostic Lab, as well as participating in a computer-based lab about molecular identification of microbes. In addition, to involve the students in the subjects, each student will gain experience reading primary literature and helping to explain the research conducted to the class. During spring 2012, the 13 students taking the class range from freshmen to graduate students, from numerous departments, but most have an Entomology background. This new class is going very well, students are very engaged and it's hoped that enrollment will continue to climb when this course is offered again.

Author: Professor Ann Hajek

The "Summer Field Course", which is officially named *Agricultural Application of Plant Health Concepts – PLPA 4190/ ENTOM 4190*, is a two-credit course offered each summer. This course provides graduate students in CALS an opportunity to observe first-hand how insect pests and diseases affect agriculture and other plant-based industries in New York and how these problems are managed. Students tour a variety of diverse agricultural production areas in central New York where commodities such as horticultural crops (fruit and vegetables), field crops (grains), forest and shade trees, and turf are grown. Faculty discuss how insect pests and diseases are identified and managed and also may show students new management approaches that they are investigating. Extension personnel also are involved and they discuss their role in communicating pest and disease management information to the industry. The real treat for the students, however, is to talk directly with growers on their farms about the pest and disease issues they face as well as other important topics such as production, marketing and labor.



This is a Fall-listed course that actually takes place between the Spring and Fall semesters in order to observe seasonal diseases and insect pests. The course consists of day-long field trips, usually preceded by an introductory presentation. The schedule includes nine field trips, concentrated in June. Selected faculty from Entomology and Plant Pathology and Plant Microbe Biology (from Ithaca and Geneva campuses) are asked to lead a discussion and field trip related to the commodity that they work with. The course is coordinated by Herb Aldwinckle, Department of Plant Pathology and Plant-Microbe Biology, and Brian Nault.

Author: Professor Brian Nault

Greg Loeb shows students that the strawberry sap beetle is one of the major pests of strawberry in New York. After consuming several handfuls of berries, the student in the dark blue shirt just learned where the strawberry sap beetle lays its eggs.



Early instar gypsy moth larva killed by the fungal pathogen *Entomophaga maimaiga* during May. Setae of the larva are covered by spores actively ejected from the surface of the cadaver. Photo by Ann Hajek

The first season of Dr. Linda S. Rayor's television series "Monster Bug Wars" premiered on the Science Channel on in March. **Monster Bug Wars** is about the behavior of predatory arthropods. Each of the six 1-hour episodes featured the behavior of five different pairs of predatory arthropods (ants, spiders, various insects, centipedes, scorpions) from Australia that come into conflict with one another. The show is fun, the science is accurate, and the macrovideography spectacular. The two human stars, Dr. Linda S. Rayor and Dr. Bryan Grieg Fry, University of Queensland, discussed the biology and behavioral strategies of the combatants. Most of Linda's interviews were filmed in the Cornell studio in the basement of Comstock. She has also filmed the 2nd season of **Monster Bug Wars**, based on Costa Rican arthropods, which aired in early 2012. The 2nd season had even better photography, graphics, and fewer distracting sound effects. The 1st season is available at Amazon.com.

Each year, students in Dr. Linda Rayor's Naturalist Outreach Speakers Bureau go into classrooms (Grade 2 - High School) to give free presentations about organismal biology and environmental science. This year, eight entomology majors and 15 other students gave 223 presentations to over 4800 people in schools and at the Sciencenter!

In conjunction with Cornell Cooperative Extension and NYS 4-H (funded by USDA Smith Lever), Dr. Linda Rayor has been producing K-12 STEM videos based on the biology presentations given by her Naturalist Outreach students. The first three videos have been posted on YouTube, with six more in the pipeline for 2012. The first video stars Entomology graduate student, Margarita Lopez-Uribe, talking about the importance of bees and bee diversity

(So many kinds of bees! <http://youtu.be/60o75z4tGRs>).

Check out Margarita's informative and appealing presentation.

Related STEM videos starring other Cornell students are: Reptiles (<http://youtu.be/xKNez5lmQZ8>), bats (<http://youtu.be/EJu5qZ5FZxw>), and mammal skulls (<http://youtu.be/wfABI5quQAU>). Search YouTube for 'naturalist outreach' for upcoming videos, including 'avoiding predators' by entomologists Heather Connelly & Jake Hurst and photos by the entire Department of Entomology.

Author: Linda Rayor

Insect Diagnostic Lab

Would you like to know more about an insect, or how to deal with an insect problem in or around the home, or on plants in your vegetable or flower garden, in your yard, or on indoor plants? If so, the Insect Diagnostic Lab, a program of Cornell Cooperative Extension in the Department of Entomology, can help. For a \$25 fee, an insect or related arthropod can be shipped to us, or a detailed photo can be emailed, for expert determination. Our newly hired diagnostician, Jason Dombroskie, Ph.D., has broad entomological knowledge, and many years of experience identifying insects and other arthropods. More information about this service, including a collection of factsheets covering commonly encountered outdoor and indoor insects, can be found at <http://entomology.cornell.edu/IDL>

Author: Jason Dombroskie

The Snodgrass and Wigglesworth Undergraduate Entomology Club (The Snodwigs, for short) is the University's undergraduate connection to insects. The Snodwigs have been expanding in both numbers and our outreach effort. Our weekly meetings often have guest presenters come to talk about their past, present, and future entomological work. We go on several camping and collecting trips throughout the year - brutal winter camping has become a favorite event! We contribute to outreach events, on and off campus. The Snodwigs play a significant role in Insectapalooza by organizing the live Butterfly Room, Cockroach Races, cricket cookies, Pondering Insects, Build-A-Bug, and face painting, in addition to having our members volunteer at nearly every display. A more recent development in our club is entomophagy. We have experience in baking crickets into cookies, but we've undertaken the more daring task of cooking full insect meals. We are always looking for ways to get involved and to bring in new members with an enthusiasm for insects!

Author: Ryan Reynolds

Ward Tingey Retires

2011 marked the end of an era with the retirement of Ward Tingey. Ward has been a faculty member in this department for 37 years during which he has provided distinguished and valuable service to the department, College and University. Ward was appointed as an Emeritus faculty member in 2012 and has moved to North Carolina where he is rumored to enjoy the winters far better than in Ithaca.

Awards and Honors

Students

Heather Connelly and Rakim Turnipseed won 2nd place in the Entomological Society of America 3-minute video contest for their video entitled "Insect detectives" on how to collect insects. <http://youtu.be/HpHnnhdumM>

Jacqueline Dillard received a three-year NSF Fellowship.

Maggie Douglas received the ESA Eastern Branch Asa Fitch Memorial Award for an outstanding Masters level graduate student, awarded March 2012.

Susan Finkbeiner ('10) won the President's Prize for her talk at the National Entomological Society of America Meetings in Reno (SysEB section) in November 2011.

Ordorm Huot received an NSF predoctoral Fellowship to pursue his Ph.D. in Entomology at Texas A&M.

Sarah Jandricic received the ESA Eastern Branch John Henry Comstock Award for an outstanding Ph.D. level graduate student, awarded March 2012. In addition, she was selected to receive the Paul J. Chapman fellowship for the 2011-12 academic year.

Mia Park was selected to receive the George S. Gyrisco Student Award in Entomology.

Susan Villarreal won an award for Best Student Oral Presentation at the 13th international meeting on Invertebrate Sound and Vibration.

The CALS Academic Excellence Award (for highest GPA in the major) went to **Yang Zhang**.

Faculty and Academic Staff

Art Agnello won the College of Agriculture and Life Sciences 2011 Award for Outstanding Accomplishments in Extension/Outreach.

Angela Douglas was named a Fellow of the Entomological Society of America, and presented the Founders' Memorial Award lecture in honor of Dr. Reginald Chapman at the 2011 Annual Meeting.

Jennifer Grant received the Entomological Foundation Award for Excellence in Integrated Pest Management at the ESA Eastern Branch Meeting, March 2012.

Ann Hajek received the Distinguished Scientist Award from the International Organization of Biological Control, Nearctic Regional Section. She was also named Honorary Professor in Zoology, Department of Agriculture and Ecology, Faculty of Life Sciences, University of Copenhagen (2011-2016), and Velux Visiting Professor, University of Copenhagen for 2 years, 2011-2012 (supported by the Villum Foundation). In addition, she was the Invited Speaker (sole awardee) for the 20th Annual H. R. MacCarthy Pest Management Lecture, jointly held by Simon Fraser University and the University

of British Columbia. Finally, she was a graduate student-selected speaker for a presentation to the Department of Entomology, University of Arkansas.

Laura Harrington received the ESA Eastern Branch Distinguished Achievement Award in Teaching, awarded in March 2012.

Greg Loeb was the recipient of the New York Wine & Grape Foundation Research Award for 2011.

Brian Nault and **Andrew Landers** both received the 2012 Excellence in IPM Award from the NYS IPM Program.

Don Rutz received the ESA Eastern Branch Distinguished Achievement Award in Extension, awarded in March 2012.

Tony Shelton won the Eastern Branch Entomological Society of America L. O. Howard Award, 2011, and was the Invited Plenary Speaker, Entomological Society of Canada, Halifax, NS, 2011. Additionally, he won the NYS Association of Ag Agents 2011 Outstanding New Extension Publication, on Swede Midge.

International Activities

Anurag Agrawal, Brian Lazzaro and **Jennifer Thaler** all participated in a joint Stockholm University-Cornell University Insect Science Symposium, Stockholm, Sweden.

Angela Douglas was the keynote speaker at the Conference on Genome Biology held by Australian Research Centre of Excellence, James Cook University, Australia. She also co-organized and presented the Symposium on Insect Symbioses at the Spring Meeting of the Society for General Microbiology, Harrogate, UK.

Cole Gilbert and **Linda Rayer**, along with former Cornell President **Dr. Frank Rhodes**, led a Cornell's Adult University (CAU) educational ecotour to the Galapagos Islands and the Ecuadorian Highlands. On the trip they snorkeled with sea turtles and sea lions, watched magnificent frigate birds courting, and walked among marine iguanas basking on black lava. Following the CAU tour, Linda and Cole visited current Cornell Entomology and Interdisciplinary Studies major Martin Zorrilla and his parents in the gorgeous Intag Cloud Forest Preserve in Ecuador, where they live and work to protect it from mining projects. Cole and Linda ended their trip in Bogota, Colombia where they attended the wedding of Entomology graduate student, Margarita Lopez-Urbe to Luis Duque, a graduate student in Crop & Soil Science. Margarita's wedding was attended by several other entomologists from Cornell and was a party to remember.

Linda Rayer and **Cole Gilbert** led another CAU educational ecotour to Alaska in June. Highlights of the trip included visits to Katmai, Denali and Kenai Fjords National Parks. While the large bears eating salmon, whales, and calving glaciers were highlights, the dominant insects were voracious black flies.

Continued on Page 11

Welcome Katja and Jason

The Department of Entomology is proud to announce the hiring of **Katja Poveda**, who joined the department on January 1, 2012 as an assistant professor. Katja is an expert in the field of agroecology of insects. She has a BS (Biology) from the Universidad Nacional de Colombia, and her Ph.D. (Summa cum laude) from the Institute of Agroecology, Georg-August-University Göttingen, Germany. She was a postdoctoral research associate working on the Diversification of Andean crop systems at local and landscape scales, and worked for the last year as a research associate in the Department of Entomology.



Katja Poveda

After an international search for a new senior extension associate, the Department of Entomology is proud to announce the hiring of **Dr. Jason Dombroskie**, who began in the department on January 3, 2012. In addition to his collection-based duties, he will serve as coordinator of the Cornell University Insect Diagnostic Laboratory.

Jason grew up in Ontario, where he worked as a naturalist and interpreter seasonally for ten years in Algonquin Provincial Park. Through this invaluable work experience, he honed his identification skills in groups as diverse as birds and fungi, but specialized in insects, especially moths. Jason obtained his B.Sc. with honors in biological sciences from the University of Guelph and just last year finished his Ph.D. (photo 1) in entomology from the University of Alberta. His thesis examined the systematics and evolution of tortricid moths and was the basis for the development of an interactive matrix-based key to the butterflies and moth subfamilies of Canada: [Matrix Key to Families, Subfamilies and Tribes of Lepidoptera of Canada](#). In his spare time, Jason is an avid insect collector (photo 2) and nature photographer and is excited to explore the Finger Lakes Region this summer.

Jason's broad knowledge of entomology has come in handy in the IDL where he is enjoying the challenge of identifying insects submitted from around the world. He is currently merging the diagnostic collection with the main collection to increase the strength of this resource. For his duties as collection manager, he has already gone through the collection updating the labeling and is actively curating the Lepidoptera collection. One of his largest tasks is incorporating the large Franclemont collection into the main collection, and developing an online list of our Lepidoptera holdings. All entomology alumni are welcome to swing by the collection to meet Jason and see the changes that he has made to the collection.

Author: Lisa Westcott and Professor Jim Liebherr



The newly minted Ph.D. after his dissertation defense. Can you spot the Cornellians?
Left to right: George Ball, Andrew Keddle, John Spence, Richard Brown, Felix Sperling, John Acorn, Jason Dombroskie & Bruce Hemming.



Jason with a Pepsis wasp

Graduating Student Activities and Plans

Undergraduates

Isa Betancourt

Throughout her time at Cornell, Isa Betancourt has enjoyed both the enriching community of people and the variety of academic and extracurricular opportunities the university has to offer. As a proud and driving member of Snodgrass and Wigglesworth, she has served as Secretary, Treasurer, and Co-President for the club. She has enjoyed inspiring and connecting people to nature through Insectapalooza and other departmental and Snodwiggs outreach events. Isa co-founded the Cornell Ukulele Club and contributed, through teamwork, to the national success of Cornell Women's Club Soccer. Last Spring she explored the biologically rich terrain of Costa Rica through a CIEE Tropical Ecology and Conservation study abroad field program. With a new-found appreciation for understanding the way insects and plants work and their intricate interactions, she doubled up and complimented her Entomology major by adding the Plant Sciences major the following fall. She has enjoyed involvement in research from simple exposure to conducting and designing experiments through work in Jennifer Thaler's, Linda Rayor's, and Bryan Danforth's labs, and in projects abroad. She looks forward to gaining more field experience after graduation before heading off to graduate school.



Chris Donovan

Chris is a senior graduating in May 2012 with a B.S. degree in entomology and microbiology. He is currently in the process of applying to medical school, which he hopes to begin later this year following graduation. Chris was first introduced to entomology from a medical perspective. After taking several classes in medical microbiology and various human pathogens, he discovered an interest in medical entomology and the roles insects play as disease vectors and pests. During the past summer, he was able to approach his interests in mosquito vector biology from a research perspective as a research assistant in Dr. Laura Harrington's lab. Outside of the entomology department, he is very active in the Cornell Big Brother Big Sister program and in various Global Health groups on campus. Although he will be graduating in a few short months, Chris hopes to carry on his interest in medical entomology as a medical student and beyond.



Graduates

Jacob Crawford

For his dissertation research (major professor, Brian Lazzaro), Jacob used population genomic approaches to infer the evolutionary forces shaping patterns of genetic variation across the genome of the African malaria mosquito, *Anopheles gambiae*. The goal of much of his work has been to identify genes, mostly immune-related, that exhibit the signature of historical bouts of natural selection. However, to build a context for such analyses and to test whether ecological shifts in the past affected patterns of genomic variation, he used statistical methods to distinguish between demographic hypotheses. From this analysis, he found that the genomes of *An. gambiae* bear the signature of an ancient population expansion that pre-dates the advent of agriculture, commonly thought to have been a major event in the history of this species, as well as ongoing migration among sub-groups. Leveraging this and other population models as neutral expectations, he identified several putative immune genes that showed patterns more consistent with natural selection than with neutral evolution. These results point to a subset of immune proteins that may be locked in an evolutionary arms-race with pathogens such as the *Plasmodium malaria* parasite. Jacob also had the opportunity to travel to Burkina Faso to conduct malaria infection studies with a second malaria vector, *Anopheles funestus*. This rare access to living *An. funestus* mosquitoes provided valuable mRNA that he sequenced and assembled into the first large-scale transcriptomic dataset for this species, vastly expanding the DNA sequence data available for future studies. Jacob plans to continue studying the evolution of *Anopheles* vectors and developing novel methods and genomic resources for these species.



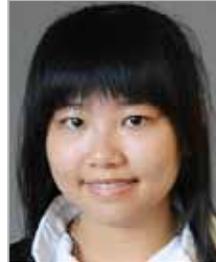
Scott McArt

Scott is graduating in May 2012 with a Ph.D. in entomology. He studies the ecology of insect-plant interactions. The three main findings from his Ph.D. are 1) How arthropod communities respond to plant genotypic diversity, 2) How herbivores reduce consumption in response to plant genotypic diversity, and 3) How Japanese beetles actually increase the fitness of a native plant by consuming it (via induced resistance to its native seed predators). Scott has thoroughly enjoyed his time in the department and at Cornell and he will be sad to leave! Post-Ph.D. plans are still up in the air, but will involve a postdoc or job somewhere in the US, Canada, or NZ.



Wu, Pei-Chun (Patricia)

Patricia attended and participated in Insectapalooza for three years, and served as Jugatae seminar coordinator for one year.



Yip, Eric

Eric studied the social behavior of the Australian huntsman spider, *Delena cancerides*, for his Ph.D. Unlike their mostly solitary relatives, these spiders live in family groups under the bark of dead trees. By installing windows into the spiders' homes and observing them in the field at night, Eric discovered that young spiders benefit from living in groups by sharing prey with their mother and older siblings. Older spiders face fierce competition for available bark and benefit by staying in their natal home until they are big enough to compete for bark with other spiders. After graduation, Eric will do postdoctoral research on other social spider systems.



Opportunities to Help

PINNED! - Purchase new collection equipment for that infamous Introductory Entomology Lab Collection and help launch the career of our next famous graduate - \$1500

BUGS-R-US - Sponsor Insectapalooza 2012. The department's one day open house is the premier science outreach event for the College of Agriculture and Life Sciences - \$4000.

HOW I SPENT MY SUMMER VACATION - Support an Undergraduate Summer Intern with a gift of \$5000. If you are interested in establishing an endowment for support of Undergraduate Summer Interns please contact Jeff Scott.

PAY THE RENT - Gifts of any size to the Entomology Excellence Fund to help us support graduate students are welcome. If you are interested in establishing an endowment for support of graduate training please contact Jeff Scott.

Please contact Jeff Scott (jgs5@cornell) if you would like more information or to discuss other giving opportunities.

Ann Hajek was the guest of the Bulgarian Ministry of Education, Youth and Science, to give a presentation plus attend a review of Bulgarian research on *Entomophaga maimaiga*. She also went to Denmark twice - to complete a book chapter; and to attend a workshop in insect pathogenic fungi (with collaborators from Canada and Switzerland, plus her Danish hosts) and work with a Danish scientist and her student. Ann and her postdoc, Ryan Kepler, are working on the fungal symbionts associated with *Sirex* species in Europe, the original home of *Sirex noctilio*. Ryan made a trip to Denmark to collect isolates stored by Dr. Iben Thomsen, as well as infested wood and then they both travelled to Denmark again as well as to Hungary. Their collaborator, Dr. Gyorgy Csoka, had identified and collected wood infested with *Sirex* from many sites in Hungary. They toured many of these sites and spent a week (Ann) or two (Ryan) isolating symbiotic fungi and parasitic nematodes from *Sirex noctilio* and *Sirex juvencus*. They attribute their ability to collect so much material, both from Hungary as well as from Denmark, during their first year of this study, to their excellent collaborators.



Ryan Kepler, r., with Gyorgy Csoka

Laura Harrington participated in the Cornell Global Health Field course in Moshi, Tanzania in June 2011.

Linda Rayor spent two months in Australia doing research on the evolution of sociality in endemic Australian huntsman spiders. Although based at the Australian National University in Canberra where Linda is an adjunct faculty member, she also collected spiders in rainforests near Cairns, in the red dirt outback, and eucalypt forests near Melbourne. Linda reports spending over two hours to capture one of the largest huntsman spider species in the world by gently coaxing a large female down a tall tree using a smaller tree as a prod!

Tony Shelton presented 2 invited lectures at the Global Biosafety Management Program, Jaipur, India, 2011.



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Carl J. Jones (B.S. '70) died in Tennessee on February 10, 2012 at the age of 63. He received his B.S. degree from Cornell University, and his M.S. and Ph.D. from the University of Wyoming. A leader in the field of medical and veterinary entomology, Jones was on the faculty at the University of Illinois College of Veterinary Medicine from 1989 until moving to the University of Tennessee in 2000, where he was professor and head of the University of Tennessee's Department of Entomology and Plant Pathology. In 2008, Dr. Jones received the Lifetime Achievement Award from Bayer Animal Health and the International Association of Livestock Insect Workers. They recognized him for a career of outstanding contributions to animal health and productivity through veterinary (livestock) entomology and for his contributions to medical and veterinary entomology at the national, regional, university and local levels. Some of his career highlights include analyzing the impact of mosquitoes on sheep in Wyoming and making the first American collections of mosquitoes specifically attracted to sheep; associating house flies with the distribution of pathogens in livestock-rearing facilities; analyzing the movement of Lyme disease and the tick that serves as its vector into areas not previously known to have problems with the disease; and studying factors that result in the development of LaCrosse encephalitis.

Art Agnello
Alicia Caswell
Charlie Linn
Brian Nault
Linda Rayer
John Sanderson
Lisa Westcott

Editorial Board

Obituary We are deeply saddened to report the passing of the following alumnus

Do you have any news to share? Send your information to Ms. Lisa Westcott, Department of Entomology, 2130 Comstock Hall, Cornell University, Ithaca, NY 14853 or by email to LEW1@cornell.edu.

Name: _____
Degree: _____ Advisor/Major Professor: _____
Email Address: _____ Phone: _____
Current Position: _____
News you would like to share: _____

We want to hear from you!

2012 Calendar

May 27, 2012
Commencement
Cornell University, Ithaca, NY

June 7-10, 2012
Reunion
Cornell University, Ithaca, NY

October 20, 2012
Insectapalooza
Cornell University, Ithaca, NY

November 12, 2012
Cornell Mixer at the ESA meetings
Knoxville TN (November 11-12, 2012)