



# The gloworm



An Extension Newsletter of the Biochemistry, Molecular Biology, Entomology and Plant Pathology Dept.  
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## Editor's Notes

The Gloworm is glowing again! I recently transferred to the Entomology and Plant Pathology Department from Wildlife, Fisheries and Aquaculture to spend more time on entomology. Initially we will work to get the Gloworm out quarterly. There was not a Gloworm in 2011. If there are features you would be interested in seeing let me know. We have just finished the 2012 Bug and Plant Camp and campers enjoyed seeing and collecting *gloworms* on Joe MacGown's farm.

I will be assuming some 4-H entomology responsibilities and continuing programs such as BugFest and the Bugs Night Out. 4-H Agents, please let me know how I can help you develop interest in 4-H Entomology programs in your counties. We will also be restructuring our youth oriented page for our departmental website soon. My office is in Clay Lyle Room 139, my phone number will be 662-325-3482 and email is [jguyton@ext.msstate.edu](mailto:jguyton@ext.msstate.edu).

There are a couple **important dates for insect collectors**. If you are close to Starkville, we will be hosting a Bugs Night Out at the Sam D. Hamilton Noxubee National Refuge on September 1<sup>st</sup>. Bring a sack dinner and spend the afternoon and evening collecting insects with us. And then on Sept 21<sup>st</sup> and 22<sup>nd</sup> we will be at the MSU Crosby Arboretum for BugFest.

We are using our original mailing list for this edition of the Gloworm and are particularly interested in knowing who still enjoys receiving it. We will be transitioning to an electronic version so those of you who received this by snail mail, please send us your email if you would like to receive it or if you still want the paper version let us know that too.

John Guyton, Ed.D.

## Bug and Plant Camp 2012 was a Huge Success

We tried a lot of new things this summer at Bug and Plant Camp and enjoyed sharing the fun with a number of new staff and faculty members. Since the last Gloworm the Entomology and Plant Pathology Dept. merged with Biochemistry and Molecular Biology to become the Biochemistry, Molecular Biology, Entomology and Plant Pathology Department. And this certainly has broadened the range of topics we can incorporate in camp, as you will notice below.

Several years ago we moved camp to campus, in part, because of the close proximity of the Noxubee National Wildlife Refuge (NNWR) whose manager had approved my request to collect insects there. And the NNWR quickly became a great partner. You will notice on this year's t-shirt logo to the right they have changed their name to honor to Sam D.



**Pollination Camp**  
Mississippi State University  
& the Sam D. Hamilton  
Noxubee National Wildlife Refuge

Hamilton who grew up in Starkville, caught his first fish at the NNWR and went on to be the director of the US Fish and Wildlife Service (USFWS). The Sam D. Hamilton Noxubee National Wildlife Refuge also has a new Manager, Dr. Steve Reagan, who was excited to learn about Bug and Plant Camp and has continued to support our partnership. This year the regions of the USFWS are competing to see who has the most pollination education events so we have joined the effort for our region and selected *pollination* as our camp theme.



In support of the pollination theme, campers collected flowering plants on the refuge from which they harvested some pollen with the help of Dr. Lelia Kelly, Assistant Director Heather Blackwell, Deanna Lyle and Karen Benson. Karen taught GPS skills while collecting flowers and documented where each flower was growing. Prior to camp Amanda Lawrence, Outreach Coordinator for the Institute for Imaging and Analytical Technologies produced some images of pollen so we were able to show campers what to expect. It was also pretty

incredible to have a Scanning Electron Microscope (SEM) on site at the refuge! We had a few problems with the SEM but now have the pollen images we will be sharing with campers a little later! Lelia did talks on pollination and show campers where to find pollen on flowers. We will publish the pollen images in the next Gloworm.

Other new activities included a termite pheromone activity with Dr. Ashli Brown. She took the "termite circus" to new heights! Older campers will remember the ink circle on paper that termites follow. Well, Ashli ran some of the ink through her mass spectrometer as well as some termites and found identical molecules in each strongly suggesting the ink mimicked a pheromone laid down by the termites for others to follow. Clarissa Balbalian, diagnostic lab manager, showed campers how viruses are detected in pepper plants and each camper performed an analysis. Amanda Lawrence set up a number of diseased insects and some microscopes for campers to learn a little about how to identify insect diseases. Dr. Jerome Goddard did a medical entomology and a forensic entomology talk and Matthew Thorn lead the forensic field investigation. Janet Chapman lead the aquatic entomology activity and macro insect photography using a smart phone. Breanna Lyle and Heather Blackwell did a session on spiders and Deanna did a session on Mississippi's carnivorous plants. We kept all the old favorites: Dr. Layton's insect photography, Audrey Sheridan's tour of a bee colony, Dr. Frank Davis, Dr. John Schneider, Kathy Knighten and Teresa Ziegelmann Insect Rearing Lab Tour and Dr. Richard Brown's life of an entomologist series and he did a session on silk moths featuring silks and cocoons from a collection in the museum.

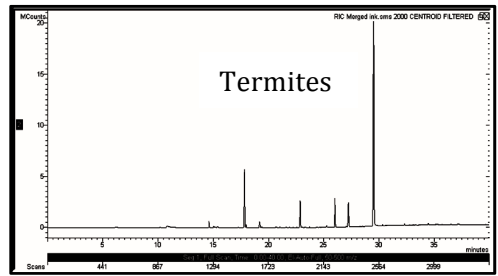
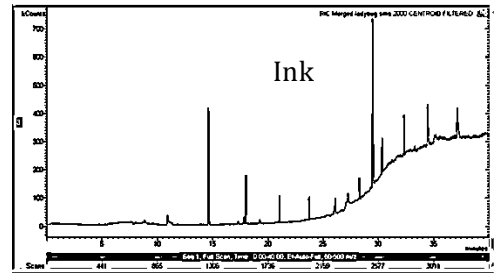
We collected in Dr. Blake Layton's yard, garden and fields, on Joe MacGown's Farm and at various locations on the Sam D. Hamilton Noxubee National Wildlife Refuge. We collected over 101 different insects in 16 orders.

Camp leaders were Drs. John Guyton, Mike Williams and Lelia Kelly assisted by Peggy Guyton, Asst. Director for Logistics and Heather Blackwell, Asst. Director for Programs. Edward Entsminger kept campers hydrated, ran errands, and assisted with everything, Charles and Michelle (Williams) Guyton assisted in transporting a huge amount of equipment and setup and took down the black lights. We began experimenting with the use of former campers as camp staff and Breanna and Deanna Lyle and Matthew Thorn did an **outstanding** job. Matthew Thorn and Lauren Goltz served as camp taxonomists. And, Dr. Willard and Ms Susan even dropped in regularly to collect a few insects!

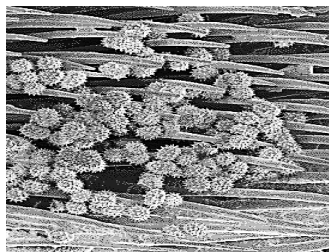
## ***Termite Trail Pheromones Found in Government Ink Pens***

For years we have been demonstrating termites following trail pheromones at camp by drawing a circle on a piece of paper with an ink pen. We call this a termite circus. We have noticed the government's Skillcraft pens are dependable sources of a mimic of termites' trail pheromone. Termites are blind and leave trail pheromones as a means of communication. This year at camp Dr. Ashli Brown, a biochemist in our new department took this activity to a new plateau in her lab.

Using solid phase microextraction (SPME) coupled to a gas chromatography-mass spectrometer GC/MS she first analyzed the ink in a Skillcraft pen and then when the campers returned with termites she analyzed them to see if there were molecular compounds common in the ink and termites. Using a straight edge you can identify the common molecules strongly suggesting the termites produce a trail pheromone that is very similar to a molecule in the ink pen. And yes, we joked about the government using termite trail pheromones to attract termites to assist in destroying the evidence!



## ***You are Taking the Scanning Electron Microscope Where?***



The opportunity to take a scanning electron microscope to the Sam D. Hamilton Noxubee National Wildlife Refuge made a pollination theme for Bug and Plant Camp a natural. Dr. Lelia Kelly, Co-Director and Consumer Horticulture Specialist, prepped the campers with sessions on pollination. Campers then collected flowers and Breanna Lyle and Matthew Thorn working with Amanda Lawrence began looking at pollen from the flowers collected on the refuge. Heather Blackwell and Karen Benson assisted campers in harvesting flowers and documenting their location. The picture shows pollen caught in the hairs on a bee's leg. This proved to be a fortuitous decision on a camp theme since USFWS regions are competing to see which region can deliver the best pollination education.

## ***A Totally Buggy Camp by Stephanie Larrick Hill***

Tropical Storm Debby, fire ants, and extreme heat could not keep 25 middle school age campers from having a great time and collecting insects at the 3<sup>rd</sup> University of Florida Entomology Camp. Entomology Field Camp is a week long day camp for students entering 5<sup>th</sup> through 9<sup>th</sup> grade. The camp is held at the Entomology and Nematology Department on the University's campus. This year the theme was Collect and Curate.

We started off the week learning about the arthropods and insects. Mr. Lyle Buss talked about insect orders bringing everyone up to speed. The campers received their collecting equipment and collecting commenced. After our small window of collecting time, the campers learned about insect curation. The campers were challenged to collect and properly identify as many insects as possible.

Tropical Storm Debby gave us a nice break on Tuesday, and we traveled to Lochloosa Wildlife Preserve to do some more insect collecting. The campers collected over 100 insects in eight orders! We took advantage of the weather and collected more in the Natural Area Teaching Laboratory

across from the Entomology Department in the afternoon. After a long day collecting the campers spent the rest of the afternoon curating and identifying.

Wednesday was all about aquatic insects. The campers learned about aquatic insect orders from Dr. Charles Covell and then got to collect at a stream on campus. That afternoon, we spent some time at the Florida Museum of Natural History. The campers were able to go through all the exhibits and got to see butterflies released in the Butterfly Rainforest!

Pollinators and pollination was our theme on Thursday. Dr. Rebecca Baldwin gave the campers a nice introduction to the color of plants that insect prefer and how plants utilize the insects. The campers then painted a flower pot and planted a flower in it so they could start a pollination station at home. We then traveled to the UF Bee Biology Research Unit to learn about honey bee biology. We were fortunate enough to be able to extract and taste some wildflower honey provided by UF graduate student Ashley Mortanson. In the afternoon, the campers planted zinnias in the UF Butterfly Garden in hopes to attract nectar feeding insects. The campers were then introduced to integrated pest management. After the introduction the campers attempted to build houses that were pest proof. The house had a piece of candy put inside and was set in a pan of ants.

The next day, the houses were examined. Two of the four houses were pest proof. The campers then toured the Urban Entomology Laboratory to learn about how to control the pest in and around our homes. Dr Baldwin then taught the campers about entomophagy and we all had insect snacks. After lunch the Insect Olympics began. Graduate student Matt Thom led the traditional Linnaean Games. After that, the campers participated in grasshopper jumping, cricket spitting, and build-a-bug from candy. The camp concluded with an awards ceremony and ice cream.

This is the largest camp that has been held in the past three years. This year we had campers from all over the state of Florida as well as from New York and Oregon.

A special thanks to the camp group leaders; Dale Halbritter (graduate student), Nick Larson (graduate student), Andrea Darmanjian (undergraduate student), Sarahlyne Guerrero (graduate student), and Ashley Poplin (graduate student). They are all students that gave up their summer break week to help with camp.

The campers suited up in bee suits. The campers took at tour of a honey bee colony.

For more information about UF's Entomology Camp, please visit [http://entnemdept.ufl.edu/bug\\_club/camp.htm](http://entnemdept.ufl.edu/bug_club/camp.htm)



**Editor's Note:** Stephanie and her family camped with us for a number of years and she is now working on her doctorate in entomology at the University of Florida. She is also in her third season of running her own bug camp. Congratulations Stephanie! Incidentally, Stephanie and I will be doing a session on Bug Camps at the Entomological Society of America annual conference this fall.



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